JOSEPHINE ANSTEY AND DAVE PAPE

Title  The Trial The Trail

Genre  Immersive Virtual Reality Drama with Intelligent Agents

Applicant’s Role in Production

Production Format  Anstey and Pape are responsible for all creative and technical work for the interactive narrative and virtual environment. They are collaborating with Stuart Shapiro to research and develop the intelligent agents.

Brief Project Description  (do not exceed space given below)

The Trial The Trail is an immersive virtual reality (VR) experience designed to engage the user as a central protagonist in a compelling interactive drama. It is designed for a projection-based, 3-D stereo VR display with one large screen or multiple screens forming a virtual theater. Immersive VR puts the user inside the virtual world with the other characters rather than outside, viewing the world on a monitor and manipulating an avatar of herself. This collaborative project brings together artificial intelligence and visualization research with the goal of creating intelligent actor-agents and interactive, dramatic, virtual reality experiences.

Our interactive drama is designed to create an unfolding story around the user which the agents establish, populate, maintain and influence. We build our VR dramas using a two part structure; a psychological substrate where we explicitly determine the emotional states we want to evoke in the user; and an implementation level with three elements - an interactive script, a smart set, and actor-agents - that turns the psychological plot into a dramatically evolving series of responsive conundrums for the user.

The Trial The Trail will be a 15-20 minute experience, during which the user is immersed in computer generated imagery. The images change in real time as the user navigates through the virtual environment. Ideally the piece will be shown to one person at a time, so that they are not intimidated by an audience watching how they interact. The psychological terrain of The Trial The Trail is the handling of uncertainty and the nature of trust, with respect to other people and to life itself. The Trial The Trail has three main characters, two intelligent agents and the user, which allows us to investigate behavior triggered by triangular relationships such as two characters ganging up against one; changing allegiances; betrayals. The overall story is a warped quest narrative owing inspiration to Tarkovsky’s Stalker, Alice Through the Looking Glass, Monty Python and the Holy Grail, Don Quixote. The user is given two companions, the actor-agents Filopat and Patofil and told that at the end of her experience she will get her heart’s desire. Imagine embarking on a guided journey through this warped yet familiar landscape. As you proceed your actions and interactions are logged, interpreted psychologically, and used to determine the outcome of your quest.
Josephine Anstey and Dave Pape

Title
1. "The Trial The Trail"; teaser; documentation of first user test; documentation of first demo of SnePs agents. Total duration 7:23

Year
1. The Trial The Trail is an ongoing project, submitted for the New Media Fellowship

Genre
1. Immersive Virtual Reality Drama with Intelligent Agents
2. Networked Virtual Reality Experience

Applicants' Roles in Production
1. "The Trial The Trail": Anstey and Pape are responsible for all creative and technical work for the interactive narrative and virtual environment. They are collaborating with Stuart Shapiro to research and develop the intelligent agents.
2. "PAAPAB": Anstey and Pape are responsible for all creative and technical work for this networked virtual environment. They collaborated with sound designer, Dan Neveu. Pape designed the core software Ygdrasil, which is used by all the environments in the "Virtual Reality, Networking and Collaboration" exhibit.

Original Length/Format
1. "The Trial The Trail" will be a 15-20 minute experience for one interactor. It is designed for a realtime, interactive, immersive, virtual reality environment.
2. "PAAPAB" is a spatial rather than temporal interactive piece. It is designed for a realtime, interactive, immersive, virtual reality environment, networked with similar environments, so that remote users share the same virtual space.

Color X Sound X

Sample Submission

Format VHS

Length of Cued Selection ~10 minutes

Special Information For Screening
In this documentation some images are doubled; the users are wearing 3D glasses and see this doubling as 3D stereo. The current version of the SnePs agent has a computer generated voice, but because voice generation systems cannot manage dramatic affect, for the final version we will record a large library of possible utterances for the agent and the appropriate utterance will be chosen on the fly. Please keep in mind, this is documentation of a projected system in low light conditions.
Description of Work (use an additional sheet if necessary)

1. “The Trial The Trail” is an interactive drama designed for an immersive VR system. Imagine Tarkovsky’s *Stalker*, crossed with *Alice Through the Looking Glass*, crossed with *Monty Python and the Holy Grail*. Now imagine embarking on a guided journey through this warped yet familiar landscape. As you proceed your actions and interactions are logged, interpreted psychologically, and used to determine the outcome of your quest. “The Trial The Trial” builds on our previous experience building dramatic VR, The “Thing Growing.” We are collaborating with the SNePs AI group for the implementation of the mental functions of the intelligent agents who will people the environment.

http://www.ccr.buffalo.edu/anstey/VR/THETHING

2. “PAAPAB” is a networked art application for CAVE or other projected VR display systems. A networked VR environment allows participants in different locations to share the same virtual environment. The participants see each other as avatars in the virtual environment. Since the participants are wearing tracking systems, participants can see where each other’s avatars are looking and pointing; how they are dancing; and where they are navigating. PAAPAB is a dance-floor environment inhabited by life-size puppets that are animated by the users. Users from the different remote locations can watch each other record puppets. They can also dance with each other and their puppet recordings on the dance floor. Networked VR can be used for any kind of collaborative project, where the collaborators are located on different continents, different cities or just across town. Typically high speed networks are needed to carry the necessary information between the locations.

http://www.ccr.buffalo.edu/anstey/VR/PAAPAB
Josephine Anstey and Dave Pape

Title

Year

Genre
1. Immersive Virtual Reality Drama with Intelligent Agents
2. Interactive Wall

Applicants' Roles in Production
1. "The Thing Growing": Anstey and Pape are responsible for all creative and technical work.
2. "Falling Over You": Anstey and Pape collaborated with Kathy Shiroki and Rich Cherry on the creative design; and Pape is responsible for all software and hardware implementation.

