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Architecture of Home in Later Life: Towards a Fivefold Theoretical Model

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Abstract

Purpose
Most older people wish to age “in place”. However, as current housing is mainly unsuitable for later life, architects have a key role to play. Yet, there is little architectural consideration of the notion of "ageing in place" and its various facets, beyond a functional focus. Architects seem to lack support to grasp inhabitants’ sensible needs, and thus synergies with human sciences could be enlightening. To ensure homes are designed in line with people’s well-being, we aim to address a review of the current state-of-the-art, as to build a model supporting architects through their understanding of older people-environment relationships.

Design/methodology/approach
In this paper, we investigate the main key concepts that could enrich architects’ design approaches on “ageing in place”. A narrative literature review interrogating English- and French-written publications from the last twenty years in various disciplines was conducted, with a focus on older people and non-institutionalised housing.

Findings
The results highlight five essential perspectives to be taken into account when questioning housing for older people: health, affective, social, built and contextual perspectives. Their meaning and ties are developed and then synthesised into considerations, calling for architectural creativity.

Originality
This fivefold theoretical model adds to the architectural existing body of knowledge by adopting a multidisciplinary and multidimensional angle, going beyond the predominantly pragmatic vision associated with ageing. It provides stakeholders in architecture with a fresh and clear insight of meaningful relationships between older people and their residential environment.

Keywords

Architecture, Home, Older People, Ageing in Place, Age-friendly Environment

Classification

Literature Review

Introduction

Today, societies are facing an unprecedented challenge of demographic ageing. In 2050, more than a third of the European population will be over 60 years old and the number of people in the world over 80 will almost have tripled (United Nations, 2019). This demographic change, mainly due to declining birth rates and higher life expectancies, is also associated with societal changes. Differentiations between the pre-war and post-war generations have gradually emerged, particularly in terms of comfort, personal development, health, technologies, services and mobility (Auger, 2016). These lifestyles, needs and expectations will continue to evolve in a substantial way and will have particular repercussions on how to approach the ageing process and the environment of later life.

In line with this, western societies have been questioning residential systems for older people, acknowledging this issue as a major challenge of our time (Abramsson and Andersson, 2016). The home (i.e., the daily living space) has been identified, both by policies and older people themselves, as the first and main health support, allowing autonomy and privacy in distinction to hospitals and nursing homes (Beyeler, 2014; Wiles *et al.*, 2011). Initiatives favouring home care have been taken by many countries, both for economic and well-being reasons (Dagnies, 2016), and the research is clear: the great majority of older people want to live in their own homes as long as possible (Fondation Roi Baudouin, 2017; Dreyer, 2017; Burholt and Windle, 2004), even if those are often not suitable for the ageing years (Smetcoren, 2016). This position is discussed in the scientific literature and policy programs through the notion of "ageing in place".

In front of these strong demographic, societal and residential observations, architects have a crucial role to play (Luck, 2019). Through their skills, influence and impact on everyday aspects of our daily life, they have a key position to improve the health and well-being of older people (Marsh *et al.*, 2020). In that regard, the social responsibility of architects is tremendous: architecture serves people's needs and wishes (Luck, 2019). Harper (2013) argues there is not only a necessity to engage with the environment of older people but also a huge opportunity for design to influence the ageing process itself. Therefore, architecture and gerontology need to be explored together to prepare for the next silver generation and to ensure their health and well-being (Andersson, 2011; Burton *et al.*, 2011).

Despite the increasing number of studies on "ageing in place", several associated challenges still need to be tackled (for an overview, see Frochen and Pynoos, 2017). Particularly, there has been little research creating unifying concepts useful to architects, stemming from a variety of research domains (Greenfield, 2012). For a long time, much of the research conducted on residential environments of older people has been focusing on physical accessibility and functional adaptations of the dwelling, in order to remove barriers to mobility and to reduce the risks of falls (Rowles *et al.*, 2003), as well as on the "care environment" (Harper, 2013). Still today, most conferences on architecture and health are specifically related to hospital design or environmental hazards (Public Health England, 2019). On the field, the situation is similar: existing housing guidelines linked to the ageing population, although useful for the housing sector and architects, are often limited to a pragmatic and normative vision, ignoring the more subjective dimensions.

Yet, semantically, "ageing in place" is a broad concept (Fernández Arrigoitia *et al.*, 2018; Wiles *et al.*, 2011), and the complexity of the "meaning of home" (Aplin *et al.*, 2013) entails the need to address in an equally important way both the physical dimensions and the "internal psychologically-based ties" between persons and places (Rowles *et al.*, 2003). However, according to recent studies, it would seem that architects, probably lacking support on this matter, have a more limited understanding of emotional-

related users' requests (Chrysikou *et al.*, 2016) and mainly deal with those through their own "intuition, personal experience or gut feeling" (Stevens *et al.*, 2019; Van Der Linden, 2018).

At the same time, the residential challenges raised by the ageing population call for an interdisciplinary response (Marsh *et al.*, 2020). Bridges have to be built between different worlds (Després *et al.*, 2017) and the works from environmental psychology/gerontology, anthropology, urban studies, sociology, health researchers and many other specialists can be of great value to the field of architecture (Lucas, 2016). Interdisciplinarity is indeed increasingly important, in order to ensure a comprehensive understanding of the issue (Lucas, 2016). However, so are transdisciplinarity and inclusion of stakeholders beyond the scientific community (e.g., older people, housing developers, policy stakeholders and relevant NGOs). These actors, directly concerned by or in a position to trigger change in the housing situation of older people, are highly valuable to consult regarding these matters.

In the light of these observations, we therefore ask in this paper: "What main key concepts in (grey) literature would enrich architects' design approaches on 'ageing in place'?". The narrative review we conducted in response to this has a holistic aim and adds to the existing body of knowledge for architects by adopting a multi-disciplinary and multi-dimensional perspective.

