Dedication

This thesis is dedicated to Dan and Katrina Wilcox for all their help, support, and cookies. An über-fantabulous thanks to Dan for all his insight into this project and encouragement. This thesis is also dedicated to Shawna Wilcox, thanks for being a friendly ear!
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Abbreviations

Standard Abbreviations in games:

IF = Interactive Fiction
NPC = Non-Playable Character
RPG = Role-Playing Game
PC = Player Character

Standard Abbreviations for platforms (only used in the Bibliography):

PC = Personal Computer, with a Windows operating system
MAC = an Apple Macintosh with an Apple operating system
PS1 = the original Sony Playstation
PS2 = Sony Playstation 2
PS3 = Sony Playstation 3
SNES = Super Nintendo Entertainment System
Xbox = Microsoft Xbox
Xbox 360 = Microsoft Xbox 360
Abstract

The gaming industry is diligently working to find ways to emotionally immerse players in games. Their goal is to evoke emotions in the player, such as empathy, to make the player feel more genuinely involved in the game experience. A large body of work, both theoretical and physical, has been done in this regard. However, in order to have an emotionally immersive game, the player and the game must be involved in an emotion dialogue. It must both evoke emotions (emotion output) and receive emotions (emotion input). To date, emotion input has been largely ignored by game designers, leaving games that “talk” emotionally at the player but do not “listen” to the player. This thesis explores emotion input by designing a game that prompts for and responds to player input of emotions to create a game that listens to the player emotionally. The hypothesis is that the capability to input emotions will create an emotionally responsive world that will facilitate player involvement and immersion.
Introduction

Games no longer have to be a simple experience, a linear track where the player has no effect on the game experience. There has been an explosion of games that allow the player to make choices and experience the consequences of these choices. Some games, like Mass Effect (BioWare 2007), even have these repercussions carry through to their sequels creating extremely long-term consequences. No matter how far reaching the consequences, most of these “choice-based” games merely present the player with action choices that allow the player to select from only a few alternatives.

Allowing the player to supply emotion input to the game and have the game be affected by this information is a reasonable addition to the design of choice-driven games. Adding another layer of player input and game feedback can further enrich the game experience and make for a more responsive and believable world. It allows players to create a more realistic “puppet” of the Player Character (PC). Previously, the player only had control of the external facets of the PC: their position, movement, actions, physical appearance and choices. Emotions add some of the internal components, allowing for a more fully realized PC and facilitating player role-playing.

With the existence of biosensors and brain-computer interfaces, it is possible to attempt to read the player’s emotional state directly. However, it is imprecise; is a racing heart a sign of fear or excitement? Is an increase in sweat a sign of being nervous or a result of an increase in ambient temperature? Trying to understand a player’s real emotional state is a difficult prospect and outside of the scope of this project. The goal is to make a game that listens to the emotion data from the player and is not concerned with surveying all the methods to obtain this data. Additionally, it is unnecessary to use the player’s real emotions to use emotion input and to
explore its effectiveness. The goal is to have the player use emotion input to explore a story space and as a tool for role-playing.

Current games are not totally devoid of PC emotions, but they typically prohibit player control over these emotions. Cloud, the PC from *Final Fantasy VII* (Square 1997), clearly becomes emotionally upset with the death of Aeris, but this is just part of the story. No matter the player’s feelings on the matter, Cloud will always mourn the loss of the healer. Giving the player the ability to manipulate their PC’s emotions will allow them to shape the story and game experience in new and varied ways, creating a much more layered, responsive, and immersive experience. In the previous example, giving the player the ability to manipulate Cloud’s emotions could have resulted in Cloud being angry over her death, ambivalent, or even happy, severely impacting the story. This interaction can add depth and story-customization to any story-driven game, and when perfected could even be part of the solution for emotionally immersive games.

The purpose behind this thesis and its accompanying interactive project, *Crimson Night*, is to explore methods that 1) allow player manipulation of the PC’s emotions and 2) provides a way for the game to respond to that input. By making a game that listens for emotion input from the player, the game and its story becomes more malleable by the player and thus leads to an interesting and enjoyable experience that reacts to emotion input.
Project Description

Crimson Night, the accompanying interactive project, is a story-driven adventure game developed to test and refine the methods of emotion input to create an emotionally responsive game. It is a game where the PC is caught in an emotional dilemma about who she is, who to trust, and where her loyalties lie. Her emotional state transforms how she views her world and how she interacts with NPCs as well as how they react to her. It was consciously tailored to have no “correct” responses or choices. Ultimately, the story culminates in the revelation of her past, tailored to the choices the player made for the PC’s actions and moods.

Player interactions are with the mouse and keyboard or a Microsoft USB Xbox Controller. The game was developed with Adobe Flash and as such can be played on a Windows, Macintosh, or LINUX computer. Using Flash as the development environment also allowed for rapid prototypes and iterative changes as the game was developed.

The story revolves around the PC, Alyn Britemore, a soldier for the Unified Territories (the UT), who is captured by the enemy Doman nation. In custody, she struggles with what she knows about herself and what her captors present to her. Alyn had previously suffered a near-fatal wound that has given her some memory damage, but the Domani claim that the real Alyn is dead and they just moved her memory into the Domani Reyvka Reshon. Reyvka’s parents try to convince the orphaned Alyn that she is their daughter while the similarly captured Juri, Alyn’s beloved fiancé, tries to keep her grounded to her remembered past. Is the PC Alyn or Reyvka? Is the PC in Doman or still in the UT? Who is trying to save her and who is trying to turn her to their advantage? Player choices of emotions and actions dictate which one of these are “true” and determines the consequences.
Player interactions with the game are purely explorative and conversational, with a focus on player manipulations of the PC’s emotional state. There are no puzzles or combat in this small sample of the game as they are unnecessary and distracting to the goal of exploring player control of PC emotions and the game’s responses. The PC’s emotional state affects other NPC’s emotions, NPC dialogue, and NPC opinions of and responses to the PC. It also affects what actions the PC can perform, PC opinions on objects and people, what PC dialogue options are available, and influences the ending.
Emotion Model

A simple emotional model was needed to be the base for the game’s emotion input mechanic. The study of emotions is a deep and complex field as the origins and purpose of emotions is debatable. Theories of emotion are categorized into one of three types: evolutionary (emotions are a result of natural selection), social (emotions are social constructions, learned through social interactions), and internal (emotions caused from biological processes) (Johnson 2009).

