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NEIGHBOURING PATTERNS IN AUSTRALIAN SUBURBAN HOUSING DEVELOPMENTS

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INTRODUCTION
‘Sense of community’ and ‘neighbouring’ are two key concepts that are integral to social cohesion. They have been the subject of extensive studies in several disciplines including sociology, psychology and built environment. Sense of community is used to describe a feeling of belonging and shared interests among members of a community. Neighbouring is used to refer to the activities engaged in by and between neighbours.

Although the physical qualities of neighbourhoods and suburbs may affect the formation of the sense of community and neighbouring relationships, studies that focus on the contribution of the built environment are limited. According to Silverman (1986), a number of researchers have noted the importance of housing in predicting neighbouring behaviour, but typically have not developed a full model to account for it.

To address this gap, this study aims to evaluate the physical structure and characteristics of suburbs and how they contribute to neighbouring interactions and sense of community. Three suburban residential streets in the City of Greater Geelong have been selected for this study. A short survey was conducted in these streets to evaluate the intensity of interactions between the neighbours that reside here. The intensity of neighbouring interactions and the pattern of relationships was documented through Appleyard’s mapping technique. The built environment qualities have also been assessed through extensive field studies and observations.

This study will compare the physical qualities of the most successful and unsuccessful street in terms of the number and intensity of interactions to discover how the built environment contributes to a sense of community in suburban developments.

NEIGHBOURING: MEANING AND FRAMEWORKS
The way neighbouring is defined can be a determinant factor in the role of the built environment on neighbourly interactions. Silverman (1986) argues that the correlation between neighbouring and urbanism is an artefact of how neighbouring is defined. Neighbours are defined as those people who live in close proximity to the private space of a person’s home. These relationships are characterised by shared physical residential boundaries as well as potentially a common constructed history centred around overlapping private aspects of their lives. Keller (1968) has defined ‘neighbouring’ as “the activities engaged in by neighbors as neighbors and the relationships these engender among them”. Neighbouring has also been defined as a sense of ‘we-ness’. This kind of involvement with neighbours, has been correlated with the physical aspects of the neighbourhood.
Lofland’s (1989) model of social realms offers a framework for understanding urban interaction by distinguishing three realms: the private, the parochial, and the public\(^7\). Based on Lofland’s model, Kusenbach identifies four distinct patterns of neighbouring: (1) friendly recognition, (2) parochial helpfulness, (3) proactive intervention and (4) embracing and contesting diversity (Table 1)\(^8\).

**Table 1: Principles of interaction in the public and parochial realms, Source: Kusenbach (2006)**

<table>
<thead>
<tr>
<th>Cooperative Motility</th>
<th>Parochial Realm ‘Neighboring’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civil Inattention</td>
<td>Friendly Recognition</td>
</tr>
<tr>
<td>Restrained Helpfulness</td>
<td>Parochial Helpfulness</td>
</tr>
<tr>
<td>Audience Role Prominence</td>
<td>Proactive Intervention</td>
</tr>
<tr>
<td>Civility toward Diversity</td>
<td>Embracing and Resisting Diversity</td>
</tr>
</tbody>
</table>

Kusenbach (2006), by comparing Lofland’s model of the public realm with neighbourhoods’ context, identifies a neighbourhood as a parochial realm. Here neighbours differ from the strangers encountered in the public realm thorough their patterns of neighbouring. For example, the ‘civil inattention’ in the public places in cities becomes the ‘friendly recognition’ or ‘saying hi’ among neighbours in a neighbourhood. ‘Restrained helpfulness’ in the public realm such as telling the time and giving directions is replaced by ‘parochial helpfulness’ or the ‘cup of sugar’ example. In comparison to the public realm, residents of the local communities are much less prone to ignore any threat or danger a neighbour might experience. Therefore, the ‘audience role prominence’ in the public realm changes to the ‘proactive intervention’ in neighbourhoods\(^9\).

Most studies on neighbouring focus on the importance of social interactions and mutual aid in neighbourhoods\(^10\). Kusenbach’s model of neighbouring is very similar to the social components of neighbouring in Unger and Wandersman’s (1985) model\(^11\). The importance of social components in some models, has in fact caused some scholars to refer to neighbouring as the exchange of social support between neighbours\(^12\). However, Unger and Wandersman’s model which does not consist solely of social components, but also takes account of cognitive components and affective components and therefore provides a more comprehensive approach to the concept of neighbouring\(^13\).

