

# Interactions between architects and end-users during housing design processes: a systematic literature review

Architects and  
end-users'  
interactions

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Received 15 March 2022  
Revised 9 June 2022  
5 August 2022  
20 August 2022  
Accepted 1 September 2022

## Abstract

**Purpose** – This research focuses on the interactions between architects and end-users during the design process of housing projects, both experiencing challenges and friction points when meeting.

**Design/methodology/approach** – The authors conducted a systematic literature review (SLR), based on and adapted from Kitchenham and Charters' work (2007). The thematic analysis of  $N = 104$  identified articles reveals 13 main themes and 30 subthemes specific to architects, end-users and the interactions of architects and end-users, and 3 main groups of other actors intervening in these dynamics. The authors organize the data by actors and the actors' social encounters, themes and subthemes. The authors focus on some aspects, given possible evolution of practices.

**Findings** – The authors question the role of architects and the ways both parties share respective knowledge. The authors also discuss the various scales of social encounters depicted through literature, from traditional discursive meetings to participatory practices, and raise the lack of convincing tools genuinely used in current housing architecture practices. Finally, the authors point out the need for further field research in order to practically bridge the gap between researchers and practitioners.

**Originality/value** – The authors present an overview of the most relevant papers, organized in a table and grouped by themes. This represents a major output of this SLR, and gives the concerned readers the opportunity to get a grasp on readers' sub/theme of interest.

**Keywords** Housing architecture, Architect-user interactions, Participatory practices, Co-design, Client satisfaction, Systematic literature review

**Paper type** Literature review

## 1. Introduction

The relationships between architects and clients have been investigated for several decades (Cuff, 1991; Van der Linden *et al.*, 2017) and the analysis of their interactions offers provoking results: communication gaps have been pointed out (Cairns, 1996; Tidafi, 1996; Olsson, 2004; Lawson, 2006; Steen, 2011) limiting users' input to functional and structural recommendations (Cuff, 1991; Sanders, 2005), whereas inputs related to space meaning or embodied knowledge are rarely collected (Van der Linden *et al.*, 2019).

Although some isolated, alternative initiatives of social interaction with/for users have been explored (see the work of Geddes' (1994), Alexander's (1968), Habraken (2021) or later phenomenologists' (Coxon, 2015)), general models for participation in architecture never really reached the necessary balance between users' involvement and architects' desire to keep the creative lead (Luck, 2007; Steen, 2011; Tribout, 2012; Zetlaoui-Léger, 2013; McDonnell and Lloyd, 2014), i.e. designers' need for recognition when it comes to giving purpose and sense of direction to some piece of architecture.

Consequently, misunderstandings and frustrations still generate tensions between architects and clients (Defays and Elsen, 2018), who seem to experience difficulties in communicating and in sharing knowledge. Some architects even rely on self-reference and



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implicit assumptions (Till, 2009): instead of trying to design for everyone, they prefer designing as for themselves (Oudshoorn *et al.*, 2004).

Other researchers show that when the interactions are correctly facilitated, clients and users are able to engage (Luck, 2007; Van der Linden *et al.*, 2017) and apprehend design values (Siva and London, 2011). Throughout this paper, we intend to delineate the factors that can impact the interaction between architects and clients/end-users. We aim to provide a better understanding of the ongoing postures, practices and factors impacting design interactions and satisfaction levels as depicted in recent scientific literature through a systematic review.

## 2. Focus

In this section, we want to show to the reader how we framed our purpose.

### 2.1 Actors

We focus on the architects, and on the future occupants who are going to use the buildings most frequently.

If the term “end-user” reveals some limits in semantically describing human beings’ relations to artificial environments through the reduced lens of “use” (Deni and Catoir-Brisson, 2019), it helps to designate clearly the real occupant of the building. Lee and Wohn (2016) consistently use the terms “future occupants” in order to avoid confusion. Orchowska (2019) insists on the term “residents”. Abdirad and Nazari (2015) differentiate the client from final users and occupants: compromises to please the clients, if not made in accordance with the occupants’ best interests, are equivalent to bargaining the power in design projects.

We interchangeably use end-user, user, resident and occupants in the case of housing. When developing other authors’ analysis, we prefer to refer to their own terminologies to transcribe results as accurately as possible. Even when not echoing end-users *per se*, information about the interactions occurring between clients and architects can be relevant to nourish our understanding of the challenges they face during design interactions.

### 2.2 Social encounters and satisfaction levels

The “design interaction” term used above is to be understood here as in Luck’s paper (2014), i.e. interactions of all sorts between architects and residents during the design phase. Yet, we realize that this term might be misleading in regard of its use in the field of human-computer interaction. We will rather rely on another concept to depict interactions, understood by Little (2016) as social encounters: “Social interaction is the process of reciprocal influence exercised by individuals over one another during social encounters. Usually, it refers to face-to-face encounters in which people are physically present with one another for a specified duration. However, in contemporary society we can think of social encounters that are technologically mediated” (p. 914).

Regarding satisfaction levels associated with these social encounters, we agree with Oluwatayo *et al.*’s definition (2014) as a starting point: “In architectural practice, the client is the owner of a building project who engages the services of an architect. Clients’ satisfaction is therefore defined as the perception of the quality of architectural services received by the owner of the building” (p. 318).

### 2.3 Stages of the architectural process

Even though Siva and London demonstrate that “uncertainties and the associated stresses are inevitable in the course of projects and typically occur during the construction stage” (Siva and London, 2011), in this paper we argue that social encounters between architects and end-users should be analyzed as soon as the preparation and design phases (according to RIBA’s (2007) and Norouzi *et al.*’s (2014) definitions) to better delineate the roots of possible difficulties.

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The design process is indeed iterative (Stojanović and Stamenovic, 2015) and unfolds through the “interactive involvement of designers and clients in discussions of design requirements and solutions” (Norouzi *et al.*, 2014, p. 988). While dissatisfactions can appear at any time during the project, they may also emerge in the initial and briefing phase of the design process. Expertise, beliefs, expectations and motivations need to be shared and adjusted on both sides at that time in order to create a shared common ground throughout all stages of the project (Casakin and Badke-Schaub, 2017; Bogers *et al.*, 2008).