Original Length/Format
1. "The Thing Growing" is a ~15 minute experience for one interactor. It is designed for a realtime, interactive, immersive, virtual reality environment.
2. "Falling Over You" has no duration. It is a realtime, interactive, wall, which uses cameras to track multiple users who can effect the graphics by their gestures and movements about the room.

Color X Sound X

Sample Submission

Format VHS

Length of Cued Selection ~10 minutes

Special Information For Screening
In this documentation some images are doubled; the users are wearing 3D glasses and see this doubling as 3D stereo. Please keep in mind, this is documentation of projected systems in low light conditions.

Description of Work (use an additional sheet if necessary)

1. "The Thing Growing", is a work of fiction implemented in virtual reality, in which the user is the main protagonist and interacts with computer controlled characters. It was originally built for a CAVE VR system at the Electronic Visualization Laboratory between 1997 and 2000. A Japanese version was made in 2001. We believe intelligent agents are crucial elements for dramatic VR applications. The Thing was our first attempt at building a responsive character
- a manipulative creature designed to encourage the user to jump through emotional hoops. The impetus for *The Thing Growing* was a short story Anstey had been writing. In the story she wanted to explore a relationship that was cloying and claustrophobic but emotionally hard to escape. An immersive, interactive VR environment seemed an ideal medium to recreate the tensions and emotions of such a relationship.

2. “Falling Over You” Interactive Wall. This large scale, interactive video wall is a meditation, interpretation, and re-imagining of the paintings of Frank Moore, an environmental and AIDS activist. The responsive nature of this work allows the visitor to reflect on one of Moore’s main themes - the ways our interactions with the world impact the greater environment. Looking through the door, the Interactive Wall is merely a large screen in an empty room showing video footage of Niagara Falls. If you enter the room and move about in front of the screen, chemical symbols and eye-balls tumble over the falls; swarms of butterflies drift across with the spray; tourist boats and insects battle the churning waters; odd hybrids of plants and technology grow up against the current. If you get closer, the video image bounces off you and reveals a painting beneath, Moore’s "Niagara". Graphic elements are taken from Moore’s work and the visuals are accompanied by a sound recording of Niagara Falls. The interactive wall was exhibited from February 1 to April 20, 2003, at the Albright Knox Art Gallery to accompany the exhibition “Frank Moore: Green Thumb in a Dark Eden”
Artists' Statement Josephine Anstey and Dave Pape

In science-fiction stories, computers immerse human beings in virtual reality (VR) simulations that stimulate every sense, while the human engages in relationships with the avatars of other immersed humans and with embodied, disembodied or distributed artificial intelligences (AI). Ignoring techno-utopian or Luddite-dystopian arguments that coalesce around such scenes, what has moved from the realm of fiction to the actual? Human-level intelligence is still a far-off goal for the AI research community, although intelligent agents abound as enemies in video-games. In terms of virtual environments we have text-based chats; 3D graphical web-communities; and massively multi-player, on-line games. But by and large these remain in the monitor/keyboard/mouse paradigm -- the body is absent.

Our work lies outside this paradigm. We produce immersive virtual reality (VR) experiences designed for projection-based, 3-D stereo, VR displays with one large screen or multiple screens forming a virtual theater which allows the user to see her own body inside the virtual world. Michael Heim argues that projection-based VR “creates a spiral telepresence” which can deepen self-awareness, as we reiteratively move between awareness of our cyber-body encountering virtual entities and our primary body and its kinaesthetic experience. (Michael Heim Virtual Realism, Oxford University Press 1998). A complex awareness of self on both physical and psychological levels is the basis for the project we are submitting for this fellowship; a virtual reality drama populated by social and emotional intelligent agents who play with, talk to, tease, profess love and generally engage the user in relationships rather than battle. Granted, they might be dysfunctional relationships ...

As well as building VR drama with intelligent agents, we are also taking part in a ground-breaking series of networked VR exhibits where avatars of participants in the US, Europe, Asia and South America, dance, play music, and act out improvisations in shared environments which hint at the vibrant possibilities of those sensory-complete virtual dreams. Exhibits like these, though rooted in the mud of technical difficulties and in the murk of elite-access issues, convince us that immersive VR is a tremendously powerful medium for an enormous range of artistic expression. We are committed to the continuing process of actualizing VR as a viable and accessible medium by creating compelling art experiences in VR; researching and developing low-cost VR systems; pioneering software tools for artists; and supporting
a community of VR artists.

Formally we are concerned with the role of the computer in the creative process. We believe the computer should be seen as a partner and not a slave; that computer-based work should embrace and acknowledge the aesthetics of software design; that software tools should be modular, generic, re-usable, shared, empowering for artists. Yet the human must also remain a respected partner; software should enable, not constrain, the creative process.

Issues of authorship are ever-present in interactived art work, and important to both of us. Our VR drama's are strictly authored, but Anstey's background in experimental video narrative inform the processes by which we draw the user into a fully interactive stance with a responsive story. Pape's solo VR work plays with issues of art and authorship. In Vandalism users in a virtual art gallery are encouraged to paint on the walls and on the art itself, and to distort the shapes of the statues. Pape's background is in computer science and scientific visualization. He is the developer of the VR authoring system Ygdrasil which is widely used by a community of VR artists. Ygdrasil is tangible proof of his comitment to putting software tools into the hands of artists so they can author experiences in a technically complex medium.

Explorations of identity, power relationships, representations of self, mimesis, mirroring and desire surface in Anstey's work whatever the medium. Our first virtual drama, The Thing Growing, simulates a relationship between the user and an intelligent agent which is cloying and claustrophobic but hard to escape. In our networked project PAAPAB the user can animate life-size virtual puppets with a motion-capture technique. The interest lies in which puppet the user chooses to “be”. Our proposed project, The Trial The Trail, explores triangular relationships, bullying, trust, betrayal and the nature of our heart's desire.

