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On March 9th, 2000, Sony released the fireworks-themed *Fantavision* (Sony Computer Entertainment 2000) in Japan as one of the very first titles for its then new Playstation 2. *Fantavision* exhibits many of the desirable qualities for good launch title: simulation properties that show off new graphic capabilities, established gameplay that is quick to grasp, a broad appeal. Though the critical reception for the game was ultimately lukewarm (a 72 rating from Metacritic.com), it is notable that Sony launched its new console with a fireworks game. After all, fireworks are celebratory; what could be more appropriate? But the more one ponders the nature of games and play, the more fitting Sony's decision appears. Fireworks are to explosions as games are to play. Think about it: in both cases, the wild energies of the latter are shaped into coherent aesthetic experiences in the former. But what does it mean to integrate fireworks into game forms? And what can we learn about the workings of individual games by studying their use of fireworks?

We can consider fireworks as an entrée into games as felt experiences that move us beyond linguistic modes of analysis. As Adorno points out, fireworks represent "a script that flashes up, vanishes, and indeed cannot be read for its meaning" (as quoted in Tone 2005). Fireworks, rather, are a boundary phenomenon, rooted deeply in our sensory life, and, as experienced in games, can tell us something about the felt potentials of game forms. Further, like a great gameplay session, the pleasures of fireworks are ultimately fugitive: "Fireworks had no other purpose than amusement and endured no longer than the kiss of a lover for a lady, if as long" (Biringuccio, *Pirotechnia*, 1540 as quoted in Boorsch 2000). Fireworks pleasures are brief and intense.

Hit a home run in *Wii Sports* (Nintendo Co. 2006), or complete a track in *Super Monkey Ball: Banana Blitz* (Amusement Vision Ltd 2006), and you will be rewarded with a burst of digital pyrotechnics. But celebratory light effects – though the most commonly seen usage in games – are only the simplest manifestation of the ludic festivity of fireworks. Teasing out a fuller account of the contribution of fireworks to games is best sought through a threefold aesthetic perspective (Niedenthal 2009) that focuses on the senses, on art, and on the aesthetic experience that gives pleasure through the player's participation in the simulation, gameplay and narrative potentials of fireworks.

The simplest of Flash-based fireworks simulators, of which there are a number online, demonstrates the way in which the basic anticipation and response pleasures that are at the core of the fireworks experience can be expanded through digital simulation to afford three basic gameplay pleasures of digital pyrotechnics: design and performance, timing and rhythm, and power and awe. In the multiplayer online game *A Tale in the Desert 4* (eGenesis 2008), design and performance are key: the

design of fireworks, fired in competition, serves as a focus for community building. The basic three-stage structure of shell firing—detonation, flight and burst—creates a temporal play space that is exploited in rhythm and puzzle games such as *Boom Boom Rocket* (Bizarre Creations 2007) and *Fantavision*. Fireworks are also dangerous, the product of explosive forces, the destructive powers of which are harnessed by the player in *Big Bang Mini* (Arkedo Studio 2009), a shooter, and *Okami* (Clover Studio 2008b). Besides contributing to repeated gameplay pleasures, fireworks are also associated with specific characters and sequences in the overall structure of games, thus serving aims of narrative richness and variety. Tama, the “flaming pyrotechnist” of *Okami*, lives to put on fireworks shows for the residents of Kamiki village, and the defeat of a major boss is celebrated with his display. A more sinister association of fireworks with the concealment and subversion of carnival time emerges as one skulks through the Venetian night in *Assassins Creed II* (Ubisoft 2009).

The ludic festivity of digital fireworks is emphatically sensual, and contributes to our further understanding of games as embodied experiences. Approaching fireworks in games with reference to fireworks aesthetics and hedonic psychology allows us to propose that fireworks constitute a kind of pleasure primitive in games, punctuating the longer and more nuanced (fractal) trajectory of gameplay sessions, anchoring the unique pleasures and powers of particular game moments, and expanding the capacity for sensory disruption and “voluptuous panic” (Caillois 2001) in game forms.

