

Virtual Graffiti: from stone-age to digital art

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The roots of graffiti

The term »graffiti« originates from the greek word »graphein« and means to scratch a message into another medium. The roots of graffiti art go back to the stone-age when cave men carved messages into stones and walls. Nowadays, graffiti artists still use walls (besides other mediums) to paint on, but their tools have changed. Carving stones are replaced by aerosol-cans, which surely offer greater flexibility and allow more stylistic variations. Unfortunately, not everyone is thrilled by this special art form, which escapes any kind of control and uses public buildings as their »blank canvas«.

An international modern art

Nevertheless, today, graffiti is a special form of communication, particularly popular among young people in urban areas. This modern form of graffiti aims to express their attitudes and opinions and of course the painters want to gain acknowledgment from others. Unfortunately, there is one major problem: In nearly every case it is illegal.

The virtual approach

The VG system solves this problem by transferring the art of graffiti into the virtual world. To spray a graffito, the user no longer needs to buy aerosol colors and to abuse their surrounding urban environment to express their creativity. »Virtual Graffiti« suggests new painting tools and thus enables a new visual art. »Virtual Graffiti« utilizes modern VR hardware and combines it with a software which simulates the important aspects of graffiti spraying.

The technology within VG

When painting a virtual graffito, the artist is standing in front of a back-projection screen, which offers the full front of a real wall (approx. 3x2 metres). The screen shows a brick-wall located in a New-York style backyard. Instead of a real aerosol-can, the artist uses an imitation, which is equipped with a tracking sensor. In combination with an electro-magnetic tracking emitter, the position of the can is provided, while being moved by the user. When the artist pushes the button of the can, the system correlates its position to

German Abstract

Graffiti sind Kunstwerke, die unter Verwendung von Lackfarbe in Sprühdosen auf Wänden gezeichnet werden. Diese Form der Kunst stößt dabei nicht bei jedermann auf Verständnis, vor allem nicht bei jenen, deren Wände davon betroffen sind. Nichtsdestotrotz ist Graffiti-Malerei eine internationale, vornehmlich von Jugendlichen im städtischen Umfeld praktizierte (meist illegale) Kunstform. Um dieses Dilemma zu beheben, verschiebt das System »Virtual Graffiti« den Sprühvorgang in die virtuelle Welt. Unter Verwendung einer getrackten Sprühdosenattrappe malt der Benutzer auf einer rückprojektions-betriebenen Leinwand sein Graffito. Auswählen kann er dabei sowohl die Farbe, als auch die Form des Sprühkopfes. Das System registriert die Druckstärke und den Abstand zwischen Wand und Anwender und simuliert so einen realistischen Sprühvorgang.



Impression of the booth »Virtual Graffiti« (Cybernasium Days 2002)



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the virtual wall and simulates a color-spray at this particular position, taking into account the pressure applied to the button and the distance to the wall. Additionally, the user can choose different colors and caps of various sizes from a menu activated and operated using only the can imitation. When the artist has finished his artwork, the can is placed back into the docking station thus enabling the system to detect the end of the session. The sprayed picture is then stored permanently in the form of an image file for later usage. The system runs on a standard linux pc using a 3D-accelerated graphic card. The software was implemented on top of the OpenGL scenegraph system.

Getting famous – legally

As mentioned earlier, one motivation is to achieve fame among their peer group graffiti artists and others. To accomplish this in the virtual world, the stored images can easily be pre-

sented to the public on a web page. In this way one can spray, have fun and even show their creativity to others and – best of all – he can do it legally.

Virtual Graffiti in action

The system was initially introduced to the public on the Cybernarium Days 2002 in Darmstadt. During the five days of exhibition more than one thousand images were sprayed by visitors who never used a system like this before. In contrast to real urban graffiti not only young people were attracted to the genre, but people from all ages wanted to try out the system. It turned out that interacting solely using the can imitation worked very well regardless of the user's age. Within a short while of playing around with the system everybody was able to use it without problems and painted images. Children adapted quickly to the usage of the can imitation and obviously had great fun spraying the wall.

The gallery

To get an impression of what is possible with the »Virtual Graffiti« system, check out the exemplary paintings attached to this article. The whole gallery of paintings completed at the exhibition can be found on the internet at: <http://http://www.cybernarium.de/graffitis/>

Conclusion

The five days of exhibition demonstrated the benefits of the presented system. In contrast to conventional input devices, the can imitation represents an everyday device used for man-machine interaction, which is easy and fun to use. It provides a new way of interacting and enables artists and non – experts to easily spray digital images and thus establishes a new form of image creation especially suitable for large screens.

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