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What is Co-Housing? Developing a Conceptual Framework from the Studies of Danish Intergenerational Co-Housing

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Abstract

Co-housing forms part of a collaborative housing trend receiving increased interest. The physical layout of co-housing (*bofællesskab* in Danish) comprises several independent homes in combination with shared spaces and facilities, which support living together, balancing privacy and communality. In Denmark, self-organised groups have established co-housing ever since the early 1970s in different forms and types. Due to the complexity of how these communities have been arranged over time, co-housing includes great variety, which can be challenging when exploring the concept. The paper proposes an empirical and conceptual approach to the emerging literature on intergenerational co-housing, by developing a multi-dimensional spatial framework combined with an investigation of the different designing types of co-housing. By presenting an analysis of Danish intergenerational co-housing, the paper fills an empirical and conceptual gap in the existing co-housing literature, which usually makes references to Danish experiences or analyses some single cases, but rarely explore these more systematically.

Keywords: Concept of co-housing; spatiality; visions; organisation; communality; design

Introduction

Springing from the collective movement of the late 1960s, the development of co-housing as low-rise dense clustered housing originated in Denmark in the early 1970s (Nygaard 1984, Andersen 1985, Vedel-Petersen, Jantzen, and Ranten 1988). Danish co-housing has since then been built both like this and developed further as various types, and as experiments in small and large scales (Vedel-Petersen, Jantzen, and Ranten 1988, McCamant & Durrett 2011, Marckmann 2009, Jakobsen & Larsen 2018). In the 1980s, two American architects, McCamant and Durrett, came to Denmark to study co-housing with Danish researchers. The American architects brought the Danish model of co-housing from that time back to the US, where it has developed and spread (McCamant & Durrett 2011, Meltzer 2005). Later, they came back to Denmark to elaborate on co-housing in the third edition of their influential book (2011), stating that 'Danish cohousing remains the golden standard for cohousing worldwide' (2011:37). In other European countries like Sweden, Germany and the Netherlands, co-housing projects are also rooted in historical developments, although they are slightly different in typology, form, and organisation than the Danish co-housing movement (Vestbro & Horelli 2012, Vestbro 2000, Marcus 2000, Fromm 1991). Today, the (re-)emergence and spread of co-housing is a phenomenon taking place in many countries (Tummers 2017, Jarvis 2015, Krokfors 2012, McCamant & Durrett 2011, Lang et al. 2018). Demographic changes in societies, resources, and lifestyles play a central part of this phenomenon (Bresson & Denèfle 2015, Tummers 2015b, Droste 2015). As an alternative to other housing options, however, co-housing takes up only a minor part of the total building stock in the respective countries (Vestbro & Horelli 2012).

Ever since the 1970s, the creation of co-housing has primarily been a bottom-up process (McCamant & Durrett 2011, Vedel-Petersen, Jantzen, and Ranten 1988, Nygaard 1984). However, top-down professionalisation of co-housing is gaining acceptance in Denmark, in new enterprises where developers take the initiative involving the whole process or municipalities and local communities either take the first steps or welcome establishments of co-housing projects as a strategic element in planning (e.g. Roskilde, Lejre, Halsnæs, Furesø, Høje-Tåstrup and Faxe municipalities). Alternative developers currently build co-housing, attracting people to join the projects, where the framework is designed more, or less beforehand (Ecovillage.dk, Almennr.dk, Bærebo.dk).

In recent years, a body of international research on intergenerational co-housing has been carried out (Lang, Carriou, and Czischke 2020; Czischke 2018; Tummers 2017; Sanguinetti 2014 and 2015; Ruii 2016; Chatterton 2015; Williams 2005 and 2008; Vestbro 2010; special issues: Fromm 2000; Krokfors 2012; Tummers 2015a). However, more conceptual research is still needed. Lessons in this paper are learned from a focus on Danish cases. Paradoxically, little systematic research has been conducted since the late 1980s about Danish intergenerational co-housing, although projects have continuously been built. Exceptions are Marckmann's dissertation about eco-communities (2009), McCamant and Durrett's book (2011), two master thesis' (Martinussen 2010, Madsen 2012), two ministerial reports (Ganer 2016, Pagh and Viemose 2016), and recently, an article based on a quantitative survey by Jakobsen & Larsen (2018), and an article about the Danish history of co-housing related to tenure forms (Larsen 2019).

In literature, the co-housing concept tends to be focused on the physical layout and the social aspects of this living form. An important feature of co-housing is the combination of single unit dwellings with shared facilities, balancing privacy and communality (Lietaert 2010, Marcus 2000). A common house, where residents dine together some days during the week or do other activities together is another essential part of co-housing. McCamant and Durrett (2011:25) operates with six common characteristics of co-housing, which have affected the co-housing literature: (1) participatory processes, (2) designs that facilitate community, (3) extensive common facilities, (4) complete residential management, (5) non-hierarchical structure, (6) separate income sources. Designing for social interaction (social contact-design) is emphasised by academics and recommended by architects (Fromm 1991, Torres-Antonini 2001, Williams 2005, McCamant and Durrett 2011, Jarvis 2015).

As there is broad variation in types, sizes, and tenure forms, when exploring intergenerational co-housing from a first view, the projects look quite different from each other. Each co-housing is uniquely designed, build, and managed in terms of location, methods of formation, group dynamic, visions and values. However, as the Danish tradition for establishing intergenerational co-housing has developed through five decades, some types of how to design co-housing communities emerged through this period. In this article, these designs are grouped and termed *designing types*. They are historical rooted, but are at the same time contemporary, as they have become models for building co-housing. Further, the combination or crossovers of designing types, mix of tenure forms, and the new developer approach, makes the concept of co-housing complex, and it raises the question: What are the common denominators and what are the differentiators of Danish co-housing from a spatial perspective?

The aim of the paper is to develop a conceptual framework of co-housing to help to better understand this many-faceted phenomenon. More specifically, the concept of co-housing is first theorised as a framework through the lens of spatial dimensions, developing a way to understand the concept that characterises the common denominators of co-housing. Spatiality is perceived in an extended manner involving more dimensions than just the physical. As a way to distinguish what separates co-housing types from each other, three different co-housing designing types are presented. The designing types are identified in the empirical work and in the co-housing literature, underlined by historical ideas and designs, exemplified through representations of selected cases. A matrix of spatial dimensions and designing types is developed as an analytical tool to explore what co-housing is. Finally, a cross-over of types and tenures is shown in a current co-housing project developed today.

