Can co-design and co-building help make collaborative housing more affordable?

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Summary

In Sweden, the housing shortage for vulnerable groups is extreme. Can co-design and co-building help make collaborative housing more affordable? Is it a possible way forward for young people and other vulnerable groups to get into the housing market? The present article, which is based on a transdisciplinary action research, examines the implementation of a co-design method aimed at attracting young people. The theories the co-design method is based on came largely from Alexander and Livingston, and the research questions were formulated as follows: What parts of the theories is the co-design method based on? How have the theories been integrated in practice? What results did the method have when implemented among young people? To sum up, there are a number of core values, deriving from these theories and earlier experiences, on which the co-design and co-building method rests. These values are crucial to the experience and to the method having potential of being scaled up. Many of the core values have been successfully integrated into the method, but several of them remain to be worked on. Among the latter are participatory calculation and offering clients standardization on as small a scale as possible. In addition, training architects to become codesigners is important, as is addressing to the need for 'community carpenters' and 'community engineers'.

Keywords: co-design, co-building, empowerment, community architect, housing market, vulnerable groups, young people, youths

Introduction and research question

Housing is a bottleneck for a range of issues: shelter, equity, societal integration and well-being (UN Habitat, 2014). In Sweden, there is an extreme housing shortage, especially for groups with a weaker economy (Sveriges Allmännytta, 2018). Older and younger adults, single-parent households, newly arrived migrants and students are especially affected (Boverket, 2020). Policymakers and planners do not seem able to manage the balance of power, and they continue producing plans that strengthen exclusion from the housing market for more and more groups in society (Baeten et al., 2015; 2017).

In various European countries, the physical, social and financial design, governance mechanisms and management practices of collaborative housing have delivered affordable and high-quality housing. In Sweden, affordable collaborative housing remains marginal due to numerous challenges in municipal procedures and processes, laws and regulations, markets and financing, dissemination of models and experiences, and processes within collaborative housing initiatives themselves (Divercity, 2021). Moreover, existing collaborative housing examples are scattered and largely for the more affluent (Scheller & Thörn, 2018). Still, Sweden is teeming with nascent initiatives for collaborative housing at different levels of maturity, and it is high time to shift our focus toward implementation and upscaling.

In that context, it is interesting to consider whether co-design and co-building can help make´collaborative housing more affordable. This is a research area with few existing scientific articles and those that do exist mainly examine this approach in developing countries.

There are exceptions, and they often concern the UK. For instance, Heslop (2021) described an experiment in which participatory action research was used as a method to overcome power inequalities in the design process and where joint learning was crucial.

Important to the origin of the concept of co-design is the Austrian architect Christopher Alexander and his US-based colleagues, who developed a 'pattern language' for design and applied it in many different contexts (Alexander et al., 1977a, 1977b). Although pattern language is well known and has great potential to tackle wicked problems such as the climate crisis, few researchers have analyzed the design theories and applied it in present time (Ricaud et al., 2021). There are some studies aimed at instrumental learning and streamlining of the design process, e.g., pattern-based coding engines (Bukovszki et al., 2021), but not many modern studies examining how co-design done with lay-people in the Western world works and the potential for upscaling such bottom-up driven housing.

The most interesting article in this regard comes from the Danish design researcher Galle, who studied Alexander's thoughts on beauty and delved into pattern language as a design theory (Galle, 2020). His theoretical analysis leads to development of definitions and concepts, but at the same time he thinks that "theories full-blown and mature science of architecture (or indeed design) is not yet available" (Galle, 2020:370).

There is another architect who developed an extensive co-design method, the Argentine Rodolfo Livingston, who was active for many years in Cuba, where he developed the concept of 'community architects' (Livingston, 1995). His work is well known in Latin America, a continent of pioneers in the field of co-building and research about it, but only two academic articles about him were found, written by the Canadian planning researcher Valladares (2013, 2017).

Our article contributes to the development by seeking knowledge about how co-design and co-building can help make collaborative housing more affordable. This is accomplished by analysing the implementation of a co-design method aimed at attracting young people. The theories the co-design method is based on derived largely from the work of Alexander and Livingston. The research questions for the present article were formulated as follows: What parts of the theories is the codesign method in use based on? How have the theories been integrated into the method in practice? What results did the method have when implemented among young people, especially considering that they belong to a vulnerable group with limited resources and have great difficulty entering the housing market.

> Our article contributes to the development by seeking knowledge about how co-design and co-building can help make collaborative housing more affordable.

Method and case study

Self-building occurs privately in both rural and urban areas, but interest in organised self-building for a group has historically often been associated with a general lack of housing or widespread shortage of housing for groups with limited financial resources. The extensive housing deficiency we have in Sweden today in 2022 is probably a key reason why interest in self-building is increasing. The situation was similar in the early 1900s, when there was both a housing shortage and a large amount of substandard housing (Hansson, 2009). This situation was behind the initiation of a 'home movement' (Egnahemsrörelse) – a national program aimed at providing the working class with affordable housing. In 1904, the state began to grant loans to self-builders, and municipalities allocated leased land. Between 1927 and 1976, 12,000 families in Sweden built their own houses in this way. The movement is described in historical documents as very successful (Volny, 1977). But why did it die out? And what can be learned from it? Could a 'home movement' based on an organised self-building system help people get a home even in our time, with the extreme housing shortage that exists today?

