

# *Yellowred*

ON REUSED ARCHITECTURE

***Yellowred***  
**ON REUSED ARCHITECTURE**

**Chair of Reuse, Prof. Martin Boesch, Accademia di architettura, Università della Svizzera italiana**

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VOLUME I

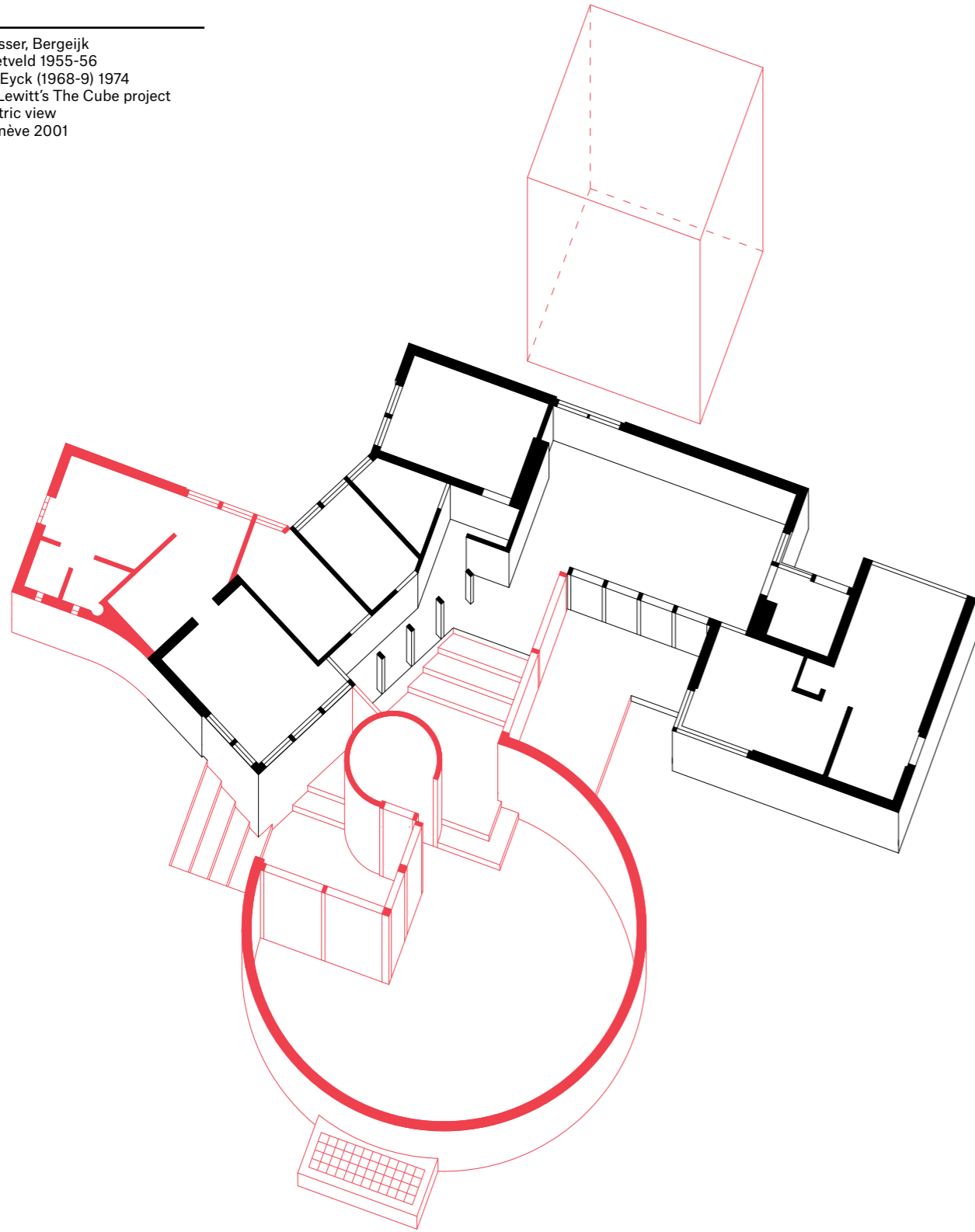
# ***Yellowred***

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Edited by Martin Boesch,  
Laura Lupini and João F. Machado

