

EventSpaces

A Multi-Author Game And Design Environment

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Abstract

EventSpaces is a web-based collaborative teaching environment we developed for our elective CAAD course. Its goal is to let the students collectively design a prototypical application — the EventSpaces.Game. The work students do to produce this game and the process of how they interact is actually a game in its own right. It is a process that is enabled by the EventSpaces.System, which combines work, learning, competition and play in a shared virtual environment. The EventSpaces.System allows students to criticize, evaluate, and rate each other's contributions, thereby distributing the authorship credits of the game. The content of the game is therefore created in a collaborative as well as competitive manner. In the EventSpaces.System, the students form a community that shares a common interest in the development of the EventSpaces.Game. At the same time they are competing to secure as much credit as possible for themselves. This playful incentive in turn helps to improve the overall quality of the EventSpaces.Game, which is in the interest of all authors. This whole, rather intricate functionality, which also includes a messaging system for all EventSpaces activities, is achieved by means of a

database driven online working environment that manages and displays all works produced. It preserves and showcases each author's contributions in relation to the whole and allows for the emergence of coherence from the multiplicity of solutions.

This Paper first presents the motivation for the project and gives a short technical summary of how the project was implemented. Then it describes the nature of the exercises and discusses possible implications that this approach to collaboration and teaching might have.

Introduction

Teaching the elective course for Computer Aided Architectural Design at the Architecture Department of ETH Zürich, for many years we have had to cope with very large classes of up to 140 students. To turn these large numbers into an advantage rather than a disadvantage for the students, we have made extensive use of the World Wide Web and common databases to support mutual exchange and peer to peer learning in these classes. The success and fascination these means have continued to have for the students as well as

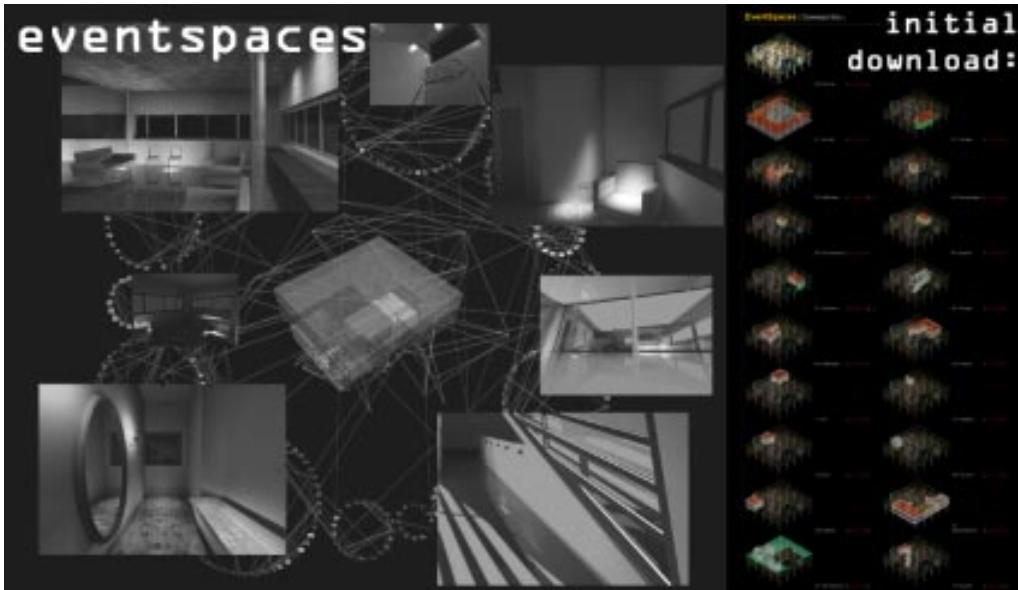


Figure 1:
The final state of the EventSpaces hyperstructure with some sample images. Schematic model with all viewpoints shown in the middle, scenarios with nodes and connections arranged as circles visible behind the sample images. Initial download: parts of the villa Savoye, available for download at the beginning of the semester.

for us over the years have led us to explore different types of database-supported course environments such as Phase(x)[1], the Virtual Design Studio Multiplying Time[2] or fake.space[3] which have been presented at ECAADE conferences in the past.