Process description of the case study

The social enterprise Egnahemsfabriken at Tjörn was initiated in 2018 to contribute to the development of affordable housing, especially for three vulnerable groups: young people, newly arrived refugees and the elderly. The research project 'Together we build' aimed at utilising knowledge from previous research projects, the goal being to spread knowledge about the innovative design method that Egnahemsfabriken had developed to young people. The co-design method (Stenberg, 2020) derives

mainly from the work of architects Rodolfo Livingston and Christopher Alexander. Their work will be described in the section Theoretical framework below. Egnahemsfabriken's version is not only a design method, but also aims to strengthen the participants, i.e., to contribute to their 'empowerment' so they will feel ready to build houses. To accomplish this, a strategy for 'building together' has been developed, where laymen and volunteers build under the supervision of professionals.

Our ideas was that, through young people, we would reach other young people. We developed a strategy whereby young people act as an 'engine' for attracting other young people who want to build their own homes. The strategy was based on a combination of 'learning by doing' and 'food as a magnet', the latter developed after several years of successful work with 'Food and Talk', which attracted both migrants and people born in the area. Another strategy, which was developed to attract young people, was the introduction of 'Construction Wednesdays' under the watchword 'integration through creativity'. During the warm half of the year, young people were invited to Egnahemsfabriken directly after school and could, with support, build things they wanted or contribute something that needed to be built. They were also offered pizza from the Neapolitan wood-fired pizza oven. The municipality's culture and leisure department was a supporter of this activity, and it continues even after the project ended. Through these activities, Egnahemsfabriken gained an expanded network of contacts with young people who could spread knowledge about the project as well, and it paid off.

The first summer, a group of ten young people learned construction by co-designing and co-building an outdoor kitchen together. The building weeks were preceded by a course in co-design, where eight volunteers tested the method practically through a role-play where the designed house was set out on the ground. Several of the volunteers were architect

students who came to learn a new way of working, and some of them participated as assistants during the building weeks. In parallel with the kitchen construction, some of the young summer workers learned film editing and together with a professional filmmaker helped make a film about the process (Kanvassfilm, 2020). Because the municipality participated in the project, the young people were able to do the work as a paid summer job, which gave them extra motivation. After the first summer, an evaluation of the process was carried out, the aim of which was to revise the strategy for next summer.

The second summer, the ambition was to continue building the outdoor kitchen, but as the strategy had proved fruitful, the level of ambition was raised: All participants wanted to achieve the goal of building a small home for a young person. It was thus the development and spreading of the co-design method that was in focus, and the feeling of increased power that it conveyed to young people through 'learning by doing', which prepared them to think about the idea of shaping and building their own home. Through social media, Egnahemsfabriken offered young people a chance to co-design their own small home, i.e., to participate in an organised design and building process, and the choice fell on a 15-year-old girl who wanted to build a home on her parents' property.

"What is a home for you?"
"A place you feel comfortable in, where you get peace and quiet, where you feel that you can be yourself."

(Interview with the 15-year-old)

The design process was carried out during two weeks in May 2021 and involved twelve young persons and project participants. It started at the place where the house would stand, as it is a basic idea that the place creates the house and not the other way around. The method implies that the professional designers help by offering their expert knowledge, but all decisions are made by the person who will live in the house. To spread knowledge about the design method, volunteers were invited to come, and most people who took part were architect students.

The three full-time weeks of building were led by Egnahemsfabriken's carpenters in collaboration with an architect student with special responsibility for successively making drawings, supervised by Egnahemsfabriken's architect. The building group consisted of the 15-year-old girl and her family, many volunteers from near and far, and again a group of municipal summer workers (around twelve persons participated plus project participants). The house was built in modules. At the end of the period, the framework for floors, walls and ceilings was ready for the half of the house that could be built at Egnahemsfabriken, and in September 2021 it was moved to the site. The foundation had then already been built there by the family and was ready for assembly of the frame. Shortly afterwards, a films about Ellen's house was completed (Kanvassfilm, 2021) and used for disseminating knowledge to politicians, officials and the general public. A popular science report in Swedish has also been completed to reach out to the public (Berglund et al., 2022).

During 2022 and 2023, the house is being completed on site. The family do the work themselves, to some extent with professional carpentry and architect support that they pay for themselves. Egnahemsfabriken supports certain aspects by organising co-building, where volunteers come to help and learn to build. The total cost of building materials has not yet been calculated, but it is estimated to be 340 000 SEK (30 000€) thus 9400 SEK per sqm (850€). This cost concerns materials and hence does not include labor, land, and water/sewer connection costs.

''When you are involved and co-design, it feels like then it becomes so much more, somehow.''

Youth in the Podd *Knack knack – Vägarna hem*

Empirical material

The table describes the collected empirical material. For the analysis, despite the transdisciplinary approach, to provide as rich material as possible, recorded material and written evaluations have only been available to the academic in the project. This has probably made participants more confident and interviewees more outspoken. For the same reason, the quotes in the present article are anonymous, being aware that, at the local level, it is common knowledge who the 15-year-old is. Regarding photos and videos, participants have given their consent to be visible to the outside world, and this material is used successfully for information dissemination. However, we photos and critical reflections separate to protect participants.

