

# Player Character Design Facilitating Emotional Depth in MMORPGs

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## ABSTRACT

How can we create computer games facilitating emotional depth in the playing experience?

When entering into a persistent virtual game world the player leaves the body behind. It is up to the game designer to create a virtual body with skills, needs and drives necessary for survival and pleasure in the game world. Would it be sensible also to create a virtual mind for the player to possess and evolve? Can models like Maslow's hierarchy of needs and 'being-values', or the personality trait model popularly called 'the big five' be used for character design in a way that suits massive multi-player game form?

Based upon a view of the player character as the concentrated mirror of the functionality of an RPG game and adding features inspired from psychology, cognitive science and behavior science, this paper presents the high-level system design of a virtual mind for the player to possess in a MMORPG. The mind model is being implemented in a research demonstration game in which game play emphasizes emotional engagement and dramatic interaction. This research is conducted in the Zero-Game Studio within the frame of the open research MMORPG Ouroboros.

## Keywords

Emotive game play, player character, mind modeling, MMORPG, emergence, Massively Multiplayer, characterization.

## INTRODUCTION

When you enter an Role Playing Game (RPG) you step into character and you leave your physical body behind. If it is also a Massively Multiplayer Online Game (MMOG) you meet other player characters. The world never sleeps – its persistently there all the time, with its environment, its history, its challenges and its inhabitants.

It is up to the game developers to decide upon what type of body you can have and how you can develop it in the game. The skills that you can acquire are those which are of use in the game world. The constitution of the world usually is the basis for the types of qualities the player characters can have in the game – there is no need for skills that are not useful in the game. What is useful is defined by the rule set. The player character itself is for the player the focal point that looks out on the world, not just by perceiving it visually from the screen, but also being the center point for all future actions and how these can be performed. From the developers point of view the player character is the entity to which all functionality is aimed.

Most character generation systems in one way or another derive from the D&D™ system from 1974 [11]. Its hard statistics describing agility, speed, strength, hit points etc. These are the features of the bodies we enter into in most RPG like games. When games are on their second or third generation the character generation systems usually become more complex; there are more character classes and customizing skills and other properties become more flexible.

After having entered into these bodies we modify and refine them in a way that gives us the satisfaction of development. We put our minds into these bodies, which in turn are placed in a world with its own rule sets. The rule sets define the needs of these bodies, and the rule set of the game world and its history gives us goals for what to do while performing through those bodies.

Within this model however we recognize a missing part in current games:

*Immersion in a deeply emotional sense in digital games that have a high degree of simulation.*

This paper describes an ongoing research project to develop a virtual mind for the virtual body of the player character in a massively multiplayer environment, with associated game rules for creating a deeper emotional experience within game play. Based upon the observation that emotive and dramatic interaction must be at the core of game play in order to deepen the narrative experience of the game [17], the virtual mind is integrated with the central mechanics of the game rules.

#### **DEEP CHARACTERISATION IN COMPUTER GAMES**

Deep characterization in a single player environment is a product of authorship. One successful example is *Final Fantasy VII*, where characterization is developed in ways similar to novels and movies [5]. On the non-digital multiplayer side, designers of Live Action Role Playing (LARP) events provide a model for role playing leading to intense emotional involvement and dramatic interplayer interaction. LARP events create deep characterization using rule sets, physical environments, game masters and the performative potential of the players.

This leads to the question: is it possible to take “deep characterization” from LARPing and integrate these within a digital game world? These are very different approaches to the creation of game experiences. It is not a trivial thing to integrate different and defining methods from different genres. LARPing tends to use relatively small castes of players, frequently with each character being carefully designed by an author. In massively multiplayer games there is a practical reason for having generic character classes and static quests that all players can perform – it would be an impossible task to individually author unique characters with unique interwoven stories for very large numbers (eg. thousands) of simultaneous players. Combat based games with characters having simple statistical characterizations, enhanced by mechanistic techniques for recombining elements of visual representation, support a very large combinatorial space of possible characters. This method of characterization lends itself to personalization for large numbers of players within the scope of combat oriented descriptions. Analogous combinatorial principles for emotive and deep characters of the kinds performed in LARPs are not yet understood. We also need to address the question of how to create compelling stories in a structure that functions for thousands of simultaneous players. Not only are there many players, but play schedules vary widely, and methods for collaborative drama must be able to deal with this variability.