However, the reasons behind emotions are unimportant for the game’s model. All that was needed was a small group of “base” emotions so that the game did not have to accept too many emotions, and that these emotions were understandable and clear to a player. There is no definitive taxonomy of emotions, so there are different “base” or “primary” emotions depending on the view or psychologist proposing them.

René Descartes wrote in *The Passions of the Soul* about there being “six primitive passions” of admiration, love, hatred, desire, joy, and sadness, and that all other feelings are combinations of these (Descartes 1650, 54). These “passions” are analogous to the modern concept of emotions, but Descartes described them as emotions of the soul that were caused by “spirits” in the body (Descartes 1650, 23). To “love” or “hate” someone or something was too simplistic as it can be reduced to a “agree with” or “disagree with” system when referring to conversation topics. “Admiration” would also be difficult to utilize in the game, as it is a fairly subtle emotion. “Desire” means to want something, which was deemed not useful for the purposes of this project as controlling what the PC wants was deemed more of an aspiration or needs system rather than an emotion system. Therefore, Descartes’ classification of basic emotions was rejected.
In 1677, Baruch Spinoza argued against Descartes theory of emotions in *Ethics* (Spinoza 1997, Part III, Preface). In *Ethics*, Spinoza gives pleasure, pain, and desire as the three primary emotions (Spinoza 1997, Part III, Definitions of the Emotions, IV). Pleasure and pain are a response to generally physical stimulus however, like a hug or falling down. It does not lend itself well as an emotion system for interacting with NPCs, especially through conversation. A topic may be “painful” or “pleasurable” to talk about, but how would this be expressed and how would the NPCs understand this? And “desire” would still be a problem for emulation as in the Descartes model. It is also missing “anger” which is one emotion that would be beneficial to have in the game, as it is simple and well-recognized by players. Therefore, Spinoza’s set of base emotions was unacceptable.

There is the minimalist view of there being only three core emotions: terror, ecstasy, and despair (Jensen 2000). All other emotions are derived by a different degree of one of the core emotions or from a combination of core emotions. This was unsatisfactory as it was not comprehensive enough; it boiled down to the player picking from being happy, afraid, or sad. Anger is a common emotion and one players will want to be able to use, but to use this model and have anger meant doing combinations of the base emotions which would exponentially increase the number of emotions used.

Paul Ekman ran an experiment of showing images of facial expressions of varying emotions to seven different cultures including two isolated cultures in New Guinea who had little-to-no exposure to the rest of the world (Ekman 1972, 260-276). Ekman found some emotional facial expressions were universal as the different cultures would positively identify them in photographs. He concluded that the emotions of these universal facial expressions were the basic emotions of happiness, sadness, anger, fear, disgust, and surprise (Ekman 1972, 278). This would be a good
Robert Plutchik, an evolutionary emotion theorist, created a list of primary emotions based on animal adaptations that he theorized occurred 600 million years ago (Johnson 2009). From a list of core adaptive behaviors, he created a list of primary emotions associated with those behaviors, which were anger, fear, joy, sadness, acceptance, disgust, anticipation, and surprise (Johnson 2009). All emotions are either varying degrees of these primary eight or combinations of them (Plutchik 2001, 350). Further, he postulated that these eight primary emotions can be conceptualized as being four pairs of polar-opposite emotions: fear versus anger, sadness versus joy, anticipation versus surprise, acceptance versus disgust (Plutchik 2001, 349). He also created an emotion wheel (Figure 2) to graphically display his emotion model. “Disgust,”
“acceptance,” “anticipation,” and “surprise” are too subtle and difficult to express in a game of this caliber. Because the combination of emotions was not to be emulated, it was acceptable to drop these emotions from the model with no ill effect. Plutchik’s model for the base emotions is similar to Ekman’s model except for the addition of the “acceptance” and “anticipation” emotions as well as the concept of the emotions being arranged in opposite-pairs. However, it is this arrangement of emotions into opposite-pairs that makes this model the ideal one for the emotion mechanic in the game.

As a game mechanic, being able to reduce the emotional spectrum into two axes make the emotion mechanic not only simpler from a design point of view but also from the player’s point of view. Also, having each primary emotion have several different degrees of intensity would lend itself to making emotion changes more subtle and realistic while also helping to keep the PC from making extreme mood swings. The names of these emotions at different degrees (e.g. “apprehension” and “terror” for fear) were not used, instead the prefixes of “mild,” “moderate,” and “extreme” were used (e.g., “mild fear,” “moderate fear,” and “extreme fear”). This would make the degrees clear as well as maintaining reference to the base emotion.

Another change to Plutchik’s model was due to the fact it was missing a “neutral” or “emotionless” state, which is understandable as the lack of emotion can hardly be an emotion itself. From a game design point of view, it was necessary to have an emotion option that meant lacking any perceivable emotion. This state is there for players to use when they do not want the PC to have any particular emotional response or if the player does not want to use any of the available emotions. It would also be unfair to start the PC in any specific emotion, so the neutral state serves as the starting emotion position as well. The neutral state also serves as a buffer when going from one emotion to its opposite, such that an angry PC must become neutral before becoming afraid.
To keep the amount of acceptable emotions manageable, especially for a game of this scope, a limit was placed on the variety of emotions available. Only a sub-set of primary emotions would be used and the full emotional spectrum that comes from combinations of these primary emotions would be ignored. For this purpose, the emotion model used in the game is based on Plutchik’s primary emotions, except for the removal of the “anticipation-surprise” and “disgust-acceptance” opposite pairs and the addition of a “neutral” emotion. As in Plutchik’s model, anger and fear are treated as opposites, as are joy and sadness. Each of the non-neutral emotions were divided into three degrees of “mild,” “moderate,” and “extreme” to make a total of 13 possible PC emotions. This gives a good range of emotions and emotion intensities without becoming too overwhelming for the game designer or the player. These 13 emotions are a sufficient set of emotions to explore emotion input with and show the viability of this method to engage the player.
Prior Art - Games

Games that deal with emotions fall into two main categories: games with emotion input and games with emotion output. Games with emotion input are those that allow the player control over in-game emotions, and games with emotion output are those that elicit emotions in the player. There are many games that involve emotion and many ways that they accomplish these emotions. However, there are few that allow for player manipulation of the PC’s emotions and none of those to the degree of subtlety and consequences that are necessary to create the emotionally responsive game this thesis attempts to explore.