#### 2.4 Housing architecture

In this paper, we look into architects’ and end-users’ social encounters solely during housing processes, which present the advantage of being widespread processes all around the world (Dimuna and Olotuah, 2019). Focusing on housing moreover allows to explore issues affecting a large sector of the industry (Siva and London, 2012; Frimpong and Dansoh, 2018), as architects working in housing still constitute the majority of the profession at least in Europe, e.g. in the United Kingdom (RIBA, 2011).

As pointed out by Oluwatayo *et al.* (2014), “previous studies have focused on [...] public sector clients” whilst very few provide empirical data on “first-time private clients who engaged the services of architects for their personal homes” (p. 316). We argue that the context of single-family housing, where architects are often in direct contact with the end-users, is the opportunity to sensitize architects to approaches that integrate end-users in the design process. However we still consider some studies from other fields of architecture (e.g. healthcare), provided that interactions that were being depicted could be beneficial to housing as well.

#### 2.5 Research questions

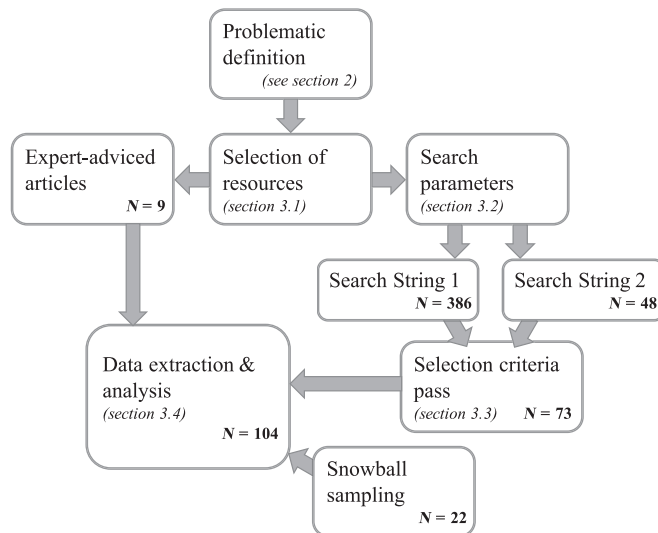
We frame this review limiting its purpose to social encounters and satisfaction levels occurring between architects and end-users at any design phase of housing projects.

From our main research question, namely “**How do end-users and architects currently interact during the process of housing design?**”, we derived three major search areas: Actors, Encounter and Field. We aim to identify current practices in architects’ and users’ interactions, their main bottlenecks and potentialities. We focus first separately on literature concerning each actor, then questioning their social encounters.

### 3. Methodology

According to Kitchenham and Charters’ recommendations to conduct a Systematic Literature Review (or “SLR”; 2007) and similarly to Jovanović *et al.* work (2019), we provide an adapted protocol (Figure 1) to identify the existing body of knowledge which corresponds to our focus.

After framing the problematic (section 2), we identify available resources to collect papers to be reviewed (section 3.1). We define the search parameters and prepare a set of selection criteria corresponding to our scope (section 3.2): this helps us include or exclude papers to form the final panel to review. We extract the data to analyze and we create a corpus that we submit to thematic coding using the NVivo software (section 3.4). Throughout data compilation, we iteratively reassess the selection according to our previously defined criteria. We pinpoint seminal papers to reintroduce in the review through a succinct one-round snowball sampling (Lecy and Beatty, 2012). Finally, we dig into each coding node in order to identify the main concepts handled in literature and we highlight thematic ideas. This process nurtures our discussion about the postures, the roles and models of social encounters occurring between architects and end-users, and helps us identify potential areas for improvement.



**Note(s):** The research strings can be sent upon request

**Figure 1.**  
Methodology diagram  
of the SLR with the  
quantity of concerned  
papers

### 3.1 Resources

Our starting point is a set of expert-sourced papers, provided by preliminary studies such as Defays and Elsen's work (2018) for instance. Our second resource is online databases. We opt for the Scopus Database because it covers the main scientific databases in architectural and design research; it includes the most impactful journals in these fields (e.g. Archnet-IJAR or Design Studies) and is among the accessible databases at our institution (see Paul-Hus *et al.*, 2019 for a database comparative analysis).

### 3.2 Search parameters

After several iterations, we build two search strings to run through our database. We narrow down the main keywords to being either part of the title, the abstract or the keywords to avoid full texts where terms could be used in an anecdotal manner. We also explicitly select "social sciences", "engineering", "arts and humanities" and "environmental sciences" areas while excluding other fields that may use similar vocabulary (e.g. mathematics, software engineering, robotics, landscape or medical fields).

For this literature review, we are focusing on articles, conference papers and conference reviews. Gray literature is also very rich and could inform us differently about current practices but we decide to put these sources aside for now.

Regarding the language, the set of articles is limited to English and French written papers, as these are the languages that all three authors are comfortable with.

There has been a great augmentation of papers written on these subjects since 2005. Therefore, to reach a manageable number of articles, we focus on the latest literature (from 2005 to 2020) and expect the seminal papers to be included either through expert-sourced articles or snowball sampling.

### 3.3 Selection criteria

We define criteria to narrow down the set of papers to be reviewed (Kitchenham and Charters, 2007). We include papers discussing the social encounters between architects and clients or

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end-users, or at least discussing major issues that one of the two parties might experience. We consider papers either theoretical or empirical in nature.

We exclude:

- (1) Papers in other fields than architecture (e.g. structural design, farming/agriculture, household recycling, mobile networks . . .);
- (2) Papers too far from the field of housing architecture (e.g. participation at an urban level; heritage conservation; GIS web; BIM-based management);
- (3) Papers focusing exclusively on buildings' visual quality and aesthetics or acoustic properties;
- (4) Papers focusing on the interactions users have with the built environment without any reference to the architect;
- (5) Papers exclusively focusing on post-occupancy evaluations or on houses' energetic comfort and performances.

We conduct a first round of exclusion, screening through titles and abstracts, and then read full texts. This first read sheds light on the contents and allows to exclude some more articles.

### *3.4 Data extraction and analysis*

We use the software NVivo 13 to conduct a qualitative analysis through thematic nodes, firstly based on our focus (section 2) and on the keywords used during our database search. We then refine the preliminary coding nodes with an iterative approach, going through the articles and enriching the coding tree with concepts extracted from the literature. This review adopts a dialectical approach, contrasting different views of authors following the main themes we identified as critical in the literature.

