

# Forgotten academic modernism in the reconstruction of downtown Le Havre by Auguste Perret

**Paweł Piotr Szumigala**

<https://orcid.org/0000-0001-8069-787X>  
[pawel.szumigala@up.poznan.pl](mailto:pawel.szumigala@up.poznan.pl)

*Department of Landscape Architecture, Poznań University of Life Sciences*

**Karolina Olenia Szumigala**

<https://orcid.org/0000-0003-1935-7491>  
[karolina.szumigala@gmail.com](mailto:karolina.szumigala@gmail.com)

*Faculty of Architecture, Poznań University of Technology  
Department of Landscape Architecture, Poznań University of Life Sciences*

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**Abstract:** This paper attempts to present historical architectural and urban structures realized in the style of academic modernism on the example of the reconstruction of Le Havre. The reconstruction of Le Havre is a full-scale depiction of an urban structure in a unified modernist style, combining academic classicism and modernity. After years of experience in urban planning, the image of the reconstruction of Le Havre after the destruction of war is, in the context of contemporary urban planning concepts, an example of holistic urban thinking about urban space.

**Keywords:** academic modernism, urban structures, downtown reconstruction, Le Havre, Auguste Perret

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## Introduction

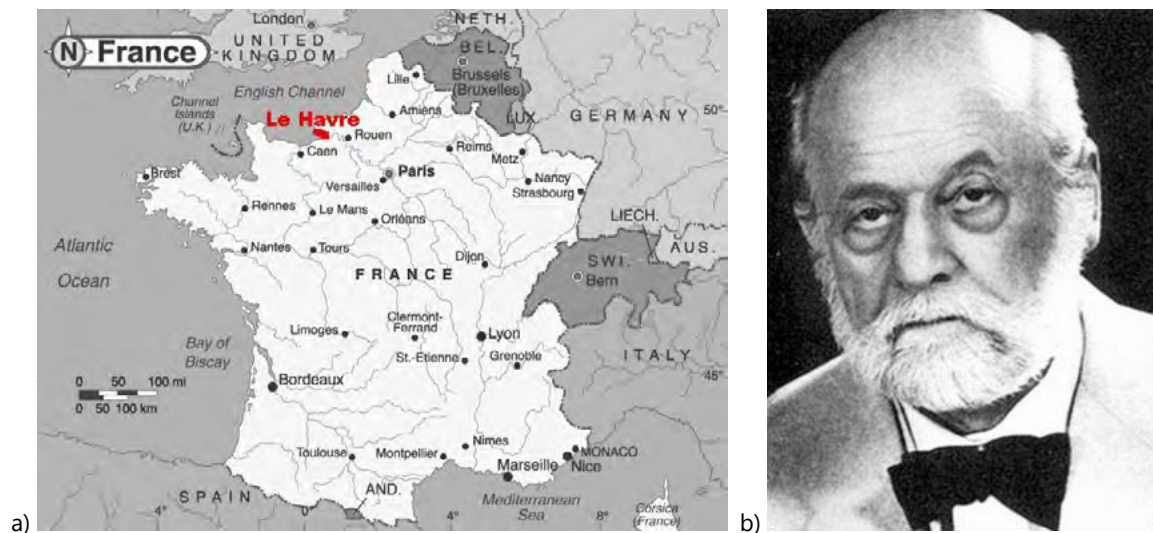
The reconstruction of downtown Le Havre after the destruction during World War II led by Auguste Perret is an example of the modernist trend in post-war architecture and urban planning, which can now serve as an inspiration for contemporary designers of public spaces. The concept of modernism, as a result of many failed realizations in the history of post-war urban planning, appears in the public consciousness as images of public spaces devoid of individuality and attractiveness. It is hard not to admit that this common opinion is right when we see modernistic realizations, which in many cases were created without respect for history and cultural values of the place. They can also be accused of disrespecting the spatial context and of being schematic and monotonous.

