Toward a Dynamic Dramaturgy: An Art of Presentation in Interactive Storytelling

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ABSTRACT

In interactive storytelling systems, we see common challenges of artistic expression that pertains to presentation, standing apart from narrative structure. We believe this expression can be achieved computationally, which is a core challenge in using procedurally-generated worlds in interactive storytelling. This computational expression so is what we call *dynamic dramaturgy*. We intend dynamic dramaturgy as a complement to interactive narrative systems, particularly drama management, and as a fundamentally distinct task from plot-level narrative construction, yet it is still a basic medium for artistic expression by an author. It is, in effect, an art of presentation in interactive storytelling.

ACM Classification Keywords

H.5.1 Information Interfaces and Presentation: Multimedia Information Systems—*Artificial, augmented, and virtual realities*

General Terms

Theory

INTRODUCTION

We see procedural world building in interactive storytelling (as in [5, 6]) as a nascent approach with rich narrative potential. There remains significant challenges, however, in making a procedural world a viable medium for storytelling rather than just a medium for simulation-style gaming. One of the chief questions is, "given dynamically-created resources, possibly entire characters, how are the resources choreographed into compelling, interactive dramatic action?" Another important question, and the focus of our work, is "given a plot and the resources to execute it, how can the experience be presented with regard to its dramatic meaning?"

This latter question has its roots in all forms of storytelling, interactive and otherwise. In a video game, what is the camera angle that most effectively and dramatically communicates the meaning of a scene? On a theater stage, how can the lights be manipulated to show isolation, tension, or even love? In a text adventure, what choice of words can be used to shape the way a moment is perceived? In each of these cases, we see a challenge of artistic expression that stands apart from the narrative structure. We believe this expression can be achieved computationally. To do so is what we call *dynamic dramaturgy*.

Despite the many possible implications of the word "dramaturgy," we define *dynamic dramaturgy* to be the algorithmic construction of an interactive experience to achieve a dramatic objective for a prescribed narrative. We intend dynamic dramaturgy as a complement to interactive narrative systems, particularly drama management, and as a fundamentally distinct task from plot-level narrative construction. It is, in effect, an art of presentation in interactive storytelling.

THEORY

We take the view that the telling of a story can (and often should) be treated separately from the story itself. This view is not new. R. Michael Young discussed story and discourse as a "bipartite model" of narrative generation, using Mimesis as his basis for an example [8].

As such, we propose an architecture composed largely of two parts: a narrative engine (especially a drama manager) interacts with a presentation engine. The job of the presentation engine is to provide *dramaturgical handles* through which the narrative engine can communicate authorial intent to the human player. The presentation engine is also responsible for handling and interpreting player interaction, feeding relevant information back to the narrative engine. The presentation engine thus takes on a role analogous to a theater director: it interprets authorial intent, from both the dramatist (a human author or the narrative engine as proxy for a human author) and itself and selects the presentation most effective for communicating that intent.

What interface should our presentation engine present to the narrative engine? This interface is composed of *dramaturgical handles*, affordances[3] that, in addition to allowing the character-level manipulations motivated by Aristotle, expose semantics that can cue non-character presentation activities, like perspective choice and lighting. We claim that the following is a list of suitable handles, though not necessarily exhaustive:

- *Importance* (of a character, thing, activity, or scene): this allows for dynamic cinematography to emphasize the target element.

- *Mood* (of a scene): this allows for the choice of ambient sounds, background people and animals (happy couples vs. funeral procession, blue jays vs. crows, etc), weather, and other ambient properties.

- *Mood* (of a character): including ideas like "isolation," this allows for animation-level decisions like choice of gait and path planning (showing various levels of affinity for ambient elements)

- *Relationship* (between a character and another character or thing): taken with *Mood*, the OCC model of emotion, with some adjustments[1], can be used to motivate character expression and posture toward other elements.

- *Perspective* (of a scene): largely driving cinematography and sound design, this allows for the dramatic emphasis of how things and events should be perceived.

It is this last point, *Perspective*, that we make an early attempt at demonstrating. Later in this paper, we discuss our implementation of "point-of-view kits," which are a proof-of-concept that at least the *Perspective* handle can scale dynamically with the world.

UNPARKED PERSPECTIVES

Historically, interactive storytelling engines have adopted various narrative unfolding devices from literature and film[7]. In some cases, alternating between different character perspectives as the story develops allows users to access the different characters' thoughts and experiences[4]. We call this pattern "interleaved perspectives."

Our example system, Unparked Perspectives, extends the notion of interleaved perspectives to include all of the contents of the environment or secondary world as characters with their respective unique perspectives. In our system, the user (or drama manager) can dynamically blend the current story perspective with that of any other character or prop. The ability to fluidly shift to any perspective within the world's object catalog enriches the story possibilities thus providing more robust options for transmedia storytelling authors[2].

In Unparked Perspectives, the viewer clicks on any story element and triggers a dramatic response from the system A simple park-scene is rendered using a combination of realtime 3D and 2D procedural animation techniques. The scene is populated with two main characters: Lady Tofu and Tofu Sir, along with several omniscient trees and two park benches (see Figure 1).

Each time the drama manager adds (instances) a story element (character or prop) to the world's catalog and instances that object into the rendered story world, a kit is automatically generated to enable the object's participation in the presentation engine. The kit consists of the 3D geometry model, a description of the model's visual appearance, and an asset library of animated behaviors and associated dialog sound files. Most notably, each instanced object defines a personal perspective by instancing a camera whose location serves as a waypoint anchor for the 3D perspective planning module.

Figure 1. World objects and their instanced POV kits camera as it relates to the object of interest

DISCUSSION

As an exploration into creating a scalable system for future storytelling, our proposed architecture succeeds at providing a broader palette of creative options. Though our larger vision of dynamic dramaturgy has yet to be tested in earnest, we have presented a test system, Unparked Perspectives, with a minimalist story that shows that at least one of our proposed dramaturgical handles can be manipulated computationally.

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