Exploring social system barriers and enablers in Dutch collaborative housing, using Rogers' diffusion of innovations framework

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Fred Sanders
Delft University of Technology, Department of Urbanism
F.C.Sanders@tudelft.nl

Gerard van Bortel
Delft University of Technology, Department of Management in the Built Environment
g.a.vanbortel@tudelft.nl

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Abstract

In recent years collaborative housing has developed into a housing typology for a wide range of households seeking housing solutions that are not offered by mainstream providers. Collaborative housing is very divers, but initiatives share the central similarity that people support each other in creating their living environment together and [often] share facilities together. Because collaborative housing projects are resident-led, there is a need for easy access to knowledge and research about other collaborative housing experiences. Unfortunately, the institutes possessing this knowledge are often as fragmented and diverse as the collaborative housing initiatives themselves. The authors contend that this fragmentation hampers the diffusion of collaborative housing. An analysis of the Dutch collaborative housing initiatives shows that this fragmentation hampers information exchange and learning processes. Using Roger's framework of 'Diffusion of innovations' this paper explores how national and international knowledge networks and shared information resources could support the adoption of collaborative housing.

Keywords: collaborative housing, cohousing, knowledge exchange, diffusion of innovations, policy review

1. Introduction: The collaborative housing landscape

Collaborative housing is a small but developing societal phenomenon of growing importance for the quality of city areas. In recent years, collaborative housing has developed into a diverse housing topology for groups and individuals that, with mutual support address, their housing needs. These initiatives are often seen as a contribution to the livability of very diverse surrounding urban, suburban and rural areas (Sanders, 2014). Collaborative housing initiatives deliver a diversity of positive contributions to the quality of living in general, to the people participating and to local communities. Collaborative housing projects offer new attractive meeting places in a positive socially cohesive context for people visiting these communities. Additionally, these initiatives provide in diversity of housing options for diverse target groups (Tummers, 2017) (Czischke, 2017).

Collaborative housing is an umbrella term for numerous of small scale bottom-up organized housing initiatives (Czischke, 2017). Housing needs vary, and so do collaborative housing solutions. Consequently, collaborative housing is divers and fragmented, can be found in ownership and rental sectors, and includes low-income and more affluent households. Solutions include projects with shared facilities or only shared responsibilities. Projects can emerge from independent grassroots initiatives or can be supported by others such as social housing providers. Collaborative housing solutions can

look strikingly different from main-stream housing, such as Tiny Housing, or can be indistinguishable from the average existing housing stock.

As collaborative housing entails a diversity of initiatives, the availability of experiences and knowledge generated on these initiatives is divers too. It includes resident- and community led housing initiatives, taking a wide variety of form, including Community Land Trusts (CLTs), co-housing, different forms of self-organized housing, resident cooperatives, experimental work-life communities, ecological housing communities, new settlements based on (local) community asset ownership and self-building initiatives [ENHR 2018, p. 4]. Consequently, there are numerous different forms of collaborative housing worldwide. The central similarity between these initiatives are the grass roots origin and the mutual support of people -not being housing or urban professionals- to address housing needs together, share caring and maintenance activities and by socializing in togetherness.

Defining collaborative housing
When defining collaborative housing more precisely, one must take into account that the traditionally the term 'cohousing' was a more widely used term with many similarities to collaborative housing. The collaborative aspect of grass-root housing initiatives can be described on multiple levels as different definitions in use show. A wide-spread of definition of 'cohousing', introduced by the 'Cohousing Association of the United States', for instance, focuses on the collaboration of the participants. This definition highlights living together in a sustainable way, with actively engaged members by sharing facilities, worked out as:

'Cohousing communities are intentional, cohousing neighborhoods created with a little ingenuity. They bring together the value of private homes with the benefits of more sustainable living. That means residents actively participate in the design and operation of their neighborhoods, and share common facilities and good connections with neighbors. All in all, they stand as innovative and sustainable answers to today's environmental and social problems.' (www.cohousing.org).

For the Dutch cohousing organization 'Centraal wonen' (established in 1977) sharing housing facilities such as a central kitchen or washing facilities is an important issue to distinguish cohousing from other housing options (www.lvcw.nl). Compared to this broad definition of 'cohousing', the one used by the USA Cohousing Association is more focused:

'Cohousing is a kind of housing by which the residents choose consciously to live with each other in a way that each household has its own home, but shares number of facilities and rooms. A housing project provides participants opportunities to development personally through mutual support and emancipatory actions.'

