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Article

## Reinterpreting *Existenzminimum* in Contemporary Affordable Housing Solutions

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### Abstract

During the housing crisis of the 1920s, the German concept *Existenzminimum* (minimum dwelling) was developed and applied to the construction of public social housing. It was considered a design laboratory, where research, design, and experimentation would focus on a unique goal: create a space-efficient affordable housing typology, based on minimum quality standards. Empirical evidence indicates a renewed interest in alternative design solutions and minimum dwelling approaches over the last decade: examples include micro-housing solutions and collaborative housing models. This is due to the current affordable crisis and the increasing trend of urbanisation. However, little is known about the current interpretation of *Existenzminimum*. What does the concept entail today and how has it developed? This article investigates if and how *Existenzminimum* is currently applied: first, it unfolds the core design principles of the original *Existenzminimum*. Then, these principles are used to assess if and how existing affordable or low-cost housing approaches are current (re)interpretations of the concept. Finally, the article proposes a definition for a contemporary *Existenzminimum*, arguing that a better understanding and awareness of the concept can help urban planners, designers, policy-makers and citizens in developing alternative affordable housing solutions.

### Keywords

affordable housing; alternative design solutions; *Existenzminimum*; housing typology; minimum dwelling

### Issue

This article is part of the issue “Housing Builds Cities”, edited by Luca Ortelli (École Polytechnique Fédérale de Lausanne, Switzerland), Chiara Monterumisi (École Polytechnique Fédérale de Lausanne, Switzerland) and Alessandro Porotto (École Polytechnique Fédérale de Lausanne, Switzerland).

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### 1. Introduction

Housing affordability is “concerned with securing some given standard of housing (or different standards) at a price or a rent which does not impose, in the eyes of some third party (usually government) an unreasonable burden on household incomes” (Maclennan & Williams, 1990, p. 9). This definition contains two essential dimensions: (1) a standard of housing quality, and (2) a standard for determining the reasonable relation of price or rent to household income (Haffner & Heylen, 2011). It is therefore related both to minimum quality standards of physical features of housing and to the ability of the household to pay a house that follows these standards of quality. But under which criteria are we able to as-

sess quality in housing? This is where the concept of *Existenzminimum* becomes relevant and links to the concept of affordable housing, since its aim was precisely to define the spatial criteria that would assure a minimum of quality in housing, at a price that would not represent a burden to the households.

*Existenzminimum* is a concept that was developed in Germany in the early twentieth century to set the conditions for a dignified and healthy existence, including access to food, clothing, medical care, and housing, assured by a defined minimum level of income. It is one of those German concepts that can hardly be translated into other languages; the direct translation into English would be ‘minimum subsistence’ or ‘subsistence level’, although these expressions do not accurately illustrate the



progressive ideology of the concept. When specifically used in the housing domain, it can be translated as “minimum dwelling” (Teige, 1932/2002). The complete term of the concept is *Die Wohnung für das Existenzminimum* (meaning ‘minimum subsistence dwelling’); however, to simplify the reading, the expression will be condensed to *Existenzminimum*.

This approach was widely applied to social housing after World War I, not only to overcome the housing shortage and the unsanitary living conditions in Europe, but also to adapt to the social transformations of the post-war period (e.g., women entering the labour market, smaller households). Based on socialist premises (Mumford, 2002; Teige, 1932/2002), the concept aimed at establishing high-quality living standards in housing, but at affordable prices to the low-income classes. The result was the mass production of minimum housing settlements—*Siedlungen*—in the outskirts of many European urban centres, such as Frankfurt and Berlin.

*Existenzminimum* contributed to establishing the design rules that became the standards of the general production of housing. Today, modernist design concepts “are fully assimilated by the contemporary culture and are inherent in any realisation” (Llinares, 2010, p. 153, translated from the original “estan completament assimilats per la cultura actual i es troben intrínsecs en qualsevol realització”). But besides these elements that became intrinsic to housing until our days, how did the concept—in its wholeness—evolve to our days? Can we talk about a contemporary *Existenzminimum*?

Currently, Europe is again facing a severe crisis in affordable housing provision: in 2015, 11.3% of the EU population lived in unaffordable housing conditions (Pittini, Koessl, Dijol, Lakatos, & Ghekiere, 2017). Additionally, the current trend of urbanisation is reducing the available space in cities. Recognising both the relevance and urgency of addressing these issues, we suggest that *Existenzminimum* is an imperative design approach for developing new affordable housing solutions. There is evidence of a renewed interest in *Existenzminimum* in the last decade: for instance, the international symposium “Min to Max”, held in Berlin in 2011, entitled “Die Wohnung für das *Existenzminimum*” (likewise CIAM II in 1929), aimed at reviving and reinterpreting *Existenzminimum* in contemporary housing. Furthermore, empirical evidence shows recent attempts in redefining the minimum standards in housing complexes. Examples include developer-led micro-housing and co-living projects (McKnight, 2015; Zatarain, 2017), resident-led collaborative housing (Lang, Carriou, & Czischke, 2018), or the recent “Tiny House Movement” (Ford & Gomez-Lanier, 2017).

However, little research has been reported on the current definition and actual use of the concept in housing (Brysch, 2011; Ruby & Ruby, 2011), leading to the following research question: what principles define the contemporary *Existenzminimum*? To answer this question, first we identify and describe the core design prin-

ciples of the original *Existenzminimum*; then, these principles are tested against current affordable housing approaches, to assess if and how they are still present today and what kind of development they entail. The aim is to propose a more accurate and updated definition of *Existenzminimum* and to illustrate the socio-economic benefits of using this concept in contemporary housing, arguing that a better understanding and awareness of the concept can influence urban planners, designers, policy-makers and citizens to develop alternative affordable housing solutions.

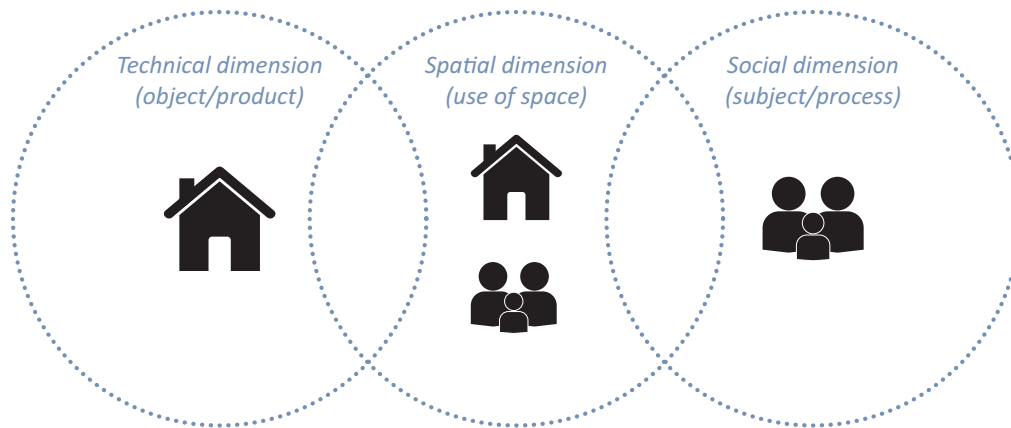
## 2. Methodology

This article is organised in two parts: the first one identifies the design principles of *Existenzminimum* applied to housing in the 1920s, through a literature review of discussions, methods, and outcomes of *Existenzminimum*. Design principles are here defined as parameters that guided the development of the concept from an architectural perspective, and therefore framed within three different architectural dimensions, namely technical, spatial and social, as depicted in Figure 1.

The second part, due to the scarce theoretical work on the contemporary definition of *Existenzminimum*, mainly draws from recent affordable housing projects collected from grey literature (architectural publications and magazines) and empirical evidence from observation carried out by the author. The main purpose is to test the identified principles against contemporary affordable housing approaches, to understand how has *Existenzminimum* evolved until today.

Special attention is paid to the issue 962 of *Domus* magazine, from 2012, the follow-up of the above mentioned “Min to Max” international symposium. The panels of the symposium entitled “Spaces for the Collective”, “Self-Construction and Social Empowerment”, and “Building on the Existing” are also taken into consideration (the correspondent audio-visual material is available at <http://www.min2max.org>). Both the symposium discussions and the follow-up articles in *Domus* (issue 962) focus on current architectural practices and link them to the role of the architect, at the same time that stress the urgency of addressing the housing crisis through community-oriented and self-organised approaches. These sources are relevant to shed light into current professional approaches and views, although they do not fully provide a comprehensive reflexion and conceptualisation of what could be considered the contemporary *Existenzminimum*.

