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Floating facilities providing social services – a Floating Salvation Army Refuge in Paris and “School Ship” in Vienna

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Abstract

The article presents two floating architectural structures developed in response to the needs of local communities. The first one – a river barge “Louise-Catherine” – was adapted in 1929 according to the design of Le Corbusier, one of the most influential architects of the first half of the 20th century, for the purposes of Salvation Army shelter docked on the Seine in Paris and it continued its operation as such until 1994. The second one – Bertha von Suttner state junior high school – was developed in a shipyard to serve as a school, which purpose it has been fulfilling since 1994 while moored on the Danube River in Vienna. The author’s intention was to describe both structures while highlighting common features as well as differences, and to analyse them in view of certain selected aspects. The background for the projects’ development was described account taken of different reasons and circumstances. Issues under analysis include decision making processes in terms of architectural programme, functions and spatial developments. The analysis also includes technical aspects such as structural developments, material and infrastructure – in terms of the floating Viennese school – account taken on safety of using a barge as a school establishment. A separate part of the article is dedicated to the issue of social reception, and in case of the former Salvation Army shelter – actions aimed at the protection of a historic structure.

Key words: *Bertha von Suttner Gymnasium, floating facilities, Le Corbusier, “Louise-Catherine” barge, Paris, the Danube River, the Seine River, Vienna*

INTRODUCTION

A decision to adjust a boat to accommodate certain social services is influenced mostly by economic conditions and land issues. Such investment projects are developed in areas featuring high floor area ratios and deficits of land available for development, or in settlement-friendly regions featuring a high percentage of inland waters or sea water, or areas suffering from regular floods as a result of natural processes.

The aim of this article is to describe and present a comparative analysis of selected aspects concerning two structures floating on the water: 1) “Louise-Catherine” barge which started operation in 1929 as a homeless shelter of the Salvation Army in Paris (Photo 1) and 2) the Bertha von Suttner Bundesgymnasium in Vienna, opened in 1994 as a solution for the shortage of school buildings in the Viennese district of Floridsdorf (Photo 2). There are major

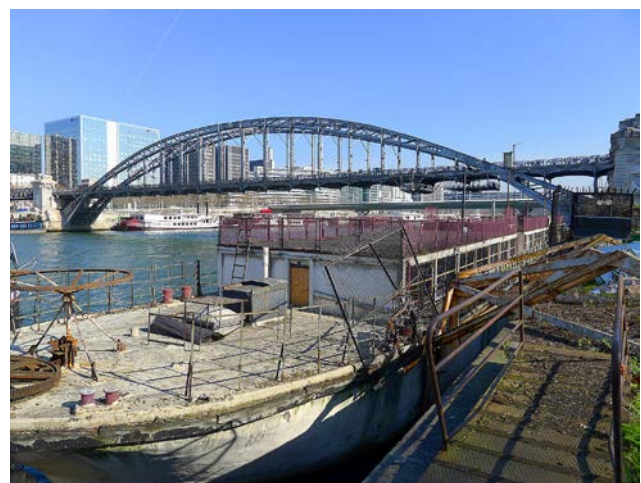


Photo 1. Louise-Catherine barge under renovation;
source: Mbzt [2011]



Photo 2. Bertha von Suttner floating school – general view
(phot. G. Rytel)

differences between them. Firstly, there is a 65 year gap between the time each of them was opened for use; secondly, they float on two different rivers – the Seine and the Danube; thirdly – the purpose of each of them is different – one was a shelter, the other one is a school. What connects them and makes them worth attention, however, is that they provide services to local community and they are quite valuable pieces of floating architecture which are parts of the European architectural heritage.