## **THE PURGATORY ENGINE AND THE OUROBOROS ITERATIONS**

These are complex issues that do not have simple answers, requiring active research to develop new principles of game design and implementation. In the Zero Game Studio of the Interactive Institute we are developing a set of components constituting the open source Purgatory engine for conducting research in this area. Our motivation is to create game play experiences that achieve more varied, subtle, and deeper emotional experiences for players than typical contemporary computer games, and to explore more diverse themes. The Purgatory Engine is especially designed to support experiences of deep characterization and narrative engagement in character in a massively multiplayer virtual world environment.

The Ouroboros project (<http://zerogame.tii.se/ouroboros>) is an experimental game production based upon the Purgatory Engine. The project involves producing specific game implementations in a series of alpha iterations. Each iteration is developed over one to three months to explore specific research themes. Currently the following research components of the Purgatory Engine are either in their planning or their implementation phase:

- Contextual Gesture System; based upon the state of the mind of the character, other characters in the context, and various aspects of the state of the world, a particular subset of dramatic and emotive character gestures are made available to the player
- Story Daemon System; a method for orchestrating narrative experiences by setting and resetting character and world states and goals, and monitoring states to determine critical plot points at which states and goals will be changed to advance a plot; all of this information for a specific narrative matrix is stored within a story daemon, which is a story-management object that can be virally transmitted between and/or inhabit game objects and characters
- Metaphysics System; this is the world-level equivalent of the mind model for a character, representing thematic states of the total game world, and both influencing and being influenced by character and world actions and events
- Language Characterization System; a character-specific adaptive discourse system, replacing free inter-player chat with constrained inter- and in-character chat
- Social Grouping and Influence System; consisting of game rules that encourage group actions (eg. allowing group magical rituals)
- Mind System; a model of a player (or non-player) character's mind that influences what a character can and cannot do, affects other characters within intersecting zones of presence and reception, and provides goals and a prosthetic psyche for the player within the game world

A major point of the Purgatory Engine is to support development and experimentation with multiple and alternate character psyche models, even within a single game world. In Ouroboros, relationships between psychic elements and between these elements and emanations of a world soul provide a system of influences and interactions implementing personalities, and interactions between personalities and the world soul as a system of universal karma; every action has in-game consequences. Consequences are manifested not just in physical terms, but also in emotional, dramatic and metaphysical terms (as a game, not a philosophy). Since this is a model of the associative patterns of the mind and world themes it requires specifying how the associations work in general, together with a tabulation of particular associative relationships. Players of the Ouroboros game do not see any of these mechanics directly. Instead they are manifested in how their player character develops, how the

world develops, what grows and lives in the world, how things happen, what happens and with what difficulty, what works and how well.

The design of a virtual mind for the player to possess is one piece of the Purgatory puzzle where we aim to facilitate emotional depth in MMOG gameplay.

### **The second self or prosthetic consciousness**

“When one starts discussing emotion one is starting to discuss having a self – a perceived and felt self. Emotions are in terms of and help define that ‘self’. The purpose, we propose of this self is to integrate experiences in a meaningful way into a self. Specifically a self is a continuously maintained and global construction that speaks for the organism’s reasoning and assessments on a global level.” [6, p 160]

Observing one’s emotional reactions can be a way of getting to define ‘myself’. For the question of characterization this is important. Film and literature generally provide a multiplicity of sites of identification. First-person narratives imply strong identification with the narrator, and traditional three-act restorative film structures [see 12] imply an audience identification with the central hero, although the act of reading/viewing leaves open many different levels and degrees of identification with numerous characters within the text.

In games, however, control of a (player) character creates a different sense of identification. An avatar in the most general sense is intended to represent the self. Hence in this context we want to achieve a deeper experience of the player character’s prosthetic self.

Bellman recognizes the self as the ultimate integration mechanism in a biological sense, and proposes to implement the self in autonomous agents; our objective, however, is to create a semi-autonomous agent as a vehicle for the performance of a character by a player. We need to find the balance between the autonomy of the player character and the player’s control of the same. Never the less the approach to autonomy vis-à-vis the rest of the system is just as relevant for us: “Autonomy implies some knowledge of the current state of the system – including its goals”. This is the same standpoint which we think is necessary for the possibility of creating functioning story constructions for games with thousands of players [7, chapter 5].