The concept of collaborative housing has largely replace cohousing as the broad umbrella term, and includes a bandwidth of more narrowly 49defined grassroots housing initiatives, including cohousing. In this paper we use Fromm's and Czischke's perspective on collaborative housing as: 'an umbrella term for a variety of collective self-organised forms of housing, which is 'wide enough to encompass all international variations' (Fromm, 2012, p. 364). This definition also emphasizes the collaborative nature of the relationships that residents have in this type of housing, both amongst each other and with a variety of external actors" (Czischke, 2017). In addition, this paper signposts not only the wide variety of external actors involved, but also the diversity in the nature and scope of the collaboration, ranging from light and informal to intense and formalized, and also the various thematic forms of collaboration, such as environmental sustainability, and social cohesion and mutual support.

Collaborative Housing support organizations and networks
This paper does not focus on individual collaborative housing initiatives, but on 'umbrella' organisations and supporting networks that facilitate collaborative housing initiatives. The first initiatives were established in the early 1990s. One of the oldest collaborative housing communities started around that time in Davis, California USA. Since then collaborative housing projects can be found in the Western world in many countries with concentrations in Denmark, the UK, the Netherlands, and in the states of California, Colorado and Massachusetts at the USA counting. In total, hundreds of initiatives can be found. Most countries have overarching support organizations and networks. These initiatives have diverging goals, and so do their facilitating and advisory activities.

Some of these initiatives have developed their own supporting, back-office, organizations or are hosting mini-umbrella organizations promoting specific themes or focusing on specific regions. Understanding of these supporting collaborative housing initiatives is limited. Information on these initiatives is often difficult to find.

This paper explores if Rogers' diffusion of innovations framework can increase our understanding of the criteria influencing the success of organisations and networks supporting collaborative housing initiatives. The following steps are taken to achieve this aim:

1. Following Rogers, key elements of his innovation diffusion framework are introduced and summarized (Section 2);
2. These key elements are connected to the characteristics of the collaborative housing domain (Section 3);
3. In Section 4 we introduce an overview of collaborative housing support initiatives in the Netherlands and several international networks;
4. In Section 5 characteristics of these initiatives are -tentatively- positioned in the framework developed in Section 3;
5. In the conclusions (Section 6) the paper presents acquired insights. In the discussion (Section 7) we reflect on the caveats in this research and suggest possible future research.

2. Research framework

Research question
The diversity of collaborative housing projects is considerable, as are the institutes with knowledge on collaborative housing. These collaborative housing institutes and support networks have frequently emerged out of collaborative housing projects to provide mutual support. This led to fragmentation of knowledge, possible limiting the ability for growth of collaborative housing as a mature tenure in national housing systems. Considering the societal benefits of collaborative housing this paper will therefore explore the following research question:

How can collaborative housing network organizations increase their contribution to the diffusion of collaborative housing.

Research scope
To answer this research question this paper explores, using Rogers innovation diffusion theoretical framework (Rogers, 1961/2003), if (and how) networks can support the diffusion of collaborative housing solutions. The research is based on a review of recent collaborative housing literature and the working knowledge of the authors on collaborative housing networks. The paper focusses on the Dutch collaborative housing context, whereby European and global collaborative housing networks active in the Netherlands will be taken into account.

Theoretical framework

Rogers theorized the diffusion of innovations in his seminal book '*Diffusion of* Innovations' and explored the factors influencing the diffusion of products and ideas (Rogers, 1961/2003). Rogers has a background as sociologist, although his work is often used in the marketing of products and services. Rogers used a broad definition of what innovations entail. He considered an innovation something that, in the eyes of the people who deal with it, is considered to be new. Innovations are context specific. Something that is very common in one country can be a real innovation in another. This invites the application of the theory on the societal phenomenon of collaborative housing, knowing that the emerging and growth of collaborative housing could be seen as a 'societal innovation'. We will explore under what conditions collaborative housing network organizations facilitate the diffusion of collaborative housing practice growth by using Roger's framework.
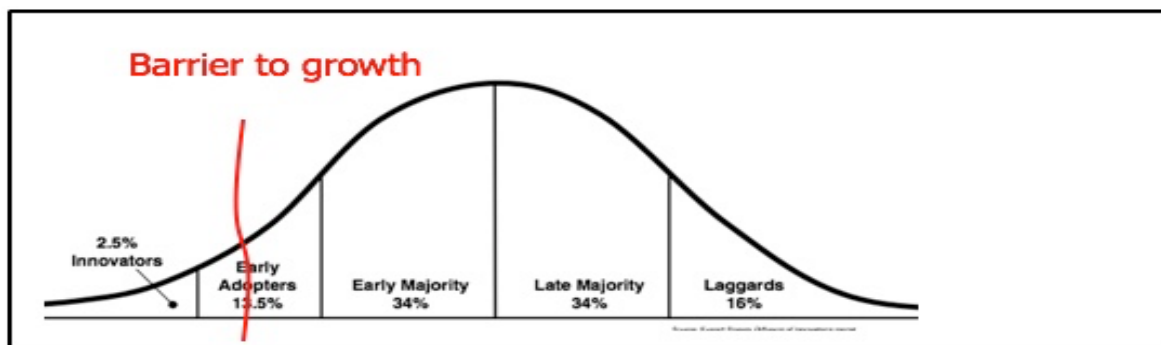

