Tafter Journal
Esperienze e strumenti per cultura e territorio

Priming as a learning tool in museum environment

Sense perceptions vary across time and space.
We see according to what we know.
Knowledge alters perception
(Hooper Greenhill, 1988)

1. Background
An artwork instantiates some forms of communication. It employs visual clues to express its meaning. Examining masterpieces will allow museum goers to explore other cultures and time periods, marvel at human ingenuity and creativity, and open a dialogue on a world of issues and ideas central to the human experience. A key to assisting beginning and mid-level viewers is to encourage the development of reasoning in relation to the visual arts, defending their analyses based upon the visual and semantic evidences they observe.

In order to understand an image is important to investigate visual details (iconographic analysis/formal qualities) and semantic contents (e.g., artist's weltanschauung). The ability to interpret the formal qualities of an artwork is integral to a complete understanding of the art-making process. Formal qualities can be identified as elements such as composition, colour, line, texture, scale, proportion, balance, contrast, etc. Another way to find meaning in an artwork is to comprehend semantic contents concerning the life and philosophy of the artist, the function of the object, the buyer's intention, and so forth. Knowing about the artist's education, partnerships and ideas about art can help viewers to see a work with new insight and find new meaning that they may not have gained by just focusing on the formal aspects.

Museum educators often use what is called the "inquiry method" when exploring an artwork with the public: this Socratic method employs open-ended questions and answer technique designed to help beginning viewers look closely at masterpieces. Shall we employ other methods?

2. Priming: a promising tool
I tackle with the issue of techniques to improve visitors' learning and satisfaction from a different perspective that takes advantage of psychological elementary processes and phenomena like priming. Since Meyer and Schvaneveldt's seminal work in 1971, scholars pointed out the fact that "priming is an improvement in performance in a perceptual or cognitive task, relative to an appropriate baseline, produced by context or prior experience" (McNamara, 2005). It is measured in increased accuracy and decreased response times. A few key issues must be listed:
– Priming triggers implicit memory processes.
– Perceptual priming effects are long-lasting in normal adults and amnesic patients.
– Priming remains relatively stable from age 3 to 80.
– The degree of attention devoted to encoding typically does not affect the magnitude of priming.
– Priming seems to be a phenomenon independent of cultural background.

Our purpose is to develop a priming-based model that takes into account the most relevant experimental and physiological findings and applies them to the museum environment: visitors should learn a methodology – based on the knowledge of the main features contained in an artwork – to approach, comprehend, and memorise artistic objects. Our aim is to trigger visitors visual skills and knowledge showing visual stimuli (e.g., colours, lines, shapes, etc) and semantic stimuli (e.g., keywords connected to

artistic period, object's function, etc) related to artworks.

3. Experimental setup in the lab and in the museum

Here we describe two streamlined example of a priming-oriented method so as to develop artwork-related visual skills and knowledge of artistic concepts.

The experimental setup aims at collecting visual perceptual and semantic priming data, devising a tentative application of such priming to real-world scenario, and showing that the proper use of semantic priming and visual-perceptual priming might improve learning of artistic concepts.

The first experimental set up exploits *semantic-repetition priming* in a museum environment. It is based on a museum tour where each participant watches a video on a PC screen for a short period of time (about 5 minutes). The video explains an important artistic topic related to the group of selected masterpieces (5/10 artworks) located in a Museum of Fine Arts. The explanation is constituted by sentences containing keywords, which are subsequently quoted in the captions located beside the selected exhibits. Museum visitors, who participate in the experiment, are divided in three groups: prime stimuli group, neutral stimuli group, and control group.

Procedure. The prime group watches a short video that presents an artistic topic. While the speaker explains an artistic concept (e.g., *Renaissance*), the keyword related to the argument appears on the screen (e.g., *perspective, Botticelli*, etc.). Thus the prime stimuli are keywords related with the artistic concepts outlined during the video. The museum display is adapted adding captions, nearby the artworks, containing these keywords. The neutral stimuli group watches a video unrelated to the paintings chosen. A control group visits the museum without any previous semantic stimulus. After the museum tour, participants are asked to complete a questionnaire about the artistic topic in order to check if the semantic repetition priming has been effective.

The second experimental set up is based on *visual-perceptual repetition priming*, where each participant of the prime stimuli group watches prime stimuli on a screen. Ten stimuli are shown within a controlled period of time (about 1 minute). Subsequently the participants visit the museum without any restrictions. At the end of their tour, the participants are asked to answer some questions about the masterpieces selected in order to check whether the prime stimuli (*colours*) helped visitors to remember the artwork's main features.

Procedure. The prime group watches a session of 5 coloured prime stimuli related to 5 features selected from paintings of the museum and alternated with neutral prime stimuli in black and white (for instance, objects not depicted in paintings). The neutral stimuli group watches a session composed by 10 stimuli in black and white unrelated to paintings. A control group visits the museum without any previous visual stimulus. After the museum exhibition tour, participants complete a questionnaire about the five selected features (*colours*) of the corresponding artworks.

The encouraging outcomes collected in both experiments would suggest to improve this prime-based methodology and to apply to publics culturally and linguistically diverse, such as Chinese visitors, in order to enhance learning in Museums of Fine Arts. Besides, the priming-based model is promising because it can be easily adapted to the whole Cultural Heritage domain and to other kind of museums.