Type of empirical material	Documentation method	Number	Type of participants
Project meetings	written notes	38 meetings	project participants
Photos of the entire process	photos, public and internal	appr 1000 photos	all involved
Year 1:			
Film, the process of building the outdoor kitchen	public film	5 minutes	young people, volunteers, project participants
Podcast: *Knack knack – Vägarna hem* (Knock, knock – The roads to a home)	public podcast	44 minutes	young people
The young people's brief written feedback at the end of the first summer weeks	written	14 persons	young people
The young people's evaluation meeting at the end of the first summer weeks	written	14 persons	young people, project participants
Participants' brief written feedback at the end of the first year	written	7 persons	project participants
Year two:			
Film, the process of building a young person's house	public film	9 minutes	young people, volunteers, project participants
The young person's and volunteers' brief written feedback at the end of the summer weeks	written	14 persons	young people, volunteers
Participatory evaluation workshop for the second year	recorded	9 persons	project participants
Deep interview	recorded	1 person	the 15-year-old self-builder
Deep interview	recorded	1 person	civil servant, working in asylum reception, migrant

Theoretical framework for the co-design

The fact that the project was part of the call 'Turning research into practice – methods and tools' implied its aim would be to implement previous research results – a co-design method. This method originates from design theories developed by architects Christopher Alexander (1977a) and Rodolfo Livingston (1995), knowledge from which has been integrated with research on co-design and social inclusion developed at Chalmers Architecture (codesigncities.se) and combined with Egnahemsfabriken's experience of co-building and outreach to locals and migrants at Tjörn. The codesign method, in its first edition, is described in detail in the book 'Create your own home' (Stenberg, 2020). It was relatively comprehensive, and the evaluations showed that it needed to be compressed, for both financial reasons (the design process should in the long run be paid for by users) and empowerment reasons (the participants should be able to have a life in parallel and still feel strengthened by the process). As we were approaching young people, there was even more reason to slim it down considerably, and we went from 11 design sessions spread over 3 months, to 5 sessions completed in 2 weeks. As the time frame indicates, the method in this version does not come close to including content as extensive as both Alexander and Livingston advocate, however, we have focused on, in our context, important core values that each architect pointed out as important; these values will be described below.

Christopher Alexander's Pattern Language

Alexander and colleagues aimed at developing a design language that is understandable for everybody, and 'the pattern language' (1977a) is therefore formed to make visible how design is carried out, i.e., to provide transparency to the tacit knowledge architects and other designers possess, the aim being to facilitate a transfer of the power over the design from architects and other professionals to the person who will live in the house. We had tested the method in 1987-88 in an informal area in western Argentina (Stenberg, 2020:23-34) and therefore had practical experience of its potential. According to these experiences, the method implied empowerment of laypeople, even people with limited resources, and gave them a great desire to create and shape their own physical environment. Many researchers (e.g. Bukovszki et al., 2021) agree on the method's good ability to hand over power to laypersons. Egnahemsfabriken's first co-design process during 2018-2020 also showed good results on handing the power over design to laypeople (Stenberg, 2020). Therefore, transfer of power over design decisions has continued to be considered a core value in the method – not to be negotiated.

Further, Alexander pointed out that the design process should go 'from wholeness to detail' and that one must make a definite decision for each pattern before moving on to the next. Thus, the design method that architects learn in Sweden – to constantly switch between the whole and the detail – is not something Alexander advocates, at least not when dealing with clients. Not everyone considers this to be a core value in the pattern language. For instance, Galle (2020:360) stated that the order of application of patterns in a design process can be flexible. However, in our experience, this has to do with not

fully relinquishing power over the decisions. When architects continue to consider themselves best suited to making decisions, it is close at hand to continue using design techniques such as 'oscillate between wholeness and detail', even though this does not favor equalisation of power. Designing 'from wholeness to detail' in decision-making not only the understanding of the design process for laypeople, but it may also make the construction easier and the end result cheaper, as one advantage of designing from 'whole to detail' is that you make decisive decisions at the right time and do not risk having to tear up parts of the design process and redo. In addition, you can start building before the design is complete, which makes it easier for laymen to understand the design. With this in mind, Egnahemsfabriken has kept designing 'from wholeness to detail' as a core value.

> The aim being to transfer of the power over the design from architects and other professionals to the people who will live in the house.

A third central part of pattern language is that it contains a political dimension in the way the patterns are written: "every pattern has a comprehensive structure—a hypothesis, its backup and its implication for intervention—and combines verbal information and non-verbal information" (Rooij & van Dorst, 2020:62). Some critics mean that this is problematic, because it simultaneously introduces aesthetic ideals and such ideals are context-dependent and can and should look different in different parts of the world as well as within countries. Egnahemsfabriken's design method has learned from this criticism and tried to formulate patterns in a way that conveys the political message, but without

imposing aesthetic expression on them. For Egnahemsfabriken, it is very important that the patterns express a political message. For instance, Alexander conveyed in a pattern the conviction that kitchens should be designed for joint cooking to increase equality in the home. This is also crucial in Sweden. Another example of a political message is that one of Egnahemsfabriken's patterns introduces issues concerning the reuse of building materials and the management of energy and water. This comes from lessons learned in Argentina (Stenberg, 2020). It was the family we worked with there who introduced patterns with clear sustainability aspects, as this was important for them both economically and because they lived in an area with a shortage of drinking water. In this time of climate crisis and injustice, it is definitely a core value for Egnahemsfabriken that the patterns contain a political dimension.

Rodolfo Livingston's El Metodo

The Argentinean architect Livingston's work was unknown to us before visiting Havana in 2014, when we learned something that all architect students in Cuba learn: how to become a 'community architect'. Livingston's starting point was his opinion that architects contribute to misery through their lack of action. His work in Cuba started in 1961-1962 when he visited eastern Cuba and developed a method of participatory design of housing regeneration specifically aimed at poor people. The method is described in detail in the book 'El Metodo' (1995). Livingston then worked further with it in Buenos Aires for several years, but in 1991 he returned to Cuba on behalf of the Cuban state and continued to develop his ideas. In 1994, as a result of the work, a national commission was created with participants from all provinces in Cuba, who were given the task of forming groups of 'community architects' in all municipalities – all people were entitled to a community architect in the same way as they were, and still are, entitled to a community medical doctor. This method that Livingston developed together with residents and young engaged architects in Cuba – integrating architecture issues with housing problems – was thus scaled up nationally, and this was done in a short period of time. It was unique in the world, Livingston states in the preface to his book, and one of the few researchers writing about Livingston agrees:

> "This approach is perhaps the largest effort to facilitate the participation of residents in housing design in any country of the world. Habitat Cuba pioneered a design method through which residents seeking to build, renovate, or expand their homes could engage in a collaborative process. Two decades after its inception Community Architect Program has grown to employ more than one thousand designers across Cuba. Cuban community architects are trained to apply a sound methodology that integrates residents into the process of designing homes through the use of a sequence of roleplaying games (Valladares, 2013). This method was developed by the Argentinian architect Rodolfo Livingston. The method is a product of rigorous analysis and address the ways in which architects interact with clients. One conclusion of this analysis was that architectural programs genuinely reflecting the wishes and needs of clients may only be arrived at if clients feel free and encouraged to express their ideas concerning the design of their homes. Community architects use role-playing and games throughout the design process to achieve this goal." (Valladares, 2017:402)

Livingston's method is in line with the pattern language (Valladares, 2013:19), but also has a component that Alexander had not fully developed: a very great awareness of how the design process needs to be organised for the results to truly be affordable. This was of course a result of Livingston operating in Cuba with the great general lack of resources that prevailed then and still prevails today. His method was therefore designed to be implemented in a short period of time; it can be done in as few as three weeks. In addition, there is a financial calculation that is adjusted in each step, and it is clear to the client that it is him or her and the family who will carry out the construction – in Cuba there were no other options. Egnahemsfabriken has absorbed these experiences and made an efficient timetable, participatory calculation, and clear division of responsibilities core values in the co-design method.

> Livingston believed that, when
> using the approach in
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> can provide not what the client
> has ordered,
> but what the client desires

For Livingston, housing is a process. Improving a home means nurturing relationships and developing trusting contacts. His design method therefore included clear instructions on how to interview the family thoroughly and getting to know the family's needs through role play, because it is easier for people to talk to an architect if they can

forget for a moment the hierarchy that stands in the way of a dialogue. The family is thus the starting point, but the place is as well. The climate and the environmental conditions of the place, sun and shade, available local building materials, traditions, etc., are also important. The community architect's role is to understand all this location- and culture-based information. Egnahemsfabriken also aims to integrate as core values in the co-design method the key phrases 'housing is a process' and "community architects must enjoy working with people and have good communication skills" (Valladares, 2013:19) as well as 'the place creates the house and not the other way around'.

Livingston is also clearer than Alexander regarding the fact that, between meetings with the client, the architect also works individually with the design and adds his or her expertise to it. However, all meetings thereafter are well-directed regarding the balance of power and the architect never runs over the client. Livingston believed that, when using the approach in 'El Metodo,' the architect can provide not what the client has ordered, but what the client desires: "Here is the key to our involvement: neither obedience nor authoritarianism. Interpretation" (Livingston, 1995:69). He claimed that when we make houses and homes, we create something that survives the people in the house. We are community-builders – architects and residents together. Critics believe this method takes too much time. According to Livingston, however, it does not take so much time considering what we are doing: building a society. Consequently, in Egnahemsfabriken's co-design method, the phrase 'neither obedience nor authoritarianism. Interpretation' is included as a core value.

Last but not least, Livingston did say something important about standardisation. Considering that Cuba also produced standardised housing similar to the Swedish million program, his thoughts are interesting. Namely, in Sweden, and globally, there are designers who strive for a high

degree of standardisation in affordable housing production, the idea being that it will be cheaper than when each house is designed by an architect and certainly when houses are designed by the people who are going to live in them. What did Livingstone say about that?
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> "Is standardisation of housing good? Can it simplify the design process for community architects? In response, Livingston turns to architect Alvar Aalto, who said that standardisation is good to a certain extent. Aalto compared it to the alphabet. With only 24 letters, we can vary a text almost infinitely (Livingston, 1995: 69). But if we had decided on a certain number of standardised sentences to use, the text would have been much worse. Aalto believed that the standardised elements should be of good quality and allow the greatest number of possible combinations: Then the architecture can be a good one. Livingston agrees with this, stating that a standard house does not exist, because different conditions of all kinds, which all homes have, make them different from the outset. For example, homes in apartment buildings have different distances to the ground and different solar conditions on their exterior walls. In addition, the families in them are different and live differently. The norms differ across countries. What is mainly saved when developing standardised homes is the thinking architects do. But architects are trained in exactly that – thinking. Removing that aspect of the profession would mean wasting an important societal resource. Livingston argues that architects should instead strive to maintain this responsibility. He says it means working on the same principle that underlies the 'microyet'"
> (Livingston, 1995:75).[1]

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1. Microyet is an irrigation system used for banana plants in Cuba, where the last piece is special in giving the plant water exactly where it is needed most, which means the system performs better than traditional irrigation systems.

Egnahemsfabriken sympathises a great deal with this description, and one core value is to offer clients the whole alphabet when they design their homes. In the project with the 15-year-old, this clarity had not been developed yet, although everyone tried to avoid limiting her imagination. Egnahemsfabriken's ambition is to implement a further developed construction method that is easy for laypeople to build, inexpensive, ecologically friendly, and incorporates a very large proportion of used building materials. However, this construction method should not be presented as a finished frame, but as an alphabet, thus divided into components that describe how each part needs to be performed and how it is joined to others. This is important to engaging the clients' full imagination when they think about what they want their home to look like.

This is important to engaging the clients' full imagination when they think about what they want their home to look like.

"What is co-design?"