Research Methods

A combination of literature synthesis, searching co-housing webpages, and empirical research is used for the paper. The fieldwork had a visual ethnographic perspective, which is an explorative approach studying visual and spatial qualities obtaining photography, comparing the different co-housing types, and combining that with ethnographic methods (Pink 2013, Rose 2007). The research is based on analysing 22 visited co-housing projects in Denmark (Table.1). Four emerging co-housing projects were followed over a period of two years while being established. One case did not succeed. In all, 53 persons were interviewed: 25 residents, 20 future residents of emerging co-housing projects, and seven related professionals. Three of the central cases presented in the paper have been revisited three to four times sometimes staying overnight, while the case for Jystrup Savværk was a 24-hour visit. The fieldwork entailed interviews, participatory observations taking field notes involving in common activities, such as meetings, dinners, parties, development days, and courses. Talking with residents while walking in and around the co-housing and taking photos of the spatial structures formed part of the fieldwork activities. The analysis is a combination of framing the spatial dimensions of co-housing and a synthesis of the different co-housing types and models found in the literature, which are observed in the empirical work.

Table 1. Co-housing cases.

Co-housing cases visited:

Designing types:

Tenure forms:

Name	Year of establishment	Units	Architect - design	Retrofit /rebuilt	Self-built	Private ownership	Cooperative	Rented
Skråplanet	1973-74	33	x			x		
Svanholm	1978	50-54		x				(x)
Stavnsbåndet	1979	26	x			x		
Æblevangen	1980	36	x			x		
Jernstøberiet	1981	20	x	x		x		
Jystrup Savværk	1983	21	x				x	
Drejerbanken	1983	20	x			x		x

Gl. Grevegården	1990	24	x	x				x
Lysningen	1990	18	x				x	
Dyssekilde	1990	82			x	x	x	x
Fælleshave	1991	16	x				x	x
Munksøgård	2000	100	x	x	x	x	x	x
Bauneholm	2002	14		x			x	
Fri&Fro	2004	17			x		x	
Hallingelille	2005	27		x	x	x		x
Græsmarken	2007	25	x			x		
Lange Eng	2008	54	x			x		
Nygården	2010	3		x		x		
Cases followed during establishment :								
Nielstrup Manor	2016	4		x				x
Frikøbing	2017	23	x		x	x		
Karise Permatopia	2018	90	x	x	x	x	x	x
Torup Overdrev	Failed to establish							

Explanation:

The table shows the co-housing cases in the study. Each co-housing case is uniquely designed. The year of establishment is the year, when moving in. The units are how many dwellings there are in each case, showing different sizes of the communities running from 3 to 100 units.

The columns show the different designing types of co-housing, which were observed in the field studies: 14 have architect-designed houses, nine have retrofit or rebuilt houses, while six cases are designed as self-built types from a lot-model. Two or three of the designing types are used concurrently in some of the above-listed cases. Six of the cases are designed with two or more different designing types. By combining these different designing principles, cohousing communities are achieved from many creative methods. Furthermore, a mix of tenure forms are evident in six of the cases. The reason for combining tenures is typically due to a wish for different economic situations of the inhabitants in order to encompass both students and seniors with small pension savings. In Munksøgård and in Karise Permatopia all three designing types are combined and at the same time, all three tenure forms are evident. These two cases are quite large with 90 and 100 dwelling units. The homepage www.bofællesskab.dk which is a self-registering site for co-housing that has considerably developed over the last years, was also visited regularly.

What Does the Term 'Co-housing' mean?

As many other concepts starting with co-, connoting collective and collaborative practices, co-housing (*bofællesskab*) forms part of the wider umbrella concept of 'collaborative housing', which is used by Fromm (1991), Vestbro (2010), and Czischke (2018) to describe a tendency of

self-managed housing models in different countries. Collaborative housing can involve a group of people building and/or living together, or it can be professional actors involving future residents for participating in planning and self-managing housing. Such collaboration practices are present in community land trusts, collective private commissioning, self-build initiatives like the German Bau-gruppen, co-housing, resident-led housing cooperatives, and other forms of collective self-managed housing (Czischke 2018, 3). The Danish term *bofællesskab* was translated by McCamant and Durrett to 'cohousing' (1989, 95) and by Vedel-Petersen, Jantzen, and Ranten (1988, 101) to 'co-housing community'. According to Vedel-Petersen, Jantzen, and Ranten, this denotes 'a housing group which involves a number of independent homes with the addition of common facilities, such as common rooms and open spaces' (1988, 101).¹ The word 'community' is meant as a group of people living in independent homes near one another, who interacts socially and share norms and values about the way of living together. In line with McCamant and Durrett's characteristics, the 'co'- in co-housing refers to sharing common areas, making decisions in non-hierarchical processes, living, and interacting socially, and doing things together. Due to the private dwelling units co-housing communities are, according to McCamant and Durrett (2011), not communes. The meaning of *kollektiv* (commune) and *bofællesskab* (co-housing) are however, a little blurred in Danish, as the words are sometimes used as synonyms. In cities, many young people share an apartment, and this may well be called *kollektiv* or *bofællesskab*. In technical terms, co-housing refers to that, private dwelling units are equipped with their own kitchen and bathroom, whereas these facilities are often shared in communes. As we shall see, some communes have developed into co-housing. Senior co-housing is another way of designing co-housing, exclusively for members aged over 50 without children living at home. This is well described by Max Pedersen (2015, 2013), Durrett (2009), and Choi (2005). The paper does not address senior co-housing specifically, although there are some general similarities with intergenerational co-housing. Another connotation of the word *bofællesskab* in Danish is an institutional home for disabled or vulnerable people living together. These institutions are not covered in the paper.

Inspired by the German *mehrgenerationswohnen* (Droste 2015), where different generations live, help, and join each other across ages, multigenerational houses have developed (e.g. Generationernes Hus, Århus). These housing projects are often located in cities (e.g. in Berlin) and, besides the common spaces for the residents, they also have spaces open to the public and people from the local community (e.g. cafés, workshops, nursing homes, etc.) Openness to the public and the local community that existed before the co-housing group settled is an awareness in many co-housing projects (Ruiu 2016). Other co-housing communities do not have open public spaces and are designed to be more closed to the local community (Stender 2014, Chiodelli and Baglione 2014, Marcus 2000). The term 'multigenerational' implies different generations living together in larger scale intergenerational co-housing, or families living across-three-generations, which is a relatively new orientation in Denmark. The size of co-housing can thus vary from two to hundreds or more households.

