

Sustainable dwelling

Polyvalence and empowerment

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'I do not attribute any wild power to architecture. [...] Architecture does not create the social conditions but, nevertheless, an architectural solution is never meaningless, it is never without aftermaths. It always has an influence on social practices, it can favour or refrain certain social practices.'

Jean RENAUDIE ¹

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"Je n'attribue pas un pouvoir démentiel à l'architecture. [...] L'architecture ne crée pas les conditions sociales mais, par contre, une solution d'architecture n'est pas innocente, elle n'est jamais sans conséquence. Elle a toujours une influence sur la pratique sociale, elle peut favoriser ou contrarier certaines pratiques sociales." (authors' translation). Buffard, P. (1993) *Jean Renaudie : ouvrage réalisé à l'initiative de Jean-Pierre Lefebvre, directeur de la Sodedat 93 à l'occasion de l'exposition 'La logique de la complexité dans l'oeuvre de Jean Renaudie'*, Paris: Institut français d'architecture.

The 'Sustainable Dwelling' project aims to examine the articulation between the social and spatial dimensions of dwelling from the perspective of sustainability. The ambition of the project is twofold: to address the issue of sustainability in the field of housing and understand how built projects implement it, as well as how inhabitants put the projects to the test.

While the ultimate objective remains the operational potential of sustainability in housing, the research ambitions are thus primarily theoretical and analytical. In each of these scopes, dwelling is examined in terms of both its spatial and its social organisation. From a theoretical point of view, the project seeks to identify, in the field of housing, the pervasive properties of 'sustainable space' along with the variety of socio-cultural backgrounds that can embody them. Hence, the permanent features of the spatial and social structures of dwelling are investigated beyond contextual variations (geographical or temporal). From an analytical point of view, the purpose is to comprehend the concrete implementation of the concept of sustainability in housing. This understanding is based on cross-referenced studies of various built collective housing projects carried out by scholars in architecture and the social sciences.

Sustainability in general

The terms 'sustainable city' and 'sustainable housing' are everywhere. The success of the concept as a referential background is such that it is becoming difficult to distinguish the initial ideas from the outcomes of those ideas but also from the goals set in the name of 'sustainability'. Sustainability is often acknowledged as an ecological quest aiming either for energy efficiency or economic viability for consumers. In the worst-case scenarios, sustainability is nothing more than idle talk or political rhetoric. In better cases, however, these initial ideas translate into practical means of building the city and housing.²

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Hajek, I. and Hamman, P. (2014) *Villes du Nord, Villes du Sud : la durabilité, entre prêt à penser et opérationnalité*, Rennes: Presses Universitaires de Rennes.

The most consensual definition of sustainable development is provided by the Brundtland Commission report:

*'Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts: the concept of needs, in particular the essential needs of the world's poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organisation on the environment's ability to meet present and future needs.'*³

A closer look at this definition of sustainability shows its proximity with the contemporary paradigms of the degrowth movements (convivialism, transition, voluntary simplicity, etc.).⁴ If reference is made to the Brundtland definition, the questions raised by sustainability can no longer be limited to a mere ecological issue. On the contrary, this definition recalls the holistic nature of the issue and the systemic character of the changes we are confronted with (in terms of relationships to oneself, to others or to the entire environment). In view of this evidence, in the case of residential spaces, sustainability is a comprehensive issue that affects the spatial constitution of inhabited premises as well as the social practices of the inhabitants. Hence, it is natural to combine the two features in an attempt to determine what a sustainable dwelling is.

However, combining the social and the spatial approaches to dwelling in order to understand sustainability is not necessarily a given.⁵ Hence, before trying to connect the two approaches, a closer look will have to be taken at the concept of sustainability from a spatial and a social point of view.

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Brundtland, G. H. (1987) *Our Common Future*, United Nations World Commission on Environment and Development.

4.

Lievens, L. (2015) *La décroissance comme mouvement social ? Discussion théorique, perspective critique et analyse sociologique de l'action militante*, unpublished thesis, Université catholique de Louvain.

