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The process of value setting through co-design: the case of *La Borda*, Barcelona

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ABSTRACT

Against the increasing commodification of housing, a new kind of housing cooperatives has emerged in Catalonia in the last decade. These cooperatives fall within the wider concept of collaborative housing (CH), i.e. they are collectively self-organised projects based on a collaborative design process, or 'co-design'. In such a process, residents need to adjust their individual expectations and demands in order to reach a collective set of values to realise their housing project. The aim of this paper is to assess how values are set through co-design and translated into a housing project. To do so, we develop an analytical framework to conduct a longitudinal single case-study that traces back the co-design process of the resident-led housing cooperative *La Borda*, in Barcelona. Our findings shed light on how co-design unfolds and uncover trade-offs carried out to overcome tensions mostly between individual and collective demands and between building costs and quality.

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Collaborative housing; cooperative housing; co-design process; design for values; *La Borda*

1. Introduction

A new kind of housing cooperative in Catalonia has developed in the past decade as a response to the lack of affordable, suitable and sustainable housing. Because they are resident-led and collectively self-organised, these cooperatives fit within the wider concept of collaborative housing (CH), an umbrella term (Fromm 1991; Lang, Carriou, and Czischke 2020) for housing projects that involve collaboration in their development and management. *La Borda*, a housing project built in public land, was the pilot that has spearheaded the grant-of-use housing cooperative model in Catalonia. This model appears 'as an alternative to both the capitalist market economy and the state' (Larsen 2019, 83) and contrasts with previous waves of housing cooperatives merely focused on the construction phase (Cabré and Andrés 2018; Larsen 2019;Scheller and Larsen 2019).

CH is often based on collaborative design processes, or co-design. This approach resonates with the tradition of participatory design and goes beyond the user-centred

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approach (Sanders and Jan Stappers 2008) where designers focus on end-users' needs. In a co-design process of a CH project, residents (the end-users) 'participate as co-designers in the design process' (Van der Velden and Mörtberg 2015, 41) in collaboration with professionals (Mattelmäki and Visser 2011; Sanders and Jan Stappers 2008), namely architects. Cohousing is a CH form that often combines co-design processes with collective living arrangements. Hereupon, residents have to adjust their individual expectations and demands to reach a collective set of values, to be materialised in the housing project. Values are, therefore, at the core of the co-design or participatory design negotiations and compromises (Agid and Chin 2019; Iversen, Halskov, and Wah Leong 2010; Le Bail, Baker, and Détienne 2022; Molnar and Palmås 2022; Van der Velden and Mörtberg 2015).

However, 'there is still insufficient emphasis on how user values can drive the design process as it unfolds' (Halloran et al. 2009, 246). Moreover, scientific studies linking co-design and values in the field of housing design remain inexistent to our knowledge. How does the co-design process unfold in the face of diverse values amongst (future) residents? How are these values translated into co-design decisions? What design trade-offs result from conflicting values in a co-design process? To answer these questions, we conduct a longitudinal single case-study that traces the co-design process of the recently built resident-led housing cooperative *La Borda*, Barcelona. The aim is to assess how values are set, evolved and are translated in a housing project through co-design. Our conception of co-design is based on the premise that product and process are equally important (Van der Velden and Mörtberg 2015) and inseparable dimensions in a housing project (Brysch and Czischke 2022). In this study, *housing project* encompasses the physical result of the process – 'architectural design' – and the way residents shaped their social and convivial practices as a group living together – 'social design'. We employ an analytical framework to operationalise the translation of values into design outcomes (and vice-versa), which helps to visualise the value setting process in the context of co-design. This framework is an adaptation of the *Value Hierarchy Model* (Van de Poel 2013), as applied in the *Design for Values* (DfV) approach (Elsinga et al. 2020), which highlights the role of values in housing design, making them more explicit.

2. A value-hierarchy analytical framework to assess co-design in collaborative housing

According to the Oxford Dictionary, the term *value* relates to the judgement of what is important in life. In the housing field, values refer to 'an estimate of the worth of a concept that guides decision making about housing' (McCray and Day 1977, 245) and 'are different from individual preferences, wishes and desires, in that they relate to a common good' (Elsinga et al. 2020, 3). Values can therefore be taken as the *driving forces* for or the *ideals* behind decision-making and further action, i.e. materialisation in the final design output. In this sense, what prompts action are the incentive values of the likely outcomes of one's actions. In the context of CH, the required (collective) action to co-design raises the question of how these 'incentive values' are collectively set. This is done either implicitly or explicitly (Halloran et al. 2009; Van der Velden and Mörtberg 2015).