## **4. Findings**

The analysis reveals 13 major themes (Figure 2) that we organize by actors individually versus their social encounters. In each node, the first column consists of the major umbrella theme. In some cases, subthemes are raised in literature and are listed in the second column. References are enclosed in Table 1, facing each coded theme or subtheme.

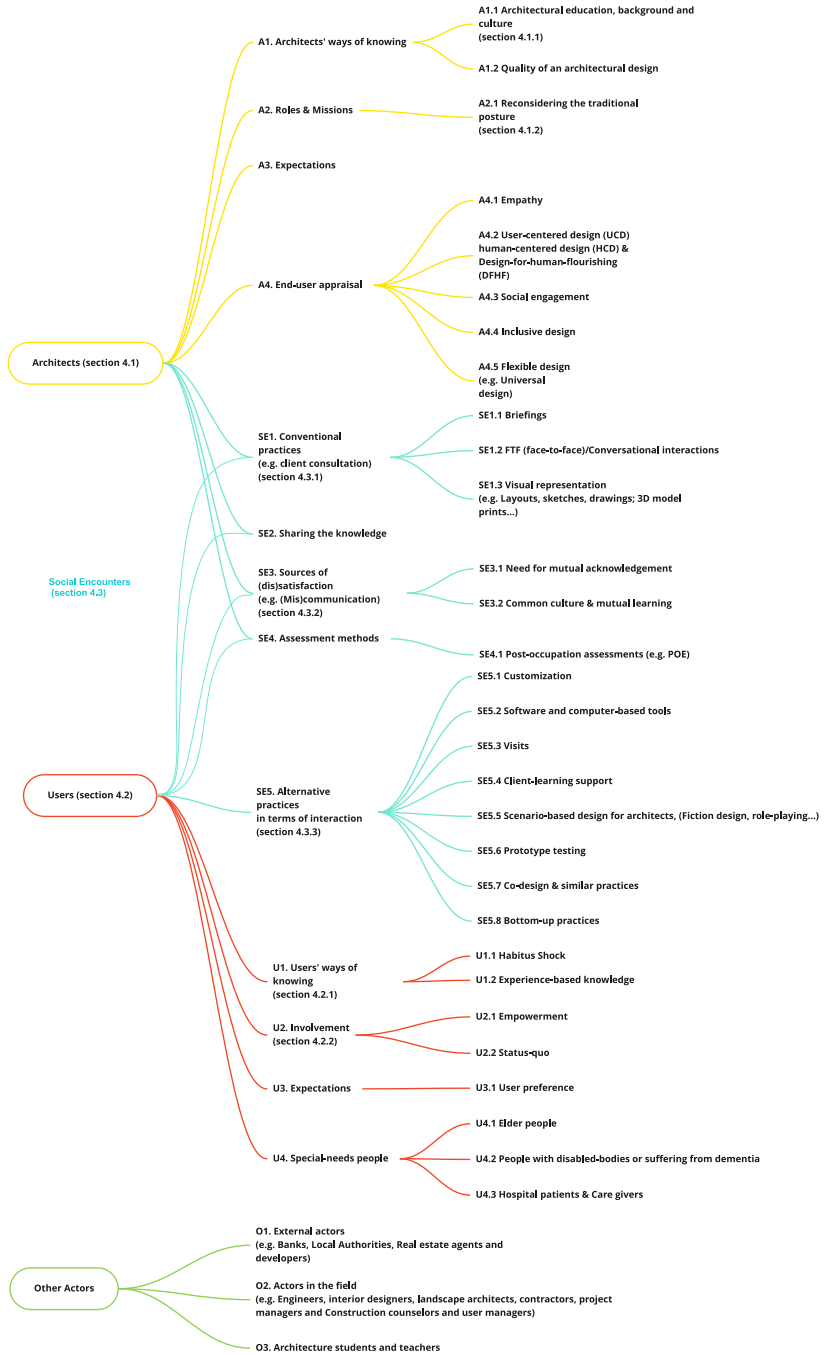
We further develop some of the following themes and subthemes. We identify these ones as potential friction points between architects and end-users considering the lens of housing design, raising up discussions directly echoing our research question. Other themes are not deemed less relevant for research in general; they are simply less crucial to review first, given our focus.

Some sub-themes that could also fit into the scope of our research are available in the table, without being extensively discussed further. They are suggested as potential leads to interested readers.

### *4.1 Architects*

It is important to understand the specificity of each party in order to tackle the interaction between them. In the case of architects, literature points out the specificity of the architectural culture, handed down from generation to generation, which is bound to evolve as implied by some researchers nurturing our corpus (e.g. Arboleda, 2020; de Maat, 2012; Dursun and Saglam, 2009; Havik and Plumbi, 2020).

*4.1.1 Architectural education, background, and culture.* Various reports and studies (Stater, 2002 in Siva and London, 2011; Angral, 2019; RIBA, 2015) raise the architects'



