Chapter 2
AI Design for Believable Characters via Gameplay Design Patterns

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ABSTRACT

We address the problem of creating human-like, believable behavior for game characters. To achieve character believability in games, the game designer needs to develop that character so that it fulfills as many aspects of believability as possible. With believable behavior we mean that the game is consistently structured in terms of narration or gameplay so that it is possible to build and maintain coherent relations between the actions of the characters. In this paper, we first analyze the general patterns for game characters design in detail concentrating on the aspects that are relevant to the AI design. Then, we present an agent architecture that we are developing, and discuss how this architecture can address the identified design patterns.

INTRODUCTION

Game characters have an important role in the playing experience, because people are fine-tuned to act in social situations. Damasio (2005) argues that a part of the brain is specialized for reasoning and making decisions in social situations. Different studies imply that people react to human-like

entities similarly with how they react to people (e.g., Reeves & Nass, 1996; Schulte-Rüther, Markowitsch, & Piefke, 2007). In addition, theorists argue that understanding what other people or characters are experiencing depends on action-perception coupling and mimicry (e.g., Decety & Jackson, 2004; Niedenthal, Barsalou, Winkielman, Krauth-Gruber, & Ric, 2005). This coupling means, for example, that when one seems someone smiling happily, one tend to smile and feel happy also. Mimicry seems to be rather involuntary and autonomous; people have only limited control over mimicry (e.g., Dimberg, Thunberg, & Elmehed, 2000). Characters need not to be realistic (Mickey Mouse), but the expressions and behaviors need to resemble human ones.

To create human-like and believable behavior for a game character, the designer needs to develop that character so that it fulfills as many aspects of believability as possible. Lankoski and Björk (2007b) define believability as follows: "By believability we mean that the game is consistently structured in terms of narration or gameplay so that it is possible to build and maintain coherent event indexes (relations between the events)." Lankoski and Björk (2007a) argue that character can be looked at from three perspectives: physical (e.g., sex, health, posture, and appearance), social (friends, social standing, and family), and psychological (intelligence moral standards, skills, attitude, complexes, and goals). They base their proposal to drama theorist Lajos Egri's (1960) method for theatre writing. These perspectives are connected and every feature in one has implications in terms of what is a possible and plausible feature in the other. As very simple examples, a skilled gymnastics moves differently than a man weighting hundred kilos, and person who is a afraid of snakes reacts to the presence of a snake differently than one who owns a snake. When non-player characters (NPCs)[1] should have emotional expressions towards events in the game word, the character design needs to be detailed enough to give basis for reasoning how the NPCs should react emotionally to the possible events.

Lankoski and Björk (2007a), following Egri (1960), look at how the character qualities can be used to create believable conflict. While conflict design is not discussed here, it is noteworthy that this character design approach extends beyond designing single characters.

Isbister (2006) describes how different attitudes (or aspects of the personality) and emotions show in the character's facial expressions and posture. For example, a friendly person smiles and maintains eye contact (but does not stare) and a dominant person tends to control conversations and take up more physical space than a submissive one.

Lankoski and Björk (2007b) argue that a believable character is one that behaves consistently; the players are able to posit causal connections between the character's actions. However, believable behavior is context dependent: an action hero or superhero can perform impossible actions without breaking the expectations of the player or causal logic of the game. They argue, following Murray Smith (1995), that character interpretation is based on a schema that includes qualities such as:

- the physical body, and each human has a different body;
- perceptual activity and self-awareness;
- intentional actions;
- the ability to use natural language;
- persistent traits. (See, Smith, 1995, pp. 20-31.)

In addition to guiding the interpretation, the person schema sets up expectations of what it is to be human. For example, people assume (without ever having seen the person in question) that a person talking to you on the phone has a body, and they associate some features to the body based on the voice (such as whether the person is female or male). (See, Smith, 1995, pp. 20-31.)

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