In CH, 'each individual choice, which might produce effects on the collective life, is supposed to be shared and negotiated by the whole group' (Ruiu 2016, 170). These

negotiations and eventual trade-offs take place because values are sometimes in conflict with each other. High levels of conflict may be disruptive, time-consuming and lead to the withdrawal of some future residents or even the dissolution of the group (Ruiu 2016; Williams 2005). However, conflicts and conflict management may act not as an inconvenience which should eliminate differences and force consensus but as a tool to promote the dialogue about those differences. Conflicts or design 'dilemmas' can also be seen as an opportunity for 'creative leaps' (Iversen, Halskov, and Wah Leong 2010, 5). Conflicts are therefore useful in the design process for the identification, clarification and (re)negotiation of values (Van der Velden and Mörtberg 2015) and can be overcome over time (Le Bail, Baker, and Détienne 2022) through constant deliberation, negotiation and settlement (Castro 2021). In line with this, values are dynamic and prone to change during a co-design process (Gaete Cruz et al. 2022a, 2022b; Halloran et al. 2009; Iversen, Halskov, and Wah Leong 2010). According to Trischler et al. (2018) and Antonini (2021), there is an added value to co-design as it may foster design creativity and innovation, in contrast to conventional design processes. This is particularly relevant in the housing field, considering that many current housing solutions are based on outdated layouts (Burkhalter and Castells 2009).

Some scholars identify housing values as linked to the private living unit, namely comfort, convenience and privacy (McCray and Day 1977). Others also consider values such as sustainability, quality and community building (Mulliner, Smallbone, and Maliene 2013). Specific literature on CH shows that these initiatives are mainly anchored in community and sustainability values. Solidarity, mutual aid, sharing, collaboration, resident democracy, community and well-being (Czischke 2018; Lang, Carriou, and Czischke 2020; Sørvoll and Bengtsson 2020; Vestbro 2010) and sustainability, either social- (Lang 2019) or environmental- (Lang, Carriou, and Czischke 2020; Sørvoll and Bengtsson 2020; Tummers 2016) are often mentioned when describing CH projects. Elsinga et al. (2020) provide a holistic perspective towards values in housing, within the *Design for Values* (DfV) approach. These values are 'ontological security' (*safety*, *affordability*), 'autonomy' (*freedom of choice*, *autarky*), 'well-being' (*safety*, *health*), 'inclusiveness' (*accessibility*, *affordability*), 'sustainability' (*environmental* and *social sustainability*, *resilience*), 'social stability/order' (*sense of community*, *place making*) and 'market efficiency' (*resource efficiency*, *optimisation*).

The DfV approach considers the *Value Hierarchy Model* (Van de Poel 2013), which was developed to operationalise the translation of values into specific design outcomes. It appears as a conventional hierarchical pyramid where *inherent* and *operational values* (Elsinga et al. 2020) are at the top, followed by *norms*, with tangible *design requirements* at the basis (see Figure 1). Norms are 'all kinds of prescriptions for, and restrictions on, action' (Van de Poel 2013, 258) and may take the form of objectives or constraints. Usually, it is at this level where value conflicts and required trade-offs are expressed. Design requirements (at the bottom) represent the more tangible 'properties, attributes or capabilities that the designed artefact, system or process should possess' (Van de Poel 2013, 254). Linking to the initial definition, values are the *why* (driving forces), norms are the *how*, while design requirements are the *what* (action). Here, hierarchies can be built top-down and bottom-up, where two types of relations are determined, namely *for the sake of* and *specification*. This duality 'might then be used to assess whether the design requirements sufficiently cover the value on which

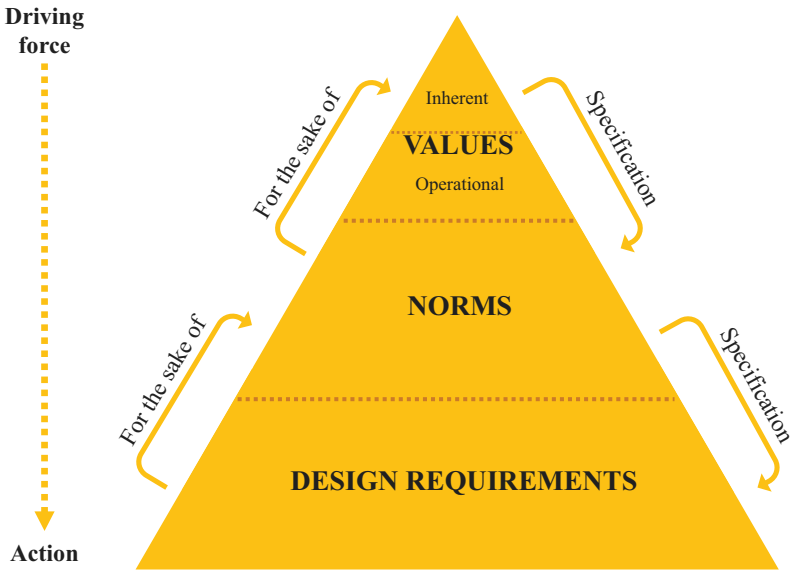

Figure 1. *Value Hierarchy Model* adapted from Van de Poel (2013) and Elsinga et al. (2020) (source: authors).

they are based and may potentially lead to new design requirements or the reformulation of existing design requirements (or the reformulation of the value)' (Van de Poel 2013, 260–261).

