Building Cuthbert Hall Virtual College as a Dramatically Engaging Environment

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ABSTRACT

This paper outlines the interdisciplinary nature, collaborative work patterns and role of aesthetics in the *Cuthbert Hall Virtual College* research project at the Cambridge University Moving Image Studio (CUMIS) and the Centre for Applied Research in Education Technology (CARET). The project identifies key properties of dramatically engaging real-time three-dimensional virtual environments (RT 3D VE) and how the holistic experiential phenomenon of place is organised and mediated through spatial narrative patterns. Interdisciplinary by nature, the project requires a collaborative approach between science, engineering, media and architecture, and the results are revealing for all these areas. The *Cuthbert Hall* project invites discussion of the importance in the creation and use of RT 3D VE's - under single and multi-user conditions - of articulate aesthetics (the quality of architectural, visual and audio design; the production and incorporation of dramatic properties) and of the conditions required for collaborative, communicative use of the environment.

The full theoretical and technical discussions as well as the evaluation results are outside the scope of this submission.

Keywords

Real-time virtual environment, computer game, place, architecture, mediation, narrative, expressive space

VIRTUAL CUTHBERT HALL PROJECT
Assumptions and Concepts

The *Cuthbert Hall* project proposes that 'place', a fundamental archetype of human consciousness [1] and a holistic experiential phenomenon that is irreducible to its components [6] [8], may be used as the primary principle

for the construction of Virtual Environments (VE's) and can serve as a criterion by which to judge their success. To complement the specificity of place, narrative, reinforced by a wealth of dramatic techniques from performance, literary and moving image arts, can introduce meaningful structure to VE's, which makes them engaging and effective as a forum for sharing and generating ideas. *Cuthbert Hall Virtual College* is an interactive RT 3D VE 'stage' [5] where spatial narrative is collaboratively created through active user participation. As such, it seeks to explore how the integration of narrativity and architecture can expand the potential of RT 3D VE's for dramatic engagement, for use in collaborative design, research, education, communication and drama.

Implementation

The *Cuthbert Hall* project investigates, identifies and formulates spatial definition, event structure and effective mediation in RT 3D VE's by creating two environments, *Plowman Court* and the *Boethius Room*, within the context of the virtual college of *Cuthbert Hall*. This college is conceptually defined in reference to a traditional Cambridge College, a place for learning and teaching with a specific character expressed in its architecture as well as its statutes, teaching and learning practice. In creating this virtual place, mediation techniques from established fields (such as cinema, television and sound design) are transformed and combined with interactive access to enhance the conditions of RT 3D VE's.

The fictional pedigree of *Cuthbert Hall Virtual College* combines factual episodes from the history of 'real' Cambridge colleges with imagined stories. For our purposes, History is made to tell of the foundation of *Cuthbert Hall* in the 15th century, and later of its subsequent disappearance from the cityscape - and the records - for complex political reasons. Today the RT 3D VE makes this college accessible 'again' – virtually.

The content operates on several narrative levels, defined through the spatial layout of the college, the means of

mediation and the visitor interaction with the VE. Combined, these elements create the experience of place, parallel to the experience of belonging to a real Cambridge college, with its history, personalities and architecture.

The *Cuthbert Hall* project suggests that this experience of place, enhanced through spatially expressed narrative, not only improves the visitor's engagement with the VE by providing a meaningful exploratory experience, but also inspires stimulating interaction between multiple users. Visitors can meet in the virtual college of *Cuthbert Hall* to exchange ideas or news, participate in one-to-one academic supervisions, or have a tour.

Plowman Court:

Navigable Expressive Space and Spatially Organised Narrative
Plowman Court incorporates an open courtyard, a central feature of all Oxford and Cambridge colleges, and generates evocative memory pictures staged within a nocturnal exterior environment. While the spatial structure remains constant, audiovisual encounters within the environment add narrative context to the space, making it meaningful for a visitor, who can discover various dramatic events illuminating the life and history of the college. The underlying narrative pattern is based on symbolic activities - historic, social and scientific: such as 'Bumps' (rowing boat races), 'May Balls' (celebrating the end of examinations) or scholarly debates. The spatial as well as conditional organisation of these dramatic scenes uses trigger zones to activate site-specific audiovisual effects. A visitor to *Plowman Court* is free to explore the virtual environment, and in so doing will set off the scenes embedded there, thus generating an intrinsically non-linear narrative that crystallizes during and through the exploratory process.