Figure 1, Model 'Diffusion of innovations' with transition barrier (Rogers, 1961/2003).

Rogers distinguishes five stages in the diffusion of innovations (see Figure 1). It is a fair assumption that collaborative housing is in its pioneering stage (phase 1) heading to reaching early adaptors (phase 2) and then be confronted with a 'Barrier to growth'. Rogers contends that four elements influence sledging this barrier through the diffusion of new ideas: the innovation itself, communication channels, time, and the social system. This diffusion process depends heavily on human capital.

In this paper, we will analyze the characteristics of collaborative housing knowledge exchange hubs and explore the diffusion of innovation generated by these hubs.

Rogers defines diffusion as the process by which (1) an *innova*tion is 2) *communicated* through certain *channels* (3) *over time* (4) among the members of a *social system*. We will define these elements and tailor them to the domain of collaborative housing. Table 1 contains a summary of the four main elements from Rogers' framework

Table 1, Key elements of innovation diffusion according to Rogers

Elements	Definition	Examples
Innovation	An innovation is an idea, practice, or object that is perceived as new by an individual or other unit of adoption.	
Communication channels	The process by which participants create and share information with one another in order to reach a mutual understanding.	• Mass media • Social media • Interpersonal communication
Time	Time between first knowledge of an innovation and final adoption (or rejection)	• *In the context of this study we regard 'time' as an outcome variable, not an element directly determining the diffusion of an innovation.*

Social system	A set of interrelated units that are engaged in joint problem solving to accomplish a common goal. The members or units of a social system may be individuals, informal groups, organizations, and/or subsystems	• Member characteristics (including level of homophily) • Level of formality / Informality • Communication structures and pattern • Social system norms concerning the adoption of innovations • Social system roles (opinion-leadership, change agents)

Source: Rogers (1962) pp. 11-20

3. Rogers' framework applied to the collaborative housing domain

In Table 2 below we have added various aspects to the four elements of the Roger's framework to better connect the generi model of Rogers to the specific domain of collaborative housing.

COLLABORATIVE-HOUSING UMBRELLA ORGANIZATIONS			
Innovation	Up-scaling	The organisation is focussed on upscaling an existing innovation. *Focus on 'Early adaptors' / 'Early majority'*	CLOSED
	Renewing	The organization is focussed on the generating new innovations and improving aspects of existing innovations. Exploring new technical opportunities and housing solution *Focus on 'Innovators'*	OPEN
Communication	Results	The organization is focussed on communicating tangible project results and the success of the projects and processes of the own organisation. *Focus on talking, and on goals of the own organisation*	BINDING
	Knowledge	The organization is focussed on the increasing the knowledge and competences of participants in collaborative housing projects *Focus on listening and goals of participants*	BONDING
Social-system	Introvert-Extroversion	The organisation focuses on the support of collaborative housing project in a 'transactional' way. *Focus: short-term*	BINDING
	Coupling	The organisation is focussed on long-term network relations *Focus: long term*	BONDING

Table 2, Rogers framework connected to the collaborative housing domain framework

Based on these elements we have developed a matrix consisting of two axes (see Figure 2 below). The horizontal axis represents the **target-setting orientation** of collaborative housing umbrella organizations. On the left side of the axis are **binding** organisations focusing on a specific theme and

aimed at attracting like-minded individuals and organisations by proudly promoting previous successess. On the right side of the axis are initiatives focusing on **bonding** initiatives with an open attitude attracting individuals and organization by incorporating new ideas and goals and combining them with existing goals.