BACKGROUND AND SOCIAL NEEDS

At the end of 1920s Winnaretta Singer was supporting the construction of Salvation Army shelter in Paris. The building designed by Le Corbusier, constructed since 1929 and opened for use in 1933, belongs to the most important and significant examples of avant-garde modern architecture. Winnaretta Singer, Princess Edmond de Polignac provided financial support to a number of charity and artistic initiatives in Paris at that time. In 1928 Madeleine Zillhardt, an artist, interior designer and a writer, who was a friend of Winnaretta Singer, bought a river barge originating from the times of the Great War. Zillhardt intended to adjust it for residential purposes and to donate it to the Salvation Army for charity purposes. At first she thought of the barge becoming a shelter for widows whose material situation after the Great War became quite instable. The barge, launched in 1915 under the name “Liège”, was used for coal transport during the First World War. Adjustment of the barge to new purposes was financed by Winnaretta Singer. With the same donor and beneficiary as in Salvation Army building, it was somewhat natural that the design was vested with Le Corbusier. After the remodelling works the barge was renamed to “Louise-Catherine” – to commemorate Madeleine Zillhardt’s life partner – Louise Catherine Breslau, a Swiss artist painter and graphic designer, died in 1927. As a floating shelter – Asile Flottant – the barge, operating under the Salvation Army flag, served a charitable purpose while floating up and down the Seine, depending on the season. During summer holidays it would leave Paris and dock in the outskirts. There, it served as

a venue for camps organized by the Salvation Army for the children of poor Paris families. In winter, docked in Paris, it gave a shelter to vagrants. This was its function until 1994.

In the same year 1994 a state junior high school (Ger. Bundesgymnasium) was opened at the bank of Donauinsel in Vienna. The school was named for Bertha von Suttner – a writer and journalist, a promoter of pacifism, the first woman to be awarded the Nobel Peace Prize. In German the term “Schulschiff” – a school ship – brings clear associations of beautiful sailing ships on which the students of maritime universities practice their maritime skills and shape characters, but first of all – learn teamwork and tolerance while working in very specific circumstances and they learn to accept variability and diversity. Thus, the name may be seemingly misleading, but on the other hand, the message is quite clear.

But why should Vienna need a school floating on the Danube River? At the beginning of 1990s it was necessary to double the supply of apartments in Vienna. Vienna is perhaps the only example of a big European city which effectively addresses residential needs of its inhabitants. The council housing programme was started in 1920 under the reforms implemented by the left-wing government, whose term of office was commonly dubbed “Red Vienna”, and continued until 1934 [BLAU 1999]. After WWII the council housing programme was restarted and it has been continued to-date. As a result of increase in the number of inhabitants a need arose to build more schools.

The following guidelines were adopted in choosing sites for school construction:

- places where there is the greatest need for a school;
- places which are well connected with public transportation network;
- places which do not require infrastructural investment;
- to build as quickly as possible;
- to build as cheaply as possible;
- to provide a place for children to learn [Kammer der Architekten und Ingenieurkonsulenten 2014].

What had an additional impact on a decision to build a school on a river was a debate conducted in Vienna in the first half of 1990s concerning the need for educational reform. Hitherto commonly applied spatial model of a school came under heavy criticism and in response to changing educational paradigm attempts were made at developing new models to address the situation. One of the results of those attempts was an exhibition entitled “The New Schoolhouse in Vienna 1990-1996, Schoolchild’s Universe and Urban Particle” organized by Austrian Chamber of Architects and Consulting Engineers [CHRAMOSTA, BALDASS 1996].

At that time the authorities of Vienna and Budapest applied for the right to jointly organize World Expo 1995; because of this, the prices of lots in Vienna rose significantly. This frustrated the postulate to lower the cost of building schools. Another factor which determined the location and form of the new school operated from outside Vienna while gaining an international dimension. Because of political and economic collapse of the USSR, Korneuburg shipyard on the Danube River which was a part of

ÖSWAG shipyard company lost its orders from the Soviet Block (Eastern Europe). The shipyard was facing bankruptcy. Thus, in order to support the domestic shipyard sector and due to difficulties in finding a cheap piece of land, the city authorities decided to build a school on barges moored on the Danube [ACHLEITNER 2010]. The site was chosen at the bank of the Danube Island between the Floridsdorfer bridge and the railway bridge which facilitated access to public transportation – trams and the underground train. Although the construction of the floating school was the most spectacular order processed at the Korneuburg and made the shipyard famous, it did not save it. Bertha von Suttner floating school was the last project launched at Korneuburg. The shipyard, established in mid-19th century, announced bankruptcy in 1993 and was closed.