Methodology

Choice of the method

We conducted a narrative literature review (see Paré *et al.*, 2015) on the topic of "ageing & housing", based on the following arguments:
(a) We aimed to obtain a broad overview of the topic. Such aim is a key aspect of narrative literature reviews (Collins and Fauser, 2005), contrary to systematic literature reviews, which rather answer very specific questions studied in clearly delineated situations (Corbière and Larivière, 2014).
(b) Formal protocol-driven search strategies (such as systematic reviews) may fail to identify important information in complex and heterogeneous topics (such as housing for older people) (Greenhalgh and Peacock, 2005). Indeed, strategies that might seem less efficient, such as "snowballing" (i.e., scanning the reference lists of publications and selecting papers that seem relevant for further review) or "serendipitous discovery" (i.e., finding a relevant paper when looking for something else) for example, are likely to identify important sources that would otherwise be missed in the review (Greenhalgh and Peacock, 2005).
(c) Although our research focuses on publications related to the combination of the themes "ageing" and "housing", it also appeared important to include papers that focused on single aspects of "ageing" (to capture dynamics specific to older people) or on single aspects of "housing" (to capture dynamics specific to the meaning and design of the home). A systematic review only focusing on "ageing & housing" would have been too limited, while a systematic review focusing on each term and their combinations would have been too broad and mainly inadequate. A narrative review with a critical eye throughout the readings was, therefore, necessary for this selection.
(d) Finally, given the need for transdisciplinarity and the growing interests and activities in the topic of housing for older people, not only through the scientific community but also through NGOs, local and political actors, it seemed essential to extend the review to these "grey" initiatives and literature. The freedom allowed in a narrative literature review was, therefore, more adequate in order to broaden the databases and sources as much as possible.

Process

Although narrative literature reviews do not usually detail how the review was conducted (as they are not based on systematic methodological searches/analyses) (Paré *et al.*, 2015), we aim for transparency and clarity by explaining the steps we followed.
Our process was inspired by the Grounded Theory (Strauss and Corbin, 2007), which consists of three main phases: (1) data collection, (2) encoding data, (3) theory building. This Theory was used and adapted specifically from a literature review perspective (see Ermel *et al.*, 2021).

(1) The data collection resulted in two types of searches.
1.1. The main search was based on five main inclusion/exclusion criteria:

- the topic, which focused on ageing and non-institutionalized housing;
- the English-French language association, which was essential regarding our geographical position as authors and provides a fresh look at the issue;
- the dates, which have been limited to 2000-2019, in order to have a recent view of the topic, echoing the societal challenges addressed in the introduction;
- the sources, which were of three kinds: publications from academic databases (we used 11 main portals: Cairn, Scopus, Taylor & Francis Online, ProQuest, Erudit, OpenEdition, 3 University Libraries, Google Scholar and ResearchGate), books and grey literature (e.g., doctoral dissertations, guidelines for practice, government and NGO reports);
- the access to the full text.

The methodological approaches of the sources were not subject to exclusion criteria: we included qualitative and quantitative studies, as well as theoretical and empirical publications.

1.2. Complementary searches were also conducted, mainly by snowballing via reference lists (e.g., relevant publications, authors, journals), by serendipitous discoveries, as well as by manual searches on aspects that seemed interesting to investigate further or to backtrack specific seminal publications.

(2) The second phase of the review aimed to decompose and cluster information (Ermel *et al.*, 2021), and consisted of two sub-phases. These sub-phases were built together, progressively and iteratively.
2.1. The first one resulted in the critical selection of 626 texts from the data collection for abstract screenings. By reading the titles and abstracts, we started to identify recurring themes, both general (e.g., "ageing & housing", "ageing in place", "architecture & gerontology", etc.), and more specific (e.g., "co-housing", "adaptability/flexibility", "generational differences/societal evolutions", etc.).
2.2. The second one resulted in the reading of 137 full texts, of which 126 were eventually useful for the review. These readings are listed and described in an annexed table (see Appendix 1). During this phase, the thematic reasoning of the abstract screening phase was pursued and detailed: texts were annotated, key statements were extracted, initial themes were completed/nuanced and other themes were added. More specifically, we proceeded through: open coding (i.e., extracting meaning from the text and associating it with codes), axial coding (i.e., assembling codes into categories) and selective coding (i.e., identifying relationships among the categories) (Corbin and Strauss, 2007). The readings ended when saturation was reached (see Boell and Cecez-Kecmanovic, 2014).

(3) Finally, as a result of the first two phases, the identified categories and their relationships have been combined in a theoretical model, which will be presented in this paper.

The three phases and their sub-phases are illustrated in Figure 1. They were iteratively conducted and built on each other in a recursive manner (see Boell and Cecez-Kecmanovic, 2014). The whole process was carried out by the first author, a researcher with background in architecture.

