

The Colors of the Eiffel Tower: A Case Study

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Abstract: Architectures undergoing restoration often have numerous layers of color related to their history and previous interventions. Each layer takes on its own precise meaning related to a specific history and cultural context. The case of the Eiffel Tower becomes significant in illustrating past events and designing future intervention.

Key words: 20th century architecture, Eiffel Tower, colors, history, preservation.

1. Colors of 20th Century Architecture

There are many ways to talk about color in architecture:

- Color of the designed architecture
- Color of the built architecture
- Color of the architecture reproduced and broadcast
- Color of the urban and landscape context
- Modified color of the architecture, before the

color of the restored architecture

It all adds up to the color of the architecture.

Each of these colors represents a moment in the history of a project and of an architecture, its transformation, the techniques of the image and the evolution of its reception. Each of these colors needs to be analyzed before they can all be confronted. Together they form a coherent materiality, dissonant or shifting materialities, to perceive a real or dreamed about color.

2. The Eiffel Tower: An Example

The Eiffel Tower, designed by Gustave Eiffel for the 1889 Universal Exhibition in Paris and a founding symbol of modernity, illustrates all these issues. The 20th repainting campaign¹ currently underway has provided an opportunity to analyze the history of its colors in order to define a heritage repainting project: archives

research, surveys by restorers (Fig. 1), analysis by the Laboratory (LRMH), health constraints on lead paint.



Fig. 1 Eiffel Tower, picture of a stratigraphic survey detail.

3. Color of the Designed Architecture

3.1 The Prussian Blue Tower

A complex structure designed by engineers from the Eiffel design office is expressed using the codes for representing its material. Built of iron, it is designed and colored in blue, a hue that identifies ferrous

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¹ The Eiffel Tower is the property of the City of Paris and its management is entrusted to SETE. The main Contractor for the 20th repainting campaign is Agence Pierre-Antoine Gatier, represented by Marion Gauchard, architecte, project director.

materials. Since the end of the 18th century, the colored representation of the material of modernity has used a new pigment, the Prussian blue. It categorizes iron, without claiming to identify strictly the alloy chosen by Eiffel, puddled iron. The Musée d'Orsay collections include drawings of the Nice Observatory designed by Charles Garnier, rigorously colored in blue to document the use of puddled iron. In 1889, however, the engineer's mastery of the nuances of blue mixed with the red of carmine and the black of Indian ink enabled him to express the major materials of metal construction, iron, cast iron and steel.

4. Color of the Built Architecture

4.1 *The Venetian Red Eiffel Tower*

The black-and-white photographs taken by the Chevojon studio and those of the photographers who followed the gradual construction of the Tower cannot convey the color. We need the records of the paint supply, which specifies the use of Venetian red pigment. After the Tower's inauguration, the chromolithographs produced spectacular images of a red tower. For Gustave Eiffel, the construction of the Tower was the culmination of the construction processes used on the great bridges' pylons. The parts were systematically prepared and inspected in the workshop, and painted with a first layer of lead-based anti-corrosion paint. Once the Tower has been riveted together and assembled, two new coats of paint are applied, colored with Venetian red. After the blue of the drawings, this tint was an aesthetic display of both the anti-corrosion necessary for the conservation of the metal as well as the engineer's work. The survey carried out during the 20th painting campaign identified these initial red layers. It confirmed the exceptional three-tone gradation from base to top described by Gustave Eiffel. His total mastery of the processes involved in iron construction enabled him to go beyond the engineer's point of view and create an aesthetic work of art. By coloring the Tower, Eiffel became part of a history of architecture in the 19th century that was imposing color

as a means of writing, following on from the work of Paxton and Owen Jones on the Crystal Palace in 1851. The Eiffel Tower in red embodies the new architecture of the 19th century.

5. Colors of the Architecture Reproduced and Broadcast

5.1 *The Yellow-Brown Tower*

Gustave Eiffel undertook the first repainting campaign in 1893, and established a regular schedule of one campaign every seven years. This new protocol involved a new color scheme. Gustave Eiffel abandoned Venetian red and chose ochre pigments in an oil-based binder. For the 1900 Universal Exhibition, Gustave Eiffel publishes "The 300m Tower". The collection of technical drawings from the design office reflected the ochre hue of the iron. The color was henceforth known as the "Yellow-Brown". The process of painting the Tower intersected with the history of anti-corrosion painting techniques and the invention of protocols adapted to the new steel structures. From 1907 onwards, Gustave Eiffel used "Ferrubron" for the regular repainting campaigns of the puddled iron. The Eiffel Tower, built for the Universal Exhibition, was to be dismantled twenty years later. Gustave Eiffel gradually obtained permission to maintain the Tower. The 1907 color was faithfully reproduced until his death in 1923 and maintained until 1965. The Eiffel Tower was red for three years, forming an image that has become mythical for artists.