In the meantime, CAAD has become a mandatory part of the basic architectural training at ETH and our elective class (which is offered for the upper semesters) is no longer flooded with people. At the same time it has become ever more clear that the role of the computer in the architectural profession is by no means limited to that of design tool. When we talk about computer support in architecture, computers as a social media are just as important. So much so, maybe, that one could argue that both aspects should be addressed as separate subjects. After all the modeling and rendering programs commonly used nowadays are very com-

plex and take longer than ever to learn. The whole issue of networks, virtual and information architecture on the other hand provides ample topics to explore in its own right. However we feel that it is precisely the double role of producing and sharing, of learning and doing that holds the real magic of the computer for a creative discipline such as architecture. It is precisely at this intersection of tool and media that we'd like to situate our courses. Therefore we continue developing web-based environments for our skill and design oriented classes. The fact that there are now fewer and more advanced students actually lets us go several steps further and produce more particular, specialized environments. The EventSpaces course, described in this paper, was the first class environment we have developed in this spirit.

EventSpaces.Game: connecting architectural scenarios

In EventSpaces, students collaboratively design a computer game. Not just any computer game, but a computer game about architectural space. The game is developed around the notion of architectural scenarios. A scenario is here understood as a set of hyperlinked architectural images or 3d models, referred to as nodes, that coherently describe an architectural situation, somewhat like a stage set. Later in the semester, these scenarios become loaded with interactive functions – the events, consisting of actions and switches allowing the development of game interactions within these scenarios. Developing their scenarios, students deal with essential architectural topics such as light, material and movement and learn to use modeling and rendering software in a playful way.

All scenarios are staged in the same building, the villa Savoye by Le Corbusier. We provided a rough CAD model of the villa at the beginning of the semester that was subsequently changed and refined by the students. But it is not only this model they worked with: because of the prominent role this villa played in the development of modern architecture, because of the 'cinq points' that it is a built manifesto for, and also because of the polemics that surround its history, all the students had their own experiences and feelings about this building to bring into their work. The choice of the villa Savoye thus charged the architectural aspects of the scenarios. They were a possibility to explore the modernist ideal of space with today's digital tools, but also a possibility to take a very personal position towards this icon of modernity. Another thing that is curious about the villa Savoye is, that it was never inhabited for a longer period of time. When the groups of students selected different rooms of the villa to work on during the semester,

it seemed like they were moving in, so that finally something would happen there, some events could take place in those pure spaces.

Besides developing their own scenarios, the students were asked to establish links from their works to the other scenarios, thereby creating one coherent hyperdocument. By using a common building for all scenarios, a spatial relation between all scenarios was given that could then be used or intentionally disregarded when connecting the individual scenarios (figure 1).

Levels: the structure of the semester

The semester was made up of several stages, which we referred to as levels. In these levels the teaching and the work were always focused on a particular topic. There was a progression in the levels, going to more advanced topics in the production of the game and towards increasing collaboration in the course of the semester.

Level_0: online_ID

All authors enrolled in the course get a chance to define their online identity, selecting an image, colors and a statement about games to become part of their EventSpaces business card. They were also asked to form teams in the first week. The following levels were performed in groups of two or three people.

Level_1: scenario

The first production level was about setting up a scenario, essentially a set of renderings, linked in a consistent way so as to allow them to be navigated through naturally (figure 4). Students learned how to use Lightscape to create the renderings and were introduced to the action-editor (figure 2), to link the renderings and create active areas on them.



Figure 2:
Editor and player, showing
the same node of a
scenario: authors can
place actions and switches
with different parameters
(exchanging sound and
images or animated
images) and
interdependencies on the
page, to create the game
logic within their scenarios.

Level_2: object

The model of the villa we provided was empty. At this level, students were asked to produce or find models of objects to be placed in their rooms. If they wanted, students could make their objects available to everyone else in a library as part of the website. To incorporate them into their scenarios they were asked to create variations of their renderings that contained the objects.

Level_3: interaction

The 3D node-type was introduced that contains VRML worlds. 3D nodes were placed at special points within the hyperstructure and allowed for a different way of interaction.

Level_4: animation

Different types of animations were introduced: GIF-Animations in the 2D nodes (placed as overlays over parts of the existing renderings), VRML-Animations in the 3D nodes.

