the humane co house

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ABSTRACT

The Humane Co-house design-led research project presents a new typology for shared medium-density housing sited in a city-fringe Wellington suburb. The research argues communal living can be utilised to achieve smaller dwellings, a high medium-density grain, a humane living environment and a new form of social interaction that home buyers will find desirable.

Buying a home is difficult throughout New Zealand and Wellington is no exception. Inner-city apartment blocks lack individuality, space for growing families and a sense of community and autonomy. While research shows houses in outer suburbs are perceived to provide these, they come at a high price and there are low amounts of available stock. There is potential for city-fringe suburbs adjacent to the inner city to accommodate more dwellings, creating available housing stock that is appealing to buyers who would otherwise be looking at expensive suburban houses.

The research begins with the current attitudes and preferences within the New Zealand housing context, and suggests that the appeal of the traditional detached suburban house is intertwined with a desired balance of private space to common space. The research designs and develops a new typology that attempts to achieve this balance, but with smaller dwellings at a high medium-density.

Through design-led research an architectural definition and manifestation of a humane dwelling is formed. This focuses on a balance of private space and common space.

Qualities of common and private spaces within a dwelling are explored through literature and design tests. Evaluation of design case studies produced from research, tests and iterations draws conclusions about how communal living can be utilised by different demographics to achieve a new type of social interaction, and a basic level of affordability that will resonate in the current context. The final design case study was critically reflected upon in terms of a theoretical client that over time might transition through three demographic groups – a working young person or couple, a family and a retired person or couple. In this way the design case study produced was considered as a flexible and long-term dwelling, resulting in a humane and appealing home for occupants at different stages of life.

“... the Kiwi dream ... you’ve got your own yard, it has a fence. You can have a dog and a cat and a sandpit” (ERIKSEN).

part one.

INTRODUCTION AND BACKGROUND

INTRODUCTION

Supply, quality and affordability of urban housing are well-publicised issues, and it is widely acknowledged that local authorities and governments need to significantly change and improve their housing strategies to address these. A large market of working households, often with two incomes, that cannot afford to buy into even low-priced housing has emerged, and consequently there is demand for affordable housing close to the city and increased attention being given to medium-density housing (Centre for Housing Research Aotearoa New Zealand ii). Research of this topic that explores new ways to live in and around the inner city is required.

The research opens with the current attitudes and preferences of buyers within the New Zealand housing context. It suggests that the appeal of the traditional detached suburban house is partly to do with a desired balance of private space to common space, and is related to the autonomy and spaciousness that come with a detached suburban home.

Figure 3. The conventional housing model.

The design-led research aims to result in the design of a new medium-density housing typology, located in a Wellington fringe suburb, that will achieve a private and common space balance in smaller dwellings of a high medium-density. Through a combination of private and common space the new typology will provide a humane, high medium-density living environment that first home owners will find attractive and feasible.

Home ownership is difficult throughout New Zealand, with Wellington no exception. Demand for housing is driven by growth in the number of household groups. From the 1960s onwards, the baby boomer generation triggered unprecedented demand for housing as they grew up and had families. As a result, household growth rates have exceeded population growth rates for the last several decades. Future household growth is likely to continue to exceed population growth because of the trend towards smaller households, which is a result of an ageing population. Instead of having every 100 people spread over 38 houses, we might have 100 people spread over 42 houses (Statistics New Zealand).

Available housing options do not make ownership appealing for potential buyers. Inner-city apartment blocks lack individuality, space for growing families and a sense of community and autonomy. While research shows houses in outer suburbs are perceived to provide these, they come at a high price and there are low amounts of available stock. In the year up to October 2013, the national median house price increased by \$27,525 (+7.2%), with 10 regions recording an increase in the median price. The national median house price reached a new high in October 2013. The Real Estate Institute of New Zealand's Stratified Housing Price Index, which adjusts for variations that can impact on the median price, similarly reached a new high in October and is 9.9% higher than October 2012. The Wellington Index is up 0.3%. There is potential for city-fringe suburbs adjacent to the inner city to accommodate more dwellings, creating available housing stock that is appealing to buyers who would otherwise be looking at expensive suburban houses.

Figure 4. Wellington fringe suburbs and site.

Patterns of family formation or dissolution, household sizes and lifestyles and employment and financial stability are constantly changing. The conventional housing model of living in the parental home, moving to rental accommodation, buying a first home and then trading up homes as situations change (refer figure 3) needs to evolve too. Factors in New Zealand such as the growth of non-European ethnic populations are likely to make it common that multigenerational families live together. Other unpredictable influences on the property market are New Zealand's diaspora, including the 600,000 New Zealanders in Australia, and increasing globalisation resulting in a more mobile older population that may move more frequently across the globe to care for family and grandchildren (Statistics New Zealand).

The *inner city* refers to the Wellington CBD. It is recognised that the inner city provides jobs, amenities and vibrancy. *Fringe suburbs* refers to suburbs adjacent to the inner city. *Outer suburbs* or *suburban* refers to the next layer of suburbs out from fringe suburbs (refer figure 4).

The term *humane* is used throughout the research to describe a standard of living essential to an occupant that wishes to live full-time and long-term, comfortably and happily, in a dwelling. Defined by the *Oxford Dictionary* as "having or showing compassion" and "inflicting the minimum of pain", it is redefined through the design-led research to refer to a dwelling that provides a private inner sanctum for the individual occupants and a feeling of safety and enclosure, gives the perception of autonomy and detachedness, comprises a gradient of common to private spaces, invites social interaction with like-minded neighbours, has an implied, intrinsic boundary that represents ownership, and has some level of individuality for a sense of address.

Top terrace: existing building.

Bottom terrace from Tasman Street: tennis courts.

Figure 5. Site.

The research contributes a co-housing typology to the field that encourages a new mode of social interaction and facilitates smaller dwellings and a higher density of dwelling. It presents a design case study that is sited on a city-fringe site in the context of difficult home ownership conditions. There are currently international examples of urban co-housing developments, but New Zealand examples are generally suburban lower-density models. The new housing typology contributes an innovative concept of dwelling, introducing an alternative to a current model that is not accessible to buyers.

The chosen site is 44 Tasman Street in Mt. Cook, Wellington. It currently has two tennis courts and one building, both associated with Massey University. The Tasman Street edge is 77m long and the Ranfurly Terrace edge is 83m long, with a site area of 0.44ha (refer figure 5). It consists of a lower and upper terrace, with a slope rising approximately 19m between them.

SCOPE

The scope of the research is limited to presenting an affordable medium-density dwelling design by utilising the following affordability tactics, the majority of which decrease construction and material costs:

- Shared, attached construction.
- Rooms such as bathrooms and kitchens and the corresponding required services shared.
- Small dwellings. The average house size in Wellington is 159 square metres, and the new typology aims to be less than 80 square metres (QV).
- Standardised house plans; a maximum of three basic designs.
- Reduced need for car parking or built garages because of the site's proximity to the inner city; this will also result in lower transport costs.
- Reduced administrative costs such as building consents and organising contractors through sharing land and parts of dwellings.
- Reduced cost of land per dwelling.

Figure 6. Existing medium-density development in Newtown, Wellington.

Medium-density housing refers to comprehensive developments including four or more dwellings with an average density of less than 350 square metres per unit, or 30–60 dwellings per hectare (dph). It can include stand-alone dwellings, duplex dwellings, terraced housing or apartments within a building of four storeys or less. These can be located on either single or aggregated sites, or as part of larger master-planned developments (Ministry for the Environment).

Medium-density low-rise dwellings, or clustered dwellings, have advantages over detached single houses – land, energy and materials are used more economically than in detached houses (Durrett and McCamant 34), and a relatively higher density supports public transport options. The aim is to create high medium-density housing. This means the 0.44ha site will hold 15–20 dwellings. To differentiate the new typology from its suburban context, it will aim for a minimum of 25 dwellings for a density of 57dph.

Being confined to a period of 11 months, the scope of the research is limited by what could be achieved to a high standard within that time, in order to achieve the research aim.

METHODOLOGY

The research starts with current attitudes and preferences within the New Zealand housing context, and finds that the appeal of the traditional detached suburban house is intertwined with a desired balance of private space and common space. Through the research a definition of a humane dwelling is formed, in terms of a balance of private and common space.

The focus of the research is on design as a method of investigation. The common and private balance is explored through design tests that support or test literature, and case studies and analysis of existing co-housing precedents.

MT COOK! MOBILISED

No 13 - April 2013

Welcome to Mt Cook Mobilised, your residents' and community group. We invite your input (via the email above) on any Mt Cook issue. We urge all owners to paint out graffiti immediately and look out for neighbours. Many thanks again to the Southern Cross, 39 Abel Smith St, for generously sponsoring us.

WARM WELCOME

Mt Cook is a suburb that values its diverse communities. For many years it has hosted a population of students who make the very sensible choice to move here to study at one of Wellington's excellent tertiary institutions.

A warm welcome if you are a student new to Mt Cook. We hope you enjoy living in one of the best, most vibrant and lively suburbs in the city. We are pleased that you have come to live among us and add to the richness and colour we all enjoy as part of inner-city living.

Mt Cook is also home to many long term and permanent residents, some of them quite elderly and some of them young families. Our goal is for us to live harmoniously and respectfully, appreciating the needs of our fellow citizens, looking out for each other and being mindful of how we can build helpful and concerned neighbourhoods. Students will have parties – and

ALCOHOL STRATEGY

MCM is on WCC's Reference Group to help shape a strategy on alcohol, from which Council has, under a new act, to develop a Local Alcohol Policy (LAP).

Away from the excesses of late-night Courtenay Place, Mt Cook experiences alcohol issues through liquor-driven partying, driving and 'pre-loading'. This is where people drink cheap booze at home before heading

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SOUTHERNCROSS
GARDEN BAR RESTAURANT

Mt Cook – FIRST IMPRESSIONS

To move from a large old villa in suburbia to a smaller newish apartment in Mt Cook, has been what could be called a 'sea change'. While we are not right in the city, the overwhelming impression is one of a close urban environment. It is cosmopolitan, busy and, thanks to the proximity of Massey University and the nearby Dance and Drama schools, youthful. The high proportion of rental accommodation means moving trucks are a common sight at the beginning and end of the academic year.

There isn't a real business centre to Mt Cook but residents have good access to shops, banks, libraries and the hospital and other facilities in the central city on the one hand and Newtown on the other. This has been the case for many decades now - this is not a new suburb and it is the mix of old and new that gives Mt Cook its charm. It

BUS REVIEW

The good news is that GWRC dropped any idea of routing the Taranaki St services along the Terrace, and dieselising it. Good on ya GWRC!

A Papawai Reserve working bee moving Mt Mulch.

TIMEBANKING - EASY AND FUN

Timebanking is an easy way to get things for next to nothing and share your skills. Say, you have a car and give someone a lift to the supermarket, then that person might wash someone else's car. The timebank keeps a record of who is swapping what and debits or credits time points. One hour of time equals one Timebank point. At first it might seem a little weird, but really timebanking is fun and a great way to meet new people and you can trade all manner of skills and expertise.

The Wellington Timebank has over 200 members and now needs to devolve to a less centralised operational model – the new way of operating involves Neighbourhood Hubs. There are almost a dozen Timebank members in Mt Cook already, and Hannah is looking for a Hub Coordinator for Mt Cook, and

yes, you can timebank the time you spend on neighbourhood hub Timebank activity!

To find out more, google 'wellington timebank', or contact Hannah at the Wellington Timebank on 920 6708 or email <ngn.timebank@gmail.com>

Mt Cook Minis

All the original Mt Cook Minis from 2008 are big school kids now. There are lots of pre-schoolers and toddlers around Mt Cook who need someone to coordinate their Mums for a monthly get-together at the park or Junglerama. Would you have 2 hours a month to coordinate a new group of Mt Cook Minis? Mt Cook Mobilised will help the new coordinator get in touch with Minis. Email mtcookmobilised@gmail.com if you would like to give it a go!

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MT COOK! MOBILISED community

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PCs \$5, monitors \$15, TVs \$25, washing machines \$30 (they moved to 2 Forrester Lane, opposite Burnings on Tory Street. Electronic items contain toxic nasties that cannot be dumped in the landfill. For a small fee the Sustainability Trust will take old electronic goods for dismantling and recycling - or e-cycle, the price per item, and e-cycling. Cell phones are free. their opening hours.