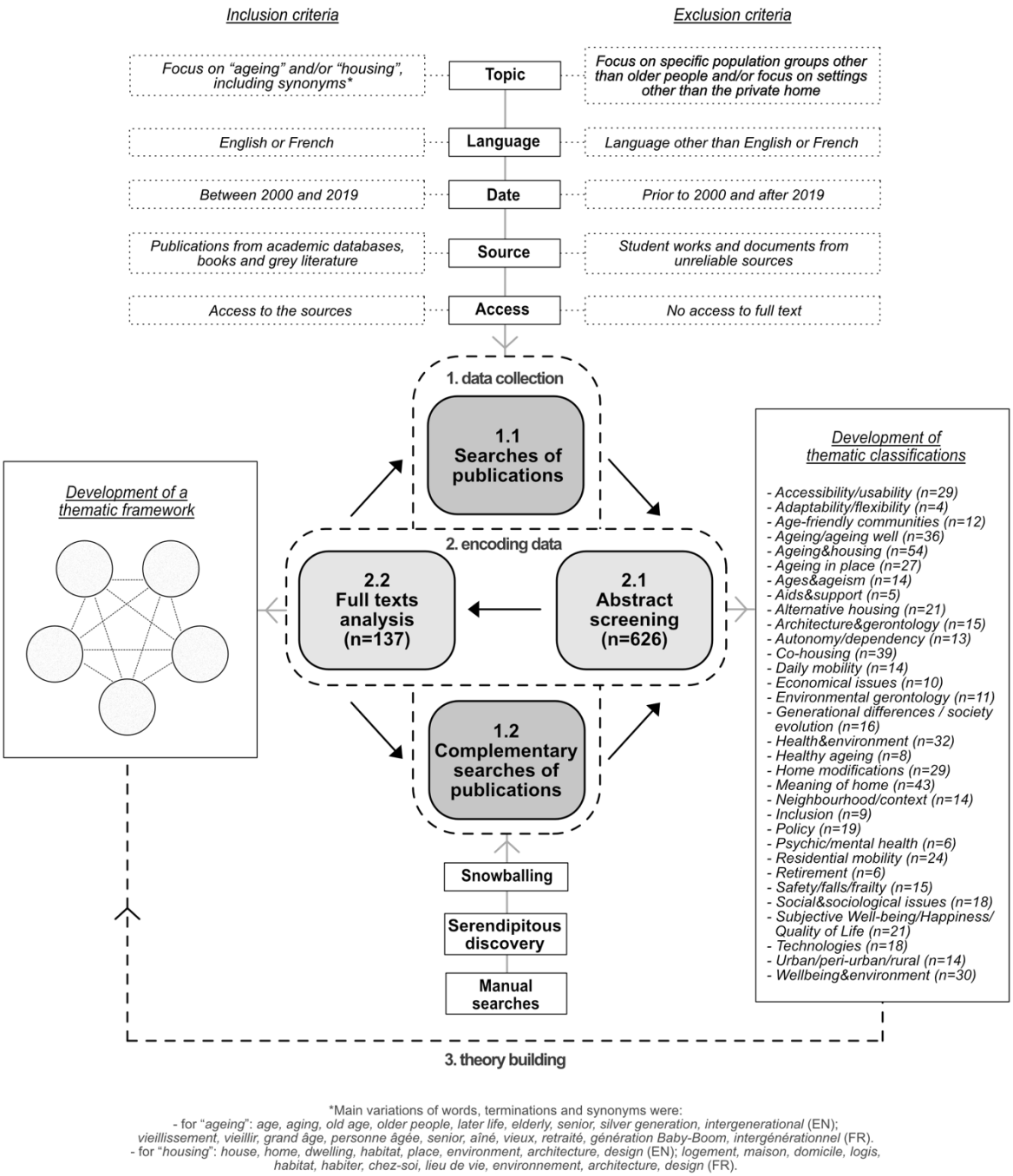

Figure 1. Process of the narrative literature review.

Findings

The findings are presented in 6 sections. The first section explains tripartite models of person-environment studies. These models are nuanced regarding both the specific population (i.e., older people) and the discipline we seek to nurture (i.e., architecture). Studying these has resulted in the development of a "fivefold theoretical model for architecture of home in later life". In the subsequent five sections, we therefore explain the five perspectives of this model: health, affective, social, built and contextual perspectives. Together, these five perspectives identify main aspects for designing homes that provide meaningful implications for older people's well-being.

Emergence of a fivefold theoretical model for architecture

The home environment is a multidimensional and personally meaningful place (Fernández Arrigoitia *et al.*, 2018; Aplin *et al.*, 2013) and "ageing in place" involves dynamic relationships between the person and the environment. As primarily explained in 1973 by Lawton and Nahemow in their ecological model of ageing and the competence-press model, the "ageing in place" process is successful when the person's abilities (competence) meet the environment (environmental press), or vice-versa; i.e., when a balance between both of these components is established (Bigonnesse and Chaudhury, 2019). Following this predominant and well-known approach, over the years, theories on living places of older people have further developed and multiplied. Two main fields, specifically, have contributed to the major conceptualizations of the "meaning of home" in later life: environmental psychology and environmental gerontology. Although to date there is still no consensus on a precise definition of "ageing in place", both of these research fields agree that "the meaning of home among older adults is related to aspects of physical, social and personal bonding" (Oswald and Wahl, 2005, p.13). Early research thus tended to articulate concepts through three main dynamics: the physical dynamics include physical/functional components of the environment and the body-centred processes; the social dynamics refer to the home as a place of connection and socialization; and the personal dynamics include behavioural, cognitive and emotional levels (Bigonnesse *et al.*, 2014). As collected in Table I, over the years this tripartite approach has been shared by many authors when explaining relationships between people and their environment.

Authors	*Date*	*Discipline*	*Theory / topic*	*Tripartite model*
Rowles	1983	Environmental gerontology	Elder's sense of insideness within a place	(1) Physical insideness; (2) Social insideness; (3) Autobiographical insideness
Sixsmith	1986	Environmental gerontology	Home experience	(1) Physical home; (2) Social home; (3) Personal home
Lawton	1989	Environmental psychology	Basic environmental functions	(1) Maintenance; (2) Support; (3) Stimulation
Rubinstein	1989	Environmental gerontology	Psychological processes linking person to place	(1) Person-centred process; (2) Social-centred process; (3) Body-centred process
Somerville	1997	Social policy	Meaning of home	(1) Physically constructed; (2) Socially constructed; (3) Psychologically constructed
Oswald and Wahl	2005	Environmental gerontology / psychology	Theoretical perspectives on the meaning of home	(1) Physical bonding; (2) Social bonding; (3) Personal bonding
Iwarsson *et al.*	2007	Health Sciences	Healthy ageing at home	(1) Physical health; (2) Social health; (3) Mental health
Gilroy	2008	Architecture & urban planning	Domains of possible change for older people	(1) Physical; (2) Social; (3) Psychological
Pattaroni, Kaufmann, *et al.*	2009	Urban sociology	Lifestyles through quality of life	(1) Functional quality; (2) Social quality; (3) Sensitive quality
Raymond *et al.*	2010	Environmental studies	Place attachment	(1) Environmental connections; (2) Community connections; (3) Personal connections
Burton *et al.*	2011	Health & Social Sciences	Place-related well-being constructs	(1) Functional place-related well-being; (2) Social place-related

				well-being; (3) Emotional place-related well-being
Aplin *et al.*	2013	Occupational Therapy	Dimensions of the home that affect decision making	(1) Physical; (2) Social; (3) Personal; (as well as (4) Temporal)
Bigonnesse *et al.*	2014	Environmental gerontology	Meaning of home	(1) Physical aspect; (2) Social aspect; (3) Personal aspect

Table I. Examples of tripartite models for person-environment relations.