Special Interest Groups

For the rest of the semester, students no longer worked in their groups only, but formed what we called special interest groups that students could sign up for: MOTION, LIGHT & FORM, SCRIPT &

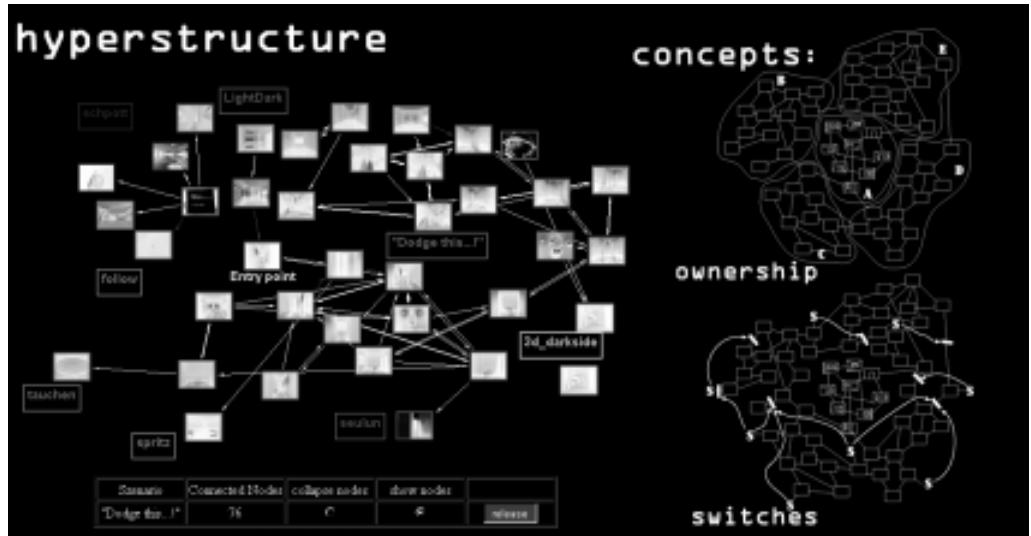
SOUND. These groups could get into more depth with a topic, exchange notes on it, while in different ways still contributing to the overall project. The MOTION group addressed the 3d nodes, LIGHT & FORM dealt with modeling and rendering and SCRIPT & SOUND addressed the overall linking of the hyperstructure, the gaming narrative, as well as the sound.

Technical Specs

The EventSpaces website runs on an apache webserver on silicon graphics hardware (the whole environment has been tested on other platforms, such as Linux and NT, too). Server side scripting was done in PHP3 and to a lesser extent in Perl. A mysql database was used as the backend. The Actions-editor and the player (figure 2) were programmed in JavaScript and the outworld hyperstructure viewer (figure 3) was implemented in Java. For the VRML nodes, special code was written in Java, to take control of the interface and the input devices.

Software used by the students includes Lightscape, Microstation, CosmoWorlds, Photoshop, ImageReady and to a lesser extent FormZ and 3DstudioMax.

Figure 3:
Outworld view browser
(Java-Applet), showing a
part of the EventSpaces
hyperstructure.. Concept
graphics on the right show
how ownership and global
switches work in the
EventSpaces.System



EventSpaces.System: online collaboration

The novel aspect of the course does not lie in the technicalities, nor in any of the individual levels, described above, but in the fact, that all these activities contribute to the same product, the EventSpaces.Game. While in previous semesters we used database-driven websites to transparently present and exchange students' works, those were still individual projects, displayed in the context of all other works. In EventSpaces we went a step further in that we wanted to have cycles of refinement, rather than just an accumulation of works through the semester. These cycles of refinement, which also included feedback mechanisms through rating and discussion, were achieved in the EventSpaces.system, using ways to provide feedback, control and self-regulation.

Feedback: the messaging and rating system

In the EventSpaces.System, there are authors and owners. The scenarios are owned by the groups that develop the initial plot for them, but the nodes can be produced or improved by all EventSpaces authors, as all the working material (model, radiosity solution, material descriptions, rendering settings etc.) are available for download for every single node.

All changes made are instantly visible to the community. But while every author can contribute to any scenario of their choice, it is up to the owners to decide about the definite version of their scenario. They can select between different versions by different authors for all nodes. They are likely to take the best versions, though, as their scenarios are rated once a week by the whole community. The rating translates to so-called EventSpace Units

(ESU), which are distributed among the contributing authors by the scenario owners. The ESUs are used to measure the contribution of a single author to the whole game.

