Eight Ways Videogames Generate Emotion

Jonathan Frome
University of Georgia
frome@jonathanfrome.net

ABSTRACT
Many fields are interested in how videogames can generate emotion but most have a very limited conception of what emotional response includes. This paper presents a comprehensive model of emotional response to the single-player game based on two roles players occupy during gameplay and four different types of emotion. The emotion types are based on different ways players can interact with a videogame: as a simulation, as a narrative, as a game *qua* game, and as a crafted piece of art. The paper then describes the various inputs videogames can provide to produce these types of emotions.

Author Keywords
Emotion, player response, theoretical framework, aesthetics, ecological psychology

INTRODUCTION
Videogames are a complex phenomenon open to numerous methodological approaches. Some researchers see videogames primarily as a tool to simulate real-world environments for training and education. Others concentrate on developing videogame technology. Some aim to measure the psychological effects of videogame play and to understand the types of engagement they offer. Ludologists study videogames against a context of non-digital games and play. Many researchers are interested in the relationship between videogames and other media, such as television or film. And serious videogame criticism, a small but growing field, evaluates videogames as works of art.

Almost all videogame scholars are interested in videogames' ability to generate emotions. Developers want to make videogames that make people cry, educators want to engage students in learning, and psychologists want to understand people's motivations to play. Yet the extreme differences between these fields create obstacles in studying the wide range of emotions videogames can generate. It is not obvious how we might integrate different approaches to emotion, but if we do not, we risk overlooking important aspects of the experience of gameplay.

This paper presents a model of emotional response that attempts to describe the wide variety of emotions videogames can generate. Much of the research on videogames and emotion either overlooks important types of emotion or fails to properly differentiate between these types. The model presented aims to capture and integrate a broad vision of possible emotional responses but also usefully delineate how these types differ. To do this, this paper will discuss the *roles* that players inhabit during videogame play, different *types* of emotion that videogames can generate, and the *inputs* videogames provide which lead to those emotions.

AIMS AND SCOPE
Obviously, it is overly ambitious to attempt to present a model which can account for any emotion that any player might experience during videogame play. Thus, I will limit the scope of my discussion in a few ways. First, I aim to describe the emotional experience of individuals engaged with single-player games, and I will not address the extremely complex emotional issues brought out in multiplayer gameplay. Second, although the model applies to numerous types of videogames, not all of them have the potential to exploit all areas of the model equally. For this reason, I take as my prototype a modern videogame in which a player controls a character moving through a three-dimensional world to achieve her goals. Third, the model does not aim to describe every possible emotion that we might have in any situation, but only our emotional responses to videogame play. Finally, the model does not aim to accurately predict a person's emotional response to a given artwork. The varieties of contexts for viewing the artwork and the varied individual histories and cultural backgrounds of players make this impossible. The goal is to create descriptive categories and vocabulary that help us understand and explain various emotional responses. This sort of framework can be informed by and consistent with the aspects of emotion common to all people and still give proper emphasis to the enormous influence of historical and cultural factors in emotional response. It can also act as a guide to empirical research on specific aspects of emotional response.

The notion of emotional response relies on the extremely ambiguous term "emotions". There are many ways to classify emotions, such as Ekman's basic emotion types (joy, sadness, disgust, fear, anger, surprise, interest, and contempt) [3]. Others classify emotions based on whether they are positive or negative, and Ortony, Clore, and Collins propose a taxonomy that turns on the distinction

Situated Play, Proceedings of DiGRA 2007 Conference

between self-directed and other-directed emotions [5]. I follow Damasio in considering emotions extremely broadly [1, 2]. Although space precludes a full discussion, I consider emotions to be any type of response to stimuli that has a phenomenological "feeling" associated with it and which is designed to encourage an organism's well-being. There is a certain type of feeling associated with anger, for example, and anger encourages us to act in ways that may deter others from impinging on our interests (by encouraging us to act against those who made us angry). This is not to say that emotions always lead to actions which contribute to our well-being in a given situation, only that they are constructed to do this in general.