Our creative process and working method is collaborative and iterative. We are currently working with AI researchers using the SNePS system to develop sophisticated actor-agents for The Trial The Trail. The goal of our VR drama is to engage the user's emotions as the driver of a narrative arc. We pre-plan an ideal arc; test the result with users and watch how they respond; program responses to their responses; and test again. Flexible prototyping and alteration of the experience is made possible by the Ygdrasil authoring system.
The Trial The Trail is an immersive virtual reality (VR) experience designed to engage the user as a central protagonist in a compelling interactive drama [1]. It is designed for a projection-based, 3-D stereo VR display with one large screen or multiple screens forming a virtual theater [2]. A tracking system and wand, with joystick and programmable buttons, create the interface between the user and the virtual environment (VE). Immersive VR puts the user inside the virtual world with the other characters rather than outside, viewing the world on a monitor and manipulating an avatar of herself. In a projection-based system this integrated feeling is heightened as the user automatically uses her own real body to judge the physical proximity, scale and size of any virtual object including computer controlled characters.

We build our VR dramas using a two part structure; a psychological substrate where we explicitly determine the emotional states we want to evoke in the user; and an implementation level with three elements - an interactive script, a smart set, and intelligent agents - that turns the psychological plot into a dramatically evolving series of conundrums that the user is faced with [3]. As a play depends on the interrelationship of script, set design, and actors to communicate, so meaning assembles around the user through the co-dependent working of the three responsive elements - the interactive script, smart set, and intelligent agents. The strategy of using a psychological substrate as the underlying driver for drama has a substantial proponent in Alfred Hitchcock. He explicitly prioritized the psychological, basing his scripts around an emotionally fraught theme. He made famous the concept of the MacGuffin, a plot pretext that supplies a narrative framework of cause, effect and continuing choice to illustrate his characters' psychological development (or unravellings!) [4]. In our case, the implementation level with its three elements make up our “interactive McGuffin.”

The psychological domain of The Trial The Trail is the handling of uncertainty and the nature of trust, with respect to other people and to life itself. The Trial The Trail has three main characters, two intelligent agents and the user, which allows us to investigate behavior triggered by triangular relationships; two characters ganguing up against one; changing allegiances; betrayals. The overall McGuffin is a warped quest narrative owing inspiration to Tarkovsky's Stalker, Alice Through the Looking Glass, Monty Python and the Holy Grail, Don Quixote. The user is given two companions, the actor-agents
Filopat and Patofil and told that at the end of her experience she will get her heart's desire. A first draft implementation and user-test of The Trial The Trail, showed that it was too literal; it did not stimulate the psychological questions (handling uncertainty, placing trust) we were interested in [5]. We needed a more ironic and questioning take on quests, goals versus journeys, the real desirability of attaining one's heart's desire, to come through. The test led us to restructure the interactive McGuffin to contain an explicitly theatrical metaphor which acts as a transition between stages of the quest, and creates a series of entre-actes.

Visually this translates into two major elements, a curtained stage where the companions explain each part of the quest, and, as the curtain rises and stage flats fly out of sight, an endless vista of the fantasy landscape where the quest itself takes place. The stage, and the banter of the companions when they are on the stage, refer to the over-genial charm of music halls, English pantomimes, game shows. The artifice and theatricality of the endeavor are forefronted, in order to answer the cynic's presumption that she will not get her heart's desire. By contrast, when the curtains are raised the user moves into a fairy-tale landscape in which wishes may come true. This space displaces the stage, yet it hints at interior space. Here Freud and Dali meet Alice in Wonderland. The user is offered the chance to move between immersion in the task at hand, giving full rein to the feelings that brings up, and observation of herself.

As we develop this project we are actively engaging in the current, rich discourse around the possibility and mechanisms for creating interactive fiction [6, 7]. The challenge for interactive fiction is that of handling the complexity of having a completely free agent - the user - as a central element of a story. Like others we have developed a strategy of dividing the story into scenes and maintaining authorial control over the overall arc of the narrative in order to maintain dramatic tension. Working in a VR environment and concentrating on detecting and stimulating the user's emotions make our work unusual. The narrative strategy of psychological substrate and interactive McGuffin is our intellectual contribution to this area of inquiry. Our theoretical work is tightly coupled with our practice, it developed during the production and exhibition of our first VR drama, The Thing Growing, and continues to evolve [8, 9, 10].

Using intelligent agents for interactive narrative is considered by many, including ourselves, to be a sine qua non. However, how one defines story, interactive story, and the dramatic strategies needed in this enterprise, effect how the intelligent agents are constructed. We are collaborating with Stuart Shapiro and
using his SNePs AI system for our agents [11,12,13]. SNePs is a knowledge representation and reasoning system. SNePs agents have been developed that interact in natural language with a user. At present, and this is the case for all AI systems, that interaction if very constrained. However, we believe that using a system that is designed to cope with natural language is clearly a good choice for actor-agents in general, especially future generations of these agents. We expect the actor-agents in The Trial The Trail to be important prototypes and we are designing them so that within the constraints of our dramatic scenarios they will appear to have human level intelligence. We believe that this work contributes to one of the hardest AI questions, that of constructing agents that can fully use language.

The Trial The Trail will be a 15-20 minute experience, during which the user is immersed in computer generated imagery. The images change in real time as the user navigates through the virtual environment. Ideally the piece will be shown to one person at a time, so that they are not intimidated by an audience watching how they interact. We will close this project narrative with a description of an ideal user's progress through a fragment of the project; a three part scenario which demonstrates how we hope to move her through a series of emotional states. In part one Patofil and Filopat bring the user to a reed-bed where cat-like creatures are playing, and tell her to collect the crowns they are wearing. They show her she must creep up on a creature, crooning softly, then stroke it gently as she takes the crown. We detect whether she is successful or unsuccessful, gentle or rough. In part two one of the cat creatures exhibits surprising behavior, clinging to the user and weeping if she tries to get away. We detect how the user treats this clinging creature - does she beat it, does she stay with it? This result is used in part three where the companions comment on the user's actions. At the start of this sequence the user is fairly happy. In part one she is moved to a sense of accomplishment and superiority over the dumb creatures who she is essentially tricking into giving up their crowns. This is followed by the reversal in part two where we aim to elicit feelings of guilt, discomfort, annoyance. Then in part three, the user overhears the companions judging her actions. If, for example, she pulled abruptly away from the clinging and wailing creature, Filopat will condemn her cruelty; if she is unable to get away from it, he will laugh at her wimpiness. Patofil will defend her. In this fragment, we are trying to perturb the user and to put her into an alliance with the agent Patofil.
References


VR Display System

A project goal is not just to produce a VR drama but to show it widely, but there are few venues with VR facilities. We therefore need to put together our own equipment so that the finished VR drama can become a traveling exhibit.