Games with Emotion Input

Games with emotion input allow the player the ability to directly or indirectly affect emotions of characters in the game. There are only two types of characters in a game, playable characters (PCs), and non-playable characters (NPCs), so this category can be broken down into two subcategories: games that affect PC emotions and games that affect NPC emotions.

Affecting PC Emotions

This thesis specifically explores this subcategory of games that allow players the ability to affect PC emotions. There are few games published that have any sort of emotion control of the player character, and these are mostly to a limited degree. The Act (Cecropia 2007) is one such coin-op game. In The Act, the player uses a single rotating knob to manipulate a particular behavior or emotion, such as sense of humor or courage, of the PC Edgar, with the goal to maintain the right degree to pass the level. This is an uninteresting emotional control because it is a means to an end; player control results in only failing or passing a level. This control adds nothing but novelty
to the player experience and therefore is not a good example of having games with player manipulation of the PC’s emotions, which requires nontrivial emotional choice.

*Super Princess Peach* (Nintendo 2006) has a mechanic where the player can make the PC, Princess Peach, take on different emotions to have different abilities for traversal, solving puzzles, and defeating enemies. These emotions are Joy, Rage, Calm, and Gloom. Joy gives her the ability of wind, Rage gives her the ability of fire, Calm gives her a healing ability, Gloom gives her the ability of water through her tears. A “Vibe” gauge depletes as players use emotions, and must be refilled by collecting special crystals. This is not an emotion mechanic that is used for story purposes, but rather as tools for puzzle solving. Overly dramatic depictions of these emotions -- in Gloom, Princess Peach becomes a fountain of tears -- and quick emotion changes leads to Princess Peach to appear emotionally unstable, which many players take as a sexist stereotype about women and their emotions. As a means to an end, the emotion input content in *Super Princess Peach* is not interesting and was detrimental in the characterization of Princess Peach.

In both *Blade Runner* (Westwood Studios 1997) and *The X-Files Game* (HyperBole Studios 1998) the player could select the PC’s mood for talking with NPCs. In *The X-Files Game*, these were emotions like “humorous,” “indifference,” and “paranoia” that were presented graphically to the player when talking to NPCs that the player clicked on to make the PC respond in that mood. In *Blade Runner* the player must use the options menu to change the PC’s mood which can alter how the PC converses with NPCs. In both of these examples, the player has no control over what the PC says, merely the mood in which the PC speaks in. This style of emotion control by selecting the mood for a response often is just changing the “flavor” of the dialogue or it serves as a means to an end for conversational puzzle solving. This system of emotion control has several problems: lack of control over PC dialogue hurts role-playing, allowing the PC to go from
one mood to another can result in extreme mood swings that makes the PC appear schizophrenic, and the effects of the mood choices to the game are unclear or negligible.

**Affecting NPC Emotions**

Most games with emotion input fall into the category of players affecting NPC emotions. In these games, NPCs are given some semblance of having emotions to make them more dynamic, interesting, and responsive. The player’s actions then affect or sometimes directly control the NPC’s emotional state, which can influence the game in a variety of ways.

*The Sims* (Maxis 2000) gives the player godlike control over the simulated people and their lives, that brings them happiness or despair. While in the game this usually translates as a willingness to obey the player’s commands -- and breaking into sobs if they are too unhappy -- the game is very good at letting the player create their own story and thereby project emotions onto the characters.

*Ruben & Lullaby* (Opertoon 2009) is an art game for the Apple iPhone that features a nonverbal fight between a couple. The player can direct the argument by shaking the iPhone to make a character mad or stroke the character on the touch-sensitive screen to calm them down. In this manner, the player can get the characters to reconcile or break-up.

*Façade* (Procedural Arts 2005) is an interactive story, which also deals with a fighting couple. The player, caught up in a feud between a married couple, can type in sentences to “converse” with them. Then the natural-language processor deciphers it and it affects the couple and their opinion of each other. In this manner the player can manipulate the couple, ultimately driving them apart or having them reconcile. The only characterization the player is given is that they are an old college friend of the couple’s and given no development. Besides being able to annoy the
coup enough to have them kick the PC out, the PC’s relationship to the other characters is never established or changed. This is supposed to allow the player to play themselves or someone of their own imagination and develop their own story, so it is not necessarily a bad thing. However, the stand-alone narrative does suffer because of this.

*Wonder Project J* (Almanic 1994) is an example of a “raising” type of game, where players “raise” Pino, an android boy. Players use positive and negative reinforcement to train Pino in a variety of skills and behavior, from petting (or kicking) a dog to throwing a ball correctly. Too much punishment causes Pino to become angry with the player; praising him makes him happier with the player. While the player can make Pino kind or cruel, a fighter or an intellectual, happy or angry, etc., ultimately the player must force Pino to gain certain skills and acquire a certain mind-set to pass game obstacles. Unfortunately, this means that players cannot raise Pino in any way they would like; the training of Pino must conform to meet certain requirements for progression through levels. For example, Pino must win a fighting challenge to proceed and therefore must be trained to be a great warrior even if the player would prefer to make Pino pacifist. There are many times when the player must unlearn skills or learn specific skills to pass obstacles. In the end, this means that the emotional involvement between the player and Pino is lessened as the player must view their management of Pino as a means to an end and not become involved.

Visual novels, popular in Japan, are text-based games generally with still-image graphics and whose player interaction is to select from multiple-choice decisions at specific points. Most of these games, such as *Clannad* (Key 2004), focus on relationships between the PC and the other characters. Player decisions can lead to characters hating or even loving the PC. Narratives in visual novels general fall into learning about the NPCs, with the goal to get a player-chosen character to love the PC.
Galatea (Short 2000) is a conversation-based, text-only interactive fiction (IF) game. Its premise is to manipulate the NPC Galatea by asking her questions or telling her things. From this interaction, her mood and opinion of the PC changes, which affects what she will tell the player and how she does it, as well as resulting in several different endings.