The vertical axis represents the **innovative drive**, ranging from organisations (top of axis) with a **closed** focus on the conservation (or upscaling) of the original focus of the organisation. On the other side of the vertical axis (bottom), organisations can be found with a more **open** focus, widening the scope to incorporate emerging social and ecological innovations. The two axes combined create a matrix with four domains (see Figure 2). In Section 5 of this paper we will use this framework to position collaborative housing umbrella organisations.
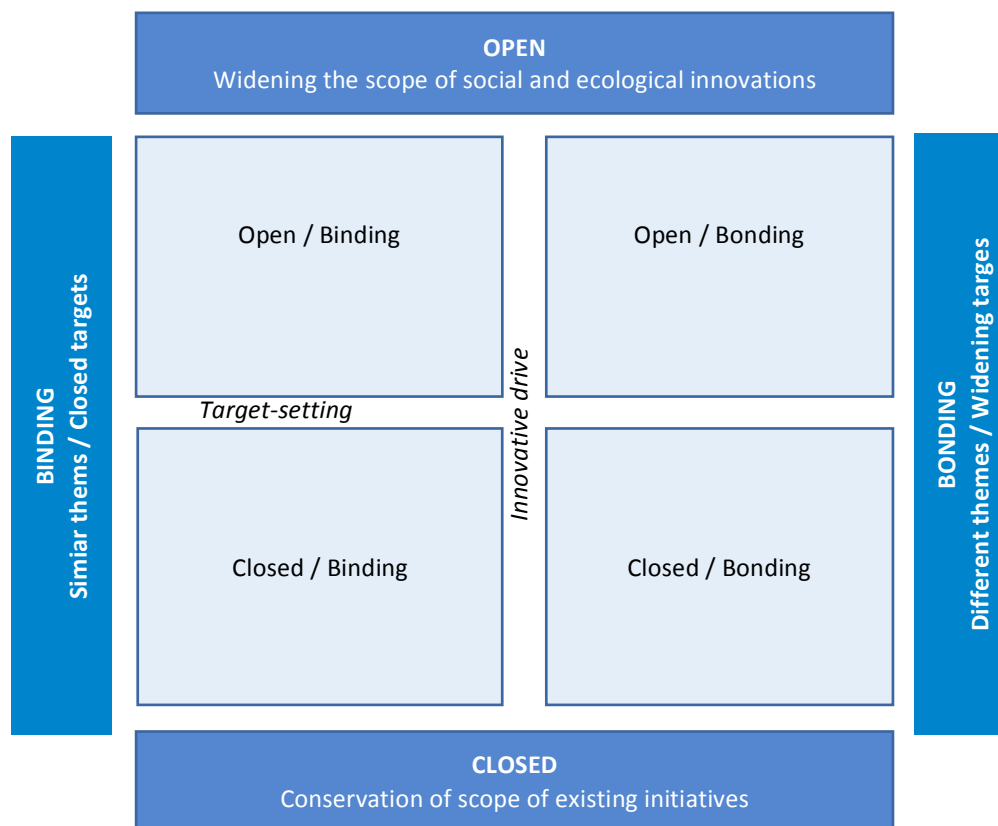
OPEN
Widening the scope of social and ecological innovations

BINDING
Simiar thems / Closed targets

Open / Binding

Open / Bonding

Target-setting

Innovative drive

Closed / Binding

Closed / Bonding

BONDING
Different themes / Widening targes

CLOSED
Conservation of scope of existing initiatives

Figure 2, Framework to classify collaborative housing networks

4. A Dutch collaborative housing networks overview

In the Netherlands the collaborative housing practice is divers, and diversely organized. The first initiatives started in the early 1990s. The first projects found their origin in the need of a minority of the Dutch population at that time to live with like-minded people in an ecological neighbourhood with sustainable housing, food gardens and within a strongly cohesive community of residents (Barton and Kleiner, 2013). Examples are Ecolonia in Alphen aan de Rijn (99 houses started in 1993) and Eva-Lanxmeer Culemborg (240 houses started in 1994 www.eva-lanxmeer.nl). These early projects found their knowledge mostly within the educational NGO 'Kleine Aarde' for sustainable living, founded 1974 in the Dutch city of Boxtel (translation: 'Little Earth' www.kleineaardenetwerk.nl).