Software Licenses

The SnePS AI system is built using Allegro Lisp and the Ygdrasil VR authoring system is built using OpenGL Performer, we therefore need these licenses for production and exhibition of the work.

Personnel

We are asking for funds to support additional personnel to work on 3D modeling and sound design for the VR environment. We are asking for funds to support an administrative assistant to help with the organization of the final stages of the project. This will include working on grants to the NEH, NEA, NYSCA and NYFA for finishing funds and exhibition support; and liaising with galleries and museums in order to propose the traveling exhibit for their calendars. We have good relations with the Ars Electronica Center in Linz Austria which has a projection-based VR system. We will propose to them that the project makes its European premier at their center at their 2006 Festival in September 2006. We have also been consulting for the Art Museum of Western Virginia which is planning to put a VR display in a new building. We will propose that we make the American premier of this work there.
# The Trial The Trail Budget

## Award Amount

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>VR Display System</td>
<td>35000</td>
</tr>
</tbody>
</table>

## Expenditures

<table>
<thead>
<tr>
<th>#</th>
<th>Item</th>
<th>Amount</th>
<th>Subtotal</th>
</tr>
</thead>
<tbody>
<tr>
<td>VR Display System</td>
<td>Polarizing Preserving &quot;Disney Black&quot; Screen 10’x8’ plus frame</td>
<td>4000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Graphics PC</td>
<td>2500</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Audio PC</td>
<td>1000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DLP Projectors</td>
<td>4000</td>
<td>8000</td>
</tr>
<tr>
<td></td>
<td>Polarizing Filters</td>
<td>100</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>Polarizing Glasses</td>
<td>25</td>
<td>250</td>
</tr>
<tr>
<td></td>
<td>Tracking System with wand</td>
<td></td>
<td>4000</td>
</tr>
<tr>
<td></td>
<td>Sound Mixer</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Speakers</td>
<td>300</td>
<td>1200</td>
</tr>
<tr>
<td></td>
<td>misc cables, network hub etc</td>
<td></td>
<td>300</td>
</tr>
<tr>
<td>Software Licenses</td>
<td>Allegro Lisp Linux License</td>
<td>5000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OpenGL Performer Linux License</td>
<td>500</td>
<td>5500</td>
</tr>
<tr>
<td>Personnel</td>
<td>Modeler (3D)</td>
<td>2500</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sound Designer</td>
<td>2500</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Administrative Assistant</td>
<td>2000</td>
<td>7000</td>
</tr>
<tr>
<td>Office Expenses</td>
<td></td>
<td>550</td>
<td></td>
</tr>
<tr>
<td><strong>Total Expenditure</strong></td>
<td></td>
<td></td>
<td>35000</td>
</tr>
</tbody>
</table>
CURRICULUM VITAE

Josephine Anstey
Department of Media Study,
University at Buffalo

http://www.ccr.buffalo.edu/anstey

Professional Experience

Assistant Professor, Department of Media Study (DMS), University at Buffalo, 2000 - present

- Courses: virtual reality (VR) production, interactive media analysis.
- Curriculum development: "digital" component of Media Studies BA, MAH and MFA degrees
- Facilities development: immersive VR studio & linux lab for students studying realtime, interactive computer graphics.

Research Assistant, Electronic Visualization Laboratory (EVL), UIC, 1996-2000

- Participant and/or organizer of EVL's VR demonstrations and exhibitions for international conferences including SIGGRAPH, SuperComputing, Ars Electronica Festival, MediaArtech, ISEA, iGrid
- Webmistress for EVL website. Responsible for site content and administration. Documented VR research in scientific visualization and art.

Freelance Producer/Writer 1986 - 1995
Teaching Assistant, Department of American Studies, UB, 1982-1984.

Professional Activities

Virtual Reality Art and Research, 1995 - present

- 1995- Present: Creation of Interactive Drama in VR, "The Trial The Trail," (current), "The Thing Growing" (1997-2001). I am currently working on the development of intelligent agents to serve as actors for these dramas with the SNePS AI group.
- 2001 – Present: Collaboration on a series of ground breaking networked VR art exhibitions, viewed simultaneously by audiences in the US, Europe, South America and Japan. Development of networked art piece "PAAPAB" for these exhibitions.
- Other VR related art collaborations include: interactive wall installation, "Falling Over You" (2003), networked VR cultural heritage project "Shared Miletus," (coordinator/programmer, 2000); virtual reality experience "The Multi-Mega Book in the CAVE" (coordinator/programmer 1996-7).
- VR projects involving scientific visualization and industrial application include, "Enhancing Crystal Structure Determination through Data Mining, Collaborative Environments, and Grid Computing" (2002-3), "Interactive welding application" for Fronius, an Austrian welding company (1997)
- Research on low-cost VR solutions, development of Low Cost VR System for the
Department of Media Study, UB, and use of system to direct the creation of VR art projects by UB Students.