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The research is divided into three design investigations: common space, private space and the combination of common and private spaces. Co-housing case studies and literature are integrated into these investigations as the design process requires them, in order to develop the design case study. Along with evaluation of design tests and design case study iterations, they generate conclusions about how common living can be utilised to encourage new types of social interaction and a basic level of affordability that resonates in the current architectural and social context.

The design investigations result in a final developed design case study, a new typology that achieves this balance of private space and common space through smaller dwellings at a high medium-density. The final design case study is considered in terms of the evolving priorities of different demographics that might occupy the dwellings.

BACKGROUND

SITE: MT. COOK

Mt. Cook is situated on a busy transport artery that leads traffic to outer suburbs. It does not have a defined suburban centre, instead relying on the proximity of the CBD for amenities and supplies that go beyond what is found in a handful of dairies within the area. Mt. Cook has a high proportion of one-parent families, a high proportion of renters and a high proportion of part-time workers compared to the rest of Wellington (Profile ID Community Profile).

New housing developments are an important issue to existing Mt. Cook residents. There is concern about the quality of new dwellings built in their

Figure 7 (left). Mt. Cook Mobilised newsletter. "Get to know your neighbours. Become involved with the activities around Mt Cook. Join in the events that are held to celebrate and keep our suburb attractive and safe. Use the local businesses and facilities. Find out about the recycling system and civil defence arrangements for emergencies. Be part of our proud community and help us to continue making it better and better for everyone and generations of families and students to come."

Figure 8.

Mt. Cook consists of small regular blocks with consistent dwelling and lot sizes, broken up by blocks of social housing or apartment blocks, populated by mostly renters. In 2013 in Mt Cook 18% of households own their home, 50.4% are renting privately and 17.0% are in social housing (Profile ID Community Profile).

neighbourhood, the new residents they will attract and the social interaction or behaviour they will encourage. These are concerns that exist in regards to both Housing New Zealand developments and private developments (Mount Cook Mobilised). A sensitivity to change is also indicated in the Council's *Urban Character Assessment and Residential Design Guide*.

There are some groupings of villas and cottages of similar style creating pockets of visual coherence, but these tend to be fragmented from each other by variations in type and style of buildings. Influences by large institutions have also affected this area. Future changes would need to be carefully managed to avoid a negative impact on the existing areas of heritage character (Boffa Miskell 16).

Mt. Cook consists of low medium-density residential grain as well as light commercial and industrial areas on Hopper Street and Adelaide Road (refer figure 8). A distinctive local character is derived from identifiable large concentrations of consistent building character, such as light-coloured house exteriors, and painted weatherboard and corrugated iron construction. There is a consistency of age, type, form and scale among the original buildings in the area. There is also some visual diversity: variations in roof form and building height, topographic variations and the presence of some non-residential building types.

The general typological pattern is detached buildings on small, narrow, rectangular sites. There are predominantly villas, cottages and bungalows, with some clusters of semi-detached houses. The most common lot width is 10m, while side yard dimensions are generally less than 1.5m. The average building width is 7–9m and more than two thirds are single storey. There is a consistent pattern of narrow frontage widths. The narrow frontages combined with the small separation distances (sometimes 2m) create a perception of high density when seen from the street. Site coverage is already intense for detached housing, at 30–45% (Boffa Miskell 16).

Mt. Cook is exemplary in its low car use. Statistics show households owning no motor vehicle are twice as common in Mt. Cook as for the rest of Wellington, and one to three motor vehicle households are half as common as for the rest of Wellington (refer table below). Obviously the reason for this is that Mt. Cook

Vehicles per household: Mt. Cook (2006)

	number	%	Wgtn city %
no motor vehicle	864	34.4	13.5
one motor vehicle	1002	39.9	44.7
two motor vehicles	339	13.5	29.3
> two motor vehicles	108	4.3	8.6
not stated	198	7.9	3.8
total	2511	100.0	100.0

Statistics New Zealand, Census of Population and Dwellings 2006.

is inner city-sufficient; the inner city is a fifteen-minute walk or a one-zone (\$2.00) bus ride away.

THEORETICAL CLIENT: SUBURBAN LIVING IS STILL THE DREAM

It is still very much the Kiwi dream ... you've got your own yard, it has a fence. You can have a dog and a cat and a sandpit. There are different stages in life where that sort of thing is less appealing (Eriksen).

According to focus groups, medium-density living is “satisfactory” but generally thought of as “transitional” (Centre for Housing Research Aotearoa New Zealand 30). Appeal to home buyers could be improved in the following ways:

1. Fostering a feeling of permanence – or qualities that would make permanent living there desirable.
2. Effective management.
3. Offering a range of choices in housing stock and dwelling types.
4. Developing the potential for children and pets to be happy and safe there (Eriksen).

Row houses, a common medium-density typology, are associated with transition, and detached suburban homes with stability and settling. The following qualities equate

to “the suburban dream” that Eriksen describes in “Kiwis still crave slice of suburbia” from the *New Zealand Herald*:

1. Autonomy.
2. Space for a pet and children.
3. Quality and control of that quality.
4. Space and large scale.

Improving the Design, Quality and Affordability of Residential Intensification in New Zealand, a document prepared for The Centre for Housing Research Aotearoa New Zealand in 2011, supposes that the resistance to row housing may be based on long-standing cultural preferences. Negative connotations like inferior construction, transiency and poverty are all associated with higher-density housing (Centre for Housing Research Aotearoa New Zealand ii), but this needs to change. A large intermediate market of working households, often with two incomes, is emerging that cannot afford to buy into even low-priced detached housing.

Understanding motivations in the housing market means understanding the values associated with housing in general. The key qualities that home buyers seek are safety, security, space and ambience – which can be grouped under the notion of *domain*. This sense of domain is stronger in suburbs, where networks are formed around the family group, and higher levels of owner occupancy create a stronger sense of attachment and pride. These networks and relationships, and the desirable concept of permanence, are key aspects that the research aims to explore in a new, higher-density typology.

Attributes of domain that could increase the appeal of medium-density neighbourhoods are:

1. A mix of housing styles, ideally with nothing over two storeys.
2. Some shared leisure facilities.
3. A sense of security built into access and design.
4. Cul de sac layouts, perhaps creating distinctive small neighbourhoods.

Figure 9. Chermayeff and Alexander's terminology: three domains.

The focus groups identified attributes of private space within the domain, referred to as *sanctuary*. Attributes of sanctuary that could increase the appeal of medium-density dwellings include:

1. Physical separation from neighbours.
2. Private outdoor space.
3. Open-plan design and a feeling of spaciousness.
4. A sunny aspect.

TERMINOLOGY: THREE DOMAINS OF COMMON AND PRIVATE

For the purpose of analysing and testing private and public spaces, the following three domains as defined by Chermayeff and Alexander as part of Six Domains of Urbanity (121) are adopted throughout the research when referring to spaces used by different occupants (refer figure 9):

1. Group-private: Areas common to the development. Circulation spaces, community gardens, playgrounds, laundries, storage.
2. Family-private: Spaces controlled by a single household group devoted to communal activities such as eating, hygiene, entertainment and maintenance.
3. Individual-private: the the inner-most sanctum to which individuals can retreat, withdrawing from the rest of the household group.

When discussing co-housing, the distinction between family-private and group-private definitions naturally start to blur. Family-private will refer in some instances to the common domain of four (family-private) household groups. Throughout the research, *household group* is used as an alternative to *family*, describing a group that would buy and occupy one family-private dwelling.

“... the support and reassurance of having someone to talk to who was experiencing the exact same problems as I was, the benefits of having a flat mate who was happy to set up reciprocal babysitting ... the advantages for our daughters of having a constant playmate” (SPACE4).

part two.

COMMON

WITHIN THE DEVELOPMENT

“SUBURBAN ADAPTATION”: SHARING LAND, SHARING COSTS

To achieve a higher density, the conventional suburban section must accommodate more household groups. Trina Day’s “Suburban Adaptation” suggests that one section could accommodate three dwellings; a childless friend might join up with a young family, whose ageing grandparent also stays with them in a granny flat (refer figure 10). Costs of land are instantly divided and reduced. There are two ways to achieve this intensification: decrease house size or increase occupancy (4). These may occur separately or in combination.

Figure 10 (left). Diagram from Trina Day's "Suburban Adaptation".

Figure 11 (right). Compound House compared to traditional site layout. In Mt. Cook, the general typological pattern is detached buildings on small, narrow, rectangular sites. The most common lot width is 10m, while side yard dimensions are generally less than 1.5m. The average building width is 7 to 9m (refer page 13).

Similarly, Richard Leplastrier's Compound House concept suggests four buildings on the corners of a conventional site is an ideal alternative to the standard one mass at the front (refer figure 11). This courtyard form prioritises outdoor open space by providing a large central garden, and maximises the efficiency of the site by using the full depth of the land and eliminating skinny side passages. The four small structures could accommodate four small household groups, one extended family, or any permutation in between (Day 13). The configuration actually increases privacy levels between household groups by facing blank walls to the boundaries instead of windows.

Day identifies two obstacles to the suggested intensification: firstly, an emotional attachment that prevents us from considering alternatives to the traditional suburban layout of a detached house located in the front centre of a site, and, secondly, the planning regulations regarding boundary setbacks and building envelopes that are designed to perpetuate it (13). We have seen that research backs up this emotional attachment to the existing suburban model. Despite being unpractical and more costly, it is still a humane option in its comfort and familiarity. Social stigma also means that land surrounding a dwelling equates

Figure 12. Mt. Cook density tests.

Figure 13. Mt. Cook density tests.

Figure 14. Mt. Cook density tests.

to wealth and the luxury of spare space (Eriksen).

DESIGN DENSITY STUDY: "SUBURBAN ADAPTATION" APPLIED TO MT. COOK

A higher density of 60dph is achieved when dwellings are added to the open space among the grain along Tasman Street (refer figures 12 and 13). The area of the small sample size used in the test is 2.26dph, which means the original density of the un-intensified layout is 31.8dph. The new intensification almost doubles the density of the sample site to 60.1dph, a high medium-density (refer figure 14).

Dwellings are small, but it is assumed additional dwellings would be for a secondary purpose (a studio, granny flat or dwelling for a single or couple), and therefore cover a smaller area. The intensified density tests inform the design case study by looking at what exists critically, concluding that the current model is not using the land efficiently, and presenting possible alternatives that result in a higher density.

Within this figure-ground layout, different configurations of dwellings were explored through model making and sketches of the site in plan. Two concepts of adjacent dwelling, "strip" and "interval", were tried on the site, as well as a combination of the two (refer figures 15–18). Placing the new density on the site informs the design case study by acknowledging the restrictions of the site's topography for the attached dwellings. In figures 15 and 16 we also begin to see possible challenges, such as access up and into the site, and the threat to

INTERVAL

STRIP

COMBINATION

Figure 15. The intensified plots are explored through different configurations of dwellings, and strategies to unify them.

Figure 16.

Figure 17. Exploring modelled configurations on site.

A slightly more generous layout results in 13 plots with 2 dwellings to each: 26 dwellings with a still intensified density of 59dph.

Figure 18.

Density shifts as required. Summer brings high density and winter brings low density as occupants utilise mainly built cabins.

Figure 19 (left). Waipatiki Beach Campground.

Figure 20 (right). Figure-ground diagram of Waipatiki Beach Campground.

private outdoor space that attaching the dwellings in different configurations results in. The next stage of the research investigates creating humane spaces that still achieve the high density and utilise shared construction for efficiency and economy.

TRAILER PARKS AND CAMPGROUNDS: SEASONAL SHARING AND SHIFTING DENSITY

The dwellings within a campground or trailer park are exemplars of an affordable housing typology that intensifies land use. This is achieved through minimal plot sizes and common amenities close by to dwellings. Campgrounds are an exemplar of common living (refer figure 19). However, the campground and its associated dwellings fall short as a permanent housing solution in terms of their ability to provide accommodation that gives occupants a perception of a permanent, humane home. Dwellings or sites provided are of minimal area, and the short distance to common amenities and the need to share them with many neighbours becomes inhumane after a few days. Space and facilities provided within the dwellings are minimal, and since the common amenities tend to be an uncovered walk away from the interior comfort of the dwelling, the privacy needs of the occupant and a feeling of true ownership are sacrificed.

Unfixed campground dwellings (trailers, caravans, campervans and tents) have three main attributes. They connect to utilities, they usually have no permanent foundation, and they are quick to erect – or park – meaning communities of them are built up easily.

