

Character Data Sets and Parameterized Morality

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Abstract

Creating dramatic and engaging characters is one of the ‘holy grail’ issues in video games. Another – related – focus is the implementation of morality in game characters. We look into a combination of these two issues inside the game character’s definition. This character data set forms the backbone of the game entity and a basis from which behavioral engines can operate. Some of these data features refer to established character definitions from traditional media, including physiology, sociology and psychology as three defining elements of dramatic characters. Historically, games have developed game character physiology, but how do data sets provide for the other two elements? We refer to three games (*Chrono Trigger*, *Fable* and *Ultima Online*) and examine their character data sets in regard to:

- a) their range, limitations and contents
- b) ways in which they mimic social and ethical references

Based on the analysis we suggest a basic rethinking of a character’s data set combining the elements of consistency and granularity that allow for a clearer tracking and representation of moral behavior as “parameterized morality”.

Introduction

In his theories of dramatic character creation, Lajos Egri identifies physiology, sociology and psychology as the three dimensions of a dramatically compelling character. [1] He applies this classification scheme to create character conflict and ensure narrative advancement. A direct application of Egri’s overall approach to story generation and decision making to video games is beyond the scope of this paper. Here, we concentrate on the relatively simple character data set, the collection of all variables that define a certain character’s basic capabilities, achievements and requirements. This differs from the field of characters’ artificial intelligence as it describes only the underlying information, not the processing of this data. Egri’s categorizations are useful for classifying character statistics, identifying holes in current models and assisting us in a selection of data values that can support robust, three-dimensional characters. Modern video

games often represent the physical qualities of characters with considerable success but largely ignore the other two dimensions [2]. Yet, in literature, drama, film as well as in many modern video games characters are the dominant source for dramatic and narrative [3] involvement and compelling interaction beyond sheer physical performance [4]. Any meaningful social and psychological action on this level requires suitable data sets. Traditional computer Role Playing Games use character data sets that detail the character's ability to participate in the conflicts of the world—primarily physical contests of strength, agility and mental prowess involving sword slinging and long treks across unfriendly landscapes. The data to support dramatically compelling social interactions is usually limited [5].

For characters to reach their full dramatic potential their character data sets must allow them to exist physiologically, socially and psychologically. Furthermore, good character data sets have to address relevant behaviors with the fewest values, minimal quality overlap and close connections between the variables to provide optimal performance [6].

This paper examines values by which video games describe a character, focusing on the character's morality data. Role Playing Games (RPG's) serve as our prime examples, because they often attempt to implement dramatic and believable characters via detailed character statistics, extensive character development and (relatively) engaging plots. *Chrono Trigger* [7], *Fable* [8] and *Ultima Online* [9] are examined due to their varied representations of social and psychological character dimensions. The goal is to identify a versatile data set that allows for a practical yet diverse tracking of a character's morality

What Defines a Single Player Character?

Laurel refers back to Aristotle in defining a character as 'bundles of traits, predispositions, and choices that, when taken together, form coherent entities' [10]. For game characters these bundles are defined numerically by objective data that is interpreted and processed – the character data set. These data sets are closely connected to the actions a character can perform. Characters engaged in physical pursuits are built out of physiological statistics like strength, agility and endurance. Similarly, characters existing in a social arena require socially supportive characteristics like neatness and attractiveness [11]. Character data and actions are interdependent—characters cannot act meaningfully in ways that are not supported by their data set and any data is inconsequential if the characters lack the necessary actions to make use of this information. We do not offer any AI approaches on how to develop the actions but instead limit ourselves to a tracking of “parameterized morality” within the data set.

Character data change over time as the character develops. The dominating development forms are either through milestones (often implemented through a special item to enhance the character) or performance repetition (often implemented as repetitive killing to gather experience points that level up the character). In the following, we will exemplify and trace core elements in the analysis of three different games.

The Trial of *Chrono Trigger*

Chrono Trigger is a single player RPG combining simple character data sets with extensive scripted dialogue, plot events and meaningful character choices. The player leads Crono and a band of friends to save a princess, the world and the hero himself, destroying numerous enemies and rescuing other characters along the way. The adventure unfolds along a linear narrative spine but moves through different time zones. These time shifts give the characters considerable agency over the state of the world.

