

1. The exhibition at National Museum

The exhibition and the evaluation continued at the Swedish Nationalmuseum during the first three months of 2004. Although this museum was not formally a partner of the project and didn't get any economic support for this activity, it confirmed its interest by organizing together with UPPSALA and PERCRO a temporary exhibition of the Museum of Pure Form.

The exhibit opened on March 23, 2004 and lasted until April 10, 2004.

The exhibition was realized simultaneously with "False and Genuine" exhibition, that is about verifying originals as well as copies, replicas, forgeries, pastiches, paraphrases and plagiarisms.



Figure 1 The "Falskt and Äkta" exhibition at National Museum

The installation was very similar to the one realized in CGAC. Some pictures of the installation are reported below.

The installation was placed just in front of the ticket office, in the main hall of the museum. This was a strategic location for attracting people attention, and for this reason has been visited by a great number of people.





Figure 2 The installation at National Museum

The area where the installation was set-up was prepared by personnel from National Museum. A set of dark curtains was used to create the right illumination and avoiding to have too much light in the exhibition. The screen was mounted on a wood basis that was finally covered by a dark fabric, while on its back it was located all the projection system.



Figure 3 Bust by Sergel: it is possible to note beside the plaster copy of the sculpture, the mold and the copy of the same made of chocolate. On the right side it is visible the virtual copy of the same sculpture, derived from the digitized mode, that was on display in the Museum of Pure Form. This was allowed to be touched!



Figure 4 This sculpture represents a man that is removing a thorn from his foot. The original was on the display at the first floor of the National Museum. At the ground floor, in the Museum of Pure Form, it was possible to compare the real model with the virtual one.



Figure 5 The museum was attended by a lot of children. In the pictures above some moments of the exhibition when small crowds of kids were visiting the exhibition. For some of them has been also possible to try on the system. Notice that the girl on the left is trying the system, by standing with her feet on a chair!

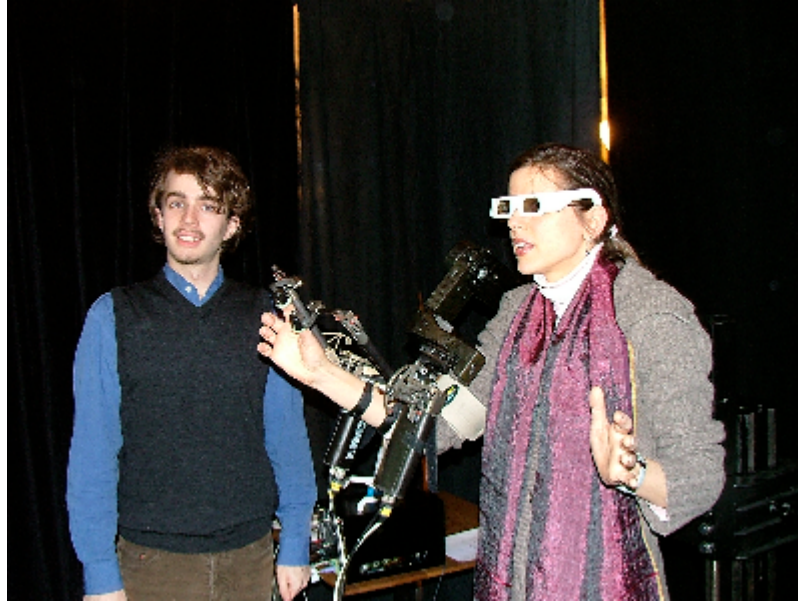


Figure 6 Reaction from people was very different while trying the system; here it is shown an astonished lady that is touching with her right hand the surface of a sculpture

Besides the numerous visitors of the exhibition, we had two very special guests, the King and Queen of Sweden, that during their visit to the museum, visited the Museum of Pure Form installation too.

The exhibition was preceded by a seminar organized by the Educational Department of the Museums that was given by prof. Bergamasco and prof. Jansson to an audience of people interested to cultural heritage new applications. The scope of the exhibition and the scientific related aspects were introduced and explained on the basis of previous results. Then the attendees were invited to try the system.



