Bringing Computer Graphics to Everyday Environments with Informative Art

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The field of display technology is rapidly developing, and LCD- and plasma-displays are already invading our surroundings. Alternative technologies such as “electronic ink”, electro-luminescent materials, and even color-changing textiles [Holmquist and Melin 2001] will further increase the number of possibilities to integrate computer graphics in our everyday lives. We believe that computer graphics for everyday life will have requirements that are very different from those of a Web page or a movie special effect. To explore this, we have developed a type of applications that anticipates a future use of computer graphics, so-called *Informative Art*.

A piece of Informative Art is a dynamic visualization – reminiscent of the style of a certain painter – whose visual appearance continuously changes, reflecting some source of information. We have previously visualized data such as e-mail traffic, current weather conditions around the world, earthquake data and the activity level in a room. in styles inspired by painters such as Piet Mondrian, Bridget Riley, Andy Warhol and Mark Rothko. Informative Art is typically shown on a wall-mounted display to give the impression of an ordinary painting. (See **Figure 1.**) Our long-term goal is that informative art will take a similar place in our daily environment as traditional artworks do today, while at the same time providing information that is relevant for the place it is situated in.

Previously, we have mostly displayed Informative Art in exhibition contexts, such as SIGGRAPH Emerging Technologies [Skog et al. 2001]. As a first step towards our goal of bringing computer graphics into everyday environments, we decided to display informative art in a semi-public area, where we could get general perceptions and opinions from as many people as possible. We chose the Göteborg IT University, where about 150 students are present every day, as the setting for our study,

We first conducted a pre-study to establish that the piece of informative art would display data of interest for the students. Weather forecasts was one of the most common suggestions, therefore we chose to design a weather display. We decided to use Dutch painter Piet Mondrian as a source of inspiration. We believed that the simple, yet appealing, graphical structure of his compositions would be suitable for displaying information in an intelligible way. The resulting visualization was shown at a large flat-panel screen in an open public space at the University, during one week.

Figure 1. Informative Art in an everyday environment

The weather display looks superficially like a Mondrian painting, but in fact each colored square represents the weather of one day. (See **Figure 2.**) The size of each square reflects the temperature for that day, so that the higher the temperature, the larger the square. The color shows the weather condition: yellow represents a sunny day, blue represents rain, and red represents clouds. The display is read left-to-right, top-to-bottom, where the first square (top-left) represents the current weather conditions, the next one tomorrows forecast, and so on. The visualization is implemented as a Java application that retrieves weather information from a web page. As the information on the Web is updated, the application reflects the updates dynamically. The resulting image thus reflects a four-day weather forecast, while still being reminiscent of a painting in the style of Mondrian.

Did it work? Yes, provided with one brief explanation, students could interpret the information. This was confirmed in two studies conducted after a one-week testing period. Before the tests, a brief explanation of the piece was given to a group of students. The two studies brought in a total of 40 questionnaires, where 15 came from students who attended the briefing. The results showed that the greater part of the students considered informative art to be an enjoyable and natural part of the surroundings. Students that did not get any explanation perceived the piece solely as art, whereas the others could benefit from it as an aesthetical weather forecast.

This was only a preliminary study, but the positive feedback from the test group lead us to believe that the concept of informative art is a viable way of designing new kinds of information displays, that should be investigated further. We will now design informative art for new settings, taking the next step towards integrating computer graphics in our everyday environments.

References

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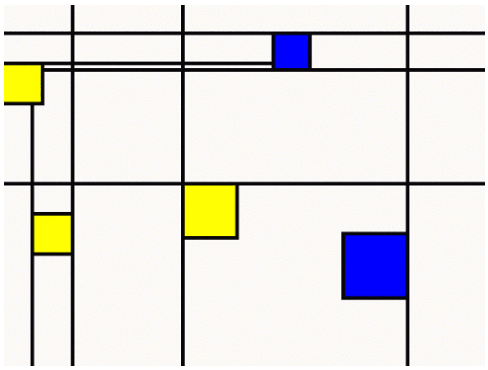

Figure 2. A weather forecast in the style of Mondrian

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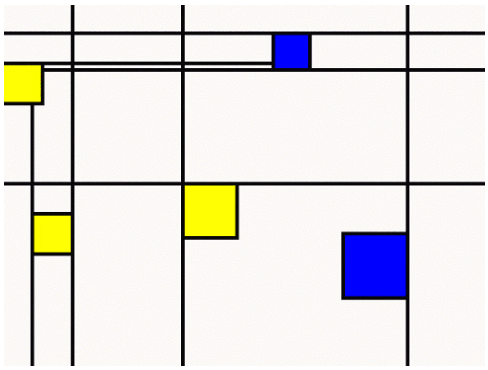

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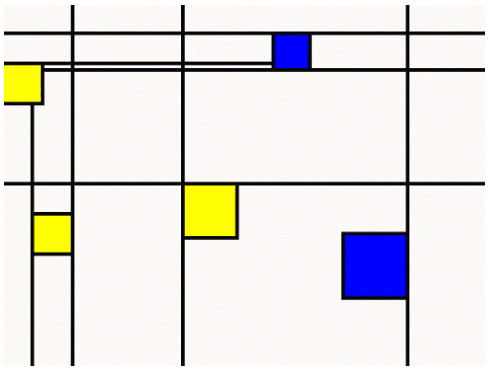

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