Fireworks, the senses, the body, and *ilinx*

Fireworks acquire their power from their visual, aural, percussive and olfactory effects. It is still meaningful to discuss a subset of these effects within digital games, but one of the greatest differences between fireworks in games and in real space is the presence of a frame. As pyrotechnics expert Takeo Shimizu writes, “Fireworks art is different from the pictorial art, i.e. there is not framework, and it can be appreciated from all quarters. ... firework art has no framework with the result that fireworks often lose their stability and are apt to give people unpleasant feelings” (Shimizu 1981, p. 13). Fireworks in games can thus contribute to the sort of playful disruption of the senses that Caillois refers to as “*ilinx*,” the effect of which he explores as part of his taxonomy of game types. According to Caillois, loss of stability is characteristic of *ilinx*, which is

based on the pursuit of vertigo and which consist of an attempt to momentarily destroy the stability of perception and inflict a kind of voluptuous panic upon an otherwise lucid mind. In all cases, it is a question of surrendering to a kind of spasm, seizure, or shock which destroys reality with sovereign brusqueness. (Caillois 2001, p. 23)

Go to a fireworks display yourself, or check out some of the Tama River fireworks on YouTube¹ and you will immediately sense the link between fireworks and the “voluptuous panic” that characterizes *ilinx*. Moreover, depending upon one’s position vis á vis an outdoors fireworks display, viewing fireworks introduces particular vertiginous tensions in the body associated with looking up. In the Tama River display, as per the link below, the designers of the display explore progressively

higher altitudes as the show moves towards its climax, gradually introducing more tension into the neck and back just as the explosive power of the shells peaks.

Fireworks as a pictorial and mediated art form

Although, as Shimizu notes, outdoors fireworks displays lack a frame, they have, historically, often functioned as a kind of pictorial form: “Most fireworks today are admired against the night sky, relying for their impact upon the height attained by the shells, the succession of their bursts, the variety of colors, and the loud noise. Early displays, however, were more like stage presentations than sky shows” (Boorsch 2000, p.4). In these displays, often honoring coronations, births or treaties, fireworks are grounded with characters and sculptural elements, and associated with allegories or battles. Besides early prints of fireworks displays (which preserve for us the allegorical, character-based and dramatic earlier fireworks displays), framed fireworks experiences are also present in pre-filmic media such as 19th century shadow boxes, in which perforated backgrounds provide light for the glitter of the bursts (Plimpton 1984).

Pictorial framing and sensory disruption coexist in tension in digital fireworks. Mediated forms that we experience through frames have their own vocabulary of disruption, which has been incorporated into the depiction of fireworks in games. In the case of *Okami*, for example, we often see the frame being used to increase the disruptive power of fireworks, through rapid shifts to extreme worm’s-eye views and foreshortening during fireworks cut scenes (figs. 1 & 2). The framed use of space in *Fantavision* likewise progressively disrupts expectations. As with *Boom Boom Rocket* and *Big Bang Mini*, we begin *Fantavision* against the backdrop of a night cityscape, but the stability we experience is gradually undercut, as we move to levels set in outer space in which fireworks enter horizontally into the frame. The sensory disruption we encounter in fireworks in games is often experienced against our expectations of the stability of the frame.



Figure 1: Fireworks launch in Okami



Figure 2: Fireworks burst in Okami

Moreover, the introduction of new controllers has reintroduced opportunities for vertigo in gameplay. Kirkpatrick (2009) traces the tensions that we experience through the controller, and the relationship to our experience of “carving out” game form: “...the important forces that drive the action of the on-screen game fiction are present in the tension between fingers, thumbs and plastic controller” (p. 134). This dynamic has been altered by the introduction of the *Wii* console:

The first feeling triggered by the *Wii*-mote is one of vertigo, because the tensions of play are not contained within the hand any longer. Some ... of the actions we have to do to play the game no longer have the controller to refer to ... and instead must occupy the empty space of the room we are in (p.134).