The frameworks developed by Van de Poel (2013) and Elsinga et al. (2020) primarily target a conventional design process and focus on how values are translated into a final *product*. As they are now, they do not contemplate the essential aspect that, in a co-design setting, the *process* itself is also based on values. Participation and democracy are *sine qua non* values of co-design processes (Andersen et al. 2015; Van der Velden and Mörtberg 2015). These, together with other specific values set by the group of co-designers, generate a work ethic that guides the whole process. This is in line with the early participatory design tradition aiming at combining democratic principles with participation (Iversen, Halskov, and Wah Leong 2010). Co-design as a *process* becomes more than merely an instrument to achieve a final design of a product, since 'other goals are accomplished, such as mutual learning, reflection, and skill acquisition, which have a value that is independent of the final outcome of the process' (Van der Velden and Mörtberg 2015, 62).

The following section describes how we adapt the frameworks to our analysis on co-design, emphasising the role of 'process-related' values in the definition of the key values guiding the housing project. Similarly, we incorporate the *inherent* value of collaboration, due to the collaborative nature of our case-study.

3. Case and methods

We conducted a single case-study, namely the resident-led cooperative *La Borda*. This is a six-storey cohousing project with 28 housing units (around 60 residents) and several shared spaces such as laundry, common kitchen and guest rooms (see Figures 2–5).

Figure 2. *La Borda's* General assembly during the design phase (source: image courtesy of *La Borda*).

Figure 3. Ground floor and first floor plans of *La Borda* (source: image courtesy of *Lacol*).

We adopted a qualitative longitudinal approach, which involves repeated observations of the same variables over a period of time. This is justified by the need to track back the co-design process of *La Borda*. Although the process has its roots in 2012, the actual co-design process intensified in 2014, when the group formally became a cooperative. The co-design process was more active between 2014 and 2015, when most of the design decisions were taken. Residents moved in by the end of 2018. We refrain from stating 'the end of the process' or 'completion of the building', because

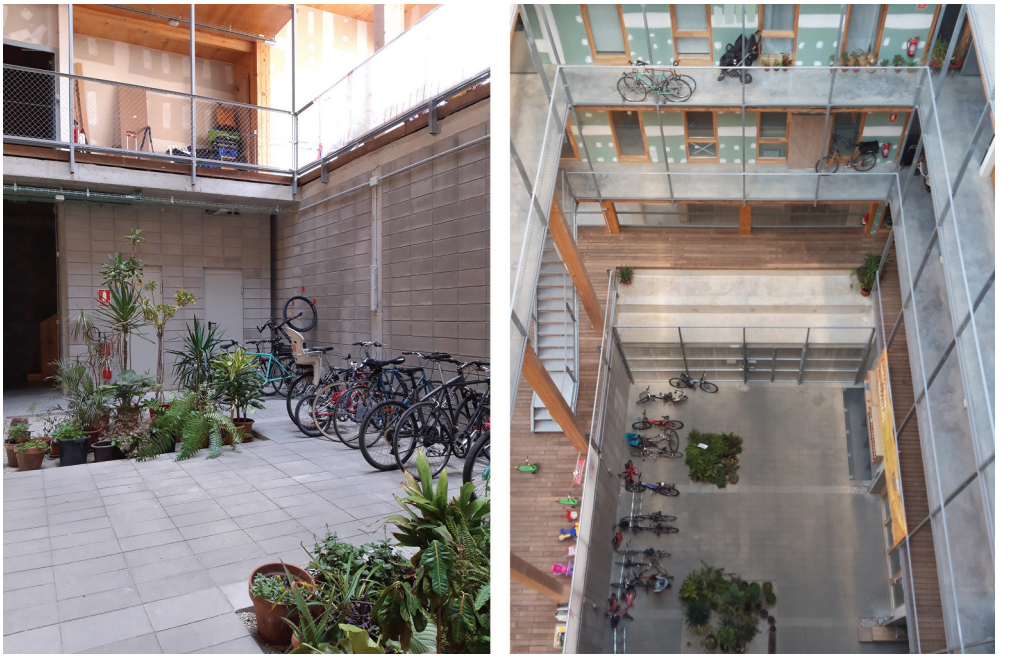

Figure 4. *La Borda* During the living phase (source: Authors).

Figure 5. *La Borda* During the living phase (source: images courtesy of *La Borda*).

La Borda, such as many other CH projects, was left unfinished upon moving (see Figure 5). It is based on a phased construction and self-building approaches carried out over time. For this reason, our analysis also takes the living period into consideration. Research methods include document analysis, interviews (carried out in 2018 and 2020) and a validation focus group (in 2022) with five co-designers. Informed consent was provided by the participants to take part in this study and to the way the collected data is processed and managed. This research benefits from the direct experience of one of the co-authors, who has been a member of *La Borda* since 2014 and was actively involved in the co-design process.

