Chapter 2
Multi-Disciplinary Paths to Actor-Centric Non-Player Character Emotion Models

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ABSTRACT

Video game non-player characters (NPCs) are a type of agent that often inherits emotion models and functions from ancestor virtual agents. Few emotion models have been designed for NPCs explicitly, and therefore do not approach the expressive possibilities available to live-action performing actors nor hand-crafted animated characters. With distinct perspectives on emotion generation from multiple fields within narratology and computational cognitive psychology, the architecture of NPC emotion systems can reflect the theories and practices of performing artists. This chapter argues that the deployment of virtual agent emotion models applied to NPCs can constrain the performative aesthetic properties of NPCs. An actor-centric emotion model can accommodate creative processes for actors and may reveal what features emotion model architectures should have that are most useful for contemporary game production of photorealistic NPCs that achieve cinematic acting styles and robust narrative design.

INTRODUCTION

"Constructing characters" is a phrase that infers distinct meanings for two participants in the creative process of computer-based media. On one hand, for the narrative architect of video games or other kinds of narrative computational media, it is a semiotic process of fiction authoring where the character designer provides a written personal history. Three-dimensional or two-dimensional models of anthropomorphic shape combined with voice can also suggest agency in a game space. A weapon-wielding muscular humanoid with big bright eyes is well equipped for video game combat and all of the emotional expression players associate with fighting. Once audio-visual elements are programmed to react to user input, these elements can signify to the observant player an imagined persona. On the other hand, for the developer of video game computer code, "constructing characters" is a process of designing a system that uses

quantitative data derived from the game program, the computer operating system or from player input data to control or trigger character animation and voicing such that the player experiences the presence of a seemingly intelligent cohesive character identity. The result of the work of the designer and the developer is a composite signified that evolves in the player's mind over the time of game play.

The manner of construction for narrative architects of video games depends on mental processes of player participation. Over the course of game play time, the player may observe actions and behaviors of Non-Player Characters (NPCs) so that a pre-game play biography and an in-game "alterbiography" (Calleja 2009) combines the NPC's pre-game past with the evolving NPC actions the player witnesses or learns through game interaction since the start of the game. The manner of character construction for video game developers depends on computer languages whose frameworks contain data structures (primitives, classes, objects) and data behaviors (methods, functions) that can trigger and manipulate unique animations of the three-dimensional mesh model and its sound emanations (usually a voice) in ways that resemble the player's understanding of human and animal emotional expressions. These NPC animations and sounds must be recognizable by the player as specific to the NPC's type as a fictional narrative agent (human or non-human) and consistent with the character's role within the world of the game.

The study of character construction coincides with the related research in other disciplines. The late twentieth century coincidentally delivered strains of thought from disciplines that sought to provide taxonomies of two human endeavors – storytelling and emotion expression. Narratology addressed the former and evolved from literary theory and folklore studies to describe systematically the human perception and representation of stories in various media. The categorization of characters within stories based on a typology of roles and emotion sets afforded to those roles is one specialization within narratology. Cognitive psychology and its subdiscipline, Computational Cognitive Psychology, evolved as a reaction to Behaviorism and as an alternative explanation to the mental and emotional processes that drive human behavior. The categorization of human emotions as well as their neurological processes is one subdiscipline that Cognitive psychologist frequently consider. The two disciplines converge in computer game design because game character designers and game code developers both use models from which characters can be efficiently produced. These characters and their behaviors can be embodied as preconfigured audio-visual animation and sound synthesis systems for "static" characters or can be used in-game to spawn procedurally generated characters or behaviors.

This research focuses on NPC modeling rather than Player Character modeling for the benefit of taking a simpler problem before tackling the more complex Player Character with its additional set of variables that describe each player's unique persona and context. Daniel Vella initialized a discussion of the Player Character's implications on game narrative that can apply to related studies of NPCs (Vella 2014). A discussion of NPC modeling benefits from the character theories of Narratology and the emotion theories of Computational Cognitive Psychology because both examine the behavior of human or human-like agency. Narratology considers how foregrounding particular NPC behaviors in the context of an audio-visual story system forms the role of a character. These behaviors are a functional necessity for story development and an elaboration in the player's mind. Computational Cognitive Psychology considers how to represent in computational form, a simulation of the internal processing machinery of the emotive part of the human mind so that when one implements and embeds an emotion model in an agent such as an NPC, the sensory input will yield an expressive output as an appropriate behavior that simulates a coherent human-like character. To design an NPC model of emotion for video games, one must consider how emotions in characters are useful in the elaboration of narrative, and how they are generated by actors for use in animated characters.

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