The development of urban planning in the last 80 years has brought many new concepts and trends in the planning of public spaces and residential and service areas<sup>1</sup>. The availability of new construction technologies and the abundance of building materials nowadays provide many new opportunities in urban planning and to a large extent contribute to the realization of buildings and public spaces with increasingly higher utility and aesthetic standards. In this contemporary context, the example of Auguste Perret's rebuilding of Le Havre is

<sup>1</sup> Functionalism, New Urbanism, Postmodernism, Contextualism, Cohesive Cities, Posturbanism, Neurbanism, Deconstructivism, Compact Cities, Green Cities, Ecopolis, Slow Cities, Smart Growth, Ditch Urbanism, Everyday Urbanism, Green Architecture, The Third Way, (Solarek K., *Współczesne koncepcje rozwoju miast, Kwartalnik Architektury i Urbanistyki*, 2011 – [jadda.icm.edu.pl](http://jadda.icm.edu.pl)).

read more and more clearly as a masterful urban and architectural solution seen through the prism of a single universal building material, reinforced concrete at the time.

The city of Le Havre has always been of strategic importance. Located at the mouth of the Seine to the English Channel, it defended and provided access by water and land to Rouen and Paris. Le Havre had been the most important port on the north side of France since 1517 [Fig. 1 a]. Because of this, the port and downtown area of the city was completely destroyed during World War II – 12,500 buildings were demolished. The main designer of the reconstruction of Le Havre between 1945 and 1964 was Auguste Perret, born in 1874 in Ixelles (Belgium), who is called the father of reinforced concrete [Fig. 1 b].



**Fig. 1.** a) Le Havre; b) Auguste Perret (1874–1954), <https://www.findagrave.com/memorial/74909613/auguste-perret>, 10.06.2020

Auguste Perret, a student and later a lecturer at the École des Beaux-Arts in Paris (teacher of Le Corbusier), experienced in the use of modern reinforced concrete techniques, undertook the reconstruction of Le Havre as early as 1944. The reconstruction of the inner city structures of Le Havre, designed and executed by him, is an outstanding example of post-war architecture and urban planning. It is characterised by the application of a uniform methodology based on prefabrication, segmental technology and the innovative use of reinforced concrete. The reconstruction area, including the centre of Le Havre, was inscribed on the UNESCO World Heritage List in 2005 and since then the city has been enjoying a new boom.

## State of research

Analyzing numerous publications and archival materials on the reconstruction of Le Havre, it should be noted that this issue has been widely discussed by a group of architects and researchers. Among other things, this topic was described in terms of historical events by Martine Liotard<sup>2</sup> in 2007. Joseph Abram<sup>3</sup> spoke on the Perret school in 1985. Pier Dalloz and Auguste Perret<sup>4</sup> in 1957 described aspects of the reconstruction of the urban structures of Le Havre and Auguste Perret together with André Le Donné<sup>5</sup> in 1953 discussed the issue in terms of technology, construction and building work. Research in this area was also done in subsequent years.

2 Martine Liotard, *Le Havre 1930–2006, renesans ou l'irruption du moderne*, Picard, Paryż 2007.

3 Joseph Abram, *Perret et l'École du classicisme structurel (1910–1960)*, raport z poszukiwań, École d'architecture de Nancy, Nancy 1985.

4 Pierre Dalloz, *Auguste Perret e la ricostruzione di Le Havre*, w "Casabella-Continuità", n. 215, 1957, s. 52.

5 Auguste Perret and André Le Donné, *Avant-propos*, in «Annales de l'Institut Technique du Bâtiment et des Travaux Publics», n. 65, 1953, p. 438.

Andrea Calgarotto<sup>6</sup> in 2014 analyzed the metric relationships and composition of Havre's built structures and Elisabeth Chauvin<sup>7</sup> in 2021 carried out considerations in the social and spatial aspects of Havre's cityscape.

## Urban structure and selected objects of the reconstruction of Le Havre

After years of experience in city planning, the image of rebuilding Le Havre from war damage, seen in the context of contemporary urban planning concepts, is an example of holistic urban thinking about city space. For the presentation of this view, the southern part of the settlement at the port of Le Havre was chosen, which for the purposes of the publication was called the West and South Port Settlement [Figs. 2 and 3]. It constitutes a distinctive urban grid and structure, the western and southern edge of a larger urban complex, i.e. the rebuilt inner city of Le Havre after World War II. The reconstruction of Le Havre was carried out in stages over a period of 20 years from 1944 to 1964. The Port Estate was built in 1951–54.