We selected the events or occurrences during the process whose purpose was to deliberately and *explicitly* name and document the goals, principles, guidelines or values

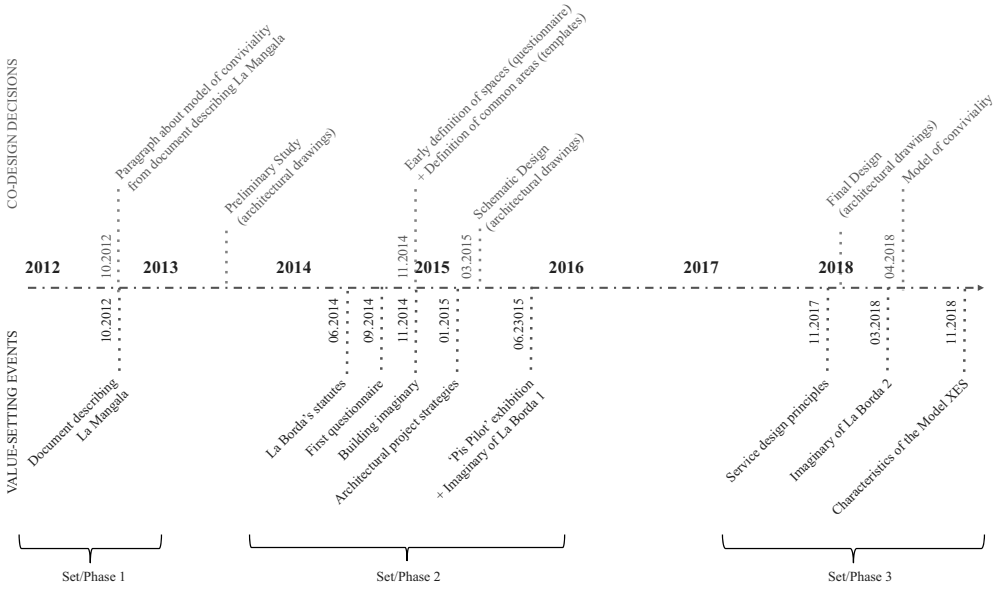

Figure 6. Timeline with data sources for 'value-setting events' and 'co-design decisions' (source: authors).

linked to the project. These – we call them 'value-setting events' – encompass legal statutes, project descriptions, presentations and communication material. In addition, from the documents and interviews, we have identified 'co-design decisions' to set the project design. These decisions are related to both the architectural design (building), led by an 'architectural committee' and the social design (conviviality practices), oriented by a 'conviviality committee'. These two analytical domains form an integrated socio-spatial experience (Lefebvre 1974/1991). We have identified a total of ten 'value-setting events'[1] and six pivotal moments where 'co-design decisions'[2] were expressed (See Notes for full description). We have grouped them in three sets or phases, according to their occurrence in time (see Figure 6).

3.1. Data analysis

In the first phase of data analysis, we used as reference the *Value Hierarchy Model* (Van de Poel 2013) and the pre-set housing values as listed by Elsinga et al. (2020) (see previous section). By combining the principles of provisional- and value-coding (Saldaña 2013), values were uncovered and listed from the reviewed documents. Here, we either directly extracted the *operational* and *inherent* values from textual excerpts of the reviewed documents (when values were explicit) or we converted the detected *norms* or *design requirements* into values (see snapshot in Figure 7 and Supplementary file 1 for entire dataset).

In the second phase of analysis, we visually displayed the identified values in what we call 'value footprints', through relationship maps, a visual tool inspired by word clouds and cognitive maps (Eden 1988). These maps position the values according to the links established among them. If they appear in the same document source, a link is created; if

Inherent value	Operational value	Entry (original: in catalan)	Entry (in english)	Level	Source ('event')	Date
Well-being	decent housing	'Garantir l'accés a un habitatge digne i assequible'	Ensuring access to decent and affordable housing	Norms	Cooperativa d'habitatges en cessió d'ús la Mangala	2012
Inclusiveness	affordability					
Inclusiveness	non-speculation	'Desmercantilitzar l'habitatge per a evitar-ne usos especulatius.'	Take homes out of free market to avoid speculative uses.	Norms	Cooperativa d'habitatges en cessió d'ús la Mangala	2012
Social stability/order	conviviality	'Generar noves formes de convivència comunitària i fomentar la relació intergeneracional.'	Generate new forms of community conviviality and foster intergenerational relationships.	Norms	Cooperativa d'habitatges en cessió d'ús la Mangala	2012
Inclusiveness	intergeneration					
Well-being	human scale	'Construir un barri a escala humana.'	Build a neighbourhood on a human scale.	Norms	Cooperativa d'habitatges en cessió d'ús la Mangala	2012
Social stability/order	place making					
Collaboration	collective process	'Generar un procés col·lectiu de definició d'un nou model de producció, gestió i tinença de l'habitatge alternatiu a l'existent actualment.'	Generate a collective process of defining a new model of production, management and ownership of alternative housing to the existing one.	Norms	Cooperativa d'habitatges en cessió d'ús la Mangala	2012
Social stability/order	housing model innovation					

…

Figure 7. Snapshot of the first analytical step: coding (source: authors).

they appear in the same paragraph, another link is created. The number of value mentions influences the 'size' of the value in the footprint: the more mentions in the data sources the larger the circles that represent the values, determining their relevance in the footprint. The purpose was to provide a more graphic overview of the evolution of the value setting throughout the process and to illustrate relationships and potential hierarchies between values. Figure 8 (see next section) illustrates the footprints that resulted from the assessment of the three 'value-setting events' data sets.