Over the years, various collaborative housing projects arose. The diversity of initiatives increased and new educational and coordinating network organizations emerged. Some of these projects and network organizations did not succeed and terminated. The diversity stayed and continues to develop. From a helicopter view, four kinds of collaborative housing categories can be identified in the Netherlands: 1) group initiatives to live sustainable or ecological, 2) groups with their focus on social living together, 3) initiatives for building together to create more personal living for an affordable price and 4) creating special care housing for elderly. Even within these broad categories projects differ in form and size.

One of the oldest thematic non-commercial collaborative housing network organization is the Dutch 'Centraal Wonen' association, already mentioned. This institution promotes intergenerational living of young families and older people, with shared facilities and mutual caring programming. The idea is that older people can look after children or the washing machine when parents work, to be given care and company in return. 'Centraal Wonen' still has a nationwide active network, although the number of yearly started projects has diminished over the years (www.lvcw.nl). Also in the collaborative housing domain housing preferences change over time. This probably explains that over the years new umbrella network organizations emerged and older organisations became less active. Most of these network organizations (old and new) are still active.

Summarizing and taking stock of these collaborative housing umbrella network organizations active in the Netherlands shows a divers field of initiatives. To gain insight in the characteristics of these network organizations and their mutual and external interrelations, the initiatives are divided into categories. The categories that are chosen characterize the kind of dominant drive of the network organizations binding the initiatives to the field collaborative housing. These are: 1) cooperative, 2) thematic, 3) commercial and 4) digital initiatives. Within these categories there are largely voluntary network organizations with members, and predominantly professionaly managed network organizations. Some are connecte to specific collaborative housing projects, that started in the Netherlands or other European countries, see Tables 3 and 4 respectively.

Cooperative network organizations	Thematic network organizations
1. Centraal Wonen www.lvcw.nl 2. Bond Precaire Woonvormen www.bondprecairewoonvormen.nl 3. Heidemij 'Kern met pit' www.knhm.nl 4. Tiny housing www.tinyhousingnederland.nl 5. Mens- en Milieuvriendelijk Wonen	12. Eco Collectief www.ecocollectief.org 13. Kilimajaro zelfbeheer www.kilimanjarowonen.nl 14. Ecodorp www.omslag.nl 15. Ecodorp (en) www.ecodorp.nl 16. Anders en actief en duurzaam Wonen www.andersenactiefwonen.nl 17. Cooperaties van Longo Mai www.longomai.nl 18. Erfdelers leegstaande boerderijen www.erfdelers.nl
Commercial consultancies	Informational websites
6. De Regie www.zelfbouwinnederland.nl 7. Bieb: www.bouwenineigenbeheer.nl 8. KUUB www.kuub.info 9. CPONH www.cpo-nh.nl 10. Building community www.buildingcommunity.nl 11. Sir 55 www.samenbouwen.nl (stopped)	19. www.nieuwbouw-nederland.nl 20. www.wikaza.nl

Table 3. The Dutch collaborative housing network organizations categorized in its diversity.

European network organizations that incorporate a focus on collaborative housing	International network organisations (outside Europe) that incorporate a focus on collaborative housing
a. Cultural villages of Europe www.cultural-village.com b. European Civic Forum www.civic-forum.eu c. Emmaus International www.emmaus-international.org d. European Federation for Living www.ef-l.eu e. ENHR www.enhr.net f. Housing Europe www.housingeurope.eu	g. One Planet Living Communities www.bioregional.com h. Fellowship for Intentional Communities www.ic.org i. Federation of Egalitarian Communities www.thefec.org j. Global Ecovillage Network (GEN) www.ecovillage.org k. Sustainable Communities Network www.sustainable.org l. Organic Farms (WWOOF) www.wwoof.net m. International Communes Desk x n. International Network for Urban Research and Action (INURA) x o. Kibbutz movement x

Table 4. European collaborative housing network organizations active in the Netherlands.