ARCHITECTURE – FORM, FUNCTION, STRUCTURE

“Louise-Catherine” was built as a flat-bottomed barge 70 m long and 10 m wide and is made of reinforced concrete. Barges with ferroconcrete hulls were built since the second half of the 19th century. At the beginning of the 20th century, before the Great War such barges were built in many European countries and in the USA. Experimental units were also built as sea and ocean vessels, but significant weight impaired their resilience. Demand for reinforced concrete vessels grew during wars, where steel was used mainly for military purposes. During World War II ferroconcrete cargo ships and landing crafts in the USA and in Germany.

The same technology was thought of by Le Corbusier when he designed the extension of the barge [BOESIGER (ed.) 1935]. Finally, the Asile Flottant housed 160 beds in three sections. The centre of the barge included a kitchen and a dining room for 36 people. The forebody was designed into the headmaster’s room, and the skipper’s room was fitted in the afterdeck. The subsequent sections with various functions were separated with sanitary facilities. Two gangways – the main one and an additional one – lead to the deck. Near the main gangway there are stairs leading down to the barge interior. In addition, Le Corbusier designed ways down from five staterooms hanging at the level of the main deck above the open interior of dormitories and a dining room, which can be accessed by entrances next to both gangways and on both edges of the superstructure. Separate flights of stairs lead to the above mentioned staterooms dedicated to the director and the skipper. Flat roof of the superstructure was meant, according to one of Le Corbusier’s Five Points of Architecture, to be a terrace with the hope of making it into a garden. According to the subsequent postulates of his manifesto, the interior is not supported by walls and forms an open plan. Two rows of pillars mark the central bay for the passageway and two side bays, intended respectively for beds, tables, sanitary facilities, etc. The cantilevered projecting roof which rests on supports enables the fulfilment of the last two of five postulates: horizontal strip of windows within a freely designed façade. Thus, the architect managed to apply all the

rules defined in the canon for modern architecture. But looking at old photographs showing intensive traffic of barges and boats on the Seine River, Asile Flottant seems not to have been something odd, it could have been regarded as one of many picturesque and quite ordinary means of transport in the world of rivermen living their lives constantly on the move.

What we must bear in mind is also Le Corbusier’s admiration for boats as logically designed purpose vehicles not adorned with any superfluous ornaments. By giving references to ships in his books, and by highlighting the huge scale of an ocean liner design and production versus the size of buildings constructed, Le Corbusier wanted to encourage architects to make courageous design related decisions aimed at relieving buildings from decorative elements rooted in the classical tradition [LE CORBUSIER 1987]. Forms of the so called nautical architecture may be the spin-offs in relation to those motivations, but they clearly influenced the architecture of the avant-garde period, reaching far away to later stages of modernism and the subsequent architectural styles, as one can see in case of many well-known structures. Here the ideas underpinning the nautical style in modern architecture are back at their roots. The combination of functional clarity, logic of structure and reduction of the means of formal expression to a language which is somehow natural for a “floating machine” is a true masterpiece, account taken of the existing space, which was not easy to adapt. To make the assessment of the utilitarian character of the barge architecture (which limits formal actions to the functional minimum) exhaustive, it seems justified to refer to the project decisions and design solutions applied by Le Corbusier at the same time to the design of the already mentioned Salvation Army headquarters building in Paris. Serving as the icon of the avant-garde of the turn of the 1920s and 1930s, the building features clear references to classical architecture traditions. Regardless of state-of-the-art formal and technological solutions applied in the main building which houses dormitory rooms, Le Corbusier re-interpreted traditional syntactic elements of the classical language of architecture. This is very clearly seen in the sequence of architectural elements of the entrance which are relatively small in relation to the main building, namely the portico, round vestibule and the main lobby. Spatial arrangement was deformed due to the building location, but the overall principle was observed [JENCKS 1973]. The primary aim of those formal strategies was to highlight “reformed” monumentality features of the building to honour the good cause of the building construction and charity operation, and to underline the dignity of the shelter’s inhabitants.

The Viennese junior high school was designed by dipl. Ing. Bernhard Müller, and the whole construction process lasted 22 months¹⁾. The floating school is composed of two barges dedicated to teaching, which resemble a catamaran, with a “gym island” attached to its back (Fig. 1). The facility includes the total of 180 rooms, the total usable area of which is approximately 12 000 m², it is 190 m long and has

¹⁾ All data concerning technical solutions applied to the Vienna floating school have been obtained by courtesy of Mr. Harald Schwarz – Headmaster of Bertha von Suttner Gymnasium.