The earning's ranking, updated weekly, is an important feedback mechanism. As teachers, we also gave our feedback to the students, for example by showing and discussing certain scenarios in the lectures. The advantage of the rating system was however, that it was outside of our control, as it reflected an entirely democratic voting process. While a bad ranking in this type of list is still not pleasant, students can accept it as an objective feedback more easily.

Control: outworld views

The control that the owners exert over their own scenarios did not only manifest itself in the rating. Essentially they were also in charge of governing the development of their part of the whole hyperdocument. Counting all the variations and versions, EventSpaces consists of almost 3500 nodes. To allow for a good control over the complexity of the emerging hyperdocument, we provided, among other things, a mapping mechanism, that displays all the works and the connections between them at once. As it can also be structured hierarchically (scenarios can be displayed as boxes or with all its individual nodes), it provides a possibility to analyze and control the connectivity and the logic of the hyperdocument in a straightforward way (figure 3). At the same time, no individual author could authoritatively change any link outside their own scenario. They could only post nodes as their suggestions and explain them with the messaging system.

Motivation and Self-regulation

EventSpaces is built on two essential underlying suppositions: firstly, that the creative development of a complex system can be done in a distributed way without a central authority and secondly that in order to function properly and efficiently and produce a satisfying result, such a distributed collaborative setting must have the proper checks and balances, i.e. means for motivation as well as self-regulation, built-in.

Motivation

The first motivation for everyone in the class is to be part of a larger enterprise that produces a good game in the end. Therefore they collaborate and discuss the project with the other authors. The second motivation is to have their name and their personal input manifest in it. This entices them to produce work that is popular among the other authors. If they are successful, they get more points for their work and more recognition in terms of authorship percentage.

Self-Regulation

Of course there are ways to beat the system. If a group decides to use the rating mechanism to give many points to themselves and none to their collaborators, this will win them many points quickly. As rating habits are transparent, though, in the long run, this habit will probably lead to a bad reputation, to fewer points and fewer collaborators for their scenario and consequently to a less favorable rating. We are essentially creating a situation not unlike the *prisoner's dilemma*, which has been explored by Axelrod [4] and Dawkins [5]: in EventSpaces, it pays to be "nice". Along these lines, students learned that reputation and responsible behavior is important in cyberspace, too. At the same time, EventSpaces was "just a game" and a bad rating didn't discourage people too much. (figure 4)

Figure 4:
EventSpaces online
community of authors,
rating by peers: authorship
percentage was distributed
democratically according
to the peer assessment in
the rating.



Evaluation

Now the proof of the pudding: Did it all work the way we expected? And of course the main question: how good a game is EventSpaces, really? To answer the second question first: We were indeed able to give a CD-ROM of the whole game to every participant at the end of the semester. However EventSpaces probably wouldn't do well on the game-market. Not surprisingly, in structure it is more a bazaar than a cathedral [6], and therefore as a game it lacks an overarching, compelling plot. It does contain a lot of beautiful, sometimes poetic, sometimes funny episodes and parts of it are truly immersive and engaging. So, if one does not expect just a game-game, but is prepared for a rather surreal journey through unexpected interpretations of the villa Savoye, one will probably find it rather entertaining. The dynamic group interaction that went into its making can be felt when playing it.

Still, we have to admit, it did not all work as we expected. For one, the messaging system was too

complicated, and didn't really support the discussion. Also the possibility to make variations in other scenarios was not taken advantage of often enough. In many places the navigation is very linear rather than complex and quite generally not consistent enough.

We nevertheless consider the class to be a success. Feedback we got from the students was positive and encouraged us to take this development further. As a matter of fact, based on the initial EventSpaces system, there are currently two follow-up projects going on: *EventSpaces II: neighborhoods* at the Harvard Graduate School of Design and *EventSpaces III: urbanity* at ETH Zürich. And naturally we've tried to address and fix what we found to be weaknesses in the new implementations.

Outlook

EventSpaces is still a work in progress. As it evolves, we feel that this project raises more questions than

it provides answers. As we push the game along, we ask ourselves: How can we build a society of ideas, all gaining strength from other ideas? And how can we cultivate the “best” solutions from the field of possibilities and constraints?

EventSpaces allows diverse forms of exchanging ideas and encourages partners to build on each other’s insights and contributions. It provides new means to make design processes transparent and coherent, to augment group negotiation and to foster a collective intelligence [7], so as to integrate diverse concepts and requirements into a single composition.

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