PLAYER ROLES

A key component of the emotions we feel during gameplay are the roles that we take during that play. Players take two roles when they engage with videogames. The first role I call observer-participant. An observer-participant engages with an artwork but does not change the material form of the work. In this role, engagement with videogames is similar to engagement with films. When we watch films, we observe the images and sounds the film presents but we do not change these features of the film. Similarly, during videogame play, there are many images and sounds that a player cannot change, and a player's response to these aspects of the game are based on her observation. I call this role observer-*participant* in recognition that when you engage with an artwork, in addition to merely observing its form, you participate with it in significant ways through your mental activity. You cognitively process the images into meaningful representations, you construct the story through inference, and you evaluate characters as sympathetic or not. Observer-participation gives the player a constrained freedom in their understanding of an artwork. For example, players can freely disagree about whether *Grand Theft Auto* (Rockstar Games, 1998) celebrates or ironically criticizes violence, but if they did not agree that the game allows a player's avatar to steal cars, we would say that they had made a mistake. As observer-participants, players' emotional responses are based on what they see, hear, and feel. They can interpret these inputs in different ways but they cannot change the inputs themselves.

Is it this aspect of the observer-participant role that distinguishes it from the second role: actor-participant. The actor-participant *does* change the material form of an artwork. Unlike films or books, interaction that changes the form of an artwork is the norm for videogames. As you play the first-person shooter *Halo* (Bungie, 2001), for example, you determine much of what appears onscreen through you gameplay. When you press a button, the character you control throws a grenade, changing the images on the screen. When you pull a trigger, you character fires his weapon. Videogame play requires actor-participation because any moves you make must be represented in a manner that changes the game's material form. As an actor-participant, players' emotional responses are based primarily on what they *do* rather than what they perceive.

EMOTION TYPES

As mentioned earlier, emotions can be classified in numerous ways, such as valence (positive/negative), intensity, or underlying belief structure. I propose a different method of classifying videogame-generated emotions based on the different aspects of a videogame to which a player might respond. The two most obvious aspects are *game* and *narrative*, which we might think of as causing game emotions and narrative emotions. It is commonplace in videogame scholarship to discuss these two components as fully constituting the inputs videogames can provide to the player experience, and indeed they are very important. We can think of game emotions as emotions of competition; they are emotions generated due to winning, losing, accomplishment, and frustration. When you are playing a videogame, game emotions are directly related to your performance. You might be anxious playing *Robotron: 2084* (Williams, 1982) when killer robots begin to swarm you and threaten to end your game. Completing a level in *1942* (Capcom, 1984) with a 100% kill rate can provide a deep sense of satisfaction. You can also have game emotions while watching a game, as shown by fans of professional sports. Game emotions can be social emotions when people play games in groups. Players might feel loyalty to a team member, regret at failing to protect a partner, or schadenfreude (pleasure at the misfortunes of others) when another player accidentally blows himself up with a grenade during a competitive game of *Halo*.

Narrative emotions are based on a videogame's characters, settings, and events. Whereas game emotions are caused by videogames but not other media such as film or literature, all narrative art can generate narrative emotions, and they are the most common emotions we feel when engaging with artworks. One example of a narrative emotion is sadness that Rick and Ilsa fail to stay together at the end of *Casablanca* (Curtiz, 1942). Although videogames are frequently criticized for having underdeveloped storylines and flat characters, it is actually quite common for them to generate narrative emotions. A player's amusement at the videogame *Sam & Max Hit the Road* (LucasArts, 1993) is based on the narrative situations and characters in the game, not the abstract gameplay.