On the other hand, *Chrono Trigger* allows very little character customization. Each character develops in its own linear fashion, distinct from the rest of the party members but on a linear trail. Seven characters form the playable party, each of which has a strict, pre-determined appearance, advancement path, set of abilities and possible weapons. Upon killing enough enemies and earning enough experience, a character will level up, increasing his values for hit points, magic points, power, stamina, speed, magic, hit chance, evade chance and magic defense. At pre-determined points in their journey, the team will find new items to further enhance the characters. The player's customization over their individual character is restricted to choice of a name and which equipment to wear. The most powerful influence over the character development happens in the combination of active characters.

Crono's active team is composed of three characters selected from the seven that are available in total. Although each individual character develops in a linear way, their abilities can be customized via the team selection. Groups of characters can gain experience fighting together and learn cooperative skills using two or three characters at a time. In this respect, *Chrono Trigger's* character-cooperation develops into a sort of social or shared character data set, a connection between two characters that is gained through shared actions. Different character data sets are interdependent. This offers the greatest range of customization in the game as a player might choose never to use a particular set of characters, thus never developing their combined skills – or she might favor a certain combination. But what about the issue of morality?

A few hours into their epic fantasy adventure, the game's main character, Crono is being tried in a virtual court of law, accused of kidnapping the kingdom's princess. With no hard evidence, the

prosecution calls for moral witnesses. One after another, NPC's step into the virtual courtroom and recount particular actions Crono (controlled by the player) performed over the first hours of gameplay as the crowded courtroom boos and cheers depending on the player's choices in the cited situations. Up to that trial, these points of minor moral choices seemed insignificant, but as they are being recounted in the trial setting, *Chrono Trigger's* world reveals an unusual moral awareness. The inhabitants of the game world seem to judge each other on complex moral issues and expect Crono (and the player) to take responsibility for his actions even in every-day moral dilemmas. Crono can be found an innocent man with sparkling morals if, for example, he rescued a little girl's cat, immediately checked on the princess when she fell over, refused to sell her pendant and patiently waited as she shopped. If the player had chosen the "immoral" path at these occasions, Crono will be convicted.

But while the situation simulates a moral depth, this dramatic event does little to shape future gameplay. A verdict of either innocent or guilty has no quantifiable effect on the rest of the game. The result is never brought up again and has no influence on either the story or the characters. Regardless of the jury's decision, the judge decrees that Crono be imprisoned. Thus, no benefit is gained by acting morally apart from the approval of the game world NPC's. The character data sets do not supply a more elaborate response.

The courtroom episode in *Chrono Trigger* highlights several underdeveloped aspects of encoding morality into a game character. Most notably is the (general) lack of tracking and response to character decisions not quoted in the trial but at least as significant for moral judgments. Crono and his team are continually making morally poignant decisions, such as leaving a poisoned prison guard to die or throwing an innocent kitty into a bottomless pit. These actions, however, are not stored in the character data set and are not referred to at any later stage. Unless they offer a branching opportunity in the storyline, they are ignored by the game. Thus, the courtroom episode stands out as a singularity that illustrates the lack of moral tracking in most of the rest of the game experience.

However, two important points are illustrated by *Crono Trigger's* focus on inter-character relations and a linear narrative. First, a world is created in which a character can be mostly good (the player is on the quest to save the entire game world) and still slightly devious (the player might leave the prison guard to die). A character described in that way would still receive positive NPC reactions and his small misdeed would be lost to the moral sum. A greater granularity of this system could represent complex characters – like Robin Hood – who steals but is still morally commendable. But as the most advanced character development in the development of the teams is driven by physicality and combat moves, it leaves little space for such multi-

dimensionality.

Secondly, the incomplete implementation of moral issues in this decade-old Super Nintendo game suggests that the labor required to extend similar systems to more complicated modern game worlds is impractical as it forces the quest into too many branches to accompany for the different outcomes. A generic and scalable solution is needed to offer current games a similarly compelling moral arena without an explosive increase in custom event tracking and handling.

Character Data in *Fable*

Fable aimed to reverse the traditional single-player linear RPG model by constructing a game narrative out of the growth of the player's character. Although a linear narrative shell structures the game play, the foregrounding of character development has laid the foundations for a dramatic character creation.

