A Cognitive Psychological Approach to Gameplay Emotions

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ABSTRACT
Although emotions elicited by the fictional world or the artefact play a part in story-driven video games, they are certainly not the focus of the experience. From a cognitive psychological perspective, this paper studies the appraisal and action dimensions of emotions arising from gameplay. As it relies on cognitive film theories about popular narrative movies, it also revisits their conceptual sources in order to better reflect on the specificity of those gameplay emotions.

Keywords
emotion, gameplay, video game, film theory, appraisal, action tendency

As David Freeman wrote at the beginning of *Creating Emotion in Games: The Craft and Art of Emotioneering*, the subject of emotion in games is a new continent and an almost unmapped one [4 : p. 8]. This is unquestionably true. However, though he considers the subject from a designer perspective, Freeman neither highlights emotions as a complex phenomenon, nor goes into thoroughly. While I'll come back to this question later, for now I will simply state that one must not forget that emotions involve many elements, from bodily changes to perceptions and thoughts, from dispositions to experience them to behaviour in reaction of them. But insofar as the gaming experience of story-driven video games resonates with the same emotional power as film[1], often with even more intensity in regard to certain emotions, I'll begin by introducing the description I've made [19] of two of the three major territories of this new continent with the help of cognitive film theories about emotion.

EXPLORING KNOWN TERRITORIES
My main reference is Ed S. Tan's *Emotion and the Structure of Narrative Film: Film as an Emotion Machine* [27]. Its usefulness lies in the fact that Tan restricts his research to the natural viewer[2] and the traditional feature film which, following some elements of the classical narration definition given by David Bordwell [1] used by Tan, presents more or less psychologically

[1] This is in fact a comment made about the *Metal Gear Solid* series (Konami/Konami) [14 : p. 59].

[2] As opposed to people watching films with a special analytical purpose in mind, natural viewers have a more or less stable preference for traditional films.

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defined individuals – the principal causal agency – who straightforwardly struggle to solve clear-cut problems or to attain certain goals. It also introduces solely temporary causal narrative gaps, gives information functionally necessary at a particular time, does not draw attention to itself as artefact and has an happy ending most of the time. As an opening postulate, Tan asserts : "[f]rom the perspective of the viewer, it could be said that what all natural viewers of the traditional feature film have in common is their desire to experience emotion as intensively and as abundantly as possible, within the safe margins of guided fantasy and closed episode" [27 : p. 39]. Identifying two sources of primary satisfaction, he then characterizes two relevant types of emotion.

Rooted in the fictional world and the concerns addressed by that world, the first type of emotions are referred to as *fiction emotions* or *F emotions* [27 : p. 65].[3] To begin with, though the viewer or gamer visits, via the power of their imagination, a fictional world where he or she runs no risk, this world does have an emotional impact. It is not the same thing to step into the nightmarish city of *Silent Hill*, the corrupt neighbourhoods of *Grand Theft Auto*, or the fantasy worlds of *Final Fantasy*. But fiction emotions have above all to be defined as *witness emotions* because they are elicited by a controlled and invisible observer's position. It is the protagonists' concerns which are at stake. Since the situations in which those protagonists find themselves cannot be acted upon, we have to experience it *with* them. Fiction emotions are principally empathetic. The plot of story-driven games unfolds beyond the control of the gamer, for the most part though cut-scenes asides. For instance, nothing can be done about the murder of Max's wife and daughter or the frame-up of which he is victim in *Max Payne* (Remedy/Rockstar Games, 2001), but you are lead to feel Max's anger and to strive, with him, for revenge. You can only witness the betrayals of the two women Snake has relations with in *Metal Gear Solid 3: Snake Eater* (Konami/Konami, 2004) and feel sad with him, not to mention share his heartbreak that the death of one of those women elicits and feel compassion for the hero.[4]

Arising from the concerns related to the artefact, as well as stimulus characteristics based on those concerns, Tan's second type of emotion is called *artefact emotions* or *A emotions* [27 : p. 65]. As soon as the viewer or gamer is aware, no matter how fleetingly, of artistry and manipulation, the object of the emotion is not the fictional world anymore, but the film or the game as a man-made artefact. One wouldn't expect less from artefacts produced by an industry based on fast-changing computer technology. Video game history is peppered with technological innovations and the groundbreaking computer-generated imagery that create this type of emotions. The aesthetic of video game has much to do with an "aesthetic of astonishment"[5]. We can certainly feel wonder crossing dazzling 3D landscapes or moving along with the real-time

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[3] Widening his considerations in a later paper, Tan talks about *R-emotions*, that is emotions elicited by elements of the represented world [25].