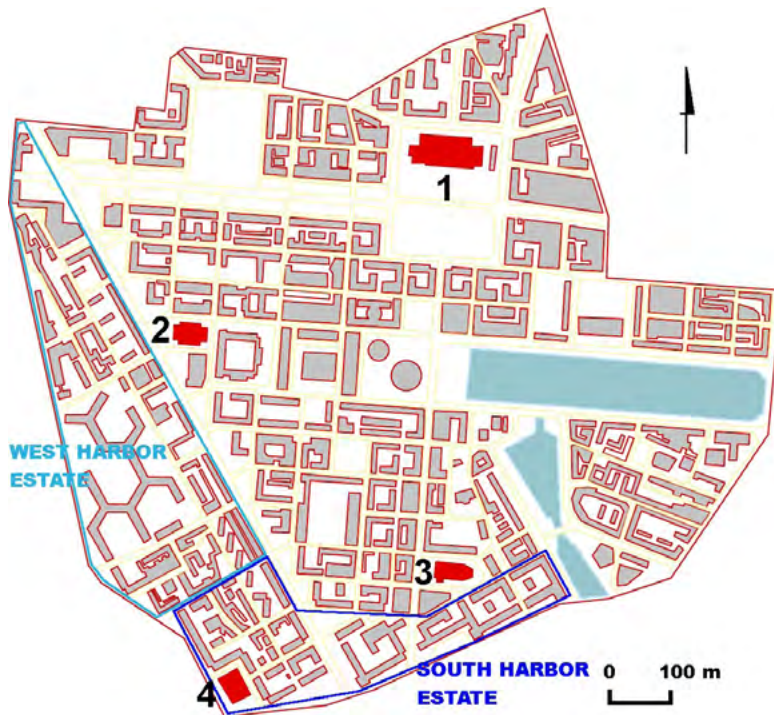
**Fig. 2.** The area of the reconstruction of Havre by Auguste'a Perret, <http://lehavredavant.canalblog.com/archives/2008/10/22/11055471.html>, 10.06.2020

The reading of the urban space of the area covered by the modernist reconstruction is most clearly felt only while walking through the streets of Le Havre. Only this visual reading of this space allows us to understand that it is a place which presents a unique full- scale image of architectural and urban structures in a uniform modernist style, combining academic classicism and modernity [Fig. 2]. It was all the more fascinating to get to know, or rather rediscover this structure, as it is an example of perfect realization of concrete and reinforced concrete objects with high artistic values and rhythmic chiaroscuro effects. Auguste Perret created architecture that successfully combined his contemporary theories with Gothic forms. Unlike most contemporary theorists, Perret pointed out the need for precise and particular detailing, details and textures that are evident in all restoration objects. He used with great success the connections between natural forms, classical symmetry and order, and the structural system and qualities of concrete. Hence, in the implementation of the reconstruction

<sup>6</sup> Andrea Calgarotto, *LA MISURA DELLA CITTA. AUGUSTE PERRET E IL NUOVO CENTRO DI LE HAVRE*. FAmagazine, 2014.