The construction of a personal history is a core motivation for playing *Fable*. When playing *Fable*, the player creates a unique hero that is provided for by an extensive character data set. Its moral significance evolves from a detailed feedback loop between a player's actions, storyline decisions and the emerging individuality of the hero avatar. The traditional attribute values (strength, skill, magic powers) of RPG character generation are present, but the "alignment" value mirrors a tracking of the player's moral decisions. The game's NPC's react to this through a flexible behavior based on the hero's current state. In that way, the game attempts to introduce a level morality and responsibility. By implementing this moral dimension and simulating social interaction, the game tries to implement Egri's demands for dramatic character generation.

A loop between social judgment of available actions in the game world and the morality attribute is established early on in the game as the child hero is presented with several moral decisions. As the game progresses, these moral moments are not only driven by branching storylines but by the player's play decisions, leading to a matrix of actions that add or subtract points to the alignment continuum. For example, even physical accoutrements purchased by the player (clothing, tattoos, etc) can shift the morality slider in either direction.

Still, in its most concrete form, character development in *Fable* manifests itself through the physical appearance of the player's heroic avatar. While the player's agency in the world environment is limited to marginal alterations like the ownership of buildings and minor personal touches therein, the player's ability to actualize changes on their character is highly detailed. *Fable* tracks multitudinous events and player actions in a list of over 70 values that ranges from traditional experience levels (general, strength, skill, magic), personality continuums (alignment,

attractiveness, scariness), mini-game high scores, to the number of divorces your hero has incurred over the course of play.

Recording extensive game statistics also features in games like Sega's *Shenmue* [12] and Rockstar's *Grand Theft Auto III* [13]. However, these games lack a deeper moral tracking. *Fable* bridges a gap between excess and usefulness of character data sets by emphasizing the story that grows out of this data, drawing character growth on multiple levels and using it to drive subtle NPC interaction. For example, tracking the level of the attractiveness of a player's customized hero is used to shape reactions of NPC's in the game world while the value itself is interconnected to other variables (e.g. physical appearance). Values form a complex network – but the ultimate tracking of the moral status stays a single variable.

The use of the moral variable in the form of the “alignment” data attempts to create a dynamic social world even if the method, drawing data from a single morality continuum, is one-dimensional. Unfortunately, this simplicity of deriving morality from one value limits the spectrum and thereby reduces the impact of the morality tracing within the gameplay. The game does not record moral acts in their relation to each other, but rather lumps them all into one value. There is no historical record of individual moral actions, so a character that earlier in a game slaughtered a town's population (and thus should remain a criminal forever) will be praised when he returns from a successful raid on a bandit camp since all NPC interaction is drawn from the single alignment value that – after the raid – is dominated by positive factors.

The real strength of *Fable* is that the player has enough agency over his character's data set. Playing through the same linear story can lead to unique outcomes each game. Heroes sharing core data (e.g. strength) are still treated differently as long as they differ in other values (e.g. appearance). Two game heroes might share the same core data, but as long as they differ in a significant way in other values, they are treated differently by the NPC's resulting in a different gameplay experience. While *Fable*'s underlying character model does not store values in a novel way, its insistence that story grows out of character is a step towards the development of more dramatic characters in video games.

Representation of Social and Psychological History

Change has been identified as a core element of characters in literature, drama and [14] film [15]. But the values offered in *Chrono Trigger* and *Fable* provide a fair idea of a character's immediate state—and little more. No information is offered as to how a character attained his current position. This might be motivated by the dominating interaction, the battle, in which the path to

physical strength is meaningless and the crucial value is how strong the game hero is at that moment.

Psychological values and interactions prove to be a different affair. In a game with a slider bar measure of morality, for example, a man who regularly gives money to beggars and occasionally murders civilians would be judged “good,” if the sum of his generosity outweighed the collective “bad” of his murders. Without the demonstration of generosity, the same man would quickly fall to the depths of immorality. In contrast, our real world social assessment of a character’s morality is multi-layered and heavily dependant on history. That is why real world societies keep criminal records. The number of previous offenses is a major factor in our moral and judicial assessment. Performing a great many good deeds will not wipe a murder off of one’s record—unlike in most games. Situated in our own moral codices, we would argue that both men are murderers and treat them accordingly. In contrast, the game engine would judge the first man as significantly better, perhaps even as “good.” The system is limited in its moral assessments, because it lacks a sense of history. Such a lack of historical relevance flattens dramatic characters to static and shallow entities.