Based on different definitions, several indicators have been used to measure neighbouring. While Tsai and Sigelman measure neighbouring by the frequency respondents reported spending a social evening with neighbours\(^14\), Kasarda and Janowitz measure it by the number of friends in the neighbourhood\(^15\), and McGahan by whether the respondent had friends in the building, went to social events with neighbours, talked with neighbours about personal problems, and borrowed from neighbours\(^16\). When neighbouring is defined in terms of recognition of connections, then the explanation is straightforward; several factors combine to encourage or discourage recognition\(^17\).

Taking the existing indices into account, neighbouring in this study has been examined through four stages of intensity: the number of neighbours that residents can recognise by face, the number of neighbours that residents can recognise by name, the number of neighbours that residents greet, and the number of neighbours residents consider as their friend.

**STUDY AREA AND METHODOLOGY**

The suburban lifestyle is associated with a lack of vitality and social life\(^18\). According to Richards, suburban living has two faces: the dream achieved and the nightmare of dreary living, deprivation and isolation\(^19\). To address the social life of suburban developments, this study examines three suburban case studies in the City of Greater Geelong (the state of Victoria’s second largest city, 75km south-west of Melbourne). Highton, Geelong West and Bell Park are three residential suburbs that have been selected for this study, arguably as places that are representative of wider suburban conditions.

The map below illustrates Curtin St in Bell Park with detached housing and large lots of about 600 square metres. The footpaths are wide with nature strips and trees (Figure 1). As the map shows, five
houses have a second unit at the back of the house. This is a consequence of the large lots that have given residents the opportunity and room to build new structures in their backyard.

McDougall St is a residential street in the suburb of Geelong West. Similar to Marcus St, the typology of the housing in this street is in the format of single storey detached housing. McDougall St differs from Curtin St as the size of the lots are much smaller (almost they are half in size in comparison to Marcus St) and therefore the houses are more congested. As it can be seen in the map, the footpaths are very narrow without any nature strip and the front setback is usually small.

Marcus St is a residential street in the suburb of Highton. The map below represents the detached housing morphology alongside the large lots, front yards and backyards. Although the lots are very large and similar size to Curtin St, the residents have not built a second unit in their backyard. It also shows the wide footpaths and nature strip designed on both sides of the street.

Based on the field studies and observations, residential streets were found to be quite inactive with minimal activities happening on the streets. The survey is therefore designed to capture the sense of community and neighbouring relationships occurring on the three streets, which might not be noticeable through the course of observation of activities.

In order to evaluate the pattern of neighbouring relationships, a methodology that build on Appleyard’s approach outlined in his book ‘Livable Streets’ was utilized. Appleyard’s survey and mappings show the network of acquaintanceships and friendships among neighbours on three streets with different volume of traffic (Figure 2).
Figure 2 the pattern of acquaintanceship and friendship among neighbours on three streets with different volume of traffic; Source: Appleyard (1981)

Survey Analysis

Patterns of neighbouring in the three streets (from face and name recognition to greetings and friendships)

Question one on the survey asks the residents to identify the neighbours that they can recognise by face. Question two asks the residents to identify the neighbours that they know by name. Question three asks the residents to identify the neighbours that they greet on the street. Question four asks the residents to identify the neighbours that they consider as their friend.
There seem to be a consistent drop between the responses to the survey questions when asked in this order, suggesting the process of neighbourliness starts from the recognition by face and then it moves to greetings on the street and then to introducing themselves and a possible friendship. In other words, the process of minor acts of neighbouring (such as face recognition and greetings) to name recognition and friendships among residents has a similar pattern in all the three streets. The number of neighbours that residents can recognize by their face is more than the other categories. The second category is the neighbours they greet, and the third category is the neighbours they can recognize by name. Lastly, the number of friendships among neighbours is by far less than the other categories. This pattern has been repeated with similar weight in all the case studies (figure 3).

**The Spatial pattern of Neighbouring**

As it can be seen in figure three, Separation Street in Bell Park falls first in all stages of neighbouring (the four questions asked). McDougall St in Geelong West is placed in the middle followed by Marcus St in Highton with the least number of neighbouring activities/interactions among the residents. The figure below illustrates the difference between the intensity of neighbouring interactions (in terms of recognizing neighbours by name) in the three streets (Figure 4).
The neighbours that you know by name

Marcus St in Highton

Curtin St in Bell Park

McDougall St in Geelong West

Houses that responded to the survey

Figure 4 result of the survey for name recognition by neighbours

Enumerating the number of relationships between the side neighbours and front neighbours for all the four questions has revealed a spatial pattern on the streets (figure 5).
Figure 5 enumerating the number of relationships between the side neighbours and front neighbours

The graph above reveals that residents of all the three streets recognize more side neighbours rather than the ones that are across the street. In this sense, the process of acquaintanceship among neighbours happens through a spatial hierarchy. The early interactions occur more frequently among the next-door neighbours rather than between the across the street neighbours.

