

The Mole Antonelliana

between real shape and folding design

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Abstract

The present work deals with how to make ori-kirigami paper models of the *Mole Antonelliana* of Turin (Italy), designed by architect A. Antonelli. This building, from the time of its construction (1863-1889), distinguished the late eighteenth century Turin skyline, with its 167 meters height and immediately became the symbol of the city.

Models are, since ever, useful tools for visualizing and understanding an architectural shape; when they are made by ori-kirigami techniques, they provide a synthesis of a cognitive path between representation of reality and approximation, in the spirit of Japanese mitate (“to see the geometric shape of the folded paper as the subject that the shape represents, where the first agrees and in the same time disagrees with the second, while we share common ideas about what the latter is”, see K. Hatori in 6OSME Proceedings, 2014).

At a first observation of the building - characterized by a square plan and four equal elevations - we can read its architectural shape, between analysis of built environment and its symbolic representation, with different interpretative tools (mental, visual, real and symbolic images). We can also simplify its analytical and geometrical description as a sum of translation and rotation surfaces, with a 90° rotational symmetry around a vertical axis.

We summarize our design process, which starts from the existing graphics sources, as follows:

- recognition of the elements which characterize the shape, according to the representation scale and to the communications purposes, which both define the choice of the physical modeling technique;
- recognition of simple shapes to which the architectural complexity can be assimilated (composition, decomposition and re-composition): ‘the whole’ as the sum of ‘parts’ (origami modeling into parts);
- development of the ruled surfaces patches which compose the building (see C. Cumino et alii, 6OSME Proceedings, 2014): a ‘part’ as a synthesis of ‘the whole’ (kirigami modeling) and ‘the whole’ as a complex shape (one sheet origami modeling).

The result is a set of models, which disclose the *Mole* as the same simplified shape obtained by different patterns and folding sequences, according to various communicative purposes. In accordance with the geometric rigor of surface development, we designed extra paper outside the model; with different levels of approximation we managed extra paper inside, up to the introduction of tiny cuts to reduce the amount of paper necessary for the final folding and shaping in closing the model.