At the same time, a systematic literature review of well-known architectural online magazines was carried out, encompassing a total of 103 publications (52 in *Dezeen*, 29 in *Archdaily*, and 22 in *Designboom*). The aim was to provide a comprehensive database of current architecture approaches of affordable housing and to identify their main features and concepts within the social, spatial and technical dimensions. This only considers dig-



**Figure 1.** Framework used to identify the design principles of *Existenzminimum*. Source: author.

ital platforms due to the easy filtering related to the thematic: the used keywords were ‘affordable housing’ and ‘low-cost housing’, since they are concepts intrinsically connected to *Existenzminimum* and wide enough to encompass all the relevant approaches for the study. Both multi-family housing and individual houses or prototypes were considered. The timespan of the selected publications starts in 2008, linking to the event of the economic and financial crisis of 2008, which worsened the already acute affordable housing crisis; and it ends in 2018, covering the design approaches developed over the past ten years. Table 1 shows the results of this review: it lists the features and concepts of current affordable housing and provides the number of articles that mention them. This overview is useful to detect existing patterns or common denominators between the displayed approaches, helping to substantiate the conclusions.

### 3. The Original Principles of *Existenzminimum*

*Existenzminimum* was developed in a period of significant socio-economic and urban transformation. In Germany, the political agenda of the Weimar Republic focused on implementing urban and housing policies to overcome the housing shortage, the high rents, and the poor and overcrowded living conditions, with the construction of new low-cost social housing. At the same time, the cultural movement *Neue Sachlichkeit* (“New Objectivity”) aimed to objectively illustrate the post-war reality.

The rational approach of *Existenzminimum* emerged from this renewed social and political commitment, but its socialist roots date back to the end of the nineteenth century. Indeed, in the previous decades, the housing issue had been already debated among philan-

**Table 1.** Features and concepts related to current ‘affordable’ and ‘low-cost’ housing, scanned from the systematic literature review.

Dimensions	Features/Concepts	No of articles
TECHNICAL	<i>Regeneration of disused spaces</i>	11
	<i>3D printing/CNC/open source</i>	7
	<i>Do-it-yourself (DIY)/self-building</i>	15
	<i>Prefabrication/modular construction</i>	57
	<i>Use of containers or water pipes</i>	11
	<i>Unfinished elements/raw materials</i>	8
	<i>Sustainable construction/alternative materials</i>	46
SPATIAL	<i>Compact living/small spaces</i>	18
	<i>Micro-housing</i>	18
	<i>Tiny houses/tiny capsules</i>	8
	<i>Incremental model</i>	7
	<i>Flexibility</i>	23
SOCIAL	<i>Temporary living</i>	9
	<i>Shared living</i>	5
	<i>Participatory or collective design</i>	3
	<i>Co-housing</i>	2
	<i>Co-living</i>	4
	<i>Enhance sense of community</i>	9
	<i>Communal facilities/courtyard</i>	15

thropists and communist philosophers, who were concerned about the poor housing conditions of the proletariat; and among feminists, such as Lily Braun and Christine Frederick, who aimed at improving the efficiency in the domestic space through centralised services and shared facilities (Mumford, 2002). Discussions on housing affordability were also taking place during this period, although under the designation of housing need or housing shortage, when economists began to carry out studies of household budgets and incomes (Hulchanski, 1995). In addition, after the Russian Revolution of 1917, collective housing models such as *dom-kommuna* were tried out in the Soviet Union, with a particular focus on optimising the domestic space and emphasising the sense of community through a scientific approach towards design (Khan-Magomedov, 1987). All of this helped to shape the way *Existenzminimum* was explored and defined (Mumford, 2002; Teige, 1932/2002),

The first worldwide comparative study of minimum dwelling was conducted in 1929. The results were presented in Frankfurt in the second International Congress of Modern Architecture (CIAM II, from the French *Congrès Internationaux d'Architecture Moderne*), *Die Wohnung für das Existenzminimum*, whose proceedings were published in 1930. At the end of the event, the participants decided that the minimum unit was the “correct solution” to solve the housing problems of industrial societies (Mumford, 2002, p. 31). This correct solution was the result of many studies, mainly led by the architects Alexander Klein, Ernst May, Le Corbusier, Margarete Schütte-Lihotzky and Walter Gropius.

From the literature review of the main publications on the topic at that time, namely the proceedings from CIAM II and the critical analysis from Karel Teige published in 1932, we identify five main design principles behind the studies and the subsequent design of the minimum dwelling:

- (1) Innovation and cost-effectiveness in construction, by rationalising the (re)production of constructive elements (Corbusier & Jeanneret, 1930; Teige, 1932/2002);

- (2) Minimum quality standards (Bourgeois, 1930; Klein, 1927; May, 1930);
- (3) Redesign of the domestic layout, to make it more suitable to the new family structure (Gropius, 1930; Klein, 1927);
- (4) Relationship between architecture and the city (Gropius, 1930; May, 1930);
- (5) Community building and social concern (Gropius, 1930; May, 1930; Teige, 1932/2002).

These design principles can be organised and intertwined in three architectural dimensions, namely technical, spatial and social (as depicted in Figure 2). The following paragraphs elaborate on how each of these principles was applied in the design of *Existenzminimum* housing.

### 3.1. Innovation and Cost-Effectiveness in Construction

Determining minimum standards for the *Existenzminimum* units was fundamental to the success of their mass production and, consequently, their affordable construction. These standards should lower the construction costs without compromising the quality of the industrialised materials (Teige, 1932/2002). The configuration and organisation of the units should imply rational construction methods to facilitate the industrial production of the constructive elements and accelerate the construction process, at the same time that would increase flexibility in spatial configuration. Almost all the construction elements, ranging from entire structural walls to door handles, were supposed to be (pre)fabricated and, then, assembled in situ. This represented an innovative economic approach to housing construction, taking advantage of technological and industrial progress (Corbusier & Jeanneret, 1930). The *minimum dwelling* unit became the standard dwelling unit, to be used by the emergent post-war society (Gropius, 1930).

Ernst May, state-architect of Frankfurt, determined that housing should not cost more than 25% of the household’s income in order to be affordable (Mumford, 2002). However, despite many design attempts to make these new minimum housing settlements as much af-

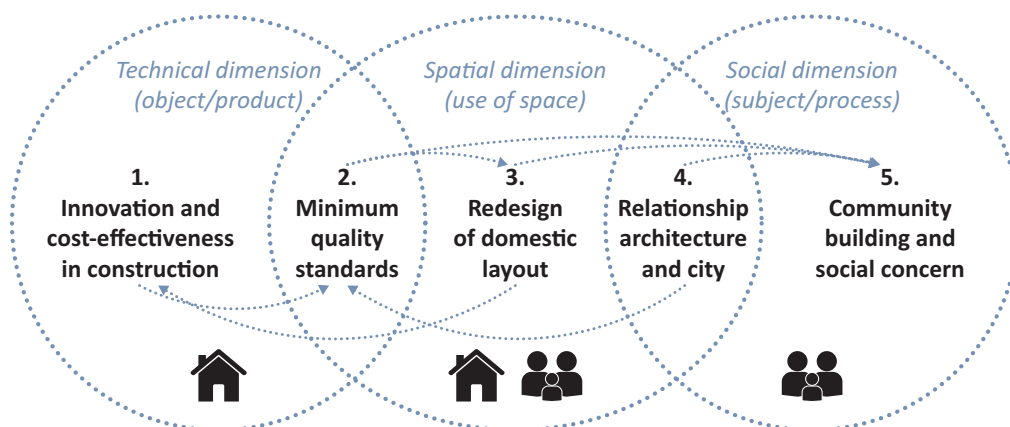


Figure 2. *Existenzminimum* design principles. Source: author.

fordable as possible to the working-class families, they were still inaccessible to a large number of low-income and even middle-class families, due to the general inflation (Teige, 1932/2002). In parallel, self-help or self-building approaches were tried out and encouraged by the state in the form of cooperatives (Henderson, 1999).

### 3.2. Minimum Quality Standards

The socialist premise, advocating that all humans were equal and shared the same needs, influenced the idea of developing a universal housing solution, based on minimum quality standards. On the other hand, housing understood as a biological phenomenon (Corbusier & Jeanneret, 1930; Teige, 1932/2002) should provide at least the minimum of space, air and light required for the vital functions of the human being, as for her or his healthy social life (Gropius, 1930). It was based on:

The mini-max dwelling concept: that is, a minimal space accommodating “maximal life” for the class of the subsistence minimum, defining a dwelling that does not fall below standards needed for biological survival (i.e., below acceptable sanitary and hygienic norms), one that provides its inhabitants with sufficient light, access to sun and air, and a sense of open space. (Teige, 1932/2002, p. 33)

To this end, Alexander Klein, while a member of a governmental research agency in Berlin, developed a scientific methodology to analyse different housing typologies by comparison (see Figure 3). The aim was to determine minimum space standards that reflected the most effective and healthier (physically and mentally) environment (for a detailed description of methods and findings see Klein, 1927). This also resonates with the Soviet housing experiments, in which a group of architects advocated the application of scientific methods to determine a standardised value—*Stroikom*—for housing planning and construction (Khan-Magomedov, 1987).