Again there seems to be the same spatial pattern among the residents that know their neighbours by name. In all streets, residents seem to know more neighbours around their immediate locality and on the sides of the house rather than the neighbours across the street.

For the third question, the spatial pattern of McDougal St and Marcus St is similar to the last two question, where residents had more interactions with their side neighbours. However, in Curtin St, the trend changes and residents greet to neighbours across the street, more than the neighbours on their side.

For the fourth question, the spatial pattern of McDougal St and Marcus St is similar to the first three questions where residents had more interactions with their side neighbours. However, in Curtin St, the trend is similar to the third questions, where there were more greetings to the neighbours across the street, more than the neighbours on their side.

Table 2 Distance to the front and side neighbours

<table>
<thead>
<tr>
<th>Street</th>
<th>Suburb</th>
<th>Street width</th>
<th>Sidewalk Width</th>
<th>Front yard setback</th>
<th>Average distance to the front neighbours</th>
<th>Average distance to the side neighbours</th>
</tr>
</thead>
<tbody>
<tr>
<td>McDougal St</td>
<td>GEELONG WEST</td>
<td>8 m</td>
<td>1.8 m</td>
<td>4 m</td>
<td>15.6 m</td>
<td>4.8 m</td>
</tr>
<tr>
<td>Curtin St</td>
<td>BELL PARK</td>
<td>6.5 m</td>
<td>4.5 m</td>
<td>6.2 m</td>
<td>21.7 m</td>
<td>4.8 m</td>
</tr>
<tr>
<td>Marcus St</td>
<td>Highton</td>
<td>6.5 m</td>
<td>4.5 m</td>
<td>7.8 m</td>
<td>24.3 m</td>
<td>6.6 m</td>
</tr>
</tbody>
</table>
In all the three streets the average distance to the side neighbours is much less than the average distance to the front neighbours (Table 2). This spatial placement of the housings has developed a greater sense of community among the side neighbours rather than the front neighbours (except for few exceptions in Curtin St). The farthest the houses are apart there would be less chance for interactions among neighbours (assuming that other contributors are the same). However, this does not mean that if the houses should be as close as possible to enhance a great sense of community among residents. Sometimes lack of enough distance between neighbours may cause an intrusion in privacy. Rapoport defines privacy as the ability to control social interaction and being able to choose the desired rate of social interaction\(^\text{21}\). There needs to be an optimum privacy for enhancing social interactions and exorbitant proximity might cause an intrusion in privacy. This optimum proximity might change in regard to the background, culture and social behaviour of the residents. Lang argues that if the social needs of people are in balance with the sense of independence provided by privacy, social interaction will be easier\(^\text{22}\).

The average distance to front neighbours is dependent on the street and sidewalks width alongside with the housing setbacks. The result of this study suggest that narrower streets with less front setback might actually encourage interactions among across the street neighbours. A study by Verbrugge and Taylor concluded that the accessibility of residents to each other had little impact on social ties, as compared to their social and demographic characteristics, the number of residents in the area (density), or their subjective feelings about their environment\(^\text{23}\). In contrast a more recent study showed that immediate neighbours tend to communicate more with each other than residents living further apart\(^\text{24}\). Likewise, the result of this survey suggests that the visual accessibility of neighbouring houses have a contributing effect on the formation of the sense of community neighbouring relationships.

The mapping below represents all the houses that responded to the survey extracted and separated from figure four (figure 7). They have been sorted based on the length of residence from 0 (two weeks) to 53 years. The lines represent the neighbours that the participants greet, when they see them on the street. The pattern of growth of these networks/relationships during the years of residency among different households suggest that residents usually start their neighbouring interactions with their immediate neighbours and through time they expand this proximity to neighbours further apart.

There are exceptions and other non-spatial factors affecting the intensity of this expansion and relationships. However, there seems to be a general spatial pattern. The closer neighbours are the more chance there is for interaction and this has reflected in the mappings. After some years (as mappings
show a decade or so), households start to get to know the neighbours, who are much farther down the street.

