Liberty in the form of Statue: an odyssey in the New World

“Not like the brazen giant of Greek fame, 
With conquering limbs astride from land to land; 
Here at our sea-washed, sunset gates shall stand
A mighty woman with a torch, whose flame
Is the imprisoned lightning, and her name
Mother of Exiles. From her beacon-hand
Glows world-wide welcome.”

Emma Lazarus*

Almost a century after the United States Declaration of Independence, dated 1776 and whose main mentor would be Thomas Jefferson (with declared interests in architectural practice and the country’s 3rd president), it became socially imperative to leave visible ballast for such event of universal value, which symbolized the principle of freedom, equality and fraternity, ideals widely professed by France and for which they heroically fought at the end of the 18th century, in a contagious movement that began with the famous Storming of the Bastille on July 14, 1789. Due to the role that these two countries – USA and France – occupy on the international scene of founding states of democracy, to which the political thought of Alexis de Tocqueville (1805-1859) would not be alien, undertaking such as the Statue of Liberty, as sentinel of the Western world¹, is of particular relevance and interest.

Liberty Enlightening the World is undoubtedly the most daring achievement by Auguste Bartholdi, having become known as the Statue of Liberty. Constituting an icon and an identity mark of the USA, none of these resources favored the planetary knowledge of its author, despite the effervescence of the event being as well known as the Statue of Bartholdi.²

Traditionally, in most cases monuments are evocative of certain situations, such as personalities, conflicts or conquests; but, in the specific case, this statue is testimony of an ideal that is later symbolically transported and transformed as an imaginary associated with one whole nation. This monument was an undertaking that united desires and incomes in two countries, leaving the statue in charge of the French people and the pedestal in the hands of the Americans, with the design of the famous American architect Richard Morris Hunt, making it possible for each continent to develop a specific commission to collect the sums sufficient for its realization.³ At the start of the financing attempt in the USA, contrary to more optimistic expectations, American society did not join the project. To contaminate this difficult task, a connotation of the undertaking with New York City was developed, conditioning the collection of funds outside this geography.⁴ Due to the position that the statue occupied, on an island, renamed Liberty Island – initially Bedloe Island – and in a wide natural port, it was considered, during the period of the great European emigration to the USA, an ostentatious landmark of hope, tolerance, cohesion and aggregation.

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¹ Excerpt from the poem New Colossus, written in 1883 for the purpose of helping fundraising the Statue of Liberty pedestal and which is engraved on a plaque placed on the pedestal in 1903 (Emma Lazarus, Selected Poems and Other Writings, edited by Gregory Eiselein, Broadview Literary Texts, Peterborough, p. 233 and note 1).

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In the second half of the 19th century, we witnessed a period in which countless artifacts are being tested that aim to surpass the heights of the Gothic architecture, with much of this effort being done in American territory. The end of the 19th century was a relevant period for the exercise of construction at height, in its various functional aspects, given the quality of iron production and its gradual trivialization of use in architecture. A challenge such as the Statue of Liberty had, in addition to the difficulty of financing, given the enormous costs involved, the problem of overcoming a very high set of technical and structural issues since it was a project that had no comparison. The conditions and the physical space where the colossus was intended to be implanted, represent a huge technological challenge, but due to the exposure that such a project had, it could, in case of failure, cause the doom of its executors. If in appearance this would be a calculated risk, in practice it was an enormous challenge that put the most advanced knowledge at stake and certainly constituted a notable feat in terms of engineering and publicizing the potential associated with iron structures. Given the size of this colossus, many times, due to issues of scale, the use of the analogy of a confrontation between ants and a titan, of Lilliputians against Goliath, is recurrent.4

At that time, the statue certainly beat a world record for its height and, although it corresponds to a shell, composed of riveted plates, with steel skeleton, it was a remarkable engineering challenge, let alone because we were talking about two hundred and fifty-four tons of steel, of which eighty-one were copper.5 In terms of the past, it is known that Bartholdi knew in some detail other experiences of statues, notably the Colossus of San Carlo Borromeo6 built between 1614 and 1698, which the sculptor had visited in 1869 when he was in Arona in the context of his trip to Egypt.7

This colossus, made with copper-molded plates, was for a long time the largest statue of its kind, having only been surpassed in the 19th century, first by the Statue of Arminius8 in Detmold in Westphalia and, immediately after by the Statue of Liberty. In the case of the German statue, it was built between 1833 and 1875 and its author, Ernst von Bandel, resorts to the subterfuge of the sword wielded on an elevated arm, allowing a greater height of the monument. This cunning medium would also be used by Bartholdi through the use of the raised arm with a torch. The statue was the tallest building in New York, until it was supplanted in 1897 by the St. Paul Building, by architect George Browne Post, unfortunately demolished in 1968.

