

Framing devices for works of art and hypotheses for an immersive use of cultural patrimony

Marianna Cuomo

The experiments conducted at the Interdepartmental Design and Research Centre 'Scienza Nuova' (Suor Orsola Benincasa University) is the result of doctoral research pursued under the direction of Prof. Emma Giammattei and Prof. Roberto Montanari.

The research was born within an action plan funded by the Campania region (RIS 3) and dedicated to the enhancement of technological production domains in the field of cultural heritage (CH).

The project envisaged the development of innovative and immersive fruitful solutions through the use of an eye tracking device, capable of identifying the points of greatest interest for an observer and, therefore, of suggesting possible set-up criteria useful for maximizing the visiting experience on a cognitive level.

The case study of experimentation (representative of a broader category of artefacts) raises the question – since the early nineteenth century a 'theoretical' problem – of the role of the frame in the perception of iconic and narrative constructs, a theme that, when transposed into the museum context, flows into the exhibition debate principally concerning framed artefacts but, on a large scale, also the problem of shop windows, of the media responsible for visual and textual communication, even the museum space intended as a 'container' for different visual stimuli.

The thesis focused on a specific category of frames characterized by a complex wealth of information that is, through the presence of repetitive decorative motifs, also extended to less elaborate types (up to and including images without borders), in order to identify whether and which of these can be considered 'indices' and vehicles capable of catalysing the attention of observers towards specific aspects of a visual construct.

For these reasons it was decided to verify, on an experimental basis, the theory developed by Ernest Gombrich on the psychology of the ornamental element,¹ selecting as a case study a small ivory tablet preserved in the Picardy Museum in Amiens, on whose decorated edge the art historian Jean Claude Bonne has previously formulated various hypotheses, evaluating it as having an active role in the fruition and understanding of the narrative contents of the piece.²

Ernest Gombrich's study represented a revolution in the vast panorama of literature dedicated to the subject, because it set out to investigate the functionality

¹ E. Gombrich, *The sense of order. A study of psychology of decorative art*, London: Phaidon, 1979.

² J.C. Bonne, *Les ornements de l'histoire (à propos de l'ivoire Carolingien de saint Remi)*, Annales HSS, 1, 1996.

of the ornamental element and, in particular, its ability to elicit certain responses from the observer, making use of in large part of the results achieved by information and cognitive theory, thus configuring itself as a precursor to today's studies of Neuroaesthetics, that is, the discipline capable of explaining in partially universal terms the phenomenon of aesthetic perception, making use of research on the functioning of the brain and brain imaging technology. Compared to Gombrich's theory, the experiment used here tried to verify the cognitive effects of the repetition of decorative motifs within the frame of the case study and, more precisely, its ability to divert and standardize the attention on the narrative content.³

Furthermore, the experiment aimed at understanding how and to what extent the presence of framing devices determines the perception of works of art and, therefore, whether the theory of the centre as a "force field" exists⁴, capable of attracting the eye by nature.

The experiment was carried out with the aid of eye-tracker technology commonly used in the field of User Experience and neuroaesthetics (the model used was the wearable Tobii pro-glasses II), to map the fixation points and the path visual of the participants in the experimentation compared to a high definition photo-reproduction of the case study (whose dimensions are similar to those of the original piece, 18.3 x 12.2 cm), projected on an iMac 27 LED backlit monitor (resolution 2560x1440) .

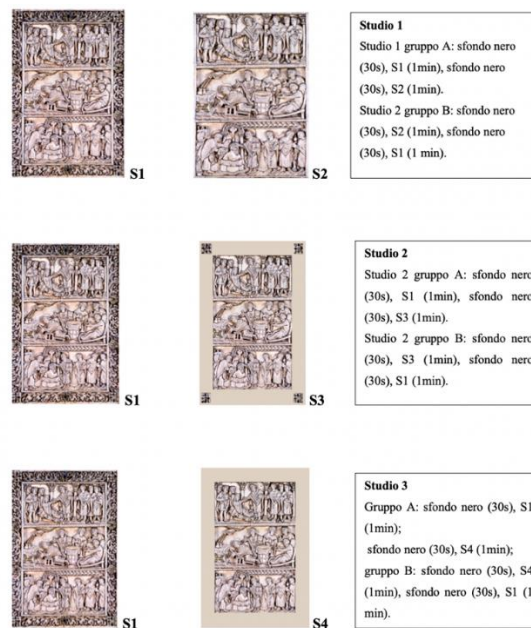


Figure 1 Stimuli experiment

The case study was projected in its original features and modified in the frame area with a photo editing program (Adobe Photoshop) in order to obtain three pairs of stimuli (S1 / S2; S1 / S3; S1 / S4) (fig. 1) designed to test the responses of observers on the basis of the variation of their morphology.

³ Ivi, pp. 80,84,85-88.

⁴ E. Gombrich, *The sense of order. A study of psychology of decorative art*, London: Phaidon, 1979, p. 175.

Stimuli were presented for one minute in a randomized manner and interspersed with a black background, projected for 30 seconds to avoid sequence effects.

The sample analysed included 48 participants, organised into three groups, each observed a single pair of stimuli and completed an incoming and outgoing profiling questionnaire, built to understand how much they understood and remembered the images that had been viewed.

The metrics considered to respond to the experimental hypotheses were: TTFF – time of first fixation (the first time the subject looked at a certain AOI area of interest); the FN – number of fixations (how many times the subject has focused his attention within a certain AOI); FD – duration of fixation (the residence time of the gaze within a certain AOI); VC – number of visits (how many scan paths have emerged within a certain AOI); VD – duration of the visit (length of time of the scan paths within a certain AOI).

The experimental hypotheses proposed for each pair of stimuli were the following:

H1) the presence of the original frame more easily conveys the gaze on the work;

H2) the presence of the original frame massifies the attention on the narrative content;

H3) the presence of the frames does not affect the reading order of the narrative sequence (for the first couple of stimuli); the morphology of the frame does not change the order of reading (for the second and third pair of stimuli)

The areas of interest hypothesized for the stimuli were in sequential order:

- the frame (except for S2);
- the resurrection of the young woman from Toulouse (the first register above);
- the healing of the dying person (the median);
- the baptism of Clovis (the third).

The results of the experiment yielded very interesting and promising results for the development of new set-up criteria and will be published in the future.

The data suggested by the eye tracking and the responses to the questionnaires have indeed shown unique behaviours in terms of perception and use of works of art, in part overlapping with what is already in neuroscientific literature but, also, innovative in other respects. Through the quantitative and qualitative analysis of the data it was possible to hypothesize new solutions for the enhancement of works of art, based largely on cognitive or 'universal tricks of

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aesthetic appreciation'⁵ suggested by neuro-aesthetic research and frequently used
by numerous museums, mainly internationally.

Marianna Cuomo is currently a PhD candidate in the Department of Humanities -
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⁵ A. Saviano, O. De Clemente, *Neuroestetica: bellezza, arte e cervello*, Nuova Ipsa Editore:
Palermo, 2020, p. 100