*"It's a method of creating together. If you are a designer, you get to learn how to shape a **process** to create the object. Instead of creating the object yourself, you learn to design a process so that all people who will use the city or a house are involved and design what it should look like. It will be a better house when those who are going to use it are involved and create it because they know what they want, often, if you ask them. We also build a better society when we do it together. We must do things together to build a climate-smart and democratic society, it is not a one-man operation."*

(Jenny Stenberg in the Podcast about the first summer)
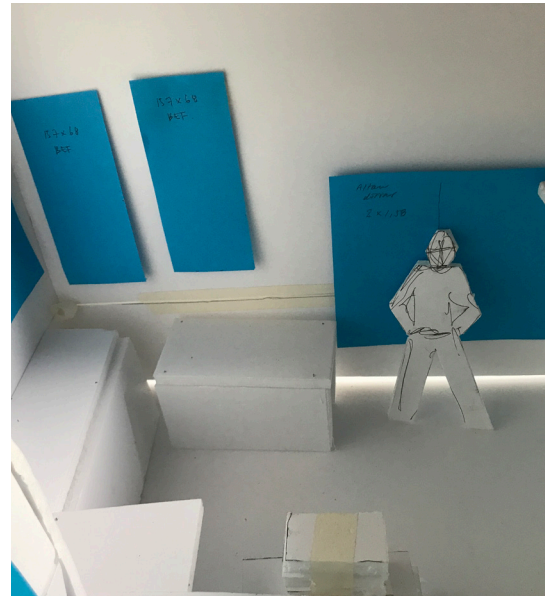
Egnahemsfabriken's experience and previous research

As mentioned earlier, Egnahemsfabriken's experience and previous research about co-design and social inclusion have also played a role in how the method was formed. When it comes to general power issues, Egnahemsfabriken experienced early problems with power relations between different actors. To deal with this, the co-design method was supplemented with aspects of 'master suppression techniques' (Ås, 1978) when it was presented to young people. The fact that young people are attracted to the concept of 'learning by doing' (Bentley, 1998) has long been established, and the concept also works well at Egnahemsfabriken. Co-building, in the sense that laymen build something together for one or all of them, is traditionally found in several cultures.

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It is a cheap way to build, it is faster than working alone with one's house, it is fun and it gives participants a sense of strength – empowerment. The concept of empowerment, however, may be used to describe very different types of processes. In one type, the focus is on the change of individuals and the possible benefit of a person being empowered to develop his or her knowledge, attitudes, and skills to fit what is demanded in society. In another type, the focus is on the process, the culture, the collective and team building (Andrews et al., 2006). Egnahemsfabriken stresses the latter process. This type of empowerment is also closely related to the core value 'food as a magnet,' and interestingly there is an academic text that describes how Alexander's pattern language can be used to co-design food and to cook collectively (Isaku & Iba, 2016). This also accords well with another of Egnahemsfabriken's established core values: 'integration through creativity', where experience has shown that unaccompanied refugees and young people from Tjörn have developed relationships by building together. Finally, it is Egnahemsfabriken's experience that how we visualize the results is important.
This is because it is otherwise easy for architects to take over by using familiar digital three-dimensional presentation techniques that they master (e.g., SketchUp). A core value in our co-design method is therefore 'co-visualize the results', which is done by the participants jointly building a model – not a fancy architectural model, but a simple cardboard model with which they can test different solutions and which can easily be changed as the process goes on.

Core values in Egnahemsfabriken's co-design method

To sum up, there are 18 core values for Egnahemsfabriken's co-design method:

FROM EGNAHEMSFABRIKEN'S EXPERIENCE AND PREVIOUS RESEARCH ABOUT CO-DESIGN AND SOCIAL INCLUSION:

1. food as magnet
2. learning by doing
3. integration through creativity
4. co-building
5. handle master suppression techniques
6. co-vizualise the results

FROM ALEXANDER'S THEORIES:

7. transfer of power over the design from architects and other professionals to the person who will live in the house
8. the design process should go from wholeness to detail
9. the design patterns contain a political dimension
10. the place creates the house and not the other way around

FROM LIVINGSTON'S THEORIES:

11. efficient timetable
12. participatory calculation
13. clear division of responsibilities
14. housing is a process
15. community architects must enjoy working with people and have good communication skills
16. the community architect's role is neither obedience nor authoritarianism: interpretation
17. the house and its surroundings should fit together, neither should be superior to the other
18. to offer the clients the whole alphabet when they design their homes, presenting the construction method in small components.

Egnahemsfabriken's six design cards

The 18 core values have partly been implemented in six design cards (Stenberg, 2020:58). Like Alexander's patterns, the cards contain both values and instructions on how each design step should be carried out. The core values have also been implemented in part in the organization plan for the subsequent co-building process, where some of the design steps continue simultaneously to further detail the design while the house is being built.

Results and discussion

This chapter will present the results of implementing the co-design method among young people and describe how implementation went concerning the core values from the design theories presented above. It will also address specific problems and challenges we have encountered as well as discussing the results. So as not to forget what went well, we first want to briefly mention that food as a magnet, learning by doing, integration through creativity, and co-building functioned as expected and were, according to collaborative evaluations (Krogstrup, 1997), considered crucial to attracting young people to codesign in the way Egnahemsfabriken carried it out:

> *"The 15-year-old: It's not just me, there are lots of others, but together we have created something that I feel very..., it feels very good."*   (Film about the second summer)

> *"I have built the floor, together with volunteers and other summer workers. The three weeks I have been here until now, I have learned to build, carpentry, gained more knowledge about things that I couldn't do before. We have teamworked together. Together we do better, I think, with joy and friendship."*
> (Young person, summer worker, migrant, filmm about the second summer)

Likewise, the design cards were very much appreciated. Just as researchers have previously pointed out, Alexander's pattern language really has potential when it comes to involving laypeople in design:

> "Patterns remain useful to establish dialogue—and thus participation—and create good, context-dependent architecture. This is because the notion of the pattern language was created to access tacit knowledge of how to build well in vernacular architecture."
> (Bukovszki 2021:19).