### **IN-GAME PLAYER CHARACTER DEVELOPEMENT**

Levelling in an RPG type game is a traditional and well functioning effect of, and reward for, successful playing, providing a strong driving force for the player. Sometimes players perform an exaggerated behavior, normally referred to in MMORP contexts as *power levelling*, meaning that a player uses all possible ways within the rule system to level the player character up as fast as possible. The levels are usually represented by a numerical value, so for example a 44 level player character has a much more powerful attack and a larger set of skills than a character of level 7. It is not implausible to compare RPG game world levels to real world hierarchical structures in societies, where the richest, the fittest and the ones higher up in organizational structures in general have more freedom of choice in their actions. This lays deep in the structures around us in our everyday lives, even the title of this conference refers to levelling.

Is this something that we want to mirror in a game world? A numerical model of progress represents an extremely crude model of narrative development, and thematic explorations in general need have nothing at all to do with such concepts of advancement within a systematic hierarchy. Concepts of progress may be supported in ways that do not require in-game or system level representation, ie. as an emergent phenomenon of player communities and/or experiences of personal/emotional

transformation through the performance of characters. For many themes, progress is not a relevant concept at all.

For player character development in Ouroboros there will not be any traditional system of levels represented by numerical values. The driving force of the player for developing the player character will instead be channeled into pursuing values similar to Maslow's being-values. The issue of goals for the player characters is tightly interconnected with the core gameplay. The core gameplay is focused around three major game play driving forces: 1) Balancing and evolving the player character, including reaching "being-values" inspired by Maslow and described later in this paper, 2) Performing story daemons – playing parts in the interweaving narratives of the game world, 3) group dynamic emergence and influence.

### THE MIND MODULE

"Mind is not a thing but a process – the process of cognition which is identified with the process of life. The brain is a specific structure through which this process operates." [13, p 174]

In this context of the mind of the human player in character, the process of cognition of the player character arises from a prosthetic brain which when instantiated provides the player with a virtual mind to relate through, or to use an expression by Fennecott, a prosthetic consciousness. [18]

The role of the mind module is to provide the system with emotional output from the individual player character. The mind module performs computational operations (of a kind described below) on the input values, which come from virtual sensors, and outputs in the form of emotional reactions and/or potential emotional reactions that in turn become inputs to the sensors of the mind modules of surrounding entities, or entities that in some other way are receptive (eg. if they belong to the same social grouping) to the specific player character.

The system itself consists of a variety of nodes of different types (image 1). After a presentation of the high level design of the mind module, we will have a look at how a specific player character can be implemented in a specific game scenario.

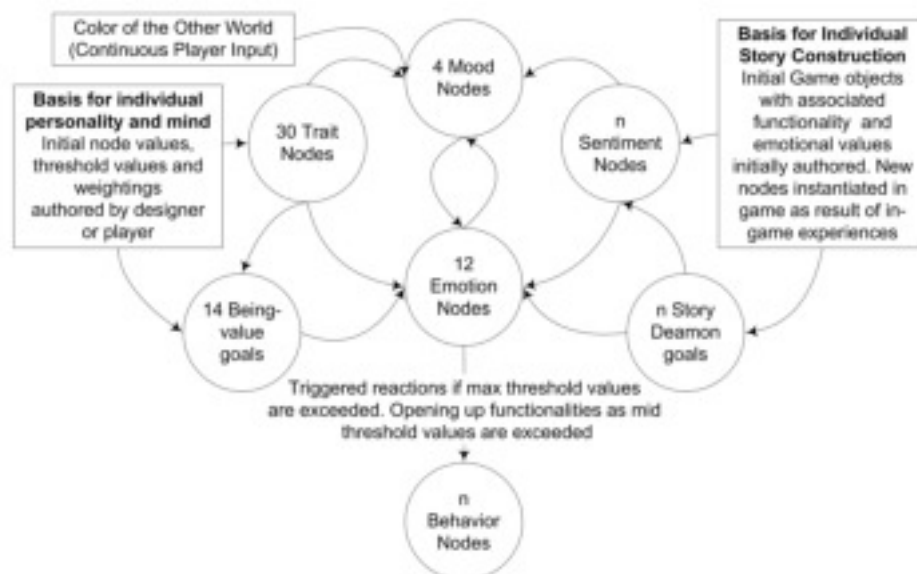


Image 1: Interconnected node types in the Mind Module

### Psychic affects

By *personality* we mean the distinctive and characteristic patterns of thought, emotion, and behavior that define an individual's style and influence on his or her interactions with the environment. Moffat [9] suggests that emotion can be regarded as a brief and focused (ie. directed at an intentional object) disposition, while sentiment can be distinguished as a permanent and focused disposition. Mood can be regarded as a brief and global disposition, while personality can be regarded as a global and permanent disposition. Hence emotion, mood, sentiment and personality are regions of a two-dimensional affect plane, with focus (focused to global) along one dimension and duration (brief to permanent) along the other.