6. Color of the Urban and Landscape Context

6.1 *The Brown Tower*

In 1965, the Eiffel Tower was listed a Historic Monument. A new color was chosen, a grey-brown that would express the iron of the Tower. The blue hue was considered; it was not the forgotten memory of the technical designs of the 19th century; it was a request to erase the Tower from the Parisian sky. The attempt to paint the Tower blue in a way that breaks with Gustave Eiffel's choices is a paradox. Monumental

architecture that dominates the Parisian landscape, anticipates the heritage rediscovery of this architectural century.

7. Modified Color of the Architecture, before the Color of the Restored Architecture

7.1 The Work in Progress

The 20th repainting campaign respects the goals of the anti-corrosion treatment. A new analysis of the history of the Tower's colors has guided the choice of the new tint: it respects Gustave Eiffel's choice of a "Yellow-Brown" oil paint graded into three tones. Eiffel invented a red Tower for the Universal Exhibition, then the ochre hue of the stone of the Parisian monuments.

Color was constantly reinterpreted to express the changing values of architecture (Figs. 2 and 3).

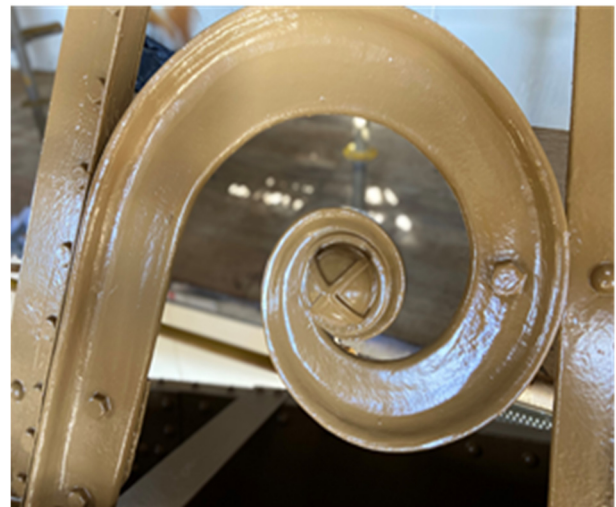


Fig. 2 Eiffel Tower, detail on pickled framework.

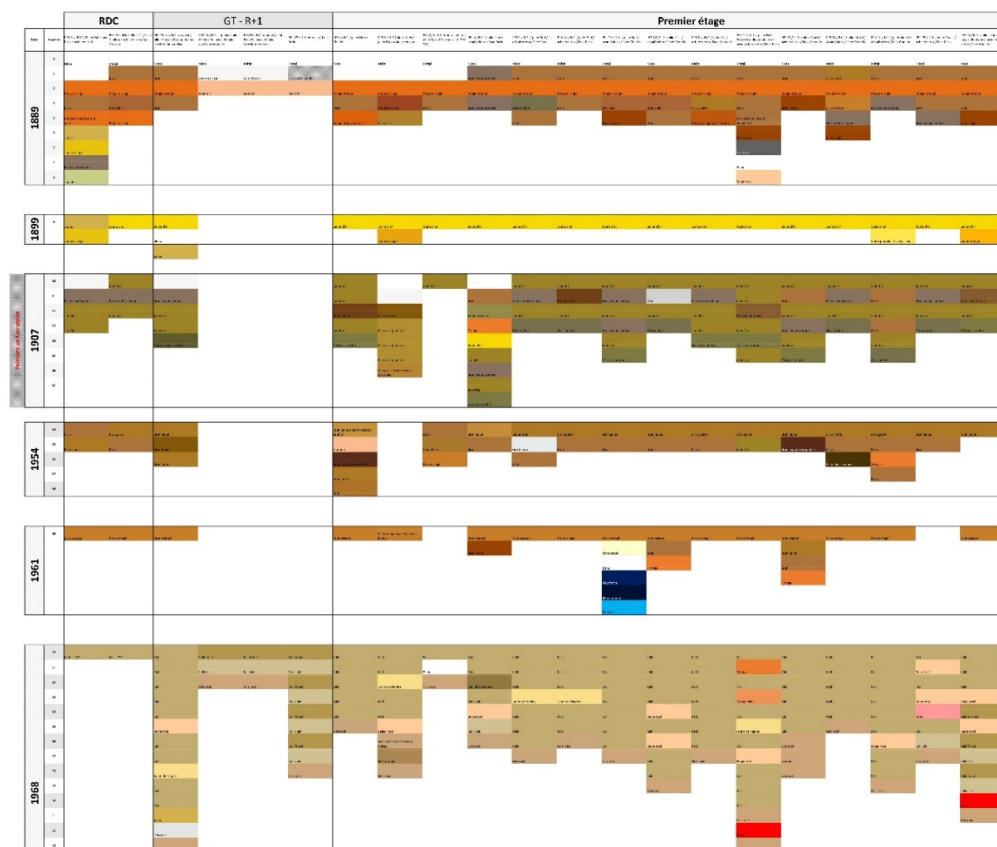


Fig. 3 Summary table of the stratigraphic surveys, PAG Agency with Claire Dandrel and Annick Texier, LRM.

References

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