One of the most interesting situations of the Statue of Liberty is undoubtedly the structural solution developed by Eiffel, which resembles a kind of skeleton to which a cover has been added. The question of foundations being very important given the load of the steel colossus, the way in which the interior support structure was designed is particularly relevant. This skeleton is composed of three distinct parts that complement each other. A first one that corresponds to a central steel pylon, composed of four steel pillars, which constitutes the main support tower; a secondary support consisting of trusses that will define a conformation between the main structure and the interior volume of the statue, a third, formed by rectangular bars (50x8mm) that – corresponding to a kind of springs – make the connection between the secondary structure and the copper leaf envelope layer that defines the statue, allowing the transmission of the wind action of the outer shell to the central pylon.10 In defining the volumetry of the statue, the use of a wrinkled covering, corresponding to a costume, was certainly a choice that

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6 Rossi, Giovanni Battista, has an accessible interior, 23.4m high to which is added 11.7m of granite pedestal.  
7 Hayden, Richard Seth and Despont, Thierry, Restoring the Statue of Liberty, p. 24.  
8 This monument consists of a pedestal of about 26.9m and a statue covered in copper foil that measured from its base to the tip of the statue, corresponds to 26.6m, note that the sword alone measures 7m.  
favored the bearing character of the statue. In reality, the use of a pleated dress corresponding to a Roman toga to which a stole was superimposed was definitely a subterfuge that greatly helped to give rigidity to the entire outer wrap. An enclosure that was intended to have some level of autonomy in relation to the interior structure in order to be able to absorb expansions, contractions and oscillations, both due to the thermal amplitudes and the action of the winds.

One of the biggest mysteries around the Statue of Liberty is the identity of its model. Since this answer was not clarified in life by the author, the choices always went through the group of people closest to him, whose most credible hypothesis would be his own mother, Charlotte Bartholdi, or the dedicated wife Jeanne-Émilie de Puyseux. However, it appears that the enigmatic and Roman-nosed face may be that of Sarah Coblenzer (better known as Sarah Salmon due to her marriage to André Salmon), who had impressed Bartholdi during a visit to his atelier in Paris and led him to recognize her as an incarnation of the image that he intended to eternalize Liberty.11 What is most curious about this story is precisely the fact that Sarah was of German family ancestry and, above all, was born in New York. As far as is known, Bartholdi always wanted the statue and its face to be a symbol and not a portrait, which is why he never publicly revealed who was his model, always limiting himself to considerations of a generic and not very objective character.

If on the French side, the Statue of Liberty implementation project was a serious matter, difficult to achieve, on the American side, despite being a land

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5. Foot and torch of the Statue of Liberty next to Fort Wood on Bedloe Island (c. 1885-86).

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with multiple millionaires, it proved to be a Herculean task and if it weren’t for Joseph Pulitzer’s dedication, making his newspaper, the New York World, serve the cause, everything would have been nothing more than a dream, since there was a large gap in the development of works on both sides of the Atlantic. As it is known, the shipping of the containers with the different parts of the statue had left the frigate of the French navy in the month of May 1885 from France and only arrived, late, on June 17, 1885, in New York. The delay was due to the need for an intermediate refueling of coal and supplies on the island of Faial, in the Azores, an unscheduled but imperative situation, mainly due to bad weather.

In order to launch the process of building the monument in the context of the USA and to keep this project alive, Bartholdi’s trip to the American continent was necessary. Thus, on the part of the French sculptor and having the Statue of Liberty as common denominator, five transatlantic voyages were made, between 1871 and 1893. The first, after twelve days at sea, arriving at New York port on June 21, 1871, it allowed him to observe a prominent, fortified rock, offering itself from the first moment as a potential site for the placement of his statue. However, this place had the disadvantage of the fact that in the desired site – Bedloe Island – there was a military fort.