Figure 1. Cuthbert Hall College - main gate.

The Boethius Room:

Temporality and Spatiality Fused in a Narrative Form
The *Boethius Room* consists of five variations on a single room, which manifest in different historical periods.

Perceptually, in the spatial dimension, a visitor can step from one 'room' to another, while structurally, the architecture remains the same – it is only the temporal positioning that changes. Rather than through an incremental process, the *Boethius Room* VE unfolds through a series of instantaneous metamorphoses, not unlike cinematic temporal or locational continuity 'cuts'. For the visitor, a change in space generates a change in time. Each time/room features a distinctive set of textures, time of day, lighting, camera strategy, soundscape, weather condition and effects. The dramatic impact, then, comes from instantaneous juxtapositions of contrasting time, space images and events that build up towards a meaningful whole, not unlike montage technique in cinematic editing.

Technical specifications
The *Cuthbert Hall* environments are implemented as easily accessible low-cost onscreen RT 3D representations, which use game-engine technology, and feature textured and animated geometry, sound and visual effects. Navigation is by keyboard and mouse. The two 3D engines used are *Zanzarah* (Funatics)/*Renderware 3D* (Criterion) and *Serious Engine* (Croteam).

WORK PATTERNS: BUILDING CUTHBERT HALL
Challenges
Creating *Cuthbert Hall* demanded working procedures that could blend knowledge and techniques from the areas of art, design and academic research. One major challenge in the design of holistic spatial environments for digital media is the lack of natural or specific locational context, the 'given' that traditional architects interpret and imbue with significance when they design a built environment. Another inherent problem arises from the exploratory freedom, given to the user who is not constrained by pre-specific pathways or timeframes, that makes saturating VE's with adequate detail difficult.

Solutions
Design
Spatial structure and narrative context are closely intertwined in the design of *Cuthbert Hall* and cultural references establish initial contextualization. Explained through narrative, spatial patterns can be considered products of historically located social practice that can be defined and re-used as recognisable 'social space' [4]. This space is further enriched with dramatic samples of the relevant social practice borrowed from (or based on) written and oral history.

Its architectural design puts the virtual college, *Cuthbert Hall,* into relationship with the social space of Cambridge, drawing inspiration from existing colleges; while the narrative arranges the dramatic scenes in patterns that relate to the social life of Cambridge University. The combination of architecture and narrative generates the

necessary context for the design of expressive narrative space, a prerequisite for turning virtual space into virtual place. The detailed practical design of the environments includes the definition and placement of dramatic scenes, thematically distinct zoning and scenic effects (such as lights, fog, and animations).
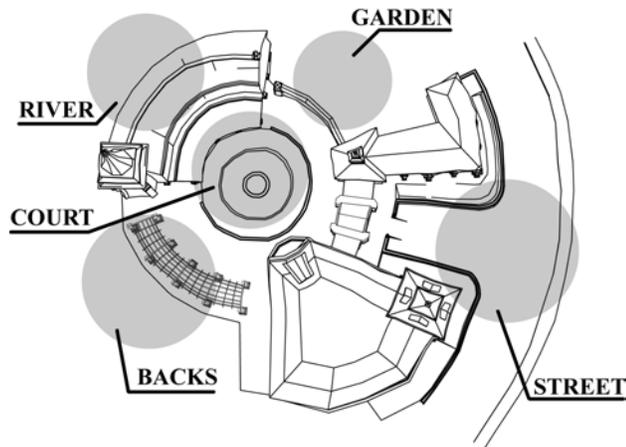

Figure 2. Spatial zoning with distinct characteristics.

An efficient workflow with continuous feedback demands continuous RT testing of these elements, and this proved to generate a looping process, not unlike that of 'graphic thinking' [2] [3], which was effective in rapid idea generation, exchange and evaluation.