The concept of flexible housing plugging into utilities as needed, as well as plugging into a plot of land, starts to sound like an ideal model for a higher-

Figure 21. Attributes of the campground model applied to site. A central, fixed strip of essential amenities is intensified with added dwellings as required.

density, affordable housing typology. But while it is accessible, it is not humane. Individuality and comfort are reduced. There is also a social stigma around transportable, manufactured homes, and around living in a campground or trailer park. This is perhaps a consequence of the importance in our culture of home ownership.

Clement sees the appeal of the campground as a relief from full-scale domestic living; a miniature world within the standard world developed through thorough occupant input within a manageable scale. Within a campground the occupant chooses their neighbours and designs their community, consisting of people they know. Children from different families become honorary siblings and love it, and each site has access to required services (Clement 40). Common living in the campground setting is seen as utopian, nostalgic and desirable. Occupants are given the chance to create their own boundaries and autonomous domain. “The caravans and their awnings are orientated around a central internalised space which simultaneously marks out the territory of the group ... they begin to be the controllers of it ... The guests are the urban planners and site surveyors” (42).

DESIGN CASE STUDY: “SUBURBAN ADAPTATION” ON SITE (REFER FIGURES 22–25)

The attributes of the campground model were applied to permanent housing on the site, in clusters that intensify the land use. This successful new density introduced to the suburban site accommodates two to three household groups in areas similar to the standard existing Mt. Cook section, achieving a density of 63dph. The clusters of partly attached dwellings are grouped around consistent repeated wall elements that provide services such as electricity and water and a unifying visual element. Individual exterior spaces are created between the dwellings, providing different levels of privacy.

A traditional suburban grid structure can still be seen, which is limiting the development; it is moving towards a suburban and urban hybrid – detached housing with private, owned exterior spaces combined with the affordability strategies of row houses – but is not radical enough to be considered a new typology. Materiality has not yet been considered, and could potentially be used to assert individuality among the sometimes blurred boundaries of the shared plots. The role of repetition needs to be similarly considered.

Figure 22. Attributes of the campground model developed. The clusters of partly attached dwellings are grouped around consistent repeated wall elements that provide services such as electricity and water and a unifying visual element, and reference the campground concept of plugging into common amenities.

Figure 23.
 2 plots with 3 dwellings, 11 plots with 2 dwellings, equating to a minimum 28 dwellings on site. Site is 0.44ha, so density of proposed scheme is 63.7dph.

Figure 24.

ONE
2 bedroom + living space, kitchen, laundry, bathroom, front lawn.
TWO
1 bedroom + bathroom, living space with extra bed, balcony, back lawn.
THREE
1 bedroom + bathroom, kitchen, living space, balcony, shared front lawn.

Between balcony of **ONE** and **THREE**.

Front lawn, looking towards **ONE** and **THREE**.

Back lawn, behind **TWO** and **THREE**.

Figure 25. Views of three dwellings occupying one plot.

FAMILY-PRIVATE: COMMONNESS WITHIN THE DWELLING WITHIN THE DEVELOPMENT

HOME: THE HERE TO ELSEWHERE

A new intensified density having been established, ways to achieve a humane environment within that density were explored. The research focuses on what constitutes *home*, specifically using the context of the kitchen.

Society is shifting so that a strong relationship with a home environment is created in new ways. It is not just created through living in one family home throughout your childhood and adolescence. In their conference paper “Self-sufficient Community through the Concepts of Collective Living and Universal Housing” Ali et al describe home instead as something that you take with you, being a concept associated with memories involving certain people or events – instead of a building or land (621). It is “a place of order that contrasts with the chaos” (Ali et al qtd. Duncan 621) of places or situations which are not home, a place where the familiarity of each individual or family’s control and regulations defines their own habitat. Society is becoming more mobile, so individuals and household groups, even those with young children, are becoming more nomadic (Ali et al 621).

Home is the *here* to *elsewhere*. It’s the place in your mind where you keep everything that makes up your conscious thought and your individuality. Instead of four walls, it may be a short-term nest to collect your thoughts, keep your family safe and close, and make memories.

In this context, a quest to construct a *home* becomes an investigation of a few essential spaces, instead of an aim to provide every luxury or space possible to every occupant. In his article “Home: Territory and Identity”, Macgregor Wise discusses how the establishment of home involves marking out places in many ways to establish places of comfort (392).

One might rid oneself of all one's possessions each time one moves, but might recreate a similar space with similar feel in the next place, drawing around oneself an expressive space from a variety of markers. One makes oneself at home (McGregor Wise 393).

This implies that the feeling of home that people perceive as available only within a detached suburban house can be created anywhere in order to use less space and volume for a higher density. Along with Clement's description of the appeal of the campground, this is significant in forming a working definition of a humane dwelling in which occupants feel comfortable and familiar. Perhaps this means moving away from a designed environment that provides every home comfort and luxury in a vast number of rooms that all have prescribed uses, and instead designing a minimal set-up that houses an individual and group's requirement for control and occupant-defined boundaries, as well as private space to remember and collect thoughts.

NATURALLY A KITCHEN

A minimal set-up within a dwelling inarguably includes some essential features, many of which are associated with kitchen space: kitchens provide comfort through sustenance, warmth and space for the household group to meet through common needs. In *Thinking Architecture*, Zumthor uses the kitchen as an example of a meaningful space made so by memories of smells and noise.

Figure 26. Plan and 3d diagrams of the kitchen in my childhood home.

Perhaps it was just the fact that it was so very much, so very naturally, a kitchen that has imprinted its memory indelibly on my mind. The atmosphere of this room is insolubly linked with my idea of a kitchen ... the noises my mother made in the kitchen ... made me feel happy (Zumthor 29).

THOUGHTS, MEMORIES AND REFLECTIONS ON A

In the kitchen from my childhood home, the entry is the main door to the house. It opens off a porch, which has stairs and a ramp leading up to it, and a big pile of shoes and boots and a dog bed lined up beside it. The kitchen bench is to the left, and lines a wall which has a window running its length – the window looks out over the ramp to a paved driveway area in front of a big garage. The paved area is designed for cars to turn around and visitors to park in, but also works as a front yard space. We played there a lot on bikes and skates. In the centre of the kitchen is a perfect-sized dining table. It fits six chairs around it. To one long side of the table is a floor-to-ceiling sideboard and cupboards that, as well as housing plates and pantry food, accumulates accessories to every family member's daily life – piles of newspapers, school newsletters and permission slips, homework, dust. Behind the head of the table (the warmest spot in the house) is a big black Rayburn, which heats the living area and the rest of the house magnificently. It is also used as a second cooking oven. Next to the long sideboard is a door to the laundry. The kitchen also leads into a living room, divided by a change of flooring. From the living room there is a door into the hallway, which leads to three bedrooms, an office and the one family bathroom. When you pass through this door, it seems cool, dark, private and quiet in contrast to the warmth and activity of the kitchen.

The contemporary kitchen is the centre of the home. It is a hub of activity at regular intervals throughout the day. Its spatial qualities help shape the routines of the dwelling occupants; it is visited when they wake up and perhaps before they sleep for a final cup of tea, and at regular points throughout the day when they're home, and it has a direct connection to food and sustenance for everyday and special occasions. Occupants might look forward to regular events throughout the week: Sunday brunch, Friday takeaways or a beer from the fridge at the end of the work day. It's a communal space and everyone contributes to its life. Adults, children, guests and pets. It is both the public face of the house and a comfortable family hub. It is a transit space to outside, to a hall leading to bedrooms, to a laundry, a toilet or a garage or storage space. It needs a vista inwards to the house to visually connect people doing essential activities there, or to be adjacent to the living or dining space, as well as to views outside to nature or the community. A view is helpful to relieve the monotony of doing the dishes. The kitchen must be operable every day. Dishes need to be rinsed, washed or stacked in the dishwasher and rubbish needs to be managed carefully. Systems such as plumbing and electrical appliances must be working every day for daily routines to be carried out smoothly. If the jug or toaster isn't working it puts you out of kilter for the whole day. Kitchens are memorable and positive rooms in terms of noises and smells.

Figure 27. Reflections on the kitchen from my childhood home (left) and my definition of a natural, contemporary kitchen (right).

Figure 28. Repeated kitchen: What if the main vista out of the kitchen was into the neighbouring kitchen?

NATURAL AND CONTEMPORARY KITCHEN

The large kitchen in my childhood home is the space I remember most vividly – or at least as vividly as I remember my bedroom. My memory of this space contributes directly to my definition of the ideal contemporary kitchen (refer figures 26 and 27).

REPEATED KITCHENS: FIVE DESIGN TESTS

The kitchen is a key space through which to investigate humane common space. We can test its potential to be repeated and shared in different configurations within multiple dwellings, and tease out implications of adjoining and repeating kitchen space.

Test 1: What if the main vista out of the kitchen was into the neighbouring kitchen?

A kitchen allows a certain level of public visual access. The semi-public activities that occur in a kitchen are not usually private. They are social and utility spaces. For this reason, large kitchen bench windows facing into a neighbouring kitchen may be acceptable. A kitchen where neighbours can catch a glimpse of you is not inhumane. Even more successful may be windows opening out across transit or play spaces, adding safety and vitality to the public space (refer figure 28).

Figure 29. Repeated kitchen: What if the kitchens were in a traditional, staggered row?

Test 2: What if the kitchens were in a traditional, staggered row?

Kitchens staggered in a row lack a relationship with each other. Entries are separate for each dwelling, and everyone has a separate view that is not towards the other kitchens. Privacy is achieved, but the sense of community suffers with the complete blocking out of views of neighbouring kitchens. The reflections on a natural kitchen above describe the kitchen as the public face of the home, which is not achieved here by forward-facing windows that hinder a connection with neighbours in their own kitchens (refer figure 29).

Figure 30. Repeated kitchen: What if the kitchens were adjacent and opened up into each other?

Test 3: What if the kitchens were adjacent and opened up into each other?

If kitchens are adjacent and interconnected, occupants see, hear and smell neighbouring kitchens, but no amenities are shared. There is the possibility to screen off or partially obscure the view, so that it becomes a new kind of row typology, with transparent or open shared walls between kitchen spaces. The end of the kitchen where the bench is remains a family-private nook, not yet completely common to the neighbouring kitchens (refer figure 30).

Figure 31. Repeated kitchen: What if the kitchens were adjacent and opened up into each other ... and even shared a table?

Test 4: ... and even shared the table?

A shared table establishes a sense of community across individual dwellings' kitchens, without sacrificing the values set out in the description of a 'natural kitchen'. The kitchen is both the public face of the house and a comfortable family hub. This design tactic questions whether a kitchen space can remain as a sanctuary for a family but at the same time encourage a sense of community between neighbouring dwellings, through the arrangement of the kitchen table. Notional boundaries are created through the repeated element of the partial kitchen walls, and their space-defining qualities. One table merges two kitchens (refer figure 31).

Figure 32. Repeated kitchen: What if the kitchens were placed at half levels down the topography?

Test 5: What if the kitchens were placed at half levels down the topography?

Test 4 explored repeated kitchens with a high proportion of common space thanks to shared tables. Test 5 seeks more of a balance between family-private, individual-private and group-private spaces. Repeating the kitchen spaces at different heights allows them to be adjacent but prevents the occupants from having fully common kitchen space. Figure 32 shows the kitchens partially screened off and separated by a change in level, which would allow for movement and activity to be made out between dwellings, but for privacy to be maintained within a family group. Again, notional boundaries are successfully created – this time through the change in height, instead of closed walls.

The potential for the kitchen to be common not just within a family-private setting but across multiple dwellings is evident in these sketches. The kitchens can be considered an entry point and social interface where group-private space meets family-private. This characteristic can be pushed further, so that the kitchen operates as group-private common space for multiple household groups. Common space can reduce size of dwellings and increase levels of social interaction that in separate dwellings do not usually go further than a wave from the kitchen window. Sharing kitchen space also incorporates the affordability tactic of grouping together and sharing expensive-to-build wet and electrical service areas. These tests inform a shift in the design method towards a blatant co-housing typology where separate households share rooms. The next stage of the research goes on to investigate what exists currently in terms of the co-housing model.

Density of Earthsong: 24.8dph
(low density).

Figure 33. Earthsong Eco Neighbourhood. Photos and figure-ground diagram.