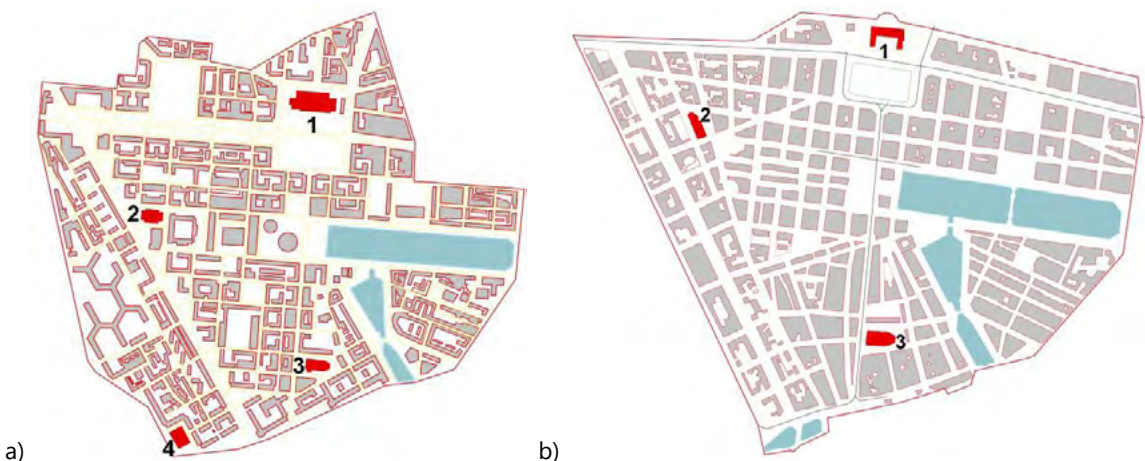
<sup>7</sup> Elisabeth Chauvin, *The City of Le Havre – the Story of a Modernist Utopia*, Nr 2/3 EN "20<sup>th</sup> Century Architecture until the 1960s and Its Preservation", 2021/24.

of Le Havre, the integrity, uniformity and stylistic consistency of the new concrete architecture with the objects and urban structures that survived the war was preserved.



**Fig. 3.** Plan of the West and South Harbour Estate and the boundaries of the rebuilding of Havre, with the structure of the development visible in the form of regular quarters of buildings. 1 – Town Hall, 2 – St. Joseph’s Church, 3 – Notre Dame Cathedral, 4 – Museum, (study by Szumigała P.P., Szumigała K.O.)

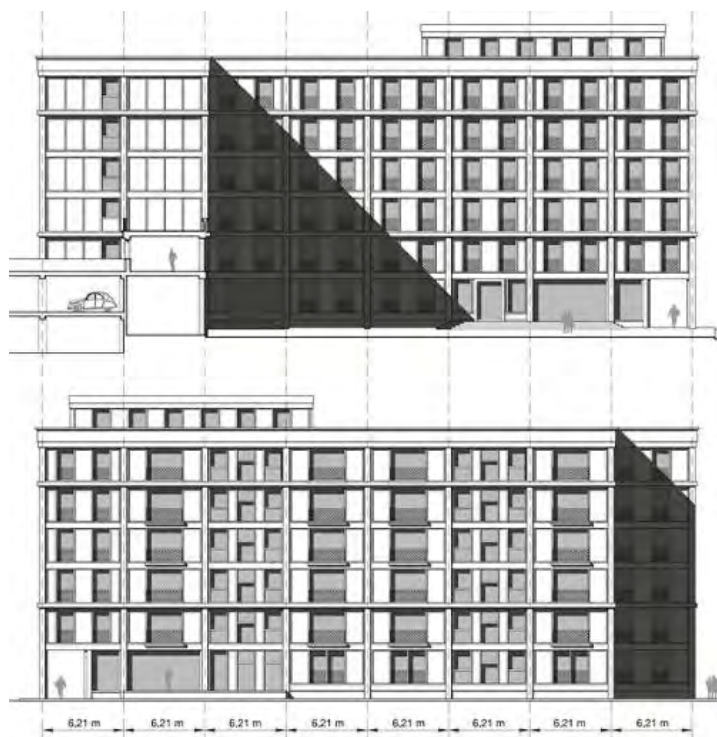
The reconstruction of Le Havre’s inner city is an example of a perfect fit with the city’s existing spatial context. The entire reconstruction inner city area, as well as Portowe Osiedle Zachodnie and Osiedle Południe, is a fragment of an „urban jigsaw puzzle” perfectly made of sizeable quarters of multi-family, service, sacral and industrial buildings. It is an example of a holistic approach to the design of reconstruction and reconstruction of the urban fabric with all its functional-spatial aspects. The preservation of the urban rhythms of the classical grid and the separation of public spaces in the designed structures, while maintaining and emphasizing the essential elements of the existing composition, accounts for its timeless significance for the development of urban planning thought.