- Artist in Residence, Ars Electronica Center (AEC), Linz, Austria, May- Aug 1997

**Video Art, Prose Fiction, Documentary, 1983 - present**

- 1994: Produced a 30 minute documentary on BlackFeet Women Forest Fire Fighters which aired on NPR's Horizons, “Battling the Heat:BlackFeet Women Fire Fighters.” Produced a five minute report of the same material which aired on the BBC's Woman's Hour, "BlackFeet Firewomen". 1994

**Computer Graphics and VR Research Community Activities**

- Juror, Medi@terra 2002, judging the Best Project in the Artificial Entities Category, Athens, Greece, Dec 2002
- Panel Chair, SIGGRAPH 2001, The CAVE and Beyond: VR Art in Museums and Galleries, LA, CA, Aug 2001
- Panel Chair, SIGGRAPH 1998, Chair of the Interactive Installations Panel, Gallery Talks, LA, CA, Aug 1998

**Education**

- **Master of Fine Arts** in Electronic Visualization, University of Illinois at Chicago (UIC), 2000
- **Master of Arts** in American Studies/Women's Studies, University at Buffalo, State University of New York, 1986
- **Bachelor of Arts (hons)** in English Studies, University of East Anglia, Norwich, England, 1977

**Grants & Awards**

- **IRCAF Grant:** "Virtual Drama with Intelligent Agents," University at Buffalo, PI, 2003
- **Young Investigator Award:** Exceptional Scholars Program, University at Buffalo, 2003
- **NSF Award 0204918:** ITR: Enhancing Crystal Structure Determination through Data Mining, Collaborative Environments, and Grid Computing, Co-PI, 2002-3
- **Faculty Development Grant:** Awarded Education Technology Grant, by the Faculty Development Committee of the University at Buffalo, 2001
• **Foreign Title Award**: "The Multi Mega Book in the CAVE," in the Theatre and Exhibition Section of Multimedia Grand Prix '97, Multimedia Content Association of Japan, 1997

• **University Fellowship**: University of Illinois at Chicago, 1995-1997

• **Second Prize**: "Uh-Oh", 6th International Video Festival, Cultural Council of the City of Vigo, Spain, 1995

• **Chelsea Award for Short Fiction**: "Dwayne Loves Johnny Coggio", 1994

• **Best Dramatic Video**: "The Bus Stops Here", 15th Annual Atlanta Film & Video Festival, 1991

• **Best Experimental Video**: "Let's Play Prisoners", 13th Annual Atlanta Film & Video Festival, 1989

• **Grand Prize**: "Let's Play Prisoners", Black Maria Thomas Edison Film & Video Festival 1989
Publications


Anstey, Josephine, Dave Pape, Stuart C. Shapiro, Vikranth Rao "Virtual Drama with Intelligent Agents", in the proceedings of the Ninth International Conference on Virtual Systems and Multimedia (VSMM 2003), Hybrid Reality: Art, Technology and the Human Factor, Montreal, Canada, Oct 15-17 2003, pp 521-528


Anstey, Josephine, Dave Pape, “The Trial The Trail: Building a VR Drama” in the proceedings of TIDSE 2003, 1st International Conference on Technologies for Interactive Digital Storytelling and Entertainment, Darmstadt, Germany, March 24 - 26, 2003 pp 394-402


Pape, Dave, Josephine Anstey, Bryan Carter, Maria Roussou, Tim Portlock, “Virtual Heritage at iGrid 2000" in the Proceedings of INET 01 The Internet Global Summit, Stockholm, Sweden, 5-8 June 2001


Anstey, Josephine, Dave Pape, "The Thing Growing" Ylem Newsletter, July/August 1999, pp. 5-6


Anstey, Josephine, "We Sing the Body Electric: Imagining the Body in Electronic Art," Feature Article in Leonardo Electronic Almanac, Vol. 6 # 4, May 15, 1998


Anstey, Josephine, Alan Cruz, Soyon Park, Joeffrey Trimmingham, "De Minderheid Voorbij?," Ruimte Kunstmagazine, jaargang 13, Amsterdam, April 1996


Anstey, Josephine, "Interview with Claudine Booth: Black Cable TV," The Squealer, Buffalo NY March 1987, and FX: Women's Film and Video Bulletin, London, Spring 86,

Selected Reviews


Donovan, Patricia, "Avatars, EVL and ghosts," The Reporter, University at Buffalo Vol 33, No. 3, November 2001


Sacristan, Alejandro, "MediaArtech 1999," PCMania, No 83, September 1999, Madrid,

Sacristan, Alejandro, "EVL, La Meca de la Realidad Virtual en Estados Unidos," PCMania, Segunda Epoca, Ano IX, No 6, Madrid, pp 92-94


Straayer, Chris, Deviant Eyes, Deviant Bodies, Columbus University Press, New York, 1996, pp. 121-124


Taubin, Amy, "Voice Choice," The Village Voice, February 1, 1994


Chris, Cynthia, "Girlfriend," AfterImage, April 1989
Exhibitions

Permanent Collections

"PAAPAB" & "The Multi Mega Book in the CAVE," Ars Electronica Center, Linz, Austria


"The Bus Stops Here," & "Let's Play Prisoners," Centro d'Arte Reina Sofia, Madrid, Spain

"Let's Play Prisoners," The Long Beach Museum, Long Beach, California

Selected Exhibitions

"PAAPAB" Networked VR Presentation, V_Hive, at the Virtual Worlds Festival, the Seventh Symposium on Virtual Reality (SVR), Sao Paulo, Brazil, October 19-22, 2004, (networking between Sao Paulo, Buffalo, Indiana, Chicago & Stockholm)

Organised VR, Networking and Collaboration and exhibited “PAAPAB” Networked VR Presentation (networking between Buffalo, Indiana and Chicago) ; and Experimental scenes from “The Trial The Trail", VR with AI agents, at Networks, Art and Collaboration Conference, Buffalo, NY 24-25 April 2004

"PAAPAB" Networked VR Presentation, SPIE: The Engineering Reality of Virtual Reality 2004 Conference, San Jose, CA, 22 January 2004 (networked between San Jose, Buffalo, Indiana and Chicago)