The reduction of the housing unit area was not a goal per se (Aymonino, 1971; Gropius, 1930; Teige, 1932/2002), but rather an outcome of the optimisation studies carried out. In fact, many housing projects based on minimum dwelling turned out to be larger and with higher levels of comfort when compared to the existing housing stock.

### 3.3. Redesign of Domestic Layout

This principle is directly connected to the previous one, insofar as minimum standards were defined according to a new dwelling layout. The pre-war *Wohnkultur* (‘culture of dwelling’), based on bourgeois traditions—even among low-income families—went through great transformations due to many factors. These include (1) the increasing number of working mothers, who no longer had time for the usual housekeeping, (2) the low birth rate,

leading to smaller households, (3) a “new nomadism of the individuals” (Gropius, 1930, p. 16, translated from the original: “ein neues nomadentum der individuen”), influenced by the advances of the mobility infrastructure, and (4) the new meaning given to family, from a symbolic and organisational perspective (Gropius, 1930). The new domestic space and its surroundings should reflect the *Wohnkultur* that emerged from these circumstances, and it should be based on high levels of experimentation and freedom (Montaner & Muxí, 2014).

Therefore, as said, the underlying intention of *Existenzminimum* was not a mere reduction of the traditional housing areas, but rather the creation of an upgraded typology. This should be designed to simplify the movements inside the housing unit. Figure 3 outlines a study on how a more rational disposition of the rooms results in a more spatially-efficient layout (right side) when compared to a conventional apartment with the same area (left side).

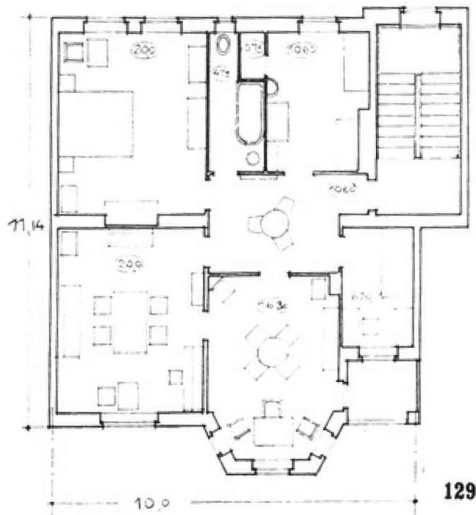
The *Frankfurter Küche* (‘Frankfurt kitchen’), designed by Schütte-Lihotzky, became the standard for the minimum dwelling kitchen. The traditional nineteenth-century kitchen was replaced by a more efficient layout equipped with advanced appliances (see Figure 4), more suitable to the working mothers, who no longer had time for long and tiring domestic tasks. The bathroom would become part of the housing unit, equipped with standard sanitary ware; and each person had the right to have an individual room (Gropius, 1930). Many elements, such as sliding doors, movable furniture, or folding beds, were designed to allow some flexibility inside the apartments.

### 3.4. Relationship between Architecture and the City

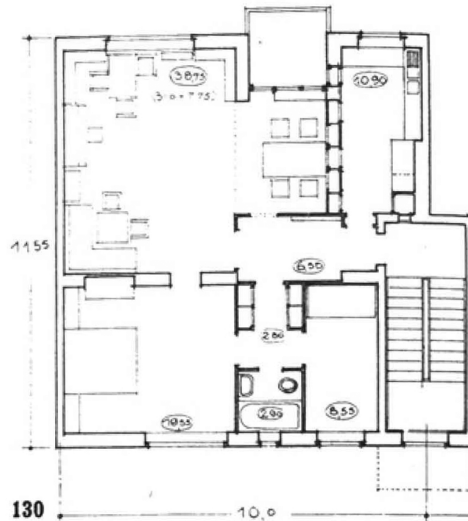
*Existenzminimum* was also part of a wider urban strategy. Housing was intrinsically connected to urban planning; therefore, access to public spaces and mobility infrastructure was paramount for the location of the settlements. Following the principles of the garden cities, the main goal was to create self-sufficient communities. Hence, in addition to housing complexes, public spaces and facilities such as gardens, shops, day care centres, churches, community centres and laundries were designed (Mumford, 2002) to transform these settlements into small, autonomous cities. Some settlements, namely *Praunheim* or *Römerstadt* in Frankfurt, were referred to as satellite-cities.

The concerns regarding biological issues that served as the basis for the design of the *Existenzminimum* unit were also considered from an urban perspective: the buildings should be sufficiently separated from each other and correctly orientated, in order to guarantee correct ventilation and access to sunlight. Likewise, the process of standardisation was applied not only to the housing unit but also to the way housing units were grouped to shape the building. This would streamline the construction of the settlements (see Figure 5). Different block typologies emerged, namely *Reihenhäuser* (‘row

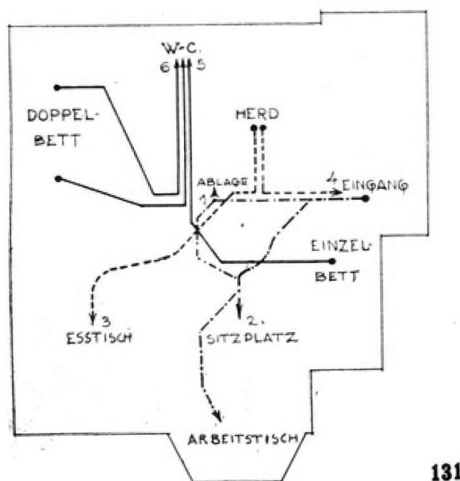




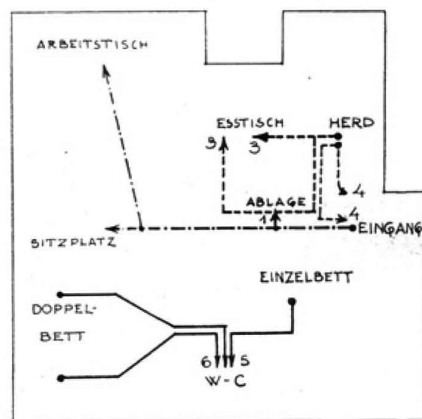
Beispiel eines ausgeführten Geschößgrundrisses. Die Verteilung der Möbel ist die des Originals.



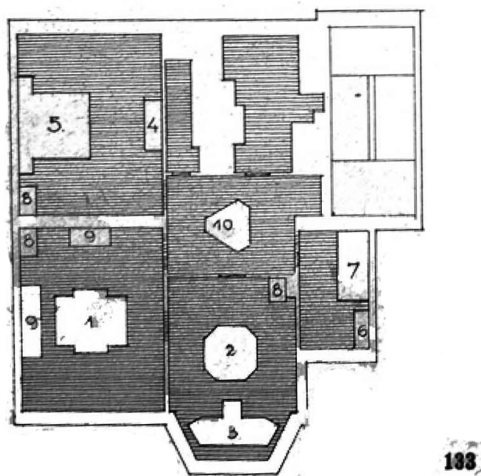
Studie des Verfassers zu einem Grundriß der gleichen Größe wie Abb. 129 unter Verwendung der oben angeführten Grundsätze. Treppe umgelegt, um im Erdgeschoß den Durchgang zu vermeiden und den Wohntyp durchführen zu können.



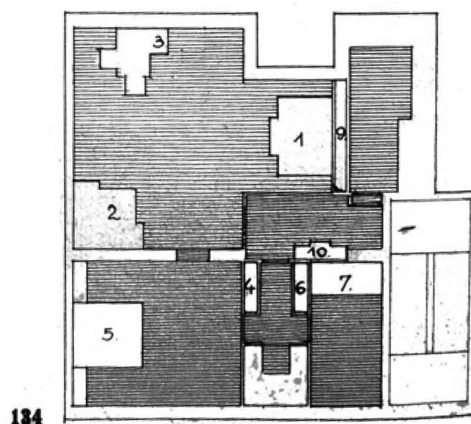
Verlauf der Verkehrswege und Ganglinien im angenommenen Beispiel. Alle Lebensfunktionen verlaufen auf sich kreuzenden Wegen.



Verlauf der Verkehrswege und Ganglinien in der Grundriß-Studie. Die Verkehrswege kreuzen sich nicht, wodurch die ordnungsmäßige Abwicklung der Wohnvorgänge erleichtert wird.



