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Understanding the Design of Emotionally Impactful Game Feel

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Figure 1: Examples of games where game feel design contributes to emotionally impactful gameplay. From left to right, *Celeste*[G3], *Arise: A Simple Story*[G10], *Ico*[G7] and *Journey*[G19].

Abstract

This paper seeks to understand the connections between two previously disjoint subfields of game research and design: 1) the study of emotionally impactful games and 2) the study of game feel. Regarding games and emotion, we now understand aspects such as how negative emotions are appreciated in games and can be a desirable quality for designers and players alike. We also understand aspects of game feel such as the importance of responsive player character control and juicy (i.e. exaggerated) feedback for player actions. However, the literature on game feel rarely links to emotion research and focuses on a narrow subset of emotions/feelings such as power and control. Research is lacking on how game feel design can impact a wider palette of emotions, including negative ones, and how this may require one to "break the rules" of good game feel design, e.g., making it purposefully hard to control the player character. In this work-in-progress paper, we begin a systematic mapping of such connections between game feel and emotion. We conduct a Constructivist Grounded Theory analysis on the game feel of 42 mechanics from a diverse selection of games such as Journey, Celeste, and Freedom Bridge. We identify two core concepts,
Deviation and Motif, along with 8 design concepts, as central to crafting emotionally impactful game feel.

CCS Concepts

• **Applied computing → Computer games**; • **Human-centered computing → HCI theory, concepts and models**; • **Software and its engineering** → *Interactive games*.

Keywords

game design, game feel, juice, emotions, eudaimonia, video games, player experience

1 Introduction

At their core, video games create and deliver experiences [30, 34] and game designers may focus on crafting different aspects of this experience. On the one hand, games like *Super Meat Boy* [G16] and *Celeste* [G3] focus on kinesthetic joy and mastery through carefully crafted movement, platforming mechanics and challenges. Steve Swink [33] popularized the term *Game Feel* to describe the experience of these moment-to-moment mechanics and virtual sensations [14, 26, 33]. The literature and discussions on game feel
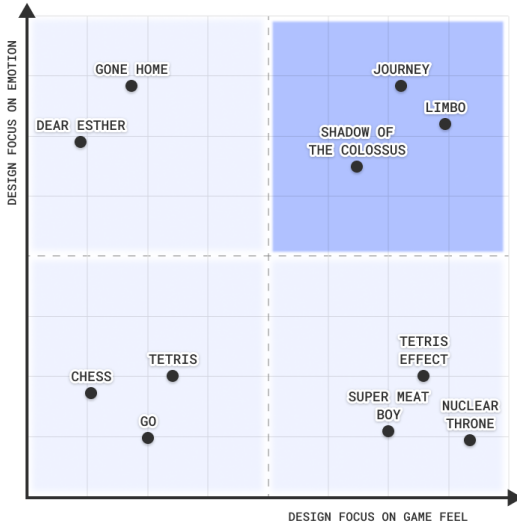
Figure 2: Positioning games based on how much their design appears to focus on game feel versus emotion. We aim to understand the top-right quadrant where game feel and emotions interact and are equally important. Note that the positioning of the games is purely subjective and intended as a conversation starter rather than an objective truth.

tend to focus on aforementioned games and experiences [16, 24, 35], highlighting properties such as responsive real-time control of virtual objects, juicy feedback through the generous use of effects such as screen shake and particle effects, and careful tuning of game physics [16, 26, 33]. On the other hand, there are games such as *Telltale's The Walking Dead* [G17] and *Life is Strange* [G2], where game feel appears secondary to the delivery of emotions and narrative. Research on such games has revealed insights such as how experiencing negative emotions and emotional challenges can make players appreciate games more, eliciting long-lasting impacts and reflection [2, 3, 21].