In the *Wii* version of *Okami*, the fireworks drawn through the *Wii*-mote (with the Cherry Bomb brush) and viewed in cutscenes (in Tama’s displays) contribute to an experience in which visual disruption is contrasted with the need for steadiness of hand in the manipulation of powerful forces. This reinforces some of the striking contrasts of the game, which moves back and forth between action and rest, power and stasis, vertigo and control.

Fireworks as a pleasure primitive

According to Caillois, the experience of *ilinx* is one that we seek out, it is pleasurable. We can begin to understand the pleasures of fireworks by looking at the firing of a single shell. Detonation is the beginning of a three stage temporal structure, followed by the flight of the shell (often trailed by sparks), and burst. This sequence establishes a very primitive and effective anticipation and fulfillment mechanism. The pleasure of a fireworks display is experienced in the firing of single shells (especially foregrounded when the shells are very large), as well as by the choreography and performance of the display as a whole.

Kubovy (2003) distinguishes between “pleasures of the body” and “pleasures of the mind,” and one unique characteristic of fireworks is the way in which these two sources of pleasure intersect. Kubovy writes of a class of pleasures of the body that are “relief pleasures,” as they follow tension or discomfort (these pleasures run the gamut from sexual release to sneezes). The bodily experience of fireworks participates in this pleasure, as we feel the thump of launch, follow the rising shell with increased tension in our bodies, in anticipation of the eventual burst. Pleasures of the mind, as proposed by Kubovy, allow us to trace a more complex experience of pleasure that consists of “collections of emotions distributed over time whose global evaluation depends on the intensity of the peak emotion and favorability of the end” (2003, p. 137). This is the pleasure we experience over the duration of a fireworks show, as we anticipate and appreciate the sequencing of the shells, participating, in a sense, with the designer of the show.

Games themselves present a similar set of pleasures, on a different scale and with greater complexity. Here, as Kirkpatrick notes, we feel bodily tension and release through our experience of the controller in relationship to our bodies, the room we are in, and the screen. Along with this embodied activity, we experience pleasures of the mind in relation to what Kubovy identifies as particular objects of that pleasure, which

can include curiosity (the pleasure of learning) and virtuosity (the pleasure of doing something well); the connection to game motivations and gameplay experience is evident here. These pleasures can come together, as Grodal (2003) argues, when practice of motor control in games through the controller brings us to greater virtuosity, and ultimately participation with the designer of the game in the game form itself.

Fireworks can also illuminate our understanding of the structure of game pleasures over time. One of the examples that Kubovy cites in his discussion of pleasures of the mind is the way in which anticipation and fulfillment are often explored in narrative forms. Narrative forms in games and the trajectory of player interest have been described as fractal (Schell 2008); that is, overall structures of anticipation and fulfillment are mirrored also in the parts that make up the whole. Fireworks displays are often a perfect example of this fractal patterning: the way in which we respond to a single fireworks shell is a mini version of our response to an entire show.

The very efficient way in which fireworks combine bodily and emotional pleasures suggests that fireworks constitute a kind of “pleasure primitive” (and I am consciously referencing 3D modeling practice, in which more complex forms are often molded from a set of geometrical primitives). The observation that fireworks comprise a source of pleasure of both the body and mind suggests that we can identify other aspects of games in which the embodied and the reflective come together to provide key experiences and motivations for the player. The structuring of these primitives could liken the design of a fireworks shell, in which the individual star charges are clustered around a larger burst charge that blows the shell apart when it has reached altitude (fig. 3). This implies a central motive force for a game, and the overall aesthetic effect of the game is to be found in the relationship between this force and the individual pleasures that fly out of it, and that one experiences in the playing (and this schema has the benefit of remaining free from, but being able to accommodate, both narrative and play elements). Jumping, climbing, and other activities performed through the controller and body, and experienced through our encounter with the game narrative and world, offer us further avenues to a better understanding of the pleasures of embodied gameplay.