Several systems have been suggested to enhance character depth and flexibility. Paul Schwanz proposes drawing on a character’s profession and values of wealth, power, information and health as a way to judge a character’s actions through his personal and professional lens. Under this model, an assassin is held to different moral standards than a merchant. A murder committed by each would be treated differently—the first with respect for an assassin’s job well done and the latter with disdain for a particularly untrustworthy trader [16]. Chris Crawford suggests using various character moods in his interactive narrative models to give characters dynamic responses to the same event based on their current feelings [17]. Lee Sheldon endows each of his NPC’s with personality values of like, trust and respect. A NPC’s individual disposition is summed with a player’s personality to gauge an appropriate NPC reaction [18]. Michael Mateas developed and implemented an advanced form of narrative intelligence that exemplifies the development of artificial intelligence in multi-facetted game characters [19]. Such an AI driven approach is beyond the scope and topic of this paper but points towards a successful operation of believable game characters via consistent behavior.

The aforementioned models each have definite gameplay advantages. Schwanz’s character values encourage players to role play their characters with respect for the character’s personal values. Crawford and Sheldon’s models could make NPC’s in virtual worlds act significantly more human and respond in more flexible ways. But apart from Mateas’ AI-driven approach, these models provide insufficient incorporation of a character’s history.

Tracking and revealing a character's history is a means to describe a character more accurately to another character (human or NPC) as it provides not only a momentary snapshot of the character data set but reveals its development. The character becomes more interesting and complete. To develop such a history level in the character data set, we will look at *Ultima Online* that features a high level of history in the shared knowledge about the world, its community and the player-characters.

Single player games store all applicable data as numbers in a database. This data is interpreted by the computer and stays within the system. A character's strength or attractiveness can be nothing other than what the game says it is. Likewise, as far as the NPC's of the game world are concerned, a character's moral standing is judged solely by the coded values.

More accurate modeling of social systems is found in massively multiplayer games. They collect a lot of their history outside of the objective system's data set in websites, chat channels, publications and real-world meetings. At the same time, it is the duty of the game to provide the players with a means of assessing the other players and a diverse enough vocabulary for interactions. The following chapter looks at ways in which *Ultima Online* mirrors social frameworks within this in-game character data set.

***Ultima Online* – Data Sets in Massively Multiplayer Games**

Ultima Online was released in 1997 and quickly attracted a large fan base. Technically, the game used isometric 2D graphics at a time when 3 dimensional worlds were quickly becoming the standard. But it levels graphical lacks with its unique offering to players to be a citizen of a virtual world. The bulk of *Ultima Online*'s character data sets mirror the simple values in *Chrono Trigger*: strength, dexterity, intelligence, health, mana, stamina, equipment, inventory, name and character appearance. Characters are also marked with the handful of skills they have chosen from the 50 available options, spells they have acquired, their guild affiliation, a murder counter and a two dimensional measure of their social position – called the reputation system. We will focus on the last two elements as simulations of social systems in an online community.

As an example of tracing a character's history, the murder counter decays over time and distinguishes between a short-term and a long-term memory. A single kill will be "forgotten" within 5 hours of gameplay and taken from the short-term memory. The long term memory erases a single kill of an innocent within 24 hours of gameplay. Both memory layers have different impact on the gameplay (e.g. NPC town guards might prevent the character from entering a virtual city).

Character reputation in *Ultima Online* is measured at the combination of two values: karma and fame, forming over 20 moral titles such as “honorable”, “dastardly” and “dread lord”. These titles are added to the character’s name depending on its reputation. Karma attempts to quantify a character’s propensity toward good or evil, while fame is a rough measure of how many powerful enemy monsters a character has killed.