THE CURRENT CONTEXT: EXISTING IDEAS REGARDING COMMONNESS

THE EARTHSONG TYPOLOGY

Earthsong Eco Neighbourhood in West Auckland (designed by Bill Algie and completed 2001) represents a more conventional co-housing configuration with an ecological focus. At a low 24.8dph, (refer figure 33), Earthsong does not aim for a radical level of common living in order to achieve higher density, instead providing a traditional co-housing typology. A series of common buildings are placed separately among completely self-contained dwellings for household groups. Dwellings arranged in detached and semi-detached clusters of three and four are all self-contained and separate from the common facilities, meaning theoretically occupants can live without sharing spaces, and there is not an emphasis on using common space to minimise dwelling size. The shared spaces, all housed in the Common House, are a large kitchen and dining room, living spaces, guest suites, teen space, office space and children's room. The dwellings are duplex typologies. Earthsong intended to provide each dwelling with a "community side with entrance, kitchen overlooking a path and shared common space, and a more private side opening onto an individual garden area so that residents can maintain the balance between privacy and community interaction" (Earthsong).

Repeated kitchen
Test 4 and Test 5.

Group-private spaces are
running perpendicular
across the site..

*Share along
Share down
Share between two*

Kitchens of each dwelling
are all linked together,
essentially forming one
long room down the
topography common to
all occupants.

Figure 34. Stepped, common kitchens.

DESIGN CASE STUDY: STEPPED COMMON KITCHENS (FIGURES 34–36)

A second iteration of the design case study reacts to the Earthsong model of semi-detached dwellings with a separate common house. Kitchens of each dwelling are all linked together, essentially forming one long room down the topography common to all occupants. Concepts explored in the stepped repeated-kitchen test and the long, opened-out kitchen that shares tables are multiplied (refer figure 34). Having one shared room facilitates affordable construction, along with a sense of community and company. Running perpendicular across the site are the group-private spaces.

The strip kitchen does not provide one common space that occupants all cook in; there are still boundaries provided by the changing levels. Across the site are each household group's family-private domain, which also provides private exterior space previously identified as desirable in a traditional suburban section.

In this stepped kitchen design experiment, privacy is still afforded by the change in heights. The kitchen space is open and shared, but divided with notional boundaries through changes in height. A humane environment must offer privacy and the perception of an owned and controllable domain.

Concepts explored in the stepped repeated-kitchen test and the long, opened-out kitchen that shares tables are multiplied.

Figure 35. The changing levels maintain boundaries.

The strip kitchen does not provide one common space that occupants all cook in; the changing levels maintain boundaries.

In this linked kitchen design experiment privacy is still afforded by the change in heights. The kitchen space is open and shared, but divided with notional boundaries through changes in height.

Figure 36. Design case study 3d diagrams.

Figure 37. Examples of existing online collaborative living agencies.

WHO WILL EMBRACE COMMON LIVING?

Whew, I'm relieved that my disgust of community and sharing and hippies is shared by the majority. I do feel uncomfortable being in the minority (Brian H on 9 February 2007 on worldchanging.com).

The most likely household groups to embrace a more communal way of living are small households of low to middle income.

- Single-person households are the fastest-growing demographic group, and also the group that is the worst fit for a traditional nuclear family house.
- Couple families often enjoy living with just two, but some also enjoy the stimulation of adding an extra person to the mix. One extra person contributing to the cost of buying a house provides an opportunity to afford a property in a better location with more features.
- Single-parent families are prime candidates for multi-family homes due to the financial strain of raising a family on one income, the emotional support offered by another adult and also the practicality of sharing the supervision of children.
- Extended families are likely to be interested in multi-family homes, whether the arrangement is adult children staying in the family home, older parents moving in when they need assistance or siblings sharing a house. Privacy is very important in extended family groups; each household is very likely to want their own bathrooms, kitchens and private outdoor areas.
- Migrant families are very likely to appreciate multi-family homes partly because of the benefits of pooling finances but also because many non-Western cultures are not so strictly bound to the nuclear family unit.

Figure 38. Notes made at a design workshop by the Urban Co-housing Otepoti Group and posted to their Facebook group page. The caption that accompanied it read "This the record of what is seen as important in our co-housing development by the people who came to last weeks meeting".

It is also important to note that traditional nuclear families are the least likely to be interested in any sort of shared housing network. This is partly because traditional suburban houses were made to suit this family group and therefore the typical layout works well, but it is also because nuclear families are already a tightly knit unit and have less need for additional members to make a community. However, as house prices grow, many families, especially young ones, will need new alternatives to an expensive suburban house (Day 17).

The co-housing tax is the thorn that comes with the rose. It's those annoyances that each individual puts up with in order to enjoy all the other gifts of living in a high-functioning community. It is the price each individual pays to enjoy common dinners six nights a week; for being able to borrow a car occasionally; for the beautiful landscaping no one could ever do on their own; for great homemade food, sauces, cookies; for incredibly rich and wonderful conversation that grows richer and deeper over time and means you get to know your neighbours better and better. It is the tax that makes all of the benefits of co-housing possible. Can you have community without people? No. Can you have people without occasional annoyances? No. And there you have it (Durrett and McCamant 19).

Meanwhile, collaborative living agencies are increasing in number online (refer figure 37). Space4 connects single parents looking to share accommodation and childcare, and Eatwithme offers new ways to connect with people through sharing food and eating together (Day 12). There are established co-housing groups in New Zealand. One example is the Urban Cohousing Otepoti Group, which is in the early stages of renovating a former Dunedin high school into a co-housing community (refer figure 38). The group, along with another, rural, Dunedin co-housing group, formed after meetings earlier this year run by the Earthsong community (*Otago Daily Times*).

Figure 39. The Common: Diagram of plan.

Figure 40. Jystrup Savvaerket: Diagram of plan.

*This is new and we want to have this open day so people know who we are. We are not a bunch of weirdos, just everyday people (Catherine Spencer in the **Otago Daily Times**).*

There is growing evidence of groups of people interested in a new mode of common living for the purpose of social interaction and pleasure as well as affordability.

By pooling our resources we could not only afford to live in a house that was way beyond our means individually, but there were other benefits which contributed hugely to improving those first couple of years of separation ... The support and reassurance of having someone to talk to who was experiencing the exact same problems as I was, the benefits of having a flat mate who was happy to set up reciprocal babysitting, and also the advantages for our daughters of having a constant playmate (Space4).

EXISTING CO-HOUSING CONFIGURATIONS OF COMMON AND PRIVATE

International co-housing examples show unique configurations that offer alternatives to the Earthsong model. The following precedents have been considered in terms of their combinations of common and private space. Drawings explore this using Alexander and Chermayeff's terminology, and colour coding.

1 The Common. Melbourne, Australia (architects: Six Degrees). 2011.

A public front lawn provides an expansive front yard for a strip of 10 adjacent dwellings, so that small group-private outdoor spaces are minimal. Dwellings are all family-private (refer figure 39).

Figure 41. Stock Orchard House: Diagram of plan.

Figure 42. Schindler-Chase House: Diagram of plan.

- 2 Jystrup Savvaerket. Copenhagen, Denmark (architects: Tegnestuen Vandkunsten). 1984.

Similarly to Earthsong, the development consists of a shared common house and self-contained units, although here they are linked with a glass corridor which becomes a pleasant, integrated common space that leads occupants from private to common facilities (refer figure 40).

- 3 Stock Orchard House. London, United Kingdom (architects: Sarah Wigglesworth Architecture). 1998.

A house and office in North London, Stock Orchard house explores common space intended for life and work (refer figure 41). The development has a room at the centre that functions as both a dining room for the home and a meeting room for the office. The building is set in a productive garden that “addresses the work life balance by providing a calm place for occupants of both the house and office to take time out” (Sarah Wigglesworth Architecture).

- 4 Schindler-Chase House. West Hollywood, United States (architect: Rudolf Schindler). 1922.

Two household groups, couples, share one house. Each individual gets a large studio to themselves, and all share a large common outdoor courtyard, which allows the common kitchen to be minimal (refer figure 42).

- 5 Yokohama Apartments. Yokohama, Japan (architects: ONDesign). 2009.

Four individuals share ambiguous studio, living and exhibition space, below four private apartments which all have individual outdoor areas. Raising the apartments above the common space gives a perception of optimal privacy (refer figure 43).

KEY

Figure 43. Yokohama Apartments: Diagram of plan.

These existing examples of co-housing developments show that common spaces can be expanded if there is an adequate balance of private space for individuals and groups. In fact, the more private the private space is, the more an occupant can embrace common spaces. Removing the private space as far as possible from the common space ensures equilibrium for the individual. A couple of hours can be shared with other occupants over dinner, or over a meeting in the case of the Stock Orchard House, because the reward – the withdrawal or retreat – is so complete. The matrix that follows summarises conclusions drawn from these existing examples (refer figure 44).

Acknowledging the importance of withdrawal space for individuals in each dwelling, the next section of research investigates further requirements for an individual and a household group's private spaces.

KEY

group-private space	common
family-private space	common
individual-private space	

The Common	Jystrup Savvaerket	Stock Orchard House
<p>Four bedrooms. The design emulates the generic family model with one master bedroom and three secondary bedrooms.</p>	<p>Three bedrooms. The design of the development encourages fairly conventional family groups: for example a parent or two parents and two children.</p>	<p>Household is just one couple. Common space is shared by clients of their home office as required.</p>
<p>Family-private dwellings are distinctly separated from, but directly adjacent to, common space.</p>	<p>Family-private dwellings are distinctly separated from, but directly adjacent, to common space.</p>	<p>Family-private dwelling is within the same dwelling as common space. The common office space acts as another room in the house.</p>
<p>Greater sense of privacy for dwellings achieved – public space acts as buffer between dwellings and road.</p>	<p>Dwellings are private to each household group but social interaction is enforced by a common corridor leading to common amenities past every dwelling.</p>	<p>Space is saved by merging office and dwelling, but household group of two people still has whole dwelling essentially to themselves. Office space that is common is still at complete control of occupants, during work hours and invited by them.</p>

Figure 44. Existing co-housing examples present an alternative to the traditional Earthsong model: Significance of household group and corresponding relationship of common

For Earthsong Eco Neighbourhood density, refer to page 52.

Schindler-Chase House

Yokohama Apartments

Two household groups – two couples – occupy one dwelling.

Four households – singles or couples – occupy one dwelling.

household group within dwelling

The common space shared by just two couples is within the dwelling – the kitchen, courtyard and bathroom.

common and private space

The common space shared by four individuals is within the dwelling – the kitchen and bathroom and large shared studio space.

Each of the four occupants gets a spacious individual-private bedroom, but must interact with the household when using kitchen or outdoor courtyard space.

Most of the individual-private space for the four occupants is above the common space, increasing the feeling of privacy and retreat. Common space is large.

significance for occupants

KEY

public space
group-private space	common
family-private space	common
individual-private space	

“The ease with which the interaction between the private world inside and the desired elements outside can be achieved determines to a large extent the occupants’ enjoyment of their home”
(LEUPEN AND MOOIJ 19).

part three.

PRIVATE

MEMORY AND MEANING

Memories of comfortable private spaces may provide clues as to what constitutes a meaningful connection with a space. Our own memories of happy and safe places affect what we regard as humane places to dwell in for the rest of our lives. As we try dwelling in different places, we instinctively construct specifications or a critique that defines comfort and familiarity for us. Early memories, though seemingly naïve, “retain personal identifiability and emotional force throughout our lives,” which prove their authenticity (Pallasmaa 448). When we are young we experience space without thinking about it, which produces the deepest kind of architectural experience (Zumthor 9–10). Leupen and Mooij concur in *Housing Design A Manual*; everyone knows instinctively what a dwelling is, simply because it is an indispensable part of every human life, and “our idea of a dwelling is defined by our individual frame of reference” (15). Memories of experiences might be to do with smell or noise, as well as form and space.

“... good places to sit, these small tables clinging to the edge of the veranda; the sill was just the right height for use as an elbow rest” (ZUMTHOR

In *The Geometry of Feeling* Pallasmaa writes that we connect with a space or dwelling from the primary feelings it invokes in us (451). There are points of connection; moments created by architecture that might signify a sudden or intense shift in situation or feeling. It might be stepping into a house, crossing from the exterior to the interior. The key attribute of a dwelling is how it provides a change in state from outside to inside. With that logic, a door might define a threshold of a dwelling. When the door is used, there is a primary feeling of entering shelter or becoming enclosed; we suddenly become aware of “something enveloping us, keeping us together and holding us” (Zumthor 45). “One of the first things a dwelling does is creates a division between a controllable world inside and an uncertain world outside ... the ease with which the interaction between the private world inside and the desired elements outside can be achieved determines to a large extent the occupants’ enjoyment of their home” (Leupen and Mooij 18–19). A primary feeling might also be invoked by being “within the sphere of influence of a focus” within the dwelling: the table, a bed or a fire (Pallasmaa 452). Sitting with one’s back to a fire or sitting at a table in the middle of a kitchen evokes the origins of dwelling, the necessities with which to dwell. This is the definition of *home*.