[4] When Freeman talks for instance in *Creating Emotion in Games* about making major NPCs interesting, giving them emotional depth and complexity through the game, writing interesting and deep lines of dialogue, making game plots interesting, using symbols, or using opening, pre-rendered and in-game cinematics to suck the gamer into the game, he is talking about fiction emotions.

[5] An expression of Tom Gunning about the early cinema. See also Andrew Mactavish's article : "Technological Pleasure : The Performance and Narrative of the Technology in *Half-Life* and Other High-Tech Computer Games" [18].

lighting of the *Splinter Cell* games. Following the example of *Metal Gear Solid 3: Snake Eater*, we can be surprised by a sudden twist of the plot and reflect upon the intricacy of the telling of the story.[6] But in a game, we can be very displeased by a bad game design, as we can have admiration for the specific act of puzzle construction. We can be in awe in front of the physics engine, say of *Half-Life 2* (Valve Software/Vu Games, 2004).We can equally astonished by a counterattack of NPCs that we've never seen before. For Tan, there is a likelihood that more intense the emotion may be, the greater one will realize that this is a special experience and be aware that one is in front of an artefact. This is a situation in which the simulation's of video games often puts us. Has it not been stated that video game art is the art of simulation ?

APPRAISING THE NEW FIELD

Without doubt fiction and artefact emotions play a role in story-driven games. But they are certainly not the main part of the experience. Needless to say, we are playing for *gameplay emotions*[7] or *G emotions*, the emotions arising from our actions in the game – mostly in the game-world in the case of narrative games – and the consequent reactions of the game(-world).[8] To paraphrase Frijda [5], the different pleasures (and displeasures) we have when playing a game are the most elementary of our emotional processes. As Nicole Lazzaro's research shows, over thirty emotions – although they are no all introduced in her abstract – may be elicited by gameplay, completely separated from those elicited by story [17]. The impact of gameplay is, currently, scrutinized by empirical studies of affective gaming that investigate the states of arousal of the gamer. As well, notions such as "adaptive gameplay" call attention to the way video games are meant to respond to the gamer's emotional states [10,11, 24][9]. Since it is hard to look at emotions from all angles, it is from a cognitivist perspective that I wish to make my contribution to the study of gameplay emotion. Basically, I want to start to examine the appraisal and action dimensions of those emotions. As a comparative analysis of film and video game inevitably leads us to reflect on the specificity of the latter, which Torben Grodal's "Video Games and the Pleasure of Control" illustrates remarkably well [13], it also prompts us to revisit theoretical sources in order to better apply them.

Story-driven games meet the elements of the above-mentioned description of classical narration. They are indeed avatar-centered and therefore chiefly elicit prototypical emotions which are intentional, object-oriented and action-oriented. Emotions are as much *processes* as *states*. "[E]motional reactions develop over time and usually consist of sequences of emotional reactions" [6 : p. 382]. Emotions are structured, and wax and wane according to rules. They are functional in the way they regulate the interaction between the individual and the environment, whether it is real or virtual. While Tan's "filmic emotion machine" remains my principal

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[6] So when Freeman recommends to "make both in-game and pre-rendered cinematics more artful and, thereby, more emotionally complex and powerful" [4: p. 389], making the gamer unable to predict the end of a cinematic, he is also pointing toward artefact emotions.

[7] As opposed to *game emotions* that would underline a production coming from the game and would not give emphasis on the personal experience of the gamer.

[8] In my opinion, it's only when Freeman [4] talks about the choice of actions given to the gamer that he's really pointing to gameplay emotions.

[9] Besides, papers on those research are part of the program of the DIGRA 2005 Conference.

reference, his main one is Nico H. Frijda work, principally his book *The Emotions* [9].[10] For Frijda, and this is part of the twelve laws of emotions he enunciates [7], emotions arise in response to the meaning structures of a given situation; thus different emotions arise in responses to different meaning structures. Emotions arise, what's more, in response to events that are important to the individual's goals, motives and concerns. There is a more or less enduring disposition to prefer particular states of the world. Frijda's thought lies within the predominant cognitive appraisal theory of emotions.