We are motivated by a key observation: There appears to be virtually no literature on the interplay of game feel and player emotions, and on games that successfully blend these two types of experiences, often by *breaking the rules of what is traditionally considered as good game feel design*. In the design space map of Figure 2, such games populate the top-right quadrant. For instance, good game feel is typically associated with responsive controls and fluid character movement empowering the player, but the penultimate scene of the critically acclaimed game *Journey*[G19] does the opposite: The scene has the player walk forward and ultimately collapse in a blizzard; the player character's movement gradually becomes slower, heavier, and more tedious. The creators motivate this design by amplifying the feelings of struggle and hopelessness, and the scene creates a contrast that makes the subsequent final scene of the game more cathartic and empowering, as the player becomes free to fly and glide up towards the mountain summit[6].

To begin untangling the connections of game feel and emotions, we employ Constructivist Grounded Theory to analyze the game feel design of 42 game mechanics, probing the following research questions:

- What kind of emotional impacts can game feel design have?
- What game feel design decisions and techniques can designers use to support emotional game design?
- What are the common practices of emotional game feel design employed by successful games?

As elaborated in Section 4, our analysis highlights 8 game feel design concepts such as *Mechanical Subversion*, *Conscious Interactions* and *Re-contextualization*. Further, we propose a preliminary theory of *Deviation* and *Motif* to explain how game feel design affords emotionally impactful experiences.

2 Background and Related Work

2.1 Game Feel

Swink [33] popularized the term *game feel* to capture their understanding of the indescribable "good-feeling" quality of games experienced through the moment-to-moment interaction. Swink defined game feel as *"Real-time control of virtual objects in a simulated space, with interactions emphasized by polish."* [33, p 6]. They relate this holistic experience to being a kind of *"Virtual Sensation"*, a composite of visual, aural and tactile feedback. Simply put, it's the sensation of, e.g., running, jumping and stomping goombas in *Super Mario Brothers* [G13] or sliding down sand dunes and gliding through the air in *Journey* [G19]. The design and tuning of the various parameters that contribute to this experience is game feel design and the parameters being tuned are called elements of game feel design [26, 33]. Swink highlights that their understanding is not the only interpretation of game feel, yet it seems to have become the generally understood all-encompassing definition of 'good' game feel [16, 25, 35]. The survey of game feel research by Pichlmair and Johansen [26] compiled various elements of games feel design including properties like character movement, gravity, screen shake, audio feedback, etc. While reflecting on the future of game feel research, they urge investigating "good negative moments" in games which aligns closely with our research direction [26]. Wilson [14] along with Pichlmair and Johansen [26] find Swink's game feel definition restrictive in nature, with Wilson commenting that it fails to capture a lot of games, e.g., real-world games or interface-heavy games.

The term *juice*, as coined by Kucic, is the design of feedback to a "constant and bountiful" degree [22]. Juice tends to be present frequently in game feel design discussions, and the two concepts have been closely linked by academics and developers alike [15, 19, 20]. Though some equate juice with game feel, we consider it merely as a contributing element, as it primarily concerns feedback but is not directly related to other core elements like real-time control or simulated space [20, 33]. For example, in Super Mario [G13], the holistic experience of jumping is the game feel of the jump mechanic, whereas the particle effects on hitting blocks, the animation details and the sound effects, all elements that provide feedback to the action of jumping constitute the 'juiciness'. The term can also be used as a verb, where 'juicing' a game mechanic/element can mean adding or exaggerating the feedback. Developer talks and discussions on the topic, though informational, tend to understand juice as merely a means of boosting the player's feeling of power and control, as initially presented by Kucic [22]. Brown [27] posits that designers should choose a feeling that they want players to

experience at the moment and juice the game elements towards serving that feeling, since juicing without context can lead to an unsatisfying or incoherent experience. Brown explains this idea by illustrating it through her game *Imagical* [G20] where they juice the game to create a feeling of catching fireflies, adding up to a relaxing experience. Overall, the literature appears to lack discussions on the interplay of emotion, game feel, and juice.

