ALLES SPIEL
audience participation
LOREN & RACHEL CARPENTER
CINEMATRIX™

Introduction

The patented CINEMATRlX Tm Interactive Entertainment Systems gives each person in the audience the real time capability to interact with images on a screen and thus play games together, answer questions, create patterns and make decisions about adventures in a collective virtual world. This invention grew out of the innovative world of computer graphics along with advances in computer hardware enabling new forms of interactivity to arise. Up to now, this system has always been done indoors with people in their seats. We propose a unique experience for Linz - to set up the experience for a crowd outdoors. We also intend to push the boundaries of what is possible in the experience itself. Necessarily, the games have been fairly simple up until now. We think that it is possible for groups to interact and cooperate to create forms using genetic algorithms. Linz is the perfect place to try this out.

Communication with Humans

Communication is unpredictable at the best of times. The more people you try to communicate with just accentuates the possibilities for misunderstanding and confusion. Having a few calibrating exercises at the beginning helps people to know that the system is working and that they are being represented. Before giving explanations, it is important for the audience to experiment with the wands. This can produce some surprises. Then the group can be asked to show one color and they can see it up on the screen. When the group changes the color they are showing, it changes correspondingly on the screen. The participants can then be divided into groups and reproduce the exercise to get an even better idea of where their position is on the screen and to get a feeling for the system working.

Using passive reflectors as an interface allows the freedom of no wires and immediate feedback. People can respond without complicated button pushing or the moving of levers. It helps for people to be familiar with the concept of the game and for the goal to be simple. Large crowds do not want to listen to a lot of rules. The games need to be visually understandable with the right mix of action and challenge.

Hardware & Software Challenges

The original audience participation event at SIGGRAPH '91 only had five months to invent the system and get it working. Many questions had to be answered and many problems had to be solved. The first big question was interface. How was the audience going to send a signal to the computer in a cost effective, safe way? Flashlights would be too expensive; wiring each seat was out of the question. How about reflecting light? The resulting device of combined "Reflexite" on a paint stick is referred to as a "wand".

The requirements for designing any game with this system begin with the constraints of the reflective device. Locating the players is a huge technical challenge. The red or green reflected light signal needs to be picked up by video cameras and communicated to the computer, which deciphers the information according to the game or task on the screen. To differentiate each person's signal is a top priority; each person needs to be represented. The camera sees a mass of spots that need to be differentiated by the computer. Forming a seating chart is one way to partially define where each person is. There are additional considerations of extra movement, reflected light objects in the room. The solution is in software. The past three years of development have made it possible to eliminate seating charts where possible. This new method will debut in Linz for Ars Electronica, known for being on the cutting edge of art and technology.

Each venue has its specifications and idiosyncrasies. Basic photographic principles apply. A wide-angle lens on the camera can see more if it has a greater distance. Cameras and lights need to be linked to power with red, green, blue and sync going into the right ports in the computer. It is important that each person be represented.

The Games

It is important to establish that people are having real time input as described in the introduction. Each game requires a small explanation. We try to emphasize games where people work together either in teams or with the entire group. One two-team game has a "paddle" on each side of the screen to hit a conference logo or whatever is appropriate for the event. Green makes the team's paddle move up and red makes it go down. If one side sees that their paddle needs to move up, they start to show the green side of their reflector to the cameras and lights. If everyone on their side showed green, the paddle goes up too far, so people need to moderate the signal by a few people showing red or putting their paddle down. These decisions have to be made quickly and become intuitive, producing a state of flow, which ends up being very exciting. New variations of this game are continually being created. The rotating cube is an exercise that requires the entire audience to cooperate. A multicolored cube is rotated on two axes, each controlled by one-half of the audience. Red rotates the cube one way and green rotates it the opposite way. The trick is to stop the cube with the blue side showing. It is a difficult problem, but an audience that is warmed up can quickly maneuver the cube into the required position.

Flying an airplane requires very fine skills from the entire group of participants. One side controls pitch, the other yaw. This game has been undergoing rewrites to make it more exciting for groups to play.

The feedback on these games has given us ideas to keep in mind when developing new games. People really need to know where they are and how their reflector relates to the action. Asking questions with binary decisions may produce answers, but that process does not excite the crowd unless they are really interested in the subject matter and it is a competition.

Sometimes groups divided up into competing teams can get very excited by true/ false questions, because they can see instant results.

Games that require participants to let go of exactness and make intuitive decisions seem to put people in touch with each other in a different way, to go beyond the usual linear mode of thinking. That could be one of the reasons so many people got excited. The CINEMATRIX system provides the opportunity for people to work together in a way never before possible. It is still a young technology ready for new ideas. Some people have pointed out that there might be a possibility for people to use this in a way to control others when they get in an excited state. Since the entire experience is focused on personal choice, we think this is not likely, but we do own the patent for the U.S., the E.C., Japan and several other countries. It is our intention that the technology be used for people to have fun and develop cooperation in the process.

The genetic algorithm collaborative experience is new for Ars Electronica. The group will be able to make choices about the collective creation of an organism. When each choice is made, the crowd will see the results instantly. More than one segment can be worked on at a time and the results will happen quickly. This is new, we don't know exactly what will happen or how many other new things will be invented in the meantime. That's what the cutting edge is all about.