From a cognitivist perspective, cognition and emotions work together. Emotions are determined, as it was just noted, by the interaction between a given situation and an individual. They will differ according to the ways the situational meanings might be assessed. As Frijda states, and also Lazarrus and Folkman [16], there are two types of cognitive appraisal. In a primary appraisal, the situation is evaluated according to a person's well-being. A situation that is not relevant for an individual is not likely to elicit an emotion. A benign-positive or stressful situation will be characterized as pleasant or unpleasant. Then, in secondary appraisal, it is what might be done or can be done that is assessed. The process takes into account the available coping options, their range and their effectiveness. In video game, Torben Grodal has noticed, ever so pertinently, that "[i]t is the player's evaluation of his own coping potential that determines whether [a] confrontation with a monster will be experienced as fear (if the evaluation of his coping potential is moderate), despair (if he feels that he has no coping potentials), or triumphant aggression (if he feels that he is amply equipped for the challenge). This entails that the emotional experience will vary over time, due to the learning processes leading to a change in coping potentials" [12 : p. 150]. It is worth reiterating Grodal's consequent conclusion : "Video games therefore simulate emotions in a form that is closer to typical real life experiences than film: emotions are motivators for actions and are labelled according to the player's active coping potentials" [13 : p. 201]. And on the basis of new information from the environment, finding ammos or a health kit for example, the situation or confrontation will be reappraised, and the meanings attached to it will be changed.

In appraisal theory, different emotions correspond with different appraisal structures. Although appraisal determinants may vary in some respects, some remain important consistently, and give us more insights as to the causes of emotions[11] :

- Motive-Consistent versus Motive-Inconsistent. This is the fundamental distinction between positive and negative emotions. A positive emotion thus occurs when a situation is consistent with the person's goals, desires, intentions, and motives. Hope, joy, relief, liking and, and pride are positive emotions. Fear, sadness, distress, frustration, disgust, dislike, anger, contempt, regret, guilt and shame are negative ones. However, it is possible to connect the two opposites. We play a survival horror game for the many pleasures of being scared. There is nothing really bad about feeling a bite of frustration in front of a puzzle we must solve or an obstacle we must overcome.

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[10] Tan and Frijda even wrote a paper together about "Sentiment in Film Viewing" [26].

[11] I'm following here Per Persson's application [21] of the Roseman, Antonio and Jones's structure of the emotion system [22].

- Expectedness versus Unexpectedness of the Event. Appraised independent of motives, surprise is elicited by unexpectedness, and it is related to novelty and unfamiliarity.
- Circumstance-Caused versus Other-Caused or Self-Caused Events. The agent causing a given situation to emerge is critical to the appraisal of it. Joy is more circumstance-caused, while liking is caused by another person and pride by our own action. In a story-driven video game (as opposed to online games where you meet people), it is improbable we will feel liking per se. You may get angry at the actions of the NPCs (other-caused). However, the situation might be proved more complex. Immersed in the game, your may be frustrated by the circumstance leading to a failure and hope for a better outcome (circumstanced-caused). But if you are thinking about the system behind the fictional world or if you relate to the computer as Other (as do some sociological studies), it will always become an other-caused situation. When you succeed, you are pride of yourself (self-caused).
- Believed Certainty versus Uncertainty of the Event. Believing in the probability of an upcoming event explains the difference between joy and relief that are certain, and hope (positive) and fear (negative) that are not.
- Appetitive versus Aversive. This is another fundamental distinction. We want to obtain, pursue or keep something pleasurable (joy), and discard a thing inconsistent with our desire or concerns (distress, disgust, contempt and shame).
- High versus Low Control Potential. An important situational appraisal is whether we believe we can change the course of an event, restore it or undo it. Frustration arises because we can control the situation but are never able get to the end. Otherwise, it unlikely that a story-driven video game in which I can/have to reinvest my action or the paths I've chosen would bring regret at the gameplay level. Because regret is elicited when I cannot redo something (for instance, you can regret you did decline in the past the invitation to become a member of a good Counter-Strike Clan).

But emotions do not have only an appraisal dimension. They also have an action one.

READY FOR ACTION

In *Film Structure and the Emotion System*, Greg Smith criticizes Tan's choice to limit himself to the work of Frijda in order to account for filmic emotions [23]. His criticism is certainly correct with regard to the notion of action tendency which is fundamental to Frijda's theory. Indeed, emotions are action tendencies. They can be defined as "modes of relational action readiness, either in the form of tendencies to establish, maintain, or disrupt a relationship with the environment or in the form of mode of relational readiness as such" [9 : p. 71], or "be conceived of as plans or programs to achieve such ends, which are put in a state of readiness" [9 : p. 75]. Emotional action tendencies are felt as impulses and urges to act in one way or another until an emotional episode is closed due to a change of situation. They therefore assign precedence to the control of action and the information processing that goes with it (what Frijda calls *control precedence*).