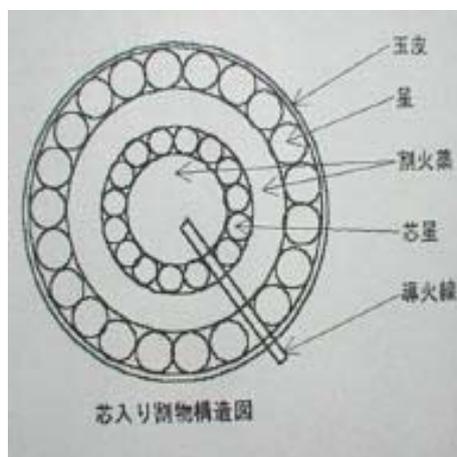


Figure 3: Structure of a fireworks shell

Fireworks as light effects in games:

The simplest fireworks pleasure in games is the light effect. Players are most likely to encounter fireworks at celebratory moments in games, such as when they hit a home run in *Wii Sports* (fig. 4). In *Super Monkey Ball: Banana Blitz*, for example, successfully reaching the finish line often results in a chrysanthemum fireworks burst (along with stars and other festive light forms). Here fireworks function as part of a much larger class of light effects that not only provide visual feedback, but also indicate that something has been performed, or that some change in the game state has occurred. Spell casting in role-playing games, or moves in fighting games are also accompanied by similar light phenomena. In the case of fighting moves, for example, the light effects provide a motion blur that enhances the visibility of what the player has performed, and they may also signify something about the kind of move or sequence being performed. These effects reference back to older optical and shutter-based artifacts such as motion blur and flares. As celebratory light effect, fireworks serve as a kind of emotional punctuation, visually emphasizing what is being played out in the game, and acknowledging what the player has just achieved.



Figure 4: *Wii Sports*

The simulation pleasures of fireworks in games

The simulation pleasures of fireworks draw attention to the design and enjoyment of fireworks themselves; they claim the focus of the player in a more explicit way. As the product of explosive forces and chemical burn effects, fireworks lend themselves to computer simulation. The manufacture and launch of fireworks belong to a set of dangerous practices (such as auto racing) that constitute good subjects for simulation, and the burst of a shell is produced by forces that can be modeled well through the computer's capacity to perform quick physics calculations.

It is notable that the design of real space fireworks shows is now often the domain of 3D digital tools. In *Visual Show Director* (Infinity Visions Inc. 2009), for example, a 3D

model of the show site is combined with editing tools that synchronize computerized shell firing with a musical score to choreograph professional shows (fig. 5). For the layperson, there are of course many simple Flash-based simulators that work through web browsers.² The pleasure of simple fireworks simulators lies in manipulating a limited set of variables: angle of launch, thrust, shell color, delay, weight, etc. The user sets the variables, then launches the shell and watches its burst, exploring and anticipating the various outcomes (fig. 6). What we get is a taste of the pleasures of a fireworks show designer, as we see the way in which our planning of timing and force variables affects the final burst.