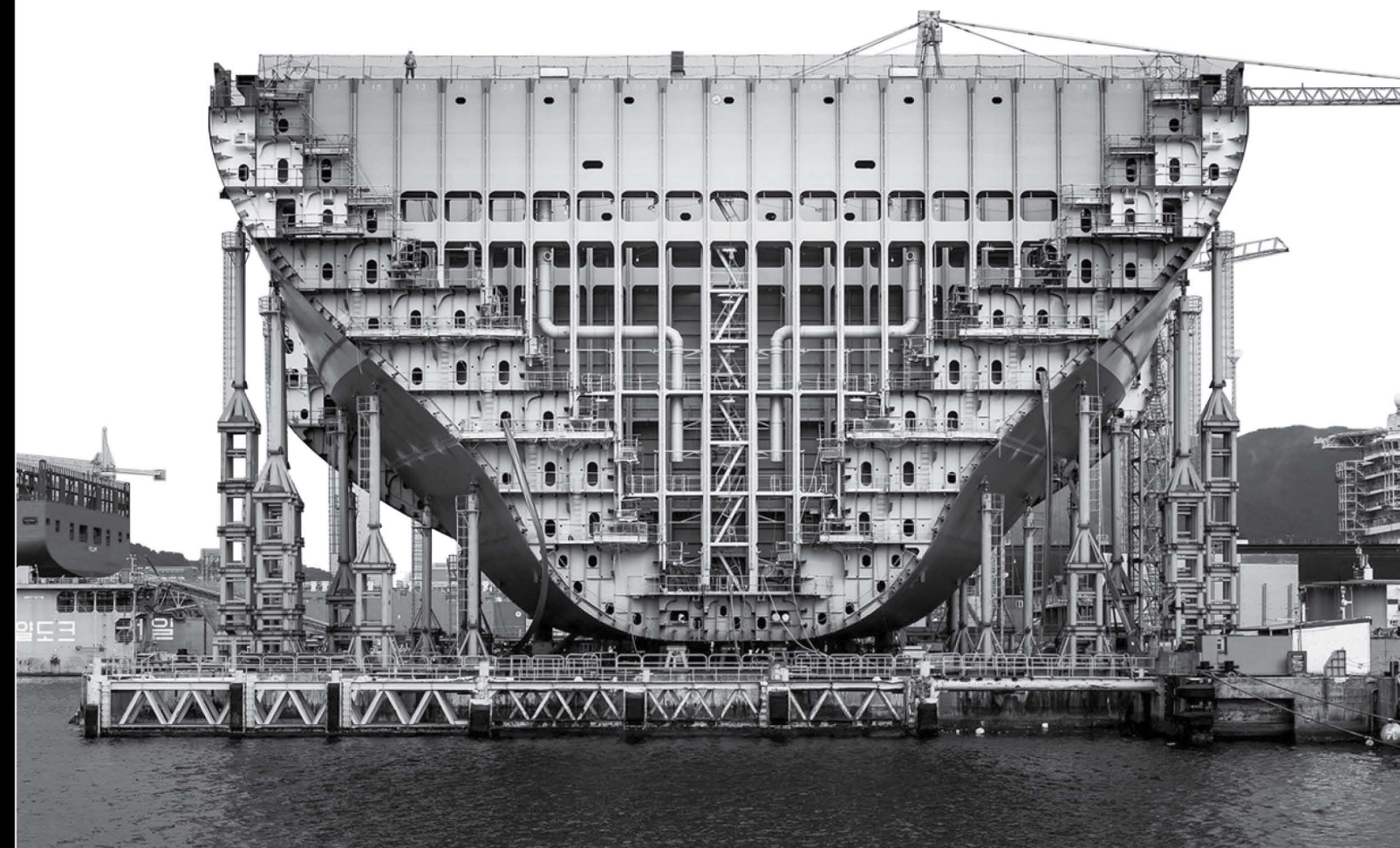
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House Visser, Bergeijk  
Gerrit Rietveld 1955-56  
Aldo van Eyck (1968-9) 1974  
with Sol Lewitt's The Cube project  
axonometric view  
IAUG Genève 2001