**Fig. 4.** A – The urban structure of the downtown before World War II, B – The urban structure of the downtown after Perret’s reconstruction. 1 – Town Hall, 2 – St. Joseph’s Church, 3 – Notre Dame Cathedral, 4 – Museum, (study by Szumigała P.P., Szumigała K.O.)

To illustrate these activities, Fig. 4. presents a comparison of diagrams of the urban structures of the city centre before World War II and after the reconstruction led by Auguste Perret.

On the other hand, the achieved stylistic cohesion of the elevation's architecture and the scale of completed buildings, in such difficult materials as concrete and reinforced concrete, presents the highest level of post-war European architecture and urban planning. The four-, six-, and nine-story buildings of the downtown and South Harbor Estates combine modernist utility and austerity with historicizing resentment. In terms of technology, the prefabrication system, the modular grid and the innovative use of concrete were characteristic here. The designs of the buildings and open spaces were based on a 6.21 m square grid module. Building plots were delineated based on a 100 m grid, although some were combined into larger lots [Fig. 5, 6].



**Fig. 5.** Design of the elevation of the building of the Port South Housing Estate – workshop drawings, <http://www.festivalarchitettura.it/festival/It/ArticoliMagazineDetail.asp?ID=153>, 10.06.2020



**Fig. 6.** Facade of a residential building, photo by Szumigata K.O., 2019

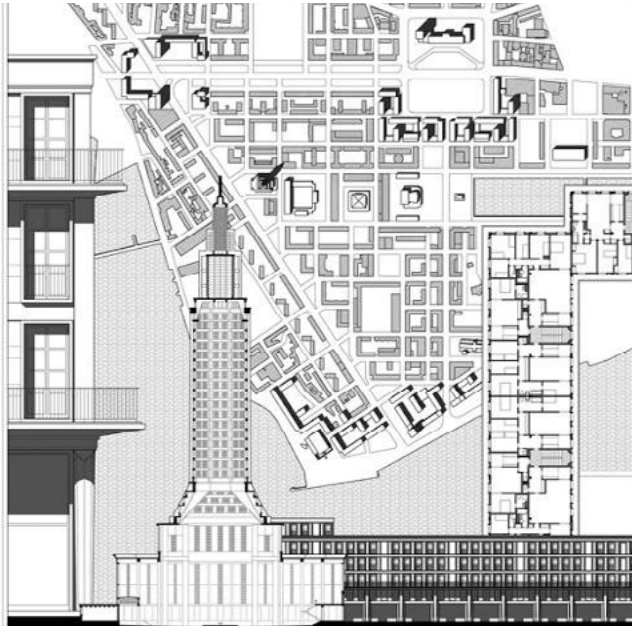
The reconstruction plans for Le Havre reduced the average population density from 2,000 inhabitants per hectare (found in the pre-war period) to 800. The reconstruction plan included Perret's "neoclassical" assumption according to which the buildings form closed complexes and the streets remain streets. The few buildings that were not destroyed by the bombing were incorporated into the new urban fabric<sup>8</sup>.

Perceiving this urban structure with our senses, we experience the feeling of peace, order and magnetism at the same time. It is influenced by the appropriately selected scale of the interiors, the central angles<sup>9</sup> of squares and streets, and the calm, though rhythmic structure of the elevations, which despite the consistent character of the whole, has its subtle varieties in the given area of the rebuilt Port Estate and the city centre. This subtle variety of details, ornaments and textures, always made of the same material – concrete and reinforced concrete, has a peculiar tone and warm hue of the natural material used: gravel, pebbles and light cement.

