What We Talk About When We Talk About Game Aesthetics

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ABSTRACT
Digital games are commonly described as phenomena that combine aesthetic, social and technological elements, yet our understanding of the aesthetic element of games and play is perhaps the least developed of all. All too often, an aesthetics perspective within game studies and design discourses is relegated to a marginal role, by conflating game aesthetics with graphics and "eye candy," or by limiting aesthetic discussion to graphic style analysis or debates on the question "are games art?" Changing game technologies, as well as arguments from within philosophy, psychology, interaction design theory and cultural theory, call for us to examine the implicit and explicit assumptions we make when we write about aesthetics within game studies research, as a prelude to reclaiming a perspective that will allow us to better understand the way in which games function as sites for sensory and embodied play, creative activity and aesthetic experience.

Author Keywords
Game Aesthetics, Game Design

Introduction: Aesthetics and Discomfort

Digital games exist in the realm of art and aesthetic experience. This assertion is not just a pitch for greater social credibility; rather, it reflects the current understanding within the discipline of game studies, and is a regular topic of discussion in the game design industry. One notable formulation for describing games in their fullness and complexity (taken, in this case, from the program of the Digital Games Research Association (DiGRA) game studies conference) is that they are an "aesthetic, social and technological phenomenon" [8]. But, though it could be argued that this statement now constitutes common knowledge about games, it is still not completely clear what we mean when we talk about game aesthetics, nor what aesthetics can contribute to our understanding of games and play. What is clear is that fewer game scholars are positioning their research in the area of aesthetics: the word "aesthetic" figured in nearly 10% of all papers (as sampled in titles, abstracts and keywords) in the 2003 DiGRA conference, but dropped to well under 4% in both 2005 and 2007. Game industry discomfort with aesthetic questions is expressed in a different manner. "Here we go again" was the resigned response of one interviewee in a recent *Gamasutra.com* article on the question "Are games art?" [34]. Are we to conclude that an aesthetics perspective on digital games has fallen upon tough times? Hardly. Although the term "aesthetics" (and the implicit and explicit attitudes associated with it) needs to be critically reexamined within a game studies context, changes in game technologies, as well as arguments drawing upon philosophy, psychology, interaction design theory and cultural studies suggest that an aesthetics perspective can contribute greatly to research discourses on gaming as an embodied and pleasurable experience, and can give rise to new ways of thinking about game design.

So what is the problem with game aesthetics? The mixed feelings evident in the *Gamasutra* article represent in many ways the current attitudes towards the broader practice of aesthetics. The term "aesthetics" brings its own baggage, and admits sources of resistance that have to do with the traditional topics of aesthetics discourse, as well as the near impossibility of defining what constitutes an art object. "What (people) typically object to (in their assumptions about aesthetics) is the idea that art can be understood according to a set of universal principals about its immutable properties . . . " [23]. Further, within the area of game studies, there are those who believe that the problem with aesthetics is not that it proposes to explain too much, but that it aims too low. Casual assumptions about aesthetics that are present in writings not specifically on the topic reveal shared meanings of the term: early in the game design textbook *Rules of Play*, for example, Salen and Zimmerman [40] refer offhandedly to "aesthetic trappings" (p. 11) which they consider apart from the more crucial fundamental rules and core mechanics of a game prototype under development. The word "trappings" carries with it associations of décor, a thin veneer of "eye candy" that may attract attention and provide fleeting motivation, but otherwise serves as an less important part of the experience of playing (or designing) a game. As such, aesthetic

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elements are best not brought into the game design process too early. In its only indexed reference to "aesthetics," the design text I use in my own classes defines aesthetics as "the visual and aural dramatic elements of your game, which we have told you repeatedly not to worry about for your physical prototypes. The same holds true for most of the digital prototyping work you will do" [14].