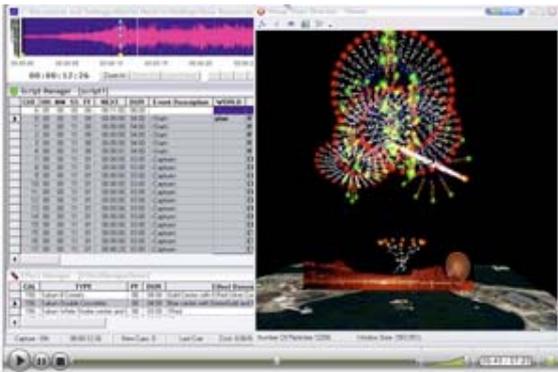


Figure 5: Visual Show Director

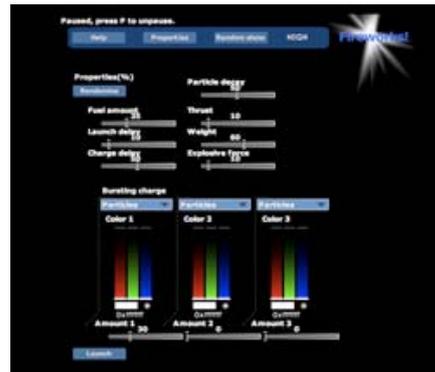


Figure 6: Fireworks Simulation Flash Game

The gameplay pleasures of fireworks in games

The essential variables of fireworks simulation provide a field of potential for gameplay pleasures, and a survey of fireworks-themed games demonstrates the way in which these potentials are realized. There are three main clusters of gameplay pleasure related to fireworks: design and performance, timing and rhythm, and power and awe.

The simulation of fireworks engages the player in design activities, and there are several games in which these activities serve to support larger community building aims. In *A Tale in the Desert 4*, players can choose to develop their mastery of fireworks design, which is judged in regular public competitions. In *The Test of Pyrotechnics*, one practices extensive skill building, and manufactures fireworks materials from gunpowder, to the substances that color the shell and the mortar used for launch. What is notable in the work of community members is the willingness to explore pyrotechnic effects that are not limited by physical forces: shells rain up as well as down, cycle back and forth on one another, and describe horizontal patterns in a manner that defies gravity.³ In the case of *RollerCoaster Tycoon 3* (Frontier Developments 2005), a community drawing upon the fireworks simulator and devoted to design has formed around a single aspect of the game. In this game, players can choreograph fireworks displays to selected musical scores (fig. 7).



Figure 7. RollerCoaster Tycoon 3

Fireworks-themed games that focus on timing and rhythm, such as *Fantavision* and *Boom Boom Rocket*, explore the play space between launch and detonation, with key player input on detonation. *Fantavision* (fig. 8) is considered a puzzle or strategy game, as the main challenge is to capturing ascending shells with a cursor and detonating them with a button press, in a particular order defined by color coding. *Boom Boom Rocket* (fig. 9) is a rhythm game that draws upon long-standing musical traditions linking musical performance with fireworks displays (cf. innumerable July 4th performances of “1812 Overture” with fireworks displays in the U.S.), as well as the more recent trends towards musical performance as a game genre. The close relationship between musical structure and fireworks display choreography is further explored by Shimizu, who adapts traditional musical staves as a means of notating a fireworks show. Like *Fantavision*, *Boom Boom Rocket* plays out against a night cityscape, and the challenge is to synchronize the bursts – through specific button presses – to a musical score, most often an upbeat, synthesized version of some well-known classical music chestnut. Although these timing and rhythm games do a good job of exploiting the anticipation/fulfillment potential of fireworks, the player is kept in something of a reactive state, and it must be noted that neither game was considered by critics to be very successful (*Boom Boom Rocket* scores 69 on Metacritic.com). Even simple fireworks simulators allow for more player creativity. Perhaps we are waiting for a more tangible input mode for interaction with fireworks. You time fireworks; you play a guitar.



Figure 8. Fantavision



Figure 9. Boom Boom Rocket

Finally, fireworks can be played in games as a source of explosive power, one that points to the awe inspired by an overwhelming sensory experience. The first time the player of *Okami* encounters Tama she acquires the Cherry bomb brushstroke. The explosive potential of fireworks in the game is not only thematic; it also extends to player agency. When one paints the outlines of a Cherry bomb and fuse, one sets into motion an explosion that is used in the game to defeat opponents and blast open passages (fig. 10). As with launch and detonation of firework shells in other games, using the Cherry Bomb is very much about timing, understanding how long the fuse will burn and where to place the bomb for maximum effect. The Cherry Bomb highlights the uniquely counterintuitive affordances of the brush in the game, in which both creativity and force are expressed through artistic activity.