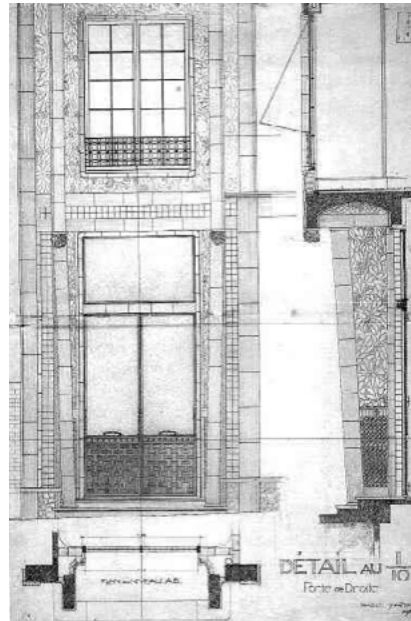
<sup>8</sup> [https://pl.wikipedia.org/wiki/Hawr,\\_miasto\\_odbudowane\\_przez\\_Auguste%28%80%99a\\_Perreta](https://pl.wikipedia.org/wiki/Hawr,_miasto_odbudowane_przez_Auguste%28%80%99a_Perreta).

<sup>9</sup> The central angle (the angle between the point of the floor and the top of the highest wall of the adjacent building) – the ideal size, which does not create a claustrophobic or agoraphobic impression and allows the whole square to be seen, is 28–30 degrees, <https://www.google.com/search?q=k%C4%85t+%C5%9Brodkowy+placu+i+ulicy&oq=k%C4%85t+%C5%9Brodkowy+placu+i+ulicy&aqs=chrome..69i57.6431j0j7&sourceid=chrome&ie=UTF-8>.

Auguste Perret used perfect shades of aggregate here, obtaining the effect of different shades of fragments of the façade and details maintained in a consistent tone, which he reinforced and supported with chiaroscuro effects of the architecture of walls, tiles, and arcades, blends, bands, cornices, and rhythms. These effects are clearly visible in the artificial light of night-lit streets and squares. However, most characteristic and spectacular for this development, are the qualities of the play of light and shadow visible in the strong summer sunlight. The chiaroscuro effects on the facades of the buildings were planned by Perret in the structures and architecture of the facades of the buildings. Perret's perfect approach to architectural detail is revealed in his large-scale workshop drawings with markings of textures, divisions, and ornaments, which were executed consistently throughout the restoration [Fig. 7, 8, 9, 10, 11, 12].



**Fig. 7.** Folder showing the essential elements of the structure of the Port Settlement and downtown Havre, <http://www.festivalarchitettura.it/festival/It/ArticoliMagazineDetail.asp?ID=153,10.06.2020>



**Fig. 8.** Design of building details by A. Perret – workshop drawings, <http://www.festivalarchitettura.it/festival/It/ArticoliMagazineDetail.asp?ID=153,10.06.2020>



**Fig. 9.** Commercial ground-floors of a downtown development in Havre, photo by Szumigala K.O., 2019



**Fig. 10.** Chiaroscuro effects on the facades of downtown buildings in Le Havre, photo by Szumigala K.O., 2019



**Fig. 11.** Residential buildings in downtown Havre, photo by Szumigala K.O., 2019



**Fig. 12.** Detail – play of structures on the ground floor column of a residential building in the Port West Estate, photo by Szumigala K.O., 2019

August Perret's holistic and consistent approach to the reconstruction of Le Havre is also evident in the realization of other buildings, including administrative, service and sacral buildings, realized in the commonly used concrete and reinforced concrete.

One of Auguste Perret's most recognizable and famous architectural works is the City Hall in Le Havre [Fig. 13 a, b, c].



**Fig. 13.** a – The City Hall in Le Havre, b and c – Interior of the Town Hall, photo by Szumigała K.O., 2019



The flagship example of sacral architecture in reinforced concrete technology is St. Joseph's Church, built near the port in 1951–1958. Nowadays, the reinforced concrete church tower, which is illuminated at night, is a characteristic element of the town's landscape, visible from along distance [Fig. 14 a, b and 15].