The application of emotional action tendency to film viewing reveals, as matter of fact, the inevitable conclusion that this tendency is only virtual. What's more, in cinema, all you can see is on the screen and your gaze is controlled by mise-en-scene and montage. "Thus, in effect, says Tan, the action repertoire of the viewer in his or her capacities of spectator to the fictional event

is empty" [27 : p. 75]. You cannot run to help the President's daughter when she is threatened by Russian terrorists in *Air Force One* (Wolfgang Petersen, 1997). But this doesn't mean that the emotional experience felt through the actions of the fictional characters cannot be intense. However that may be, and I'm following Smith's reasoning here, since action tendencies are crucial to the definition of emotion and that actual tendencies are more important than virtual ones, Tan sets the notion of "interest" as the central emotional mechanism in film viewing : "[i]n the case of interest, the action tendency is real, unlike so many other affects evoked by film" [27 : p. 118]. Interest is defined as an elaboration akin to problem solving, "a mental activity that lies somewhere between free association or fantasy on the one hand and a strictly prescribed process of inference controlled by the text, on the other hand" [27 : p. 90-91]. Interest is based on concerns and on the situational meaning structure of the characters' action in the fictional world. It displays a "strong control precedence" that refers to the fascination, enthrallment, tension and absorption. For those reasons, it exhorts the viewer to pay attention to detail, to investigate the plot for clues, to learn more about the story, and to anticipate what will happen next. To maximize the interest of the viewer as regard to progress made toward closure and the preferred final situation, the narrative has to find a perfect balance between frustration and reward.

Interest as emotion is, of course, as significant in story-driven games. And, given that action tendencies are not virtual, it takes things a step further (even if it is enacted in a *virtual* game-world). Between free association and prescribed process of inference, the gamer has to make his or her avatar explore the game world in order to find clues about the plot, about "the pre-structured but embedded [narrative] within the mise-en-scene awaiting discovery" [15 : p. 126]. He or she may also traipse around if he or she wishes. In Jenkins' terms, this would then be the gamer own "unstructured and controlled narrative", a narrative that can elicit artefact emotions should we note (as procrastination leads us to wonder at the artistry behind the creation of the fictional world). But the gamer still has to pursue the avatar's goals or the concerns set by the game, that is for example to save the President's daughter in *Resident Evil 4* (Capcom/Capcom, 2005). To do so, he or she has to straightforward struggle to solve cleat-cut problems, whether it is a riddle, or how to dodge or kill monsters. Following Lazzaro's four keys to the gameplay emotional experience, and depending of how the space is contested and how the gamer appraises it, this will be "hard fun" (Emotions from Meaningful Challenges, Strategies, and Puzzles) and/or "easy fun" (Grab attention with Ambiguity, Incompleteness, and Detail).

Tan's "interest theory" rests to a large degree on the progress made in the direction of closure and on the uncertainty about the final situation. For the most part, the cognitive and affective investments in the fiction take the form of anticipations which counterpart the antagonistic effect of the narrative. In his explanation, Tan refers briefly to a notion put forward by Noel Carroll, i.e. *erotetic narration* [2, 3].[12] Applied to linear narrative structure of popular movies, this is a model based on the logic of questions and answers. To various degrees, each scene asks a question that articulates the narrative possibilities and that the movie will go on to answer. Whereas the end

[12] We must also say that the "curiosity theory" developed by Carroll about the horror genre [2] has many similarities with Tan's interest one. Video game literally involves a "play of ratiocination" and the "drama of corridors" that Carroll talks about applies quite well to the maze structure of story-driven video games, be a survival horror game or not.

brings out an answer to the macro-question(s) of the movie, there are, beforehand, a large number of micro-questions to be answered. Those micro-questions connect fictional event to fictional event and slow down progress toward the end. Erotetic narration is also an elaboration akin to problem solving. Yet again, this theorization makes even better sense regarding video games. If the viewer is a question-former according to Carroll, the gamer has therefore to be seen as a answer-maker, a decision-maker, a problem-solver. Leaving narration aside and considering the game itself, it is thus possible and appropriate to talk about *erotetic gameplay*. Gameplay is about micro-questions that the gamer must answer, about micro-objectives that he or she must attain. The difficulty of these varies, something boss fights display. Games like *Tom Clancy's Splinter Cell* (Ubisoft/Ubisoft, 2002) illustrate this process perfectly. Sam Fisher always receives objectives at the beginning of and during a level via his OPSAT. He has to find ways to infiltrate various facilities, ways to meet contacts, ways to cross protected areas, ways to avoid taking people's life and ways to kill others, ways to retrieve, access, collect, desactivate or destroy items, etc. The constraints the gameplay micro-questions place on the gamer's actions are to be overcome within the range of possible moves Sam Fisher can perform. All those micro-goals or concerns will eventually enable Sam Fisher to save the U.S. from a Russian terrorist's threat (happy ending), that is to answer the macro-question of the game. In spite of its linear progression and many pre-defined answers or options, erotetic gameplay can be "hard fun". Frijda notes : "Pleasure in successful goal achievement extends to any goal-directed action that is successfully performed, when such performance is not taken for granted and perceived as a challenge. This is the domain of mastery pleasures, to which most or all activities lead to flow or and optimal experience belong" [5 : 81]. It is the gamer's progress and achievements which are rewarded.