Konzentration der Bewegungsflächen im Beispiel. Die verbleibenden Bewegungsflächen sind zerstückelt.



Konzentration der Bewegungsflächen in der Studie. Die Bewegungsflächen sind konzentriert und stehen in gutem Zusammenhang.

Figure 3. Comparative spatial studies, by Alexander Klein. Source: Klein (1927).

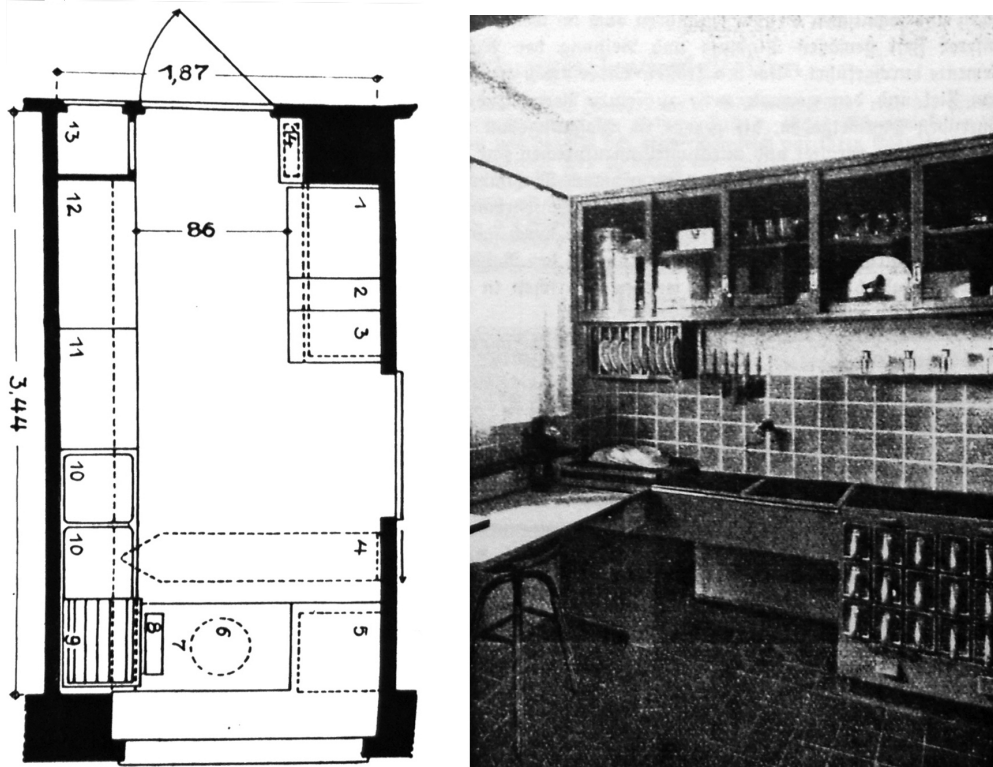


Figure 4. Frankfurt Kitchen, by Schütte-Lihotzky. Source: May (1926).



Figure 5. Praunheim (left) and Römerstadt (right), Frankfurt, by Ernst May. Source: author.

houses’) and *Mehrfamilienhäuser* (‘apartment buildings’), which were organised either in exterior galleries or around staircases (‘sectional housing’). Despite the urban nature of the concept, the architects at the CIAM II did not consider the design of the building and its integration into the urban fabric.

### 3.5. Community Building and Social Concern

Highly influenced by Soviet collective housing, *Existenzminimum* should represent the “negation of the bourgeois family-based household” (Teige, 1932/2002, p. 14).

The new housing typology would foster “the concept of collective dwelling, by allowing the individual dwelling unit to be complemented by a scheme of central collective facilities” (Teige, 1932/2002, p. 5). The typical one-family house was gradually replaced by the apartment in a housing complex, which in its turn should become part of a new form of a centralised master household (Gropius, 1930).

The idea of democratising domestic tasks, by adding common amenities in collective housing, advocated the minimisation of individual private spaces since the main activities would be performed collectively (Vestbro,

2000). This idea was mainly applied to other parallel alternative housing approaches, such as the Central Kitchen Buildings, which emerged in the 1920s in many European capitals. This approach was based on the rationalisation of the domestic work, through employed staff preparing the meals in the central kitchen; and on the minimisation of the apartment areas (Vestbro, 1992). Likewise, the *Hof*, a housing typology for the Viennese working-class families developed in the 1920s based on the *Kleinwohnung* model (Porotto, 2017), often excluded the individual kitchen from the housing unit, replacing it with a central shared kitchen (Montaner & Muxi, 2014); while some hotel-like apartment buildings, mainly developed in USA, combined individual units with collective housekeeping services (Puigjaner, 2014).

However, all these progressive and rational visions towards housing production turned the house into a product, and the dweller into a consumer. In the following decades, the minimum dwelling unit—small, cheap, easy to build—became the gold mine of the capitalist housing market, and started to be reproduced and sold as a commodity, as an isolated element, originating the real estate logic of the city (Aureli, 2016).

Moreover, many social housing programs in the aftermath of World War II continued using *Existenzminimum* design principles, although without considering its intrinsic initial components, such as urban integration or collective living. The former complexity of the concept was simplified to a mere reduction of domestic space and to a low-cost-full-speed production, leading to a progressive social alienation of the housing settlements (Ruby & Ruby, 2011). Therefore, overtime, *Existenzminimum* acquired detractive connotations, not only because of its detachment to the city but also due to its “overly deterministic approach to design” (Lucas, 2016, p. 15).

#### 4. The Current Application of *Existenzminimum* Principles: A Critical Analysis

In the last decades access to affordable housing became a challenge not only to low-income families, but also to the middle-classes, as public and social housing are more

and more exclusively targeted to the very poor (Czischke, 2009; Elsinga & Lind, 2013); therefore it is urgent to think of strategies to make housing accessible to larger segments of the population. Woetzel (2014, p. 5) identifies four possible approaches that can narrow the current affordability gap: “securing land for affordable housing at the right location, developing and building housing at lower cost, operating and maintaining properties more efficiently, and improving access to financing for home purchases, development, and rental assistance”. By all means, architectural design plays (again) an important role in this endeavour, not only to provide innovative spatial layouts, but also to guarantee that space standards are not corrupted or reduced to fit the market profit-oriented goals.

This section aims at analysing if and how the identified original *Existenzminimum* design principles in the previous section are present in claimed affordable housing solutions from the past decade and what kind of development they entail. From the literature review, as well as the outcomes of the “Min to Max” symposium, we were able to identify additional concepts that may strengthen or challenge the original principles (see Figure 6), as it is further described in the following lines.

##### 4.1. Innovation and Cost-Effectiveness in Construction

The conducted systematic literature review confirms that prefabrication and modular construction are still a core factor in building affordable housing, but not anymore as a means to mass-produce standardised housing units. The use of standard elements is now made in a more flexible and customised way, to avoid a repetitive and impersonal building complex. Today, construction elements include not only prefabricated components, but also recycled ship containers, water pipes and alternative or reused materials (see Figure 7).

An innovation present in many experimental projects is the use of 3D printing (often associated with open source software) as a building technique. On the other hand and similar to some alternative approaches developed in the 1920s, many contemporary projects com-

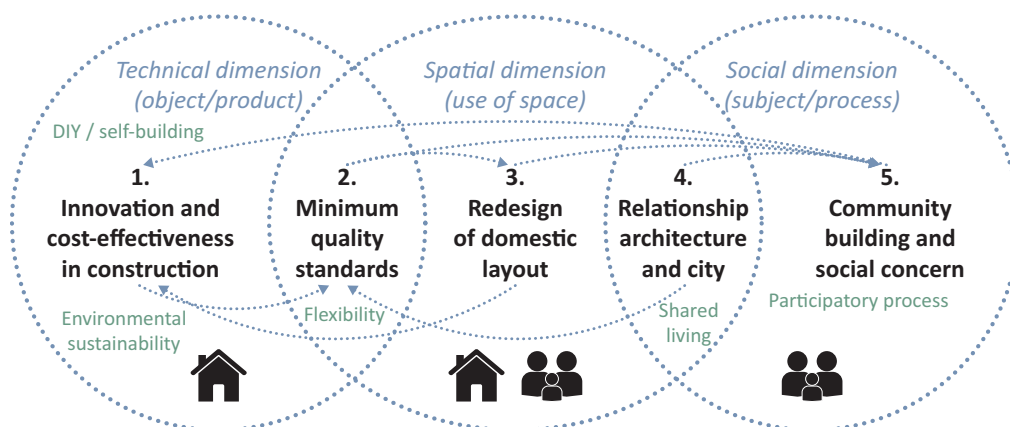


Figure 6. *Existenzminimum* principles, from a contemporary perspective. Source: author.



