Good Fit in Good Video Games: Components in a System

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At the level of programming, video games are algorithms. At the level of invention, they are not. In my view, a good video game demands a coherent, meaningful, and engaging fit between its game mechanics (the types of interactions the player has with the game in controlling play) and its content (what the game is primarily about). Though sometimes seemingly simple, such matches often require design genius to invent.

For example, the game *Flower* repurposes an old game mechanic—moving things through rings—to a new purpose. The movement becomes part of a game-poem about motion and renewal. For those who have manipulated arcade characters like Sonic through rings, the new match is amazing. Few even notice the ring mechanic directly, so well integrated is it into the content of the game (moving with the wind through the environment to bring it back to life).

DragonBox uses a balance mechanic (arranging things in boxes on the two sides of the screen) to exemplify ideas about equivalence and balancing in algebraic equations. The *Thief* games use an array of stealth mechanics (melting into darkness, hiding in shadows, moving silently, and so forth) to enact a content about being a super thief striking from the dark.

Note, though, that a game mechanic must not just fit well with the content. It must, as well, be engaging in its own right. It must be fun to do and yield results that seem to follow from the mechanic almost effortlessly when the mechanic is mastered. All players know that in games where they must master combos to enact fighting moves, mastery leads to a fluid fit among a quick action on the controller, a striking action on the part of the avatar, and a clear and coherent result to the player. It is a thing of beauty.

On the other hand, one educational game (that will remain unnamed) flashes an algebraic equation on the screen every once in a while. Players must solve the equation to move forward in the game. But the game is an action and fighting game. The game's core mechanics (exploration and fighting) have nothing to do with algebra and the algebraic equations have nothing to do with the game's core mechanics, though learning algebra is supposed to be the point of the game. The game's educational content (algebra) is an incoherent add-on to its play content, which is fighting. This is exactly the opposite of a game like *DragonBox*.

The term "content" is a vexed one. In a movie or book we take the content to be what the book or movie is about. In a sport, like professional baseball, we take the content of playing the game to be solving baseball problems skillfully in competition. The thing many a movie is about is its story, but the main point of playing a professional baseball game is skill and competition. We can impose a story on a baseball game as we watch it—and for some viewers that, indeed, might be the game's main content—but even for many viewers the main content of a game centers around watching and appreciating skill and competition.

In any media, content tends to have three aspects. First, as we have just said, content is what the media is about. *War and Peace* is about the French invasion of Russia in the Napoleonic era. Authors and readers, or designers and players, can disagree how exactly to state the nature of the content and nuance can count here. Content in the sense of what a particular piece of media is about is a matter of interpretation.

Second, content comes in various types of genres. Here too different interpretations can arise. Many people read *War and Peace* as a novel. But Tolstoy himself said it was not really a novel or an historical chronicle. He viewed it in part as a philosophical discussion. He also argued that much of Russian literature did not fit standard norms (genres). Today, most critics would probably say that *War and Peace* is an historical novel (with lots of philosophy in it).

Third, an author or designer usually wants the content of his or her work to have an effect (or several different effects) on the reader or player. Indeed, the author or designer may well want to have different effects at different parts of the media experience, as well as some overall effects from the whole. Of course, readers and players can both also have idiosyncratic responses to content and, thus, experience effects the author or designer did not intend. One effect *War and Peace* has is to allow readers to experience the scope of war and history in highly cinematic terms, a new narrative technique that Tolstoy's writing, along with that of others, helped to establish in the 19th century.

A game like *Flower* is about movement and renewal. Its genre is we might say "game as poem", though it is new enough in its form to be part of establishing a new genre. One effect the game

seems to intend is for the player to feel a sense of hope and exhilaration at the end of the game. The dark middle sections of the game certainly change the initial up-beat mood of the game, cause a sense of dread and anticipation, and help set up the effect at the end as a form of reversal of fortunes and emotions.

Different types of games have different types of content for players. *DragonBox* is about balance in an ultimately algebraic sense. *Call of Duty* games are about solving problems in warfare. *Two Brothers* is about physical and emotional collaboration. Some games can be played by stealth or open fighting, in which case the game offers the player two different ways to play connected to two different contents. Of course, individual players will interpret the main content in somewhat different and more nuanced ways.