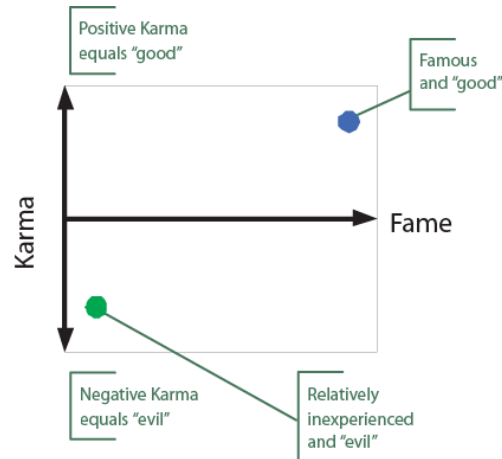


Figure 1: *Ultima Online* – tracing the reputation: two characters with different fame and karma values

The social consequences of *Ultima Online*’s reputation and murder systems are significant. Crimes have been divided into “murder” and “everything else”. The status of murderer outweighs any title granted by the reputation system, so if a character with a positive karma kills innocent NPC’s, he is still a murderer until enough time passes for his deeds to be forgotten or pardoned. The result is a separation of major and minor sins allowing characters to be held accountable for both separately.

Still, the system falls short of any finer granularity. The status of murderer is the only aspect of the reputation system that is notably significant to either the players or the NPC’s. Murderers cannot enter towns and other players either immediately attack or elude any murderer that is spotted. Regarding the reputation system, NPC’s do respond to a character’s reputation by varying the friendliness of their greetings. The most significant difference between a good or evil character, though, is the title placed before a character’s name. The title marks the character clearly for any other player. It is this level of player-player-interaction that is the true backbone of *Ultima Online*. Despite a simple character data set and almost trivial interactions between player characters and NPC’s, *Ultima Online* feels like a dynamic, living world due to expansive tapestry of human to human interaction. This level of player-player interaction is also the greatest source for inconsistencies with the game’s moral system.

Depending on the player’s style, characters will often completely defy their title—even that of murderer—and players willing to study their behavior can uncover the nature of the character beyond the game’s estimation. A player could be a murderer because he protects new characters from being bullied by older ones. Similarly, a “Great Lord” with no murders, having attained the highest moral status in the *Ultima Online* universe, could still be disrespectful, rude and generally irritating depending on the player behind the character. Players will grow to respect the noble murderer while also learning to disregard the “Great Lord.” A kind of subjective and shared character data set exists in the social conscience of the player community. This does not apply to single player environments but the notion of a growing history and of an element of variable decay time to simulate forgetfulness stand out as applicable options.

Encoding Moral Data into “Parameterized Morality”

As the discussion has shown, character data sets not only define an operational character but they also provide information to players and NPC’s to make reasonable decisions and (moral) assessments concerning this character. Tracing the moral status in this data set is a critical and underdeveloped element. Based on the discussion so far, we propose a re-structuring of character data sets to better incorporate a moral instance in the character description.

We develop our model in three steps: first, we introduce the concept of “consistency” to trace a character’s reliability; second, we refer to a level of “granularity” to distinguish between different traced events instead of conflating them into one; finally, we combine the two into a proposed form of a multi-layered system of “parameterized morality.” How such a set might be interpreted and applied to the character’s behavior is left to the field of artificial (dramatic) intelligence.

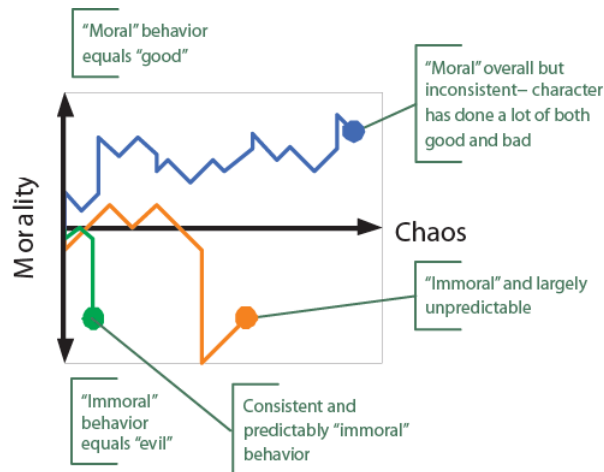


Figure 2: Consistency – three different characters and their levels of morality and consistency; Note that the system only stores the position, not the whole path, it is included here to illustrate the development of the particular character over time

“Consistency” is a simplified measure of a character’s moral history. Consistency is driven by the same data that influenced, for example, the alignment variable in *Fable*: a character’s specific actions are interpreted as either good or evil. Instead of representing this data as a single level slider value, we suggest to use it further to deliver an image of the character’s consistency over time. Whenever a character conducts an action that qualitatively differs from his last one an inconsistent behavior is recognized and the “chaos” level increases. If the character has conducted only “moral” deeds, his value rises on the “moral” scale with no development on the “chaos” axis. If the same character then conducts an “immoral” action, his value decrease towards “immoral” and it grows towards “chaotic.”