5.

Gans, H. J. (2002) 'The Sociology of Space: A Use-Centered View', *City & Community*, 1(4), 329-339.

Sustainability from a spatial point of view

In accordance with the Brundtland definition of sustainability – namely meeting the needs of the present time without compromising future needs – sustainability from a spatial point of view, and hence in domestic architecture, can be understood as a means to produce perennial spaces for human habitation in the sense that they are able to meet present and future needs. Yet this permanence is challenged by the rapidly growing obsolescence of inhabited spaces.⁶ Spatial obsolescence is due to three types of changes. First, the traditional forms of kinship, partnership, social relationships, education and societal codes evolve promptly. These rapid evolutions of ways of life have a direct impact on defining the functions within residential architecture.⁷ Second, new construction materials, structural solutions and servicing systems are emerging at a very fast pace. These evolving building techniques challenge the constructive dimension of architecture.⁸ Third, the conception of fashion, tastes, stylistic or formal values are relentlessly changing. Moreover, as with social conventions or construction techniques, there is no longer a prominent and shared aesthetics. Once again, the constant renewal of aesthetic codes jeopardizes a perennial implementation of architecture. The three challenges to architecture concern its Vitruvian principles of *utilitas*, *firmitas* and *venustas*. Clearly, these three current challenges directly affect the founding principles of architecture. Consequently, in terms of domestic space, the very idea of meeting present and future needs is disqualified by a rapid obsolescence of inhabited spaces. In order to respond to this phenomenon, several architectural approaches can be explored.⁹

6. Hertzberger, H. and van Vlijmen, M. (2001) *Lessons for Students in Architecture*, Rotterdam: 010 Publishers.

7. Schneider, F. (2007) *Recueil de plans d'habitation*, Berlin: Birkhäuser.

8. In their essay about obsolescence, Thomson and Van der Flier distinguish physical opposed to behavioural factors. Thomsen, A. and van der Flier, K. (2011) 'Understanding obsolescence: a conceptual model for buildings', *Building Research & Information*, 39(4), 352-362.

9. Ledent, G. (2016) 'Beyond contingency. Sustainable design versus obsolescence' in Cairns, G., ed. *AMPS Proceedings Series 4, Obsolescence and Renovation – 20th century Housing in the New Millennium*, Seville: Universidad de Sevilla.

First, some architects address variations of the triad in a monovalent way. Some advocate buildings that can adapt over time to the changing habits of their users. This flexibility of uses is achieved through adaptable, transformable or indeterminate architecture, as opposed to the tight-fit spaces of functionalism.¹⁰ Others seek a solution to obsolescence in structural, energetic innovation or servicing systems. Whether soft or hard, these strategies lead primarily to technological buildings. For example, sustainable architecture as it is commonly understood is no exception to this monovalent logic since it is primarily a technological answer to the question of building obsolescence. A final option concentrates on reducing any kind of aesthetic codes to their core. The formal aspect of architecture is thus condensed to a minimal standard expression. But none of these approaches provides a comprehensive response to the issue of obsolescence.

Second, some architects consider spatial obsolescence a given which is inseparable from our built environment and, by extension, from architecture itself. According to an economic logic, many buildings are conceived with a life expectancy of no more than 25 years.¹¹ In this sense, architecture becomes a throwaway product, precluding any possible sustainable development. In reflecting on *La Défense* in Paris, Rem Koolhaas emphasized this position when he professed that 'modern' buildings could expire and be removed within a single generation.¹² According to this principle, the very existence of a building is precarious, allowing no notion whatsoever of permanence. Architecture is thus a '*tabula rasa... in waiting*'.¹³

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Till, J. and Schneider, T. (2005)
'Flexible housing: the means to the end', *Arg : Architectural Research Quarterly*, 9(3-4), 287-296.

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Brand, S. (1995) *How Buildings Learn: What Happens After They're Built*, New York: Penguin Publishing Group.