**Figure 2.**  
Themes and subthemes, organized by actors

Theme	Subtheme	Authors
A1	A1.1	Boumová and Zdráhalová (2016), Heylighen (2008), McDonnell and Lloyd (2014) Bogers <i>et al.</i> (2008), Boumová and Zdráhalová (2016), Frimpong and Dansoh (2018), Havik and Pllumbi (2020), Herriott (2018), Siva and London (2011), Lasiewicz-Sych (2019), Luck (2007, 2018), Oluwatayo <i>et al.</i> (2014), Mota (2019), Treviño Sherk and Cobreros Rodriguez (2019), Stevens <i>et al.</i> (2016), Stevens <i>et al.</i> (2016), Angral (2019), Uhl and Boyd Whyte (2016), Scott <i>et al.</i> (2018), Defays and Elsen (2018), Adad (2004)
	A1.2	Abdirad and Nazari (2015), Arboleda (2020), Bos-de Vos <i>et al.</i> (2016), Dimuna and Olotuah (2019), Dursun and Saglamer (2009), Kosk (2016), Latortue <i>et al.</i> (2015), Lee and Wohn (2016), Llinares and Page (2011), Maxwell and Aitchison (2017), Oluwatayo <i>et al.</i> (2014), Moghimi <i>et al.</i> (2017), Orrell <i>et al.</i> (2013), Uhl and Boyd Whyte (2016), Cole-Colander (2003)
A2		Adinyira and Dafeamekpor (2014), Bos-de Vos <i>et al.</i> (2016), Casakin and Badke-Schaub (2017), Frimpong and Dansoh (2018), Schwaiger <i>et al.</i> (2019), Siva and London (2011, 2012), Kazimee (2008), Kosk (2016), Oluwatayo <i>et al.</i> (2014), Stojanović and Stamenović (2015), Santi <i>et al.</i> (2019), Angral (2019), Defays and Elsen (2018), Adad (2004), Cole-Colander (2003), Champy (1997)
	A2.1	Arboleda (2020), de Maat (2012), Dursun and Saglamer (2009), Havik and Pllumbi (2020), Mishchenko (2013), Moghimi <i>et al.</i> (2017), Mota (2019), Saghafi and Mirzaei (2020), Treviño Sherk and Cobreros Rodriguez (2019), Uhl and Boyd Whyte (2016), Angral (2019), Sandman <i>et al.</i> (2018), Heylighen and Dong (2019), Adad (2004), Pressman (2014)
A3		Bogers <i>et al.</i> (2008), Angral (2019), Norouzi <i>et al.</i> (2014), Annemans <i>et al.</i> (2014)
A4		Arboleda (2020), Boumová and Zdráhalová (2016), Göbel (2017), Herriott (2018), Kosk (2016)
	A4.1	Altay <i>et al.</i> (2016), Siva and London (2011), Treviño Sherk and Cobreros Rodriguez (2019), Stevens <i>et al.</i> (2016), Stevens <i>et al.</i> (2016), Sandman <i>et al.</i> (2018), Heylighen and Dong (2019)
	A4.2	Altay <i>et al.</i> (2016), de Maat (2012), Frimpong and Dansoh (2018), Schwaiger <i>et al.</i> (2019), Lallemand and Gronier (2015), Latortue <i>et al.</i> (2015), Lo Bianco <i>et al.</i> (2020), Lo <i>et al.</i> (2017), Moghimi <i>et al.</i> (2017), Santi <i>et al.</i> (2019), Treviño Sherk and Cobreros Rodriguez (2019), Angral (2019), Pirinen and Tervo (2020), Lai <i>et al.</i> (2010), Stevens <i>et al.</i> (2016)
	A4.3	Arboleda (2020), Dimuna and Olotuah (2019), Havik and Pllumbi (2020), Stojanović and Stamenović (2015), Sani <i>et al.</i> (2011), Sandman <i>et al.</i> (2018), Scott <i>et al.</i> (2018)
	A4.4	Altay <i>et al.</i> (2016), Herriott (2018), Mishchenko (2013), Santi <i>et al.</i> (2019), Scott <i>et al.</i> (2018)
	A4.5	Afacan and Demirkan (2010), Altay <i>et al.</i> (2016), Herriott (2018), Mishchenko (2013), Hosseini Raviz <i>et al.</i> (2015), Włodarczyk and Włodarczyk (2015), Beisi and Yingying (2011)
U1		Alkali <i>et al.</i> (2015), Boumová and Zdráhalová (2016), Cheng and Lee (2005), Lee <i>et al.</i> (2017), Siva and London (2011), Lasiewicz-Sych (2019), Luck (2012, 2014, 2018), Van der Linden <i>et al.</i> (2019), Luck and McDonnell (2006)
	U1.1	Schwaiger <i>et al.</i> (2019), Siva and London (2011, 2012), Saghafi and Mirzaei (2020), Adad (2004)
	U1.2	Arboleda (2020), Casakin and Badke-Schaub (2017), Heylighen (2008), McDonnell and Lloyd (2014), Schwaiger <i>et al.</i> (2019), Lo Bianco <i>et al.</i> (2020), Luck (2012, 2014), Mishchenko (2013), Ostanska (2017), Payne <i>et al.</i> (2015), Angral (2019), Vermeersch and Heylighen (2015), Annemans <i>et al.</i> (2014), Van der Linden <i>et al.</i> (2019)
U2		Bos-de Vos <i>et al.</i> (2016), Havik and Pllumbi (2020), Herriott (2018), Lee <i>et al.</i> (2017), McDonnell and Lloyd (2014), Schwaiger <i>et al.</i> (2019), Siva and London (2011), Jenkins <i>et al.</i> (2012), Kosk (2016), Latortue <i>et al.</i> (2015), Luck (2007, 2012, 2018), Ostanska (2017), Schoenwitz <i>et al.</i> (2012), Sani <i>et al.</i> (2011), Sandman <i>et al.</i> (2018), Uhl and Boyd Whyte (2016), Defays and Elsen (2018), Lee (2006), Norouzi <i>et al.</i> (2014)
	U2.1	Lee <i>et al.</i> (2017), Luck (2018), Mota (2019), Treviño Sherk and Cobreros Rodriguez (2019), Norouzi <i>et al.</i> (2014)
	U2.2	Frimpong and Dansoh (2018), Orchowska (2019), Sani <i>et al.</i> (2011)

*(continued)*

**Table 1.**  
Themes distinguished  
in the reviewed  
literature, those in italic  
fonts are developed in  
the following sections