	Time: Slow change	Time: Quick change
Not object dependent	Personality trait	Mood
Object dependent	Sentiment	Emotion

Image 2: Psychic affects

Collectively we refer to these four elements as psychic affects, where an *affect* is understood as a feeling or emotion, especially as manifested by facial expression or body language (from *The American Heritage® Dictionary of the English Language*, Fourth Edition, 2000, Houghton Mifflin Company). This is especially pertinent since body language and facial expressions are the primary modes of expression of affect states within the game world. We add the further affect of a psychic or mental *behavior* to represent complex influences, interrelationships and patterns among and between affects, sensory inputs and behavioral outputs.

### Personality

The mind model is based upon a view of personality that builds upon three different ways of interpreting the human mind. Biographical (psychodynamic) psychology is concerned with the personal psychic structure of an individual in the context of their life experiences. The five factor trait model is a commonly used model for classifying personalities. The phenomenological model is concerned with life purposes. In a sense these three models look at the past (psychodynamics), the present (trait descriptions) and future (phenomenology) of an individual from a psychic perspective. These models are summarized briefly here, since their detailed elements and interrelationships provide a backdrop to detailed design of the game system.

The personality system is an API consisting of several classes and interfaces for instantiation of the player character. In this system the "mood" is a state which is dependent on both in-game states and the current mood of the player him/herself (color of the other world) and which is taken into account in the body language output.

Personality is modeled using a 5 factor trait model to describe behavioral disposition, with Maslow's [10] model used to describe character purpose and meaning. This integrates with a behavior network to arbitrate interrelationships of these components with activation and deactivation of animated gesture options for the player (automatically triggered gesture responses are also possible), and also within an overall psychodynamic model of emotional structures and substructures of the mind.

#### *Psychodynamic inspiration*

Psychodynamic models of the mind are based upon the Freudian distinctions between:

- the *id*, which is a basic and biologically based level of drives and needs
- the *ego*, which modifies desires arising from the *id* and directives from the superego in the light of the current situation for the sake of self-preservation
- the *superego*, which is a set of internalised goals, directives, values and behavioral rules that have been learned from authority figures such as parents

The psychodynamic model functions as an inspiration for player character mind modeling; the *id*, the *ego* and the *superego* are not explicitly modeled as components in themselves. As Bellman says, there is a danger of postulating a homunculus inside each brain as if there is a "little seat of self" sitting there and controlling all the rest. [4, p 169]. The instantiated mind, as well as our biological minds, operates with so many parallel processes that a centralized view of the ego not is applicable. It can be added that a homunculus provides no explanatory utility for the mind, since it recursively suggests a homuncular account of the mind of the homunculus itself (to infinity).

Nevertheless, the Freudian model is conceptually useful for distinguishing player character goals, drives and social norms guiding behavior into layers, and also for showing what we leave out.