By focusing on affecting NPC emotions, the narrative inherently becomes about the NPCs. The characters having the emotions are driving the story, and without having a PC with emotions, the PC becomes trivial if they are present at all — merely a vessel for the player to act through. In these types of games, the player orchestrates and guides the story, often not involved in the story as a result.

Games with Emotion Output

Games with emotion output attempt to get the player themselves to experience emotions as a result of playing the game. This must be directly related to something in the game and not just being happy at finishing a level or angry at dying for the hundredth time. Rather, it is emotion as a result of the narrative, as a result of gameplay, or as a result of choices.

Emotion as a Result of Narrative

The largest category of games with emotion output is those that evoke emotions as a result of their narrative. This is often accomplished with a touching cutscene that borrows cinematic techniques to manipulate the player’s emotions. Emotion can also be from what the game’s story is about, especially if it is a “serious game” about emotionally volatile subjects.

Many story-based interactive fiction (IF) games fall into this category. For example, the game Worlds Apart (Britton 1999) has a complex and involving story that builds an attachment to the
PC’s mother as the player searches for her only to discover that she is dead. *Photopia* (Cadre 1998) tells a non-linear story about a car running over a girl, paying particular attention to people in the girl’s life so the player can feel their loss when she dies. *Hunter, in Darkness* (Plotkin 1999) has the player hunting a terrible monster and at one point stuck in total darkness. A player is quoted as saying about *Hunter, in Darkness*, “I was trapped in a cold, pitch-black, water-filled crawl hole, and I was [expletive]-freaking scared” (Parker 2000).

There are also many video games that are narrative-driven and have emotional impact. In *Final Fantasy VII* (Square 1997), a main party member, Aeris, dies and there is a touching funeral cinematic. In *Final Fantasy X* (Square 2001), the PC Tidus sacrifices his existence to save the world and the woman he loves. In the ending movie, Tidus is shown trying to hug Yuna although he has become transparent and can no longer touch her. Tearfully, Yuna runs to him before he completely disappears only to run through him. A fight between the PC and a young boy in *Xenogears* (Square 1998) is also tangibly sad, as the PC had previously accidentally killed the boy’s sister, who was also the PC’s best friend, on her wedding day. If the player does not attack him, the boy will throw his sister’s wedding dress at the PC and run off in tears.

There is also emotion based on content, specifically in games that explore emotionally rich subject matter. These are often identified as “serious games” because the message or topic of the game carries emotional weight. *Darfur is Dying* (Ruiz 2006) is based on the real life genocide in Darfur. A player plays as a refugee trying to survive. In the board game *Train* (Brathwaite 2009) players race to get their train of people to their destination -- which happens to be Auschwitz, the largest Jewish concentration and death camp during the Holocaust.

Emotion as a result of narrative is extremely rich and varied, but many games utilize cinematic techniques to evoke emotion. The ending of *Final Fantasy X*, for example, is extremely sad and
touching, but it happens in a cutscene, independent of player actions in the game. A better technique would be to take advantage of the affordances of games, allowing for the player to actively participate rather than passively observe. The game should involve the player directly with the emotional aspect and tie it to player choice so that the player will feel responsibility for the results. Player participation means they are more actively engaged and giving them meaningful choices can result in the player investing their selves in the story. Game cutscenes are very good at evoking emotion in players, but games should embrace the fact that they are games and use player interactions to establish an emotional connection with the player.

**Emotion as a Result of Gameplay**

For emotion as a result of gameplay, the mechanics of the game itself evokes emotion in the player. The prime example of this approach is found in the game *Ico* (Team Ico 2001), where the player leads an NPC, Yorda, by the hand and must keep her safe. “Shadows” are after Yorda and they will pull her down a shadow portal if they get the chance, resulting in a “game over.” When Yorda is out of sight, an often occurrence, the player becomes anxious. When Yorda is being pulled down a shadow portal, the player becomes afraid. The player is protective of Yorda, although they know next to nothing about her since she speaks a different language.

*Shadow of the Colossus* (Team Ico 2005) requires the player to destroy rather than protect. The goal of the game is to destroy the 16 colossi, who are beautiful, huge, and peaceful until the player attacks them. The player feels sad killing the colossi because it is akin to committing genocide. The game also fosters an attachment to the PC’s horse, who follows the PC around and who the player rides for transportation. Near the end, the horse is presumed dead and as a result of the connection the player developed with the horse through interacting with the horse creates a sense of palpable loss within the player.
In *Cannon Fodder* (Sensible Software 1993), the player commands soldiers to complete objectives, such as kill all enemy soldiers or rescue hostages. Soldiers have unique names, and when they die they are given gravestones on a hill that is displayed to the player before every mission. At the end of each phase of a mission, soldiers that survive are awarded combat bonuses and those that perished are replaced with new recruits. The player can have an emotional attachment to the soldiers because they have names, they become more useful to the player the longer they survive, and because their deaths have some consequence.

Using the actual gameplay mechanics to evoke emotions in players is highly successful but extremely difficult to accomplish. Most of these games include a light narrative in order to focus the player on the gameplay rather than the story. There is also no player choice involved, as the game must force the player into a certain behavior to evoke emotions. In *Ico*, the player is forced to protect Yorda because to do otherwise results in a “game-over.” The anxiousness that players feel about Yorda stem from their desire to not get a “game-over” rather than from any perceived care for Yorda’s wellbeing. That does not make the emotion any less real, but it only exists because the game forces the player into a specific behavior -- protecting Yorda. In *Shadow of the Colossus*, the player is forced to kill the colossi to progress in the game. There is no choice in the matter, and it is only because the player is forced to kill these creatures against the player’s will that makes it sad. Players in *Cannon Fodder* must send soldiers to their deaths in order to win the game no matter the player’s feelings in the matter or their attachment to the soldiers. To generate these emotions in players, player choice is sacrificed. That is not to say this type of emotion generation is worse than others, merely that to achieve it means the absence of player choice. It also means that the emotions evoked are limited in their scope as this methodology cannot support multiple emotions easily.
**Emotion as a Result of Choice**

Player choice facilitates player involvement by allowing the player to invest emotionally in the characters and the world they inhabit. When given choices, a player is enabled to feel responsibility for their actions. There are games that have lots of choices for the player to make, games that have just a few pivotal choices to make, and games with no implicit choices offered but the player has freedom of choice with their actions.