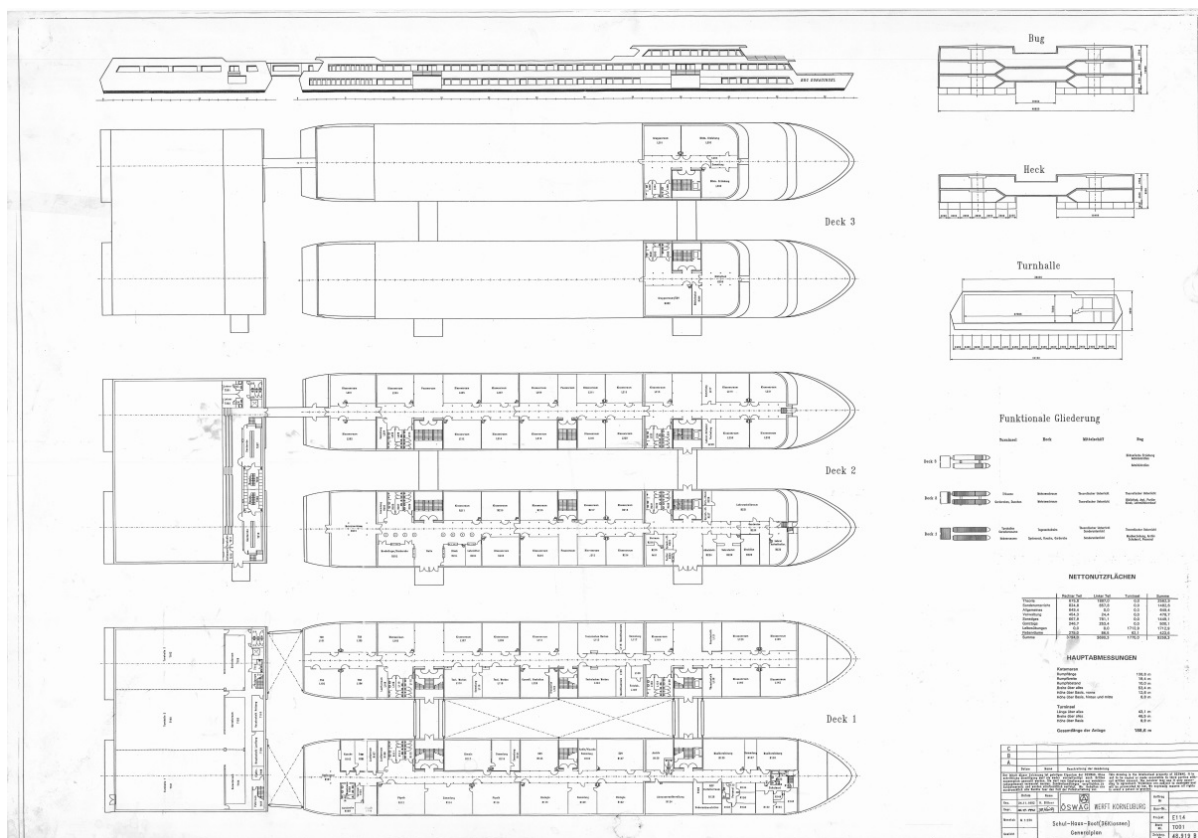


Fig. 1. Design drawings – side view, deck plans and cross section drawings; source: the archive of Bertha von Suttner Gymnasium

a dead weight of approximately 6500 t. Each of the two teaching units has got two decks all along and an additional third deck in the superstructure in the bow part. Internal layout of both teaching units is the same, being also similar to that of Asile Flottant – two rows of pillars form central corridors (Photo 3). Each unit is almost 140 m long. The school was designed for approx. 1000 students and 100 teachers. The main entrance and lobby are located on the second deck, in the front part of the unit on the bank side. School administration offices such as Secretariat, Headmaster’s Office, other administration offices and a concert hall as well as other rooms, such as a nurse room, are adjacent to the lobby.