As 'co-design decisions' we considered specific design aspects linked to the cohousing model (e.g. collective spaces, shared meals) and/or situations indicating a conflict between values. To identify the prevailing values, tensions and trade-offs in these decisions, we conducted the analysis in two different ways. For the cases where the data source was textual, we used the same coding system as for the 'value-setting' events. When the data were mainly graphic (e.g. visual presentations, architectural drawings), we crossed-checked the documents with input from interviews and general assemblies' minutes to detect the design features. These can be labelled as *design requirements*, following van de Poel's 2013 terminology. Then, we attributed underlying *operational values* to each design requirement. We also detected tensions between values when a decision was collectively made. This was done to better understand which values prevailed in the end and which design trade-offs were set to meet both equally important values. Here, a table was used instead to outline the findings (see Table 1), given the difficulty to accurately 'quantify' the relevance of values from co-design decisions due to the graphic nature of some data sources.

To validate our findings, we conducted a focus group with five members (co-designers) of *La Borda*. The 90-minute-long event was carried out in *La Borda*'s shared kitchen in January 2022. The participants, after providing informed consent, were asked to name the key values they believed have guided the whole project and to identify the co-design decisions they recall as 'relevant' and/or 'conflicting'. Then, after sharing our findings, we asked them if they recognised them in the process of *La Borda*. The results generally confirmed our analysis: participants mentioned the same key values and listed the same or similar architectural and conviviality decisions to the ones we identified. Moreover, they agreed with the flexible and fluid nature of values and the relevance of conflicts to make values visible and operable.

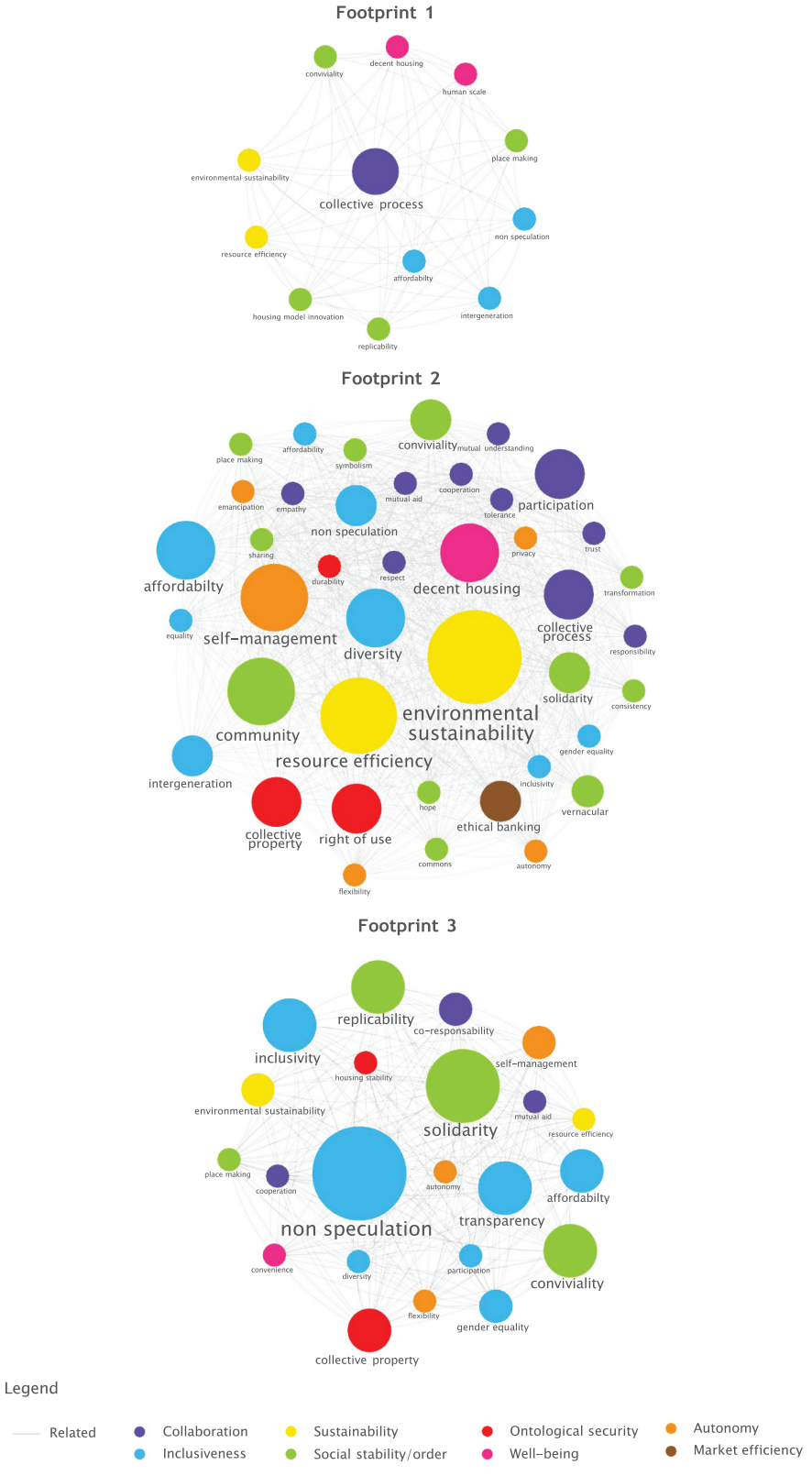

Figure 8. Value footprints of 'value-setting events' 1, 2 and 3 (source: authors).