The most profitable trip was decidedly the one made in the context of the Universal Exhibition of Philadelphia, in 1876, allowing Bartholdi to travel through American territory for an extended period of nine months. This trip, with arrival in Philadelphia on May 18, served to show a section of the Statue of Liberty, about 10 meters high, corresponding to the ‘forearm that held the torch in its hand, guaranteeing its notoriety, since the section is visible and managing to gather a dozen people at the balcony that crowned the shaft. This success was confirmed by the inauguration in New York of his statue Lafayette arrivant en Amérique, offered by the French government to the American city. After Philadelphia, the fragment of the statue would be transported to New York, confirming the popularity of the event there. On July 4, 1876, the date of the centenary of the Independence of the USA and having not fulfilled his desire to finish this ambitious project, Bartholdi had the opportunity to see a giant illuminated image displayed next to the New York Club building in Madison Square representing the statue, confirming the enthusiasm and the possibility of making possible what was a utopia for a long time.

The section that remained on display for some time, would be returned to France in August 1882, to incorporate the original statue. This part of the statue had been developed under the guidance of the visionary Viollet-le-Duc, who promoted the use of iron as a useful and correct solution for architecture, whether it is new or in a situation of rehabilitation, advocating the mass use of steel solutions.

However, despite all Barthold’s efforts, official recognition of the project took very long and only on February 22, 1877, in the context of George Washington’s birthday celebration, the US Congress, unanimously, would give moral support to this great work. This support would not be enough since it became imperative to define a strategy and a support instrument that would allow the construction of the statue’s pedestal and was a mission under American responsibility. In March 1883 and with the statue practically completed in Paris, Congress failed to provide a fund to support the construction of the pedestal. An attempt to raise funds for the project was developed by Joseph Pulitzer, through his New York World newspaper. This effort, almost fruitless, in November 1883, had collected about a hundred dollars when what was at issue at the time, according to optimistic estimates, was of an order of magnitude of hundreds of thousands of dollars. With a view to the construction of the pedestal, the excavation work had begun in April 1883 and ended in June, which was followed in October of that same year, the beginning of the foundations.

In the year 1884, the construction of the pedestal foundations followed its course, slowly, under the
control of engineer Charles P. Stone and with a design by Richard Morris Hunt. This architect, who had a particular taste for Egyptian monumental art, used the studies previously prepared by Bartholdi13 as the basis for his project. In the first studies developed by Bartholdi, still without the hiring of Hunt, the influence of pre-Columbian architecture is notorious, perhaps wanting the sculptor to test forms and a type of building that could have a genesis identified with the American continent. Hunt’s proposal would only be presented to the American Committee14 on July 31 and approved on August 7, 1884. With its gigantic proportions, the pedestal presents a classic design, with a concrete structure lined with granite from the island of Leete, in Connecticut. Given the dimensions of the statue, the design of the basement was very important and relatively vital issue for the success of the process, both for functional and structural issues, as well as for aesthetic issues of integration of the whole.15

8. Elevation and section of the Statue of Liberty produced within the context of the rehabilitation project of the 1980s.

The pedestal, due to its shape, was associated multiple times with a lighthouse, particularly that of Alexandria, one of the seven wonders of the world. This pedestal was built on the walls of Fort Wood, whose base design corresponded to a starry configuration, with eleven spouts, resulting from a fortification built between 1807 and 1811. The decision to grant the island of Bedloe for the implantation of the Statue of Liberty, under the initial proposal and determination of Bartholdi, was made official by General William T. Sherman, in 1877, after a strong request by President Rutherford Hayes, since at that time the fort had no defensive function.20

In the spring of 1885, the works continued at a very low cadence, with a strong lack of resources and with a public opinion that was not very motivated for the undertaking. Starting in March 1885 – and for five months – a new attempt at fundraising by Pulitzer in his newspaper is rehearsed. Thus, slowly and because many other initiatives have been associated with the project, such as public collections, free concerts and exhibitions, the number of donations made in cash had grown, many of them anonymous. However, in terms of financing the project, the real “Columbus egg” was the publication of the name of people who made a donation on The World pages, making the fundraising campaign very attractive and with particular success.21

Bartholdi’s third trip to the USA, which took place between November 4 and 25, 1885, will be the result of the construction work of the pedestal, allowing him to evaluate the entire process foreseen for the reassembly of the statue that was dispersed on Bedloe Island since June of that year. Only on May 16, 1886, almost a year after the statue arrived in the USA, was the pedestal in conditions to be able to start a new phase of work.22 In the final process of assembling the statue, which occurred mainly during the summer of 1886, in addition to taking care to overlap each of the pieces, trying to ensure maximum surface regularity, there was a concern that the entire riveting process be done from the inside, increasing the effect of unity of the ensemble, as if the whole statue were made at once and by a continuous material.23 In addition to this situation, it was necessary to ensure that the rivets had sufficient clearance to

9. Current photo of the interior of the Statue of Liberty, with a view of the central helical staircase and support structure.
ensure the inevitable expansions resulting from the annual thermal amplitude, transforming this task into a kind of specialized tailoring work where the seams must be robust but discreet.\textsuperscript{24} It should be noted that while in Paris the assembly had been done using an external scaffold, the conditions of assembly on Bedloe Island did not allow any scaffolding to be assembled, and the work was therefore more complex and dangerous.