Gameplay emotions arise from the interactions of the gamer with the game(-world). This brings us back to the questions of action readiness and action tendency. If interest is the only real action tendency in film, it is not the case in video game where many controls can lead to action. Opening an instruction guide confirms this easily. Game controls allow a repertoire of in-game actions : from staying still to running, from crouching to jumping, from throwing punches to shooting guns, from looking to maps to accessing inventories, etc. But inasmuch as you *can* make your avatar act, you *have to* make him takes action. If not, there will be no game. Otherwise, as I've often stressed with regards survival horror games, it is certainly not the avatar that is meant to be scared or have emotions, but rather the gamer [19]. The avatar, incidentally, generally stays expressionless, whatever the situation. We saw that emotions depend on the gamer's appraisal of a given game situation. This individual appraisal will consequently produce subjective emotional reactions. However subjective the emotions might be, several of them[13] "can be unambiguously defined in terms of particular forms of action readiness, [and] of some form of action tendency or some form of activation or lack of thereof" [7 : 351]. In *The Emotions* [9 : p. 88], Frijda presents a table (2.1) containing emotions with relational action tendencies, activation modes and functions. From this outline, we can characterize some prototypical gameplay emotions:

- Interest is then seen as a tendency to attend, to paid attention, to observe well and understand the situation.

[13] There is an underlining debate here about "basic emotions" that I do not want to enter into, and that I could not grasp anyway in all its entirety and fine distinctions because of my background.

- Enjoyment is a tonic reaction that prompts to be-with, to interact and to engage in consummatory activities. As we know, an enjoyable game session is hard to leave.
- Worry has the tendency to make us turn toward an object one is thinking about. *ICO* (SCEI/SCEA, 2001) succeeds perfectly to make me worried about the princess Yorda. I thought about her all the time after I left her behind.
- Fear is manifested by the impulse to move, to run away. In a survival horror game like *Resident Evil 4*, I'll avoid a threatening monster in order to protect myself.
- Surprised or shocked by the apparition of one of the monsters, I'll be interrupted, will freeze in order to reorient myself.
- Anger has an agonistic tendency. It urges one to move against. Its function is to regain control. So when I get mad at my opponents, I'll assault them with my best weapon in order to remove them as obstructions.
- Frustration, the feeling of boiling inside, has also a tendency to move in an antagonistic way. I become short tempered when I'm not able to achieve an objective, or if I'm forced to redo the same actions all over again. For example, I became really upset by the 14th mission of *XIII* (Ubisoft/Ubisoft, 2003). Not being able to save the game after a hard battle, finally victorious, against the mad Doctor Johansson at Plain Rock Asylum, I was annoyed by the fact that, afterward, I still had to face more guards who killed me before I could escape. This death brought me back to a point before the aforementioned difficult boss fight.

As those few observations demonstrate, a close examination of the action tendencies shows remarkable insight into the problem of gameplay emotions.

STILL IN THE MOOD FOR FUN

This paper intended to map in a bit more detail the new continent of emotions in games. But one will undoubtedly have guessed that the task is not finished, even if I had limited myself to story-driven video games. Along with empirical studies, cognitive psychological approaches to gameplay emotions need to draw upon techniques able to probe to greater depths. Because story-driven games are dense information emotional world. They use multiple emotion cues to elicit the proper emotional experience. Thus, the relation between fiction and gameplay emotions will have to be better examined. Moreover, emotions, said to last seconds or minutes, have to be distinguished from emotion episodes which are continuous and coherent series of emotions, and from moods that can last for a longer period of time. Since the playing of a game goes on for many hours, and video games can be seen as "mood managers" allowing the gamer to participate in a self-controlled arousing experience [13 : p. 209], those affective states without an object are important to study. The mood-cues approach of Greg Smith becomes a great theoretical tool of analysis. For Smith, mood is the primary set of orienting emotions states that can be elicited by various cues. It orients us toward experiencing specific emotions [23 : p. 38]. The fearful mood of a survival horror games such as *Resident Evil 4* puts, for example, the gamer in emotional alert and prepares him/her to experience burst of fear. There is certainly a link to trace between the notion of mood and the way the gamer gets emotionally immersed in games. To our great pleasure, this deserves further study.

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