Although it is fairly intuitive that videogames can generate game and narrative emotions, there are two other categories of emotion that are also important to understanding the experience of gameplay. The first is *artifact* emotion, a concept developed by Ed Tan to explain emotional responses to film [7]. Artifact emotions are those that are generated by our response to a work as an artifact, or crafted art object. Although every emotional response to art is prompted by an artwork, artifact emotions are about the artwork *as* an artwork; they are about the way the artwork represents its story or content. In other words, artifact

emotions are emotions of aesthetic evaluation. Artifact emotions might include anger that *Superman Returns* (Electronic Arts, 2006) is too short because it can be completed in just six hours, admiration for the impressive clothing textures in *The Godfather* (Electronic Arts, 2006), or frustration at the complex interface one must master to play *Tom Clancy's Rainbow Six* (Red Storm, 1998).

Although most audiences experience some degree of artifact emotion, these emotions are particularly important for scholars, videogame reviewers, and dedicated fans, all of whom make evaluation of videogames *qua* videogames a regular part of their playing practices. Artifact emotions are not generally thought of as emotions; we tend to think of them as artistic judgments or preferences, and they do not usually have the same intensity as other types of emotions. But they are emotions; aesthetic evaluations can cause frustration, amusement, surprise, and other emotions in much the same way that gameplay and narrative can.

The last type of emotion in the model is *ecological* emotions, which are generated when a player responds to a videogame in much the same way she responds to the real world. I call these ecological emotions in reference to ecological psychology's emphasis on the interaction between people and their environments. To understand what I mean by ecological emotions, consider an apparent paradox: when we play a survival-horror videogame such as *Fatal Frame* (Temco, 2001), we may scream in fear, but we never run out of the room in fear. Why? The answer is that there are several different systems in our mind which evaluate what we perceive, and those systems do not always agree with each other. The competing aspects of mind are easy to see when we consider optical illusions. We may know that two lines in an illusion are the same length but simultaneously be unable to see them as such. Our reasoning system and visual system are at odds. Similarly, when we play *Fatal Frame*, we may consciously know that the ghost on the screen cannot actually harm us, but its sudden appearance may cause us to jump with surprise. It is this surprise which I classify as an ecological emotion. We jump as if the ghost were part of our real environment and could actually hurt us. Whereas an artifact emotion responds to a videogame at the level of representation, an ecological emotion responds to what the videogame represents, and responds to it as if it were real. This is not to say that our response will be as intense as it would be in real life, but only that ecological emotions to representations are in accord with the emotional responses we would have to that which is represented. Another example of an ecological emotion can be found in *Tom Clancy's Splinter Cell* (Ubisoft, 2002). One sequence in the game demands that the player jump between platforms on a sheer cliff face. If the player rotates the camera so that she can see down the cliff, the videogame can generate genuine vertigo. To take another example, even though players do not run out of the room when attacked in a videogame, they often experience fear in the face of threatening enemies. You might initially attribute that fear entirely to game emotions, thinking that your fear is based on the fact that an enemy can cause you to lose the game. Consider, however, the difference in fear caused by a horrible enemy with sharp teeth and a cuddly enemy shaped like a teddy bear. Even if both enemies had the potential to cause the same damage, I believe that the former would generate much more fear than the latter. That additional fear, ecological fear, is attributable to the aspects of your mind that generate fear when looking at sharp teeth.

An artwork can generate any or all of these emotion types. Further, although these four types of emotion are conceptually distinct, any engagement with an actual artwork will blend them in various combinations. Some artworks may generate emotions that are dominated by one of these areas, but others might generate responses that can draw on all four. Finally, there is no correlation between the number of areas of emotional response and the intensity of response. We might have a very intense, pure artifact emotion about the design of a videogame character, or we might have an equally intense, complex response when playing a videogame set in a richly simulated world.

EMOTION INPUTS

The different audience roles and types of emotion discussed thus far suggest a framework for thinking about which aspects of artworks generate different types of emotions. I call the stimuli presented by artworks emotion *inputs*. The computer metaphor should not be taken too strongly; players are not identical and will not respond to inputs in the same way. Each person draws on a unique network of mental associations. However, I hope to demonstrate that thinking of formal elements of artworks as inputs allows us to better describe and understand players' emotional responses to videogames.