These tripartite models are however not always specifically oriented towards *older* people, nor are they always specifically relevant to the *architectural* discipline. Throughout the readings, nuances regarding these theories have emerged. They can be summarised as follows. The first nuance concerns the necessity to broaden the notions of physical capacities and abilities of the person, to reach a more global notion of "health". Health-related issues are widely discussed in the literature on older people, since this population group is more likely to have health concerns than others (Abramsson and Andersson, 2016). We will see, however, that this notion of health is tending to evolve towards a more comprehensive approach. The second nuance relates to the need of broadening the notion of housing through various levels and scales, by distinguishing the built environment and the contextual environment. Generally, the literature tends to collapse the two, whereas older people distinguish their house and their neighbourhood (Wiles *et al.*, 2011) and whereas it is recognised in the architectural discipline that human life cannot be conceptualised out of context (Luck, 2019).

These nuances have led to the identification of the "fivefold model for architecture of home in later life" (see Figure 2), which will be detailed below. It is important to note that these five perspectives are strongly interrelated. Most of the insights included in each perspective have causes and consequences on each other.

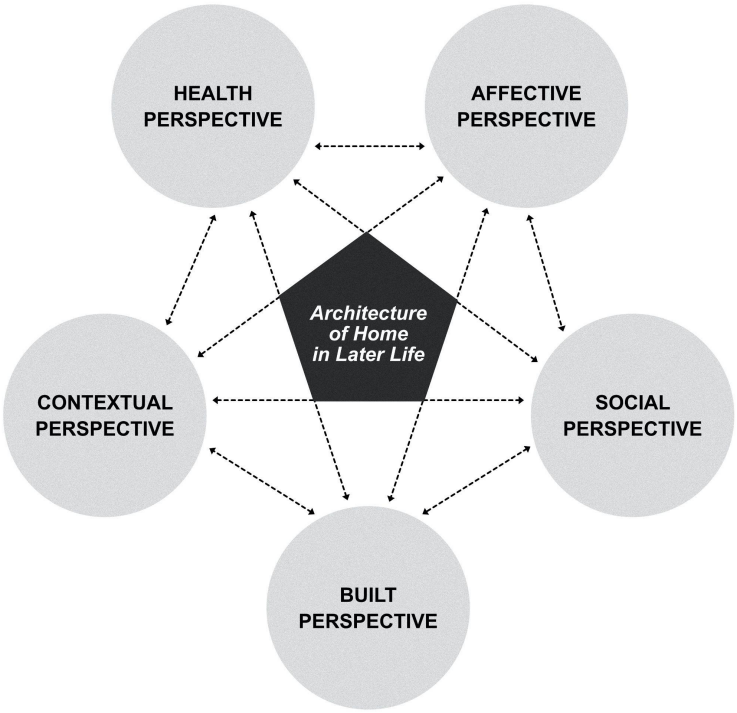

Figure 2. A fivefold model for architecture of home in later life (Authors, 2021).

The Health Perspective

When designing spaces for (future) older people, we invite architects to ask themselves: *"How are the person's health needs addressed in the environment?"*

Considering growing old as a continuous process, the domestic lives of younger and older people are not so different (Van Steenwinkel *et al.*, 2012). A person's age can, moreover, be determined via chronological, legal, biological or cognitive age, making the notions of "older" and "younger" highly dependent on each specific context. Ageing data are complex, as the ageing population is as heterogeneous as any other age group (Harper, 2013). However, even if no one ages in the same way or at the same pace, older people inevitably experience a progressive health weakening, physically and/or mentally (Després *et al.*, 2017; Seidel *et al.*, 2010; Lawton and Nahemow, 1973). Generally, researchers distinguish three phases in older days: (1) when capacities are preserved (i.e., the first part of Third Age), (2) when health problems become more frequent and old age is gradually being felt (i.e., the second part of Third Age), and (3) when capacities decrease significantly and dependency appears (i.e., the Fourth Age) (Masson *et al.*, 2015). Ageing is thus not considered as the sudden transition from a non-dependent to a dependent state, nor as a chronological segment of life having starting and ending ages (Laslett, 1991). Instead, the Third and Fourth Ages usually manifest as a process of progressive physiological, sensory and/or cognitive fragility emergence, from overwhelming vitality to absolute dependence (Nowik and Thalineau, 2014). They can vary from person to person, depending on life situations (Laslett, 1991),

This accumulation of decreasing abilities implies an increasing degree of dependency in activities of daily living (Andersson, 2011; Menec *et al.*, 2011). To prevent ageing in place from becoming complicated or dangerous to the person's health, home help, as well as informal care-giving (i.e., relatives providing non-professional support to an older person) are increasingly provided (Dagnies, 2016; Auger, 2016). Yet, beyond human support, it is now widely recognized that our built environment impacts our health (Steemers, 2017; Oswald and Wahl, 2004). Links between daily activities and housing, particularly, have a great influence on the preservation of independence of older people (Mallon, 2010). Architecture can help overcome certain functional health difficulties (Seidel *et al.*, 2010) and, thus, allows postponement of institutionalization (Aquino *et al.*, 2016). Indeed, the more serious the difficulties, the more decisive the architectural design and qualities become (Mechkat and Bouldin, 2006).