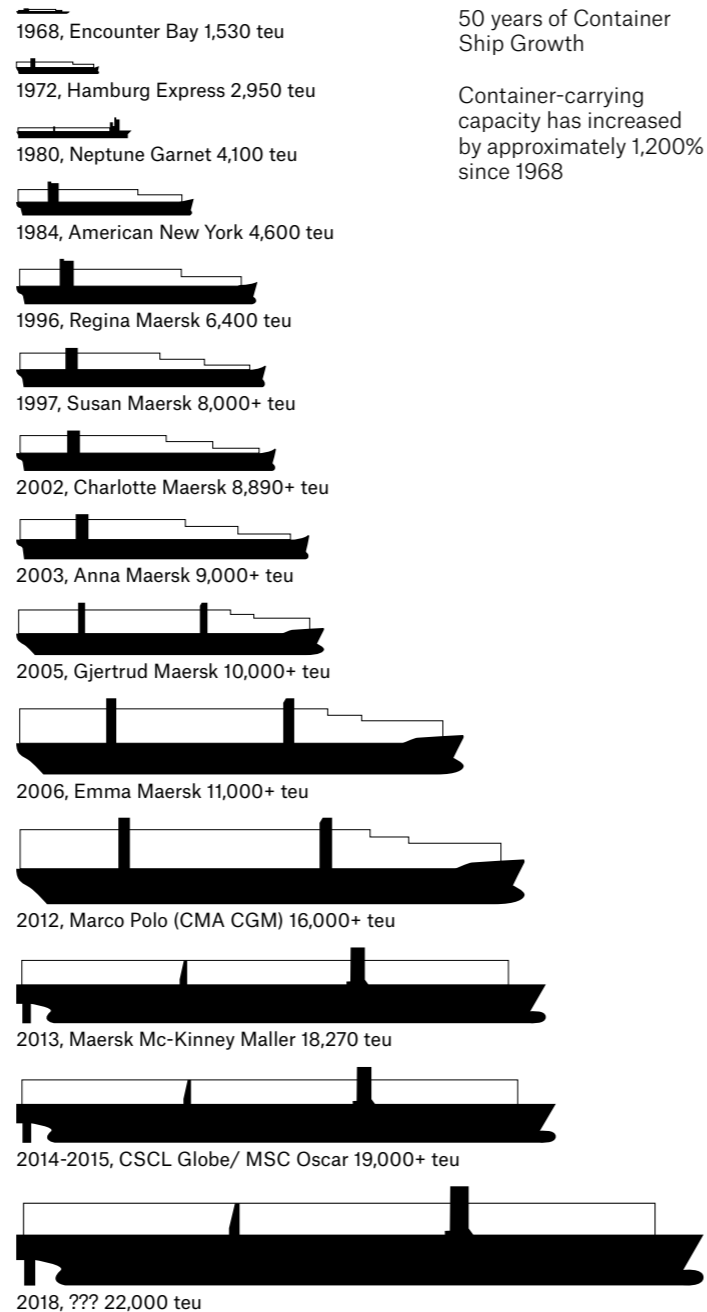
## WUNDERKAMMER OR THE FLIP SIDE OF REUSE

In this issue, Yellowred presents a particular case of reuse under way for some time but constantly neglected and never really investigated in depth. A pragmatic process without an apparent theoretical argument, comparable to a theatrical act whose script changes during the performance itself, disorienting even the actors: the case of large ships. The story of the Costa Allegra emphasizes the innate metamorphic ability that a few technical artefacts, such as water vessels of a certain size and dimension, demonstrate to have in changing programs and structural components according to the socio-economic processes to which they are subjected. This flexibility is not easily applicable to the city of accumulated sedimentations, to the complex layers and traces of pre-existing realities. Perhaps, it is in this very difficult process, at times dimension-related or regulatory, in processing materials and managing costs, that resides a possible challenge for another future, ever hovering between dreamy visions of a tabula rasa and the pragmatic necessity of rethinking the built identity starting from the expelled discards and the existing elements that, in their own way, have in the past helped to create the fabric. However, it is inevitable that programmatic changes and substantial manipulations to the pre-existing are considered radical, if one wants to be inspired by the model of large ships in order to trigger the process of adaptation to new and possible needs that the city and its inhabitants require. Perhaps, in tune with Latouche, the "happy degrowth" does not necessarily imply an arrest in development, rather simply suggests a different vision of speed and resources, geared towards greater awareness and responsibility also in the function of reduction of waste and hence of the production of one of the most in-vogue products: the discard.



1960

**CONTEXT** — The '60s represented a turning point in terms of long-distance intermodal freight transport, due to the introduction of the container module. In fact, the one most widely used today is the ISO container (International Organization for Standardization) for which the measures were established at the international level in 1967. In light of a common width of 8 feet (244 cm) and a common height of 8 feet and 6 inches (259 cm), two standard lengths of 20 and 40 feet (610 and 1220 cm) were established. The Geneva Convention of 1972 drew up the international standards in the transport sector for containers. The convenience of a piece of equipment allowing for the loading of goods not having to be moved until reaching their destination offered clear advantages: fewer instances of damaged cargo, better logistical operations and an increased speed in loading and unloading.