2.2 Affect, Emotion, Feeling, Sensation

The literature on both emotion psychology and games sometimes uses the terms "emotion" and "feeling" ambiguously and interchangeably. We adopt the definitions of the Human Affectome [31]. According to the affectome, "emotion" and "feeling" both refer to affective experiences, i.e., experiences that reflect the affective concerns of an organism. For instance, the emotion of fear reflects the affective concern of danger. The affective concerns are grounded in allostasis, i.e., the predictive regulatory processes that aim to maintain an organism's comfort zone [31, 32].

According to the affectome, "feeling" is a general term that can relate to any kind of affective concern. Emotions are the subset of feelings reflecting so-called operational concerns, e.g., danger concerns (emotions: fear, worry, dread) and epistemic concerns (emotion: curiosity, intrigue, fascination). The word feeling can also emphasize the conscious aspects of the experience, whereas emotions can be unconscious [31]. Both emotions and feelings include features of affect, i.e., valence (positive vs. negative emotions) and arousal [31]. Additionally, the affectome also recognizes "sensation" as the subset of feelings reflecting physiological concerns [31]. Correspondingly, Swink's original treatment of game feel is titled *"Game Feel: A Game Designer's Guide to Virtual Sensation"* [33] and their focus is clearly on sensation and physicality rather than other types of feelings. From this perspective, the x-axis of Figure 2 could also be labelled as "Design Focus on Sensation". Our goal is to understand when and how virtual sensation can contribute to emotion.

2.3 The Spectrum of Emotional Experiences in Video Games

Eudaimonic (briefly understood as meaning-seeking) experiences in games, though scarcely studied in the early history of games research, have gained recent interest [8, 9, 11, 12, 28]. Daneels et al. [11] in their review of eudaimonia within digital games research found experiencing negative emotions, mixed-affect(comprising elements of both positive and negative affect), emotional challenges and *"intentionally uncomfortable game experiences"* to be important features of eudaimonia. Cole et al. [7] expanded upon conventional understanding of challenges in games by introducing the notion of *emotional challenge*, as a form of challenge that is overcome *"... not with skill and dexterity, but with a cognitive effort ..."*. Cole and Gillies [9] later found *emotional exploration* as the key emergent concept to explain how emotional challenge is experienced and derived four novel types of agency to help advance the conversation [8].

Bopp et al. [3] found that emotional challenge evokes a wider range of negative emotions that were (mostly) positively received by players. This was supported by a follow-up study by Bopp et al. [2] that suggested that negative and mixed-affect emotions can lead to a positive player experience. Vornhagen et al. [36] add that disempowering feelings in games are nuanced and under the right circumstances can be appreciated and enjoyed. Denisova et al.'s [13] interview study on designers' perspective when designing emotional game experiences shows that designers' vision includes negative and mixed-affect emotional experiences. When also considering transformative game experiences [37], experiencing games as art [4] and poetic exploration within games [23], we are presented with a vivid picture of the spectrum of emotional experiences games can foster.

3 Methodology

We adopt *Grounded Theory Methodology (GTM)*, a form of qualitative analysis, to generate a theory that explains the phenomenon of emotionally impactful game feel. Below, we provide an overview of our data and elaborate on our positioning within the subdomains of GTM.

3.1 Data

Our data comprises of 3 major components:

(1) A corpus of game mechanics constructed collaboratively and progressively by three authors. These game mechanics have been chosen given the open prompt "What mechanics have you encountered that, in your experience, convey certain emotion(s) or feeling(s)?". During analysis, we focus on the game feel design of these mechanics. Examples of the data are provided in Table 1.

(2) Regular meetings and discussions that took place between the same three authors to explore and discuss the corpus. Concepts and ideas for theories were organically developed during these meetings.

(3) Transcripts of the above meetings. The audio was first transcribed automatically using WhisperX [1] run locally without diarization (speaker separation). The automatic transcript was then manually proofread and the speakers were separated.