Photo 3. Bertha von Suttner Gymnasium: corridor – doors to classrooms and student relaxation area (phot. G. Rytel)

Three decks include 36 general purpose classrooms and 19 specialized classroom labs. As a rule, specialized classroom labs are grouped on the first decks of both units; general purpose classrooms are located on the first and second decks; the third deck – particularly well lighted with daylight and offering the most attractive views, houses the arts room and the school library together with adjacent rooms in both cases. Public gathering areas such as a celebrations room, canteen with kitchen, after school activities room and a shop for students are located at the rear part. Naval architecture features open decks – terraces. The floating school has seven of those in the bow, in the middle and rear part. The units are connected by means of two pedways integrated with staircases – the front pedway on two levels, the back pedway on one level. The third pedway leads from one of the units to the “gym island”. The island includes a full-fledged three courts area, the size of which is 45 × 27 m, together with an auditorium for 200 members of audience and auxiliary rooms including two student locker areas with WCs, two staff rooms, each with its own WC and a storage and technology room (Photo 4). Access to the land is ensured by three gangplanks: two leading from the two teaching units and one directly to the “gym island”.

The school was designed and constructed at the same time in which the Freudenuau barrage dam was constructed on the lower Danube near Vienna. Thus, the mooring and gangway systems connecting the floating school with the land had to take account of the expected change of the average river water level in this area. In the first three years of the school operation, entrances to the school were below



Photo 4. Bertha von Suttner Gymnasium: “Gym Island” – the school gym, a view from the auditorium (phot. G. Rytel)



Photo 5. Bertha von Suttner Gymnasium: broadside adjacent to the river bank, gangway to the auxiliary entrance (phot. G. Rytel)



Photo 6. Bertha von Suttner Gymnasium: docking pylon near the main entrance (phot. G. Rytel)



Photo 7. Bertha von Suttner Gymnasium: a shiftable mooring element (phot. G. Rytel)

the ground level of Donauinsel. When the dam was constructed in 1997 and the river swelled, the mounting of gangways to the bank was elevated and the barges were accessible to people moving on wheelchairs (Photo 5). Inside the barges all the levels are accessible also by lifts installed in each of the three units.

The school is connected to city utility systems: water supply system, power grid and telecommunication system. Room interiors and water are heated by means of a heating pump operating above the Danube water temperature $+2.8^{\circ}\text{C}$. When the temperature falls down, heat is provided by an oil fuelled boiler. Sewage is treated at a biological wastewater treatment plant located on one of the barges. Sludge from the plant and wastewater from the chemical laboratory is collected by specialized municipal services.

The complex of floating school barges is moored to three steel pylons filled with concrete and inclined at the angle of 60 degrees (Photo 6). The structures were designed to take over the pressure forces of wind and river current. If the river level increases, the inclined pylons make the three barges float while making them approach the bank (Photo 7).

The mooring system does not require management when the Danube water level changes. The barges are combined with one another by means of pinned booms and cross ropes. The hulls are made of ship steel in modular structure. Waterproof bulkheads built along and across the hull guarantee neutral buoyancy even if two compartments are flooded. Both teaching units are built to resemble river cruise ships operating on many European rivers.

SOCIAL CONTEXT AND LOCATION

Whether well- or slightly worse heated, the Salvation Army barge – offering sanitary facilities and a soup kitchen – was an attractive alternative for homeless people in winter as opposed to river banks, under-the-bridge dens or Paris metro tunnels. However, the unpainted concrete walls did not create a cosy atmosphere. Last but not least, the life on a floating barge, account taken of the already unstable and unsure situation of the occupants, stigmatized them in some way, and made them stand out, not necessarily in a positive way. The reasons behind the shelter closing included not only worsened technical condition of the barge, but also impossibility of making any improvements of the

living standard to meet requirements commonly accepted today.

In 2006 The Louise-Catherine Association bought a barge in order to renovate it. Two years later the barge was listed as a historic monument of Paris. Works were under way to renovate and adjust the barge for exhibition purposes. To support those actions, Le Corbusier Barge Restoration Commission was established in Japan. An exhibition showing restoration works conducted on a barge could be seen in Tokyo, Yokohama, Osaka and Yamaguchi, and then in Chinese cities of Tianjin and Shenyang [Asileflottant Regeneration Committee 2019]. However, in February 2018 the barge sank as a result of a flood on the Seine. When the level of the swollen Seine River started to decrease, the barge, which was floating above the flooded quay hit its edge, tilted and started to take on water. Works on making Asile Flottant a place dedicated to exhibitions, lectures and discussions on architecture were delayed but not halted. In March 2019 a decision of International House of Japan was announced concerning the participation in the barge restoration.