Theme	Subtheme	Authors
U3		Adinyira and Dafeamekpor (2014), Cheng and Lee (2005), Siva and London (2011), Lasiewicz-Sych (2019), Oluwatayo <i>et al.</i> (2014), Payne <i>et al.</i> (2015), Santi <i>et al.</i> (2019), Angral (2019), Tabrizi <i>et al.</i> (2012), Wong and Jusan (2017), Adad (2004), Luck and McDonnell (2006), Norouzi <i>et al.</i> (2014)
	U3.1	Llinares and Page (2011), Mishchenko (2013), Moghimi <i>et al.</i> (2017), Park and Lee (2012), Pirinen and Tervo (2020)
U4		Afacan and Demirkan (2010), Altay <i>et al.</i> (2016), Payne <i>et al.</i> (2015)
	U4.1	Lo Bianco <i>et al.</i> (2020), Mattie <i>et al.</i> (2016), Orrell <i>et al.</i> (2013), Ostanska (2017), Stevens <i>et al.</i> (2016), Scott <i>et al.</i> (2018), Włodarczyk and Włodarczyk (2015)
	U4.2	Mishchenko (2013), Vermeersch and Heylighen (2015), Torrington (2007)
	U4.3	Herriott (2018), Payne <i>et al.</i> (2015), Torrington (2007), Annemans <i>et al.</i> (2014)
O1		Adad (2004), Frimpong and Dansoh (2018), Schwaiger <i>et al.</i> (2019), Boumová and Zdráhalová (2016), Cheng and Lee (2005)
O2		Bogers <i>et al.</i> (2008), Göbel (2017), Schwaiger <i>et al.</i> (2019), Latortue <i>et al.</i> (2015), Angral (2019), Adad (2004), Salam <i>et al.</i> (2019), Oluwatayo <i>et al.</i> (2014)
O3		Altay <i>et al.</i> (2016), Busby and Harrison (2018), Treviño Sherk and Cobreros Rodriguez (2019), Stevens <i>et al.</i> (2016), Scott <i>et al.</i> (2018), Wong and Jusan (2017), Adad (2004)
SE1		Adinyira and Dafeamekpor (2014), Bos-de Vos <i>et al.</i> (2016), Casakin (2012), McDonnell and Lloyd (2014), Siva and London (2011), Stojanović and Stamenović (2015), Angral (2019), Adad (2004), Van der Linden <i>et al.</i> (2019), Luck and McDonnell (2006), Norouzi <i>et al.</i> (2015a)
	SE1.1	Aburamadan and Trillo (2020), Adinyira and Dafeamekpor (2014), Bogers <i>et al.</i> (2008), Herriott (2018), Siva and London (2011), Jenkins <i>et al.</i> (2012), Payne <i>et al.</i> (2015), Stevens <i>et al.</i> (2016), Angral (2019), Lai <i>et al.</i> (2010), Van der Linden <i>et al.</i> (2019), Luck and McDonnell (2006), Norouzi <i>et al.</i> (2014)
	SE1.2	Bogers <i>et al.</i> (2008), Bos-de Vos <i>et al.</i> (2016), McDonnell and Lloyd (2014), Schwaiger <i>et al.</i> (2019), Norouzi <i>et al.</i> (2015a, b), Van der Linden <i>et al.</i> (2017), Sarvarazadeh <i>et al.</i> (2013), Jenkins <i>et al.</i> (2012), Luck (2007, 2014), Mota (2019), Stevens <i>et al.</i> (2016), Scott <i>et al.</i> (2018), Defays and Elsen (2018), Adad (2004), Norouzi <i>et al.</i> (2014)
	SE1.3	Boumová and Zdráhalová (2016), Casakin (2012), Göbel (2017), McDonnell and Lloyd (2014), Schwaiger <i>et al.</i> (2019), Mota (2019), Salam <i>et al.</i> (2019), Stojanović and Stamenović (2015), Scott <i>et al.</i> (2018), Van der Linden <i>et al.</i> (2019), Norouzi <i>et al.</i> (2014)
SE2		Boumová and Zdráhalová (2016), Casakin (2012), Havik and Plumbi (2020), Herriott (2018), Heylighen (2008), McDonnell and Lloyd (2014), Schwaiger <i>et al.</i> (2019), Jenkins <i>et al.</i> (2012), Latortue <i>et al.</i> (2015), Luck (2014, 2018), Salam <i>et al.</i> (2019), Saghafi and Mirzaei (2020), Siva and London (2012), Pirinen and Tervo (2020), Defays and Elsen (2018), Annemans <i>et al.</i> (2014), Van der Linden <i>et al.</i> (2019), Luck and McDonnell (2006), Norouzi <i>et al.</i> (2014)
SE3		Abdirad and Nazari (2015), Adinyira and Dafeamekpor (2014), Beisi and Yingying (2011), Bogers <i>et al.</i> (2008), Bos-de Vos <i>et al.</i> (2016), Cheng and Lee (2005), Dimuna and Olotuah (2019), Frimpong and Dansoh (2018), Herriott (2018), McDonnell and Lloyd (2014), Schwaiger <i>et al.</i> (2019), Kosk (2016), Luck (2014), Oluwatayo <i>et al.</i> (2014), Shao and Nagai (2018), Siva and London (2012), Schoenwitz <i>et al.</i> (2012), Angral (2019), Scott <i>et al.</i> (2018), Adad (2004), Cole-Colander (2003), Norouzi <i>et al.</i> (2014)
	SE3.1	Busby and Harrison (2018), Havik and Plumbi (2020), Siva and London (2011, 2012), Luck (2012, 2014), Orchowska (2019), Angral (2019), Vermeersch and Heylighen (2015), Adad (2004), Annemans <i>et al.</i> (2014)
	SE3.2	Siva and London (2011, 2012), Latortue <i>et al.</i> (2015), Luck (2007, 2014), Orchowska (2019), Saghafi and Mirzaei (2020), Angral (2019), Sani <i>et al.</i> (2011), Sandman <i>et al.</i> (2018), Cole-Colander (2003)
SE4		Adinyira and Dafeamekpor (2014), Jenkins <i>et al.</i> (2012), Lee and Wohn (2016), Mattie <i>et al.</i> (2016), Oluwatayo <i>et al.</i> (2014), Orrell <i>et al.</i> (2013), Stojanović and Stamenović (2015), Shao and Nagai (2018), Sandman <i>et al.</i> (2018), Torrington (2007)

Table 1.

(continued)