Zumthor identifies spaces that appeal to some innate part of our humanness: “buildings with soul ... a comfortable place in which to sit and read ...” He surmises that spaces that signify the activities that might happen in them are inherently appealing to us.

Clearly the place in which meals were served.

[Rooms in which] I would enjoy looking at the open sky from.

... good places to sit, these small tables clinging to the edge of the veranda; the sill was just the right height for use as an elbow rest (38–40).

A mezzanine bed, custom built by my dad, extended up through the original ceiling with a new skylight put in over it. The mezzanine was just big enough for my single bed and a walkway, and only accessible by ladder. If someone needed me I could look down and talk to them from the top of the ladder. The mezzanine was built over the access to the family bathroom and the linen cupboards, so if someone was using those spaces I would be aware of it but they probably wouldn't know I was. It was a perfect hideaway; I remained

part of the family activity, but slightly removed and elevated. One double-hung window looked out on a small lawn with the washing line in it, and loquat trees. I could climb out the window and eat the fruit from the trees, getting quickly outside without going through the rest of the house. It also looked out onto the ramp that was the entry to my Grandma's granny flat while she was alive – I could hail her when she was walking up to her back door with her grocery bags.

Figure 45. Plan (above) and section (middle) diagram of Space 1: My childhood bedroom.

Figure 46 (below). Reflections on Space 1.

REFLECTING ON SPACES FROM MEMORY

Buildings “... have the ability to appeal to our emotions and mind”, and “since our feelings and understanding are rooted in the past, our sensuous connections with a building must respect the process of remembering (Zumthor 18).

Considering that the basis of meaning and familiarity might come from personal memories of the spaces we have felt safe and comfortable in, an investigation of spaces in which I felt most comfortable was carried out through fast and descriptive personal writing.

Space 1: my childhood bedroom. My bedroom was a private nest with connection to the sky and to my family and yet with an intense sense of privacy. It was custom-designed for me with my input (refer figures 45 and 46).

The two bedrooms at the end of the communal hall created a precinct that belonged to just the end two occupants. I lived first in the small back bedroom, and then moved to the more desirable bigger room with sea view and morning sun when it became free. A full-length mirror was set up at the end of the hall, so it was like one big dressing room with an accompanying catwalk for us both. The smaller room was dark and musty because it was south-facing. Its vista out to the backyard was pleasant though, and

provided more privacy than the sunny room's view towards the driveway and road. When I moved into the sunny room the improvement was huge. Straightaway I had more pride in my private environment and I wanted to be there all the time – I spent less time in the lounge. The second room looked out onto Evan's Bay – one of the best views I've ever had in a flat. Being at the end of the hall made the hallway feel private – there was only ever one flatmate, my friend, transiting past.

Figure 47. Plan diagram of Space 2: two of my bedrooms in a Newtown flat.

Figure 48. Reflections on Space 2.

Space 2: two of my bedrooms in a Newtown flat. These spaces made up part of the house shared by two people only – the dead-end of the hall created a private nest shared by two friends. There were environmental factors – the desirable bedroom I really enjoyed living in had more sun, light and space (refer figures 47 and 48).

In this flat i have my own penthouse bedroom with ensuite, balcony and separate entry. The separate entry is one of my favourite features as I get older and feel less like being a flatmate, and can start to imagine I'm living in my own house. Also contributing to this fantasy is my own impeccably clean bathroom. The balcony is rarely used but somehow valuable. I can test the weather as I trial different clothing combinations in the morning. Mostly it just

creates a feeling of a connection with Wallace Street, which is always busy during waking hours. My bedroom sits propped on top of the living spaces and two other bedrooms. It feels very private. When I first moved in the separate levels made the flat seem a bit anti-social, especially as there are no internal stairs, just a strange domestic lift, but as I get older I really enjoy my individual space.

Figure 49. Plan (above) and elevation (below) diagram of Space 3: Current bedroom in Wallace Street flat.

Figure 50. Reflections on Space 3.

Space 3: current bedroom in Wallace Street flat. This space provides an isolated nest at the top of the house. Again it is a dead-end – no one is moving through or past. I have space and autonomy. I do not share my essential bathroom amenities (refer figures 49 and 50).

These descriptive texts, like the analysis of existing co-housing precedents, show that the spaces that stay in my memory as being comfortable and happy are private spaces. Privacy is achieved in each example through the perception of being removed from the rest of the household (refer figure 51). Two examples were located above the activity of the rest of the dwelling, and one at the end of a hall, giving the room a dead-end position. Also, while private and seemingly withdrawn from the household group, they are still very much attached to the dwelling, within aural or visual reach of the company and protection of housemates. The connection to the outside is important in each space. Leupen and Mooij assert that “the ease with which the interaction between the private world inside and the desired elements outside can be achieved determines the occupants’ enjoyment” (19). When I used to slip out of my double-hung window to eat a locquat or sit on the grass, and to a lesser extent when I opened my window and leant out into the private backyard from my south-facing room, it was a quick transition to a different environment, determined by me. These conclusions are significant to the next phase of the research, which discusses literature investigating the meaning and attachments that form between occupant and dwelling.

A photograph taken from an elevated position, likely a balcony or rooftop, looking down onto a residential street at dusk. In the immediate foreground, a clear wine glass filled with a light-colored liquid sits on a white ledge. The street below is lined with houses, some with red roofs and others with white walls. A street lamp on the right side of the road is illuminated, casting a warm glow. The sky is a deep blue, and the overall atmosphere is quiet and contemplative.

Figure 51. Evening view from Space 3. Privacy and room for individuality are achieved through the perception of being removed from the rest of the household.

GROUP-PRIVATE SPACE IN MODERN DWELLINGS

Within the modern dwelling, a realm generally designed for one household group, emerging trends are undermining the traditional meaning we attach and connection we create to our dwellings. Workplaces, education and amenities are most often outside the home in secondary venues. This tendency for the home to be little more than a dormitory, combined with a trend for less people in each household group, results in isolated dwellings that are removed from the surrounding community. Home is now less of a place for interaction with the people important to us and more a place we are used to occupying alone, or almost alone. It is a place of transit, like other necessary places we pass through throughout the day. Growing affinity for secondary venues like bars, cafes and workplaces which facilitate social interaction, mean the dwelling could now be considered simply a capsule serving as a temporary abode for an outer-directed existence, like a hotel room (Leupen and Mooij 28).

Our rituals in family-private spaces such as our kitchens or living rooms help us attach meaning to our dwellings. In the reading "House Design as a Representation of Values and Lifestyles: The Meaning of Use of Domestic Space", Ozaki writes "formality rituals – both to express social status of the family and to maintain formality within the household – have had a significant impact on the way domestic space is used" in the past and contemporary setting (98). A survey in the United Kingdom of first-home buyers aged 25–45 has shown a casual, friendly way of eating is preferable, often in the living room, and that the preferred way of eating main meals is to make the kitchen larger and eat there casually (42.1%). This is also the preferred way of eating with guests. "The formal manner of having meals in a specially kept space, which has long been a ritual maintaining formality, has declined in importance. People have become more casual about eating meals and receiving guests ... it could be said that social trends towards younger generations being more informal in their lifestyles are well reflected by their ways of using space." An integrated kitchen and dining room expresses sociability, inclusiveness and a homely and comfortable atmosphere (Ozaki 108). Family-private spaces are acceptable as places of transit and thoroughfare, instead of formalities and traditional rituals. Consequently they can be common without becoming inhumane in their lack of privacy.

1. St. Andrews Rd. - Havelock North

My childhood bedroom in Havelock North. A mezzanine bed custom built by my Dad, opened up past the original ceiling with a newly installed skylight. The mezzanine is just big enough for my single bed and a walkway, and only accessible by ladder. If someone called me I would appear at the top of the ladder and peer down at them. The mezzanine is built over the access to the family bathroom and Mum's linen cupboards, so if someone was up in the morning or Mum was rattling round finding bedsheets I would know about it but they might not know I was listening - it was a perfect hideaway but I remained part of the family home activity. The single window in my room (additional to the skylight) looked out on a small lawn with the washing line on it, and loquat trees which I could climb out the window and pick. It also looked out onto the ramp that was entry to my Grandma's granny flat while she was alive - I could hail her when she was walking into her home with her grocery bags. The room was custom designed for me, at the age I was, and painted a colour I chose; such a treat.

Mezzanine removed from rest of household.

2. Colville St. - Newtown, Wellington

My flat bedrooms in Newtown. Firstly the small dark back one, then the more desirable bigger one with sea view and intense morning sun. The two bedrooms at the end of the communal hall created a precinct that belonged to just us two back occupants, and a full length mirror was set up at the end of it so it was really one big dressing room with an accompanying catwalk. The smaller room was dark and musty smelling because it got no light. When I moved into the sunny room the change was huge. I instantly had so much more pride in my room and wanted to be there all the time - the lounge definitely became a secondary living space for me. The room looked out at

Two bedrooms placed at end of hallway preventing thoroughfare by rest of household.

Figure 52. Vertical dead-end: Space 1. Plan (above) and section (below) diagrams.

Figure 53. Horizontal dead-end: Space 2. Plan diagram.

A PRIVATE BOX IN THE THEATRE OF THE WORLD

The research has explained that meaning is attached to dwellings through familiarity or connection with memories of places and people, and that we are drawn to spaces with inherent activities suggested by their spatial or formal layout.

Nostalgic connection can be severed by the trend for spending less time at home. Perhaps what is required is a space used by an individual occupant simply for private reflection or contemplation – to refuel memory. Chermayeff and Alexander describe this as an “innermost sanctum”; “above all else the various hierarchies of organisation of the human habitat should be extended toward the neglected realm of the private: the innermost sanctum, the room of one’s own, indoor and outdoor, to balance the places of domestic and civic scale” (254). Ali et al’s description of home is also apt – instead of four walls, it is a short term nest to collect your thoughts, keep your family safe and close, and refresh your memories – simply a place of order contrasting with the chaos. Individual-private nests – inner sanctums – are the essential antidotes to common spaces. The rest of the world is changing and chaotic; a jumbled combination of all the extra places we need to go to carry out our lives. The isolation of the individual’s nest, a place to withdraw and dream and dwell on memories, can be a positive and comforting thing.

KEY

group-private space	common
family-private space	common
individual-private space

Top bedroom is raised and removed from rest of household, accessible only through the closed doors of the residential lift or external stairs.

3. Wallace St. - Mt. Cook, Wellington

My current bedroom on Wallace Street. My own penthouse bedroom with ensuite, balcony and separate entry. The separate entry is one of my favourite features – as I get older and feel less like being a flatmate, I can start to imagine I'm living in my own house instead. Also contributing to this fantasy is having my own bathroom – which I keep impeccably clean. The balcony is rarely used but somehow still so valuable. For one thing I can test the weather as I trial different clothing combinations in the morning. Mostly it is just the luxury of having it and feelin a connection with the life of Wallace Street which is always

Figure 54. Vertical dead-end: Space 3 (refer key page 83).

DEAD-ENDS AND ISLANDS

The analysis of existing co-housing examples and the humane spaces of my memory suggest the use of dead-end spaces may provide the most intense privacy. The Yokohama Apartment bedrooms are raised up above the common space, and the three of my own bedrooms I have described are dead-end spaces, vertically or in plan. No one is moving past them or through them. The occupant is alone on three sides. In the same way, an individual might instinctively head to the back of a bus, or to the end toilet cubicle or changing room. To interrupt, someone has to know I am there and deliberately choose to disturb my solitude. This contributes to a definition of humane space. An individual's most private space needs to be a dead-end nest among the transit space that makes up the rest of the world. In "Suburban Adaptation", Day identifies this as the "hermit and herd balance" (15).

Herd

transit
come together
interact

Hermit

dead-end
withdraw
retreat

This explains in part the continued desirability of the detached suburban home. The detached house is an island with no other group or individual's activities attached to or disrupting it. Once you enter the section, or the dwelling, you have reached a definitive destination, the dead-end. There is no one transitioning past or through anything that is part of your dwelling. You have control over both the house and the space that surrounds it.

The diagrams in figure 52–54 show the dead-end private spaces in the spaces described from memory. They are coded using colour consistent with the earlier analysis of existing co-housing examples.

... the negotiation of public and private as “who and what interferes with what and whom, to what extent, when and how ... The integrity of each of the adjoining domains must be preserved at all times, in spite of traffic between them ... ”

(CHERMAYEFF AND ALEXANDER 251)

part four.