An aesthetics approach to games simply doesn't play that well these days with regard to how practitioners and scholars think about what games mean and how they are designed. Many current definitions of games focus on games as systems of rules [40], and the key activity of the designer is to manipulate the mechanics of the game through "tuning" and "balancing." These ways of thinking about games gain additional force from a certain essentialism that has come from ludology, in which the playful core elements of digital games are often explicated through the example of simpler games (c.f. for example Jesper Juul's elegant treatment of Chuchu Rocket [22]) or non-digital games (c.f. also Murray's discussion of games essentialism at DiGRA 2005). The kernel of game meaning in these approaches is certainly not identified with the aesthetic component of games. These assumptions are further embedded in game industry project management practices that work from the core out, through progressive refinement of game builds, from simplest manifestations of geometry and game mechanics to more complex prototypes and fully textured vertical slices [33]. What is shared here is the notion that the important elements of games ought to be described, and can best be grasped at a high level of abstraction, largely divorced from the tangible, detailed qualities of the game as experienced. My argument here is not that practices of manipulating higher-level game abstractions are wrong; on the contrary, I think these design approaches represent the best of our current knowledge on how to deal with the complexity of understanding games and doing successful design. I simply don't agree that this is the only model that will work, nor that it will inevitably produce games that most fully exploit the medium of digital interaction. Although the interactive character of games is now taken for granted, interaction design itself as a discipline has long been looking beyond systems design towards the broader user experience, with focus upon the tangible, material, emotional and embodied qualities of interaction [9, 15].

The Three Core Meanings of Game Aesthetics

I want to propose an alternate approach that seeks cores of game meaning from aspects of the gaming experience that we currently tend to think of as peripheral, and a redefined game aesthetics can help with this. But if an aesthetic approach within game design studies is to provide a productive alternative, we must seek some clarity regarding the term itself. As a means of mapping current meanings, lets first take stock of the stances towards the topic that have emerged so far within game studies research and game design. Keyword searches turn up 3 main clusters of meaning around the term "game aesthetics." In brief, game aesthetics has to do with the senses, with art, and with a particular kind of experience:

1. Game aesthetics refers to the sensory phenomena that the player encounters in the game (visual, aural, haptic, embodied).

2. Game aesthetics refers to those aspects of digital games that are shared with other art forms (and thus provides a means of generalizing about art).

3. Game aesthetics is an expression of the game experienced as pleasure, emotion, sociability, formgiving, etc (with reference to "the aesthetic experience").

1. Game aesthetics refers to the sensory phenomena that the player encounters in the game. An example of this can be found in the gameinnovation.org taxonomy supported by the Carnegie Mellon Entertainment Technology Center [41], which considers digital games according to the following categories: game mechanic, computation, interface, aesthetic, story, genre, and business. According to this taxonomy, "Aesthetics relate to the way a game looks, sounds, and presents itself to the player." This includes visual aesthetics: "A graphical innovation is any innovation that affects the way a game is visually perceived." The focus upon sense and perception in this understanding of game aesthetics echoes the etymological roots of the word in the Greek *aisthesis*, which means sensation or perception.

2. Game aesthetics refers to those aspects of digital games that are shared with other art forms. Digital games share certain forms, aims, content, themes and design practices with other media and art forms, which allows for comparison and generalization. Writers coming from this perspective sometimes use game aesthetics as a platform for discussing game graphics or visual styles, or addressing the question "are video games art?" Hayward [18], for example, takes aim at photo-realism, which he sees as the dominant aesthetic of videogames, and considers ways in which an awareness of the history of contemporary sculpture could support new, non-photoreal formal vocabularies in games. These speculations can go both ways—Quaranta [37] traces influence in the opposite direction: the impact of computer games and modding culture on the current gallery scene. Once again, there is an historical echo here: as aesthetics discourse developed in the 18th century, it was deployed in opposition to the practice of writing treatises on specific art forms. However,

there continues to be debate within aesthetics on the wisdom of generalizing about art [23].

3. Game aesthetics is an expression of the game experienced as pleasure, emotion, formgiving, etc. According to this understanding, games can be approached as artifacts that have the potential to give rise to an aesthetic experience. The somewhat open-ended nature of this kind of experience has drawn a number of writers, who, in some cases, characterize the aesthetic experience of a game as ”fun” (further subdivided by Hunicke et al [21] into a taxonomy of 8 different player goals and emotional states), in other cases, as ”pleasure” (further elaborated by Lauteren [30] through constructs drawn from psychoanalysis, social identity and Barthian *jouissance*). Drawing upon Kant, Kirkpatrick [24] identifies the aesthetic experience with ”the play of imaginative and cognitive faculties” (p. 75).