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The young people seemed helped by and sympathized with the fact that the design patterns contained a political dimension, and that the design process went from wholeness to detail seemed to help them to carry out the design process in a positive way. As it turned out, design cards actually worked so well that the young people together with the volunteers, almost without interference from us project participants, were able to carry out the design in each step themselves. It worked best when we integrated Livingston's role play into the implementation, because assuming different roles clearly unleashed their imagination. It was interesting that we got the best results in terms of power when architect students played clients and clients played architects. Then the architect students could more easily free themselves from the constraints their education brought with it, which prevented them from living up to all core values in the design process. Additionally, the clients became much more courageous in the role of architects than they were otherwise and dared to both think about and express their preferences. How the role play gave participants freedom was especially clear when you observed the migrants. This is important given that they often feel their position in society is lower than Swedish-born young people, making it harder for them to express their opinion. Role play, however, did not work well for everyone:

> *"The role play was difficult for me, I felt weakened by the design process."* (Young person, migrant, valuation about the first summer)

It is therefore important in a co-design process to read the participants and be prepared to change the approach so that the power over the design is truly shared – remembering that 'housing is a process'. Regarding power issues in general, we faced major challenges early in the project. The first summer when designing and building the kitchen, it became clear that everybody did not really share the core

value 'transfer of power over design decisions to the young people' or in Livingston's words: 'the community architect's role is neither obedience nor authoritarianism: interpretation'. The present co-building group consisted of the younger young people, the slightly older young people often with ongoing architectural education, and the adult project participants, where several of us were architects, some were carpenters and others leisure-time leaders. In addition, there were others who helped in different ways – volunteers who were on site during the construction weeks to do different things. In the co-building process, situations constantly arose in which the young people were about to be run over and the design changed, and those of us managing the project had to think about being present in all steps and putting the young people back in the driver's seat. Who then had the most difficulty in dealing with the situation? Well, trained experienced architects... Architects are trained in designing and are used to being design experts; it is difficult to relinquish responsibility when one considers oneself best suited to the task at hand. Carpenters and engineers, too, obviously found it difficult to relinquish power, and men had significantly more difficulty with this than women did.

For the method to handle the problem and to end dependence on 'power guards', the following summer we introduced an element of discussing 'master suppression techniques' (Ås, 1978). The young people did not have much knowledge about this, but their interest grew dramatically when they understood what it was about, especially when relating it to a building process. Even though it was a small step in the design process, it had a great deal of influence. When the 15-year-old's house was being built, the whole group, including architects and carpenters, had in mind that the design decisions were hers, and they supported her in that process and offered their expertise in the form of suggestions and possible alternatives. Participants expressed themselves very positively about this and were a little surprised that a 15-year-old was given and took the power:

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"The process as such implied that they always included my daughter, it was always very clear that she was the one who makes the decisions. For me, it has been quite interesting to see how she's developed. That she has had to think about what needs she has."

(Mother of the 15-year-old, film about the second summer)

What was it that made you stronger, that you could be at the center?
"I felt that I wanted to seize this opportunity. That one day I will need to express my own opinions. And it really felt like everyone listened so well and no one thought my opinions were stupid or anything. And it felt good to talk, no one judged me. So I felt very safe."

(The 15-year-old, interview)

This is because she feels safe in the group. She never says anything otherwise. If she does not feel safe. After a couple of times when she had been here in the design process, she said to me in the car: it's so strange that they listen like that, even though they know everything, that they listen to me, no one laughs. In school, if you say something, if you are too clever, people laugh."

(Mother of the 15-year-old, evaluation of the second summer)

"It didn't turn out as I had imagined from the beginning, but it turned out to be much better than what I had imagined. Because now I have received all the thoughts that I didn't even know I had, and ideas and everything. And it's been so much fun watching it grow."

(The 15-year-old, interview)

"I came here because I heard it's a nice place, to learn, but when I see her, I feel so much respect, it gives a feeling like: any age, just be brave to declare like 'I am building a house' and it gives us inspiration to think about building our own house."

(Volunteer, migrant, film about the second summer)

The involved young architects were also influenced by the discussion about 'master suppression techniques'. A few of them already had a high capacity to listen to the young people and to transfer power over decisions, but for others it was a learning process that took different amounts of time before they fell into the new way of working:

"I want to develop my knowledge as a co-design architect. The process made me realize how much we as architects design without actually taking into account the client, how much we trust our own knowledge and not the discussion with them."

(Architect student, migrant, valuation about the first summer)

As Livingston pointed out, community architects must enjoy working with people and have good communication skills, including verbal skills. These competences are generally not included in the architectural education in Sweden, and it is therefore no wonder that architects feel lost when faced with that challenge. Not all architects have to be good at everything, but those who take on the challenge of co-design need to develop their knowledge base. One Swedish architectural school has conducted successful experiments with integration between the education programs for architects and social workers (Stenberg & Fryk, 2012), but the experiment has unfortunately not been permanent, even though the master's course in the actual architectural education still has a focus on social inclusion. Architects who want to work with co-design and develop themselves into community architects are therefore largely responsible for their own education and need opportunities to practice these skills.

Co-visualizing the results proved to be an important component of the design method. The first summer we had problems with this; the process did not flow as we had intended, and we had a hard time understanding why. In the evaluation, more knowledge about the reasons for this was gained through one participant's reflections:

"The thing with co-design, which we have focused on this week, it is very much about giving power to those who will use the area. Building models is an important tool for achieving this. The architect has a lot of experience, it's easy to imagine what the final product should look like. But the person who will have the outdoor kitchen in this case may not have that imagination. And that's why it's important to build models, to even out the power. That's the basis of co-design."