Co-housing: A Spatial Dimensional Framework

Co-housing is designed and organised in so many different ways; however, there are some similar characteristics. Following Jarvis (2015), Sanguinetti (2014), and Williams (2005) who argue for understanding co-housing as both a social and physical space, I propose an extended

¹ 'Open spaces' implies opening up spaces to share between residents (Vedel-Petersen et al. 1988).

spatial framework for how to understand this experimental homemaking, suggesting *four spatial dimensions* in co-housing. Besides the physical and social space, co-housing comprises shared visions and values (Sargisson 2012) as well as organising, financing, and decision-making processes (McCamant and Durrett 2011). In such a multi-dimensional approach, space is not only a natural given geometry but is relative and continuously (re-)produced through socio-spatial relations, connecting to the physical spatial dimension. Using space in this way, space is perceived as relational constituted through social, economic, and cultural meanings of how to produce, practice, and structure the world (Harvey 2009, 133-165, Hubbard et al. 2002 (2005), 13-14). Space is therefore not just physical but also has relational, organisational, and vision- and value-oriented dimensions (Fig.1). These spatial dimensions form part of the whole experience of co-housing, but to clarify the complex concept of co-housing, this analysis 'layers' the spatiality in the following four dimensions:

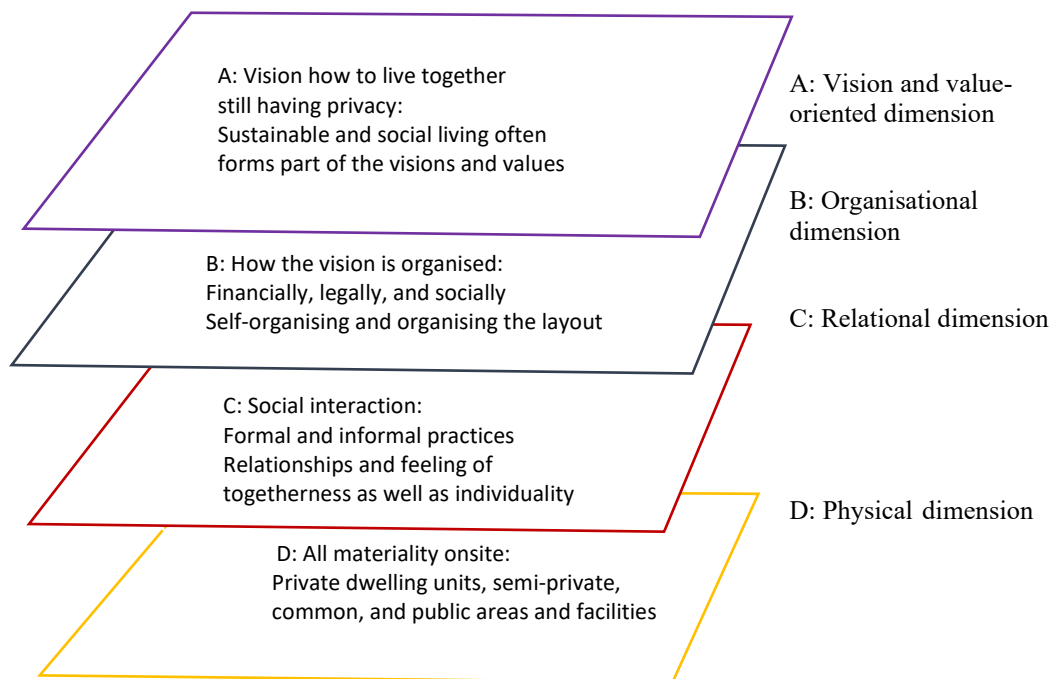


Figure 1: Conceptualising co-housing in four interconnecting spatial dimensions

The concept of co-housing comprises four spatial dimensions: a vision/value oriented dimension, an organisational dimension, a relational dimension and a physical dimension, which plays together and are interconnected.

- **The dimension of visions and values** is about making an alternative to other housing options, balancing privacy and communality, and sharing visions and values in how to live together with a focus on social aspects, sustainable living or, spiritual living and, in some cases political values.
- **The organisational dimension** is how co-housing is organised financially and planned legally (in tenures, associations, etc.), including collaboration with professionals, and social collaboration in formal and informal agreements within the community

(association membership, decision-making, common meetings, and working groups). The group's self-management and designing the layout forms part of organisation co-housing.

- **The relational dimension** includes relations between inhabitants, group dynamic and -identity, interaction, and practice in formal and informal collaboration (common dining, working groups, celebrations etc.) relating to design processes, the feeling of belonging and togetherness, as well as individuality.
- **The physical dimension** is the materiality and physical design/layout that is formed as a combination of several private dwelling units, semi-private and common (and sometimes public) areas, shared land, and facilities.

The Dimension of Visions and Values

Co-housing projects tend to emerge from a vision. The vision that the group agrees on influences the set of values that are discussed throughout the process of becoming a co-housing project. Each co-housing group collectively arrives at a core set of values, engaging in a common purpose to live and create the community together (Jarvis 2015, 94). The most essential vision of a co-housing group is to bridge privacy and communality, and to share and to live together while still having their own dwellings. Other visions can be to ensure good conditions for children (Manzanti 2007, Marckmann 2009) or to live sustainably by (self-) building organic houses with self-sufficiency regarding vegetables and renewal energy supply (Marckmann 2009, Tummers 2017). To live and help each other across generations and to establish self-governance are visions that are also found in the empirical work. Ideals of freedom and direct democracy, either as consensus models with non-hierarchical structures (McCamant and Durrett 2011) or as sociocracy (Christian 2013), are important values for the groups. A few co-housing groups have also built on spiritual, religious, or political values. The intentions to form another lifestyle focusing on social aspects of living makes room for new possibilities. By building houses, infrastructure, and systems in alternative ways, co-housing groups experiment with what is possible with today's sustainable practices regarding energy consumption and recycling (Tummers 2017). According to Sargisson (2012), with such inherent visions and values, though also focused on individual freedom, co-housing can be understood as 'intentional communities' or as 'living modern utopias' (2012, 19-21). Discussing co-housing as modern utopias, Sargisson operates with utopia as practical utopian experiments that 'create distance by establishing bounded spaces *in which* to try something better and *from which* critically to regard life in the mainstream' (2012, 2-3). She argues that the critique of society and trying out new visions and alternative ways of living is inherent in co-housing but is not necessarily in direct opposition to society but is rather done as members of society. According to Sargisson, co-housing is not so radical that it challenges society: however, co-housing communities are modern utopias in the sense that 'they represent living models of a better alternative' (2012:20). She concludes that, although comfortable with mainstream culture, co-housing allows members to live another life without dropping out of society, suggesting that this might well be what makes co-housing popular (2012, 21). The spatial dimension of visions and values is at the core in co-housing, connecting to the intentions of the community and typically providing the basis for a written document for start-up groups.

