

Narrative Expressive Space

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POSITION: CURRENT RESEARCH

This paper outlines how the dramatization of place/events through cinematic mediation can contribute towards the construction of narrative expressive space in real-time (RT) 3D virtual environments (VE's). To illustrate the principle and practice, we introduce a prototype implementation of the *Haven* research project.

Drama and Narrative

Narrative is fundamental to the way humans understand, remember, describe or imagine the world in literature in literature and in film [4][5][20][8][3]. Drama is an important engine for narrative [30][11]. Broadly speaking, drama results from the friction generated between the goals and actions of the constituents of a dynamic system instantiating emotional relationships. These relationships are usually based on the development of characters [29][17]. Such relationships, even when they are to do with inter-character conflicts, are located in specific places. This means that they are interlinked with and depend upon the spatial definition and functionality of the objective or subjective fictional representations of the world where they occur and through which they are presented.

The role and nature of narrative in RT 3D VE's has been extensively written about. Topics covered include emergent narrative, narrative interfaces, narrative engines, and virtual characters for narrative environments. Efforts have been made to design dramatic and expressive strategies, such as dramatic intelligence, where drama is understood as a means of structuring the interaction between users and autonomous agents [18][25][21]. Such strategies are predominantly autonomous character-based. A useful distinction [31] can be made between drama based on intelligent characters [1][2][15][28] and that driven by a virtual narrator [19]. We suggest that agent- and narrator-based approaches can both benefit by being imaginatively related to the spatial dynamic structure of the environment where they are located.

Place and Action

Place is a fundamental phenomenon that underlies human spatial perception, cognition and behavior (e.g. [7][27][33]). In drama as in life, place is perceived as a

space for action [22]. During the process of exploration and familiarization of a location, the explorer perceives the affordances [13] of place dynamically, and evaluates, assimilates and re-evaluates them on the basis of new understandings gained progressively through interaction with the environment. Cyclical routines of human life, emotional attachment to the places adopted for dwelling, memories of lost places and aspirations to reach attractive or high status places all become contextualizing constituents inextricable from the description of the environment itself, and these factors cannot be divorced from that spatial description or retain meaning without it. Previous knowledge and experience, familiarity with cultural connotations and underlying archetypes contribute to our experience of place. Place is perceived in a subjective way. In RT 3D VE its reading is dependent on the current state of users, which changes along with their concentration, goals, emotions, and other parameters as they move through it.

In the realm of RT 3D VE's, a lot of work has been done towards developing strategies and techniques to support effective spatial navigation and interaction, as well as work and design processes. Some consideration has also been given to the notion of 'virtual place' [14][6]. The *Haven* project suggests that a VE understood as a *place* can benefit from emotionally engaging user-user and user-environment relationships fostered by drama and narrative.

APPROACH: MEDIATION

Haven shows that the interaction between space (place) and drama (narrative) is mutually supportive in RT 3D VE's. This interaction can be influenced through a mediation-layer such as is present, more or less explicitly, in any RT 3D VE. The camera, which in cinema is accepted as a distinct narrative device, can play an effective narrative role in RT 3D VE's, where it is also necessary to define the camerawork. The use of cinematic camerawork in RT 3D VE's has been discussed since early nineties and some prototype implementations developed [9][10][12][16][32] but these were not concerned with the spatial structure of the environment. In contrast, *Haven* suggests that the interactive experience of the environment, the narrative and dramatic flow, and

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the user state, can all be controlled through a set of mediation devices that can include - as well as cameras - lighting, sound and effects. Such devices can direct attention to significant elements, assign meaning to the spatial structure of a VE, and interpret the place/events constituting the interactive exploration.

Spatially Situated Drama

In a narrative RT 3D VE, drama is situated in (narrative) context and becomes related to virtual geography. It is via this spatial environment that it is made available for exploration. Users become positioned 'within' drama through their immersion in the virtual space. This opens the possibility for affecting the dramatic positioning of the users in relation to place/events. Users can be selectively engaged as participants, witnesses or addressees.

Spatially organized drama can form non-linear narrative, which depends on user interaction with spatial artifacts and navigational patterns. Emergent non-linear narrative, even in its simplest form, with little or no conditional superstructure, diversifies experiences of space and story through unrepeatable patterns of spatial navigation. Spatial narrative can incorporate meaning and structure into this diversity without disrupting the dynamic freedom of interactive engagement. Continuity of experience and action through spatial navigation in RT 3D VE non-linear narrative is an advantage not available via the conditionally linked discrete nodes of Hypermovie structures.