Thus, the “chaos” level is an indicator of the player’s/ character’s reliability. A coherently played character (e.g. a character staying “moral”) stays on the lowest level of “chaos” throughout the play – one that changes his behavior repeatedly will have a high “chaos” rating. At the same time, the “chaos” value is independent from any moral assessment of the actions themselves. A consistent “evil” character still gets a low level of “chaos.”

Consistency addresses the problem, that a “good” ranking of a character only shows that it has done more good than bad in the overall play behavior—an accurate and useful estimation of how it will behave in the immediate future is difficult to make. Using the proposed system, the actions of a character with a low “chaos” rating can be more reliably predicted, because his consistency rating shows that he has rarely deviated from his current state. A character with a high “chaos” value can be judged more accurately as being less reliable. In reference to *Ultima Online*’s murder count system, the “chaos” value decays over gametime, simulating a form of forgetting and allowing a player to change paths along the history of the character.

“Granularity” refers to the critique on *Crono Trigger* and *Fable*. It is the division of the moral umbrella terms “good” and “evil” into more specific moral tracks. Every game designer has to decide which events might be interpreted as morally adequate or not in the game world, but the proposed level of granularity calls for a diversification of different activities. Granular systems allow for the representation and response to more complex character activities. Instead of reducing every action into a single overall assessment of “good” versus “evil” the activities in regard to certain items or values are traced independently.

This mirrors the excessive and specialized character data sets seen in *Grand Theft Auto* or *Fable* but situates them in a moral universe without unifying them into a single variable. Schwanz, for example, divides morality into a character’s tendency toward giving and taking health, wealth, information or power.

Simplifying Schwanz’s model we can imagine a good-hearted thief in a game world where morality is composed of one’s propensity for stealing and for murder. The thief steals without inhibition, but will go out of his way never to hurt another person and to protect human lives from other threats. A granular system based on Schwanz’ values represents the thief appropriately as having an very good moral value regarding life and a very low value regarding wealth without summarizing both. A richer granularity system might trace separate behavior in regard to different objects, morally charged characters and/ or spatio-temporal conditions. In contrast, a system without granularity conflates all states into a single scale from good to evil. The “good thief” (aka Robin Hood) might end up as a “neutral” character in terms of morality—a position which should be reserved for characters who have no part in morally significant actions. Granularity, thus, provides a means for diversification of a character set into a multi-layered matrix.

Overall, consistency is our attempt to include the element of history in a character data set, while granularity provides us with a multi-layered way of tracing. The final step is the combination of the two into one matrix. In this step, we apply the dimension of consistency to every element provided by a title’s granularity, adding the necessary history to the tracing of each value. Thus a single character’s moral status would be presented by a number (defined via granularity) of values.

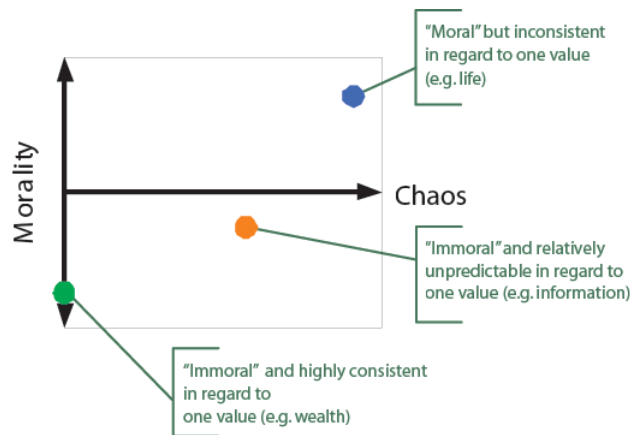


Figure 3: Combining Granularity with Consistency – three different values of one single character; an example of a simple matrix

The decay time of the consistency value can vary depending on the design and preferences of the game title. Such a variable tracking over time mirrors *Ultima Online*’s short- and long-term memory of the murder count but applies it to every traced element and thus allows for a simple, yet effective time-based hierarchy within the game specific value system. Referring again to Schwanz’ system, the decay value of manipulating wealth (stealing versus donating) and that of manipulating health (killing versus healing) would have different decay times. Thus, a murder

would be remembered longer than a theft, resurrecting a character would be remembered longer than a money donation, the overall assessment of the current moral status would be far deeper and better motivated.