Games that offer many choices generally present these as moral choices, forcing the player to choose to be “good” or “evil,” or to a lesser degree choosing to be nice or a jerk. Some examples of these types of games are *Star Wars: Knights of the Old Republic* (BioWare 2003), *Fable I & II* (Lionhead 2004, 2008), *Mass Effect I & II* (BioWare 2007, 2010), *Dragon Age: Origins* (BioWare 2009), *Jade Empire* (BioWare 2005), and *Fallout 3* (Bethesda 2008). These games use choices to present dilemmas to the player, and forcing responsibility for the result on the player as they chose to do it. Their main failing is that by having the dichotomy between being “good” and “evil,” the player needs only pick the choice that reflects the morality path they are following, which reduces the responsibility aspect of player choice. Another common failing is the lack of repercussions for their actions beyond the PC getting morality points. In *Fallout 3* (Bethesda 2008), the player is asked to choose whether to kill a being at his own request or to keep him alive for the benefit of humankind. A very emotional choice, but ultimately does not deliver, as regardless of the choice made the other side will be accepting of the decision and no further game repercussions are seen.

The Mass Effect series (BioWare 2007, 2010) is making strides towards choice repercussions by having player choices affect the entire series. Choices made in the first game have some effect on the game characters and world in the second. The choices in the first and second game will also have repercussions in the upcoming third game, making the series the games with the
longest reaching repercussions. This adds incredible weight to player decisions, especially if the long-term repercussions are not clear, and makes for a very responsive world and story that the player will feel responsible for. There are also several examples of gray morality, where there is no clear “good” or “evil” choice, such as giving the enemy’s powerful technology to the less than pure organization the player has been forced to work with. Giving them the technology will give human forces an advantage in the coming war, but it has been shown that the organization has a history of abusing technology and power, because they follow the credo of “the ends justify the means.”

Most of these games are marginally successful at evoking emotion because most of these games force the choices to be between doing the “good” option or the “evil” option. This makes the choice almost pointless, and therefore engages the player less, which results in less emotional impact. However, this is a relatively new genre and these games are getting more sophisticated and subtle as they move away from the pure black and white world of “good” and “evil” and have more substantial repercussions for player choices.

Games that have just a few decision points capitalize on there being serious repercussions for their choice. The choice is also generally story related and not a “good” or “evil” binary choice. In *Suikoden II* (Konami 1999), the player is forced to choose to slay the PC’s best friend who betrayed him or let him live. It is only the player’s feelings on the matter that determine what the player is going to do, the repercussions are only story based. However, players who do not care for the NPC will not find this an emotional choice. In *Shin Megami Tensei: Nocturne* (Atlus 2004), the player gets the shape the new world by deciding which Reason they will follow. A Reason is a philosophy of living that the new world will use as its foundation. The choices are between living as “one” with everything and therefore destroying the concept of individuality, or of isolationism where everyone lives in their own fabricated world, or survival of the fittest, where only the strong
will prosper. The player can also chose to have no Reason, which can result in the world returning to the way it was or it can lead to the demons taking over. Because the player is choosing what the new world will be, it is a weighty choice with serious repercussions. The choice is also not a specific decision point where a list of options shows up. The player makes this choice as they play, with factions belonging to each Reason trying to persuade them to side with them and they all have good pros and cons to their Reason. In Nocturne’s case, a lack of direct correspondence between player action and the PC’s Reason can make this choice feel arbitrary.

Because of the scarcity and consequences of these choices, they become important and emotionally laden. However, their focus on these choices can cause other player actions to be seen as inconsequential. If these choices are not tied deeply with the story or if the story itself is not emotional, they can also fail to be compelling.

Then there are games with so much freedom of choice that the player must take responsibility for their actions as the game is not forcing them into a particular action. These games include sand-box games like the Grand Theft Auto series outside of the main missions. In Grand Theft Auto: Vice City (Rockstar North 2002), the player has immense freedom in what to do outside of the missions. For example, they can use ambulances and save people, go on a killing spree, hire hookers, raid the police station, or just play tourist and explore the city. However, the emotional weight of being forced to take responsibility for their actions is countermanded by there being no lasting consequence to these actions. The value of NPC lives is negligible as they are represented as mere fodder, any police “heat” is removed with time or a new paint job on the player’s car, and nobody’s opinion of the PC changes. A lack of consequence means there can be no lasting emotional investment in the game.
Princess Maker 2 (Gainax 1993) is a similar, although more limited, game with freedom of choice. In it, the player is gifted a child by the gods and has eight years to raise her as the player sees fit. The player chooses jobs and school lessons for the girl to take and as such shapes her life. When she becomes 18, the player is given one of over 60 endings about the future of their “daughter” based on what stats the girl has, which are based on what the player has made her do; have her work at the “Sleazy Bar” and she can become a mistress of a noble, have her work at the church and she can become a nun, or spend some time having her chat with the prince and she might become the next queen. However, the lack of any personality of the girl and the sometimes seemingly arbitrary endings makes it difficult to care for the girl and therefore there is little emotional involvement in the game. Cute Knight (Hanako Games 2006), an indie game, is very similar but the player plays as the girl and they choose for themselves what they should do, rather than playing as the “father” issuing orders.

Without clear and serious repercussions, a game with a high degree of freedom of choice cannot capitalize on the emotional impact afforded by such freedom. Grand Theft Auto: Vice City lacks repercussions and Princess Maker 2 lacks clarity of their repercussions.
There are two fields of study necessary for creating an emotionally responsive game. The game must respond to emotion input and contain NPCs with well developed and comprehensive emotion models that are able to respond to complex player actions. One interesting project for emotion input used the player’s voice. The project used real-time tone analysis to interpret a player’s voice for emotional content and used this to guide NPC responses (Cavazza et al. 2009). A project about creating more realistic NPCs was concerned with creating an emotional connection with NPCs by having them express their emotions visually. Mainly a tool for game programmers, it allowed the user to change the behavior, body language, and mood of a character (Nayak 2005). A body of work has been undertaken to create more believable virtual human NPCs at USC’s Institute of Creative Technology. They have explored how to make NPCs become more realistic, changing their emotional state based on player action and to relay their emotional state nonverbally (Marsella et al. 2001). To make believable virtual human NPCs, a lot of work has been done to integrate NPCs’ emotion and dialogue models (Traum et al. 2004), including allowing an NPC to talk about their emotions (Muller et al. 2004). They are also working on simulating “social emotions”, emotions that have a social component (like guilt), enabling NPCs to assign blame or credit for better social interactions with the PC (Gratch et al. 2006).

