Characterising Action Potential in Virtual Game Worlds applied with the Mind Module

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Because games set in persistent virtual game worlds (VGWs) have massive numbers of players, these games need methods of characterisation for playable characters (PCs) that differ from the methods used in traditional narrative media. VGWs have a number of particularly interesting qualities. Firstly, VGWs are places where players interact with and create elements carrying narrative potential. Secondly, players add goals, motives and driving forces to the narrative potential of a VGW, which sometimes originates from the ordinary world. Thirdly, the protagonists of the world are real people, and when acting in the world their characterisation is not carried out by an author, but expressed by players characterising their PCs. How they can express themselves in ways that characterise them depend on what they can do, and how they can do it, and this characterising action potential (CAP) is defined by the game design of particular VGWs.

In this thesis, two main questions are explored. Firstly, how can CAP be designed to support players in expressing consistent characters in VGWs? Secondly, how can VGWs support role-play in their rule-systems? By using iterative design, I explore the design space of CAP by building a semi-autonomous agent structure, the Mind Module (MM) and apply it in five experimental prototypes where the design of CAP and other game features is derived from the MM. The term semiautonomy is used because the agent structure is designed to be used by a PC, and is thus partly controlled by the system and partly by the player. The MM models a PC’s personality as a
collection of traits, maintains dynamic emotional state as a function of interactions with objects in the environment, and summarises a PC’s current emotional state in terms of ‘mood’. The MM consists of a spreading-activation network of affect nodes that are interconnected by weighted relationships. There are four types of affect node: personality trait nodes, emotion nodes, mood nodes, and sentiment nodes. The values of the nodes defining the personality traits of characters govern an individual PC’s state of mind through these weighted relationships, resulting in values characterising for a PC’s personality. The sentiment nodes constitute emotionally valenced connections between entities. For example, a PC can ‘feel’ anger toward another PC.

This thesis also describes a guided paper-prototype play-test of the VGW prototype World of Minds, in which the game mechanics build upon the MM’s model of personality and emotion. In a case study of AI-based game design, lessons learned from the test are presented. The participants in the test were able to form and communicate mental models of the MM and game mechanics, validating the design and giving valuable feedback for further development. Despite the constrained scenarios presented to test players, they discovered interesting, alternative strategies, indicating that for game design the ‘mental physics’ of the MM may open up new possibilities.

The results of the play-test influenced the further development of the MM as it was used in the digital VGW prototype the Pataphysic Institute. In the Pataphysic Institute the CAP of PCs is largely governed by their mood. Depending on which mood PCs are in they can cast different ‘spells’, which affect values such as mental energy, resistance and emotion in their targets. The mood also governs which ‘affective actions’ they can perform toward other PCs and what affective actions they are receptive to. By performing affective actions on each other PCs can affect each others’ emotions, which - if they are strong - may result in sentiments toward each other. PCs’ personalities govern the individual fluctuations of mood and emotions, and define which types of spell PCs can cast. Formalised social relationships such as friendships affect CAP, giving players more energy, resistance, and other benefits. PCs’ states of mind are reflected in the VGW in the form of physical manifestations that emerge if an emotion is very strong. These manifestations are entities which cast different spells on PCs in close proximity, depending on the emotions that the manifestations represent. PCs can also partake in authoring manifestations that become part of the world and the game-play in it. In the Pataphysic Institute potential story structures are governed by the relations the sentiment nodes constitute between entities.