Obviously these categories are not exclusive; a number of scholars have invoked aesthetics as a means of exploring overarching qualities of the play experience, with reference to the senses, art and media, and the pleasures of the aesthetic experience [17, 25, 32]. We can draw a few conclusions from this brief survey of emerging attitudes. First, the popular understandings of ”game aesthetics” roughly mirror the larger development of aesthetics discourse itself; the clusters of meaning that have emerged in current literature can be traced back to different conceptions within aesthetics as it has historically been practiced. There is, however, no widely shared, comprehensive meaning of game aesthetics that is any more specific than the very inclusive general definition of aesthetics offered by Kelly [23]: the practice of aesthetics consists of ”critical reflection on art, culture and nature” (p. ix).

Secondly, game aesthetics is not linked to any one critical framework. There are no analytical tools that are inextricably bound to game aesthetics at present. Several writers have drawn upon semiotics as a theoretical foundation [30, 32], while others refer to psychoanalysis and feminist film theory [30], media studies [18], cultural theory and philosophy [24], or contemporary art theory and practice [37]. This can be read as a strength: aesthetics is a capacious practice, “uniquely situated to serve as a meeting place for numerous academic disciplines and cultural traditions” [23]. In its theoretical indeterminacy, pursuing game aesthetics has come to resemble the research practice sketched by Aarseth [1], in which aesthetics constitutes one of the possible ”modes” of the ”playing analyst” (p. 6) who is free to apply whatever theoretical foundation she chooses. Aarseth locates the proper focus of game aesthetics in exploration and analysis of game worlds (rather than gameplay or rules). But, in the end, researcher integrity and methods of inquiry are clearly of greater interest to Aarseth than offering a comprehensive definition of what constitutes game aesthetics. As it is currently pursued, then, writing from a game aesthetics perspective is a somewhat fluid practice. Given the popular tendency to link aesthetics to the sensory presentation of games, with generally negative associations of game graphics and ”eye candy,” the outlook for an aesthetic approach to games would appear not particularly vibrant, unless we take a more critical look at these core meanings.

The first core of game aesthetic associations—linking aesthetics to the sensory qualities of games—has the benefit of supporting discussion of the way in which gameplay is rooted in our physical being. Although there are a few games that can serve as good examples of sensory play (*Rez* [45] being perhaps one of the best), a perspective on games as a play of the senses has not been adequately developed in game studies. There are at least three ways forward here. First, it is useful to examine experimental games that actively seek to expand the game sensorium. As an example, Fluxus artist Takako Saito produced chess “mods” that differentiated pieces on the basis of tactile and sensory qualities that invite player exploration, such as in “Weight Chess” and “Spice Chess” [35]. Secondly, we need to build a better theoretical substructure, by initially acknowledging that our shared terms of reference for understanding sensory experience are impoverished, in ways that make it difficult for us to approach aesthetic experience as anything more than superficial sensation (think ”aesthetic trappings”). There are, however, grounds for hope, with new contributions to understanding the senses coming from geography [38] and cultural studies [19]. Both Rodaway and Howes are interested in exploring ways in which our sense knowledge functions as a cultural construction, and supports our relationship to the world, in the broadest sense. Rodaway seeks to explore the way in which the senses function in “geographical understanding: the senses as both a relationship to a world, and the senses as in themselves a kind of structuring of space and defining of place” (p. 4). Howes adds to our appreciation of how different cultures at different historical moments have conceived of and experienced the senses, which greatly expands our understanding of the rich vocabulary of sense meaning, and which has consequences for how we structure play. Finally, reclaiming the notion of sensory play as a practice in game aesthetics also calls us to rehabilitate promising threads in aesthetic thought that have fallen by the wayside. We should recall that aesthetics as it developed in the classical period was a means of doing justice to “sensory knowledge” (p. ix) as an alternative or complement to the logical [23], and this stance towards aesthetics and the senses was further developed by Baumgarten, for whom “the end of aesthetics is the perfection of sense cognition as such” [16]. “Obscure ideas,” arising from sense impressions that we are not actively aware of, serve a binding role in

Baumgarten's thought, working through association and "introducing into our present perceptions echoes of what has disappeared from memory" (p. 367). Perhaps by bringing this type of approach to aesthetics to bear on our experience of digital games, we can hope to reclaim an understanding of the senses as a site of another kind of knowledge construction.