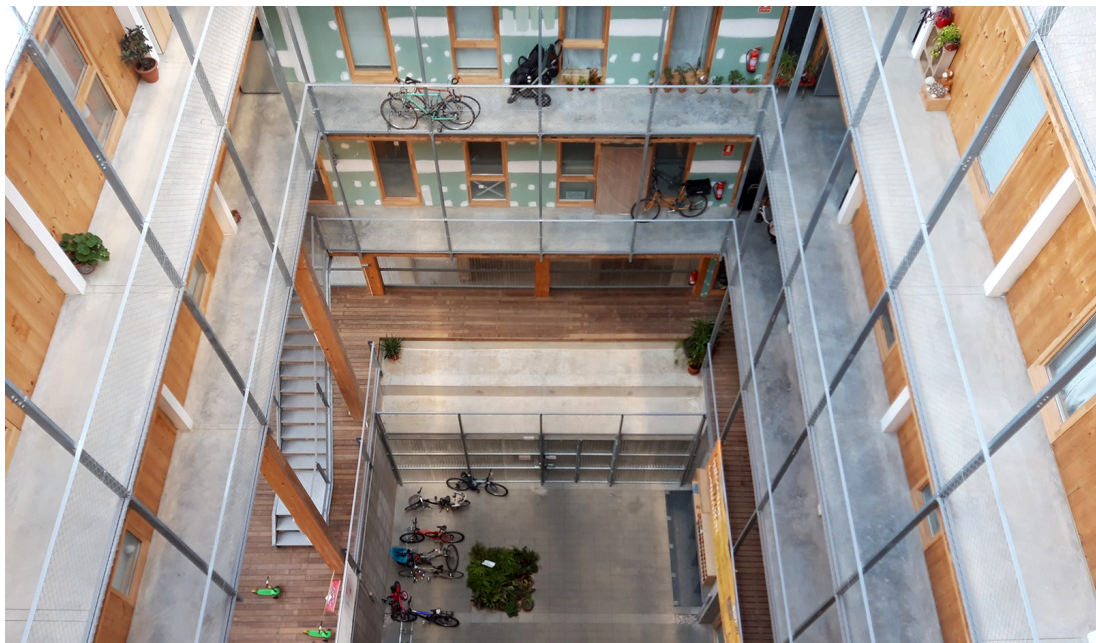


**Figure 7.** *The Urban Rigger*, Copenhagen, 2016, by BIG. Source: author.

bine modular construction with self-building (Duncan & Rowe, 1993), self-assembly, and DIY (Do-it-Yourself) or DIT (Do-it-Together) approaches (see Figure 8). These are often based on a phased construction system. The recent collaborative housing project *La Borda* in Barcelona is an example where the collective decision to leave the common rooms unfinished and programmatically flexible allows the spaces to be completed, adapted and trans-

formed by the residents. The goal was to work towards affordable construction levels (Brysch, 2018).

Environmental sustainability is mentioned quite often as one of the principles that guide the construction of current affordable housing. The correct use of resources, with a focus on maximum energy savings, is a priority when designing the 21st-century housing (Montaner & Muxí, 2010). However, this “ecological re-orientation” re-



**Figure 8.** *La Borda*, Barcelona, 2018, by LaCol Arquitectura Cooperativa. The image (taken two months after the residents moved into the building) shows the unfinished state of the building, understood as a constant process. Source: author.



quires a full reassessment of the way of designing and building in general (Manzini, 1994, p. 37), in order to decrease energy and resources consumption.

#### 4.2. Minimum Quality Standards

Today, *Existenzminimum* calls upon minimum quality standards in a more versatile and flexible way. The concept of minimum is not only connected to the spatial dimension, but also to services, resources and construction finishes (e.g., fewer individual appliances, unfinished surfaces). In line with this, the current notion of minimum also implies the lower purchase of goods (Millburn & Nicodemus, 2015). Manzini (1994) defends the idea that material possession should undergo a ‘non-individual’ consumption mode. He believes in the role of design in providing quality, where the “‘reduction of needs’ can be expressed as an ‘increase in social quality’” (Manzini, 1994, p. 40), making a reference to the contribution of *Existenzminimum* in this culture of reduction. In its turn, Aureli (2016) defends the idea of adopting a more ‘ascetic’ and needs-based posture towards life and consumption, where ‘less is enough’. Therefore, the current *Existenzminimum* is related to a new concept of quality of life, less connected to the modern idea of consumption, since the original *Existenzminimum* propaganda focused on consumer-oriented advertising of industrial products that would minimise the domestic work.

This widening of the idea of *minimum* emphasises the qualitative aspects of the concept, where some projects, such as *Baugruppe Schönholzer Strasse 11* in Berlin, are developed to “question the typical standard requirements for a flat and go beyond them” (Kunsmann, 2012, p. 67). In many cases, the idea is to deliver an unfinished house, with no partition walls, no finishes and, sometimes, no flooring. This strategy allows the future residents to customise their own domestic space, promoting not only the basis for a stronger sense of belonging but also an affordable way to have access to good quality housing, compared to average market prices.

As argued, *Existenzminimum* does not mean unconsciously reducing the dwelling areas. In fact, many

*Existenzminimum* examples of the 1920s resulted in larger spaces when compared to the existing housing stock. Today, however, due to the increasing number of one-person households and lack of available construction space, many housing units stretch to the limit the notion of minimum space. This means that many projects provide extremely small living spaces, leading back again to the fundamental question of where to draw the line that separates the (physically and socially) adequate and unacceptable minimum. What are the design mechanisms used to avoid falling into the latter situation? How ‘small’ is ‘too small’ and how to guarantee quality in minimum spaces in a long term?

Examples where the spatial dimension of the minimum is innovatively explored are (1) the recent “Tiny House Movement”, which encourages people to reduce the dwelling area to its minimum and to use environmental-friendly materials (Ford & Gomez-Lanier, 2017); see Figure 9), (2) student-style housing, micro-housing (see Figure 10) or co-living (see Figure 11), which are proliferating in dense urban centres, based on temporary living, modular construction systems, minimum areas, and shared living arrangements (McKnight, 2015; Zatarain, 2017), and (3) collaborative housing, namely co-housing, where minimum private areas combined with common rooms are collectively designed and managed (Czischke, 2018; Lang et al., 2018; see Figures 12 and 13).

All the mentioned approaches—except for most of the Tiny Houses—provide common spaces to compensate or complement the reduced size of private units. Both Tiny Houses and cohousing examples, usually designed and sometimes even built by the end-users, are the direct result of the residents needs and demands; therefore, it is the residents themselves who define their own minimum ‘tolerance’. On the other hand, in developer-led projects, such as student-style housing, micro-housing or co-living, the residents have to ‘fit’ in a specific profile and a pre-established layout, which often includes co-working spaces and other shared facilities. Yet, the design of micro-housing or co-living is based on hotel or student accommodation building normative, meaning that they are still not properly regulated as spe-



**Figure 9.** Examples of Tiny Houses. Sources: Stott (2015) and Block (2018).

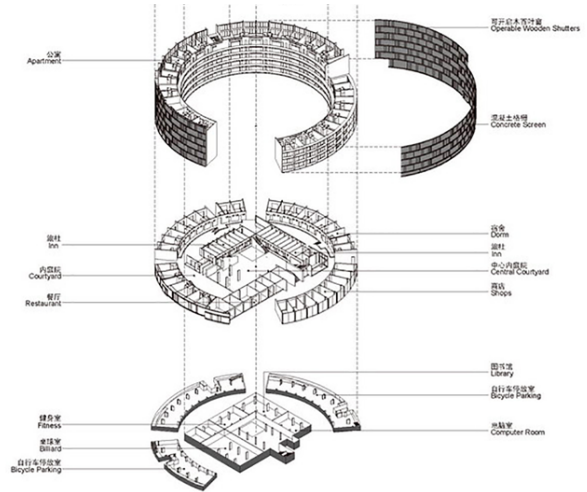


Figure 10. Tulou Collective Housing, Guangdong, 2008, by Urbanus. Source: Urbanus (n.d.).



Figure 11. Roam Co-living, Bali, 2015, by Alexis Dornier. Source: Archdaily (2016).