The Organisational Dimension

The organisational dimension is how visions and layouts are financially, legally and socially planned. Self-organisation, done with more or less help from professionals, forms an important part of co-housing (Czischke 2018, 11). Creating an association for initiating co-

housing, which is quite easy in Denmark, is necessary to become a membership group, to obtain loans and to collaborate as stakeholders with professionals. In Denmark, there are different models of organising co-housing connected to tenure forms (Jakobsen and Larsen, 2018). A project can be organised through private ownership (*privat ejerskab*), or housing cooperatives with shared ownership (*andelsboligforening*), or a rental model: either private renting (*privat udlejning*) or public housing owned by non-profit housing associations (*almen boligorganisation*), which describes over half of the senior-cohousing (Pedersen 2015). Much of intergenerational co-housing is private ownership or cooperative (Jakobsen and Larsen 2018, 9). The cooperative model was commodified in 2005 and termination of state support for newly built housing cooperatives has made this model more difficult for new co-housing (Larsen & Hansen 2015, 266). The Danish non-profit housing sector is open to everybody, although low-income socially vulnerable people are overrepresented. A co-housing can be arranged as an autonomous division of a non-profit housing association with resident democracy (Madsen 2012). The municipality must subsidise it with 10-14% of the building sum. Mixing tenures is done in some intergenerational co-housing to attract residents with differentiated financial positions (e.g. students, singles, etc.). However, as each tenure model has different regulations, mixed tenure compositions can be complex models to develop, especially as the non-profit housing sector in Denmark is subject to a vast number of rules, which cannot be negotiated (e.g. the taxable value per square metre). On the other hand, financing communities with up to 100 dwelling units is hard for a group of people using bottom-up processes. The non-profit housing sector has experience in building, although, when working with these enthusiastic groups of people who want to build as sustainably as possible, it can be challenging for everybody involved (Foldager and Dyck-Madsen 2002).

Usually, the initiative to build a co-housing project has been taken by a small group of people, who gather a bigger group by promoting ideas about another or better way of living (Martinussen 2010, Sargisson 2012). Developing co-housing can be a very long process, from gathering a group together, to discuss visions, organisation, etc., to deciding on what, how, and where to build the community (Fromm 1991). The empirical data for this paper shows that creating co-housing from scratch can take between 3 and 10 years from the formation of a group of like-minded individuals to actually moving into the new homes in the co-housing community. Creating co-housing groups today is often done through social media, advertising the project and encouraging people to join. Besides planning, deciding on values and how to carry out decision making, the group must self-organise and adopt by-laws and rules. The highest authority is the common meeting with decision making in non-hierarchical processes (Vedel-Petersen, Jantzen, and Ranten 1988, McCamant & Durrett 2011). Here the social organisation is discussed, decided, and maintained. Experimenting with new kinds of decision making has emerged recently (e.g. sociocracy Christian 2013-14). Normally, a number of working groups take responsibility for different tasks. The establishment of social and democratic organisation and tenures becomes a structure, creating the first step of, how the community will be formally and informally managed. The organisational dimension forms an important, though sometimes underestimated, part of the spatial concept of co-housing.

The Relational Dimension

Characteristic for the motivation to live in co-housing is the notion of wanting to know the neighbours, and to be part of a community. Throughout the participatory design process, there is socialising, and learning to know each other long before relocating together (Marckmann 2009, 206). Jarvis (2015, 94) operates with the term 'social architecture', which functions

through invisible, affective dimensions, such as motivations, feelings of well-being, thinking, and learning as well as inter-relationships with people in the group and place. According to Jarvis, the social architecture or 'soft infrastructure' corresponds with the 'hard infrastructure' that is visible and fixed in the material qualities of home and neighbourhood settings (2015, 94). The social connects to the physical structures; for example, Ganer (2016), Williams (2005) and Torres-Antonini (2001) point at the importance of a centrally located common house, where everybody in the co-housing naturally arrives and often walks to, making it possible to meet informally and spontaneously. The relational dimension is all the social interaction, dialogues, and collaboration taking place between the occupants in daily life, when dining together, taking turns in cooking, working in groups, and participating in meetings or other activities. The empirical data show that co-housing communities have common dining as a principle for communality, dining between one and seven days per week, although in some co-housing a take-away option has been arranged. The socio-economic profiles of residents, who engage in co-housing initiatives are resourceful in terms of having social and financial capacity, have medium to high levels of education, and seek sustainability in everyday life (Ruiu 2016, Boyer and Leland 2018, Margolis and Entin 2011, Marckmann 2009, Margolis & Sanguinetti 2015, Jakobsen and Larsen 2018). Sanguinetti (2014, 88), in a survey with 477 respondents from 127 American co-housing communities, argues that co-housing practices promote close relationships, regular social contact, and perspective-taking among neighbours. Such social practices lead to a feeling of belonging and connectedness to the community (Sanguinetti 2014, 94). Jarvis (2015, 97-98) identifies three types of sharing: co-presence, affiliation, and endeavour. In this sense 'co-housing is a living arrangement, which represents more than simply an alternative system of housing: the social dimension reveals a setting and system that cultivates an intentional negotiated ethos of sharing' to cite Jarvis (2015, 102). Maintaining and improving the relational dimension is done through formalised practices (common dining, meetings, working groups, and celebrations) taking responsibility for specific areas and tasks in co-housing (Pagh and Viemose 2016). Such formal practices underpin more informal contact, for example, meeting in the parking area or talking over dinner (Marckmann 2009, 198-201). The relational spatial dimension, as formal and informal social practices, forms a central part of co-housing.