"The Thing Growing" and "The Trial The Trail", VR Micro Theater, VR Presentation and User Test, Hallwalls Contemporary Arts Center, Buffalo NY, June 7-21, 2003


"Depth Cues" Produced VR presentation of student artwork, Squeaky Wheel, Buffalo, NY, 19 April 2003

"Falling Over You" Interactive Installation, Albright Knox Art Gallery, Buffalo, NY, 1 February - 20 April 2003

"PAAPAB" Networked VR Presentation, Stockholm ArtFair, Stockholm, Sweden, 6-9 March 2003 (networked between Stockholm, Buffalo, and Chicago)

"PAAPAB" Networked VR Presentation, en.red.ando's III One Day Conference, Barcelona, Spain, 31 January 2003 (networked between Barcelona, Buffalo, Chicago,
and Umea, Sweden)

"The Thing Growing," "PAAPAB" VR Presentation. Medi@terra 2002 conference, Athens, Greece, 9 December 2002

"The Apparent Trap," Video, Consolidated Works, Seattle, November 8-9 2002

"PAAPAB," Networked VR Presentation, IGrid 2002, Amsterdam Science & Technology Centre, Amsterdam, September 2002 (networked between Amsterdam, Buffalo, Chicago, Urbana IL, and Bloomington IN)

"PAAPAB," VR presentation, Pier Pleasure, Hallwalls Contemporary Arts Center Fundraiser @ The Pier, Buffalo, NY July 2002

"The Trial, The Trail" & "Virtual Tales" VR presentations, The Virtual and the Concrete, Hallwalls Contemporary Arts Center, Buffalo NY, May 2002


"PAAPAB," Networked VR presentation, EVL: Alive on the Grid, Ars Electronica Festival, Austria, Sept. 2001

"The Thing Growing," VR presentation, The Adventure of CAVE: Seven Programs from EVL, University of Illinois at Chicago, NTT InterCommunication Center, Tokyo, June 2001

"The Thing Growing," VR presentation, Eves - Virtual Reality Art Environments in the CAVE®, Electronic Visualization Laboratory, UIC, Chicago, March 2001


"The Thing Growing," VR presentation for the Special Guests of Robert Ebert's Overlooked Film Festival, National Center for Supercomputing, Champaign-Urbana, April 2000

"The Apparent Trap," Video, Camp Fire, Pratt Institute Film Series, Brooklyn, NY, April 26, 2000
"The Thing Growing," VR presentation at Dan Sandin Visiting Artist Lectures, Santa Fe Art Institute, Santa Fe, April 2000

"The Thing Growing," VR presentation, Electronic Visualization Laboratory, UIC, Chicago, March 2000


"The Thing Growing" VR presentation, EVL@ARS, Ars Electronica Festival 99: Life Science, Linz, Sept. 1999


"The Thing Growing," VR presentation, After Hours, Walker Art Center, Minneapolis, April 1998


"The Multi Mega Book in the CAVE," VR presentation, Virtual Spaces, ISEA 97 Allied Event, Gallery 400/Electronic Visualization Laboratory, University of Illinois at Chicago, Chicago, Sept. 1997

"The Multi Mega Book in the CAVE," VR presentation, Electric Garden, SIGGRAPH 97, Los Angeles, July 1997


"Recent Experimental Feminist Video," Video, 911 Media Arts Center, Seattle, April 1995

"Festival International de Video Cidade de Vigo," Video, Vigo, Jan/Feb 1995


"Blackfeet Fire-women," Radio, Woman's Hour, BBC's, radio 4, Aug 1994

"Retrospective," Video, American Film Institute, Washington, Feb 1994

"Uh-Oh," Video, Video Premieres, Museum of Modern Art, New York, Jan 1994

"Retrospective," Video, Lookout Festival, Downtown Community Television, New York, Nov. 1993


"Videos on the Self," Finnish National Gallery, Helsinki, Finland Sept. 1992


"The Essayistic in Film and Video," Los Angeles Contemporary Exhibitions, Los Angeles March/April 1989

Presentations

Course "Commodity Based Projection VR," with Dave Pape, Bill Sherman, SIGGRAPH 2004, Los Angeles CA, August 9, 2004

Workshop "VR for Public Consumption," organized with Dave Pape, Maria Roussou, VR 2004, Chicago IL, March 2?, 2004

Invited talk "Virtual Reality at Work and Play," with Dave Pape at Vassar College, Poughkeepsie, NY, September 12, 2003

"The Role of Computers in Media, Art and Entertainment," Speaker, Erie 1 Boces Challenge Seminar, UB, Buffalo, NY, March 18, 2003

"Cheap New Worlds: Immersive VR - an emerging platform for Artists" Panel Member, "Virtual Reality, Questioning the "Real" in Today's Virtual World," Medi@terra.02: New Platforms, Athens, Greece, Dec 6-9 2002

"Lecture and Demonstration on Immersive Virtual Reality," with Dave Pape, Vassar College, Poughkeepsie, NY, November 23rd 2002 (first version of "Cheap New Worlds" presentation)

"Building an Affordable Projective, Immersive Display," with Dave Pape, Educators Workshop at SIGGRAPH 02, San Antonio, TX, July 21-26

"VR Seminar/Workshop" with Dave Pape, The Interactive Institute, Umeo, Sweden, June 12, 2002

"Virtual Tales: Building VR Art Projects," Crossing Digital Boundaries, A Digital Media Symposium, University at Buffalo, Buffalo, NY, April 19-20, 2002

"Building Immersive Environments", with Dave Pape & Maria Roussou, Workshop at MCN/CIMI, Los Angeles, CA, 24-27 October, 2001

"The CAVE and Beyond: VR Art in Museums and Galleries" with Donna Cox, Horst Hortner, Dan Sandin, Paul Sermon, Jeffrey Shaw, Panel at SIGGRAPH 2001, Los Angeles, CA, 12-17 August, 2001