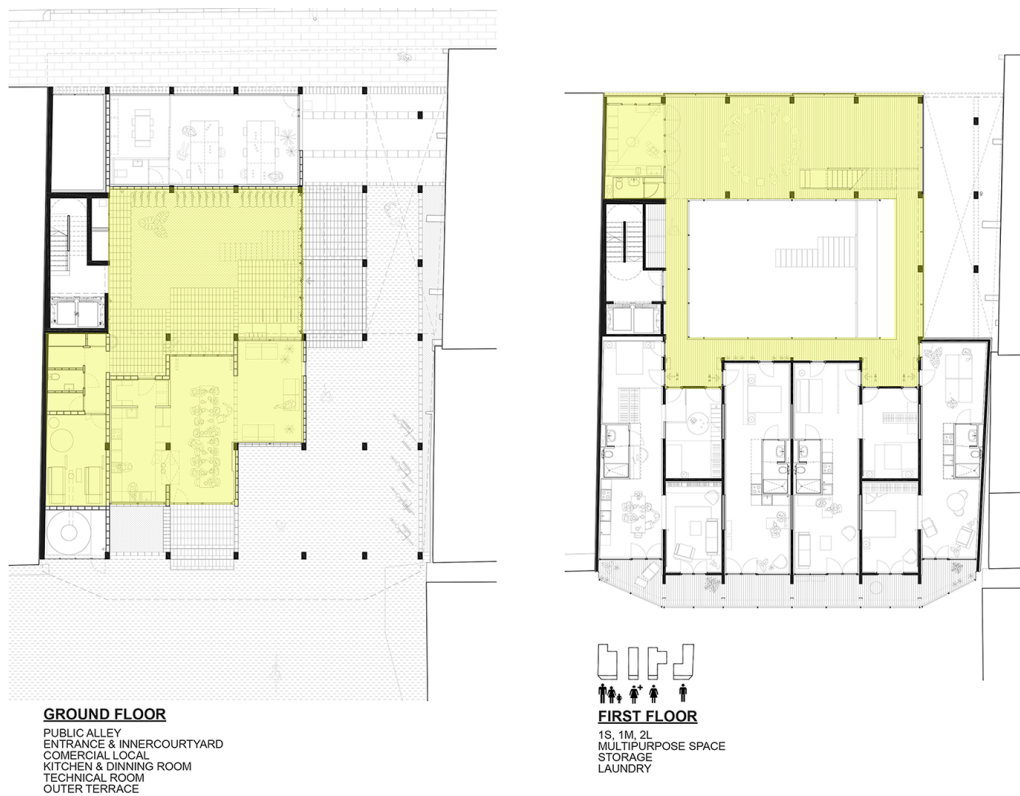
cific typologies. Therefore, and adding the fact that these projects are mainly profit-oriented, it is necessary to evaluate the actual adequacy of the spaces to the residents' needs and values.

#### 4.3. Redesign of Domestic Layout

The same way the original *Existenzminimum* created a housing unit adapted to the modern family, the cur-

rent one upgrades the domestic layout according to the shifting consumption models and household structures. The main difference is that, today, many projects are designed and developed not only by professionals (i.e., architects and developers) but also by the residents themselves, through participatory design processes. These are contributing to further develop alternative dwelling terminologies, such as cluster apartments, small private cells organised around a common





**Figure 12.** *La Borda* (Ground- and first floor), Barcelona, 2018, by LaCol Architectura Cooperativa. Image courtesy of LaCol Architectura Cooperativa. Note: the highlighted areas correspond to the common spaces.



**Figure 13.** *Spreefeld Genossenschaft* (shared kitchen and dining room), Berlin, 2014, by Carpaneto Architekten, Fatkoehl Architekten and BARarchitekten. Image courtesy of Fatkoehl Architekten.

space with shared facilities (see Figures 14 and 15); and guest apartments or joker units, designed to accommodate guests or teenagers (e.g., *La Borda*, Barcelona, or

*Kalkbreite*, Zurich). In addition, new concepts of use are emerging, namely co-working spaces in the domestic layout, and flexible spaces for temporary uses.



**Figure 14.** *Mehr als Wohnen* (plan of cluster apartment), Zurich, 2015, by Duplex Architekten. Source: McMaster (2016). Note: the highlighted areas correspond to the shared spaces.



**Figure 15.** *Spreefeld* (axonometry of cluster apartment), Berlin, 2014, by Carpaneto Architekten, Fatkoehl Architekten and BARarchitekten. Image courtesy of Fatkoehl Architekten. Note: The highlighted areas correspond to the shared spaces.

Montaner and Muxí (2010) argue that contemporary minimum housing includes minimum requirements for adaptability. Adaptability—or flexibility—is, here again, an essential component to define the current *Existenzminimum*. In line with this, many contemporary housing projects are linked to concepts such as “open building” (Habraken & Teicher, 1972), which considers the changing or adapting of the layout overtime, or “incremental housing” (Aravena & Iacobelli, 2012), a temporary minimum, where a potential area is left for future expansion, according to the needs and economic possibilities of the household. A similar approach currently being explored due to the increasing urbanisation process is the “infill model” (Aureli, Giudici, & Issaias, 2012), a flexible framework that allows the end-users to build and customise space. All approaches consider the building not as a finished product, but rather an ongoing process. These approaches directly resonate both to the open floorplan *Dom-ino* structure developed by Le Corbusier, and to the “growing house model” (Wagner, 1932), another approach contemporary to *Existenzminimum* and using similar principles (Hellgardt, 1987).

The minimum dwelling typology promoted by the modern architects is now reinterpreted in a topological way, where space is assumed as an element that is constantly under transformation and adaptation: standards become parameters of a system where everything is interconnected. Yet, the building normative has not been properly readjusted: an exploratory study (Brysch, 2018) shows evidence of the obsolescence of the building normative in accommodating these innovative ways of living. Some outdated standards or even some gaps in the building regulations tend to turn the design of these new community-oriented and adaptable housing schemes into a complex and tiring process.

#### 4.4. Relationship between Architecture and the City

Empirical evidence suggests that collaborative housing initiatives improve the relationship between (domestic) architecture and the city. Additionally, studies show how this relationship contributes to a more active and dynamic urban interaction (Fromm, 2012; Williams, 2005), since the notion of sharing expands to the surrounding neighbourhood, and progressively to the city level. Examples include cohousing projects in Berlin (e.g., *R50* or *Spreefeld*), Vienna (e.g., *Wohnprojekt Wien*), and Stockholm (e.g., *Sjöfarten*). These community-oriented housing projects reconfigure the boundaries between private and public, with activities open to the public, or by allowing the use of the common rooms by external members for local initiatives (see Figure 16). The issue of quality is stressed here again in relation to the urban environment: “housing quality is resolved by the correct resolution of the interior space and the building’s contact with the public space in the neighbourhood, through a diversity of gradients that go from the public to the private” (Montaner & Muxí, 2010, p. 82).

Dealing with the existing city is part of the current debate and practice, as highlighted in the panel “Building on the Existing” of the “Min to Max” symposium. While the original *Existenzminimum* was applied to the new construction, today many affordable housing projects result from the refurbishment of the housing stock or even from the reuse of abandoned infrastructure buildings.

#### 4.5. Community Building and Social Concern

The political role of the architect in the 1920s targeted low-income families. Currently, however, the need for affordable housing solutions encompasses increasing segments of the population. These segments not only include vulnerable groups, but also middle-class households, which are facing, too, a great decline in their living standards (Parker, 2013). This justifies the wide range of solutions claimed ‘affordable’, even when not linked to social housing, such as commercial micro living or co-living models. However, very often these models turn out to be unaffordable, due to speculative purposes, although there is generally an added value behind, a ‘package’ that includes not only access to a private space to live but also to a more community-oriented setup, with additional facilities and sharing experiences (see Figure 17). This leads to an understanding of housing as a service, rather than a product or a process, in a similar way as the hotel-like apartments or Central Kitchen Buildings were developed in the beginning of the twentieth century. In its turn, collaborative and cooperative housing are more and more used as an alternative social housing model (Czischke, 2018). Examples are *Le Village Vertical* in Lyon, which combines cooperative and social housing features in one complex, or *La Borda* in Barcelona, where the residents have to meet the requirements to apply for social housing in order to be part of the cooperative.

In the recent decades, the increasing expansion of the sharing economy has gradually questioned the ideas of property and ownership and modified them by the notion of access (Kreiczer-Levy, 2015). Sharing products, services and resources is by no means a new phenomenon, yet it has been widely popularised by technology advancement and increasing consumer awareness. Furthermore, the traditional relationship producer-consumer is being hybridised in a concept recently called “prosumption” (Ritzer & Jurgenson, 2010). Today, architects “do not limit the question of minimal standards to the individual dwelling; they actually conceive housing as an opportunity for social participation in the spatial fabric of the city” (Ruby & Ruby, 2011). This highlights the shift of the architectural focus on the object purported by the CIAM II to the subject, i.e., to the social relations (See Figures 18 and 19). Some academic research already focuses on the role of collaborative housing approaches in increasing social interaction (Williams, 2005). The presentations at the “Min to Max” symposium, more precisely the panels entitled “Spaces for the Collective”





**Figure 16.** *Wohnprojekt Wien* (plans of ground and underground floors), Vienna, 2013, by Einszueins Architekten. Image courtesy of Einszueins Architekten. Note: The communal kitchen and the multi-purpose rooms can be used or rented by external groups.