One year after the launch of the floating school in Vienna, in 1995, its promoters received an award of the Central Association of Austrian Architects (Ger. Zentralvereinigung der Architektinnen und Architekten Österreichs). The award (Bauherrenpreis) has been granted since 1967 to individuals and institutions who have particularly contributed into the culture of building. In this case it was handed over to three officers of the then Ministry of Education and Arts who were responsible for the project implementation [ZV Architekten 2018].

An unusual location of the school breaks down the daily school routine and mitigates the learning and teaching hardships for students and teachers. The glittering waves of the beautiful blue Danube, broad prospects, slowly passing huge transportation barges and fast speeding motorboats seen from the windows – all this makes studying more attractive and encourages to follow the daily routine. Teachers seek to be assigned a classroom with a view to the river (Photo 8). Classrooms with windows with a view to the island are much less liked. Working in so unusual and original – in terms of a big city – environment is a positive stimulant which facilitates community integration.



Photo 8. Bertha von Suttner Gymnasium: classroom interior (phot. G. Rytel)

Donauinsel is a popular leisure site for Vienna inhabitants who like to spend their free time actively, as well as a popular tourist site. During summer holidays the school surroundings are sites of numerous popular events. Donauinsel is where open air events attracting a lot of people are organized in regular intervals. One of them is an annual “Donauinselfest” organized in June since 1983 and deemed to be the biggest event of that type in the world. According to the statistics, nearly 3 mln people participate in Donauinselfest every year. At the turn of July and August “Beach Volleyball Major Series” were organized first in 2018 and for the second time in 2019. The Vienna Major Tournament attracts a great number of viewers gathering on an interim arena. A subsequent tournament is planned to take place in 2020.

SUMMARY

As opposed to the Paris seat of the Salvation Army, mentioned twice above, Louise-Catherine barge does not belong to those Le Corbusier’s works which are most frequently discussed. Apart from the fact that it is an adaptation of a former floating object, it does not attract attention with spectacular forms – contrary to the vast majority of Le Corbusier’s designs. This, however, is a clue which helps find the key to a proper understanding of the architect’s credo. In an object, the function of which is clearly defined and adjusted to the spatial constraints of a floating hull, the proportions of which effectively curtail the architect’s creative intervention, everything is just as it should be, and after a moment of deliberation we come to a conclusion that there is no way anything could have been designed differently. Seeking rational solutions in terms of functional disposition and in terms of elements necessary to complement the structure in the same technology of reinforced concrete Le Corbusier was so fond of, has resulted in a balance which is not at all tempting to amateurs of scandalizing architectural forms. Here everything is in place, here the ying of the form and the yang of the function are balanced and reach harmony. Thus, could it be „the ideal object” in Le Corbusier’s heritage? Such a hypothesis may be treated as a joke, it is beyond doubt, however, that the object was fulfilling efficiently its functions for more than 60 years.

The Bertha von Suttner Gymnasium object is by no means a result of the architect’s light-heartedness, it was not meant to create a loud and overwhelming WOW effect – so desired by the architects of today. Giving rational consideration to all the constraints has brought about an exceptional result of an uncommon form and location, but what is the most important, the one which forms the community of users and reinforces their feeling of identity. After 25 years of operation one can say that Bertha von Suttner Gymnasium has been a successful experiment – the school belongs to the international UNESCO network of schools, it has worked out its own methods of instruction and features a quite unique character. Nobody should be surprised with putting such a strong emphasis on intercultural education by a school which is located literally on one of the main trans-European waterways, and by a school whose

patron is world famous for launching international peace movement.

Thus, it is justified to say that in both cases under analysis, restraining the designer's ego for the sake of seeking the best solution if one is encountered with major initial constraints has enabled the achievement of satisfying results – satisfying surely from the point of view of fulfilling social needs of local communities, for which the objects have been built.

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