The Physical Dimension

Co-housing is materialised in the physical spatial dimension, where private dwelling units are combined with common areas and facilities, differentiated into private, semi-private, and common (and sometimes public) areas. Fromm (1991), Williams (2005), McCamant and Durrett (2011) stress the importance of 'social contact design', meaning that the physical layout is designed for social interaction. Usually, a common house with dining area and kitchen is centrally located and, in many cases, there is laundry facilities, playrooms, guest rooms, office workspaces, workshops, etc. The private dwelling units are provided as normal dwellings, although there is sometimes less floor area, as some goes to the common facilities. The outdoor areas are shared, except for perhaps a terrace or, a garden in connection to the private dwelling. The outdoor shared facilities can consist of green areas with playgrounds, kitchen gardens, fireplaces, green-houses, animal sheds, waste recycling areas, and land that can be cultivated or used for willow purification works (recycling and purification of sewage). Parking spaces on the periphery are typically shared. Some have carpooling, and most co-housing communities are car-free zones. Children can therefore run freely between the houses and playgrounds (Ganer 2016, McCamant and Durrett 2011, Vedel-Petersen, Jantzen, and Ranten 1988). The physical dimension consists of all materiality onsite, including private and

shared areas and areas that are not yet planned but forms part of the co-housing for opportunities coming up, as some structures are formed over time. Co-housing can be built from scratch, either designed by architects or as experimental self-built eco-communities. Another option is to retrofit/refurbish existing building stock not in use (e.g. abandoned school buildings, town halls, manor houses, etc.). In a number of co-housing projects, existing building stock is part of the co-housing project (e.g. an old farmyard as the common facility and heart of the community). The physical dimension interconnects with the other dimensions and constitutes the spatial base of the concept of co-housing.

The Four Dimensions Interconnect Through Belonging and Engagement

The four dimensions are (re-)produced through the everyday life in co-housing with the physical dimension as the material base. All four spatial dimensions in this concept are interwoven parts of each other and grounded in the holistic approach to living that many of the co-housing communities have. According to Jarvis (2015, 100) and Sanguinetti (2015, 88), engagement is rooted in a sense of belonging to the co-housing. The practices of self-managing (or self-building) engage people to connect to each other and their surroundings. It can seem easier to get things to move forward, such as optimising energy consumption, building projects, growing plants, and making good conditions for children (e.g. car-free zones, and playgrounds) when doing it together. The social practice and engagement with each other in working groups, meetings, dining together, and other formal or informal situations create social bonds and relationships (Ruiu 2016, Marckmann 2009). Through this a sense of belonging forms. When an old man in one of the analysed cases, lost his wife, he could lean on the social structures, relationships, and support he received from other dwellers in the community through his grief. Co-housing also provides new possibilities to do things together, for example, invite a philosopher for a meeting in the community, as done in one of the cases, which is something one would normally not do alone. A practical need for families with small children is to share more and help each other in daily life (Marckmann 2009, Madsen 2012). This can be combined with a critical or vision/value-oriented choice on how to live daily life, in wanting new forms of living together, in trying out other ways of democracy, or in taking a sustainable approach to life (Marckmann 2009, Foldager and Dyck-Madsen 2002). Therefore, co-housing is 'both a housing form and a lifestyle' (Williams 2008).

Differentiating Co-housing in Designing Types

The above analysis of the spatial dimensions points towards that there are common denominators for co-housing. However, how can the diversity of co-housing be understood and synthesised? For this, I propose grouping different models or traditions into three *designing types* of co-housing. The use of types, in architectural debate are often oriented towards the physical layout of specific design elements and ideas (e.g. Unwin 2017), whereas the method of using the terminology *designing types* here is oriented towards what Unwin (2017, 201) terms 'the vernacular idea', which is how the whole of a community is designed. Types in this paper are connected to historical outlines and constructed from how co-housing is created as different methods of designing. Differentiating co-housing in types, takes the risk of being slightly simplifying, not showing all the aspects of uniquely built co-housing. The designing types are found in the co-housing literature and further motivated and constructed, based on, how the Danish cases in the empirical study are materially designed and lived in:

- 1) Architect-designed** (found in Fromm 1991, McCamant and Durrett 2011, Vedel-Petersen, Jantzen, and Ranten 1988, Williams 2005, Fromm 2000),
- 2) Retrofit/rebuilt** (found in Sanguinetti 2015, Ganer 2016, McCamant & Durrett 2011, Fromm 1991, De Jorge Huertas 2018),
- 3) Self-built eco-communities developed as lot models** (found in Fromm 2000, Marckmann 2009, Gram-Hansen and Jensen 2005, Jensen 2001, Martinussen 2010, Elm and Dilling-Hanssen 2003, McCamant and Durrett 2011, Meltzer 2005, Sanguinetti 2014).

The Danish literature tends to engage with either eco-communities or architect-designed co-housing, which are sometimes combined with retrofit co-housing (e.g. Marckmann 2009, Vedel-Petersen, Jantzen, and Ranten 1988, Gram-Hanssen & Jensen 2005), whereas Anglo-Saxon literature tends to deal with architect-designed, eco-communities, and retrofit co-housing in the same texts (e.g. McCamant and Durrett 2011, Meltzer 2005, Fromm 1991, Fromm 2000). In accordance with this and with Marckmann et al. (2012, 417 building on McCamant & Durrett 2011) suggesting that eco-communities are a subgroup or a subset of co-housing, eco-communities are here treated as a type of co-housing. Some cases are, in reality, crossovers of two or even three types, which can be combined in different possible variables ways (Table 1). Each spatial dimension will next form the basis for analysing the different designing types of co-housing. Through viewing co-housing from the perspectives of spatial dimensions and designing types, a matrix is created as an analytic tool to explore the concept of co-housing.

Architect-designed Co-housing

One designing type is the case in which a co-housing group in the beginning of the design phase contacts an architect who designs the project from scratch, with the group, after having helped the group prioritise their needs. With the trend in architecture of building low-rise clusters, combined with the wish for more togetherness, the Danish concept of co-housing was born in the late 1960s - early 1970s. This way of designing had a great influence on the further development of co-housing (Nygaard 1984, McCamant and Durrett 2011). Architect-designed co-housing can, however also, be high-rise blocks with common facilities on the ground and/or top floor, which is typical in cities, such as the development of *kollektivhus* in Sweden and Finland, and a feature of the Danish *kollektivhuse* developed in the first half of the 20th century (Vestbro and Horelli 2012, Korpela 2012). Today, new city-co-housing in larger Danish cities has emerged, such as Thomas B. Thrige and several others are to come (e.g. Urbania, Den 3. Revle, Generationernes Byhus).

Vision- and value-oriented dimension

From the collective movement of the 1960s, the first architect designed co-housing communities, Sættedammen (built in 1972), and Skråplanet (built 1973-74), had ideas and utopian visions about changing the family ideal from a patriarchal one to a non-hierarchical one. In this vision, children had a voice, the living conditions should be for children, and all adult members should be like parents to the children (Illeris et al. 1997, Marckmann 2009 both citing Bodil Graa, Politikken April 1967). Men and women should have equal rights and share workloads in the households (Vestbro and Horelli 2012, Vestbro 2000). The Sættedammen group, naming themselves 'the commune group' in 1968, were linked in the process of establishing to the group of Skråplanet formed in 1964 by the architect Jan Gudmand-Høyer (Illeris et al. 1997). In the architect-designed type, the visions and values of how to live together

are discussed and planned in coordination with, how the physical structures are designed for social contact. A representation of the architect-designed type, Jystrup Savværk from 1983, was designed by Vandkunsten Architects, and is an integrated structure in split levels, where the 21 dwellings are connected to the common house by a glass-roofed street (Fig. 2). The visions were from the initiating group on the social aspect of living; the families wanted to live together yet have room for privacy.