Figure 7 The seminar made in Stockholm for presenting the scope of the exhibition

The evaluation study was conducted also on a special group of subjects, characterized by disability of the sight. Figure 8 show some of the blind users trying the system in the museum.



Figure 8 The evaluation has been conducted also on special groups composed of blind people. On the left it is visible also a journalist that was conducting a survey on the usability of this new technology for blind people.

1.1. The evaluation conducted in Stockholm at National Museum of Fine Arts

1.1.1. Problem

The aim was to evaluate the PURE-FORM exoskeleton haptic display used by museum visitors manually exploring virtual copies of statues and at the same time obtaining a stereo visual copy. A first study of blind people deprived of visual information was also included.

1.1.2. Method

1.1.2.1. Spatial arrangements

The visual and haptic displays were built up within an area delimited from the environment by black curtains at three sides with partial covering also of the fourth entering side.

1.1.2.2. Virtual statues

Two virtual statues were chosen for presentation: “The thorn extractor” (original at Nationalmuseum, Stockholm) and “The bearded man” (original at Opera della Primaziale Pisana, Pisa).

1.1.3. Procedure

The participants were informed individually about the display and instructed about the evaluation procedure. Their right arm was attached to the display and the two virtual statues were presented one by one with suggestions from the experimenters about what parts to explore. The order of presentation of the statues was varied between participants. The time from the beginning to the end of the exploration was measured with an arm watch. The

exploration time varied between 3 and 28 min with a Mean of 8 min and a SD of 3 min. About two thirds of the exploration times were within the interval 5-10. After the exploration the participants were given the questionnaire and asked to fill it in individually in their own pace outside the exhibition area. (For the blind participants the questions were read aloud by a sighted person, who also wrote down the participant's answers.)

1.1.4. Participants

Most of the participants were museum visitors, who volunteered to participate. A minor group had been asked to come to the exhibition specifically for the PURE-FORM exhibition. In all, 149 persons took part in individual evaluations. The results from 115 sighted participants are presented here. Age information was obtained via the questionnaire from 108 of them. Their age varied between 13 and 71 years with a Mean of 33 and a SD of 14 years. Of 108 reporting sex 71 were Male and 37 Female. A majority (74 persons) had a university degree, 34 had a high school level education and 8 education below that.

Previous experience of virtual reality or similar installations was reported in only 14 of 110 answers. The majority had thus no such experience. The self-reported experience of computers (N = 110) on a seven-degree scale varied over the whole scale with a Mean of 5.5 and a SD of 1.4 (Q 28). The frequency of playing computer games was reported in five categories (Q 29). The two lowest categories, Never or Rarely, was reported by 67 %, and the higher frequencies, Monthly, Weekly and Daily, by 33 % of 108 answers.

Six blind participants will be analysed later, as well as 15 participants who took part when only one of the fingers of the display was functioning. The questionnaires from 13 participants were not included because they were filled in only partially.

1.1.5. Questionnaire

The questionnaire was prepared in cooperation between partners CGAC, OPAE, PERCRO, UCL and UPPSALA. UPPSALA was responsible for the final version used at Nationalmuseum. It was prepared in two languages, English (Annex 1) and Swedish, the latter a translation of the English version.

It consisted of four parts:

1. *Background information.* A question (# 1) about how the participants got information about the exhibition and one (#2) if they had wanted more advance information, respectively.
2. *The thorn extractor.* Five questions (## 3-7) about the participants' experience of some specific parts of the statue, one question (# 8) about the experience of touching a real statue and one question, different for sighted (# 9) and blind (# 10) participants about how valuable they judged the haptic experience to be.
3. *The bearded man.* Similarly, for this statue as the other one, but the specific questions being three (## 11-13) and the others being ## 14-16.

4. *General*. One question (# 17) about the virtual visual environment, nine questions (## 18-26) about general aspects of the haptic exploration and four questions (## 27-30) about personal background factors. Finally a very open question (# 31).

1.1.6. Results

The results are presently analysed together with those from the other museums.