### What We Offer You?



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Furnished Private Room



Community Space & Coworking



Activities



Berlin City Knowledge

**Figure 17.** Usual services included in co-living contracts, Berlin. Source: Happy Pigeons (n.d.).



**Figure 18.** *The Collective Co-living*, London/New York. Source: The Collective (n.d.). Note: this promotional image highlights the community-oriented approach of co-living models.

and “Self-Construction and Social Empowerment”, emphasised the collective and participatory character of new architectural approaches.

Therefore, the new *Existenzminimum* envisions design as a dynamic and participatory process, directly connected to the users’ (changing) needs and more adapted to the different households and lifestyles, thus emphasising the process rather the final outcome. In brief, participatory or collective design (co-design) corresponds to a process where architects and prospective residents (and other involved stakeholders) design the housing

project together. In this sense, the architects’ role becomes more challenging if compared to the conventional design method used in developer-led housing: the final design must be a logical result of an effective system, reflecting at the same time common motivations and objectives. Hence, a certain flexibility and adaptability for further residents’ intervention (transformations, increments, finishes) needs to be factored into the planning.

In examples of high-level participation, collective decisions are taken over spatial configuration, density, use of space, distribution, materials, the ratio of



**Figure 19.** *La Borda general assembly*, Barcelona. Image courtesy of La Borda. Note: All decisions—from the design to the management of the building—are collectively taken in general assemblies.



personal-common space, construction systems, and levels of comfort and finishing. Such examples include the *Baugruppen* in Germany and Austria, *Habitat Participatif* in France, *Community Land Trusts* (CLTs) in England and Belgium, and new cohousing cooperatives in Spain and Switzerland (Czischke, 2018). Affordability, environmental sustainability, self-determination, community life are

common denominators to all these different models. Figure 20 illustrates the variety of projects that result from collective design processes. These processes are based on non-hierarchical structures, although they may differ in their decision-making approach: some groups use the voting system or try to reach consensus, while other base their whole process on sociocratic ideals.



**Figure 20.** Examples of housing projects based on co-design processes: (a) *Wohnprojekt Wien*, Vienna (source: author); (b) *R50*, Berlin (sources: exterior image by the author; image courtesy of ifau); (c) *La Borda*, Barcelona (sources: image courtesy of La Borda; exterior image by the author); (d) *Village Vertical*, Lyon (source: author).



## 5. Conclusion: Towards a New Definition of *Existenzminimum*

Housing affordability is “a relationship between housing and people” (Stone, 2006), i.e., it is a relative concept that connects people’s financial situation with a certain standard of housing. It is then directly connected to housing quality: the physical conditions of housing, which allow the household to achieve a quality living standard, are key to evaluate and provide affordable housing. The previous section confirms that innovative design is showing—once again—its potential towards affordable housing provision and that *Existenzminimum* is a valid concept worth exploring in our days. Yet, while current approaches are still based on the same core principles, the term *Existenzminimum* is rarely mentioned; the only explicit attempt—although superficial—to recover and reinterpret the concept is documented in *Domus* (issue 962), as a follow-up of the “Min to Max” symposium held in 2011 in Berlin.

This study uncovered key features of contemporary affordable housing that are insightful to understand the new meaning of *Existenzminimum*. Based on the findings, current *Existenzminimum* might be an answer for the “acute need for a new dwelling typology associated with the culture and functions of the 21st century city”, as Burkhalter and Castells (2009, p. 23) highlighted, at the same time that they foresaw that “[n]ew dwelling forms may require the re-engagement and re-invention of forms of living based on sharing resources” (Burkhalter & Castells, 2009, p. 23). From a technical perspective, current *Existenzminimum* approaches emphasise environmental sustainability and alternative construction methods, such as DIY and self-building (creating a new link with the social dimension). Prefabrication keeps reducing construction costs, but it is used in a more flexible and custom-like manner. The spatial dimension is today very much focused on flexibility, temporary solutions and shared living. The reinterpretation of minimum and the definition of alternative layouts are present in many current housing projects. Compact and small housing complemented with communal facilities enriches the social dimension. At the same time, projects are increasingly involving the residents in the design and construction process, through participatory processes.

Hence, if in the past *Existenzminimum* proved that the *design* helped to develop affordable housing, today *shared living arrangements* and *collective design processes* indicate that they also contribute to achieving more affordable levels in housing. This emphasis on the *social relations* rather than in the *object* is reflected in the re-emergence of community-oriented housing models such as cohousing or cooperative housing, which are much more needs-based, programmatically flexible and adapted to the recent *Wohnkultur*. As Manzini (1994, p. 41) points out: “Today’s ‘Existenzminimum’ must be translated into proposals that can appear to increasingly large segments of the population as opportunities to

achieve a higher level of social quality”. We may conclude that where the original *Existenzminimum* failed to fully develop—the community aspect of the social dimension—it is today accomplished in a more clear and substantial way.

At all events, in a time “when the status quo, the standard, is questioned” (Schubert, Schuetz, & Streich, 2012, p. 35), these alternative housing typologies demand the readjustment of the current building normative, to prevent emergent layouts or typologies to fall under the minimum quality standards—or, in other words, to make sure that the new market-led minimum housing (easy to build and therefore very profitable for the developer) are properly built and used. This regulatory readjustment should also take into consideration alternative design and construction processes, including guidelines for self-organised groups and residents’ cooperatives. The increasing tendency to systematise the housing production within the European Union, through the implementation of EU-directives, namely energy efficiency and accessibility standards, justifies the review of the existing building regulations. In addition, current housing approaches should also be tested against socially acceptable minimum standards. This means that collaborative approaches employing updated principles of the *Existenzminimum* can offer room to include other quality aspects, beyond minimum regulatory standards, without hampering affordability (e.g., social qualities).

All these factors help to frame the new *Existenzminimum* in a more versatile, participative and environmentally-friendly way, without corrupting its initial intention. Gradually, bottom-up initiatives on affordable housing are finding fertile ground to thrive, alongside more conventional top-down solutions. In conclusion, housing providers should start paying more attention to this paradigmatic shift in housing planning, which is more and more based on co-production and ecological and sharing values, and start updating their *modus operandi* to a more collaborative approach (Czischke, 2018). This contributes not only to housing affordability but also to more sustainable neighbourhoods.

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### Conflict of Interests

The author declares no conflict of interests.