"Dan Sandin Visiting Artist," Co-presenter at Sandin's VR lectures and Workshop, The Santa Fe Art Institute, Santa Fe, NM, April 5-7, 2000


"ImmersaDesk VR," Presentations to student groups of VR hardware and applications at the Walker Art Center, Minneapolis, April 1999

"VR Workshop," Presenter at VR workshop organized by Dan Sandin and the Museum of Contemporary Art, at the Electronic Visualization Laboratory, UIC, Fall 1997

"Queer Collaboration," Panelist at the Society for Photographic Education Conference, Chicago, IL 1994


"Teaching Collectively," Presentation at the 1984 Women's Studies Conference, CUNY Graduate Center, NYC, 1984
David E. Pape

Education

2001  Ph.D. Electrical Engineering & Computer Science, University of Illinois at Chicago
       Dissertation: "Composing Networked Virtual Environments"

1990  M.S. Computer Science, Rensselaer Polytechnic Institute
       M.S. Project: "XGP Graph Drawing Tool"

1988  B.S. Computer Science, Rensselaer Polytechnic Institute (summa cum laude)

Employment

8/03-present  Department of Media Study, University at Buffalo. Assistant Professor

8/02-8/03  Department of Media Study, University at Buffalo. Research Professor
           Creating commodity-PC-based virtual reality studio. Lecturing on computer graphics and virtual reality.

1/01-8/03  Freelance consultant
           Virtual reality software development for artists and museums, and custom visualization production.

8/94-7/01  Electronic Visualization Laboratory, UIC. Research Assistant
           Developed and maintained software for CAVE application programming. Created various technical and artistic CAVE applications. Assisted in development of projection-based virtual reality displays. Taught seminars in VR programming.

8/97-9/97  Ars Electronica Center, Linz, Austria. Artist in Residence
           Production work for Franz Fischnaller's Multi-Mega Book in the CAVE.

8/93-5/94  EECS Department, UIC. Teaching Assistant
           Taught recitation classes for Introduction to Programming Languages.

9/86-8/96  NASA/Goddard Space Flight Center. Computer Engineer
           Worked in Scientific Visualization Studio, creating visualizations for earth and space scientists at Goddard. Also worked in high performance computing branch, on support software for MPP and MasPar supercomputers.

9/88-5/90  Computer Science Department, RPI. Teaching Assistant
Professional Activities

Association for Computing Machinery member
SIGGRAPH member
IEEE Computer Society member
Workshop organizer, "Virtual Reality for Public Consumption", IEEE Virtual Reality 2004
iGrid 2000 Organizing Committee, iGrid 2000 Research Exhibit, INET 2000
Information Architecture Committee (GI1 Testbed), Supercomputing '95
VROOM Committee, SIGGRAPH '94

Honors & Awards

1997 Foreign Title Award in Theater and Exhibition, Multimedia Grand Prix '97 (Tokyo) for *Multi-Mega Book in the CAVE*
1993-1995 UIC University Fellowship
1993 NASA/GSFC Exceptional Achievement Award
1993 NASA/GSFC Space Data and Computing Division Peer Award
1989 2nd place team, ACM National Scholastic Programming Contest
1987 Member Pi Mu Epsilon honorary society.

Grants

11/03 - University at Buffalo IRCAF grant "Virtual Drama with Intelligent Agents"; Co-PI
10/04 - NSF ITR grant "Enhancing Crystal Structure Determination through Data Mining, present Collaborative Environments, and Grid Computing"; Co-PI

VR and Installation Works

Crayoland
Virtual reality environment; 1995
Role: entire production
Exhibitions:

- Electronic Visualization Event 4 [EVE4] (Chicago, IL, May 1995)
- SGI booth, South African Computer Faire & Bexa (Johannesburg, South Africa, May 1996)
- NLANR booth, EDUCAUSE National Meeting (Long Beach, CA, 26-29 Oct 1999)
- Tech Town, Illinois State Fair (Springfield, IL, Aug 2000)
- Brain: The World Inside Your Head (Washington, DC, 1 July 2001 - 6 January 2002)
  (Portland, OR, 26 January - 5 May 2002)
  (Atlanta, GA, 1 June - 15 September 2002)
  (Cleveland, OH, 5 October 2002 - 5 January 2003)
  (Indianapolis, IN, 25 January 2003 - 4 May 2003)
  (Queens, NY, 24 May 2003 - 7 September 2003)
  (Detroit, MI, 27 September 2003 - 4 January 2004)
  (St. Louis, MO, 31 January 2004 - 2 May 2004)
(Kansas City, MO, 22 May 2004 - 6 September 2004)

- ArsBox, SIGGRAPH 2002 Emerging Technologies (San Antonio, TX, 21-26 July 2002)

In the permanent collection of Ars Electronica Center, Linz, Austria

Vandalism
Virtual reality environment; 1996
Role: entire production
Exhibitions:

- Digital Bayou & The Bridge, SIGGRAPH '96 (New Orleans, LA, Aug 1996)
- Ars Electronica Festival '96 (Linz, Austria, Sep 1996)
- Total Museum Conference '96 (Chicago, IL, Oct 1996)

In the permanent collection of Ars Electronica Center, Linz, Austria

Mitologies
by Maria Roussou and Hisham Bizri
Virtual reality environment; 1997
Role: lead software architect
Exhibitions:

- Maria Roussou MFA show (Chicago, IL, 1997)
- Virtual Spaces, ISEA '97 (Chicago, IL, Sep 1997)
- ThinkQuest '97 (Washington, DC, 20-24 Nov 1997)
- Mediartech '98 Virtuality & Interactivity (Florence, Italy, 26-29 Mar 1998)
- Digital Pavilions, SIGGRAPH '98 (Orlando, FL, 19-24 Jul 1998)
- Ars Electronica Festival '98 (Linz, Austria, Sep 1998)
- Art Futura '98 (Seville, Spain, 8-11 Oct 1998)
- Mediarterra '99 (Athens, Greece, 10-12 Dec 1999)
- Mediarterra 2002 (Athens, Greece, 9 December 2002)