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'The modern building has become the momentary embodiment of an opportunistic financial envelope that after 20, 25, at the most 30 years, simply expires, all within a single generation. Modern buildings is literally written off.' Koolhaas, R., Mau, B., Sigler, J., Werleemann, H. and Architecture, O. f. M. (1997) *S, M, L, XL*, New York: Monacelli Press. p. 1128.

13.

Ibid., p. 1132.

Eventually, a third path towards sustainability infers a paradigm shift in design strategies around the concept of polyvalence.¹⁴ The concept of polyvalence emerges as a reaction to the determinism of modernism in architecture. One of the features of modernist architecture is indeed a minute specification of space fitting precisely its designated functions. As Bernard Leupen stated, *'The more precisely we are able to determine the requirements a dwelling must satisfy as its inception, the greater the chance that a discrepancy arises between the dwelling and its uses in the future'*.¹⁵ Thus if specificity does indeed lead to less expensive buildings, they are usually short-lived. To counteract this obsolescence of uses, several adaptive strategies are possible: by enlarging space, through altering space or through enabling from the start multiple uses without any spatial modification. Polyvalence refers to this third strategy.

Herman Hertzberger further clarifies this concept by making a clear distinction between generic and polyvalent space, comparing them to the notions of competence and performance developed by Noam Chomsky. According to him, generic space is achieved by retrieving qualities in order to produce a neutral space. The term 'genericness' describes thus a passive quality. Polyvalence, on the other hand, refers to an active character of space regarding functional adaptability. *'The idea of polyvalence is to design in such a way as to actively induce interpretation'*.¹⁶ Instead of providing neutral space, the key to polyvalence is to provide suitable space.

While Leupen and Hertzberger refer to polyvalence according to its ability to shelter the interchangeability of functions, the concept could be broadened to all three

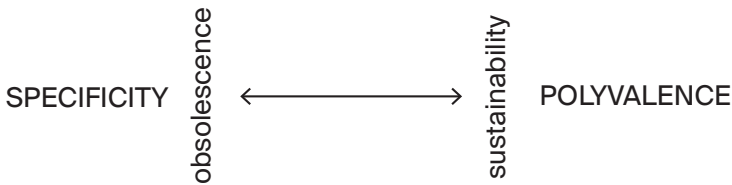
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Leupen, B. (2006b)
'Polyvalence, a concept for the sustainable dwelling', *Nordic Journal of Architectural Research*, 19(3), 23-31.

15.
Leupen, B. (2006a)
Frame and Generic Space, Rotterdam: 010 Publishers, p. 18.

16.
Hertzberger, H. (2015) *Architecture and Structuralism: The Ordering of Space*, Rotterdam: 010 Publisher, p. 140.
Hertzberger, H. and van Vlijmen, M. (2001) *Lessons for Students in Architecture*, Rotterdam: 010 Publishers.

aspects of the Vitruvian triad. Indeed, as Brundtland advocates meeting present and future needs, architecture defines these needs in three ways: functional, structural and formal. Hence, polyvalence could be a quality of space that allows for simultaneous technological, aesthetic and functional adaptation (either in time or through personal interpretation).

Accordingly, the concept of polyvalence seems to be capable of providing a comprehensive solution to sustainability from a spatial point of view. Indeed, as it allows variations on all three Vitruvian principles, polyvalence produces perennial spaces able to meet present and future needs.¹⁷ At the other end of the spectrum, specificity generates spaces that are extremely vulnerable to change.



Sustainability from a social point of view

The Brundtland definition could also lead to a social interpretation. The centre of attention would then shift to articulating the needs of some (our contemporaries) and the abilities of others (future generations) in a world which is by definition limited. In other words, the problem is now to describe and understand how the fulfilment of some would not restrict that of others but on the contrary contribute to it. Hence, sustainability creates an infinite variety of choices or lifestyles for current and future inhabitants.

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In the line of John Habraken, Stephen Kendall also advocates for such a posture of 'Open Buildings'. Kendall, S. (1999) 'Open Building: An Approach to Sustainable Architecture', *Journal of Urban Technology*, 6(3), 1-16.