Table 1. Values, tensions and trade-offs detected in co-design decisions.

	Co-design decision – 'Design requirement'	Values (prioritised, if not equally relevant as values in tension)	Values (in tension)	Design trade-off
beginning	collective spaces	*community, conviviality*	*affordability*	*minimum living units compensated for the building costs of the collective spaces*
	vernacular typology 'corrala', with galleries as circulation	*community, conviviality, place making*		
	connecting project to the wider neighbourhood	*community, place making*	*privacy, physical security, safety (after moving in and burglary attempts, the priority was given to these values)*	
	passive house and high-energy efficiency standards, timber structure	*environmental sustainability*	*affordability*	*the use of low-cost materials in the façade, minimum acoustic standards, and minimum infrastructure and finishing allowed a higher initial investment in a high-quality energy-efficient and CO2-neutral building*
	internal (self-managed) cleaning services	*self-management, autonomy,*	*long-term maintenance, resource efficiency, gender equality*	*self-management prevailed in the end under the condition that gender equality would be guaranteed*
co-design process	initial common dinners just two days a week and adapted to children and vegetarians	*graduality, flexibility, inclusivity, diversity*		
	possibility to take home the common meal	*flexibility, convenience*	*collective process, conviviality*	
	forego of underground car parking (and individual storage rooms)	*affordability, environmental sustainability, housing model innovation*	*convenience*	
	shared laundry (equipped with industrial machines)	*sharing, housing model innovation, resource efficiency*	*convenience*	*a high degree of space flexibility allowed personalisation of typified units*
	typified and minimum living units (S, M, L)	*affordability, optimisation*	*flexibility, sense of belonging*	
	living unit: no partition walls, freedom to place the kitchen, possibility to change unit size (e.g., turn S into M)	*flexibility, self-management, convenience, graduality*		
	more flexible and open collective spaces	*affordability, optimisation, conviviality, graduality, flexibility*		
	electric stoves in all the living units, schedules for window openings	*environmental sustainability, housing model innovation*	*convenience, autonomy*	
	incomplete state of the building (upon moving)	*affordability, graduality,*		
	self-building approaches / phased construction	*affordability, graduality, participation, cooperation, self-management, sense of belonging*	*resource efficiency*	*the first-order values would compensate the energy and time spent by self-builders*
	initial mix of new industrial washing machines and old domestic ones	*graduality, resource efficiency*		
end	reduced washing machine booking times	*community, housing model innovation, optimisation*	*convenience*	
	private provision of goods	*autonomy, convenience*	*resource efficiency*	

Source: authors.

4. Findings

4.1. Value footprints

The resulting 'value footprints' of the three 'value-setting events' sets (see Figure 8) display which values were set in the three 'phases' of the process and how they evolved, i.e. which values increased or decreased their relevance over time. Inclusiveness, sustainability, social stability/order and collaboration were identified as the key *inherent* values established at the beginning. The initial footprint is highly representative of the values that were prioritised throughout the process, showing that these values set the scene for the overall project. The second footprint is the most complex as it corresponds to when the co-design process was more active (i.e. when most decisions were taken), encompassing more value-setting events. This suggests that the most present values, namely environmental sustainability and resource efficiency, were central in the collective decision-making process. Non-speculation and solidarity dominate the final footprint, indicating a shift in the focus towards the end of the process.

4.2. Values and trade-offs in co-design decisions

The findings linked to the 'co-design decisions' and their respective values are illustrated in Table 1. From an architectural perspective, the decisions taken in an early design phase – before the more intense co-design process – highlight the relevance given to *community* and *place making*. As the co-design process developed, design trade-offs revolved around the actual needs of the group, and reducing both the building's ecological impact and building costs. The conflicting (in itself) decision of foregoing the underground car parking took a two-year-long process to first reach a consensus among the group and then negotiate with the municipality to change the building regulations.

Further design decisions contributed to the emergence of *flexibility* and *graduality* during the process: both private units and collective spaces became more flexible and open and were delivered unfinished upon moving in (see Figure 6) to be finalised over time through self-building or *do-it-yourself* approaches. According to one (future) resident/co-designer, the fact that the kitchens would not be completely delivered upon moving in represented a cultural shock for some people and required a change of mentality and some time to accept it. In many cases, a 'maturation time' was needed by the residents to accept compromises or readjust the priority given to some collective values, as mentioned by one architect/co-designer. After some burglary attempts during the living period, the more commonly preached values of *flexibility* or *community* became less central and, instantaneously, *privacy* and *physical security* increased their relevance.