**Fig. 14.** a – Tower of St. John's Church in Havre, b – Reinforced concrete structure of St. Joseph's Church, photos by Szumi-gała K.O., 2019



**Fig. 15.** View on the harbour buildings of Le Havre by A. Perret, <https://polskifr.fr/polska-we-francji/le-havre-normandzki-port-dla-wielbicieli-alternatywnej-sztuki/>, 10.06.2020

## Methods and materials

In our research we applied spatial analysis of urban structures and interiors using qualitative and quantitative methods and comparative analysis. For the spatial analysis at the level of urban composition, we have taken the downtown area that was included in the reconstruction led by Perret. We used qualitative spatial analysis for this study material. To visually confirm our theses, we conducted in situ studies. We have documented them with the posted selected photographs taken in 2019 in the downtown Havre area. The analyzed area of Le Havre's downtown was also subjected to a comparative analysis in terms of urban structure from before the post-war destruction and after reconstruction. We presented this analysis graphically by comparing simplified plans of the downtown area. For detailed studies of the spatial structure using the quantitative method, we selected the most representative, in our opinion, fragment of the development of South Harbor Estate with an area of approx. 48.33 ha [Fig. 16]. We studied this area by means of the urban indicator of building intensity and the number of building storeys and the results of this analysis are presented in [Table 1]. We surveyed 11 quarters of residential development and one quarter of commercial development. The areas of building development of quarters and the average index of building intensity were calculated for the variant of building development in the form of 4 storeys and 5 storeys.



**Fig. 16.** Selected reconstruction fragment – South Harbor Estate, study by Szumigała P.P.

**Table 1.** Balance sheet data of the Le Havre South Port Estate, study by Szumigała P.P.

Marking of quarters according to Fig.16.	Development area [ha]	Average building height – H Average building intensity – I
A	0.79	Average height of buildings – H 4–5 storeys
B	0.87	
C	0.52	
D	1.39	
E	0.52	
F	0.50	
G	0.55	
H	0.73	
I	0.61	
J	0.92	
K	0.73	
M – Museum	0.96	
<b>SUMMARY</b>	9.09	<b>I = 0,75–0,94</b>
<b>The area of the South Port Settlement approx. 48.33 ha</b>		

## Results

Our research indicates that the basic urban parameters of the modernist reconstruction of Le Havre do not deviate from those of a typical inner-city development and fall within the range of values that are considered in the literature to be correct for the formation of buildings and public spaces on a human scale with regular urban rhythms for the residential fabric of a European city. The form of development in the form of city blocks – quarters of development, gives the possibility to create public spaces of squares and streets and spaces inside the quarter development. At the same time, it allows connections between these spaces, giving residents a variety of experiences<sup>10</sup>. Urban rhythms<sup>11</sup> Le Havre reconstructions were set for development quarters at about 100 m. This value is adequate to the rhythms of inner-city developments in 20<sup>th</sup> century cities at this latitude, which range from a value of several dozen metres for historical developments from the medieval period to a value of about 100–200 metres for developments in the form of quarters from the industrial revolution of the 19<sup>th</sup> century. The modernist reconstruction of Le Havre fully respected the historical rhythms of the urban structure of the city destroyed during World War II. Values of the development intensity coefficient<sup>12</sup> in the study area range from 0.75 for 4 storeys to 0.94 for 5 storeys [Table 1]. These values are comparable to the average values of inner city developments in most European cities from the second half of the 20<sup>th</sup> century and in Poland, and are still considered preferable for multifamily and service buildings in urban planning. For the studied area of Le Havre, the values of the development intensity coefficient are even slightly lower than the average value of this coefficient for Polish cities. These figures confirm the results of the in situ study, which showed that Perret's development structures have an appropriate relationship between the size of the development and the public spaces, which were designed in proportions appropriate to the human scale.