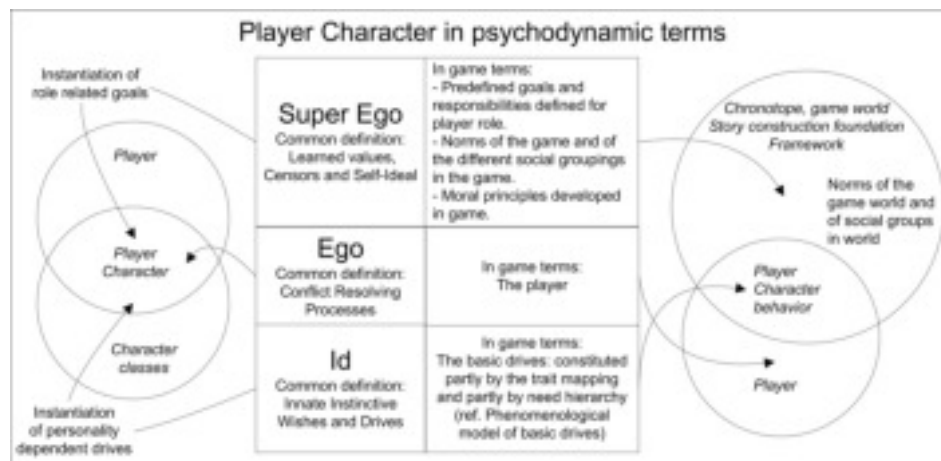


Image 3: Player character in psychodynamic terms

In the first iteration we will not include a layer of basic drives such as hunger or need for sleep which traditionally would be a part of the id-layer (which would result in game-play requiring the player to satisfy the player character's need for sleep, food, mating etc.). The decision to not implement this depends on the rule set of the game world. Ouroboros at this stage will not have rules referring to basic needs or drives. The ego layer will, on the other hand, mostly be provided by the player, being the core of the game-play experience. Ego functions are also directed automatically within the player character by contextual switching of behavioral options presented to the player. Superego functions will be emergent phenomena within the MMORPG, and may also include predefined high level character goals.

From this perspective, in the Purgatory engine game rules and specific mind models embody the psychodynamics of a character, or what Grof refers to as COEX structures, or constellations of condensed experience [19]. COEX structures are patterns of emotive and affective response to people, objects, events and situations, developed as the individual's ego defence mechanisms for resolving and managing conflicts within and between the id and the superego.

#### *Inspiration from phenomenological psychology*

Based upon Maslow's principles, the phenomenological/teleological model presents a hierarchy of needs representing a system of purpose for the individual [10]. These are general, where the character, their setting within the game, and ongoing experiences provide more specific manifestations of these purposes. There are also being-values, and these are the ones that we find more interesting. A particular character may have a certain set of being-values to pursue in order to achieve purpose and meaning. The being-values Maslow writes about include: wholeness, perfection, completion, justice, aliveness, richness, simplicity, beauty, goodness, uniqueness, effortlessness, playfulness, truth and self-sufficiency.

Components for these being values will probably be added to the module in parallel with the development of the story daemon system which is concerned with creating a framework for building compelling and dramatic narratives. This system will also involve goal-driven gameplay, and have affects upon how being-value nodes function in the Purgatory Engine.

#### *The big five*

In the five factor personality trait model, each factor is further divided into six facets, resulting in thirty descriptive categories.

Factor:	Facet
Extraversion	Friendliness, Gregariousness, Assertiveness, Activity Level, Excitement-Seeking, Cheerfulness
Agreeableness	Trust, Morality, Altruism, Cooperation, Modesty, Sympathy
Conscientiousness	Self-Efficacy, Orderliness, Dutifulness, Achievement-Striving, Self-Discipline Cautiousness
Neuroticism	Anxiety, Anger, Depression, Self-Consciousness, Immoderation, Vulnerability
Openness	Imagination, Artistic Interests, Emotionality, Adventurousness, Intellect, Liberalism

Image 4: Personality traits



In psychology there are tests to classify the personality of an individual based upon this trait scheme. Tests consist of answering a set of questions, where positive or negative answers to a given question are correlated (positively or negatively) with (facets of) one of the five personality traits.

In the mind module each trait will be a node in the weighted network, but as compared to mood nodes, sentiment nodes and emotion nodes the change rate of their values is very slow.

The traits listed here represent part of a (fictional) ontology of mind. Depending on the type of character that a game mythos requires, it is necessary to recognize this as both a starting point and a fictional construction; it doesn't need to have any known or obvious relationship to the structure of real minds. The criteria for the success of such models is the impact on the game play experience. As Sloman points out "Different architectures will support different collections of states and processes: different mental ontologies. Using this design stance we can then define different sorts of emotions, different kinds of awareness, different kind of learning, different kinds of intentionality, and so forth in the context of the architectures that produce them." [4, p 40]

### **Emotions**

The emotions that we have chosen to implement as nodes in this iteration are the ones that according to Ekman have the characteristics of automatic appraisal, commonalities in antecedent events, presence in other primates, quick onset, brief duration, unbidden occurrence, and distinctive physiology. [3, p 18] They are as follows: Amusement, Anger, Fear, Guilt, Interest, Pride in achievement, Relief, Sadness, Satisfaction, Sensory pleasure and Shame. In order to achieve the game play mechanics we need in Ouroboros we have also added "pain", since it cannot, under all circumstances, be seen as an opposite of "sensory pleasure".