In the case of dwelling, this interpretation has many spatial consequences but also various social implications. Some of these implications are made clear by a parallel to the Capability Approach developed by Sen. 'Capability' combines three dimensions: freedom of choice; desire-fulfilment goal; implementation possibility.¹⁸ This third dimension makes the approach original because it explores the link between the choices and values of an individual and the possibility (internal and external) of implementing them. Namely, what enables us to live the life we choose to live and what gives access to possible worlds? When the Capability Approach and the issue of sustainable dwelling are brought together, very concrete questions come to mind: How can a dwelling environment support basic human activities (such as eating, sleeping, washing, etc.)? How can a dwelling environment support important daily services? Such practical questions often lead to issues that are far more difficult to assess even though they are probably as important: How can a dwelling environment insure a feeling of personal security and integrity? How can a dwelling environment preserve one's privacy as well as produce enriching neighbourly relations (from a functional, intellectual or affective point of view)? Instead of focusing on precise capabilities, this second range of questions focuses on the levers provided by housing. Therefore, if the dwelling leads, indirectly, to opportunities in employment, social activities (sport, culture, etc.), the creation of new projects and initiatives, then it can be qualified as 'empowering'. Even if the literature about empowerment is based much more upon a critical view of the domination system,¹⁹ the possibility of enhancement is quite similar to that of the Capability Approach, which is conceived in a dynamic way. In this sense to dwell is therefore much more than to be housed. Thus, to sum up, from a social

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De Munck, J. (2008) 'Qu'est-ce qu'une capacité ?' in De Munck, J. and Zimmerman, B., eds., *La liberté au prisme des capacités*. Amartya Sen au-delà du libéralisme, Paris: Editions de l'EHESS, 21-49.

19.

Bacqué, M.-H. and Biewener, C. (2015) *L'empowerment, une pratique émancipatrice ?*, Paris: La Découverte.

point of view, the sustainable nature of a dwelling is inherent to the degree of empowerment it grants to present of future inhabitants.²⁰

A clarification should be added to the provision of empowerment: it can only be considered if it is articulated in accordance with a logic of interdependences between capacities. Therefore, the interdependence between individuals, social groups and generations should be recognized as a prerequisite, as suggested by *care* theorists. According to Joan Tronto and Berenice Fisher, *care* is: 'a species of activity that includes everything we do to maintain, contain, and repair our 'world' so that we can live in it as well as possible. That world includes our bodies, ourselves, and our environment'.²¹ Hence, the liberal nature of the Capacity Approach cannot rely on the concept of an inhabitant with no social links but rather must rely on the concept of an inhabitant who is fundamentally inscribed in a socio-spatial network that enables him or her to exist.²² Whatever view we may have of the individual and the social and the spatial aspects of living, there remains the issue of how people represent their individualities and their socio-spatial relationships. Consequently, if from a sociological point of view, sustainability can be linked to the notion of empowerment, it fundamentally disputes social configurations that grant no particular meaning to individual freedom or interdependence between individuals. Such configurations, whether explicitly formulated or not, tend to maintain individuals in their social role/position (symbolically and materially).²³

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This notion of empowerment can be likened to the '*droit à la ville*' developed by Henri Lefebvre in the 1960s. Lefebvre, H. (1968) *Le droit à la Ville*, Lonrai: Anthropos.

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Tronto, J. and Fisher, B. (1990) 'Toward a feminist theory of caring' in Abel, E. K. and Nelson, M. K., eds., *Circles of Care: Work and Identity in Women's Lives*, Albany, New York: State University of New York Press, 36–54. See more fundamentally: Tronto, J. C. (1993) *Moral Boundaries: A Political Argument for an Ethic of Care*, London: Routledge.

22.

In this respect, the reinterpretation of the sociological approach of Elias by Danilo Martuccelli is particularly interesting. Martuccelli, D. (2002) *Grammaires de l'individu*, Paris: Gallimard and Martuccelli, D. (2010) *La société singulariste*, Paris: Armand Colin.