COMBINING COMMON
+ PRIVATE

The next section of the research investigates the combination of common kitchen, dining and living space with private nest space for the individual, to produce a new typology.

DESIGN CASE STUDY: GRADIENT OF COMMON TO PRIVATE NEST (FIGURES 55–60)

The next design case study iteration divides the scheme into four clusters, acknowledging that sharing spaces is easier with fewer household groups. The Centre for Housing Research Aotearoa New Zealand notes that an appealing attribute of a group-private domain is a cul de sac layout creating small, distinctive neighbourhoods that residents can identify with even within larger, comprehensive developments (28). There is less chance of discomfort and tension among smaller groups. The space shared between family groups is placed along the common access ways, increasing the level of common space. The concept of contemporary kitchen as a transit space for household groups is exaggerated – the open-plan kitchen is placed along the public access way, opening it up as a transit space for all occupants of the development.

Individual-private space: The individual's nest.

Strategies to ensure individual-private nests are located at a dead-end in plan. A simple square is repeated and rearranged around family-private and group-private areas.

Figure 55. Exploration of combining common space with dead-end private space.

KEY
group-private space	common
family-private space	common
individual-private space

Four clusters on site.

Figure 56. Development of common space combined with dead-end private space on site.

Figure 57. As above.

KEY		
	group-private space	common
	family-private space	common

The open-plan kitchen is placed along the public access way, opening it up as a transit space for all occupants of the development.

Figure 58. Development of common space combined with dead-end private space on site.

Figure 59. As above.

Figure 60. Separation into four clusters acknowledges that sharing spaces is easier with fewer household groups involved.

Dwellings were arranged in radial layout as if emerging from a point, where the common space is located; dwellings then spread outward from there, allowing for greater isolation of individual nests. Access ways go across and through the length of the site, passing by the common kitchen end of the clusters (refer figures 56–59). This layout accommodates a minimum of 20 dwellings, achieving a medium-density of 45.4dph.

The dwellings, adjacent lengthwise, are long and at risk of being too dark at the centre, in the manner of a row house. There is potential for the dwellings to be stepped further vertically for the purpose of capturing greater sun and light. Further consideration of the geometry or the arrangement of dwellings and development of the common exterior space is required to fulfill the aim of a humane environment – this iteration still provides conventional sets of attached row housing. The combination of common and individual-private space can be seen in figures 55–59.

Figure 61. Miss Sargfabrik floorplan diagrams: a new level of integration of common and private areas.

CASE STUDY: MISS SARGFABRIK (ARCHITECTS: BKK-3). VIENNA, 1996.

Miss Sargfabrik is a co-housing development in Vienna that is innovative in its spatial approach and layout of dwellings. The independent dwellings are arranged non-conventionally, nestled among and inside each other, and layered within an eight story building. Social interaction was the major design driver, and is encouraged through fluid division of space that removes strict boundaries between levels and rooms (refer figures 62 and 63). Those fluid boundaries also work between the different dwellings. Changing heights and levels within the dwellings, and the way the dwellings are nested among each at different levels, create a new level of integration of common and private areas within a household group. The architecture emphasises communication, interaction, integration and a sense of responsibility among occupants (Beck and Cooper 20). In each dwelling there are interior ramps and stairs, and in some a sloped floor, which facilitate these emphases and give even the smallest apartments a unique spatial interest.

Section: Miss Sargfabrik.

Section: Traditional apartment block.

Figure 62. Miss Sargfabrik sectional diagram and views of separate apartments.

Figure 63. Miss Sargfabrik division of separate dwellings compared to division of a traditional apartment block.

A key aim of the development was that the building would still function successfully in twenty years' time – the occupants can shift demographic or change circumstances but still be comfortable and happy in their apartment or another apartment in the development. There are 39 apartments, three of which are wheelchair friendly. The rest are mostly single apartments that stretch two to three floors, with their own entrances from the street. There is one apartment that houses eight young adults, and five home offices that are adjacent to the street. This provides a varied range of different configurations of common and private nest spaces, increasing the chance of occupants staying in the development for longer (refer figures 62 and 63). This informs the design case study in that it achieves what we know to be desirable traits of the suburban detached home: permanence and stability.

Miss Sargfabrik is also a significant co-housing precedent in its administrative approach. It addresses ownership and affordability through an arrangement in which all occupants are members of an association acting as owner, builder and landlord of the complex. The tenants do not pay rent but the building's loan and maintenance fees, which encourages occupants to take more pride in their homes and foster a high standard of living. Tenants at first rent their apartments, but once they have joined the cooperative they pay a set amount per square metre as a deposit, which is refunded when they leave.

"... The integrity of ... adjoining domains must be preserved at all times, in spite of traffic between them ... Each kind of integrity can be maintained only by locks and buffer zones" (Chermayeff and Alexander 251).

sm = studio (14.60m²)
 + shaded
 basic = 2 bedrooms
 (1 + nest) (60m²)
 + shaded
 extended = basic + sm

Figure 64. Development of final design case study: combinations of common and private spaces.

Figure 65. Final design case study: combinations of common and private spaces. Sketch development of form.

Evolution of small dwelling.

Figure 66. Development of final design case study: Common space and small dwellings on slope.

Wooden board cladding references an existing traditional Mt. Cook aesthetic.

Warm and tactile materiality.

Horizontal cladding unifies the scheme and emphasises the single level forms.

Figure 67. Development of final design case study: Materiality and appearance.

Section. (refer figure 82)

access: pathway to Massey

access: Tasman Street (steps)

shared veg gardens

shared gardens

shared veg gardens

access: Tasman Street (carpark)

TASMAN STREET

Figure 68. Site plan.

DESIGN CASE STUDY: FINAL ITERATION (REFER FIGURES 64–82)

The next iteration of the design case study presents a development of 28 dwellings, with a density of 63dph. The scheme is made up of four typologies repeated and arranged on site (refer figure 69).

The predominant typology is the medium-sized dwelling that sleeps five, and is arranged in clusters of three and four. The dwellings are strips that, when arranged at 8° angles to one another, create in-between buffer zones – one common to each pair and one common to all dwellings (two pairs) in a cluster (refer figure 70). Chermayeff and Alexander describe the negotiation of public and private as “who and what interferes with what and whom, to what extent, when and how ... The integrity of each of the adjoining domains must be preserved at all times, in spite of traffic between them ... Each kind of integrity can be maintained only by locks and buffer zones” (251). The buffer zones in between the medium dwellings serve to maintain the integrity, or privacy, of the small family-private spaces. They also give occupants a perception of their dwelling being a detached island, a trait of the family-private domain that we know is desirable in the suburban detached house. Each strip or dwelling has a mezzanine space at the back that provides the most private conditions for an individual (refer figure 70). Each mezzanine has a balcony accessible and visible only from the mezzanine space. At the other end of the privacy gradient, and the dwelling, are common kitchens shared by two to five household groups. The common kitchen space flows into the common shared spaces between dwellings, providing expansion room for these busy areas.

Figure 69. Site plan showing dwelling types.

Figure 70. Plan of medium cluster. Scale: 1:200.

There are also small dwellings that sleep one to two, but up to three comfortably (refer figure 77). Some of these share the common kitchens of the medium dwellings, and some use common kitchens placed in the centre of the development on the slope. The slope accommodates seven small dwellings, two shared kitchens and two common laundries that provide 14 washing machines common to all occupants (refer figure 83).

Large dwellings can be formed by combining a medium and a small dwelling. This is shown in the case of two large dwellings (refer figure 69), but there is potential for four other medium dwellings to be added to in this fashion.

Stairs to individual-private spaces are accessed through the buffer space, removing them slightly from the business of the common kitchen.

Kitchen facilities stretch across two dwellings.

Slats provide the perception of enclosure, but warmth is shared across dwellings and material costs saved.

Figure 71. Common kitchen within medium cluster.

Figure 72. Buffer space between two dwellings within medium cluster.

Different levels of enclosure protect the privacy of different parts of each dwelling where appropriate.

Access to the central buffer shared by all dwellings is lockable and completely secure.

Figure 73 (above left). Buffer space between two pairs of two dwellings within medium cluster.

Figure 74 (below left). Mezzanine balconies.

Figure 75 (below right). Key locating views in plan of medium cluster (refer figures 71–74).

Figure 76. Exploded isometric view of large (medium + small) dwelling.

Figure 77. Plan of small dwelling. Scale: 1:200.

Figure 78. Lockable boundaries of medium cluster.

Figure 79. Example of cross-lease ownership model for medium cluster.

Figure 80. Isometric view of whole site shown with context of adjacent Mt. Cook grain. Exploded isometric view of medium and small dwelling is shown directly above examples of medium and small dwellings on site.

Basic layout of slope shown here. Refer figure 83 for further development of slope spaces.

Figure 81. Bottom terrace shared vegetable gardens and front pathway parallel to Tasman Street.

Figure 82. East-west section of whole site (refer figure 68).

DEVELOPMENT OF THE SLOPE

The slope accommodates seven small dwellings, two laundries with 14 washing machines, two shared kitchens, a glasshouse and bicycle storage.

The uniform layout of paths and stairways shown in the previous images have been widened in new variations to accommodate more inhabitable and humane spaces. Where dwellings occur, less stopping space is allowed, so as to encourage movement past the private entries. The common amenities – shared kitchens, laundries and glasshouse – have more space in front of them, to encourage occupants to stop and socialise and allow space for heavier foot traffic.

Aside from these prescribed spaces, there are further common balconies that act as extended living rooms or buffer spaces for all occupants who need space outside of their small dwellings. These spaces face north and east and have a pleasant view across the bottom terrace. Providing these widened inhabitable spaces means that the development is again sub-divided into common areas for smaller groups, which we know to be an appealing way to navigate common living. The height of the slope is dramatic, but realistically the dwellings on the slope act as the third cluster (to the top and bottom terrace clusters). Consequently transit up or down the whole slope does not need to be provided for, as the top and bottom terrace dwellings do not share the slope kitchens, and there are laundries and gardens located at both the top and bottom of the slope.

Two shared kitchens are provided for the seven small dwellings on the slope, shown in yellow, along with the common space between them that allows buffer space for movement and carrying food and supplies between the two. Adjacent outdoor space for dining when the weather permits is provided.

Figure 83 (left). Developed design of common slope spaces.

Outdoor seating encourages lingering and social interaction and provides visual interest with a different materiality.

Flowerbeds provide colour and variation among stairways.

Views to bottom terrace dwellings from shared balconies encourage occupants to venture up the slope.

Common balconies provides safety through neighbourly vigilance.

Figure 84. View down common slope spaces.

Figure 85. View between two shared kitchens on slope.

Figure 86. Three demographics: A working couple, a young family and a retired couple.

Figure 87. A humane dwelling must be a long-term housing solution for many occupants at constantly changing life stages.

DESIGN CASE STUDY DEVELOPMENT: THREE POTENTIAL CLIENTS

Research has established that a sense of permanence is a priority when buying a home. This comes when groups or individuals live in the same house or community over years or decades. Therefore it is important to consider the design case study from the perspectives of different demographics and generational groups. If there is potential within a dwelling and within a development for groups and individuals to change circumstances but not move away, a sense of permanence and ownership will develop and a sense of community will follow. While the research initially placed itself in the context of young first-home buyers, it is important to acknowledge that home ownership is not a goal solely for young families, and co-housing is not necessarily only a good fit for young families. A humane dwelling must be a long-term housing solution for many occupants at constantly changing life stages.

Feddersen and Lüdtke's chapter "Kitchen and Bathroom as Living Space" in *In Detail: Housing for People of all Ages* argues that some needs are relevant in all phases of our lives, such as security and safety; it is the priorities that change, depending on one's lifestyle and phase of life (159). These priorities will need to become more individual and customised in the future, because of the trend towards a longer and more active working life. As populations age, co-housing communities have more residents who are single parents, empty nesters and singles. Co-housing "addresses the social ills of loneliness and isolation, and provides an effective social services network that our larger society is unable to provide" (Durrett and McCamant 40). The following section of the research uses three theoretical clients – a young professional couple, a young family and a retired couple (refer figure 86) – as a lens through which to critically analyse the development of key spaces within the final iteration of the design case study. The priorities and requirements of the three clients are elaborated on in the appendix.

1
Common space in previous design case study iteration.

2
Common kitchen space is defined further to create more, smaller spaces, and a clear path from entry to family-private space.

3
Common space is kept to the front of the dwellings, and the rest of the space becomes more (family- and individual-) private.