### **Moods and Color of the Other world**

The immediate visual outputs of moods on the player character are posture, gesture and expression changes depending on the mood state. In gameplay, different tasks must be done differently, if they can be done at all, depending on the mood.

Moods are modeled by four scales: Harmonic ranging to happy (HH), Gloomy ranging to depressed (GD), Cheerful and friendly (CF) and Annoyed ranging to angry (AA). Moods are not always combinable. A player character cannot be in a HH mood at the same time as GD, but it can be either CF or AA, even though CF is more likely. The mood affects the weights on emotion nodes, making the threshold values more or less likely to be reached depending on the context.

Mood in-game is both a result of the in-game experiences and basic personality settings of the player character, and the player bringing his or her real mind into the game world. As an attempt to bring in the emotional setting of the real player into the multiplayer game experience we introduce the *Color of the Other World*. The Other World here being the 'real world' as opposed to the game world that the player currently is a part of. The first idea was to have the player character mood totally controlled by the player, but the downside of this is that it might encourage the player to set a mood which does not reflect their real mood but instead is used as an instrument to enhance the properties of the player character to make it more successful in game play. Therefore it is crucial to have a feature that has an impact on game-play, but at the same time does not overwhelmingly support the success of the player character in accomplishing tasks or goals within the game. It would also be a signal to other players that might explain some reactions of the player, and a signal for what kind of gameplay and interaction the player at the moment would be interested in. This is a first approach to

be refined by experience. It may also be that having no direct player control of mood results in a different and perhaps deeper engagement with the player character.

### **Sentiments**

In the mind module a sentiment node is tied to an emotion and either a certain individual object or to a certain type of objects. A player character can for example have the emotion Fear tied to an object of the type “wolf” or towards another player character. When the player character who owns the sentiment gets a sensory input of either of these objects in perceptual/influential range, there is an immediate change in the value of the emotive node fear. If the value exceeds a pre-specified threshold, an emotional reaction is triggered.

### **Time and Behaviour**

In our system we need to define the persistence of affective states, and we base the implementation on Frijdas research. Emotional events, he writes, lead to emotional episodes that typically last for one hour or more. In our implementation a high threshold value for an emotional node leads to an immediate emotional reaction expressible by gestural language, but the emotive state and the mood are affected for a longer time span. “Emotions, it is said, tend to be of short duration; moods may persist for a day or even more. [...] More important, the duration of an affective state is uncorrelated with whether the state is an intentional or non-intentional state, that is, whether or not it relates to an object.” [1 p. 61]

For us, the use of threshold values reaching critical values initiating immediate emotional reactions is comparable to Lazarus’ notion of acute emotions : “Acute emotions refer to the immediate adaptational business in an encounter with the environment, the fate of a specific and narrow goal that confronts a beneficial or harmful (or threatening) environmental condition.” [2, p. 84].

### **The Player Character Mind as a Semantic Network**

We have described how the player character’s mind is modeled in terms of personality traits, moods, sentiments, emotions, being values and behaviors. These categories are realized as nodes within a semantic network, generally functioning as a weighted activation net, but with other computation models available. Links between the nodes show how the different components interrelate, which may be as direct influences or as influences effecting more complex behaviors modeled as networks of behavior nodes. Behaviors include both complex and primitive behaviors. Primitive behaviors include the execution of animation sequences or other media primitives, computations, database operations, perception input and processing, activation or deactivation of lexical subsets, and inter-game-object message processing. Complex behaviors are those that can be decomposed into hierarchies and patterns of primitive behaviors, such as go-to-place-X, find-character-Y, seek-an-ally, and maximize-your-number-of-worshippers. Complex behaviors can also represent particular kinds of psychic structures, such as obsessions or neuroses.

The implementation of this model is rather generic, using psychic component classes that may contain a range of different computation types that act upon a variety of different types of data objects. Psychic components may then intermap by relationships of:

- positive or negative levels of activation
- elements that can send (data, symbolic, and/or complex) objects to other elements
- elements that can switch other elements on or off

Links between elements are message (or signal) paths having signals that may carry:

- single message events
- repetitive patterns of messages
- continuous messages/signals

Links can simply connect one element to another, or may have a prioritised relationship to links between other elements [20, eg. allowing them to suppress or inhibit the influences of other elements, in the style of a subsumption architecture].