1

The Costa Allegra was built in 1969 with the name Annie Johnson III (along with its twin Axel Johnson, which will become the Costa Marina) by the Crichton-Vulcan shipyard in Turku, Finland. It was created as a container ship, first in a series of five units, each capable of carrying 627 TEU (Twenty-Foot Equivalent Units).



2

Annie Johnson III was acquired on December 4<sup>th</sup>, 1969, by ship owners Rederi AB Nordstjernann, and already in 1978 it underwent its first renovation intervention that included the removal of the crane on the deck, given that the major ports in the world already had independent systems for the handling of cargo.



1970

**TECHNOLOGY** — The '60s constituted a crucial moment in terms of shipbuilding. This was the time during which the construction system of the hulls radically changed; in fact, the provision had always been for the construction of the framework for the entire main hull, which at a later time was covered by wooden planking to then subsequently be replaced by nailed iron sheets. The entire construction took place in a dry dock basin; in light of this constructive process, the ship, in all respects, could be compared to the construction of a building, the use of highly skilled labour necessary to ensure the artisan process of transformation determined the long construction time and one not devoid of the difficulties involved in such a case. The change of material, from wood to metal that occurred after the industrial revolution, just as the introduction of steam propulsion over wind, didn't change much the way of conceiving the hull's shape. After 1960, ships become industrial products in all respects, for which the construction system, through the assembly of prefabricated modules, was borrowed from the aviation industry (\*).

\* (NB: the port of Saint-Nazaire in France, which is an important industrial centre, hosts both the STX shipyards and the company Airbus).



Based on this new concept, the hull was divided into modules, produced in industrial facilities outside the shipyard. The ships themselves were assembled in dry dock, no longer in basins; the different modules are positioned with techniques of matching and alignment, from which it proceeds directly to the welding inside of a closed hangar. Only at final completion is the manufactured product launched. Even the shape of the hull was transformed: for centuries, the shape of the hull was designed with a "V" section, which was more or less pronounced depending on the purpose (commercial or military). Such a shape ensured good stability and manoeuvrability considering the relatively large size of the vessels. From the '60s onwards, the shape of the hull changed, taking on the form of a flat bottom, and thus with a "U" section. This shape ends up having better performance with respect to the increased weight of the vessels due to the large-scale introduction of steel and to the increasing dimensions. In fact, in the hulls of contemporary displacement vessels, the power required to overcome critical speed grows exponentially, mainly due to wave resistance and partly because of the surface friction of the hull. If one observes a displacement vessel under way, one notes that in the effort to cut its way through the water, it generates a very significant bow wave that continues along the side and rises supporting the stern; in other words, at maximum, or critical, speed, the hull ends up being supported by a single wave



**3**

In 1986, it was sold to Regency Cruises, a ship owner based in Greece, to be converted into a cruise ship; while renamed Regent Moon, it remained for years in the port of Perama without the project being completed.

**4**

It was then sold to the Mediterranean Shipping Company (MSC), which removed some structures on the bridge; it was later registered with the name Alexandra and reused for its original purpose as a container chip (NB: there is no reference to MSC Crociere S.p.A).



**5**

In 1990, the Annie Johnson III was acquired by Costa Crociere that, in the Mariotti shipyards in Genoa, converted it into a cruise ship and rebaptised it the Costa Allegra.

The reconstruction work began on September 4<sup>th</sup>, 1990, and the ship was completed on November 16<sup>th</sup>, 1992. The Costa Allegra took shape from the hull of the old container ship thanks to a daring operation of naval surgery. During the intervention, it was cut in two and a block thirteen and a half meters long and twenty-five meters wide

with a weight of 800 tons was inserted. The hull acquired a longer body, reaching 187 meters for a gross tonnage of 28,500 tons. The commission cost the owners around 260 billion Lire (about 134 million Euros). The finished ship was made up of 11 bridges, of which nine were reserved for the passengers; the Costa Allegra could

accommodate 1000 passengers and had 399 cabins, including 13 suites (10 with balconies), three restaurants, six bars, two swimming pools, two whirlpools, an outdoor 215 meter-long jogging path, a wellness centre with gym and sauna, and a theatre with around 360 seats, a casino, a nightclub, a library, a business centre and a beauty centre.