4

KEY

group-private common
space

Figure 88. Diagram of strategy for developing common kitchen space further.

Being a space essential to every phase of life, a “residential element that spans generations” (Feddersen and Lüdtke 160), and a focus of Part 2 of the research already, the kitchen spaces within the clusters of medium dwellings have been focused on for further development. The result is the design of a medium dwelling that is desirable and flexible for the three profiled clients. The contemporary kitchen can be open and multi-functional, but needs to provide a central hub for groups or families. In each dwelling there is potential for internal alterations and additions to dwellings, to express and allow for different phases of life and multigenerational living. When common spaces are further defined and divided into smaller spaces, secondary in-between spaces are created that have the potential to act as new rooms when the need arises.

One of these spaces, located in the buffer space between two adjacent medium dwellings, might function as a nurse’s room or examination room in a house shared by retirees, a waiting room in a home office or a secondary lounge with a television for older offspring (refer figure 90). The stairway has been developed further to have two landings. These pausing places, acting as small-scale rooms, are buffers that maintain the integrity of the private balcony and nest connecting from the stairs.

Figures 92–94 show further how the clusters of four medium dwellings can change with the simple addition or subtraction of walls, or a change of materials. In figure 94, two sets of two dwellings are brought together into a four-dwelling co-house by the removal of the kitchen wall. The middle buffer space is interior space. In figure 92 and 93 the buffer is exterior space, separating the two sets of two dwellings, and the kitchens are separate. One kitchen serves five dwellings – two medium and three small dwellings (refer figure 91) – while the smaller kitchen serves just two medium dwellings. Dwellings such as these, where spaces can be altered quickly and easily to accommodate changing lifestyles, are described by Herman Hertzberger in *Lessons for Students in Architecture* as *skeleton houses* (refer figure 95) – they are in principle unfinished, a “provisional framework that must be filled in. The skeleton is a half product” (157).

The kitchen is first subdivided to provide different spaces for different activities.

When I decided to work from home to make our own and our neighbours' childcare easier, the dining room was able to act as a meeting room for clients when required (theoretical client: two young families sharing a pair of medium dwellings within one cluster).

Figure 89. Developed common kitchen space, option 1.

A waiting room in a home office.

A secondary lounge with a television for older children.

A nurse's room or examination room in a house shared by retirees.

DINING ROOM/MULTI-USE TABLE

The stairway is divided into sections by two landings. These pausing or turning places, acting as very small-scale rooms, are buffers that further remove the private balcony and nest from the rest of the household.

FOOD PREPARATION

Figure 90. Developed common kitchen space: flexible use of buffer space.

This kitchen must be equipped to serve two dwellings (medium).

This kitchen must be equipped to serve a maximum of five dwellings (two medium and three small dwellings).

Here the buffer space is exterior, separating the two sets of two dwellings, and the kitchens are separate.

I'll be fixing lunch in the kitchen for all the kids and my youngest whizzes out the kitchen door to water the pot plants in the exterior corridor while he waits for lunch. His grandma is also getting some fresh air in her favourite spot (theoretical client: two young families sharing a pair of medium dwellings within one cluster).

Figure 91. Developed common kitchen space, option 2.

This kitchen must be equipped to serve a maximum of seven dwellings (four medium and three small dwellings).

Two sets of two dwellings are brought together into a four-dwelling co-house by the removal of the kitchen wall. The buffer space remains common to occupants of all dwellings.

When it became necessary to hire a nurse to check in on us more than once a week we decided to share expenses for such necessary services. At the same time we removed the wall and now share the cooking. Most of us have grandkids and they love staying up in the mezzanine beds (theoretical client: four retiree couples sharing a pair of medium dwellings within one cluster).

Figure 92. Developed common kitchen space, option 3.

My sister's kids run in and out to grab a drink of water while I'm conference-calling clients at the dining table and I barely notice (theoretical client: young family sharing a pair of medium dwellings with a young professional sibling).

Figure 93. Layout of common kitchen space, option 1.

We've got the two older kids washing and peeling veges at one end while I'm stirring the pot on the big stove down the other. The youngest dashes in for a drink of milk from the fridge but thankfully doesn't get under our feet. I glance through the interior window and the house next door is having a similarly busy dinner prep. I wave. My neighbour is using the time to finish up some of her freelance work at the big table out of the kitchen area since it's my turn to supervise dinner (theoretical client: two young families sharing a pair of medium dwellings within one cluster. Kitchen is shared with relations in small dwellings across the way).

Figure 94. Layout of common kitchen space, option 2.

Permanence is not seen as desirable, but as being stuck. Lots of the stuff we used to store on shelves and in boxes we now carry with us on hard drives ... Experts distinguish between hardware and flexware. pretty much the only hardware would be the building itself, bricks and mortar (Spiekermann 31).

Figure 95. Sectional diagram of Hertzberger's Diagoon House.

The trend towards smaller numbers of people living as household groups that Leupen and Mooij describe establishes patterns of individualism but also social isolation. Spatial design within semi-combined, semi-separate household groups creates opportunities for social connections to develop. Dwellings that incorporate common space still need a clear, defined boundary – a domain that can be truly (legally) owned. Similarly, dwellings should have a balance of cohesion and unity in the context of their neighbouring dwellings, and individuality that gives a sense of address.

Although the three theoretical client groups have vastly different daily routines and requirements, all three require space that is flexible and comfortable. No phase of life is fixed. Even retirees must plan for possible decrease or increase (for example, caregivers or relatives moving in for company or assistance) in household group numbers and the addition of new spaces and amenities that help them function, or the removal of stairs and other barriers to mobility.

The absence of loadbearing partitions allows the widest possible range of uses ... we created three locations for vertical services, so that kitchens and/or bathrooms could be located in any of three spaces on any floor ... windows to the principal spaces are identical and spaced regularly, so that the floor space is undifferentiated, and subdivisible (Dalziel and Cortale 158).

In Dalziel and Cortale's *House In The City*, the potential for internal alterations and additions to dwellings created to express and accommodate different patterns of life is referred to as *flexibility* (26). "The requirement for these features rarely appears in any architectural briefs, perhaps reflecting the short-term concerns of many developers and volume house builders ... little is being done to avoid the rigidity and the potential for redundancy and obsolescence in the design of current housing product." Dalziel and Cortale's design case study achieves this through an open structural layout and ambiguous spaces, and is intended to be used for either residential, commercial or mixed-use clients.

“Dwellings that utilise varying degrees of common shared spaces can be of minimal size and increased density ... common spaces need to be balanced with a varying range of spaces providing privacy to individuals and household groups” (REFER PAGE 145).

part five.

DISCUSSION +
CONCLUSION

DISCUSSION

REFLECTION ON THE DESIGN-LED RESEARCH INVESTIGATION

The following statements summarise the key findings of this research. They are depicted visually in figure 96.

1. Increased density on the traditional Wellington suburban plot has been created by ascribing the equivalent of three dwellings to each plot. When dwellings are arranged around consistent repeated elements, a sense of unity is created. The design of individual exterior spaces between the clusters of three dwellings provides for different levels and types of privacy. We know this to be a desirable quality of a traditional detached home.
2. Common space can be created while still providing boundaries of ownership and group-private space, as seen in the adjacent kitchens stepped down the topography. The adjacency provides a unity among the dwellings through attached construction. Use of topography already existing on site can provide height changes that achieve this. Differing heights are employed successfully in the large apartment precedent Miss Sargfabrik, where dwellings are nested among each other at half-level heights, to provide privacy at the same time as community and company (in that case within a

multilevel apartment building).

3. Sub-dividing the scheme into smaller nests of three and four dwellings creates space that is common only to these few dwellings. There is less chance of discomfort and tension among smaller groups, and higher chance of small, distinctive neighbourhoods developing that residents can identify with even within larger, comprehensive developments (Centre for Housing Research Aotearoa New Zealand 28). This is supported by co-housing precedents for fewer occupants that have more integrated common spaces. Yokohama Apartments and Schindler Chase House are examples of common space being integrated successfully into dwellings for four individuals each.
4. Creation of the greatest possible number of private spaces is achieved by utilising the cul de sac as a design tactic – horizontal and vertical dead-ends. The result is a myriad of inner sanctums for individuals that are interrupted by the least possible disturbance and through traffic. We see this strategy successfully employed in the example of my childhood bedroom, where the mezzanine removed me vertically from the household.
5. Common amenities – group-private features such as laundries, gardens and the kitchens shared by two to five dwellings – can ensure that paths and in-between exterior spaces are the most social parts of the scheme, where there is regular movement and activity. The placing of amenities among the stairs navigating the slope on the site is an example. We also see this strategy in the Jystrup Savvaerk co-housing precedent, with its central, covered exterior corridor passing each dwelling.

These findings generated the following three spatial strategies for three types of spaces in the design case study.

COMMON SPACE: GROUP-PRIVATE SPACE

Every dwelling invites social interaction with neighbours within the scheme, as well as with the surrounding community of Mt. Cook. Transit and access spaces provide common space shared by clusters of two to five dwellings. This includes

common kitchens at entries to the dwellings, and shared laundry and garden spaces interspersed in the transit spaces on the slope. Every dwelling is bordered by buffer zones common to their adjacent dwellings—occupants of both dwellings may occupy these as needed to extend their domain temporarily. This will give the perception of dwellings as detached islands, which we have seen is part of the desirability of the detached suburban house. Kitchen spaces should provide both an entry point for each dwelling and transit space that gives access to the rest of the dwelling – a stable point of connection and daily routine. Humane kitchen spaces will still fulfil the traditional qualities of a place of sustenance, warmth, food and comforting familiarity through smells and sound. Sharing kitchen space does divide the strong sense of identity that comes through the familiarity of smells and sounds. To mitigate this, small spaces within the open-plan common spaces were created to encourage a feeling of ownership among occupants, giving everyone a place to settle and create – occupants can create distinctive and meaningful meals – and the familiar smells, sounds and associated memories will follow.

FAMILY-PRIVATE SPACE

Each dwelling, or pair of dwellings, will be able to be secure as a locked unit. Similarly each dwelling, while incorporating shared space, will have a clear, defined boundary or domain that can be legally owned. Each dwelling has at least one private bathroom, and access to shared laundry facilities. Each dwelling has in its form or aesthetic a sense of individuality and a sense of address, and yet is also visually coherent with the other dwellings. Spaces within each dwelling will invite different forms of occupation in their flexibility for different use, inhabitation and potential changes in the occupants over time. Dwellings will be single-storey (with a mezzanine level), referencing the appeal of the more expansive detached suburban home by providing a perception of land ownership, more scope for individuality and greater access to social interaction.

PRIVATE SPACE

Every dwelling provides an profoundly private nest space to which an individual can retreat. Each dwelling also provides a gradient of spaces from common

1.

Increased density is achieved by intensifying plots to accommodate three dwellings. When dwellings are arranged around consistent repeated elements a unity is created and individual exterior spaces between the clusters of three dwellings provides different levels of privacy.

2.

Common space can be created while still providing boundaries of ownership and group-private space, as seen in the adjacent kitchens stepped down the topography. The adjacency provides a unity among the dwellings through attached construction.

3.

Sub-dividing the scheme into smaller nests of three and four dwellings creates space that is common only to these few dwellings. There is less chance of discomfort and tension among smaller groups.

Figure 96. Findings from key design tests and iterations.

4.

5.

1. St. Andrews Rd. - Havelock North

My childhood bedroom in Havelock North. A mezzanine bed custom built by my Dad, opened up past the original ceiling with a newly installed skylight. The mezzanine is just big enough for my single bed and a walkway, and only accessible by ladder. If someone called me I would appear at the top of the ladder and peer down at them. The mezzanine is built over the access to the family bathroom and Mum's linen cupboards, so if someone was up in the morning or Mum was rattling round finding bedsheets I would know about it but they might not know I was listening - it was a perfect hideaway but I remained part of the family home activity. The single window in my room (additional to other skylight) looked out on a small lawn with the washing line on it, and loquat trees which I could climb out the window and pick. It also looked out onto the ramp that was entry to my Grandma's granny flat while she was alive - I could hail her when she was walking into her home with her grocery bags. The room was custom designed for me, at the age I was, and painted a colour I chose; such a treat.

sample of design tests undertaken

design iteration

Creation of the greatest possible number of private spaces is achieved by utilising the cul de sac as a design tactic - horizontal and vertical dead-ends. An inner sanctum for the individual is created that has little disturbance and thoroughfare.