23.

Numerous examples illustrate this standpoint. When discussing Sen's approach, Nussbaum exemplifies the living conditions of disabled people or single parents and whether or not this condition is the primal determination of the individuals. Nussbaum, M. (2001) *Women and Human Development: The Capabilities Approach*, Cambridge: Cambridge University Press.

Accordingly, inhabitants' empowerment is essential to producing sustainability from a social perspective. Moreover, empowerment is in essence opposed to the idea of role reduction that can be summed up in the concept of determinism.



Residential sustainability at the crossroads of socio-spatial approaches

The soaring population and social discrepancies around the world draw increasing attention to the issue of sound, respectful and safe residential spaces that go beyond housing and that could be called home. In addition, due to the limited resources of the earth, sustainability also becomes a key issue when addressing housing. It is against this twofold backdrop that the 'Sustainable Dwelling' project has been developed.

The paradigm of sustainability was forged on the ashes of the modernist ideology.²⁴ The failure of its aftermath is due to two main factors. First, post-war interpretations of modernism in architecture led to technically or economically driven solutions. Many of the housing solutions proved too rigid to pass the test of time. In addition, modernist functionalism literally muted the sense of meaning for its actual users.²⁵ Lifestyle

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In their 2014 paper, Heynen and Vandevyvere challenge this antagonism, yet refer to the sustainable discourse as mainly an ecological one. Vandevyvere, H. and Heynen, H. (2014) 'Sustainable Development, Architecture and Modernism: Aspects of an Ongoing Controversy', *arts*, 3, 350-366.

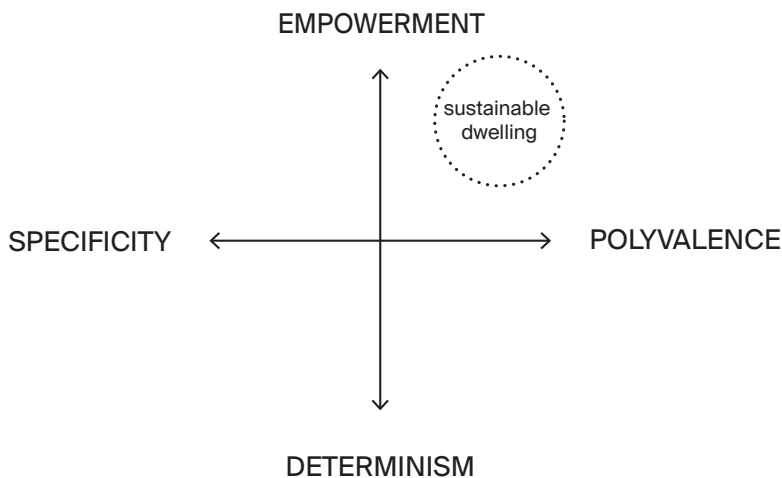
25.

Even though the 1953 CIAM introduced qualitative methods to understand the built environment. Pinson, D. (2006) 'De l'échec d'une charte à la poursuite d'une réflexion' in (Imbernon, ed., *La Modernité critique, autour du CIAM 9 d'Aix-en-Provence, 1953*, Marseille: 241-257). On this topic, the sociological analysis carried out by Chamboredon and Lemaire remains a prominent reference. Chamboredon, J. C. and Lemaire, M. (1970) 'Proximité spatiale et distance sociale. Les grands ensembles et leur peuplement', *Revue française de sociologie*, 11(1), 3-33.

choices were limited both from an individual and collective perspective. Modernist housing often failed to act as the fabric for social practices and as a means of providing the dweller with diverse opportunities in life. On the basis of these two important shortcomings, it seems appropriate to question sustainability from a spatial and a user perspective.

From a spatial perspective, sustainable artefacts are those which avoid obsolescence. This can be achieved by producing polyvalent artefacts from a technical, functional or aesthetic point of view. From a social – user – perspective, sustainable interactions are those capable of empowering individuals or groups while recognizing their interdependences.