## References

- Aravena, A., & Iacobelli, A. (2012). *Elemental: Manual de vivienda incremental y diseño participativo* [Elemental: Incremental housing manual and participatory design]. Berlin: Hatje Cantz.
- Archdaily. (2016). Roam/Alexis Dornier. *Archdaily*. Retrieved from <https://www.archdaily.com/787696/roam-alexis-dornier>
- Aureli, P. V. (2016). *Menos es suficiente* [Less is enough]. Barcelona: Editorial GG SL.
- Aureli, P. V., Giudici, M. S., & Issaias, P. (2012). From Domino to Polykatoikia. *Domus*.
- Aymonino, C. (1971). *L'abitazione razionale: Atti dei congressi CIAM 1929–1930* (Vol. 10) [The rational home: proceedings of the CIAM congresses 1929–1930]. Venice: Marsilio.
- Block, I. (2018). Low-cost micro home is made from timber and scavenged materials. *Dezeen*. Retrieved from <https://www.dezeen.com/2018/03/31/invisible-studio-micro-mobile-home-trailer-architecture-bath-uk>
- Bourgeois, V. (1930). *L'organisation de L'habitation minimum* [The organisation of the minimum dwelling]. Paper presented at the CIAM II: Die Wohnung für das Existenzminimum, Frankfurt.
- Brysch, S. (2011). *Existenzminimum. A questão da habitação mínima entre o moderno e o contemporâneo* [Existenzminimum. The issue of minimum housing between the modern and the contemporary] (Unpublished master's dissertation). Porto: Faculdade de Arquitectura da Universidade do Porto.
- Brysch, S. (2018). *Designing and building housing together: The Spanish case of La Borda*. Paper presented at the Collaborative Housing workshop at European Network of Housing Research conference, Uppsala.
- Burkhalter, L., & Castells, M. (2009). *Beyond the crisis: Towards a new urban paradigm*. Paper presented at the 4th International Conference of the International Forum on Urbanism (IFoU), Delft, The Netherlands.
- Corbusier, L., & Jeanneret, P. (1930). *Analyse des éléments fondamentaux du problème de la "Maison Minimum"* [Analysis of the fundamental elements of the "minimum house" issue]. Paper presented at the CIAM II: Die Wohnung für das Existenzminimum, Frankfurt.
- Czischke, D. (2009). Managing social rental housing in the EU: A comparative study. *European Journal of Housing Policy*, 9(2), 121–151.
- Czischke, D. (2018). Collaborative housing and housing providers: Towards an analytical framework of multi-stakeholder collaboration in housing co-production. *International Journal of Housing Policy*, 18(1), 55–81. <https://doi.org/10.1080/19491247.2017.1331593>
- Duncan, S. S., & Rowe, A. (1993). Self-provided housing: The first world's hidden housing arm. *Urban Studies*, 30(8), 1331–1354.
- Elsinga, M., & Lind, H. (2013). The effect of EU-legislation on rental systems in Sweden and the Netherlands. *Housing Studies*, 28(7), 960–970.
- Ford, J., & Gomez-Lanier, L. (2017). Are Tiny Homes here to stay? A review of literature on the Tiny House Movement. *Family and Consumer Sciences Research Journal*, 45(4), 394–405.
- Fromm, D. (2012). Seeding community: Collaborative housing as a strategy for social and neighbourhood repair. *Built Environment*, 38(3), 364–394.
- Gropius, W. (1930). *Die soziologischen Grundlagen der Minimalwohnung für die städtische Industriebevölkerung* [The sociological foundations of minimum housing for the urban industrial population]. Paper presented at the CIAM II: Die Wohnung für das Existenzminimum, Frankfurt.
- Habraken, J., & Teicher, J. (1972). *Supports: An alternative to mass housing*. London: Architectural Press.
- Haffner, M., & Heylen, K. (2011). User costs and housing expenses. Towards a more comprehensive approach to affordability. *Housing Studies*, 26(4), 593–614.
- Happy Pigeons. (n.d.). Happy pigeons co-living. *Happy Pigeons*. Retrieved from <https://www.happypigeons.com>
- Hellgardt, M. (1987). Martin Wagner: The work of building in the era of its technical reproduction. *Construction History*, 3, 95–114.
- Henderson, S. R. (1999). Self-help housing in the Weimar Republic: The work of Ernst May. *Housing Studies*, 14(3), 311–328.
- Hulchanski, J. D. (1995). The concept of housing affordability: Six contemporary uses of the housing expenditure-to-income ratio. *Housing Studies*, 10(4), 471–491.
- Khan-Magomedov, S. O. (1987). *Pioneers of Soviet architecture*. London: Thames and Hudson.
- Klein, A. (1927). Untersuchungen zur rationellen Gestaltung von Kleinwohnungsgrundrissen [Investigation on the rational design of small apartment layouts]. *Die Baugilde*, 14, 1349–1361.
- Kreiczer-Levy, S. (2015). Consumption property in the sharing economy. *Pepperdine Law Review*, 43(61), 61–124.
- Kunsmann, J. (2012). Cutting-edge home-owners. *Domus*.
- Lang, R., Carriou, C., & Czischke, D. (2018). Collaborative housing research (1990–2017): A systematic review and thematic analysis of the field. *Housing, Theory and Society*, 1–30. <https://doi.org/10.1080/14036096.2018.1536077>
- Llinares, E. B. (2010). *Existenzminimum i habitatge actual*. Catalunya: Universitat Politècnica de Catalunya.
- Lucas, R. (2016). *Research methods for architecture*. London: Laurence King Publishing.
- MacLennan, D., & Williams, R. (1990). *Affordable housing in Britain and the United States*. York: Joseph Rowntree Foundation.
- Manzini, E. (1994). Design, environment and social qual-

- ity: From “Existenzminimum” to “quality maximum”. *Design Issues*, 10(1), 37–43.
- May, E. (1926). Mechanisierung des Wohnungsbaus in Frankfurt a [Mechanisation of housing in Frankfurt a. M]. *Die Bauwelt*, 45, 1085–1091.
- May, E. (1930). *Die Wohnung für das Existenzminimum* [The minimum dwelling]. Paper presented at the CIAM II: Die Wohnung für das Existenzminimum, Frankfurt.
- McKnight, J. (2015). New York’s first micro-apartment building to be completed in December. *Dezeen*. Retrieved from <https://www.dezeen.com/2015/10/21/narchitects-my-micro-ny-modular-residential-tower-affordable-housing-new-york-usa-adapt-nyc>
- McMaster, J. (2016). Mehr Als Wohnen [More than living]. *Arc Space*. Retrieved from <https://arcspace.com/feature/mehr-als-wohnen>
- Millburn, J. F., & Nicodemus, R. (2015). *Minimalism: Live a meaningful life*. Missoula, MT: Asymmetrical Press.
- Montaner, J., & Muxí, Z. (2010). Reflexiones para proyectar viviendas del siglo XXI. *Dearq. Revista de Arquitectura*(6), 82–99.
- Montaner, J., & Muxí, Z. (2014). *Arquitectura e política: Ensaïos para mundos alternativos*. São Paulo: Gustavo Gilli.
- Mumford, E. (2002). *The CIAM discourse on urbanism, 1928–1960*. Cambridge, MA: The MIT Press.
- Parker, S. (2013). *The squeezed middle: The pressure on ordinary workers in America and Britain*. Bristol: Policy Press.
- Pittini, A., Koessl, G., Dijol, J., Lakatos, E., & Ghekiere, L. (2017). State of housing in the EU. *Housing Europe*. Retrieved from [www.housingeurope.eu](http://www.housingeurope.eu)
- Porotto, A. (2017). *Kleinwohnung vs Existenzminimum: Social housing types from inter-war years*. Paper presented at the 7th Annual International Conference on Architecture, Athens.
- Puigjaner, A. (2014). *Ciudad sin cocina. El Waldorf Astoria. Apartamentos con servicios domésticos colectivos en Nueva York 1871–1929* [City without kitchen: The Waldorf Astoria. Apartments with collective domestic services in New York 1871–1929] (Unpublished PhD dissertation). Barcelona: Escola Tècnica Superior d’Arquitectura de Barcelona.
- Ritzer, G., & Jurgenson, N. (2010). Production, consumption, prosumption: The nature of capitalism in the age of the digital ‘prosumer’. *Journal of Consumer Culture*, 10(1), 13–36.
- Ruby, A., & Ruby, I. (2011). Min to Max: International architecture symposium on the redefinition of the “minimal subsistence dwelling”. *Min to Max*. Retrieved from <http://www.min2max.org>
- Schubert, J., Schuetz, E., & Streich, L. (2012). Long live the crisis! *Domus*.
- Stone, M. E. (2006). What is housing affordability? The case for the residual income approach. *Housing Policy Debate*, 17(1), 151–184.
- Stott, R. (2015). 5 things the tiny house movement can learn from post war architecture. *Archdaily*. Retrieved from <https://www.archdaily.com/771596/5-things-the-tiny-house-movement-can-learn-from-post-war-architecture>
- Teige, K. (2002). *The minimum dwelling*. Cambridge, MA: The MIT Press. (Original work published 1932)
- The Collective. (n.d.). The collective co-living. *The Collective*. Retrieved from <https://www.thecollective.com>
- Urbanus. (n.d.). Tulou collective housing. *Urbanos*. Retrieved from <http://www.urbanus.com.cn/projects/tulou-collective-housing/?lang=en>
- Vestbro, D. U. (1992). From central kitchen to community co-operation. Development of collective housing in Sweden. *Open House International*, 17(2), 30–38.
- Vestbro, D. U. (2000). From collective housing to cohousing. A summary of research. *Journal of Architectural and Planning Research*, 17(2), 164–178.
- Wagner, M. (1932). Das „wachsende Haus“ der Arbeitsgemeinschaft [The “growing house” of the working association]. *Deutsche Bauzeitung*, 66, 41–44.
- Williams, J. (2005). Designing neighbourhoods for social interaction: The case of cohousing. *Journal of Urban Design*, 10(2), 195–227. <https://doi.org/10.1080/13574800500086998>
- Woetzel, J. R. (2014). *A blueprint for addressing the global affordable housing challenge. Executive Summary*. New York, NY: McKinsey Global Institute.
- Zatarain, K. (2017). IKEA’s SPACE10 future-living lab is researching the future of “co-living”. *Archdaily*. Retrieved from <https://www.archdaily.com/883694>

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