Organisational dimension

Jystrup Savværk is based on the cooperative (andelsbolig) financing model and is located in the village of Jystrup on a former sawmill plot. A member of the community, who has been living there since 1983, indicates that, while the scheme was under construction, the initiating group discussed how to manage the social organisation of their coming everyday life in weekly meetings for one year, before moving into the co-housing. They decided to have consensus democracy and organised detailed systems of common dining six days a week and working groups with different tasks. Remarkably, this organisation still functions in the community, due to active residents taking care of managing the community. Jystrup Savværk is, in this sense, a well-organised community. The architectural design and organisation systems provide the settings that residents must accept, as there is not that much room left, for residents in the architect-designed type to reorganise, rebuild, extend, etc.



Figure 2. Representation of architect-designed type, Jystrup Savværk: 21 dwellings, integrated structure in split levels, with glass-covered street.

Relational dimension

When visiting Jystrup Savværk, they had a salsa-party. The kitchen group was hard at work cooking a tasty meal and doing the dishwashing afterwards. Early the next morning, there was the sounds of somebody cleaning the common house. Three very efficient people in a working group were responsible that morning. Committing to communality, engaging in common activities and duties, and building relations, seems to be at the core in Jystrup Savværk.

Different dwellers spoke spontaneously, during the party, about the challenge of keeping the balance between communality and privacy. One family moved out, first back to Copenhagen, then back to stay in the village, to get more privacy, yet still be close by the co-housing. As part of the social contact design, from the street, a glimpse through the windows into the kitchens of the dwellings is possible. Therefore, people use curtains or blinds to signal, whether they want privacy or social contact. Jystrup Savværk seems a large generator of communality, where the dwellers are aware of keeping the balance between social and private life.

Physical dimension

The physical dimension is designed for social interaction. Low-rise clusters or one and a half to two storey rows that are placed around or in connection with a common house, are typical in Denmark (Andersen 1985). Glass-covered streets are another option, like Jystrup Savværk, to connect the dwellings with the common house, so that the connection is more direct, and residents do not have to take on footwear and jackets in the wintertime. Private units are coupled to semi-private and common areas within the housing project.

Rebuilding or Retrofitting Existing Stock

Reuse of existing building structures is another possible designing type (Sanguinetti 2015, Ganer 2016, McCamant & Durrett 2011), created in different ways, for example, by retrofitting (i.e. just moving into the houses and making them fit), refurbishing or completely rebuilding, sometimes in combination with building new structures.

Vision- and value-oriented dimension

Retrofitting has a history dating back to the late 1960s anti-authoritarian critique, giving rise to the Thy-lejren camp, and the 'free town' of Christiania², as well as young people and families settling in communes (Thörn, Wasshede, and Nilson 2011). The communes developed quickly as young people and families moved into old villas or other building types, and in 1979, there were approximately 10,000 communes in Denmark (Nygaard 1984). Thy-lejren (1970) started out as a so-called 'free camp': a place for anarchistic speeches, provisional building structures, and experiments with new ways of living. The effect of Thy-lejren continued with a group of people, who bought some old industrial buildings and land in 1971. By re-using these old structures, they built up a new community called Toustrup Mark, which initially was characterised as a commune with the vision of changing from a patriarchal family structure to a collective non-hierarchical structure. The settlers moved into the houses and made a constructing group, who established a common house and, over time, rebuilt the industrial structures, creating a builder culture and traditions together, but at the same time struggling with the social structures in the initial phase (El-Tanany & Christensen 2011, Jensen 1985, Nygaard 1984). Today, on their homepage, Toustrup Mark is characterised as co-housing (26 units). By squatting in an old military site, Christiania also emerged in Copenhagen, in 1971.

² Christiania is not co-housing, but rather a free town community, referred to for historical reasons.

Christiania is a free town with a do-it-yourself builder culture. Although drug problems and political resistance have threatened the community (Thörn, Wasshede, and Nilson 2011, 7-11), in 2012, Christiania was bought by the Fristaden Christiania Foundation (Bladt 2015). These communities lived utopian visions and responded to the struggles in the nuclear family in society of the 1960s-1970s, but as society changed, visions changed as well. The pragmatic side became more evident, and many communes became more co-housing-like over the years (Nygaard 1984). A representation of a retrofit designing type of today is the co-housing Nielstrup manor in rural Lolland (Fig 3). In an interview, a young woman says that they made the choice to live together with the older generation, because they do not want to be part of the ever-larger childcare institutions for their children, which have emerged in recent years, or the nursing homes for the older generation with insufficient staff. She thinks that people in these institutions are not treated on individual terms, due to the overwhelming pressure on caretakers, cutbacks, and mergers. She was a nursery teacher before and she has felt the pressure herself. She wants to look after her children fulltime, as her mother looked after her, when she was a child, and she wants to look after her mother, when she becomes older. This is a critical choice taken to live from visions and values about caring for each other across generations.



Figure 3. Representation of retrofit designing type: The manor of Nielstrup with four households having each a private dwelling unit combined with common areas, living across-three-generations.

Organisational dimension

Nielstrup comprises four households. The buildings are owned by the estate nearby and rented to the co-housing group. By renting, the organisational dimension is uncomplicated, as they can try out this way of living, without investing much money. However, they invest substantial energy in renovating, and caring for each other. The four households have

arranged to have four days of dining together by taking turns of cooking in a more informal way than in Jystrup Savværk, as they often switch days. Like the other designing types, retrofitting can be based on different tenure forms. However, residents often share the same address in small retrofitted co-housing and if ownership is shared, problems with how to pay taxes can be an issue that is difficult to tackle for the tax authorities (Degnbol 2018).

Relational dimension

The relational dimension at Nielstrup is about being together, helping and taking care of each other, and respecting privacy. The motivations for living in communality as well as the family ideals, have changed since the 1970s. Living across-three-generations in a family is a new orientation. As retrofit co-housing often comprises few households, retrofitting can be a solution, although there are examples of living across-three-generations of the same family in the other designing types. Some dwellers become aware of the balance between communality and privacy. For example, in Nygården, which is also a small extended family co-housing, the residents are changing from a commune to co-housing, where each household will have private dwelling units, to keep this balance.