*Figure 7 the pattern of greetings arranged based on the length of residency extracted from figure 4*

The figure below is a similar mapping representing the neighbours that participants consider as their friend. Comparably, the houses have been arranged based on the length of residency (figure 8). Comparing figure 7 and 8 shows that unlike informal interactions and greetings, friendships on the street won’t expand to the farther neighbours through time. The number of friendships also does not necessarily increase through time. The mapping below may suggest that proximity is a more critical factor for the formation of friendships.
The fact that more chances of interaction generate more opportunities for friendships among neighbours is not in dispute. When neighbours are farther apart, there is a less chance of interactions and less chance of friendships. Even through several decades of residency, the number of friendships does not increase considerably. Therefore, the formation of friendships among neighbours is more dependent on the proximity to neighbours and much less correlated with the length of residency (assuming that all the other factors are the same).

The mappings above suggest that the spatial design of neighbourhoods can be a considerable factor in enhancing neighbouring interactions. The distance to neighbouring houses and the distance between the entries can be determinant of the number of interaction occurring through the length of residency.

**Housing quality and neighbouring interactions**

Based on the literature review, a framework has been developed for analysing the housing qualities\(^{25}\). According to the framework, the architectural qualities of each house will be analysed regarding composition, transparency, permeability and personalization (figure 9).
All the 21 houses across all three streets who have responded to the survey have been categorized based on their number of greetings. The houses with the most number of greetings have been compared to the houses with the least number of greetings in terms of their architectural qualities of the houses. Therefore, the ten households who greeted more than nine neighbours have been compared to the households who greeted less than eight neighbours on the street. The architectural qualities of each household have been registered through the field studies and by the author.

**COMPOSITION**

Composition in this framework is a general term and includes all the architectural spatial qualities of the housing that may affect neighbouring interactions including site coverage, lot size, front setback, congestion levels (the sum of the distance to the side neighbours) and the presence of front porches.

<table>
<thead>
<tr>
<th>Greetings</th>
<th>Site coverage</th>
<th>lot size</th>
<th>Front setback</th>
<th>congestion level</th>
<th>Front porch</th>
</tr>
</thead>
<tbody>
<tr>
<td>below 8</td>
<td>0.46</td>
<td>562</td>
<td>6.92</td>
<td>6.2</td>
<td>0.3</td>
</tr>
<tr>
<td>over 9</td>
<td>0.519</td>
<td>571</td>
<td>5.28</td>
<td>7.94</td>
<td>0.8</td>
</tr>
<tr>
<td>over 9 without the outlier</td>
<td>0.55</td>
<td>501</td>
<td>5.08</td>
<td>5.71</td>
<td>0.8</td>
</tr>
</tbody>
</table>

The average site coverage of the two groups of houses are very similar. The lot sizes are also quite similar (table 3). The reason for this similarity, however, is that one of the houses on Marcus Street is on two lots that is around 1200 square metre. This unusual house has acted as an outlier and has affected the site coverage, lot size and congestion level results. Considering the average without this outlier, the
site coverage is 10% higher in houses with most interactions. When the site coverage is higher, the yards are usually smaller and therefore, this might cause the outdoor activities to emerge on the sidewalk.

The lot size is also on average about 60 square metre smaller in houses with the most number of interactions. Although large lots need more outdoor activities for maintenance and gardening, they cause an unavoidable distance between neighbouring houses, which can negatively affect the number of interactions among neighbours.

The setback in houses with the most number of greetings is about two metres less than the houses with the least number of greetings. As with a smaller setback the fronting neighbours are closer, there is a higher chance of interactions and greetings among neighbours. A similar pattern is expected for the distance with the side neighbours as well. As it can be seen in table nine, houses with the most number of greetings are about a half metre closer to their neighbours (Table 2).

The presence and use of front porches can enhance the number of activities happening in front of the house. From the houses with the least number of activities, three houses (30%) has a front porch with a sign of usage (outdoor furniture or traces of use), whereas among the house with the most number of greetings eight houses (80%) has an active front porch (Table 2).

**TRANSPARENCY**

<table>
<thead>
<tr>
<th>Greetings</th>
<th>Transparency</th>
<th>Fences Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>below 8</td>
<td>0.54</td>
<td>1.15</td>
</tr>
<tr>
<td>over 9</td>
<td>0.65</td>
<td>1.05</td>
</tr>
</tbody>
</table>

Depending on how transparent the front yard and the fences are, the houses has been ranked between 0 (non-transparent), 0.5 and 1 (completely transparent). Transparency seems to be 10% higher among houses with more greetings (table 4). Another measure of transparency can be the height of fences which is again 10% (average 10 centimetres) shorter in the houses with more greeting. Therefore, transparency seems to be a contributing factor to the greetings and interactions on the residential streets.