5. Identifying collaborative housing network clusters

Next step to answer the research question these network organizations are clustered in the diagram developed in Section 2, visualising the differences between these umbrella network organizations according to the connectedness of the internal relations: 'binding' [horizontal-axis left] versus ' bonding' [horizontal-axis right], and the long-term focus: up-scaling the existing activities [vertical-axis bottom] versus 'social and ecological innovation' [vertical-axis top] (See Figure 3). The umbrella network organizations are clustered in this diagram where they show concentrated similarities and these are given headings, see Figure 3 too.
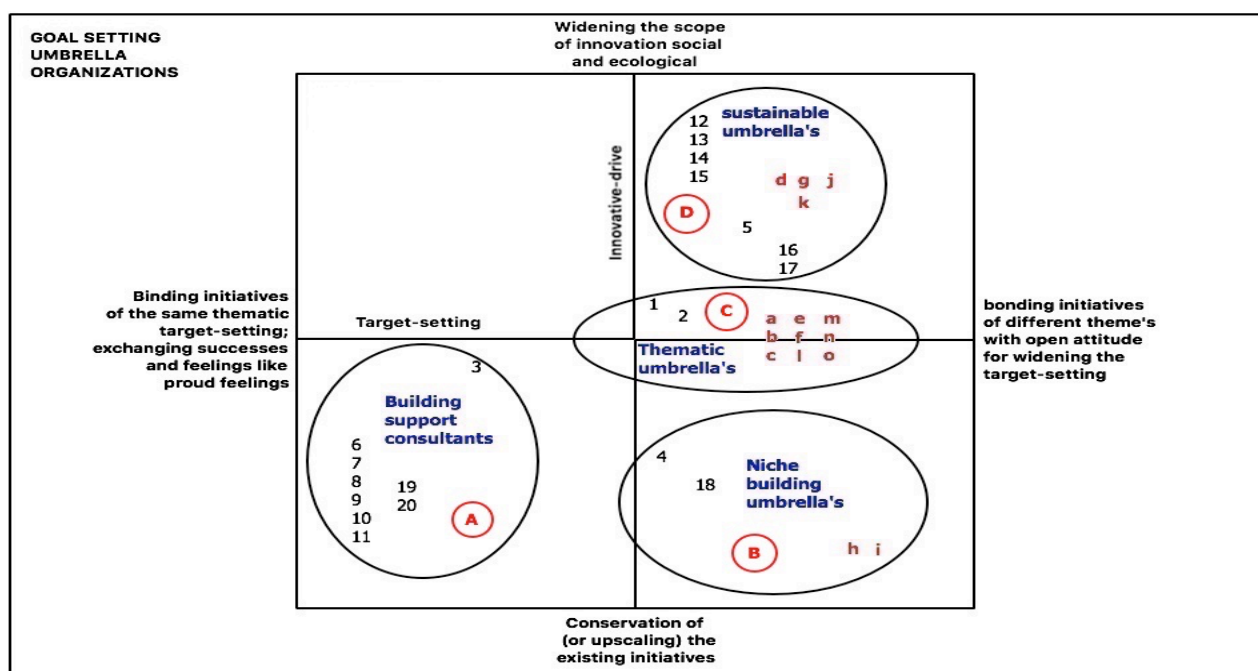

Figure 3. The umbrella collaborative housing network organizations differences made visible.

Figure 3 presents four dominant clusters of network organisations that will be discussed in more detail below:

A. **Building support consultants:** These network organizations mainly concern semi-commercials small enterprises established a part of a specific housing initiative or affiliated with an architectural enterprise. These organisations provide active support to collaborative housing initiatives or online support by managing a website with recourses and other facilities. Most of these organizations provide online resources for members only. These organizations support a diversity of collaborative housing initiatives where the dominant character is 'binding'. The most important motive is 'living together', more than being 'active together'. The organisations aim to increase the number of new initiatives. Their support to existing initiatives is more on demand and less focussed on pro-actively following developments. The number of network organizations has declined in recent. Now the Dutch economy is recovering rapidly, most of the volunteers that contributed to these organization have opted for paid employment. Consequently, organisations in Cluster A are less active and the Cluster is not expanding. Examples from the Netherlands: 1*) De Regie, Zelfbouw in Nederland* (see Table 3).

B. **Niche building umbrella organisations:** These organizations focus on niche collaborative housing initiatives such as 'Tiny Houses' and 'Egalitarian' lifestyle community living. Their function is 'bonding' these initiatives unless the great differences between individual initiatives. By 'bonding' the organisations promote the initiatives and act as their ambassadors. The number or organisations in this cluster is limited and has not increased in recent years. Examples from the Netherlands: 4) *Tiny Houses Nederland* and *18) Erfdelers Nederlandse Boerderijen* (see Table 3)

C. **Thematic umbrella organisations:** These organizations cover a wide variety of different motives for people to choose for collaborative housing, motives such as ecological living or lifestyle related and religious reasons. Many of these organizations work Europe-wide. The related network organizations show that they combine spreading their enthusiasm for new initiatives and innovation activities with a steady organisational base as a starting point. This cluster showed steady growth during the recent recession and continues to grow. Examples from the Netherlands: 1) *Centraal Wonen* and *2) Bond Precaire Woonvormen.*