For many years, research has been conducted on links between the architecture of the home and people's difficulties, both mental (such as dementia) and physical (Fernández Arrigoitia *et al.*, 2018; Shin, 2018; Frochen and Pynoos, 2017; Rowles *et al.*, 2003). Studies mainly focused on enabling activities through accessibility (e.g. functional capacity of the person and official norms applied in the house) and usability (e.g. user evaluations and subjective expressions) (Fänge and Iwarsson, 2003), or on reducing the risk of accidents and falls at home (Menec *et al.*, 2011; Wahl *et al.*, 2009). Security is one of the main aspects guiding domestic interventions, considering the removal of environmental hazards as essential (Aquino *et al.*, 2016). However, these considerations are mainly linked to the mobility of people, and other relations between sensory perceptions and the environment are rarely addressed in this context (e.g., hearing difficulties generating specific acoustic parameters, vision difficulties generating adequate lightning – for a more complete overview, see Qualidom asbl, 2018).

In architectural practice, accessibility regulations are often considered as irritating aspects which also are not mandatory in private dwellings (Van Der Linden *et al.*, 2016). Most houses are in fact inadequate

for difficulties that may occur during ageing (Iecovich, 2014; De Decker *et al.*, 2013) and an adaptation of the inhabitants to their house is more frequently noticed than the opposite (Nowik and Thalineau, 2014).

Although it is acknowledged that accessible and safe spaces are crucial to age well in place (Membrado, 2013), two important observations should be highlighted. First, there is occasionally a warning about over-assistance (Aquino *et al.*, 2016): a too large reduction in daily activities, and therefore a decrease in functional reserves, can contribute to a person's fragility (e.g., pushing older people to use a lift when they could still climb an adapted staircase and could thus maintain/improve their physical condition). Physical activity can reduce chronic conditions, disability, or even the risk of premature death (Steemers, 2017). The environment must then strike a balance between facilitating and restricting activities (Aquino *et al.*, 2016; Steemers, 2017). Second, the insertion of health supports (e.g., grab bars) into the home is often experienced in a negative way, as current human and technical aids to age in place are rarely neutral and often negatively impact the identity of the home (Auger, 2016). They are often felt as a hygienist echo of the hospital and these representations of old age conflict with people's desire to stay away from them (Boulmier, 2012). The support provided should therefore be invisible and non-stigmatizing (Masson *et al.*, 2015).
In line with this, old age should not be reduced to a set of losses (e.g., dependency, impairments) (Gilroy, 2008). Instead, we need a shift in the way we address issues related to the ageing population (Harper, 2013). To create positive links between health and architecture, beyond physiological difficulties of older people and the physical intervention they imply in housing (i.e., objective components), an understanding in terms of well-being and identity (i.e., subjective components) is therefore equally important (Shin, 2018; Heywood, 2005; Oswald and Wahl, 2004).

The Affective Perspective

A second perspective identified is the Affective Perspective. When designing spaces for (future) older people, we invite architects to ask themselves: *"How are the person's affective needs expressed in and through the environment?"*

According to Cassaigne (2006), home is the extension of the self. The home doesn't only refer to the inside spaces but to the inhabitant's awareness of his/her own interiority and intimacy (Heywood, 2005). The definition of the "self" necessarily includes the dimension of place, constituting the person's identity of place (Serfaty-Garzon, 2003a) and a sense of "being in place" (Rowles *et al.*, 2003).
This experience also relates to the appropriation of the home (Cassaigne, 2006). By personalizing spaces, unique feelings, preferences and aesthetic sensibilities are revealed (Rowles *et al.*, 2016). This personalization is essential in the creation of a positive relationship with a home: it reflects personal dynamics to life events, values, tastes, memories, etc. (Lies *et al.*, 2017; Cassaigne, 2006).
Housing is a crucial determinant of people's quality of life and well-being (Shin, 2018). Living in a home and making it their own is a founding experience for vulnerable people seeking autonomy (Serfaty-Garzon, 2003b). Older people usually have a greater need to exercise control over their environment (Heywood, 2005). Considering that they have often lived in their home for several years and will in addition spend more time there every day, their sense of attachment in later life increases (Gilroy, 2008). This sense of belonging to the home is essential to maintain over time, since sociological conditions of people and their lifestyles are, moreover, constantly evolving (Ennuyer, 2011). The process of "making" and "remaking home" (e.g., in the case of relocation) will therefore become increasingly important

(Rowles *et al.*, 2016). Planners, architects and interior designers, among others, will have a critical role to play in this reflection.

In an architectural environment, different atmospheres are perceived through the emotional sensibility and spatial experience of the residents. These atmospheres can be expressed, for example, by the lights, materials, colours, spatial articulation, or interior/exterior relationships (Author 1 *et al.*, 2018; Van Steenwinkel *et al.*, 2012). In the housing field, the word "homelike", which refers to the pleasant environment of the home in contrast to the architecture and interiors of institutions, is used: home is thus associated with a cosy rather than sterile environment, with safety rather than danger, with natural facilities rather than artificial, or with freedom of choice rather than authority (Lundgren, 2000).
To create such atmospheres, Heywood calls for "a better understanding of human need" (2005, p.532) and a consideration of "the meaning that their home has for the occupant" (2005, p.531). However, those are usually not taken into account in home intervention practices (Imrie, 2004).
According to Aplin *et al.* (2013), these affective connections with home comprise four aspects: privacy, safety (emotional) & security (physical), freedom & independence, and identity & connectedness. Onay and Minucciani (2018) add that opportunities for relaxation and psychological restoration, meaningful change & sensory variability, and an interesting visual environment with aesthetic integrity should also be addressed in building design to reflect the affective dimension. Finally, beyond place dependence and place identity, Lies *et al.* (2017) also relate place attachment to friend and family bonding. Indeed, among these notions, we observe that "ageing well in place" is also significantly impacted by the relational dimension.