To have an emotionally involving game, it is not only necessary to have an emotionally responsive game but also to evoke emotions in the player. Janet Murray asks if games can “make us cry,” meaning not to bring tears to the player, but to arouse emotions by having the player identify with the characters and feel that their actions and events in the game have weight and significance. Murray postulates that players do not particularly care about the people in games save as targets or opponents, and events in the game as wins and losses, even if there is
a narrative present in the game (Murray 2005, 85). By not taking advantage of their inherent interactive qualities, games do not have their storytelling integrated with the game format.

In order to maximize story power we have to integrate the interactor’s actions with the story content. When we are successful we create the experience of dramatic agency, the cueing of the interactor's intentions, expectations, and actions so that they mesh with the story events generated by the system. ... User action is elicited and is always rewarded with an immediate effect that is consistent with and progresses the story.
-- (Murray 2005, 85)

While games have been found to elicit emotions, happiness was difficult and sadness impossible to be evoked outside of non-interactive cut-scenes using cinematic methods (Zagalo 2005, 112). This is a failure of game design considering that by involving the player directly, they should be more immersed in the story and therefore more affected by the events that occur. Non-interactivity takes them out of the game, reminding them that it is just a scripted story. This is why it is important to find interactive methods to emotionally involve the player.

To have the player be really emotionally involved, the player has to be given the ability to make meaningful choices. To this end, the distinction between choices and problems are of particular interest. In a recent article in Gamasutra, James Portnow describes the difference between choices and problems:

Any decision that has a definitive best answer is a problem and not a choice. Anything with a ‘solution’ is a problem and not a choice. Anything that is a calculation is a problem and not a choice. ... There is very little “free will” involved in these types of problems, for the most part you know what you are trying to execute ... and the challenge is in the execution. Anytime where you present the player with a clearly defined goal and the “fun” or challenge is in the execution of that goal you have presented them with a problem. Choice appears when you are asked to decide between two things of equivalent or incomparable value. ... Choices tend to be much harder to design than problems because they don’t have a clear right answer. They also tend to be much harder to fit into games because their divergent nature tends to broaden the scope of games. ... Problems direct the player towards a goal; choices let the player choose their goal.
-- (Portnow 2009)
To engross the player and engage them in a struggle with their choices, they need to be presented with actual choices and not problems. That means that a reward system should not be used unless it is strictly balanced so it does not become the overriding factor in the player’s ultimate decision. Instead, the game must have a deep and interesting narrative that is integrated with the player’s actions. The player must make all of the major decisions that the player’s character requires. These decisions must be choices that are of equivalent value and have meaningful consequences and not be mere problems.
User Testing and Evaluation

Throughout the development of *Crimson Night* users have been brought in to play the game to provide feedback. Most play-testing was informal, with the testers giving feedback ("stream of consciousness" methodology) as they played while notes were taken of their thoughts and opinions. Later play-testing made use of screen-capture and video-recording of the player as well as storing the player’s moodpath. User feedback was instrumental in tweaking the user interface and game mechanics to make the game clearer and to refine how it uses emotion input.

“Moodpath,” in this paper, refers to the player’s set of emotion choices made in the game. It represents the player’s journey or “path” through the game, which is based on the emotion or “mood” choices made -- the path of the PC’s mood through the game, in other words. Different moodpaths can result in different endings, depending on how divergent the moodpaths are. Moodpaths in this manner are used for play-testing, as they are recorded during play and then used as a tool for analyzing player choices. However, moodpaths are also used to describe the play experience itself. If a player is mostly choosing the “anger” options, then they would be following the “anger moodpath.” Likewise, if they choose mostly sad options, they would be following the “sad moodpath.” Players who choose generally one option in this manner follow a “simple moodpath” while a player who uses many different emotions would be following a “complex moodpath.”

Mechanics

Three main mechanics areas were revised based on user feedback: the conversation system, the action system, and the mood change system. This was an iterative process where play-testers’ feedback was evaluated and changes were implemented. Each system was evaluated for
playability and emotional impact with successful elements kept and detrimental ones modified or removed.

**Mechanics - The Conversation System**

In the first prototype, the conversation system had the player select the mood of the PC’s responses. While one player enjoyed the mystery of what the PC would say, most disliked the lack of control over the dialogue. Another problem was the ability to jump from one mood to another, leading players to view the PC as schizophrenic. To address the second problem of it being too easy to have the PC suffer from rapid mood swings, each mood sans neutral were divided into three levels of mild, moderate, and extreme for a total of 13 distinct moods. The first revision of the system had the dialogue choices given in whatever mood the PC was in when the conversation was initiated with no way to change her mood inside of the conversation. Players were not interested in the conversation and it was detrimental to the goal of having emotion play a key role in game interactions. Therefore, a new conversation system was developed that combined mood choice and dialogue choice to satisfy players’ desire to choose what the PC would say while still incorporating the goal of using emotion.

The first version of this new system had a set of responses and allowed the player to dynamically change the mood that the PC would say these responses in. The moods available for the player to choose from were the moods surrounding the current mood. So when at neutral, the player could choose from neutral or any of the 4 mild emotions. At moderate anger, they could choose from mild, moderate, or extreme anger. If the PC’s mood was located in-between two moods, then a combination of those two moods’ surrounding moods was used. This resulted in players getting frustrated with going through all the possible moods to select the one they wanted as well as making them feel that the mood did not matter as the mood was relegated to “flavoring” the text. It also made it difficult to compare responses in different moods, as players had to switch
back and forth to view them. The mood choice system restricted the player too much as well, making it so that once the player made a few choices they almost always got restricted to just moving up and down in the level of a specific mood. For example, if the PC was at mild joy the player could only choose from neutral, mild joy, or moderate joy, keeping them from deciding to answer the NPC with any of the other emotions.