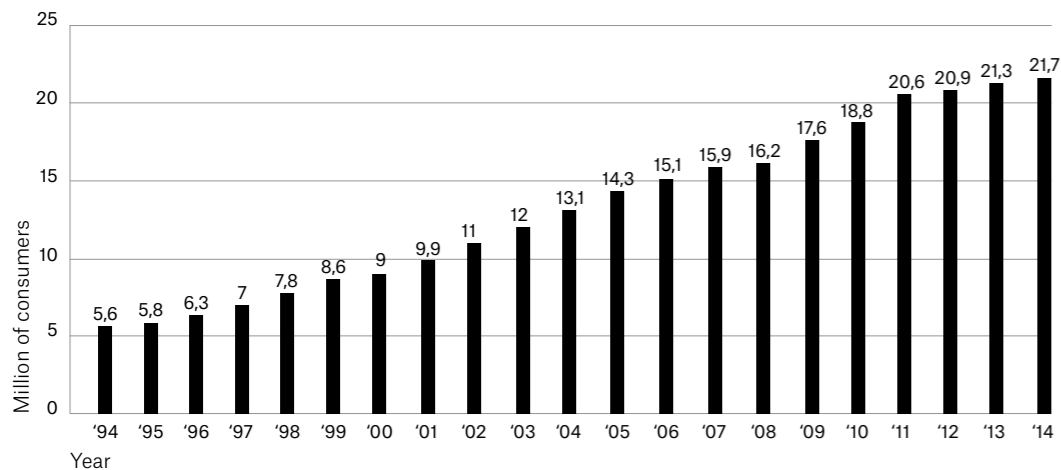
**1990**

that has its crest at the bow and the next ridge under the stern, that is, a wave that has the same length of the hull. The "bulb of the bow" has the dual function of generating the floating wave and stabilizing the pitching, as to avoid as much as possible the exit of the bow from the water surface interrupting the displacement flow. Generally, the presence of the bulb in large vessels involves a greater efficiency of 12-15% in terms of fuel consumption. The first bulbous bow, for example, we find it applied to an American military ship: the USS Delaware, launched in 1910. Following that, in the '20s, the bulb was applied to civilian German vessels like the transatlantic Bremen, which won the Blue Riband in 1929 at an average speed of 27.9 knots. By the decisive '60s onwards, all displacement ships will exhibit a bulbous bow.

**MARKET** — In the '90s, during the exponential growth of luxury cruises in the Mediterranean, the Costa company did not have enough available ships to meet the needs of the market. The only solution adopted by the Genoa's shipyards, to ensure a reasonable timeframe, was to convert two merchant vessels that, due to its hull dimensions, could be well adapted to the requirements of future passenger ships. Such a transformation involved a number of technical difficulties: given that from the standpoint of fluid dynamics, merchant ships are designed to carry heavy loads that have a function in terms of stability for navigation, the consequent weight reduction implicit in the transformation into a passenger ship involved a weighting in the form of a ballast that could constitute a cost not easily amortizable. This explains why ships are generally transformed for different uses, but always consistently with the cargo/mercantile or passenger function. The Costa Allegra therefore represented an anomaly, where the needs of the market forced a usage not foreseen in the technical possibilities.

**COSTS vs BENEFITS** — Considering large ships as rhetorical "floating palaces," some crucial aspects are lost, such as the fact that the cost of construction of a contemporary cruise ship (e.g. MSC Preziosa launched in 2012: 333m long, 38m wide, and 67m high for 139,072 GRT) is around 600 million Euros. That figure is supposed to be amortized between 5 and 8 years, more rapidly than is the case for a hotel of the same characteristics and dimensions. This is explained by the fact that for ships, it is not possible to include any cost for land acquisition. Delays or other inconveniences are not admitted since the industrial process is hyper-regulated and the construction in the factory "isolates" the manufactured product from uncertainty due to the context of the work site; above all the mobility guarantees that the ship will float around the world by helping the market trends in the various regions, always taking advantage of the most favourable conditions to operate.

**LIFE SPAN** — As with all industrial products, even for modern ships, the lifecycle has a finite duration. Although in shipbuilding the possibility is foreseen for various types of reuse, modifications and alterations, in order to allow vessels to be used as long as possible, it is inevitable that the closer the lifecycle approaches the end, the more the parameters/standards of use must necessarily decrease or lessen. No restyling intervention or structural arrangement can obviate the end of a product designed to serve within a given time frame. Beyond this limit, only dismantling appears to be the most economically advantageous option.