The Social Perspective

When designing spaces for (future) older people, we invite architects to consider the Social Perspective and ask themselves: *"How are the person's social needs expressed in and supported by the environment?"*

In addition to the relationship to the self, housing also implies relationships to other persons. The home is a place where people find a balance between private and social life, between the limits excluding or including the others, between the need to protect themselves from others and the need to communicate with them (Larceneux, 2011). Different spheres are therefore linked – the intimate, the personal, the social and the public ones (Lawton, 2001) – as well as different kinds of interactions – the spontaneous (unplanned), the proposed (semi-planned) and the organized (planned) ones (Lies *et al.*, 2017).
Research shows that the social dimension is so important for older people that their housing choices may sometimes be based more on the social ties that can be created/maintained rather than on housing as such (Hillcoat-Nalletamby and Ogg, 2014; Wiles *et al.*, 2011). Creating relationships, having spontaneous conversations, being a member of a community, relying on neighbours, having informal support and keeping family and friends bonding (i.e., connections, belonging, memories or concerns linked to family/friends) are crucial to age well in place (Lies *et al.*, 2017). As such, the concept of "ageing in place" itself tends to evolve: while the focus used to be on "place" (housing), it then extended to the "community" (relationships) (Thomas and Blanchard, 2009).

Nurturing relationships is therefore essential and, according to Thys (2016), involves two main aspects. The first one is receiving people at home: arrangements designed for intimacy as well as for meeting and welcoming others are essential (Vercauteren *et al.*, 2001). Being able to "have guests" (especially children and grandchildren) contributes to the wellbeing of older people (Lies *et al.*, 2017; Heywood,

2005). Yet, this dimension is often lacking in housing for older people, due to small rooms or non-existent temporary reception/collective spaces (Thys, 2016). The second aspect is the daily social life: being in place is rarely a completely personal process (Rowles *et al.*, 2003). Often, people live with a partner, a family or a housemate, and this sharing is linked to their quality of life (Membrado, 2013; Oswald and Wahl, 2005). However, when the circle of loved ones gradually diminishes as people get older, loneliness can be felt and can represent a major risk to the mental health of older people (Aquino *et al.*, 2016).
Notions of loneliness and isolation are often discussed in the literature concerning older people: isolation is objective and defined as "being alone", whereas loneliness is subjective and linked to a “feeling of being alone" (Nowik and Thalineau, 2014). In parallel, whereas physical distance from relatives does not necessarily reduce the frequency of contact (Pochet and Corget, 2010), forced proximity does not necessarily generate positive feelings either (Vercauteren *et al.*, 2001).

This is why, today, links between proximity and solidarity are becoming more important. Housing no longer represents a strong family place where several generations live together, but increasingly a place of fragmented families, single-parent families or single people (Iweps, 2016). This decrease in traditional ties pushes us to reinvent some forms of solidarity (Masson *et al.*, 2015). For Dijol (2016) promoting solidarity between generations is an integral part of social and territorial cohesion. Membrado (2013) adds that older people should be given a place as citizens again, in a society truly designed for all ages, in order to regain a sense of meaning in daily life (Nowik and Thalineau, 2014) and feel socially useful (Thys, 2016). The need to move towards a more collective society, promoting cohesion and social diversity, is thus strongly reflected in the discussions on ageing well in place (de Schutter *et al.*, 2018; Dijol, 2016; Boulmier, 2012).
In an attempt to overcome the difficulties related to the social usefulness and the solitude of certain older people, as well as to promote solidarity between generations, we are now witnessing the emergence of collective residential housing solutions, both in the literature and on the field (Dagnies, 2016). These solutions are particularly interesting from a building perspective.

The Built Perspective

Considering the Built Perspective, when designing spaces for (future) older people, we invite architects to ask themselves: *“How does the built environment fit with the person’s varied needs?”*

The built environment can be synthesized in three types of aspects. The first, its physical aspects, refer to the visible concrete elements (e.g., materials, colours, textures). The second, its spatial aspects, refer to articulations in the three-dimensional space (e.g., the arrangement of functions, orientations, sizes/distances/proportions). The third, its technical aspects, refer to variable technical elements (e.g., heating/cooling, acoustics, technology). All these built aspects, common to any architectural project, are perceived by users through kinaesthetic, tactile, visual, acoustic and olfactory sensations. In the case of housing for older people, some relations between built aspects and sensory perceptions might be emphasized, depending on the health, affective or social focus (see above). However, from a more general built perspective, three important lessons can be drawn.

First, there is the need to suggest various housing solutions for older people (ADEME, 2016; Nowik and Thalineau, 2014) to respond, both objectively and subjectively, to their financial, social, cultural and human needs (Dagnies, 2016; Vercauteren *et al.*, 2001). Indeed, there is no ‘ideal’ housing for older people given their heterogeneity (Masson *et al.*, 2015). The classic dual system "home vs. institution" is

no longer appropriate (Thomas and Blanchard, 2009). Over the last few years, alternatives for housing have been emerging and may vary from one country to another in terms of name, size or function (see Figure 3 below): cohabitation (Némoz, 2017), intergenerational housing (Gerards *et al.*, 2015), twin home (Beyeler, 2014), or kangaroo home (Andrianne and Jaumotte, 2016), for instance, are progressively developing. These solutions might ease the transitions between the different age stages of life (Fernández Arrigoitia *et al.*, 2018; Lies *et al.*, 2017), and concern both the possibilities of home services/care as well as the characteristics of the house/territories (Dagnies, 2016). They offer interesting opportunities for older people who do not wish to live alone, but do not need all the services of a nursing home (Nowik and Thalineau, 2014), as well as for people who aspire to have social relationships while maintaining their freedom and intimacy (Beyeler, 2014). Currently, many of these are not (well) known to older people, nor are they always 'possible' to develop in particular regions, resulting in older people who generally prefer "the housing type that is common in the area where they live, that is the housing types that they know about" (Abramsson and Andersson, 2016, p.129). Personalized architectural support for older people is therefore necessary in order to reflect on people's future life projects (Masson *et al.*, 2015).