Big Bang Mini is a shooter game for the Nintendo DS that, as in *Okami*, adapts the power of fireworks to a unique form of physical interaction. In this game, one launches fireworks with a flick of the stylus, in a manner that the game's initial tutorial likens to lighting a match (fig. 11). As with *Okami*, and unlike the rhythm and puzzle games above, player input here is at the beginning of the detonation sequence, and the tension established in the hand is associated with aiming the shell. The offensive action of shooting fireworks at targets in the upper screen is balanced by careful stylus work to protect one's "ship" from falling fireworks debris and picking up falling stars. This establishes a tension/release contrast in which stylus input and burst are not synchronized, which leads to a richer and more nuanced, if less emphatic experience.



Figure 10. Cherry Bomb in Okami



Figure 11. Big Bang Mini

The narrative pleasures of fireworks in games

Fireworks don't just provide gameplay pleasures through repeated player activity, they are also associated with specific segments and characters in games, affording narrative resonance and contributing to the sequential experience of game forms.

Sequence 9 of *Assassins Creed II* is set during the Venetian carnival, during which fireworks provide visual and sonic punctuation that underscores the pistol-based assassinations the player undertakes (fig. 12). Fireworks have a long historical association with Venice due to the quantities of gunpowder found on hand in the naval armories (Hills 2007), and the carnival compliments the themes of disguise and secrecy that permeate the game. Avoiding detection as one carries out assassinations is one of the main challenges, and in this sequence pistol reports can be timed to coincide with fireworks bursts (Piggyback Interactive 2009).



Figure 12. Assassin's Creed II

The use of fireworks for cover and concealment is one of the ways in which fireworks can add to games. In *Okami*, the contribution of fireworks to gameplay is far richer. Fireworks serve not only as emotional punctuation, as light effect and source of power, but also acquire thematic and narrative relevance through the character of Tama the “flaming pyrotechnist.” The figure of Tama draws upon a highly developed body of Japanese fireworks lore. His name itself has resonance, referring not only to a large type of shell, but also to a famous fireworks craftsman: Tamaya Ichibeh. Due to the combustible nature of building materials in 19th century Edo (Tokyo), fireworks craftsmen lived under the constant threat of exile from the city should their wares cause a mass conflagration (which indeed is what happened to Tamaya (Plimpton 1984)). Though associated with Kamiki village, the fictional character of Tama lives and manufactures his fireworks alone on a remote cliffside, well away from the village proper. It is clear from production art that the character artists of *Okami* had a lot of fun with the figure of Tama (fig. 13), going to pains to paint the fireworks craftsman as quirky outsider with the potential to destroy or to repair the social fabric (Clover Studio 2008a).



Figure 13. Character design of Tama in *Okami*

And indeed, Tama’s fireworks show after the first Orochi boss fight is a remarkable part of the game, contributing little in the way of forward plot movement and player activity, but adding greatly to our understanding of how aesthetic elements can enhance our experience of the “dynamical joy” of games, defined by Duncker (1941) as “a kind of experience that lies somewhere between emotion proper and sensation:

the tensions, excitements, thrills and reliefs of acting and resting.” In the use of fireworks, the tension and release of Tama’s show is experienced by the player as a cutscene following a long boss battle, in conjunction with a soothing Kamiki village musical theme. Far from being merely parenthetical, Tama’s fireworks show helps establish the unique pacing and pleasures of the game.