The second core of associations of the term game aesthetics—that which supports broader comparisons between games and other art forms—has the benefit of allowing access to wider art and media discourses. This is of paramount importance to specific classes of games, especially those that establish dialogues with fine art practice. This includes "game art," which, as defined by Bittanti [4], is "any art in which digital games played a significant role in the creation, production and/or display of the artwork." Strategies utilized by game artists include modding, hacking and hardware modification. As Pearce [35] demonstrates, the work of artists such as Schleiner and Oliver implies a stance of co-creation towards the audience of the work, and shows us the way to playfully engage the intellect as well as the senses, often through strategies of subversion. However, within a game industry context, this particular approach to game aesthetics—relating games to other art forms—tends to mire aesthetics discourse in graphics style analysis [18], or returns us repeatedly to the ultimately unproductive question "are games art?" As has been demonstrated numerous times in design fora (such as *Gamasutra*) recently [5, 2, 36], this question tends to founder upon individual interpretations of the current, very open definition of what constitutes an artwork (see Kelly, above), rather than upon failure to appreciate the artistic qualities specific to digital games.

Those seeking a more inclusive approach to game aesthetics—one which can accommodate a range of design practices that includes games from industry—can finesse this problem by focusing instead on the third core of aesthetics meaning. Whether or not we believe games to be works of art, it is undeniable that games can give rise to an aesthetic experience, as currently understood. According to one approach, a prototypical (visual) aesthetic experience:

1. Is one in which attention is firmly fixed upon . . . components of a visual pattern

2. Excludes the awareness of other objects or events.

3. Is dominated by intense feelings or emotions. .

4. Hangs together, is coherent

5. Involves "make-believe" [29]

Even this very basic definition of the aesthetic experience maps quite nicely onto a number of important terms within game studies, moving us immediately deeper than the question "are games art?" allows us. The emphasis upon attentiveness, absorption and wholeness in the play experience can be identified with the immersive [13] and "flow" qualities of digital games [7]. An aesthetic approach to games as sites for "make believe" allows us to focus on the qualities of fictional worlds in games, the roles we can take on, as well as the mechanisms through which games involve our participation, such as Huizinga's notion of games as existing in a "magic circle" in which the normal rules of our lives no longer apply [20]. These terms also resonate well with the desired outcomes of successful game design. Game designers themselves, for example, frequently speak about creating games that are "tight" (cohesive) as essential to fashioning a good play experience [3].

Still, a snug fit between certain game studies terms and the prototypical visual aesthetic experience, as evoked in a single beholder in relation to a fixed artwork, does not provide an adequate model for play, which is of course a more dynamic, often social, and multi-sensory phenomenon, realized, in the case of computer games, through an interactive medium, in which the player can rearrange the digital materials of the game artifact over time, through their own activity. Here, a number of recent scholars have been more explicit about the relationship of game aesthetics to play. For Egenfeldt-Nielsen et al [11], game aesthetics is identified with the play experience in its fullest sense, both the explicit elements that the player encounters, such as the game world and representation, as well as implicit features that influence the play experience, such as rules. Aesthetics *is* play. Kirkpatrick [24] turns this formulation around in a bold way: play *is* aesthetics. He situates the central concept of the ludological study of games—play—within aesthetics discourse. According to this argument, play inheres in aesthetic experience, and is only incidentally present in games (which are the focus of ludology, as sites of structured play): "positioning the computer game in this way, it becomes clear that it stands somewhere between the traditional 'game,' which structures play, and the aesthetic object or 'artwork,' which works by stimulating the play of imaginative and cognitive faculties in the subject of the aesthetic experience" (p. 75). This argument, which is developed in a cultural studies context, draws upon the work of Adorno to suggest that aesthetic form has migrated in our time from its traditional home in the world of art, to computer games.