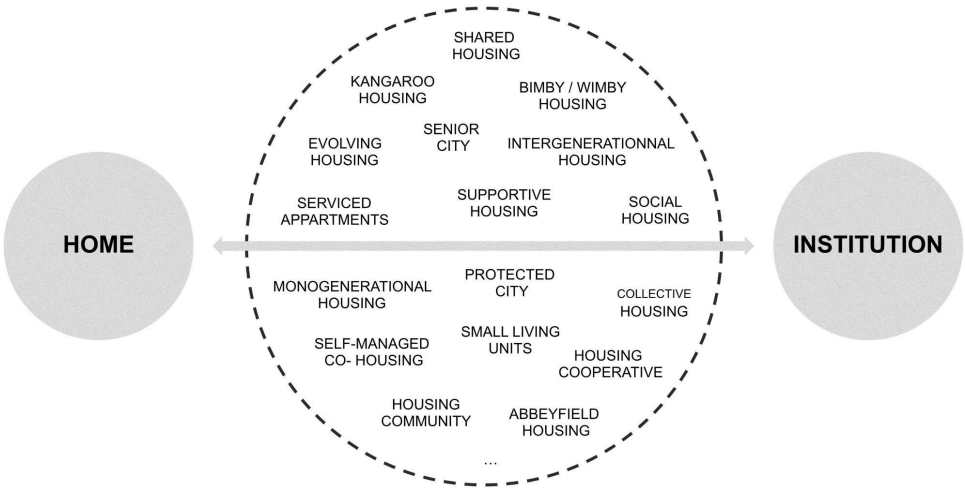

Figure 3. Examples of alternative housing between home and institution for older people (Authors, 2021).

A second major built-perspective point is the need to anticipatively design more flexible housing. If ageing often requires housing adaptations (Hwang *et al.*, 2011), these are usually carried out very late, if not too late (Fondation Roi Baudouin, 2017). Moreover, as age increases, the desire for change decreases (Auger, 2016). The original design of the dwelling is therefore essential (ADEME, 2016): spaces must be flexible in order to allow some evolutions according to the changing needs of inhabitants (de Schutter *et al.*, 2018; Beyeler, 2014). Spaces should respond to the needs of everyone (Mechkat and Bouldin, 2006; Vercauteren *et al.*, 2001), which is also why concepts such as "universal design", "inclusive design", or "design for all" (i.e., spaces that can be used by a much larger diversity of people) have been increasingly emerging (Van Der Linden *et al.*, 2016; Preiser, 2008). Moreover, the temporal dimension also takes on its full importance (Aplin *et al.*, 2013). "Adaptable", "flexible", "evolving" are key words for tomorrow's architecture in order to design spaces for everyone and at any time in their lives. Finally, this flexible anticipation, while easier in new buildings (Beyeler, 2014), is just as essential in existing housing (Dijol, 2016). Adapting existing housing to the needs of the ageing population before even considering new construction is imperative, all the more in sustainable efforts to increase the density of the existing housing stock (Dagnies, 2016).

A third and final observation is the link between the built intervention and the financial issue. Low pensions and/or a tendency to impoverishment are often observed among older people (Iweps, 2016; De Decker *et al.*, 2013). In parallel, despite the existence of some public subsidies in several countries, adapting housing for the old age remains expensive (Nowik and Thalineau, 2014). The lack of financial resources is a major barrier, among others, to housing adaptation or relocation (Fondation Roi Baudouin, 2017; Hwang *et al.*, 2011). Dagnies (2016), however, insists on the fact that housing adaptation can be established at different levels, from a very limited budget (e.g., storage and maintenance) to a substantial budget (e.g., work and heavy equipment). Besides, Némoz (2017) adds that small, shared and rental housing will be increasingly developed, thus reducing residential costs. In any case, the creativity of architects will be needed to find compromises between built-perspective needs and financial limits.

The Contextual Perspective

A final perspective concerns the Contextual Perspective. When designing spaces for (future) older people, we invite architects to ask themselves: *"How does the contextual environment fit with the person's varied needs?"*

Older people are often seen as fixed in their house (Gilroy, 2008), but life takes place both within and outside its walls (Van Steenwinkel *et al.*, 2012): living means being located and taking a place among other people and other settings (Cassaigne, 2006). This is why, today, it is acknowledged that "ageing in place" includes wider environmental horizons than the house itself and extends to the neighbourhood, the city or even the country (Wiles *et al.*, 2011). Home intersects several scales of space and time, intimately intertwined (Dreyer, 2017). This contextual perspective is of great importance in ageing, particularly because residential mobility decreases with age and people feel therefore more attached to their location and the related community (Iecovich, 2014), which impacts their well-being and quality of life.

However, "ageing in place" can't be successful if the context is not adapted/qualitative (Bigonnesse and Chaudhury, 2019): the design of all spaces, whether private or public, has an impact on population, since the physical environment facilitates or hinders people's independence and mobility in the local community (Burton *et al.*, 2011). Proximity to certain supports (e.g., medical and food services) and daily mobility services become essential (Masson *et al.*, 2015). In that regard, "age-friendly" cities, which favour active ageing, pay particular attention to outdoor spaces, transportation, community support and health services (WHO, 2007). Nature (Steemers, 2017; Lies *et al.*, 2017), limited noise and clean open spaces encouraging physical activity (Shin, 2018), as well as decent quality shops and street markets seem to also play an important role in qualitative ageing, since they call for more life and vitality instead of stagnation usually associated with old age (Gilroy, 2008).

The location of the house is therefore essential: a qualitative environment close to the home represents a factor of prevention (Aquino *et al.*, 2016). However, it would seem that there is no consensus in research on 'ideal geographical areas' for ageing, since urban, peri-urban and rural areas each offer their advantages and disadvantages (Mallon, 2010). Moreover, the scientific community seems to agree that "ageing in place" should not be seen as the only solution to all situations (Després *et al.*, 2017; Vanleerberghe *et al.*, 2017; De Decker *et al.*, 2013). Even if a large majority of people prefer progressive adaptations to a radical change of housing (Pochet and Corget, 2010), when the dwelling can no longer

respond to the person's evolution and lifestyle, moving is often more appropriate (Thys, 2016). Especially today, people no longer spend their entire lives in a single dwelling (Rowles *et al.*, 2016).