(Podcast about the first summer (Young person, summer worker, Falkeborn, 2020)

What we did not understand the first summer was that model building was an important part of the power struggle and that we had not safeguarded that process sufficiently. The young people were left to themselves to deal with this too much, and the model was not co-designed in the way we intended and did not come to good use. Without evaluation and power analysis, we might have let go of the idea of the model, but now we had new energy. The second summer, our awareness of 'master suppression techniques' created a good basic design climate to begin with and the model was included in all design steps taken during the co-building weeks and was processed successively. There were many who helped during the co-building weeks, and the model became the 15-year-old's way of conveying what the end result would be and what step would be done during the day. It also became her tool for communicating changes to the carpenter responsible for the construction. Everybody also fetched the model when visitors came, it was often architects and other housing professionals, to show what the co-design process had resulted in. In this context, it can be mentioned that Egnahemsfabriken has experienced that there is also a very great need for 'community carpenters'. The carpenter in charge of the 15-year-old's house had very well-developed community carpenter skills and became an expert at showing how to build, instead of doing it for people.

His professional knowledge derived, as in the case of architects, from knowledge transfer rather than through exercising power. The evaluations showed that this was a success factor in relation to empowerment. The downside, however, was that the co-building process was slower than the research project had intended from the beginning and the timeline for construction therefore had to be revised.

Another lesson that came early in the co-design process concerned the significance of the place where the house was to stand. According to Alexander, the place creates the house and not the other way around. According to Livingston, the place is as important as the people, but he encouraged us to think of the house and surroundings, deriving inspiration from the picture of Rubin's vase / two faces: Both have their own existence, both need to be designed equally carefully; they should fit together, but neither should be superior to the other. Trying to follow the advice from both architects, Egnahemsfabriken's co-design method always starts designing the house on site, and this was greatly appreciated by most of the participants:

"It was very good to design the house by using sticks and placing everything out! It helped everyone understand the size and it also made it easier, for everyone, to vizualise how it could be."

(Architect student, evaluation of the first summer)

However, there were also negative experiences of this initial element in the co-design method:

"It was a little difficult in the beginning when we had the design process at home, that I would set up the shape of the house, I had no idea. I would have needed a little more preparation, more guidance. It turned out good anyway. But it was difficult then." (The 15-year-old, interview)

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"I have already started planning. I may be able to save almost all of my student grants, so I can have enough to buy a plot."

(Young person in the Podcast about the first summer)

"I want to build my own house and it works! Because you can help each other!"

(Young person in the film about the first summer)

What we learned was that instead of sticks and strings for the placement of the house, it may be better to use joists or planks to symbolize walls, as these are much easier to move around when ideas change. With sticks and strings it took too much time, the participants wanted to act faster. We also learned that the architects at that stage can feel greater freedom to come up with proposals based on their expertise. They were a little too hesitant because it was the first part of the co-design process, and they did not want to run over the 15-year-old. They were also unsure about how the process would go, and they would have benefited from introductory training.

Alexander advocated that the whole design process should take place on site and that the house can also start being built as soon as things begin moving along. We tried this in 1988 in Argentina, and the result was the design of a house that was highly adapted to the surroundings. The process took advantage of existing qualities and met challenges in an exciting way (Stenberg, 2020:32-34). One disadvantage was that the design process was greatly affected by the weather conditions, in that case extreme heat. In Sweden, the weather is unpredictable even in summer, it is often raining or windy, and working under those conditions significantly impairs the quality of the design process. Egnahemsfabriken has therefore chosen to put only the first co-design occasion on the site, but to encourage several short visits during the process. The first design card thus includes a careful mapping of the site's qualities and challenges. Prior to pattern two, the design of the house was moved to the construction site at Egnahemsfabriken, and set out there in the right direction, so that the design could be completed in an environment with possible weather protection.

Finally, we would like to touch on some core values that Egnahemsfabriken has not succeeded well with, despite the high ambitions, and this concerns the clarity that Livingston advocated regarding efficient timetable participatory calculation, and clear division of responsibilities. The failures are understandable, as Egnahemsfabriken is a non-profit social enterprise, where the time invested by many is unpaid time. But it is problematic that, for those who are going to build houses, it is often unclear and difficult to understand the whole picture. It is particularly difficult to know how great the financial costs will be. One person who was involved early on in Egnahemsfabriken's co-design method, i.e., in its first version, who bought land and later did not build a house, described in an interview that the costs were multiplied when contractors were to price elements that Egnahemsfabriken had calculated. He is not a young person and did not use the latest version of the co-design method, but the point is that that part of the method has not developed much since then, so his experience still has value:

> *"I feel like an idiot, who came from another country to a country I know nothing about. But I know, in my home country, I buy some blocks, I buy some reinforcements, then we build, it's done. You can get advice from someone who is an expert in building and then you pay a small amount, there are no complications in it, in my home country, but here everything should go according to inspection, it should be checked by both the municipality and the inspector, then you understand you do not have huge choices left, you simply have to follow it."* (Migrant interview)

Hindsight is perfect, but this person did not have enough contextual knowledge to set the boundaries himself, and Egnahemsfabriken's co-design method failed to help him do so. Afterwards he said: "I would have appreciated if someone took me by the hand and said you are wrong, you will end up in debt if you continue" (Interview). According to the evaluation, it was mainly the lack of participatory calculation and clear division of responsibilities that created the situation, but there is

also a need for a clear description of how society works when it comes to building houses. This is important of course, as Egnahemsfabriken also targets migrants who do not have this knowledge. Not trusting the system is also an obstacle to considering Egnahemsfabriken's co-design method to be a good opportunity for migrants.