Content Creation
The need to endow the *Cuthbert Hall* virtual environments with emotive impact brought together artistic contributions from a wide range of traditional arts. Imaginative input is provided by a number of contributors, each well-versed in their respective arts.

The *Virtual College* project needed artistic contributions from:

- **Literary arts.** The imaginary life of the college involves epic narration, character-stories and scenarios.
- **Performance arts.** The interactive scenes require the skills and imagination for character animation and voicing, plus the sensitivity of a theatre-director for dynamic staging (*mise en scène*).
- **Music.** The interactive soundscape merges the composing with the intricate craft of a sound designer.
- **Architecture.** The aesthetics and meaning of the spatial setting call for ingenuity in the architect to work with form and cultural allusions, while lighting, textures and effects require the skills of a painter.
- **Editing.** Expressive camerawork is impossible without the experience and individual creativity of a moving-image editor.

Such a diverse range of artistic languages and practices in the context of a research project inevitably generates a good deal of creative friction, over the disjunctions - i.e. art vs. research, art vs. technology and design vs. art. At the same time, the established collaborative arts of theatre (particularly improvisational drama) and cinema, where flexible teams are built on a per-project basis, and the diverse artistic and technical talent provides multipotent creative resources, provide successful work models.

The process of developing the *Cuthbert Hall* VE as a coherent place highlighted the importance of aesthetics in the media fusion that makes possible dramatically engaging RT 3D VE's. The framework of a doctoral research project imposes strict constraints on time, budget and equipment. However, even if in a limited way, the aesthetic standards to which the project aspires had to be actually implemented before the VE could serve as an effective proof of concept.

Many research projects in VR are built using placeholders instead of full-quality material, an approach that limits the effectiveness of coherent expressive language and thus of the sustained dramatic engagement which the project aims to test. The *Cuthbert Hall* experiment reinforces the contention that in the conceptually and technically complex field of interactive RT 3D, R&D into technological foundations cannot be separated from continuous artistic input and reinterpretation. From the ground up, these processes need to work in parallel. Only in a situation of constant cross-fertilisation among members of a collaborative design team, can appropriate concepts, techniques and tools be developed for efficient research and inspired artistry.

OUTLOOK
Cuthbert Hall Virtual College constitutes Phase 1 of the *Haven* research project at CUMIS and CARET, an ongoing investigation into the use of RT 3D VE for collaborative design, research, drama, education and communication. The *Cuthbert Hall* practice-based research project has established collaborative techniques and methodologies for content creation that promise to be of immediate use within these target areas.

The workflow and method of design developed on the *Cuthbert Hall* project were tested in February 2002 as a workshop (*The Casablanca Experiment*, Nitsche) for graduate students on the 'Architecture and the Moving Image' MPhil-degree at Cambridge University. Using it, they proved able to develop a dramatic scene, model the virtual stage, texture it, import it into a RT engine with avatar characters, and, finally, collaboratively rehearse and stage a dramatic performance – all within three days.

Another application is in the process of architectural design, especially within the framework of a large-scale long-term architectural development where alternative design ideas can be tested against the background of a pre-

built model of the environment, as in ongoing work on the *Virtual West Cambridge Project* (Roudavski), a part of *Web-Based Participation for Campus-Scale Project Design* at the Martin Centre for Architectural and Urban Studies, Cambridge University [7].

RT 3D VE's depend on collaboration between artists, designers and engineers. Practice-based research in the design of *Cuthbert Hall Virtual College* is an example of this process on the scale of an academic PhD-level project. The initial research focus upon the amalgamation of architectural expertise in place creation with narrativity and cinematic *mise en scène* as a means of creating dramatic engagement in RT 3D VE not only defines the project's content, it also guides the design and production processes.

CREDITS

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Concept/direction/scenes/architectural   design/camera: Nitsche, Roudavski

Background story: sketched with the help of historian Elisabeth Leedham-Green, Cambridge, UK

Music/Sound: Karina Gretere, London, UK

Character Animation: Funatics animators, Mülheim, GER

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