The next iteration on the conversation system featured a set of dialogue choices that reflected the available mood choices of the player (Figure 4). These were not just mood “flavored” lines, but were rather different responses based on the different moods. The moods available to the player were based on the same system as before, but it kept the mild versions of the other moods (save the one opposite of the PC’s current mood) available. Now when the PC was at mild joy, the player had neutral, mild joy, moderate joy, mild fear, and mild anger to choose from. Mild sadness was not an option as on the mood spectrum, it is opposite of joy. This met with much
more success with the players, who enjoyed picking different responses. However, the absence of the opposite emotion and the fact that choosing neutral made the PC’s mood go towards neutral was confusing or not obvious to players. Therefore the opposite emotion’s mild response was added to the list of choices and choosing neutral would make no change on the PC’s mood.

As a result of work done for the emotion control system, a new conversation system was added allowing the player to have the PC talk to herself about topics as well as use those topics in conversation with NPCs. There became two conversation types -- active and responsive. In an active conversation, the player takes the initiative and asks the NPC about topics. In a responsive conversation, the NPC takes the initiative to ask the PC questions with the player responding.

**Mechanics - The Action System**

Initially, there was nothing for the player to do outside of the conversation because the first prototype was purely conversation based. This was uninteresting and did not make full use of the
goal of using emotions to tell a story and explore a world. Therefore, objects and NPCs were given descriptions that changed with the PC’s mood. This was met with wide approval and interest from play testers. However, the method of accessing these descriptions had to go through several iterations until the method of looking at them was pleasing to the players.

Initially, the player had to click somewhere to bring up an “action-wheel” (Figure 5) and then click on “walk-to” to walk to that position, “look-at” to look at that object, or “talk-to” to talk to an NPC. “Talk-to” was only available when clicking on NPCs, and “look-at” for clicking on objects and NPCs, while “walk-to” was available on any clicked location. This was annoying to players as they had to do two clicks to do anything, while also frustrating as it took too long to do what they wanted. When looking at half a dozen objects, the repetition and time delay in seeing the description was painful.

Figure 5: Close-up of the “action-wheel” used in an early prototype
The next iteration removed the “action-wheel” and instead used mouse click to mean “walk-to” a location or “talk-to” if clicked on an NPC and mouse-over to be “look-at.” This was also frustrating to players, as it was not clear that they had to hover the mouse over an object for a moment to get the description. Many players became excessively frustrated and starting clicking randomly trying to get something to happen, resulting in just the PC moving about. Even once they were told the “look-at” mechanic used mouse-over, it was still annoying to the player because of the delay in rolling over the object and receiving the description. The delay was necessary to differentiate between a mouse-over for a “look-at” and an incidental mouse-over while on the way to something else.

A new “look-at” mechanic needed to be developed, as it was one of the key mechanics for the game and should be responsive and easy to use. Unfortunately, Flash, the development environment, does not allow right clicks to be used so a simple left-click/right-click control scheme for walking, talking, and looking could not be used. Instead, the mouse-over mechanic was kept but the delay removed. To keep the game from being confused between a mouse-over for “look-at” and an incidental one, the “shift” key must be pressed to enter “look-at” mode. Holding down the “shift” and moving the mouse over an object of interest then would give its description. Players found this easy to use, although they had to be told what to do. Initially, it was desired to have only the mouse be used to interact with the game to keep it simple for the player. However, the responsiveness of the game added by using the keyboard to augment the mouse control was worth the added interface device.

**Mechanics - The Mood Change System**

As referred to in “Mechanics - The Conversation System” the player initially changed the PC’s mood by selecting which mood to respond with in a conversation. Subsequently, the player directly controlled the PC’s mood. The next version used a “mood-wheel” (Figure 6) with a little
face icon (Figure 7) to denote where the PC’s mood and its location in the mood-spectrum. Players could move this icon to change the PC’s mood.

![Figure 6: A screenshot of an early prototype identifying the “mood-wheel”](image)

This direct control was annoying to the players, who had to manually set it, but also destroyed any hope of fostering a relationship between player action and PC mood in a story-based way. It was planned to use this system only when responding to something, so that the player could not alter the PC’s mood whenever they felt like it. However, early testing showed that even then it would not work. The “mood-wheel” was distracting on the screen, the face-icon unclear, and the mechanic of changing the mood too repetitious and story-breaking. Players unanimously disliked the system, even if they enjoyed the results of changing the PC’s emotion.
The next iteration had the PC’s mood changed by what they looked at. Looking at a family picture would make the PC happy, while looking at the bed would make them sad as the PC pondered her lost dreams. Players did not easily pick up on the fact that looking at different objects had different results and the emotion control became too muddied and uninteresting to players.

Emotion changes were then facilitated in conversations, with the player’s dialogue choices affecting the PC’s mood. This was successful because the player felt they affected the PC’s mood and the connection between player choice and the resulting mood change were clear. However, this meant that outside of conversations there was no mood change and the PC became static.

To fix the problem of a mood-static PC outside of conversations, several additions were added. The player could have the PC pace around to let the PC’s mood move towards neutral. Players
did not find this intuitive or clear and it could take a bit of time to have the PC reach a neutral mood. This was then changed to a “meditate” command. This left how to change the PC’s mood to a non-neutral mood outside of conversations. Not wanting to return to the failed mechanic of looking at objects to change the PC’s mood, the same “meditate” action was used, but augmented by meditating on a topic. Topics had stored emotion tied to them, so meditating on a topic would increase the PC’s mood in the mood of the topic. This was an interesting mechanic, but the player had no control over what mood was stored in a topic. A “monologue” system was added, having the PC talk to herself about the topic as she meditated on it and using the same conversation system used with other NPCs the player could alter the mood stored in the topic along with the PC’s own mood. These topics could then be used in active conversations with NPCs, the PC talking about these topics in a mood based on the combined PC’s current mood and the mood stored in the topic.