Physical dimension

Because Nielstrup was previously a group home institution for youngsters, each household has own kitchen and bathroom; thus with a few alterations, the existing structures are retrofitted. When reusing existing structures, the physical dimension is tangible and visual in the formative stages of designing co-housing. It can seem easy to move into the buildings, as it take less time than building from scratch. A history of the place is present to build on when creating the identity of the place. In another retrofit/rebuilt co-housing, Bauneholm, a woman remarks that, she would not like to live in architect-designed co-housing, as it would feel too streamlined. However, the building is not made for co-housing: therefore, struggles with rebuilding/fitting the structures and organising for social interaction are part of this type (Sanguinetti 2015). There are examples in Denmark of old school buildings, gyms, manors, former industrial structures, etc., used for co-housing.

Self-built Eco-communities Developed as Lot Models

Optimising energy and resources from wind turbines or solar panels became a concept in some co-housing projects from the early 1980s (e.g. Sol & Vind 1981, Overdrevet 1980). Over time, this idea grew and with the self-builder concepts from Christiania and Thy-lejren and, inspiration from communities like Findhorn in Scotland, the eco-community movement was born in Denmark during the 1980- and 1990s. Eco-communities combined the traditional village and the co-housing movement from the 1970s- and 1980s (Elm and Dilling-Hansen 2003, Meltzer 2005). Eco-communities are oriented towards sustainable, holistic, and, in some cases spiritual living. However, they also have an important social focus of, sharing common facilities and, doing things together.

Vision- and value-oriented dimension

The visions of the 1990s eco-communities were concepts of building organic houses and infrastructures, experimenting with low impact living, recycling, and reduction of pollutants in the environment. Revitalising local life, so that work, family, and home could be closely related was combined with a wish for a better balance between nature and humans (Gram-Hanssen and Jensen 2005, 171). Eco-communities developed a self-builder culture with dwellings

dispersed in the landscape as detached houses and a centrally located common house. By constructing the communities own resource systems, an alternative is made to the large-scale energy- and infrastructure systems provided by society, which did not focus much on sustainability in the early 1990s (Jensen 2001, 130). Experimenting by designing unique houses on individualistic terms, using local materials, can be perceived as distancing from the use of prefabricated industrial components and streamlined building processes from the 1960s. A representation of this designing type is the first eco-community in Denmark, Eco-community Dyssekilde from 1990, located in Torup. The visions and values are oriented towards sustainability, as the binding key factor that keeps the community together and keeps it developing (Fig. 4).

Organisational dimension

Developed from what Fromm calls the 'lot model', which is a large site divided and sold as lots (2000, 97), these communities extend over time, due to the self-builder culture. Dyssekilde is organised as mixed tenures: private ownership, cooperative and renting. Most of the dwellings are privately owned. There are six housing groups, organised as associations nested in a large association for the whole community, using voting democracy. One housing group is rented apartments, built by the people of the community. A few houses have shared cooperative ownership. All land is shared, except for the lot under the base of the houses, which is privately owned. A small group of interviewed residents indicates that there are working groups for every task in the community, which are organised by the residents themselves. The community has rebuilt their old farm, which is now used for a kindergarten, a progressive free school and a community centre shared with the local villagers and owned by associations. A common house is used for meetings, and common vegetarian dining held once a week are primarily for the residents. However, only a third of the community attends the common dining regularly.

Relational dimension

In a survey of eco-communities in Denmark, Marckmann measures the social capital of eco-communities, getting a very high score (2009, 220). Dyssekilde forms an essential part of Torup, not only physically but also socially. Jepsen and Busck (2018, 6) found an active facilitating culture, where new initiatives are developed and implemented by villagers across Dyssekilde and Torup. Some people have their working space in the community as independent entrepreneurs in different fields. In the housing groups, the residents have informal communality, socialising and helping neighbours. Maintaining the common gardens between the houses is a task of the housing groups. As houses are sold, the newcomers have not had the same struggles with building their own houses, as the older generation. They live here because it is a nice place for families and children, but do not engage that much in common meetings, etc., because they involve instead in activities in the kindergarten and school, or other activities in Torup.



Figure 4. Representation of self-built designing type: Eco-community Dyssekilde, 82 households in six housing groups of different styles.

Physical dimension

Dyssekilde consists of 82 households in six housing groups in different styles: domes/round-angled houses, straw bale houses, houses with solar panels etc. A large willow purification works, with 30,000 willows were planted by the residents. As Dyssekilde is self-built, the physical dimension has developed over time as a budding growing organism. Eco-style creative houses, experiments, and grassroots ideals dominate, although a few architect-designed and standard houses are built with organic materials. Substantial energy is used in building, and different inhabitants state that, it can be exhausting living in a site hut or portable cabin, when doing it for years. For some, it even turns into a lifestyle. Being the first eco-community in Denmark, Dyssekilde has, along with Andelssamfundet i Hjortshøj, formed a model for many eco-communities.

Discussion: Matrix of Spatial Dimensions and Designing Types

On the background of combining literature synthesis and empirical work from Danish cases, an understanding of co-housing as a multi-dimensional concept was introduced. The spatial dimensions as common denominators and the designing types as differentiators is shown in the matrix (Table 2). The architect-designed type is from the very beginning created for social interaction and organised for the purpose of bridging privacy and communality as physical and social structures, whereas the retrofitted/rebuilt type is not designed for this purpose to begin with. The structures have to be changed and this happens over time, struggling with rebuilding. The design is not always as complete for social interaction, as is the case for the

architect-designed type. In the architect-design, every household has each their private unit and address, whereas in the retrofit that is not necessarily the case, as the same address and the ownership are often shared. A few retrofitted co-housing is large scale, like Svanholm, but most are smaller scales, and some convert from commune to co-housing over time to balance privacy and communality better. In the self-built type, the structure is based on a lot-model, which means that these communities can grow over time as an organism. Individual building units with manifold visual manifestations and designs every which way, are part of this method of designing a community. This sometimes means building for many years. Individuality and freedom are important issues, and what keeps the community together is the visions and values of sustainability and social living.

On one hand, the three designing types are quite different from each other: the design and the organisation activates different ways of living in co-housing. On the other hand, there are intersections and similarities in the spatial dimensions, indicating that all three types belong to the co-housing concept. Co-housing groups consider experience from existing co-housing. Therefore, learning from older communities for new communities is usual. By blending and designing from the experience across the different designing types, a recently built example; Karise Permatopia has a *comprehensive permaculture design principle*. Karise Permatopia encompasses 90 architect-designed dwellings, a retrofitted farm and rebuilt barn, which becomes a common house as a self-builder project designed together with professionals. The project is designed from permaculture principles in order to become self-sufficient with vegetables and creating recirculate systems for water, energy and waste (Fig. 5). It is designed for a sustainable sharing culture, togetherness, and by mixing three tenure forms including more people with lower income (e.g. singles, students, and artists).