Elements may then react to an input message in the following ways:

- as an Augmented Finite State Machine (AFSM), change state
- perform a neural network or weighted activation network computation operation on the input value
- perform an arbitrary computation on the input value

The details of a particular character mind are represented in a data (XML) file that is read and used to instantiate an actual mental structure consisting of instances of the generic mental classes interconnected in a network of links. Updating the state of a mind is then a matter of taking all of the inputs to each node from the previous execution cycle and computing the node outputs for this cycle based upon those node inputs and local node computations. The node outputs, together with virtual perceptions, form inputs for the next computation cycle.

#### **A specific mind**

The pre-authored player character Greyhowl in Ouroboros is known as a hedonist of epic proportions and his ballroom parties are legendary. Greyhowl is found at the centre of debauchery, always with a pained look on his bored face. He plays his games of sedition and seduction listlessly, ever hoping for something that will touch his cold soul. Greyhowl is of the undead Bysen breed. These are shadowy figures crying in fear and hate in the midwinter night. In the old days they haunted and hurt humans, feeding on their fear of the unknown. Bysing are beings present in the Gotlandic mythos of the Ouroboros project.

Greyhowl has the following values set in his trait nodes (span -50 to 50):

friendliness= -30.0 gregariousness= -20.0 assertiveness=10.0 activity level=10.0 excitement seeking= -25.0, cheerfulness= -45.0, trust= -30.0 morality= -40.0, altruism= -30.0, cooperation= -10.0, modesty= -10.0, sympathy= -30.0, self efficacy=10.0, orderliness=-10.0" dutifulness=0.0, achievement striving= -20.0, self discipline=0.0 cautiousness=10.0 anxiety=35.0, anger=10.0, depression= 35.0, self consciousness=30.0, immoderation=30.0, vulnerability = 40.0, imagination= 10.0 artistic interests= 15.0, emotionality= -25.0, adventurousness= -20.0 intellect= 25.0 liberalism= 20.0

The single being-value Greyhowl strives for is Aliveness. This is uncommon, but depends upon his undead nature.

A long term story daemon holds the story premise and plot point knowledge for the scenario in which Greyhowl's love for Jorme, his servant, could make it possible for Greyhowl to stop being undead.

Initially one sentiment is instantiated: the player character Jorme is associated with the emotion Satisfaction.

If the PC Jorme is in the range of Greyhowl, the emotion node Satisfaction will increase its value. The weight of how much the value will increase depends on the current mood. In the next cycle the mood is affected by the Satisfaction node. This in

turn might change the body posture of Greyhowl and free up the possibility of performing certain gestures or actions.

A possible threat to any character is to be cursed by, for example, an obsession or a personality disorder. A personality disorder in the mind module can consist of one or several trait nodes being set to abnormal values, which in turn would have a heavy impact on the autonomous part of the player character's overall behavior. An obsession is a sentiment node where the emotional weighting towards some specific object/s is/are set to an abnormal value. Also this will have a heavy impact on the autonomous behavior of the character, especially noticeable when the object of obsession is perceived by the player character. A story daemon or another character could be the origin of the curse, and therefore also being the key to how the cursed player character can get rid of the curse.



Image 5: Greyhowl

## CONCLUSION

This paper has described ongoing research to develop emotive and dramatic forms of game play by developing game rules that use mind models for the player characters in massively multiplayer games. The nature of the player character in MMOGs calls for other characterization methods than the ones used in traditional linear narrative media. Here we have outlined a system that provides the player character with a prosthetic mind and makes the player character into a semi-autonomous agent. The autonomous part of this agent helps to define and characterize the player character by affect states and emotional reactions that are interconnected with the game world and its inhabitants. The game rule and mind model processing system is implemented in an AI engine called the Purgatory Engine. The project is developing a research MMORPG based upon the engine, called Ouroboros, a dramatic role playing game set in the Nordic mythological milieu of Gotland. This is an ongoing project following an iterative methodology for exploring new game rule sets and game play models, together with an incrementally

expanding game world. The overall goal is to develop games that focus on emotive game play and dramatic interaction.

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