## Conclusions

The utopia of the urban solution for the reconstruction of Le Havre, and the stagnation and obsolescence of the spatial solutions have been raised in the literature<sup>13,14</sup>. Le Havre is the only example of a realized modernist city. The reconstruction of Le Havre, however, is in this context an example of urban planning thought which, despite a period of criticism, is now defending itself with a perfect mastery of the art of urban planning both in terms of general conception and in urban and architectural detail. Our research indicates that the proportion of public spaces of the rebuilt downtown Le Havre still retains its residential urban space assets, which are approved by residents. It should be noted that the qualities of Le Havre's modernist space are becoming a competing compositional premise to the commonly new-built estates of today. The qualities of Perret's space are the result of a consistently realized uniform and at the same time attractive urban fabric, where residents can choose between various types of urban interiors and attractive residential and commercial structures refined in detail and material, available at any time of day or night. The coherence of the character of the development, its recognisability and at the same time elegance and calm structural diversity, as well as the unique guiding colour of concrete used in various shades on the facades of the development are, in principle, a contemporary reference to the colour of historic Sienna. One might even be tempted to say that downtown Le Havre is the concrete "Sienna of the North". The above features of the Le Havre development, are components of the space that can compete with contemporary designed estates. Estates which are being built before our eyes, are often a picture of diverse structures, where architects compete in material solutions, form and detail as well as functional and utility schemes. Undoubtedly these spaces are attractive and perhaps made safer by fencing, locking and monitoring, but they are nonetheless devoid of that specific atmosphere and character of Perret's

10 Schneider-Skalska G., *Zrównoważone środowisko mieszkaniowe. Społeczne – Oszczędne – Piękne*, Wyd. Politechniki Krakowskiej, Kraków 2012.

11 Urban rhythm is a repetitive value of the length of sides of quarters of city-centre buildings.

12 The building intensity index (I) is taken as the ratio of the total area of the building (the sum of the areas of all storeys measured at the floor level after the outer contour of the building, including plaster, cladding and balustrades) to the plot/area.

13 Chauvin E., *Miasto Hawr – historia modernistycznej utopii*. Tłumaczenie i adaptacja tekstu Marcin Kaczmarek, [www.gdynia.pl/3\\_chauvin\\_127\\_132m](http://www.gdynia.pl/3_chauvin_127_132m) (1).

14 Minosh P., *Moderate Utopias: The Reconstruction of Urban Space and Modernist Principles in Postwar France*. 2007 Massachusetts Institute of Technology.

modernist urban structure. Downtown Le Havre is not currently a deserted area of the city. On the contrary, it is full of tourists and locals, and young people increasingly see in the modernist composition of Le Havre qualities that satisfy their need to live in an almost iconic, orderly and harmonious urban space. Our research indicates that this despised utopia is still alive and well. In our opinion, the secret of this phenomenon lies in the masterful and pragmatic composition of Perret's urban structure and the perfect use of concrete and reinforced concrete details – a material that is not among the most attractive building materials. Our research, supported by an analysis of the urban composition, presents a new perspective on the qualities of academic modernism in its best historical form.

Finally, it is worth mentioning that Le Havre and the view of the harbour became the motif of perhaps the most famous painting – Claude Monet's "Impression, Sunrise," from 1872, (Musée Marmottan Monet), which initiated the period of impressionism in 19<sup>th</sup> century painting [Fig. 17]. The unusual atmosphere of the city is now also appreciated by filmmakers, and for many artists it is associated with street-art. These facts will emphasize the extraordinary qualities of the cityscape and downtown buildings in the style of academic modernism.



**Fig. 17.** Claude Monet's painting „Impression, Sunrise” from 1872, inspired by a view of the harbour in Le Havre, <https://opolnocyw-paryzu.pl/impresja-wschod-slona-claude-monet/>, 15.07.2020

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## Zapomniany modernizm akademicki w odbudowie śródmieścia Hawru przez Auguste'a Perreta

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**Streszczenie:** W artykule podjęto próbę przedstawienia historycznych struktur architektoniczno-urbanistycznych zrealizowanych w stylu modernizmu akademickiego na przykładzie odbudowy Hawru. Odbudowa Hawru jest pełnowymiarowym obrazem struktury urbanistycznej w jednolitym stylu modernistycznym, łączącym akademicki klasycyzm i nowoczesność. Po latach doświadczeń w zakresie urbanistyki obraz odbudowy Hawru po zniszczeniach wojennych, jest w kontekście współczesnych koncepcji urbanistycznych przykładem holistycznego myślenia urbanistycznego o przestrzeni miejskiej.

**Słowa kluczowe:** modernizm akademicki, struktury urbanistyczne, przebudowa śródmieścia, Le Havre, Auguste Perret

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