Collective decisions taken under the direction of the 'conviviality committee' were mainly around the use of collective services. The initial general focus on collective values shifted to finding a balance between *conviviality* and (individual) *convenience*. The main tensions initially emerged around *self-managed* maintenance and *gender equality* (as cleaning tasks are conventionally linked to women). In the final co-design phase, 'social' decisions acquired a more practical character on specific aspects of the common services and convivial practices. Similarly, tensions moved to more practical decisions around washing machine optimisation and booking times, for example, highlighting the difficulty of changing everyday habits. Nevertheless, for more general design aspects, collective values were prioritised over future dweller perceptions of (individual) *convenience*.

Finally, additional sources such as general assemblies' minutes also uncovered the work ethic behind the whole co-design process. They mainly highlight the efforts in supporting collective values, namely 'stand for the group values', 'look for the common good' and creating an open, flexible and safe environment for discussion and decision-making, with 'active listening and non-violent communication', 'be open to dialogue', 'be inclusive'. Strategies to optimise the process were also set, e.g. 'decide just what is necessary right now', 'prevent – not necessary avoid – conflict/tensions', 'do not spend too much time in conflicting situations during general meetings', 'aim at consensus', 'pay attention to constraints on time, money, ability to work, and resources').

5. Discussion: value setting in a co-design process

5.1. Co-adaptation between values and co-design decisions

How can values be faithfully reflected in the building and internal agreements on how to live together? One thing is to abstractly define sustainability as one of the main project values, and a different thing is to translate it into tangible design features, without interfering with other guiding values. Or, to do so without reaching necessary compromises, which may shake established social or design conventions. Suddenly, residents have to 'accept' the consequences of their worldview in their daily routine. In a way, it confirms the idea that 'values shape or constrain the space of action for future users' (Elsinga et al. 2020, 2).

Findings indicate that structural decisions affecting the whole concept of the project ended up reflecting the main pre-set values. The car parking situation, the choice for minimum and flexible spaces and services, or the restriction of some individual actions in favour of the community portray that. Although many decisions were the result of long decision-making processes, 'these processes also generate consciousness', as one interviewed architect had put it, leading to the ultimate prevalence of the mentioned key values.

Conversely, findings also suggest that some co-design decisions may have impacted the relevance given to some pre-established values. For instance, the growing 'size' of *affordability* in the value footprints can be explained by the increasing need of keeping building costs down, which translated into specific design features. *Environmental sustainability* and *resource efficiency* were highly represented in the second footprint, when co-design decisions related to energy-efficiency and sustainable construction were taken. Some of these concrete decisions may also have helped to strengthen the values that concerned the most and make them more explicit, for those more difficult or highly conflicting decision-making moments. This indicates how the co-evolution of values operates as well from the specificity of design detailing to the general establishment of values.

Although other values prevailed over *convenience* in 'architectural co-design decisions', this was not the case for the 'social co-design' ones. This may seem conflicting, but in fact it is justified by the different degrees of detailing in the two types of setting events and its order of attendance: architecture matters (and decisions) acquired a more generic character over time, while issues related to collective services and conviviality became more specific and practical. Decisions resulting from situations like the burglary attempts appear to create a 'temporary' hierarchy between values that may not entirely reflect the overall 'value footprint' of the project. These results strengthen existing theories on the dynamic and context-dependent nature of values in a co-design process (Gaete Cruz et al. 2022a, 2022b; Halloran et al. 2009) and illustrate 'how values and the design process co-evolve' (Le Bail, Baker, and Détienne 2022, 165).

5.2. The role of conflict in value setting

Findings show that, on many occasions, *conflict* was useful to promote the debate about the different values at stake and to, ultimately, emphasise the key collective values of the

project. This underlines the positive role of conflict in the consolidation of values (Iversen, Halskov, and Wah Leong 2010; Van der Velden and Mörtberg 2015). One key evidence is the decision around the car parking, where co-designers eventually realised that reducing the ecological footprint and the building costs was more important than the advantages of individual convenience.

However, corroborating with Le Bail et al. (2022) who concludes that *time* is necessary to reshape the relevance given to values, this case study has shown that residents required more time than the duration of the co-design meetings to reach some collective compromises. These were mainly related to decisions that would directly and individually affect the daily life of the end-users, from 'small' decisions such as opting for electric instead of gas stoves or the restrictive use of washing machines, to 'bigger' ones, namely, the car parking or the unfinished state of the building upon moving.

5.3. The role of co-design in value setting

In a co-design process of a cohousing project, some values are 'automatically' activated, due to its collective nature. *Community*, *conviviality*, *participation*, *democracy*, are, in principle, *apriori* values of such projects, present in both the 'process' and the 'product'. Our study shows that in most occasions collective-oriented values prevailed over individual values of *convenience* and private *comfort*.