Theme	Subtheme	Authors
SE5	SE4.1	Abdirad and Nazari (2015), Arboleda (2020), Hong <i>et al.</i> (2018), Schwaiger <i>et al.</i> (2019), Zeithaml <i>et al.</i> (1993), Love and Holt (2000), Maloney (2002), Lee and Wohn (2016), Lima and Maia (2012), Luck (2014), Shao and Nagai (2018), Torrington (2007), Scott <i>et al.</i> (2018), Annemans <i>et al.</i> (2014)
		Altay <i>et al.</i> (2016), Dabieh (2016), Havik and Plumbi (2020), Moghimi <i>et al.</i> (2017), Orchowska (2019), Shao and Nagai (2018), Treviño Sherk and Cobreros Rodriguez (2019), Lai <i>et al.</i> (2010), Luck and McDonnell (2006)
	SE5.1	Cheng and Lee (2005), Lee <i>et al.</i> (2017), Jansson <i>et al.</i> (2013), Latortue <i>et al.</i> (2015), Maxwell and Aitchison (2017), Schoenwitz <i>et al.</i> (2012), Park and Lee (2012), Zawadzki <i>et al.</i> (2011)
	SE5.2	Afacan and Demirkan (2010), Casakin (2012), Desthieux and Merz (2006), Lee and Wohn (2016), Lo <i>et al.</i> (2016), Lo <i>et al.</i> (2017), Saghafi and Mirzaei (2020), Park and Lee (2012), Tabrizi <i>et al.</i> (2012), Zawadzki <i>et al.</i> (2011), Llinares and Page (2011)
	SE5.3	Göbel (2017), McDonnell and Lloyd (2014), Vermeersch and Heylighen (2015), Van der Linden <i>et al.</i> (2019)
	SE5.4	Casakin (2012), Schwaiger <i>et al.</i> (2019), Siva and London (2011, 2012), Luck (2012, 2014, 2018), Oluwatayo <i>et al.</i> (2014), Sani <i>et al.</i> (2011), Sandman <i>et al.</i> (2018), Norouzi <i>et al.</i> (2014)
	SE5.5	Altay <i>et al.</i> (2016), Cheng and Lee (2005), Herriott (2018), Van der Linden <i>et al.</i> (2019), Treviño Sherk and Cobreros Rodriguez (2019), Stevens <i>et al.</i> (2016), Pirinen and Tervo (2020), Heylighen and Dong (2019)
	SE5.6 SE5.7	Herriott (2018) Göbel (2017), Havik and Plumbi (2020), Schwaiger <i>et al.</i> (2019), Kosk (2016), Latortue <i>et al.</i> (2015), Lo Bianco <i>et al.</i> (2020), Lo <i>et al.</i> (2017), Luck (2007, 2012, 2018), Mishchenko (2013), Mota (2019), Payne <i>et al.</i> (2015), Saghafi and Mirzaei (2020), Treviño Sherk and Cobreros Rodriguez (2019), Sani <i>et al.</i> (2011), Sandman <i>et al.</i> (2018), Pirinen and Tervo (2020), Uhl and Boyd Whyte (2016), Scott <i>et al.</i> (2018), Heylighen and Dong (2019), Adad (2004), Lee (2006)
SE5.8	Arboleda (2020), Luck (2012), Adad (2004), Schwaiger <i>et al.</i> (2019), Urban (2015), Kazimee (2008)	

Table 1.

tendency to be peer-oriented rather than client-oriented, alienating the clients and end-users, therefore, bringing these to see architects as “arrogant” and “inflexible” (Siva and London, 2011; Angral, 2019). Architects are known to rely on their own experience as a main reference whilst designing (Cuff, 1991; Imrie, 2003; Verhulst *et al.*, 2016; Heylighen and Dong, 2019). Angral (2019) emphasizes the marginalization of practicing architects and raises concerns about “viewing architecture as art, a culture of allegiance and indoctrination, disassociation from clients and end-users, neglecting moral and ethical responsibilities, and outdated models of education and practice” (p. 59).

This peer-oriented point of view roots in architects’ school times. According to Adad (2004), some architects are victims of their scholar years and consider the *house* as an art object. Arboleda also vividly criticizes architectural culture as the artistic nature of some project can surpass quality issues such as functionality and stability of the building. She also points out that architectural tools have developed nowadays upon large, iconic architectural designs, as celebrations “of the designer’s creative strokes” (Arboleda, 2020, p. 16) and fail at being socially relevant. Architects’ years of education thus do not help bridge the disconnection with the clients.

Frimpong and Dansoh (2018) also address the lack of management skills in the architectural educational path in terms of organizing, leading, collaborating and costing that young architects tend to neglect, whereas the ability to design is placed above all else. The architectural culture conveyed by these educational backgrounds engenders a condescending view of those who are not familiar with architecture (Cuff, 1991).

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*4.1.2 Architects' roles and mission: reconsidering the traditional posture.* The architects' role seems to be unclear for laypersons nowadays. Architecture should be a service-oriented profession, where the architects in charge do not impose their judgment on a larger group of people (Abdirad and Nazari, 2015) but rather orchestrate a complex network of stakeholders and needs. According to Adad (2004), architects used to give advice, guidance and technical assistance without imposing their point of view; he regrets that today, architects become the undisputed project managers, occupy an important place in the decision-making process and confine the users to nothing more than "consumers". Frimpong and Dansoh (2018) imply that clients nowadays have developed the perception that architects are arrogant, inaccessible, and unapproachable. Architects would compromise to please their clients not so much for their well-being, but rather to keep a steady flow of jobs and achieve profitability (Siva and London, 2011). For some authors yet (e.g. Dursun and Saglamer, 2009; Siva and London, 2011), the architect is a designer whose main mission is to transform the client's needs into reality.

According to Havik and Pllumbi (2020), "there is currently a global radical re-thinking of the political and ethical role of the architectural profession" (p. 12) in favor of user participation, some researchers even questioning the necessity of the profession (Adad, 2004). Among the guidelines suggested to support this renewal, we read that architects should cooperate with psychologists and sociologists and remain in a continuous learning posture (Kosk, 2016; Treviño Sherk and Cobreros Rodriguez, 2019), or that human relations and participatory approaches should be taught in architectural curricula (Luck, 2018; Oluwatayo et al., 2014; Angral, 2019). Arboleda (2020) even embraces a bottom-up approach and develops an alternative posture that she calls "ethno-architect": "incorporating anthropology's emic perspective—that is, the perspective from (...) the end-users. On that condition, the designer strives to understand the users' perspective in a way that is as unbiased as possible, as an ethnographer endeavors to do" (p. 17). In such cases, the role of the architect is not erased by user participation (Champy, 1997, in Latortue et al., 2015) but rather is to "facilitate the process because the participants cannot understand or draw" (Pressman, 2014, in Saghafi and Mirzaei, 2020, p. 4).

## 4.2 End-users

Before studying further the participatory approaches suggested here above, an overview of the other side of the coin is necessary. First, we lay out what the literature brought up in terms of user's knowledge and expertise, then we look into end-users' involvement and expectations.

*4.2.1 User's ways of knowing: owning their expertise and dealing with the habitus shock.* Recent studies (McDonnell and Lloyd, 2014; Van der Linden et al., 2019) recognize the importance of embodied knowledge as a key issue in a balanced relationship between architects and clients.

Luck and McDonnell (2006), raised up the fact that "the user's knowledge contribution to the design discussions were most frequently the functional and structural naming of the representational elements of design. This was considered to be the level at which most users were comfortable", given "their current use of the space" (p. 163). Schwaiger et al. (2019) however spot an interesting category of clients who hold specific skills (such as knowledge in construction or understanding of a designer's tasks or craftsmanship); in that case, the architect can pull ideas from or enrich the design process through enlightened conversations.