The statue was originally intended to be lit, still with kerosene, a liquid petroleum-based product. Considering that in 1879 Thomas Edison presented the first marketable incandescent lamp, and further developments in technology, they allowed that a month before the inauguration the torch had been electrified and inexorably improving its image and night vision.\textsuperscript{25}

On October 25, 1886, a French delegation, which included Bartholdi and Lesseps, arrived in New York just in time for the inauguration of the statue of liberty, thus being the sculptor’s fourth trip to American territory. The ceremonies, dated October 28, with a huge military, naval and above all discursive apparatus, with a strong public presence, were led by President Grover Cleveland, on a stormy and rainy day.\textsuperscript{26} This was certainly a day that masterfully signaled the end of a cycle.

In general, given the quality of the constructive solution developed for the Statue of Liberty, it has overcome the adverse conditions to which it is subjected, with an age of more than a century and the addition of another half century to its existence is not far from today. In this long period, and coinciding with relevant moments, the statue was the object of two major rehabilitation interventions. A first in the context of its fifty years, in 1936 and which in addition to corrosion problems, had the implementation of a new lighting system, a subject that was clearly a problem since the beginning of the work and a second, much deeper and that occurred in 1985 and 1986, certainly in view of the celebrations of a century of existence.

In this last intervention, in addition to the nature of the work carried out, the apparatus created for its realization was particularly relevant. What stood out in addition to the natural conditioning of the visit to the statue was a huge scaffolding that enveloped the entire volume of the statue and which practically covered Liberty. This work, of singular specificity and in order to safeguard the integrity of the statue, forced this structure to be totally independent of the armor, given that the heights involved and the winds of the area, could put the monument in question. Now, in the context of the rehabilitation of the eighties of the last century, the structural part that was in the worst condition was the flat bars connecting the statue’s outer armor due to the successive adverse climatic actions and above all because the corrosion process in the contact between copper and the iron was in a very advanced state. Note that aware of this problem, Eiffel had used asbestos as a transition material. Complementarily and thinking about the expansion, in the interior, in the connection area, a U-shaped copper enclosure had been created inside which, sealing the square bars, made them autonomous in relation to the statue’s shell, facilitating contractions and dilation. Thus, given the detrition of the asbestos layers and its carcinogenic properties cumulatively known, the removal of this material was one of the intervention priorities. Another problem with some seriousness was the failure of many of the plate rivets, causing their displacement and consequently numerous points of moisture entry with serious damage to the iron structure.\textsuperscript{27} In this context, the access space was reformulated, creating a temporary place to display the original torch and flame that were replaced. The definitive location for these original elements would be the Statue of Liberty Museum designed by the well-known New York architecture firm FXCollaborative, which is located on the island opposite the statue. In the specific case of this project, it was intended to dilute the volume built in the landscape, creating an inclined plane that later extends to the roof using a vegetal surface and whose maximum level does not exceed the floor level of the platform of the Statue of Liberty. This intervention of enormous aesthetic sensitivity was also careful to use the same material palette as the monument. That is, the same type of...
granite, copper for the facade cladding and steel as the dominant structural element.

If the Statue of Liberty exists today as a reality, such an undertaking was only possible thanks to the strong determination of a man who knew how to bring together a whole set of desires, associating an artistic project with a remarkable engineering feat and with exceptional diplomatic capabilities. Without these particularities, without all these attributes, we are certain that such a grandiose work would have been just another megalomaniac project. In reality, Bartholdi was the great helmsman of a project that brought together two continents and that, ingeniously, transformed an almost banal place into a memorable place, in a transcendent place, which asserted itself as an indelible and identity mark. In the specific case, it was the event of the independence of the USA that constituted the foundational basis for a monument that intended to make the fraternity relationship between two peoples eternal, but in fact, given the subsequent contingencies and the value that such construction acquired, this became almost an equivalent.

Although the phrase is used in a different context, it feels like to say that "In this case, the event precedes the monument, but at the same time the monument makes the event."[29]