Expansion of the cruising market's demand





## 6

Starting in 2006, it underwent a new restyling in the interiors to suit the taste of the Asian market. The Costa Allegra thus worked for a long time off the coast of China, and its ports of departure became Hong Kong, Singapore, and Shanghai, at a time when the Mediterranean market demanded larger and more luxurious ships.

The race to the increase in tonnage in the Mediterranean started in fact between 1996 and 1997 with the construction of the Costa Victoria launched by the Bremer Vulkan shipyard in Bremen, Germany, with the Carnival Triumph launched in the Fincantieri shipyard in Monfalcone, Italy, up to the Carnival Millennium,

the first to pass the threshold of 100,000 t., launched in Chantier de L'Atlantique shipyard in Saint-Nazaire, France. Beginning in February 27<sup>th</sup>, 2012, it was taken out of service after a fire broke out on board that left her drifting out in the Indian Ocean. After making the necessary repairs to allow for navigation, the ship was returned through its

own means to the seaport of Savona on March 25<sup>th</sup>, 2012.

## 7

Having moved to Genoa at the end of July, the next month it was sold to the Turkish company Bereket Gemi Söküm İthalat, İhracat ve Ticaret Ltd. Subsequently towed to the port of Aliğa in Turkey. It was demolished on October 24<sup>th</sup>, 2012.



## 2000

**DEMOLITION VS DISASSEMBLY** — Most of the ships built worldwide are dismantled on the beaches of Bangladesh (194 ships in 2013).

India, China, Pakistan, Turkey and the aforementioned Bangladesh are the nations that most benefit from the reuse of the amount of steel obtained from the dismemberment of the vessels.

The construction system of ships derived from the principles of the assembly line makes it so that the demolition phase is in reality more of a disassembly or dismantling of the same initial elements.

The structural efficiency with which ships are designed is also evident in the efficiency of deconstruction; the dismantlement of such industrial products is inherent in their design and planned at the outset.

In Europe, the house, the building, the "immoveable" property has the aspiration of being eternal as least in terms of our idea of home, family, or existence; the ship is instead a movable property by definition, a mass consumer, cost-effective product but, still a simple means of transportation. The ship is assembled and disassembled. The building is built or demolished.

The ship nonetheless represents a significant anomaly in the concept of the consumer economy; it contemplates the possibility of being modified, restructured and reused a number of times, while, at the time, no personal computer, automobile, iPhone, or appliance allows for this possibility.

In the world of architecture, always constantly subject to a time lag with respect to what is happening in parallel fields and professions, slowly, the concept of standardization and industrialization of the construction and design process is making headway; for example, in North America, a place that has never suffered the destruction of cities for military reasons, whose accumulated sediments are less cumbersome, the concept itself of building features a significantly reduced life expectancy. The building is understood as a service, rather than an immutable good. Rather than intervening with modernization and/or renovation projects, the building is demolished and rebuilt. Not surprisingly, in this context, the use of steel is more widespread, as the new technology of BIM (Building Information Modeling) is nothing but an attempt to apply an industrial work method to the world of architectural design (\*). Consequently, even the concept of demolition is slowly transforming into disassembly.

Meanwhile, on the Bangladeshi beaches of so-called "ship-brackers", diesel, engine oil, and the remaining fire-resistant chemical materials are collected and reused. The interiors are completely stripped: everything is removed and sold, from the enormous motors to the batteries, to electric generators or miles of copper cables; nothing is left out, including bunks for the crew, portholes, lifeboats and corridor lights. The steel of the hull and the over structures are melted down and reused by the expanding industry.

In 2006, the Indian steelworks Mittal bought the historic French brand Arcelor. Of the original ship, there is nothing that remains; everything disappears forever in order to reappear in the form of a new industrial product, as also happens in each of the many transformations undergone by the Annie Johnson III/Costa Allegra.

There are nevertheless examples in which the vessel undergoes a process of transformation of meaning such that it becomes something else, for example, a fixed dwelling. At Amsterdam's Korte Papaverweg, beginning in 2012, it is interesting to note that only in this case, the boat keeps all its original characteristics intact; it is frozen in the form of real estate, thus along with its capacity to be transformed.

\*(NB: in 2010, the company Despe S.p.A. achieved a historic result for Italy by winning the award for the work of the year, at the event of the world Oscars of demolition, given out in Amsterdam; in that location, Despe presented its de-construction of the bridge between the provinces of Piacenza and Lodi (partially collapsed in 2009.)



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