When we place the two roles across the four emotion types, we can see that there are eight types of inputs that a videogame can present to a player:

	Audience Roles	
Types of Emotion	Observer-participant	Actor-participant
Ecological	Sensory environment	Proprioception
Narrative	Narrative situations	Roleplay
Game	Game events	Gameplay
Artifact	Design	Artistry

Figure 1: Inputs to Emotion

There are two complementary ways we might think of the inputs on this chart. One is to see them as the different emotion-creating aspects of a videogame. Another way to think about these inputs is through Wittgenstein's notion of *seeing-as* [8]. When we engage with a videogame, we perceive a number of concrete stimuli, including images, sounds, and the game interface. We can look at those stimuli in different ways. We might see the same image *as* part of our environment, *as* a game event, *as* a narrative event, or *as* an element of style. By perceiving concrete elements of videogames as different things, the player can experience different types of emotions.

To show how this model can help us understand a player's emotional responses to a videogame, I will describe emotional reactions someone might have when playing *Fight Night Round 2* (Electronic Arts, 2005). We can begin with ecological emotions. For a player in the observer-participant role, the sensory environment of the game is what creates ecological emotions (we might call these responses observer-ecological emotions). The scantily-clad ring girls or the well-muscled boxers might stir ecological feelings of attraction. Your scowling opponent may seem threatening. The simple sight of the realistically depicted injuries and blood on the boxer's faces can also create emotions, causing a player to grimace or flinch much as she might if seeing real blood. Again, this is caused by aspects of one's mind which do not distinguish between representations and reality.

Fight Night also promotes actor-ecological emotions based on proprioception. One game design element simulates the ecological emotion of disorientation. In the game, when your boxer is knocked down, you see a blurry image of the referee from the point of view of your boxer, who lies on the canvas. Superimposed on this blurry image is a circular target in the center of the screen with two wobbling red circles on either side. To get your boxer off of the canvas, you have to use your two analog thumbsticks, each one corresponding to one of the red circles, to line the circles up on the center target. The red circles don't move in perfect correspondence with your thumbsticks, however; the most injured your boxer is, the worse the circles' movement reflects your directions. As the red circles wobble on screen, the controller lurches in your hands. Here, the disorienting effects of the blurred images (an observer-ecological input) is strongly emphasized by the disconnect between the actual movement of the thumbsticks and the loosely corresponding motion of the red circles. This disconnect is strongly analogous to the loss of motor control a person has when they have actually been hit hard in the head and knocked down, and it generates a ecological feeling of instability in the player.

Narrative emotions are generated by narrative events and characters. Although *Fight Night* is not strongly based in narrative, it has some narrative situations that can lead to emotions. One narrative element is that the bouts are separated by periods of time, and as the player chooses fights separated by different amounts of time, those periods accumulate and her boxer ages. After several dozen fights, her twenty-year-old boxer has suddenly become thirty-eight. As her boxer ages, he becomes slower and weaker (his attributes decrease) and he starts to look less muscular. When he reaches sixty-five, he is forced to retire—you can't schedule any more fights. These events define a narrative trajectory, and may generate narrative emotions such as nostalgia for the boxer's early days or sadness that his career is over.

A videogame's facilitation of rich role-play is what creates significant actor-narrative emotions. In *Fight Night*, players are free to use characters based on actual boxers, who have personas, behaviors, and histories that are demonstrated through their fighting styles in the real world. Muhammad Ali historically has a balanced boxing style, but a player can play the virtual Ali as a slugger. The way the player plays her boxer is itself an input to the player's narrative emotions. The player can feel that she plays Ali accurately or inaccurately, and she can feel pleasure in both. Alternately, the player can enjoy creating and playing a boxer with a pre-established persona. For example, a player may enjoy playing a boxer based on a rock star or historical figure.