Dramatically Interpreted Space

Space defined by dramatic place/events acquires extra qualities of place. Spatial relationships between the constituents of a VE can become dramatically charged as new content- and story-based links are established between them. These links can drive the mediation and help draw attention to significant artifacts in a VE, add meaning to spatial structure, and help make the exploratory experience more engaging.

Dramatically interpreted space can motivate user behavior within a VE, for example determining immediate navigational or investigative decisions. The interactor's mental image of the environment used for navigation or recall can also be influenced through dramatic means to the end of engaging interactors more intensely with the experience of the RT 3D VE.

The planned intermixture of space (place) and drama (narrative) add up to *narrative expressive space* (see [26] for its description in cinema) whose unique features, outlined above, enable a new kind of interactive engagement whether with fiction and fantasy or communication and information exchange.

PROTOTYPE: HAVEN

Haven is a practice-based research project currently under development [23] at the Digital Studios, where it was initiated in 2001.

Aims

Haven aims to investigate the effects of cross-fertilization between narrativity and architecture and to identify and formulate engagement strategies in RT 3D VE in the context of how:

- 1) the mediation layer interprets and dramatizes the environment
- 2) the environment delivers dramatic content
- 3) the narrative content can be structured in space

Implementation

In order to explore how the integration of narrativity and architecture can utilize the potential of RT 3D VE for dramatic engagement we have created a RT 3D VE placed in a well-defined socio-historical context. The world of *Haven* is built around *Cuthbert Hall*, a 32nd Cambridge college obliterated, according to our scenario, in the 17th century, and rediscovered in Virtuality in the 21st. The colleges of Cambridge University have a recognizable set of functions and buildings, history and traditions on which the design of Cuthbert Hall draws in designing the VE, its content, and its mediation devices.

The mediation is organized into a framework that supports three distinct but complementary constellations: *User Driven*, *Spatially Dependent*, and *Author Defined*.

Cuthbert Hall evaluates the mediation techniques implemented within the narrative expressive space outlined in this paper. This approach is suitable for application in different RT 3D VE's independently of hardware, usage and target audience.

Evaluation of a range of game engines and development environments for their capacity to support rapid development and implementation of extended narrative and mediation structures revealed that the technical capabilities of current consumer-level game-style desktop RT 3D technologies are readily available, affordable and conceptually adequate for this kind of experimentation.

The initial implementation of the *Author Defined* constellation was built in *Zanzarah* game editor (with Renderware render engine), which supports high-level scripting well-suited for conditional triggering. Later work requiring more flexible procedural capabilities and extensibility via custom code has been conducted in the Virtools development environment.

The Project

The first stage of the *Haven* project is complete and features a single-user implementation of the *Author*

Defined mediation constellation [24]. This constellation includes events triggered but not directly controlled by the user. These events unfold in space maintaining, where appropriate, a degree of visual continuity with the interactive exploration. They consist of a choreographed interplay between animated objects and characters, dedicated camera styles, lighting, textures, sounds, music and effects. Selective restriction of interactive access enables *Cuthbert Hall* to exploit the dramatic power of cinematic language. The place/events of the *Author Defined* constellation serve to add cultural and dramatic context to virtual place. As a spatial punctuation in the tissue of otherwise unconstrained exploration, they interpret, mediate and shape the interactive flow, and thus the experience of the user.

Work is currently under way on the *Spatially Defined* mediation constellation. It introduces regions of narrative expressive space as a structural technique for creating contextual drama and supporting storytelling. Each region features distinctive architecture, objects, characters, mediation and interactive access. These elements, positioned in space, serve to add specific, modifiable character to underlying spatial topology. The resulting emotional engagement of users and their heightened understanding of the dramatic or functional significance of spatial layout provide a new and flexible infrastructure for non-linear narrative performance.

Future work will implement multi-user functionality and support the full three-part framework structure - *User Driven*, *Spatially Dependent*, and *Author Defined*.

CONCLUSION

The *Cuthbert Hall* prototype VE developed at Cambridge University as a part of the *Haven* practice-based research project demonstrates how in implementation, architecturally meaningful VE and coherent non-linear interactive narrativity benefit from cross-fertilization. A new form of effective dramatic engagement is generated from a network of meaningful spatial relationships and narrative perspectives instantiated in a tripartite purpose-built mediation layer. With the use of this mediation layer, place and drama are intertwined to form place/events in narrative expressive space whose impact and ability to engage are not dissipated by flexible timeframes and user-chosen pathways, but are contextualized and enhanced.

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