Both of these arguments implicitly move the discourse associated with game aesthetics beyond a focus on graphics and "aesthetic trappings," which is welcome. Both of these arguments assert the relevance of aesthetics to play, and further to games. But there are also weaknesses here.

Egenfeldt-Nielsen et al. make great claims for the significance of game aesthetics, completely identified, as it is, with the play experience. There are problems with this approach. First, it simply subsumes one overarching term (aesthetics) within another (gameplay). Secondly, in their quest for relevancy, their treatment fails to leverage the positive cargo of aesthetics practice that is clearly important to play, such as the link to the senses and to pleasures of the body.

Aesthetics and Mechanics

Working out the relationship of aesthetics to mechanics can help us begin to understand the place of aesthetics in play and game design. A number of scholars have already tried their hand at this. The most robust definition of mechanics offered so far is Sicart's: "game mechanics are methods invoked by agents, designed for interaction with the game state"[42]. Although Sicart conflates aesthetics and "graphics," the contours of his work suggest areas where a deeper understanding of aesthetics can prove complementary. His terminology is taken from object-oriented programming, which is useful for formal analysis of game elements, though it affords much less when speculating about emotion and the player experience. Citing Järvinen, Sicart notes that "game mechanics are best described with verbs," thus "take cover" is a key mechanic in *Gears of War* [12]. Obviously we need a lot more than verbs to analytically differentiate the play experience of different games. Defined this way, *Shadow of the Colossus* [43] and *Assassins Creed* [44] share a number of the same mechanics (climb, stab, ride, etc), but are of course very different games. If game mechanics can provide the verbs of the player experience (and thus implicitly answer the question "what will the player do?"), game aesthetics can provide the nouns and adjectives (and thus implicitly contribute to the answer to the question "what will the player's experience be?"). Although this sort of reductive, language-based model for aesthetics is obviously not adequate in itself, it does demonstrate that some of the concerns of aesthetic experience can be taken into account early in the design process, when specifying player experience goals for example [14]. Greater descriptive detail fleshes out emotional response; climbing huge, bucking colossi bent on harm, and climbing tall towers into the rarified atmosphere of Damascus establish quite different tones and play experiences. In the MDA model [21], the impact of a game is experienced and designed through mechanics, dynamics and aesthetics, where aesthetics represents the player's perspective and is identified with "the desirable emotional responses evoked in the player." The hierarchy as seen from the point of view of the designer is reversed—the designer acts through mechanics and dynamic systems behavior to influence the player's experience. It should be noted here that game aesthetics is often associated with the effect of the game upon the player, rather than the means by which the game achieves its power. The notion of aesthetics as something that "happens" or is "done to" the player, however, is limiting. I would argue instead that aesthetics rather is something that is performed in the course of play, a particular kind of pulling out of aesthetic pleasure from the game mechanics through the experience of our bodies.

Embodiment and Aesthetics

With the launch of game platforms such as the Wii, which have physical interfaces through which a player can actually work up a sweat, the question of embodiment in games no longer seems farfetched. Aesthetics discourse's traditional strength in dealing with the senses makes it a natural point of departure for seeking to understand embodiment in games. Kirkpatrick [24] quotes Kant to demonstrate that the aesthetic experience is not purely a mental exercise, it is felt in the body as well:

> "Music . . . and what provokes laughter are two kinds of play with aesthetic ideas . . . the quickening effect of both is physical, despite its being excited by ideas of the mind, and . . . the feeling of health . . . makes up that entire gratification of an animated gathering upon the spirit . . ." (p. 81).

One of the first dimensions of game embodiment is the motor experience of play. Grodal argues that engaging motor control through game controllers makes games simulations in which a form of real-life learning can occur through an "aesthetics of repetition" [17]. Grodal here uses the term "aesthetics" as a means of expressing the defining character of the play activity, with particular reference to the sort of mastery the player acquires in the game. However, we can also draw wider conclusions about how controllers work through game aesthetics. Kirkpatrick points out that the controller is the means by which we experience (and create) aesthetic form in gameplay [25], and this has design implications:

> "Unlocking and developing aesthetic form in computer games depends upon giving more power to hands to cleave form from the dark matter of the computer. New matter-forms, which depend on the invention of new controllers, will define new spaces for the playful body to inhabit."[1]

[1] This conclusion draws from a more involved development of thought from Focillon on touch and the creation of aesthetic form.