It is easy to understand how *Fight Night* generates game emotions. As an observer-participant, the player watches numerous game events in *Fight Night*, and these can generate emotions solely through observation. Before a fight begins, for example, a player may become anxious about the outcome of the bout solely based on looking at her intimidating opponent. As an actor-participant, on the other hand, a player's gameplay skills may be what generates game emotions. Knocking out her opponent may generate pride or joy at her achievement.

How might *Fight Night* generate artifact emotions? The inputs to observer-artifact emotions are the game's style and design. Graphically, this game was very advanced for its time. One reviewer describes the emotional impact of the

game's visuals by stating, "Those who were impressed with the visuals in the first Fight Night will be awestruck with the graphics in the sequel….The facial damage is more impressive this time around, with puffed lips, cuts, bruises, and other telltale signs of effective jabs and uppercuts making the action seem brutally real." [4]. Another reviewer has a similar reaction: "Perhaps some of the strongest graphical effects occur when you successfully land a solid punch and the game's physics take over - your opponent's head snapping back or sideways and their features contorting the way a real person's would….These aesthetic details are simply amazing to watch - even down to vacant eyes rolling back into the head." [9]. These reviewers, who are also players, are reporting the observer-artifact emotions of amazement and approval. The positive emotions they feel towards the game are based on observing and evaluating the game as an aesthetic construction.

Fight Night generates author-artifact emotions by allowing the player to use her artistic skills to determine her boxer's appearance. Of course, the player's options are not limitless; the game provides a limited but surprisingly robust set of features that can be altered, such as height, build, and hairstyle. One reviewer makes an explicit analogy between this activity and fine art by describing this process as "so detailed it is like molding a piece of clay….you can sculpt every part of your boxer's face…" [6]. If you try to create a favorite professional boxer that is not on the roster, such as Marvin Hagler, your creative attempts input into your emotional experience of the game. You may find your creation satisfyingly similar to Hagler and feel proud of your creation, or you may find the boxer you made looks nothing like Hagler and feel frustrated.

CONCLUSION

This paper proposes a model for understanding the various aspects of emotional responses to videogames and the specific types of inputs a videogame can utilize to generate these emotions. The novelty of this model is that it categorizes emotions not based on conventional categories such as valence or intensity, but based on ways that players can engage with the hybrid nature of videogames. As such, it captures ecological and artifact emotions usually overlooked in discussions of videogames and emotion. Videogames are simultaneously simulations of reality, fictional narratives, games *qua* games, and crafted aesthetic objects. To understand emotional responses to videogames, we must recognize that the experience of gameplay involves responding to videogames in all of these roles.

REFERENCES

1. Damasio, A.. (1994). Descartes' Error: Emotion, Reason, and the Human Brain, New York, Cambridge University Press.

2. Damasio, A. (2003). Looking for Spinoza: Joy, Sorrow, and the Feeling Brain. Orlando, FL, Harcourt.

3. Ekman, P. (1993). "Facial Expression and Emotion." American Psychologist 48: 384-392.

4. Marriott, S. A. (2005). Fight Night Round 2 review. www.g4tv.com.

5. Ortony, A., G. L. Clore, et al. (1988). The Cognitive Structure of Emotions. New York, Cambridge University Press.

6. Peterson, B. (2005) Fight Night Round 2. www.gaming-age.com.

7. Tan, E. S. (2000) Emotion, Art, and the Humanities. Handbook of Emotions. M. Lewis and J. M. Haviland-Jones. New York, Guilford Press: 116-134.

8. Turvey, M. (1997) Seeing Theory: On Perception and Emotional Response in Current Film Theory. Film Theory and Philosophy. R. Allen and M. Smith. Oxford University Press: 431-457.

9. Whipple, B. (2005). Fight Night Round 2. www.mygamer.com.