Our model re-uses the set-up of modern character data sets, but it organizes them into a more expressive and deeper matrix. This matrix of “parameterized morality” gives both, player character and NPC’s the necessary means to understand, predict and respond to a specific character better, without burdening game developers with the task of creating extra data for the character set. It also adds complexity to the moral status of the character without producing a data explosion. In fact, the system can be scaled because the rules are generic and widely applicable. The granularity can be as elaborate or shallow as the design and the production allow and consistency is merely an operation on the values tracked anyway. Our approach is a practical and – we argue – effective way to allowing for a deeper and more diverse system that improves the tracing of (im)moral behavior. Ultimately, it is one step further towards the creation of believable dramatic game characters.

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Notes

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 - 2 Chris Crawford, *Chris Crawford on Interactive Storytelling* (Berkeley: New Riders, 2005), 341.
 - 3 Ken Perlin, "Can There Be a Form between a Game and a Story?" in *First Person: New Media as Story, Performance, and Game*, ed. Noah Wardrip-Fruin and Pat Harrigan (Cambridge: MIT Press, 2004), 15.
 - 4 Brenda Laurel, "The Six Elements and the Causal Relations Among Them," in *The New Media Reader*, ed. Noah Wardrip-Fruin and Nick Montfort (Cambridge: MIT Press, 2003), 568.
 - 5 See also: Crawford, *Interactive Storytelling*, 341.
 - 6 *Ibid.*, 199.

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- 7 *Chrono Trigger*, Kazuhiko Aoki, (Square Co. LTD., Super Nintendo, 1995).
 - 8 *Fable*, Peter Molyneux, (Big Blue Box/Microsoft, Xbox, 2004).
 - 9 *Ultima Online: Renaissance*, Richard Garriott, (ORIGIN Systems/Electronic Arts, PC, 2000).
 - 10 Laurel, *Six Elements*, 568.
 - 11 For an early discussion see e.g Michael Lebowitz, "Creating Characters in a Story-Telling Universe." *Poetics* 13, 1984, 171-94. who looks mainly at interactive fiction; the OZ project focused more on emotional behavior see e.g. Bates, Joseph, Bryan A. Loyall and W. Scott Reilly. "An Architecture for Action, Emotion, and Social Behavior." In *Artificial Social Systems. Selected Papers from the Fourth European Workshop on Modelling Autonomous Agents in a Multi-Agent World*, edited by Christiano Castelfranci and Eric Werner, 55-68. Heidelberg: Springer 1994.; Blumberg's work copies basic emotions and animal behavior e.g. Blumberg, Bruce. "Old Tricks, New Dogs: Ethology and Interactive Creatures." PhD, Massachusetts Institute of Technology, 1997. his work was continued at MIT's Synthetic Character's Group; Mateas developed the field of narrative intelligence e.g. Mateas, Michael, *Interactive Drama, Art and Artificial Intelligence*, (PhD, Carnegie Mellon University, 2002); the focus of all of these approaches is on advanced AI use of underlying data sets while this paper concentrates solely on an analysis and restructuring of the sheer data set.
 - 12 *Shenmue*, Yu Suzuki, for SEGA AM-2/SEGA, Dreamcast, 2000.
 - 13 *Grand Theft Auto III*, DMA Design/Rockstar, Playstation 2, 2001.
 - 14 Egri, *Dramatic Writing*, 61.
 - 15 Linda Seger, *Creating Unforgettable Characters*, (New York: Henry Holt & Co., 1990).
 - 16 Paul E. Schwanz II, "Morality in Massively Multi-Player Online Role-Playing Games," *Morality in Massively Multi-Player Online Role-Playing Games*, Richard A. Bartle, <http://www.mud.co.uk/dvw/moralityinmmorpgs.html>.
 - 17 Crawford, *Interactive Storytelling*, 189-93.
 - 18 Lee Sheldon. *Character Development and Storytelling for Games*, (Boston: Premier Press, 2004), 143.
 - 19 Mateas, *Interactive Drama*