While the first approach opposes polyvalence and specificity, the second opposes empowerment and determinism. Combining both approaches leads to a delineation of sustainability in the simultaneous occurrence of polyvalence and empowerment.



To enhance this comprehensive approach of sustainability, an interdisciplinary methodology is set up, combining two disciplines: architecture and sociology. Such multidisciplinary research has been advocated in the past, as it offers a deeper understanding of the concept of home by tackling and interconnecting more relevant data.²⁶ The first interdisciplinary analyses emerged as a result of failing modernist housing conceptions. It is no coincidence that the first transdisciplinary studies were carried out in France, in view of its large-scale housing production – *les grands ensembles* – led by Henri Raymond and Henri Lefebvre, and inspired by the ethnological works of Claude Levi-Strauss and Marcel Mauss. Others, such as Amos Rapoport and several architects emerging from the 1953 CIAM (Aldo Van Eyck and Hassan Fathy²⁷), came to the same conclusion: space and, by extension, housing cannot be studied unilaterally.²⁸

While, traditionally, domestic architecture was an exploration of spatial configurations that encompass three dimensions – formal, functional and structural – it became obvious that the notion of dwelling involves a series of complex relationships between sociocultural factors and their spatial arrangements.²⁹ In addition, research findings indicate that time is also an important factor, as the *'relationship between habitat and inhabitants*

26.

Kent, S. (1993) *Domestic Architecture and the Use of Space: An Interdisciplinary Cross-Cultural Study*, Cambridge: Cambridge University Press ; Low, S. M. and Lawrence-Zúñiga, D. (2003) *The anthropology of space and place: locating culture*, London: Blackwell ; Gieryn, T. F. (2000) 'A Space for Place in Sociology', *Annual Review of Sociology*, 26, 463-496.

27.

Pinson, D. (1993) *Usage et architecture*, Paris: Editions L'Harmattan.

28.

Rapoport, A. (1969) *House form and culture*, *Foundations of Cultural Geography Series*, Englewood Cliff: Prentice-Hall ; Lefebvre, H. (1974) *La production de l'espace*, *Ethnosociologies*, 4 ed., Mayenne: Anthropos ; Haumont, N. and Raymond, H. (1971) *L'habitat pavillonnaire*, Paris: Centre de recherche d'urbanisme ; Bourdieu, P. (1972) *Esquisse d'une théorie de la pratique: précédé de Trois études d'ethnologie kabyle*, Paris: Seuil.

29.

Rapoport, A. (1969) *House form and culture*, *Foundations of Cultural Geography Series*, Englewood Cliff: Prentice-Hall.

is *dynamic or changeable*'.³⁰ Eventually, the concept of the individual dweller and his/her potential appropriations of space became a key notion when linking spatial and social housing studies.³¹ Altogether, these pioneering studies urged scholars to link humanities and architecture in both architectural education and research. Combining both disciplines led to replacing the notion of spatial efficiency with that of resilience-engendering social diversity.

Sustainability is thus seen from this comprehensive perspective, which regards housing as more than just a spatial or technological issue. In addition, this understanding of sustainability implies a fundamental transformation from a utilitarian vision of space to a user-oriented consideration of space,³² replacing the concept of utility with that of use. In this respect, bridging architectural and sociological research could contribute to a better understanding of the relationships between uses and spaces.

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Lawrence, R. J. (1983) 'The comparative analyses of homes: Research method and application', *Social Science Information/sur les sciences sociales*, 22(3), 461-485 ; Altman, I. and Werner, C. (2013) *Home Environments*, New York: Springer US.

31.

Serfaty-Garzon, P. (2003) 'Appropriation' in Brun, J., Driant, J.-C. and Segaud, M., eds., *Dictionnaire critique de l'habitat et du logement*, Paris: Armand colin, 27-30 ; Haumont, N. and Raymond, H. (1971) *L'habitat pavillonnaire*, Paris: Centre de recherche d'urbanisme.

32.

Cuppers, K. (2013) *Use Matters: An Alternative History of Architecture*, London: Taylor & Francis.

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