Common amenities such as laundries, gardens and the kitchens shared by two to five dwellings can enliven paths and in-between exterior spaces, making them the most social parts of the scheme, with regular movement and activity.

significance

6.

final design case study

spaces shared by the whole scheme, common spaces shared with a cluster or with the adjacent dwelling, group-private spaces and private spaces for individuals or couples.

FLEXIBILITY: THREE CLIENTS

While the need for security and safety is relevant in all phases of our lives, what changes are the priorities, which depend on one's lifestyle and phase of life (Feddersen and Lüdtke 159). These priorities will need to become more individual and customised in the future because of the trend towards longer, more active and more varied working lives of occupants. While the original motivation for the research was the context of young first-home buyers, co-housing is not necessarily only a good fit for young families. As populations age all over the world, co-housing communities have more and more residents who are single parents, empty nesters and singles. Co-housing "addresses the social ills of loneliness and isolation, and provides an effective social services network that our larger society is unable to provide" (Durrett and McCamant 40).

To provide a meaningful, *humane* dwelling advocating a range of priorities, the common kitchen space design was developed into more than open, undefined space. We can see in the design of the three flexible kitchen layouts that when boundaries of spaces and functions are more defined, the common space becomes more useable. In Figure 93 a defined space that interfaces with the kitchen can be seen, fitting a large dining table. Its proximity to the public entry suggests uses as both workspace and meeting room, as well as a formal or common dining room. The large common kitchen is also handy to the entry, but closed off enough so that those not involved with food preparation can slip past on their way through to the private dwelling, or stop by the wet bar for a glass of water. This *flexibility* (Dalziel) and the configuration of smaller spaces within common ones multiply the potential for humane and useable common space, since they allow a wider range of activities among a wider range of occupants within more household groups. When the activities are inherently suggested by

the design of the spaces, such as Zumthor's "good places to sit ... the sill just the right height for use as an elbow rest" in *Thinking Architecture* (40), meaning and familiarity is attached to them. Occupants unconsciously move into them and adapt them for their own uses.

The kitchen is where the social advantages of common space come into play – not just interaction between people using the common space, but the way the common space draws people together and affects the surrounding, secondary common and private spaces. This flexibility was explored within the context of three potential clients spanning two generations. The designs proposed for the common kitchens create wider potential for use by more clients, and accordingly for a humane, long-term dwelling for families or groups that grow, disperse or change circumstance. McCamant and Durrett emphasise the importance of a happy kitchen interface; a "warm and inviting space open to, but not within, the kitchen activity", which will likely become the most utilised space in the house (262).

AFFORDABILITY

Tactics facilitating affordability have been incorporated throughout the research. Groups of three and four dwellings share a weatherproof shell so that less durable wall construction is required. Fewer traditionally expensive rooms, such as kitchens and laundries, and the required services corresponding to them, are required, as some facilities are shared. Dwellings are small, requiring less labour and lower material costs. The three new typologies achieve small areas: 41, 67 or 108 square metres for the small, medium and large dwellings. The higher density of the design case study saves land costs.

These discussion points lead to the conclusion that follows.

Figure 97.

CONCLUSION

A new medium-density co-housing typology designed in the Wellington city-fringe suburb of Mt. Cook shows that dwellings that utilise varying degrees of common, shared spaces can be of minimal size and increased density. This can be achieved while still providing meaningful, humane homes that are appealing alternatives to suburban detached houses and inner-city apartments. Common spaces need to be balanced with a varying range of spaces providing varying degrees of privacy to individuals and household groups.

Contemporary kitchen areas are domestic spaces that can achieve this common space, and be shared by two to five dwellings, as demonstrated in the design case study. The contemporary kitchen can be informally defined and multi-functional, but needs to provide a central hub for groups or families. In the design case study the kitchen has been developed as a manifestation of the practical and social needs of three theoretical clients. Considering the design case study from the perspectives of different demographics and generations has resulted in loose-fit design potential for alterations within the dwellings and within the development, so that groups and individuals can change circumstances without moving away. In each dwelling there is potential for internal alterations and additions to dwellings, to express and allow for different phases of life and multigenerational living. A sense of permanence, ownership and community develops from this occupational continuity, assisted by a carefully considered shared ownership model agreed upon and maintained by the occupant group.

The implication of the research is that a higher density of affordable housing can be produced through sharing more spaces and amenities than is conventional; specifically kitchen and dining spaces, outdoor spaces, and gardens and laundries. The resulting higher density provides more dwellings with cheaper land costs, and also encourages affordability through the use of fewer materials and labour, smaller dwellings and some shared built form.

APPENDIX

Research has established that a sense of permanence is a priority when buying a home. This comes when groups or individuals live in the same house or community over years or decades. Therefore it is important to consider the design case study from the perspectives of different demographics and generational groups. If there is potential within a dwelling and within a development for groups and individuals to change circumstances but not move away, a sense of permanence and ownership will develop and a sense of community will follow. While the research initially placed itself in the context of young first-home buyers, it is important to acknowledge that home ownership is not a goal solely for young families, and co-housing is not necessarily only a good fit for young families. A humane dwelling must be a long-term housing solution for many occupants at constantly changing life stages (page 125).

The following appendix provides additional information regarding the design for three potential clients in Part 4 of the research. The choice of the three theoretical clients is rationalised and their specific needs and comforts are discussed so that they can be used as a lens through which to critique the development of the design case study.

Figure 98. A young working couple, a family and a retired single or couple.

YOUNG WORKING SINGLE OR COUPLE (REFER FIGURE 99)

Young professionals are perhaps the demographic where common living would seem least appealing. However, young professionals often have financial restrictions on their lifestyle due to entry-level salaries and perhaps lingering debt from study or travel. This financial strain could be lessened by sharing spaces and amenities, and a house could be sooner bought if smaller and less costly to build.

After studying or living with parents, a stable and independently occupied dwelling becomes a desirable next step. According to Day in Suburban Adaptation “single-person households are the fastest-growing demographic group, and also the group that is the worst fit for a traditional nuclear family house”. Similarly, “couple families often enjoy living with just two, but some also enjoy the stimulation of adding an extra person to the mix. One extra person contributing to the cost of buying a house provides an opportunity to afford a property in a better location with more features” (17).

We know from the research that home ownership is difficult for two working professionals, and even more so for one. The Wellington Housing Trust website states that the Wellington housing market was classified as “severely unaffordable” in a 2011 international survey of housing affordability, and that median-priced homes are only affordable for households with more than one median income.

The final design case study presents a realistic option for young professionals who may be tiring of a traditional flatting scenario and ready for the independence of their own dwelling, but perhaps still wanting the option for company and interaction that some level of common living provides. The design also offers a new form of affordability in an inaccessible financial context.

Figure 99. Small dwellings are ideal for a working young person or couple.

In the design case study, the small dwellings in particular are an appealing option for single or attached working young people entering the housing market. They provide a small, owned dwelling that allows either a low or high level of shared living. As the young professional heads into a new life stage, becomes attached, has a child or saves for a bigger home, it is easy for them to transition to a medium-sized dwelling within the development, or to purchase another neighbouring small dwelling to add to their domain.

YOUNG FAMILY: ONE OR TWO PARENTS PLUS CHILDREN (REFER FIGURE 100)

A single or a pair of working young people may well transition into a young family or a single parent demographic. Their priorities and need for space and rooms transition at the same time. In New Zealand, the make-up of families is changing and there are a growing number of sole-parent and de facto couple families (Statistics New Zealand). Although children living in two-parent families are the most common family model, changing patterns of family formation and dissolution have promoted a growing diversity of family types. The number of sole-parent families has grown rapidly over recent years, which has important implications for the welfare of children, given that sole parents tend to be disadvantaged in terms of employment, income, education and housing when compared to partnered parents (Statistics New Zealand).

Single-parent families are prime candidates for multi-family homes due to the financial strain of raising a family on one income, the emotional support offered by another adult and also the practicality of sharing the supervision of children (Day 17). The Wellington Housing Trust website states that a standardised household comprising of one adult full-time worker, one adult worker working part-time and one child aged 5 years would spend 34.7% of its income on mortgage payments. A fall in the number of private dwellings

A secondary lounge with a television for older offspring.

The common environment takes the pressure off the individuals in a family. In co-housing, children are secure (Durrett and McCamant 40).

Figure 100. Loose-fit design potential for alterations:
Young family.

that are owner-occupied as recorded by the 2006 census has resulted in the relative disadvantage of the young, single parents and low-income households. The most marked drop occurred among single parents responsible for raising children. Despite this obvious need for families with children to rely on the private rental market, less than half of landlords prefer families with children as tenants (Wellington Housing Trust).

To Durrett and McCamant it is no surprise that it is often families, particularly young families, who embrace co-housing as a solution to financial unattainability of single-household dwellings. The common environment takes the pressure off the individuals in a family. In co-housing, children are secure. And because residents know each other and share a community that is larger than any one household, crime is non-existent (40).

The final design case study presents an option for affordability for young families that has advantages beyond cost. The priority of young parents is growing and sustaining healthy children. This involves childcare, preparing food and earning an income. In the design case study, these things are all more logically shared – and responsibilities able to be divided – with the inclusion of common spaces. The unifying standard design of separate dwellings invites the cohabitation of households with similar make-up and values, ensuring that trading-off of duties such as childcare and cooking will happen organically. This becomes particularly important with the increase of sole parents, who may also be the sole income earner with less time to spread between childcare and domestic duties.

Young families may then transition into an extended family by joining up with parents, grandparents, or siblings who are at a similar life stage with children. Extended families are likely to be interested in multi-family homes, whether the arrangement is adult children staying in the family home, older parents moving in when they need assistance or siblings sharing a house. Privacy is very important in extended family groups; each household is very likely to want their own bathrooms, kitchens and private outdoor areas (Day 17).

A nurse's room or examination room in a house shared by retirees.

Constant medical care is not provided, but becomes easier to organise and share the associated costs of.

Figure 101. Loose-fit design potential for alterations:
Retired single or couple.

RETIRED SINGLE OR COUPLE (REFER FIGURE 101)

Seniors spend more than 80% of their time at home or in the immediate vicinity (Feddersen and Lüdtke 159), so the design of their home environment is crucial. Durrett and McCamant point out that just stepping out the front door in co-housing provides seniors with ample opportunity for socialising. They might go farther from home to the community garden and strike up conversation with a neighbour. Then while gardening, they might find a surplus of fresh vegetables and present these to a friend next door (21). In a development where kitchen and living spaces are shared, just taking a few steps while still inside invites social interaction. Kitchen and living rooms are especially important, as they provide spaces for socialising tasks. In “Kitchen and Bathroom as Living Space”, Feddersen and Lüdtke describe how dementia sufferers in particular can benefit from the familiar tasks carried out in the kitchen. When their memory begins to fail, a familiar domestic task such as peeling potatoes or ironing brings clarity and grounds them in familiarity. “A spectrum of different activities offered around the functional kitchen should animate the residents to spend time there: a feeling of security in the group, as well as withdrawal into niches” (162).

There is an increasing number of co-housing developments specifically for seniors that involve groups of 8–12 occupants spending the day in a common kitchen-living space, cared for by a shared nurse. Feddersen and Lüdtke state that ideally there is an open kitchen with living zones bordering it, such as a dining room or a library, all grouped around a fixed core, where essential facilities like a bathroom are located. Sliding walls can separate the zones into individual “rooms” when needed (162). Seniors also benefit from the activities of the wider scheme too. If someone is going into town, they can easily have a ride or company on a walk to the pharmacy. Co-housing intended for seniors should offer a living environment that supports their health needs and encourages the activities that they enjoy (Durrett and McCamant 31).

Figure 102. Combining different demographics to create a multi-generational development.

The final design case study presents options for retirees that have advantages for both affordability and social interaction. In the design case study, the common spaces allow social interaction that benefits the health of the occupant as well as their safety as they age and may have fewer visiting relatives and friends. As with a young family, the standardised design of the repeated strip shaped dwellings invites cohabitation of retirees who are at similar life stages. The design provides a greater sense of independence for an occupant that is not present in a traditional rest home; constant medical care or companionship is not automatically provided, but it becomes easier to organise and share the associated costs within the 2–5 household clusters.

THE IMPORTANCE OF COMBINING DIFFERENT DEMOGRAPHICS IN A MULTI-GENERATIONAL DEVELOPMENT

A development with a multi-generational focus creates a stronger sense of community and brings generations together. Importantly, it provides options for those families that want to live close by to each other without sharing a dwelling. A development where all stages of life are catered to and accommodated encourages a stronger sense of community where different demographics of occupants contribute different attributes and character to the rest of the development.

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