Games as fireworks

The loving attention paid by the creators of *Okami* to Tama’s *otaku* dedication to his craft suggests that we can understand Tama as a kind of surrogate for the designers themselves. While there are a number of craftspeople in the game, it is Tama who recreates the main characters through his fiery creations, and who lives to bring pleasure to the people of his village through his displays. By the same token, it is interesting to consider games as fireworks. Just as a fireworks craftsman builds up a shell with charges that are calculated to create a particular effect, the game designer packs his code into games that are actualized through glowing leds and burning phosphors. To explore games as fireworks, we can trace the relationship between fireworks aesthetics and game structure, and develop the notion of ludic festivity as a key gameplay quality.

Fireworks aesthetics offer us a fresh perspective on digital games as sites for intense sensory experiences that unfold over time. Shimizu develops aesthetic principles of fireworks displays based upon the traditional paired terms of harmony and contrast, and strain and relaxation, and identifies particular fireworks flower shells that contribute to the various beauties of fireworks: elegance, mystery, splendor, solemnity, loneliness, magnificence and moderation. The masterful unfolding of the fireworks experience calls for the designer to manipulate the variables of color, space, time and brilliancy (Shimizu 1981, p.14):

Fireworks consist of contrasts in light. There are two kinds of contrast; space contrast and time contrast, in colour and brilliancy. Accordingly we have four relationships in these contrasts:

- (1) Colour-space (Spatial arrangement of colours),
- (2) Colour-Time (Time arrangement of colours),
- (3) Brilliancy-Space (Spatial arrangement of brilliancy),
- (4) Brilliancy-Time (Time arrangement of brilliancy)

Though this obviously does not give us a complete vocabulary for analyzing or designing games, it does provide terms for our understanding of the sensory experience of games in a way that complements (but is not subsumed by) other, more language-based theoretical approaches. We can discuss, for example, the way in which warm and cool illumination designed into the levels of games complements player activity and is experienced in the unfolding of the play experience over time (Niedenthal 2008). Shimizu’s discussion of the aesthetic qualities of the fire and percussions of a pyrotechnics display provides an apt jumping off point for understanding the interactive experience of fireworks as a form of ludic festivity.

We have seen that the gameplay pleasures of fireworks in games include design and performance, timing and rhythm, and power and awe. All of these are elements of what we can call ludic festivity. Although there are other game activities – having nothing to do with fireworks – that also engage these activities, such as executing a mission, or going on a raid, ludic festivity ultimately points towards voluptuous panic (as opposed to qualities of *agon*, *alea*, *mimicry* – Caillois' other categories of games). Games that seek to evoke voluptuous panic consistently are few and far between: the concept is underexplored in game design, and perhaps *Rez* (United Game Artists 2001) is still the best example. But the voluptuous panic of the game as firework is evident in any game in which we experience intense sensory disruption, however brief, through in-game sensory effects (explosive, light, or sonic effects), through the controller, or through the way in which the game is framed (through camera movement, editing, etc).

Conclusion

Digital games integrate fireworks as play themes and gameplay pleasures, light effects and narrative elements that contribute to emotional punctuation, offer space for gameplay, and add to narrative resonance. Tracing the contribution of fireworks to games allows us to practice an aesthetic approach to games that examines a single phenomenon through its impact on the body and senses, relationship to other art/media forms, and the unique simulation, gameplay and narrative pleasures that it affords. Understanding the function of fireworks in games ultimately allows us to rotate the question: considering games as fireworks has the benefit of accommodating the intensity of game sensory experience, and introducing a vocabulary that does justice to the otherwise fugitive experience of voluptuous panic in games. Finally, a fireworks perspective cautions us to approach our subject with care. Games blow up in weird ways when we play with them, and touching the smoldering punk to the virtual fuse is an act with sensory, aesthetic and ultimately playful consequences.

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Notes

- ¹ I recommend <http://www.youtube.com/watch?v=vyLfR6PC2xM>
- ² c.f. http://www.gamesforwork.com/games/play-13011-Fireworks_Simulation-Flash_Game
- ³ For example: <http://www.youtube.com/watch?v=msCmj-wAHTw>