3.2 Grounded Theory Methodology

Our approach to GTM has been informed by Cole and Gillies' overview of GTM methods, which highlights the use and misuse of GTM in HCI [10]. We further supplement our understanding through the examination and recommendations of GTM within games by Salisbury and Cole [29]. We primarily align ourselves with Constructivist/Charmaz-GTM [5], sharing Charmaz's belief that knowledge and meaning in data are co-created by the researcher(s). Our goal through the methodology is to find core concepts that encapsulate our experience with emotionally impactful game feel. However, we briefly borrow from Glaser-GTM [17, 18], in that, we also form a simple explanatory theory that seems to explain emotionally impactful game feel more generally.

Charmaz asserts that the researcher(s) co-create meaning within the domain [5, 10], thus understanding the researchers as actors is crucial. All three researchers who participated in the discussions and coding have a background in computer science. R1 and R2 hold a Master's degree in game design while R3 is an active student in

ID	Game	Mechanic	Emotion	Description	Game Feel Design Highlight
M3	Celeste	Wind	Struggle	When Madeline is exposed to the wind, it influences her movement. It significantly slows or boosts her speed depending on its direction.	The wind pushing you back emphasizes the effort Madeline has to make to make progress by reducing your mechanical capability.
M30	Ico	Holding Hands	Protectiveness	You play as Ico and you are helping the NPC Yorda escape the tower. In doing so, you have to hold her hand and guide her through the game.	You press and hold a button to hold Yorda's hand to have her follow you (Input gesture/metaphor). Releasing the button releases her hand.
M39	Death Stranding	Soothe BB	Comfort	Your baby companion BB can get stressed and start crying. BB needs to be lulled to reduce its stress.	The lulling mechanic requires the player to perform the input gently. If they are too harsh, it stresses BB.

Table 1: Sample of our corpus with key columns. The full corpus is provided as a supplement and contains additional columns and reference links for each mechanic

the same program. The researchers have designed and developed multiple games in hobbyist, jam, education, and research settings. The researchers approach this project from a shared identity of designers and researchers.

4 Results

Below, each section discusses an aspect of our findings through illustrative examples from our corpus. Each example is denoted by a numerical identifier, e.g., M3 for the Celeste wind mechanic highlighted in Table 1. The "M" stands for "Mechanic". The full corpus is provided as a supplementary spreadsheet file.

4.1 Emotional Impact of Game Feel

Our corpus of game mechanics highlighted a wide range of emotional experiences communicated or accentuated through their game feel design. We note negative feelings like struggle, powerlessness and being burdened; and positive emotional experiences of lower arousal (degree of stimulation) like comfort, companionship and tranquillity. Positive emotional experiences of higher arousal, like power, control and excitement are scarce in our present corpus, not for their rarity but for their abundance in games literature and discussions. We do note some key examples in this category that add a new angle for analysis, e.g., in *Undertale* [G4] during the final battle, the player character refuses to die (M25), subverting mechanical expectations to create a sense of determination. Experiences generally didn't fit into a single emotional space, and mixed affect experiences were commonly observed, e.g., the game feel design of *Bastion's* [G15] 'Save Zulf' ending can lend to both positive and negative feelings simultaneously (M14).

Most of the emotional experiences we analysed were portrayed through a player avatar, where the game feel design is working to communicate what the player avatar is experiencing. This gives rise to two distinct emotional situations. If the player's emotional experience aligns with that of the avatar and game situation, it leads to emotional resonance, a state in which the emotional impact of the game scene is heightened. Conversely, there may be a considerable disparity between the player's and the avatar's emotional experience, leading to a frustrating or humorous situation, e.g., in *NieR: Automata* [G11] when briefly playing as an enemy robot, some players might find it sad while others funny (M26).

4.2 Design Concepts of Emotionally Impactful Game Feel

The following concepts relate to game feel design for a desired emotional experience. Most of these techniques rarely exist in isolation, rather there exists a strong interplay between them with many feedback loops.