Nevertheless, most clients are not related to the construction field and can experience trouble getting a grip on technical dimensions or specific language (Cheng and Lee, 2005; Luck, 2007; Siva and London, 2011; Alkali et al., 2015). This important aspect of the user experience, often observed during the early phases of a construction project, is often referred to as the "Habitus Shock" (Adler, 1975; Schwaiger et al., 2019; Bourdieu, 1977). It is a state of

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“confusion, stress or frustration experienced by clients who find themselves exposed to an unfamiliar architectural habitus” (Siva and London, 2011, p. 179).

In response to this shock, Siva and London (2011) introduce client-learning as “the client’s acquisition of skills and knowledge in relation to the design and construction process”, client learning during habitus shock being a “characteristic of successful relationships” (p. 185). Clients growingly become more relaxed when confronted with unexpected difficulties because they understand the complex processes necessary to reach refined results (Siva and London, 2012).

*4.2.2 Involvement: the will to participate?* In order to create a sense of belonging and to develop sustainable housing projects, involvement (Sami *et al.*, 2011; Adad, 2004; Arboleda, 2020) or users’ participation in design (Kaatz *et al.*, 2005; Gustavsson and Elander, 2016; Moghimi *et al.*, 2017; Treviño Sherk and Cobreros Rodriguez, 2019) is said to be essential.

Even more than for architects, the role that users should take in the process is unagreed on. Some argue in favor of customization methods such as platforms to enhance “industrialized house building” (Maxwell and Aitchison, 2017); others expect the clients to highlight potential issues they encounter in their use of space that is to unfold their user knowledge to detect problems that architects would not have discovered alone (Luck, 2012).

Several studies demonstrate that users nowadays are no longer willing to undergo the whole design process simply as external observers, but rather as actors in the design process (Lawson, 2006; Schwaiger *et al.*, 2019), being experts of their own habits and behaviors (Casakin and Badke-Schaub, 2017), owning their problems and sometimes even the solutions (Sanders, 2005; Arboleda, 2020). This “client-led revolution” translates into always better-informed users expecting to have their say all along the decision-making process, considering themselves as “part of a team”. No longer design recipients, they engage in the process by leading radical changes and decisions (Cole-Colander, 2003) and by suggesting design ideas (Luck and McDonnell, 2006; Glock, 2009). They enter the design process as co-creators possessing relevant expertise (Fleming, 1996) and are sometimes reluctant to hire architects on projects if it is not be absolutely mandatory (Frimpong and Dansoh, 2018).

### 4.3 Encounter

As mentioned in section 2, the relationship between architects and end-users can really be troublesome, especially in housing projects (London and Chen, 2004; Emmitt and Gorse, 2007 in Siva and London, 2012; Frimpong and Dansoh, 2018).

According to Casakin and Badke-Schaub, “despite their mutual interest in establishing a business relationship, usually architects and clients have little knowledge about each other [and] play dissimilar roles in the dynamic interaction that takes place in collaborative work meetings” and this shapes “their actions, thoughts, behaviors, and feelings throughout the design process” (Casakin and Badke-Schaub, 2017, p. 3). However, it is understood that the relationship gradually established between an architect and his client is the result of a complex balance between trust, degree of autonomy and letting go from the side of architects, and user involvement on the other side (Defays and Elsen, 2018).

*4.3.1 Conventional practices: in need of a change?* Nowadays, most architects do not often go beyond early conversational interactions to reach out to users’ needs and expectations (Norouzi *et al.*, 2015a; Van der Linden *et al.*, 2017). Even though currently established as the most frequent interaction modality, these exchanges do not make users’ data sufficiently tangible and significant, and therefore, they are not the most appropriate way for users to efficiently leverage their particular expertise or to actively engage into design processes (Norouzi *et al.*, 2015b; Sarvarzadeh *et al.*, 2013). Consensus between groups (more than one user or one architect involved) and knowledge transfer can also be tricky and bring up frictions (Van der Linden *et al.*, 2019).

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4.3.2 *(Dis)satisfaction, (mis)communication: mutual learning.* The sources of dissatisfaction in the relationship can be multiple. Luck (2014) points out three possible causes: the lack of acknowledgment of the user's expertise, the lack of acknowledgment by the user of the architect's work and the lack of common culture.

The lack of mutual acknowledgment is also discussed by Siva and London (2012): "The clients' initial negative perceptions towards the architect (...) were largely overturned through their experience with them. Instead, they had a more refined understanding of the skills, expertise and knowledge of the architect and recognized the value of employing an architect to deliver a cost-effective solution that took into consideration other key elements which added to the quality of the building" (p. 264). As mentioned earlier, there can also be a confusion or misunderstanding about the roles of architects and their responsibilities (Adad, 2004; Angral, 2019). Some architects are sometimes solicited only to sign already-made plans, without being given the chance to bring any added value, which lead to dissatisfaction and tensions (Defays and Elsen, 2018).

In brighter terms, architects accepting some sort of partnership with the client; high level of respect and trust for the architect's expertise on behalf of the client contribute to the success of the relationships (Siva and London, 2011).

As for the lack of common culture, Angral (2019) agrees with Luck (2014), especially with respect to the language and terminology used by architects and clients. Uhl and Boyd Whyte (2016) also point out differences in expectations: "When asked to choose between functionality and aesthetics, more than half (...) of respondents said that clients prefer functionality over aesthetics [...] current systems of architectural education produce graduates who only have aesthetic skills and do not know much about functionality and affordability" (p. 64).

Adding to Luck's list of sources of dissatisfaction, Shao and Nagai (2018) – although studying workspace architecture – reach an observation transferable to housings architecture, related to the lack of emotional communication, when the design fails to meet physiological and psychological needs.

Another major source of dissatisfaction hides in the architects' fees. For Angral (2019), "the agreement was that percentage-based fee structures encourage situations where clients first need to commit to the architect before the architect will discuss the design. Although the professional conduct of architects, the initial contract paperwork, the fee structure, etc., inform the clients as to how much it will cost them in terms of architectural fees, they do not communicate the look and feel of the end product. In other words, a contract of engagement is simply a promise in the shape of paperwork, which lacks the factor of "take-home feeling" or "value for money" (p. 67).