In the permanent collection of Ars Electronica Center, Linz, Austria

Multi-Mega Book in the CAVE
by Franz Fischnaller
Virtual reality environment; 1997
Role: lead software architect
Exhibitions:

- Electric Garden, SIGGRAPH '97 (Los Angeles, CA, Aug 1997)
- Ars Electronica Festival '97 (Linz, Austria, Sep 1997)
- Virtual Spaces, ISEA '97 (Chicago, IL, Sep 1997)
- Art Futura '97 (Madrid, Spain, 15-19 Oct 1997)
- Imagina '98 (Monte Carlo, Mar 1998)
- Mediartech '98 Virtuality & Interactivity (Florence, Italy, 26-29 Mar 1998)
- Art Futura '98 (Seville, Spain, 8-11 Oct 1998)
- Mediartech '99 Virtuality & Interactivity II (Florence, Italy, 26-30 May 1999)
- Mediarterra '99 (Athens, Greece, 10-12 Dec 1999)

In the permanent collection of Ars Electronica Center, Linz, Austria
The Thing Growing
by Josephine Anstey & Dave Pape
Virtual reality environment; 1998-2000
Role: co-designer, software architect
Exhibitions:

- After Hours, Walker Art Center, (Minneapolis, MN, Apr 1998)
- Digital Pavilions, SIGGRAPH '98 (Orlando, FL, 19-24 Jul 1998)
- Second Nature, Ukrainian Institute of Modern Art (Chicago, IL, 13 May 1999)
- Mediartech '99 Virtuality & Interactivity II (Florence, Italy, 26-30 May 1999)
- Electronic Schoolhouse, SIGGRAPH '99 (Los Angeles, CA, 8-13 Aug 1999)
- Ars Electronica Festival '99 (Linz, Austria, 9 Sep 1999)
- Josephine Anstey MFA show (Chicago, IL, 9-10 Mar 2000)
- Dan Sandin - Visiting Artist Lectures, Santa Fe Art Institute (Santa Fe, NM, 6-11 Apr 2000)
- immedia 1901 (Ann Arbor, MI, 8-18 Feb 2001)
- Electronic Visualization Event 5 [EVE 5] (Chicago, IL, 1-3 Mar 2001)
- The Adventure of CAVE, NTT InterCommunication Center (Tokyo, Japan, 22 Jun - 29 Jul 2001)
- Mediaterra 2002 (Athens, Greece, 9 December 2002)

Historiae Naturalis
Virtual reality environment; 1999
Role: entire production
Exhibitions:

- Second Nature, Ukrainian Institute of Modern Art (Chicago, IL, 13 May 1999)
- Electronic Schoolhouse, SIGGRAPH '99 (Los Angeles, CA, 8-13 Aug 1999)
- Ars Electronica Festival '99 (Linz, Austria, 9 Sep 1999)

PAAPAB
by Josephine Anstey & Dave Pape
Virtual reality environment; 2001
Role: co-designer, software architect
Exhibitions:

- Ars Electronica Festival 2001 (Linz, Austria, 1-6 Sep 2001)
- Chicago Artists' Month - Alternate Currents (Chicago, IL, 27 October 2001)
- Digital Frontier: The Buffalo Summit (Buffalo, NY, 2-3 November 2001)
- Immedia 2002 (Ann Arbor, MI, 8-18 February 2002)
- Pier Pleasure (Buffalo, NY, 19 July 2002)
- iGrid 2002 (Amsterdam, The Netherlands, 23-26 September 2002)
- en.red.ando's III One Day Conference (Barcelona, Spain, 31 January 2003)
- Stockholm Art Fair (Stockholm, Sweden, 6-9 March 2003)
Falling Over You
by Dave Pape, Josephine Anstey
Interactive computer installation; 2003
Role: co-storyboard, all programming
Exhibited at Albright Knox Art Gallery, Buffalo NY, 1 February - 20 April 2003

Theatrum Orbis Terrarum
Computer graphics installation; 2003
Role: entire production
Exhibited in "Depth Cues", Squeaky Wheel, Buffalo NY, 19 April 2003

The Trial The Trail
by Josephine Anstey & Dave Pape
Virtual reality environment; in progress, 2003-4
Role: co-designer, software architect
Exhibitions:
- Hallwalls Contemporary Art Center (Buffalo, NY, 7-21 June 2003)
- Networks, Art, and Collaboration (Buffalo, NY, 24-25 April 2004)

Kites Flying In and Out of Space
by Jackie Matisse
Virtual reality environment; in progress, 2003-4
Role: software architect
Exhibited at "Nicephore Days", Chalon-sur-Saone, France, 20-23 November 2003

Videos & Animations
- Pape, D. "Massively Parallel Computation at NASA Goddard." Video Theater, Supercomputing '92
- NASA/GSFC. "Images of Earth and Space: The Role of Visualization in NASA Science", [various animations]
- United States Geological Survey. "National Spatial Data Infrastructure." [various animations]

Publications
• Anstey, Josephine, Dave Pape, Stuart Shapiro, Vikranth Rao. "Virtual Drama with Intelligent Agents", Ninth International Conference on Virtual Systems and MultiMedia, Montreal, Quebec, Canada, October 15-17, 2003.


• Imai, Tomoko, Andrew E. Johnson, Jason Leigh, David E. Pape, Thomas A. DeFanti. "VR Mail System", Correspondences on Human Interface, Vol. 1 No. 4,


Presentations

- "CAVE @ ARS: Special Interest Group on HighEnd VR Systems" workshop, Linz, Austria, 16 September 1998.
- "Walking in Cyberspace", Ars Electronica Festival workshop, Linz, Austria, September 1996.