The way the co-design process of *La Borda* was shaped, around *trust*, *participation* and *cooperation*, may indeed have contributed to validate and reinforce project-related values, such as *conviviality*, *community* and *flexibility*. The design process itself sets the basis for the collective living outcome, expressed in the building and related social practices (Van der Velden and Mörtberg 2015). In addition, if values were not collectively discussed and (re)set during the process, they would not be clear enough when hard decisions were to take place, risking other less-relevant values to prevail.

Many CH projects provide alternative ways of living, based on values that frequently clash with social and design conventions (Brysch and Czischke 2022). This study displays how this clash arose during the co-design, with constant internal and external negotiations to overcome some established preconceptions and satisfy the needs as a group and as individuals. At the same time, it highlights how co-design may contribute to design innovation (Antonini 2021; Trischler et al. 2018).

6. Conclusions

The co-design process in the context of CH is an under-researched topic worth exploring, considering the current systemic housing crisis and the urge to find possible alternatives. A co-designed housing project may represent a more suitable and affordable outcome, since it reflects the specific needs and values of the residents, in contrast with more conventional or mainstream solutions (Brysch and Czischke 2022). The applied longitudinal case-study approach, which involved access to extensive data, allowed us to examine the co-design process of *La Borda* through different 'value-setting events' and specific 'co-design decisions'.

The analysis unfolds the process in which values were set, evolved and were finally translated into co-design decisions. Findings highlight a mutual adaptation between

values and co-design decisions, confirming the co-evolutive and context-dependent nature of values. In addition, the research stressed the role of *conflict* in the process of value (trans)formation and the role of *time* in the process of acceptance or prioritisation of some values by all the co-designers. The conflicts between values, exposed by tensions between certain co-design features, were either solved by a collective decision of prioritising one value over the other or by reaching a compromise between them, formalised in a design trade-off. Detected design trade-offs were mainly between individual and collective demands and between building costs and quality. Findings also suggest that the co-design in itself, guided by specific process-related values such as *participation* helped to reinforce values that are then reflected in the final project.

This case study enhances the power of values and collaboration in design in challenging established standards and social conventions. The identified key co-design decisions reveal their unconventional character compared to mainstream housing where residents are absent during the design process. *La Borda*, as a collective product, resulted in a sustainable building, based on alternative *minimum* quality standards combined with a high degree of flexibility for a gradual upgrading and personalisation, through self-building.

This paper provides empirical evidence that feeds into the body of knowledge on co-design and values from a housing design perspective. Moreover, the proposed analytical framework allows for a systematic assessment that may be useful in further studies focused on values in co-design processes. In this way, it may consolidate similar approaches that focus on the emergence, development and grounding of values in participatory processes (Iversen, Halskov, and Wah Leong 2010). Further research could explore the specific role of professionals participating in the co-design (architects, designers, etc.) in the value setting process, particularly in similar cases where members play both the role of professionals and residents.

Notes

1. The first set of 'value-setting events' includes 'La Mangala Cooperativa d'habitatges en cessió d'ús', which outlines key values in the form of objectives in a descriptive document of the project for its evaluation in a general assembly at Can Batlló in 2012. The second set encompasses documents and presentations developed between 2014 and 2015: the official version of La Borda's statutes; a 'first questionnaire' focused on the general representative project values; a 'building imaginary', where members listed general building-related values through pictures; 'architectural project strategies', with programmatic drivers for the building; a poster describing the main values of the cooperative housing model displayed at 'Pis Pilot', an exhibition at the Centre de Cultura Contemporània de Barcelona; and the 'Imaginary of La Borda 1', a document highlighting general 'values' extracted from the first questionnaire, concrete values of the cooperative model (from poster at 'Pis Pilot') and a description of the concrete 'housing project and everyday decisions' (Garcia i Mateu 2016). The final set groups the following data sources created between 2017 and 2018: 'Service design principles'; 'Imaginary of La Borda 2', a revision of the previous one conducted in 2015; and the 'Characteristics of the Model La Xarxa d'Economia Solidària de Catalunya (XES)', a document linked to the wider housing sector and the grant-of-use cooperative housing movement in Catalonia where *La Borda* was a founding member.
2. The 'co-design decisions' refer to 'architectural' and 'social'. The 'architectural' ones are drawn from architectural documents produced by the 'architecture committee' and interviews carried out in 2017 with one architect/(future) resident of the project, in 2018 with (future) residents and in 2020 with two architects/residents. The architecture drawings

correspond to a 'preliminary study' made before 2014, a 'schematic design' in 2015, and the 'final design' in 2017. The 'social co-design decisions' are identified from textual passages and graphic material from the 'conviviality committee' workshops. Textual input includes a paragraph about the 'Model of conviviality' from the document 'La Mangala' (2012), a questionnaire for an 'Early definition of spaces' (2014), and the 'Model of conviviality 1.0' (2018). The templates used for the 'Definition of common areas' (2014) represent the collected graphic material. Access to the data was granted by *La Borda* (e.g. legal documents), the design cooperative *Holon* (service design material) and the architecture cooperative *Lacol* (architectural drawings).

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Data availability statement

The analysed data used to produce Figure 8 is available in the attached Supplementary file.

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