The young migrants who have been part of the project in focus in the present article have admittedly been very positive about the co-design method and have most often been strengthened by it. But they have not built homes for themselves. Perhaps this is because they are too young as yet, but the problematic financing situation is a crucial reason for why they have not come this far (they do not have parents who can support them). Moreover, we believe that lack of knowledge of the systems and lack of trust in society play a role.

One key to succeeding fully with affordable housing is to work methodically with one core value that Egnahemsfabriken has not yet succeeded in: to offer their clients the whole alphabet when they design their homes. It may seem contradictory that greater freedom in design would create more affordable homes, but it is the clarity required when freedom is given that provides this opportunity. Clarity and transparency are vital. In our view, the key to success involves breaking down Egnahemsfabriken's idea of efficient housing construction into its smallest components and describing them to the client in an understandable way – in pictures. Then these parts can also be priced with greater accuracy, thus creating an overall economic picture that changes as the design develops. It is important in co-design that you always understand how both the physical environment develops and, in parallel, the economy – just as Livingston advocated. With today's computer programs, it should not be difficult to streamline this once the foundation is in place. A foundation that, in the spirit of Alexander and Livingston, is based on co-design and does not put economy in the forefront.

Conclusions

The results have already been discussed in the previous chapter, hence here we will simply conclude with the most important experiences and point out some future challenges we think are central when learning from co-design and co-building, considering that young people belong to a vulnerable group that has limited resources and experiences great difficulty in the housing market. If the housing market in Sweden had not been so totally off course and extremely excluding in relation to vulnerable groups, which seems to be an escalating problem with no political solution in sight, it would have been close at hand to rely on top-down solutions to the problem of shaping housing for vulnerable groups. In this hopelessness, alternatives have emerged from below, from civil society, often in cooperation with municipalities. Perhaps the most hopeful example is in Norway. Svartlamon in Trondheim has developed knowledge that, after more than 20 years of work, has received international attention. The old working-class area has 30 wooden buildings in total, with about 240 inhabitants in 130 households. Two of Svartlamon's newly built residential buildings have costed as little as 20% of what it otherwise costs to build housing in Norway (Stenberg & Bryngelsson, 2022:4).

The multi-family houses have been codesigned and co-built by the residents, and most of the building material was reused. These houses, in our opinion, have very beautiful architectural features. They were created using a simple basic structure, easy to build, 'community carpenters' were in place to learn from, the architects were personally available on site to discuss solutions with the co-builders, and last but not least, a large proportion of the material was reuses. The buildings are owned by a foundation, and the homes rented by the residents cost NKR 5500 (525€) a month, 60% of what rental apartments otherwise cost. The land

ONE OF SVARTLAMON'S NEW CONSTRUCTIONS, BUILT IN 2017

PICTURES: NØYSOM ARCHITECTS

is leased, and the foundation is governed by the municipality and the residents together, where low costs and reuse are important keywords for the production. What is perhaps most interesting about Svartlamon is that they seem to be developing a new housing policy in Norway, where instead of ownership and economic gain, co-design and social innovation are at the center of their practice. Housing innovation from below is possible.

In our case in Sweden, Alexander's and Livingston's design theories have been helpful in shaping a co-design method that has the potential to create housing for vulnerable groups, but the inspiration from Svartlamon has been significant, not least because it resulted in beautiful and fun architecture. The idea that co-designed homes should be beautiful was important to Alexander, and in an interview late in life, he expressed dissatisfaction with the fact that the pattern language does not automatically result in beauty (Galle, 2020:364). This is also our experience; it takes more than the patterns. It takes a combination of all the core values mentioned above, and certainly more that we do not yet know of for the houses to be beautiful as well. The core value of offering the clients the whole alphabet when they design their homes is an important missing component.

There is still some way to go before Egnahemsfabriken's approach has reached the point where it can be a satisfactory bottom-up solution, but if the theories and the core values are applied in full, we believe

> They seem to be developing a
> new housing policy in Norway, where
> instead of ownership and economic
> gain, co-design and social innovation
> are at the center of their practice.

there is potential for co-design and co-building to help in improving the housing situation for vulnerable groups and for co-design and co-building to be upscaled to more municipalities.

If upscaling is to be possible, however, a change is needed in architects' competences, and this also concerns other designers, including carpenters and engineers. Co-design can almost be considered a new education, and as it seems, it is the young people who will shoulder this task. Livingston also had good experience of working with architect students and newly graduated architects. Considering that in Cuba they managed to train more than a thousand community architects in a few years, it should not be an impossible task in Sweden. However, for this to happen education is needed, because it is not easy for young architects to take on this task without the right education and support. Rooij, with experience in the Netherlands, described the importance of education and learning:

> *"One of our alumni wrote to us in the interview responses an anecdote of a senior urbanist and at the same time her urbanism teacher, telling her that "people who cannot design, develop a toolbox." For us, this colleague 'forgot' the amount of holistic, implicit and intuitive knowledge and skills that he has acquired over time, and, in particular, in comparison to an urbanism student. Less experienced urbanists and professionals from other fields look for ways to better understand urban design and planning knowledge, ideas, solutions, proposals, thinking, and language. They look for clear communication from the experienced urbanism professionals, who quite often are not aware why they know what they know, and thus how to communicate that. The anecdote reminds us that being a successful and senior urbanist does not automatically qualify you to be a good urbanism teacher."*
> (Rooij & van Dorst, 2020:62-63)

Acknowledgements

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''What is a home for you?''

''A place you feel comfortable in, where you get peace and quiet, where you feel that you can be yourself.''

(Interview with the 15-year-old)

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