4.3.3 *Focus on some alternative practices.* We have identified other interactions that somewhat fall outside the practices that we have described as "conventional", and that could by themselves be the topic of a distinct literature review. Amongst other practices available in Figure 2 for interested readers, we choose to present here client-learning support, co-design and similar practices, and bottom-up practices.

As previously mentioned, client-learning can lead to better satisfaction throughout the overall project for both parties. Taking this a step further, Luck (2014) encourages architects to take the role of the pedagogue and provide client-learning support to accompany the layperson through the cultural shock they will experience when going through their architectural/construction process, for instance for their home.

Amongst less conventional practices, we also identify Participatory Design (PD) in Luck (2018) and Sander's (2002), and co-design as depicted by Sanders and Stappers (2008) and Cain (2005). As the line between participation and co-design can be blurry, we choose to look here at the two through the lens of their common thread that is designing "with" and "by" users (when users assume the role of designers) instead of only designing "for" users.

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We keep in mind that these practices have their own limits, among them their time-consuming nature which constitutes an obstacle for architects (Latortue *et al.*, 2015).

Bottom-up practices are here understood as depicted by Arboleda (2020) that is allowing users to take up the design task. We consider that houses' auto-construction and vernacular practices fall under this scope (e.g. in Schwaiger *et al.* (2019) and Urban (2015)) and shake up the usual borders of the field. Kazimee (2008) and Urban (2015) argue that vernacular practices tend to be more contextualized, respectful of the existing environment. This reasoning converges with Adad's (2004), arguing that building used to be considered as an art and a social act of the inhabitants themselves acting as "architects", and that the result was always well integrated in its social, cultural and physical context, respecting the ecosystem in an instinctive way.

## 5. Discussion and implications for practice

Looking back on our analysis of the literature (per actor and about their mutual friction points), we highlight paths to improve social encounters and emphasize some of those paths by looking at how themes relate to each other. As meta-observation, we first underline how vast the literature pointing to architect-user interactions is, but without being systematically really specific on that matter: most papers tackle connected topics and peripherally bring rich contribution to the subject, but few are really dedicated to and engage in a discussion regarding the architect-user relationship.

### *5.1 Rethink the future of the architectural profession, also in terms of mutual learning*

Papers debating architects' postures and education identify a breach between the role the architects are taking, and the expectations and current needs of the society. The peer-oriented vision should make space for a rather service-oriented one, more inclusive of the users' inputs in the design and overall process. A crucial challenge the profession faces today is thus to find a consensus about the role architects, and to develop an academic program consistent with this renewal. If not, architects will find themselves increasingly deprecated and dismissed. A follow-up research question would be: can increased users' involvement be acceptable and feasible, considering current architectural practices, and consistent with the actual field constraints? Why/to what extent is this shift not already happening and implemented?

In addition, it is important that laypeople not familiar with the field become more sensitized and educated to the added value of an architect in a project, and to the role and responsibilities of an architect, as to maintain a balance in each other's contributions.

The connection we are arguing for echoes the client-learning goal, advocated in the reviewed literature. We suggest that this position should be shared to favor mutual learning. Clients hold skills and expertise that could benefit the architectural field. This loops back to the need to reconsider the architect's role and missions, and to the need to develop adequate tools and pedagogical environments to support this kind of practice.

### *5.2 Trust and acknowledgment are key for communication*

Building awareness about the other partner's value in the process cannot come without building an actual relationship on a solid common ground. We argue that understanding the other; listening and communicating between stakeholders is essential to reach satisfactory outcome for both sides for a successful home project. Siva and London's (2011) study raises awareness on the concepts of intimacy and chemistry between architects and clients, leading to trust. Demonstrating or developing empathy with clients about these notions is crucial to create that bond. The literature presents few convincing tools to facilitate this social

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connection and trust bonding between users and architects. We would expect an influence from other disciplines (e.g. design in general, sociology, psychology) to be fruitful.

## 6. Limits of the study

For this SLR we did not use two or more databases as recommended (Kitchenham and Charters, 2007). We consider that  $N = 104$  articles reviewed give us already a strong foundation to develop our arguments, and that most leading publication channels are covered in Scopus.

Phrasing our research strings, we include keywords related to our focus' lexicon (including keywords related to dwelling), snowballing to enrich this focus. Other keywords could have been used and would have provided another corpus of articles to be reviewed. Moreover, we acknowledge that the languages chosen as inclusion criteria create a cultural bias that influences the results of this research.

To establish our coding nodes in NVivo, we created a first coding tree with the keywords from the research strings, then had them evolve inductively whilst coding a first round of articles. At some point, this tree seemed to stabilize and was kept.

It can be argued that we left a lot of actors out of the picture. Indeed, we acknowledge that the construction field cannot be reduced to architect-client/user interactions in a vacuum, since they are part of a larger framework with a multiplicity of actors who bring their own critical issues. Other actors not only necessarily intervene in the process, they can also have a huge impact on the interactions between architects and end-users. Further extensive research could focus on this matter, as to add up on the present results.

Additional research could also address the matter directly in the field, to complete the existing literature with contextualized data, to model interactions in practice. This would make the diagnosis more legitimate and help suggest advices and devices to help practitioners facilitate their work and interactions.

## 7. Conclusions

To outline the relationship between end-users and architects, we trace in more depth some of the issues raised through a systematic review of the literature, organized by actor and themes. The main points that emerge are the following.

Firstly, we point out that the literature is vast that the practices described are diversified, often lack nuance or detail, and raise many debates. In this context, it is challenging to reconstruct a coherent narrative or to suggest straight solution paths. We present an overview of the most relevant papers, organized in a table, by themes. This represents a major output of this SLR, giving the concerned readers the opportunity to get a grasp on their subtheme of interest.

Secondly, it is urgent to find a consensus on the role of architects and to teach in schools a program that is consistent with this agreement. It is important that this role is communicated to the general public, to inform on the mission and responsibilities of architects, which too often, users are not familiar with. Architects have to incarnate an educational and accompanying role towards the client, especially when it comes to housing design. We underline the importance of understanding, listening and communication between actors, but also of mutual learning between parties.

Finally, we note that the literature presents few convincing tools in terms of user-architect interaction. An influence in this field from other disciplines (e.g. design in general, possibly sociology and psychology) could present a lead to progress.

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