As Kirkpatrick points out, embodiment in games is not just a function of engaging motor control, it can also be traced in the player's physical relationship to game worlds and the play context we "inhabit." The relationship between player and context is an important site to explore for a deeper understanding of how embodiment works through digital games. In this task, we can draw upon recent interaction design theory of Paul Dourish, who mines phenomenology to develop his own conception of embodied interaction [9]. The lesson that Dourish draws from phenomenology is that it is impossible for us to understand and design interactive systems in isolation; embodied interaction means that we must take the physical context of interaction—in its greatest extension, the world—into account. It is our activity in and through the world that is the source of meaning: "we find the world meaningful primarily with respect to the ways in which we act within it" (p. 125). Game worlds in this sense shape player exploration and action, and enable particular kinds of play. They are much more complex than simple containers, or placeholders for visual styles. Dourish's approach encourages us to consider the 3D game world in its wider play context: the space around the console or monitor. It has become a commonplace that digital games are a "lean forward" medium, TV a "lean back" medium. This is perhaps the first degree of whole-body game engagement. Scholars who have studied the couch and spaces of media use [26] point out that space surrounding 3D game worlds makes them social, even in the case of single-player games. The space around the couch is one in which players move and wander with the controller, and is becoming the gestural space in which the Wiimote is used [25]. From a perspective of aesthetics and embodiment, we could say that the 3D game world is experienced in relation to our own bodily experience of surrounding space, through musculature, our senses, and our equilibrium. The embodied and aesthetic experience of digital games could be compared to looking at a Baroque ceiling, to which we might respond with both wonder and vertigo.

Game Aesthetics and Pleasure

Carving out aesthetic form in the process of gameplay is a pleasurable activity [25], though the sort of discourse on pleasure and enjoyment that has emerged in game studies research so far offers little acknowledgement of the body. Although producing a "fun" game is a self-evident design goal, writers on the topic of fun tend to break down the term in a way that emphasizes the social, competitive, challenge-based and exploratory nature of game enjoyment. Lazzarro [31], for example, proposes four sources of gameplay enjoyment: "hard fun" (challenge), "easy fun" (immersion in the game), "altered states" (largely having to do with self-esteem) and "the people factor" (sociability). Hunicke et al [21] similarly subdivide game "fun" in a more comprehensive way into game-related "aesthetic" components of sensation, fantasy, narrative, challenge, fellowship, discovery, expression and submission. Media psychologists such as Klimmt have approached game enjoyment by further developing an "excitation transfer theory" that roots positive game emotion in the way in which arousal is transferred from negative to positive through suspense and relief [27]. Salen and Zimmerman's discussion of game pleasure [40], which deals with the sensory roots of pleasure only with reference to "overwhelming sensation" (echoing Ermi and Mäyrä), is largely based upon how games achieve a flow state. Lauteren identifies pleasure with, among other things, resistance to "structures of preference" within a text [30]. In short, these approaches to game enjoyment focus on ways in which games allow us to achieve and maintain particular mental states. However, none of these approaches are fully rooted in our direct sensory experience. Indeed, those wishing to develop a comprehensive understanding of sensory and embodied pleasure of games will have to look elsewhere for support. How, for example, is our experience of playing a game pleasurable in comparison to eating a good meal or drinking a glass of wine, listening to music, fishing, witnessing or enacting a good deed?