D. **Sustainable umbrella organisations**: These organizations support housing initiatives related to sustainability goals. The most well-known form are the eco-villages. These network organizations, and the housing initiatives they support, are innovative in character and give priority to 'bonding' a great variety of participants. These organisations need to incorporate changing sustainability goals and initiatives in order to grow and attract new participants. Examples from the Netherlands:

Analysing the network organizations of collaborative housing
Using the four elements of Rogers diffusion of innovations framework as assessment criteria, the clusters of umbrella network organizations, presented in Figure 3 have been explored. What makes these organisations successful as vehicle of innovative diffusion (or not)? Therefore, the four clusters are given characterising keywords based on the generated descriptions, for the three elements of Rogers excluded 'time' because the analysis is about time related successes for all of these clusters, see Figure 3, and the vitality of these clusters is visualized in the 'Model of Rogers', see Table 5 below.

		Clusters			
		A	B	C	D
Innovation	Up-scaling	Processes	Quantitative	Diversity	Ecological
	Renewing	Quality	Quality	Quality	Development
Communication	Results	Mile-stones	Mile-stones	Thematic	Footprints
	Knowledge	Results	Quality	Developments	Innovations
Social-system	Extroversion	Minimal	Extrovert	Extrovert	Extrovert
	Networking	Light	Thematic	Meet & Greet	Tight

Table 5. The four clusters of collaborative housing network organizations characterized.

6. Conclusions

Based on the analysis of organisations and networks, using Rogers' diffusion network, initiatives belonging to Cluster C, show more vitality and a higher potential for further expansion, compared to the clusters A, B and D. What do collaborative housing network organizations in Cluster C do differently, in comparison to the other clusters? Firstly, cluster D is characterized by a social system that is 'extrovert' and 'tight'. The limited vitality of this cluster might be related to the resistance of Dutch people to the tightness of bonded 'social cohesion' networks, as concluded by Sanders (2014). They are in favour of the more open-ended 'social togetherness' (Sanders, 2014), as visualized with the vertical red line in Figure 5. Secondly, cluster C appears to be better able than clusters A and B to organize innovation and social interaction among participants by 'Meet & Greet' events. Clusters A and B focus instead on promoting quantitative and qualitative results of an existing initiatives, whilst cluster C embraces a diversity of themes and initiatives. Development and quality shows to be managed more low profile and indirectly in cluster C by stimulating enthusiasm among participants, as visualized with the circles in Figure 3. Due to the open-ended nature, organisations and networks in cluster C appear to be more engaging and inviting. This type of network organizations thus offers a healthy basis for 'collaborative housing' initiatives to be supported, to help start new ones. A recent example is the Collaborative Housing Working Group established in 2015 as part of the European Network of Housing Research (ENHR). This Working Group want to be a knowledge ex (ENHR, 2018). Strongly connected to this Working Group Collaborative Housing Knowledge hub (Co-Lab Research[1]) supported by TU Delft. These initiatives are strongly linked to academic knowledge, but also have strong and growing connection with practice.
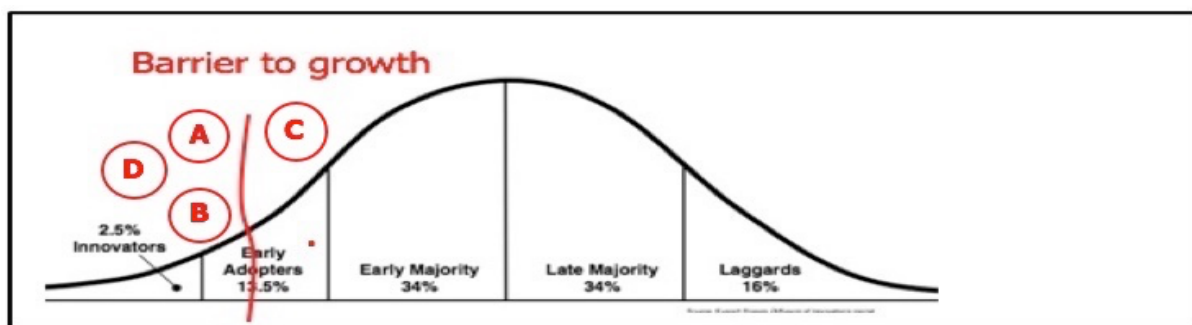