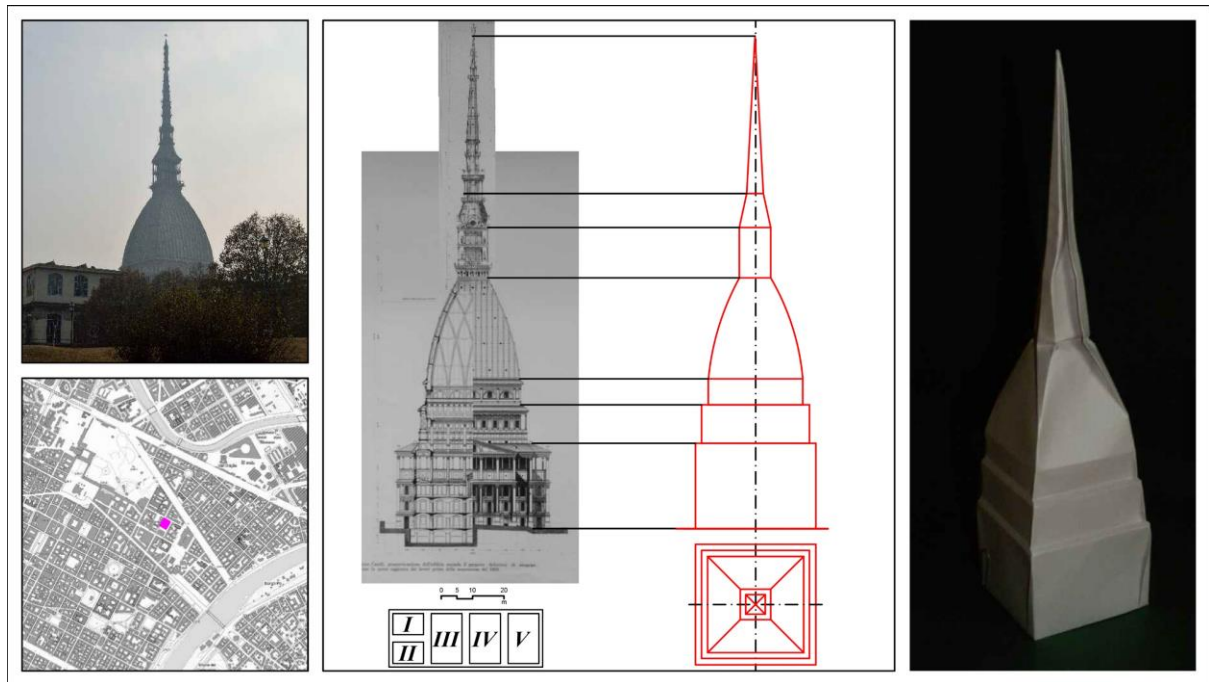


Figure 1: *I* Mole Antonelliana, *II* the Mole in the urban tissue, *III* graphic sources, *IV* recognizing simple shapes, *V* outside extra paper origami model.

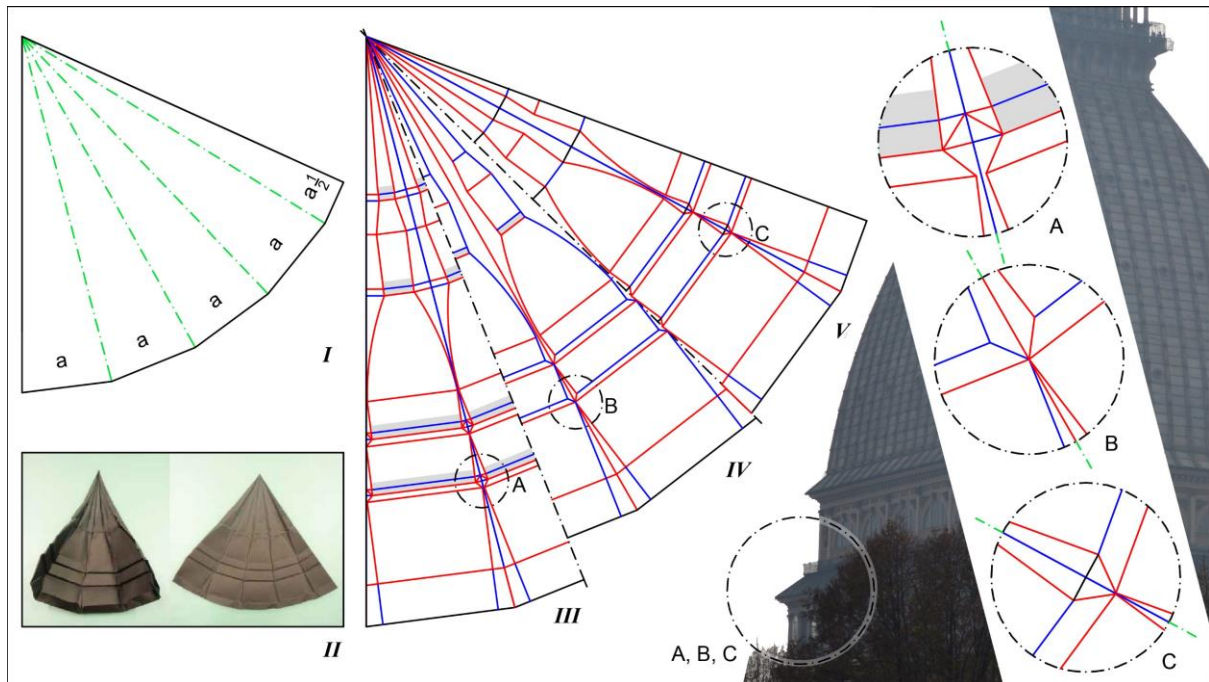


Figure 2: Due to the 90° rotational symmetry of the building, any CP is designed by repeating four times and a half the same module, as outlined in the diagram on the left above. In the center, a synthetic representation of the three CP's. On the right, the same particular in three different diagrams.