Finally, beyond positioning housing in a geographical sphere, the contextual perspective also positions housing in the political sphere in which the inhabitants live (Frochen and Pynoos, 2017). Ageing well in place is indeed also impacted by public policies and research points out that regulations on urban planning, construction, renovation and use of buildings should now be modified (ADEME, 2016) according to the evolution and challenges of our society (de Schutter *et al.*, 2018), in order to reconcile the lifestyles of older people and the architecture of their home.

Discussion

Through these five perspectives, we notice the complexity of the topic: each dimension is strongly linked to the others. To name but a few examples, the notion of accessibility is linked to both a health and a built perspective; the sense of safety is linked to a health, affective as well as built perspective; and the relationships with the neighbourhood are linked to a social, affective and contextual perspective. Although these perspectives provide some clarity, they cannot be limited to simplistic guidelines: for each perspective, balancing answers and compromises have to be found. Competing poles might emerge and must be simultaneously considered in an architectural design process. Sometimes, these poles seem opposed or complementary; sometimes nuanced or with infinite in-between variants. These polarities, which are synthetized in Table II, call for architectural creativity and some "designerly ways" of balancing constraints.

People's **HEALTH** needs can be addressed in the environment by considering both…	
The ageing group population	The ageing individual person
Current specific abilities	Future progressive difficulties
Physical condition	Mental condition
Specific health difficulties (illness)	Complete global health (wellbeing)
Human support	Environmental support
Accessibility (objective)	Usability (subjective)
Assistance (facilitating activities)	Over-assistance (reducing activities)
Independence	Dependence
The presence of the support (functionality)	The representation of the support (identification)
People's **AFFECTIVE** needs can be expressed in the environment by considering both…	
The individual self (identity)	The integrated self (identity of place)
Personal sensibilities of the inhabitant	Expression of these sensibilities in the home (atmospheres)
"Homelike" environment	"Personalized" environment (control, freedom, attachment)
Past/current-related life ("making home")	Future-related life ("remaking home")
Safety	Security
Privacy (psychological need)	Bonding (relational need)
People's **SOCIAL** needs can be expressed in and supported by the environment by considering both…	
People's inclusion (communication)	People's exclusion (protection)
Intimate/personal spheres	Social/public spheres
Unplanned interactions	Planned interactions

Existent relationships to maintain	Future relationships to create
"Ageing in place"	"Ageing in community"
Temporary guests	Daily cohabitants
Isolation (objective)	Loneliness (subjective)
Fragmentation (separation)	Solidarity (gathering)
Generational cohesion	Intergenerational cohesion
The **BUILT** environment can fit people's diverse needs by considering both…	
The habitat-built aspects	The inhabitant's perceptive aspects
The dual system "home-institution"	The alternative housing solutions
The initial design	The future design (flexibility)
Design for specific users	Design for universal users
Construction of new housing	Adaptation of existing housing
Built possibilities	Financial possibilities
The **CONTEXTUAL** environment can fit people's diverse needs by considering both…	
Inside-walls life (private home)	Outside-walls life (neighbourhood)
Proximity of services	Proximity of nature
Attachment to the location	Quality of the location
The current place (staying)	Another place (moving)
Geographical spheres	Policy spheres

Table II. Double considerations for architecture of home in later life.

Conclusion, limits & future research

To provide adequate answers to specific issues, architects must have a rigorous knowledge of the project they deal with, both in a user-related and in an environment-related way. Considering the demographic, societal, residential and well-being challenges encountered by our societies and for which architects have a key role to play, we conducted a narrative literature review on "ageing and housing". The resulting model conceptualizes theoretical and empirical studies from various disciplines, beyond the essentially pragmatic visions, to enrich architect's approaches on housing for older people. In doing so, the five perspectives developed in the paper (i.e., the health, affective, social, built and contextual perspectives) can be useful both in practical and academic contexts, be used both by architectural practitioners (e.g., as a guide in the design) and researchers (e.g., as a starting point for further holistic developments or future research focusing on one specific aspect of the review). In addition, the complexity of the topic is synthesized through double considerations (see Table II) that call for architectural creativity and specific interpretation depending on each architectural project.

We acknowledge this study has limitations. Inherent to its very nature, the performed literature review is not exhaustive nor systematically triangulated. Also, although the selection process of relevant sources was set up meticulously, the first author's background and perspective cannot be left out.
However, despite these limitations, we believe this review, given its inclusion of many varied sources, the confrontation with some seminal publications and the saturation achieved, points out essential aspects to be taken into account when questioning housing for older people.

Finally, we would like to conclude with some avenues for future research. We identified some gaps that, we believe, are worthy of further development in order to ensure homes are designed in line with older people's well-being.

Firstly, more studies on alternative residential options for ageing and on their impacts on people's daily lives are needed (e.g., consequences of downsizing; possibilities of non-collective housing alternatives).

Secondly, the needs of new generations of older people are still little known, as well as their residential wishes (e.g., "X generation"; secondary residences, lightweight dwellings).

Thirdly, some pragmatic issues related to housing for older people are rarely addressed (e.g., concrete links between budgets and housing; flexible housing through architects' designs and residents' experiences; realities of architectural interventions on existing housing). Those could be analysed through case studies and in-depth interviews.

Fourthly, in performing the review of literature, we noted that the roles of actors in architectural conception processes needed clarification (e.g., need to better define actions, considerations, difficulties and limits of architects; need to better understand how bridges between various disciplines can be developed; need for studies where architects design more "with" older people rather than "for" them; need for transdisciplinarity, social distribution and interactions with "real-world" stakeholders).

Fifthly, questions of temporality, although essential, are rarely taken into account to date (e.g., longitudinal studies validating the match between the older person's initial wishes and the post-design experience; studies focusing on people who anticipate ageing in their homes before "feeling old").

Through holistic considerations of the five perspectives of the model, we aim to move towards a society where the architecture of home in later life is addressed in its full meaning: the *clarifications and simplifications* of key concepts achieved through this model call for architectural consideration of the *complexities and diversities* of older people's experiences in their living places.

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