Figure 4. The vitality of the four collaborative housing clusters visualized.
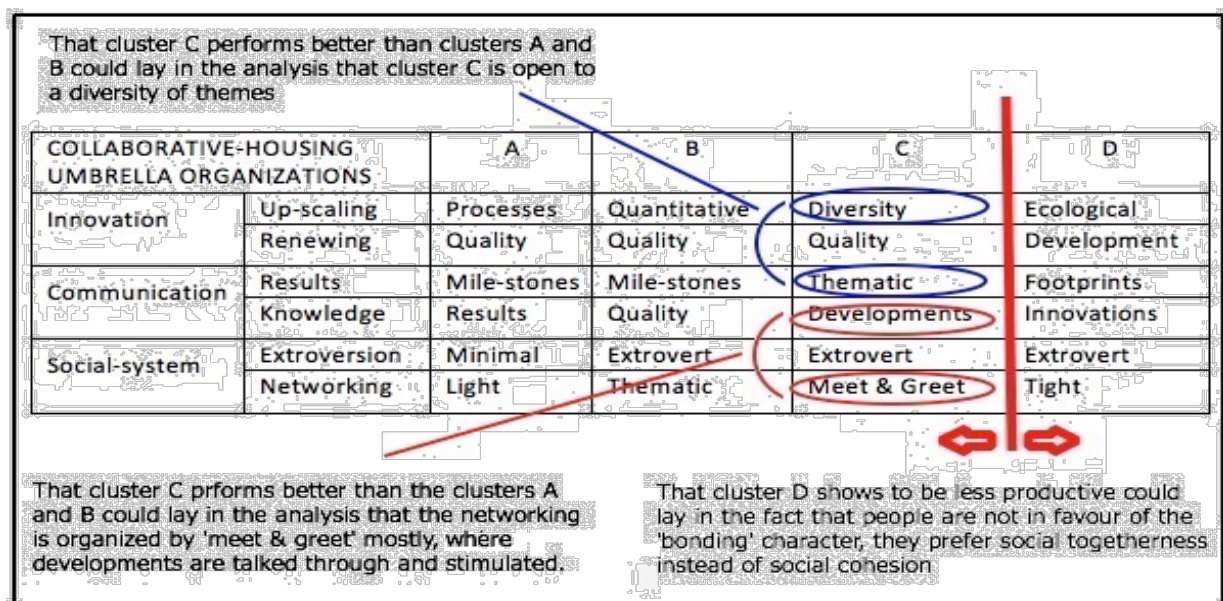
That cluster C performs better than clusters A and B could lay in the analysis that cluster C is open to a diversity of themes

COLLABORATIVE-HOUSING UMBRELLA ORGANIZATIONS		A	B	C	D
Innovation	Up-scaling	Processes	Quantitative	Diversity	Ecological
	Renewing	Quality	Quality	Quality	Development
Communication	Results	Mile-stones	Mile-stones	Thematic	Footprints
	Knowledge	Results	Quality	Developments	Innovations
Social-system	Extroversion	Minimal	Extrovert	Extrovert	Extrovert
	Networking	Light	Thematic	Meet & Greet	Tight

That cluster C prforms better than the clusters A and B could lay in the analysis that the networking is organized by 'meet & greet' mostly, where developments are talked through and stimulated.

That cluster D shows to be less productive could lay in the fact that people are not in favour of the 'bonding' character, they prefer social togetherness instead of social cohesion

Figure 5, Clusters compared

7. Discussion

This work in progress paper explored how Rogers' diffusion of innovations framework can help us understand the adoption of collaborative housing as a mature housing tenure. Whilst this framework clearly delivered additional insights, several questions for discussion and ideas to further develop this paper emerge, for example:

1. Is Rogers' diffusion of innovations framework a relevant lens to look at the development of affordable housing?
2. In this paper Rogers' concept of innovation diffusion was adapted to connect with the collaborative housing domain. The resulting framework needs to further conceptualised
3. This paper focusses on organisations and networks that support collaborative housing initiatives, not on individual projects. The authors regarded these 'hubs' as important elements in what Rogers calls the 'social system'. Is this a relevant perspective?
4. The paper is based on the working knowledge of the authors, accumulated in years of working in the Dutch social and collaborative housing sector. Additional literature review and empirical data needs to strengthen the paper. Authors are considering a round of in-depth interviews with a top 10 of Dutch key actors.

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