Art

The sprite of the PC, as well as the NPCs to a lesser degree, changes based on the PC’s mood. This started with just a change in facial expression, but players often failed to notice this. The first change was to bring the sprites closer when in a conversation, so the faces would be large enough to recognize. This was still too subtle, making mood changes -- especially between levels of an emotion -- too hard for the players to pick up on. Emotional “poses” that took into account facial expression as well as body posture were utilized instead. Players could then easily discern that the PC’s emotions had changed to reflect her mood as a result of the player’s choices.
However, outside of conversations, the sprite is not so large as to make this very noticeable. There was also a focus on the PC being the only thing that changed, while the game was trying to show how the world changed based on the PC’s perspective due to her mood. For example, object descriptions changed based on how the PC viewed that object while in her current mood. There needed to be a visual tie in to the PC’s perspective changing, so screen-effects based on the PC’s mood were added. The screen would turn redder as she got angrier, brighter when she became happier, grayer as she got sadder, and darker and harder to see as she got more fearful (Figure 8). Players enjoyed the screen effects, although some effects, like those for joy and fear, needed additional iterations to display and interpret correctly. By utilizing player feedback and iteratively implementing changes to the user interface, it has made it easier for players to perceive the PC’s current mood, whether inside or outside of conversations.

Figure 8: Mood screen effects. Center: Neutral, Clockwise from top: Extreme Joy, Extreme Anger, Extreme Sadness, Extreme Fear
The PC’s mood is altered based on the conversation choices. The PC’s current mood is a summation of all the mood choices the player has made. The PC sprite reflected her mood to help convey this information to the player. However, this made players confused when the PC was sad and they chose to have the PC say something angrily, and the PC’s sprite remained sad-looking. Therefore, when the PC “says” the player’s dialogue choice, the PC sprite was changed to reflect the mood the response was in, and then reverted back to displaying the PC’s overall mood when the dialogue was completed. Players then understood that the PC was “saying” the line in the mood they selected. Returning to the PC’s current mood helped inform the player that the PC had a persistent mood and was not just in the latest conversation mood.

**Story**

The story went through several changes as the project progressed. Initially, it was the story of Alin Britemore, who, having been told that she has suffered a severe injury and might have memory damage, tries to figure out who she really is. This was deemed too complicated, and the story was changed to be that of a woman getting ready for an arranged marriage. This read very well with players, who had no trouble understanding what was going on, but it was also viewed as being too melodramatic. Play testers who had played the previous version’s story voiced their preference for that one. The story was then restored to the previous adventure involving Alin.

As the game was developed, players began to voice confusion over the story setup as well as desiring to have an actual ending. The game had been developed as a test of mechanics and not as a full game, but this was detrimental to the testing. Therefore, a text intro and ending were created. Initially, there were 5 different endings based on what the PC’s overall mood was when the game ended. The intro and endings were well received and no one had any trouble understanding the setup for the story. Players also enjoyed that the ending changed as a result of their actions.
A few players, reading an early prototype’s intro, said that they thought “Alin” was pronounced “Allen” and therefore would be male, leading to some confusion when game play started and the PC was female. To help alleviate confusion to the pronunciation of the name and gender of the PC, the name was changed to “Alyn” (“A-Lynn”).

One prototype’s game play revolved around a psychiatrist visiting the PC in her room to introduce himself and have their first therapy session. Many players thought that a man coming into a woman’s room was weird, and were put off by this scenario. Therefore, this scenario was removed from subsequent prototypes and instead the player converses with the PC’s parents in her room. The location remained the PC’s room as it has the most relevant objects to the PC and can make the best use of the emotion system.
Discussion

Because this is relatively new design territory, there was a lot of trial and error involved in figuring out a story to support the design goals as well as the critical emotional control structure. User testing helped to improve all these facets, although there is still much work to be done.

According to the results from player tests, *Crimson Night* has succeeded in creating interesting gameplay that offers a new experience to players, even through the level of emotional involvement through manipulation of the PC's emotions was not achieved to the desired extent. However, even marginal involvement would support the hypothesis that emotion input is important to the future of game design by creating emotionally responsive games. The fact that people enjoyed the game and played it multiple times shows more than marginal player involvement and thereby supports the premise of this thesis. Nevertheless, there is a lot of room for improvement here. A more elegant and natural mechanic for manipulating the PC’s emotions needs to be developed and this mechanic and the story needs to be integrated into a coherent whole. More player actions based on the PC’s emotional state need to be added as well, particularly actions like hugging, holding hands, hitting, cowering, crying, etc. The PC’s current mood and the changes in the PC’s mood need to be made clearer. NPCs need to have a more detailed and complex emotion simulation to make them respond in a more believable manner. Additionally, it is necessary to have several dilemmas of a non-trivial nature that is guided by the PC’s emotional state. It may also be beneficial for the user interface to move away from the mouse and keyboard and find something more intuitive for the player and perhaps tied in to the gameplay.
The goal of emotion input is to have the game world, comprising of the environment, characters, and events of the game, be emotionally responsive to the player. *Crimson Night* achieved this on a small scale. It is anticipated that others building on its foundation will be able to make a game that pays attention not only to player actions but also to the player’s emotions (or at least their choice of emotions). It would be interesting to see a game where the PC can erupt into understandable tears and have an NPC comfort them or turn a cold shoulder; or a game where the PC can kill someone in psychopathic glee or in the grips of terror; or a game that is aware of and reacts to the PC’s personality and changing emotions. These games would, in essence, mold themselves to emotional data in conjunction with player actions to make a unique, custom tailored game world that would be most satisfying.
Conclusion

Games are becoming more sophisticated and are getting closer to one of the key goals of creating play that truly engages the player emotionally by establishing an emotion dialogue with the player. While corporate game companies focus on the emotion output side of this with morality games and emotional narrative games, this thesis argues that the neglect of the emotion input side is detrimental to obtaining this goal. The thesis project, *Crimson Night*, was an interesting game and its modest success in involving the player suggests the importance and usefulness of designing for emotion input.

This thesis project shows that emotion input is a viable source of emotional involvement for the player. This method working in tandem with established emotion output methods could eventually create a genuinely emotionally involving and emotionally responsive game. This would be a game that would evoke emotions in the player and incorporate emotional feedback from the player. It is believed that only through this feedback loop that real emotional immersion lies. Continued work on developing and refining emotion input methodologies will achieve the goal of creating a truly emotionally responsive game.
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