(1) *Mechanical Subversion*: Game feel design can be used to tune the functional behaviour of a mechanic (or system of mechanics) towards a desired emotional direction, subverting previously established expectations of that mechanic. The subversion may be capability-decreasing, for example, the wind mechanic(M3) in *Celeste* [G3] actively pushes the player back slowing them down and communicating a feeling of struggle by subverting the previously snappy, powerful and unhampered feel of the mechanic. An example of capability-increasing subversion can be seen in *God of War(2018)* [G14] with Kratos' Spartan Rage ability(M40) that subverts the feeling of controlled power with that of rage by briefly giving the player damage immunity and changes the attack moveset to be more of a primal and frenzied fashion. Mechanical subversion also includes the introduction of a new mechanic that differs distinctly in its game feel from other mechanics. For example the gentle and conscious feel of soothing BB (M39) in *Death Stranding* [G9] stands out from the other mechanics revolving around exploration or combat.

(2) *Input Gestures/Metaphor*: A mechanic's input is integral to its game feel and can have metaphorical meaning and value. As a simple example, in the game *Ico* [G7], you have to hold a button to hold an NPC's hand and guide them through the game(M30). The need to hold the button here is a metaphor for clutching someone's hand. This idea can be further exemplified by incorporating a more nuanced gesture for a mechanic, e.g., the lulling motion needed to soothe BB in *Death Stranding* [G9](M39).

(3) *Conscious Interactions*: These game feel design decisions are characterized by demanding player focus and awareness, bringing the experience from the subconscious to the conscious, and sometimes mindful. It tends to give players room to reflect and process the emotional circumstance. E.g., in

Celeste [G3], the mindful input needed to help Madeline calm down when she is having a panic attack(M4).

(4) *Feedback Ambiguity*: Feedback on mechanics or player actions can be made intentionally ambiguous to create a specific experience. E.g., in *The Last of Us* [G1], during one quick-time-event the feedback on player input is left ambiguous, presumably intentionally, with no clear indication through animation or UI if the input is having any effect(M42). This creates a feeling of tension and panic.

(5) *Recontextualization*: We approach the idea of recontextualization from two perspectives, namely metaphorical and spatial. Metaphorical recontextualization can be understood as a shift in game feel arising from altering the metaphorical relationship between the mechanic and the object/system it is acting on. E.g., in *Arise: A Simple Tale* [G10], the same time manipulation mechanics can have a differing game feel between two levels(M33). Spatial recontextualization means a shift in game feel arising from the alteration of the relationship between the player and a familiar virtual space. For example, in *NieR: Automata* [G11], when 2B loses most of her movement abilities, spaces that could be easily run and dashed through now need to be carefully navigated (M24).

(6) *Narrative Context*: Most of the game feel design we studied was embedded in some form of narrative context. Game feel can specifically cater to the narrative moment, or the narrative moment is what makes the game feel emotional. E.g., *Freedom Bridge* [G8] conveys a deep emotional impact through its simple game feel design, where the player's movement becomes slower to signify getting injured, which would not be otherwise obvious due to the highly abstract graphics(M22). Here, the change in game feel empowers a narrative epiphany, imbuing the abstract graphics with meaning (barbed wire) and emotional significance (struggle, desperation).

(7) *Juicy Feedback*: We highlight that juicy feedback is essential for an emotionally impactful game feel, just that the understanding of juicy feedback needs to be expanded. E.g., *Inscryption* [G5] uses juicy feedback to convey pain(M29) and *Limbo* [G12] uses it to create disgust through visceral effects(M10). Juicy feedback can also be subverted, e.g., *NieR: Automata* [G11] and *Bastion* [G15] flip the idea of juicy feedback. With the player's attack mechanics stripped, every enemy hit on the vulnerable player is emphasized with juicy polish, giving the player a feeling of powerlessness (M14, M16, M24).

(8) *Agency Reduction*: Reducing the player's mechanical agency to a certain degree can highlight the elements of game feel that are present in a scene. This concept thus can be seen as a supplement to the other presented concepts by placing them under the spotlight and guiding player attention towards them. An example of this can be seen in *Call of Duty 4: Modern Warfare* [G6] where the player character lives their last moments in a nuclear aftermath (M21). The reduced agency highlights game design elements such as the slow and painful movement, the scene framing, camera effects like wobble and blurring, sound effects and the damage indicator.