**PERMEABILITY**

The permeability pattern shows an unexpected result. In fact, the permeability of the houses with fewer greetings is 15% higher than the house with the most number of greetings (table 5). This contradiction with the result of the transparency may suggest that permeability of the street fronts is not as important factor as transparency or composition for enhancing the number of interactions on the street. Therefore, as long as front yards are transparent and fences are very tall, the permeability is not a contributing factor.

<table>
<thead>
<tr>
<th>Greetings</th>
<th>permeability</th>
</tr>
</thead>
<tbody>
<tr>
<td>below 8</td>
<td>0.45</td>
</tr>
<tr>
<td>over 9</td>
<td>0.3</td>
</tr>
</tbody>
</table>

**PERSONALIZATION**

Personalization has been calculated and ranked based on factors such as the presence of outdoor furniture, landscaping, decorations and wares (Figure 10).
In order to measure and quantify personalisation of different houses, the average score for the abovementioned physical cues for personalisation has been calculated. Each item (furniture, landscaping, decoration and wares) have been rated and calculated from 0 to 1 (1 being the highest). The four items have been added and divided by four to calculate the average personalisation observed for each house.

To calculate furniture, a score of 1 has been given to each item of furniture (canopies, chairs, lightings) observable from the street and 0 to each item that was not used in the front yard or porch. Then the average for these three items has been calculated and used as a score for furniture.

The same ranking system has been applied to landscaping. Based on the observations, the landscaping qualities have been categorised in five groups: beautification, defining a spatial territory (territorialisation), acting as traffic or intrusion barriers, maintenance, and shading.

To calculate and compare landscaping among case studies, a score of 1 or 0 has been given to each abovementioned item (beautification, defining a spatial territory, acting as an intrusion barrier, maintenance, and shading). The score of 1 refers to the presence of these features in front yards and 0 refers to the lack of presence of these items (the score does not consider the number of items). Afterwards, the average score on these five items has been calculated to represent the score of landscaping in the front yard of each house.

Similar methods have been applied to calculate decorations and wares (non-decorative items). A score of 1 has been given to each house presenting a decorative feature or putting wares and goods in the front yard. Otherwise, a score of 0 has been given to the houses without any decorative elements or additional wares.

Houses with the highest number of greetings ranked higher regarding average wares and decorations score in comparison with the houses with the lowest number of greetings. However, this average was similar in terms of furniture and landscaping (table 6).
Table 6 average personalisation score

<table>
<thead>
<tr>
<th>Greetings</th>
<th>personalization</th>
<th>Furniture</th>
<th>landscape</th>
<th>decoration</th>
<th>wares</th>
</tr>
</thead>
<tbody>
<tr>
<td>below 8</td>
<td>0.33</td>
<td>0.090909</td>
<td>0.69</td>
<td>0.272727</td>
<td>0.2727</td>
</tr>
<tr>
<td>over 9</td>
<td>0.53</td>
<td>0.1</td>
<td>0.63</td>
<td>0.7</td>
<td>0.7</td>
</tr>
</tbody>
</table>

All in all, the houses with the highest number of neighbouring interactions have 20% more personalization than the houses with the least number of greetings.

CONCLUSIONS

The present study was designed to determine the effect of housing qualities and the neighbourhood environment on the formation of neighbouring interactions. This study identified that the visual accessibility of neighbouring houses have a contributing effect on the formation of the neighbouring relationships.

This research has also shown that the spatial pattern of residential developments contributes to the pattern of neighbouring interactions. In all the three streets the average distance to the side neighbours is much less than the average distance to the front neighbours. This spatial placement of the housings has developed a greater sense of community among the side neighbours rather than the front neighbours. The distance to the neighbouring houses affects the number of interactions.

By utilising a framework developed according to the literature review, the built environment qualities (such as composition, transparency, permeability and personalization) that may contribute to the neighbouring relationships were investigated. While factors such as composition, transparency and personalisation were shown to have a contributing effect, other factors such as permeability, furniture and landscaping did not have a meaningful correlation and were concluded not to be as important as the other factors (figure 11). The houses with the least number of interactions on average have larger lots with less site coverage, larger setback, smaller congestion level, and use their front porches less than the houses with the most number of activities. The houses with the most number of activities are usually more transparent and use different types of personalisation techniques to demarcate their residence.
ARCHITECTURAL PHASE

Composition

TRANSPARENCY

Permeability

PERSONALIZATION

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