Conclusion: Transformative Aspects

Although variety and complexity challenges, the concept of co-housing, the concept comprises common denominators theorised through four spatial dimensions, whereas the differentiators were synthesised in three designing types. Co-housing is materialised visions and complex housing systems. Bridging private dwellings with common facilities so that the dwellers have space for both privacy and communality is at the core in the co-housing vision. This is done by establishing vision - and value- oriented, organisational, relational, and physical dimensions. Co-housing function through the maintenance of everyday formal and informal practices. Being part of a co-housing community enhances the sense of belonging through all four interconnected spatial dimensions.

Because the models of co-housing and reasons of living together change, the concept seems to comprise transformative aspects. As seen through the historical change in co-housing, presented here as designing types, the reasons for engaging in and methods of designing co-housing have transformed. Making visions and values together and trying out new ways of living, are evident in all three types. In the architect-designed type, from the 1970s, it was about changing the family ideal from a patriarchal one to a non-hierarchical one and living together having privacy and communality in a structural manner. In the retrofit type, it was also a vision of changing from a patriarchal family structure to a more commune like non-hierarchical structure, where building and social structures were more loosely developed over time. In the 1970s, people in communes and co-housing dissociated themselves from social norms that supported patriarchal family patterns, whereas today social norms and boundaries have changed, as there is more equality between genders and family members. The nuclear

family is today considered an ideal, where the children belong to the parents followed by full responsibility, protecting this family ideal that is somewhat perceived as fragile (Marckmann 2009, 169). A high divorce rate and demographic changes challenges family patterns in many countries. In Denmark, 37 different ways of being a family have been reported (Statistics Denmark 2012). Single living and loneliness are another challenge. Due to centralisation and cutbacks in Danish kindergartens and childcare, as well as nursing homes for elderly, institutions have grown ever larger in size, which challenges individual care. Living across-three-generations is a new possibility for young families and seniors.



Figure 5. Comprehensive design principle: Karise Permatopia under construction with 90 architect-designed dwelling units, retrofit, and self-built common house.

In the self-built type, it was sustainable design and living that was the glue of the alternative vision, balancing humans and nature, while self-building on individualistic terms. As agriculture has become increasingly industrialised, food supply has become a hot issue, and self-sufficiency is an ideal for many new co-housing initiatives. Today, new ways of designing co-housing emerge from what could be termed *comprehensive design principles*, mixing the designing types. Designing and organising from comprehensive principles is a way to overcome the problems with self-building, heading towards self-sufficiency, while developing ways of handling nature through permaculture designs.

The fieldwork was undertaken in Danish cases. However, the findings are applicable to other co-housing. In the US, there has been a parallel development with important effects from Danish co-housing (Fromm 2000, McCamant and Durrett 2011). Due to this inspiration, Danish co-housing ideas are used in a number of countries. For example, co-housing projects in Spain

are currently using parts of the Danish cooperative model (Larsen 2018, Brysch 2018). Co-housing is normally designed in a creative, participatory, and self-organised process although, it can be and often has been in collaboration with different institutional actors in hybrid forms of bottom-up and top-down approaches. Today, new enterprises emerge from a top-down approach. Co-housing can therefore be expected to develop further in this direction. Building up a group is essential in these projects, including the dimensions of shared vision and values, self-organisation, and social relations.

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Table 2. Matrix of spatial dimensions and designing types of co-housing. *Designing types:*

<i>Spatial dimensions:</i>	Architect-designed	Retrofit/rebuilt	Self-built Eco-communities
Visions & values	<ul style="list-style-type: none"> Bridging privacy and communality 1970s: non-patriarchal family ideal Now: modern nuclear family ideal Intergenerational living Equality in decision making Sustainable living (for many, not all projects) 	<ul style="list-style-type: none"> Bridging privacy and communality 1970s: non-patriarchal family ideal Now: modern nuclear family ideal Intergenerational living (sometimes across same family) Equality in decision making Sustainable living (for many, not all projects) 	<ul style="list-style-type: none"> Bridging privacy and communality Balance nature-humans, ecology Modern nuclear family ideal Intergenerational living, communities open to local interaction with surrounding society Equality in decision making Sustainability in all aspects
Organisational	<ul style="list-style-type: none"> Building from scratch, designed and planned with an architect Private ownership, cooperatives, rental or mix of tenures Self-organisation: associations, working groups Non-hierarchical: common meetings for highest level of decision making 	<ul style="list-style-type: none"> Retrofitting/rebuilding/extending Renting, private ownership, or cooperatives, but small communities often same address Self-organisation: working groups Communes converted into co-housing Non-hierarchical: common meetings for highest level of decision making 	<ul style="list-style-type: none"> Developed from lot model, self-building Private ownership, cooperatives, some rental, mix of tenures Self-organisation: associations, working groups Often shared land in rural zones, recirculation infrastructures Non-hierarchical: common meetings for highest level of decision making
Relational	<ul style="list-style-type: none"> Social capital and relations Common dining on regular basis Working groups, social structures, care for each other Balance social life and privacy Participatory design process 	<ul style="list-style-type: none"> Social capital and relations Common dining on regular basis Working groups, social structures more loose in initial phase, care for each other Balance social life and privacy Process of restructuring building design 	<ul style="list-style-type: none"> Social capital and relations Common dining on regular basis Working groups, social with locals, care for each other Balance social life and privacy Entrepreneurs working in different arenas of ecology or self-development, individuality
Physical	<ul style="list-style-type: none"> Architect designs: Low-rise, clusters, glass-covered streets or high-rise structures with a common house centrally located Social contact design: design for social interaction; private, semi-private and common areas, sometimes public areas Sustainable building (for some projects), recycling and energy saving 	<ul style="list-style-type: none"> Retrofit of existing structures: a history of place: own creative designs and experiments Reusing/optimising buildings/energy saving A common house/rooms centrally located, private, (semi-private) and common areas Rebuilding the structures for social interaction and privacy over time 	<ul style="list-style-type: none"> Sustainable building, outlined as a lot model: Individual creative eco-designs and experiments Detached self-built houses or unit built prefab houses in sustainable materials or architect-designs Common house centrally located, private, semi-private, common and public areas Community extending over time, growing organism Energy saving- and recycling systems