4.3 A theory for Emotionally Impactful Game Feel

Our observations led to the formulation of Deviation and Motif as the key concepts to encapsulate our understanding of emotionally impactful game feel.

Deviation. We define deviation as the use of game feel design to trigger a significant departure from an established expectation of gameplay or emotional experience through game feel design, be it in a positive or negative direction. In our understanding, players have an ever-changing mental model of expectations. These expectations are updated through experiencing small and perpetual deviations in gameplay, that are core to an engaging player experience. But in our observation, prominent examples of game feel design that created opportunities for emotional impact called for a significant deviation from the player's current expectations. Aforementioned game feel design concepts can be used to achieve this deviation. We can view the feather scenes (M4, M5) in *Celeste* [G3] through this lens of deviation. When the feather scene (M4) is first introduced to the player, it deviates from the baseline expectations of the game's feel design, requiring players to slow down and be conscious, fostering a feeling of calm. When this mechanic is later revisited (M5), the game feel design is further altered to deviate from the previous feeling by making the feather impossibly hard to move, creating a sense of powerlessness. We further identify Mental and Systemic types of deviation, discussed below.

Mental Deviation can be understood as a departure from an expectation that happens through player interpretations of actions, meanings and metaphors. This deviation can be created through game feel design, but the reverse was also observed where the presence of metaphors and narrative significance accentuated the game feel. The example (M33) from *Arise: A Simple Tale* [G10] can be explained thus, where a mental deviation occurs due to a change of game element metaphors and is felt in the game's feel, with the same mechanic feeling serene in one instance and tense in another.

Systemic Deviation meanwhile relates to a departure from the expectations set by the systems within the game. This may include directly manipulating a game's mechanics, feedback, player input, or agency. Game feel is very much a product of the systems it inhabits and thus it can change and be changed by an alteration in those systems. This can explain the emotional impact of (M14) from *Bastion* [G15] where the loss in mechanical fidelity, reduced player agency, and reversed juicy feedback deviate from the established game feel design of fluid controls and action-packed combat.

Motif. A motif is a recurring idea in artistic work and we extend that idea to a thematic repetition of game feel design. A motif is infrequent, relative to the core gameplay loop, and holds/creates symbolic and thematic importance. E.g., *Freedom Bridge* [G8] may work as well as it does due to experiencing the game feel of walking through the barbed wire 3 times, creating the motif(M22). This repetition can imprint certain meanings or feelings for the player, reinforce mental associations and provide avenues of reflection. The observed motifs didn't necessarily occur within the same game, rather sometimes, the motif was observed across games. E.g. the same calming flowing feeling can be experienced across *Arise: A Simple Tale* [G10] and *Flower* [G18] through shared game feel design, creating a motif (M33, M18).

5 Limitations and Future Work

Although we believe our findings are already useful and actionable for game designers and researchers by providing tools and examples for describing and analyzing emotionally impactful game feel, our study is still limited. Our dataset is fairly small and only reflects the authors' personal experiences. Additionally, our Grounded Theory approach has not yet achieved theoretical saturation, i.e., the point at which new data stops challenging our concepts.

In future work, we will iterate on the current preliminary theory by expanding our catalogue of example game mechanics—we invite others to contribute by answering our survey at https://forms.office.com/e/xESLkh5zpy. We also aim to conduct in-depth case studies of games from our catalogue to help expand our ideas and perspectives.

6 Conclusion

In this work-in-progress paper, we have shared our ongoing research on game feel design and how it relates to emotional game experiences. We find that beyond virtual sensations, game feel can be utilized to create and support emotional experiences. We articulate the core concepts of Deviation and Motif, along with 8 design concepts, to understand and inform the design of emotionally impactful game feel.

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