More promising from this perspective is the conception of pleasure as it is elaborated within phenomenological philosophy. Duncker's phenomenological analysis of pleasure [10] provides a foundational taxonomy for later development within hedonic psychology by Rozin [39]. Duncker proposes three main types of pleasure: sensory pleasure (in which "the immediate object is of the nature of a sensation," such as drinking wine), joy (in which the primary pleasure does not inhere in sensations or perceptions themselves, but rather in the "consciousness of the situation," such as pleasure in "the victory of a good cause"), and aesthetic pleasure (in which sensations take on an expressive and communicative role: "Aesthetic enjoyment is the principal . . . instance of enjoying something expressed in the process of expression" p. 405). A game such as *Okami* [6] demonstrates the way in which these pleasures can coexist in a game: we experience sensory pleasure from the visual, auditory and tactile elements of the play experience, joy from seeing our efforts to bring light to Nippon bear fruit, and aesthetic pleasure from the way in which player agency, expressed through the affordances of brushwork, ties all these together. Of particular interest to the topic of games is Duncker's concept of "dynamical joy:"

> "Dynamical joys are based upon a kind of experience that lies somewhere between emotion proper and sensation: the tensions, excitements, thrills and reliefs of acting and resting. Here belong the delights of driving at high speed, of fishing and hunting, of playing games, of following a plot (e.g. in reading a good detective story), etc" (p. 403).

Rozin builds upon Duncker's taxonomy, with focus upon sensory pleasure and the contact senses, particularly related to food, as a means of uncovering basic principles of more complex hedonic systems. Rozin points out that the pleasures associated with food take place within a temporal frame that is extended to include not only experienced pleasure, but also anticipated and remembered pleasure. He continues: "experienced pleasure is on-line and momentary, like brightness, and hence a sort of primitive. Integrated pleasure . . . is a mentally constructed entity, which is accessed and/or reconstructed in remembered and anticipated pleasure. . . . Experienced pleasure . . . function(s) to influence the behavior of the moment; anticipated and remembered pleasure may guide ongoing behavior, but they also may participate in decisions and evaluations of future courses of action" (p. 112). Indeed, Rozin concludes that "most sensory pleasure is experienced in the remembered or anticipated domains, as opposed to the online (experienced) domain" (p. 129). This extended temporal frame of sensory pleasure has interesting implications for game design, in which most decisions are made with respect to the immediate experience of gameplay. Anticipation, motivation, and memory are also important targets for an aesthetic approach to game design. Moreover, our experience of sensory pleasure creates a sense of cohesion that has little to do with the formal coherence of game parts and wholes. This is immediately apparent in the (common) experience that even flawed games can give rise to unforgettable play experiences that we re-experience long after we leave the console. Games achieve coherence not just through their formal organization, but also through our experience of game pleasure.

This conception of pleasure has much to recommend itself to the current practice of game studies. First, it is able to address a range of experience, from concrete sensory pleasures to complex patterns of feeling. The expanded temporal frame of pleasure allows us to examine not just the immediate experience of gameplay, but also the ways in which we make sense of our experience when we are away from the console. Focusing on the sequences of emotions that take place within a pleasurable experience also affords the designer some suggestions regarding structures that may provide greater pleasure within a game. Kubovy [28] points out that "pleasures of the mind are collections of emotions distributed over time whose global evaluation depends on the intensity of the peak emotion and favorability of the end" (p. 138). He links this observation to the frequently noted emotional sequence of tension and relaxation that can be identified in story structure: "Many stories have a structure that parallels the prior state, onset, change and equilibrium pattern episodes in human life. They begin with an exposition, introduce a complication, and end with a dénouement . . ." (p. 138). This formulation directs us to focus on peak moments in the game.

Conclusion: Multiple Centers

We have spent a lot of energy in game studies research and game design trying to identify the cores of the gaming experience, and we have concentrated our attention upon two intersecting spheres. The core of formal meaning of a game, according to many current approaches, radiates out from the procedural nature of games, through rule sets and mechanics to sound, graphics and the controller; the core of experienced game meaning radiates out from the brain and cognitive awareness towards the senses and hands. Game aesthetics research allows us to pay full attention to what we have tended to think of as peripheral, the edges of the spheres. New gaming technologies point us towards these peripheries, and new understandings of the significance of touch, the senses, formgiving and pleasure help us better understand what really happens when we take the controller in our hands. Where hands, senses, bodies and the tangible qualities of games meet, the aesthetic meaning of games emerges.

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