In good games, how we state the content (what the game is about) easily integrates what the game is about thematically and what the player does in the game in terms of the game mechanics in the game. *Call of Duty* is about war and fighting, *Flower* about renewal through motion, *Thief* is about stealth and stealing, and *DragonBox* is about balance and equivalence. Another way to put this is to say that in games content is usually about verbs (actions, doings). It is important to see that the main content of a book or movie is often (though not always) a story. But the main content of a game is often (though not always) not a story in the literary sense. It is action.

There have been many vexed issues about the role of story in games. Of course, for some games and for some players, game stories are like stories in literature or film. They are plots written by someone else that the player enjoys discovering and understanding. We can call this the "game's

story" (a game need not have one). But here, too, in a good game, if it has a story, the story must, as a plot, fit well with what the player does and feels in the game.

For example, in the first *Call of Duty* the player enacts historically-inspired scenes from World War 2. The player plays as a British, a U.S., and then a Russian soldier. When the player is part of the Russian force attacking Berlin, after unbelievable hardships, to win the long war, the player feels a real exhilaration that gives both cognitive and emotional insight into the story of World War 2, especially in regard to the role of the Russians. The game has made the story of World War 2 fit well with what the player does and feels in the game. The story deepens the game and the game deepens the story.

There are two more—and different—roles story or narrative can play in a game. One is that the story—whether fully realized or not—can give lucidity and meaning to the game's environment, problems, and actions. Players use the story, often in bits and pieces as they discover things, to understand what they are doing, why they are doing it, how they should do it, and how they should feel about it. We can call this function the "narrative lucidity function". In the first *Deus Ex* the player uncovers all sorts of information in notes on desks and through hacking computers. This information gradually uncovers a story, but whether or not the player follows the story (and the player does not know how the story will end until the end of the game), the bits and pieces of the story the player uncovers give meaning and emotion to what the player is doing and to the world the player is in.

The other role of story in a game—really a different type of story altogether—is that a player's actions in a game, alone or with other players, creates a series of events that count as the "player's story" (one his or her actions have "written"). Furthermore, players in their own minds or to others, can narrativize these events further by imposing on them their own interpretations, plot lines, logic, emotions, and values in some coherent way. We can call this story the "player's story". In a game like *Full Spectrum Warrior*, the player has made multiple decisions about strategy and actions throughout the many campaigns in the game. At the end of the day (and game) the player can put together as his or her own "war story".

We can make a distinction between narrative and story. Narrative is any series of actions or happenings unfolding in time: "The king died. Then the queen died". Stories are narratives with plots. A story has not just actions or happenings, it explains causes and effects and why things happened: "The king died. In her grief, the queen killed herself". Not all games have stories, but they are all narratives. In games things happen in time (the game narrative) and players do things in time (the player's narrative). In a game like *Tetris*, which has no story, we still have events of falling and stacking happening in the game and being accomplished by the player. Games are a narrative form, but they do not have to be—but can be—a story form.

Another important element of games is level of difficulty. Here, too, the level of difficulty must fit well with the other elements in the game. A classic traditional video game is about solving problems that are meant to be challenging, whether the game be a *Mario* game or a *Halo* game. Since the point is problem solving there must be some significant level of difficulty (who wants to solve problems that take no effort?).

On the other hand, in a game like *The Walking Dead* the player's actions (via the game's mechanics) are meant to unfold and emotionally engage the player with a story and with decisions that help shape the story. In a game like this, its main content is the game story, or, better put, discovering and engaging with the game story. Since the point here is to see and feel the development and end of the story, a significant level of difficulty would be inappropriate.

One final element of games I want to discuss here is "reward". Games reward players in two ways that must fit together well with each other and with the other elements in the game: reward signals and deep rewards. One reward players get is what I will call a "deep reward"—like learning something, a sense of mastery, new skills, reputation or status, or helping other—connected to the "reward signals" in the game, whether these are points, leveling up, special gear, or whatever. A game soon wears thin for many players if the reward signals do not lead to and fit with a deeper reward that has some meaning for the player. The little bell sound that goes off when you solve a problem in *Zelda* games is a perfect example of well-designed reward signals. The bell sound caps off a solution as a reward signal at just the moment the player feels smart. The bell does not take the sense of accomplishment away or seek to replace it, but simply celebrates it and tells the player the game is aware the player is smart.

Many role-playing games allow players to level up in multiple ways and display this leveling process (reward signals) in various ways. When done well, this process can give players a satisfying visual representation of their progress, trajectory, and growing mastery. They gain a sense of accomplishment, status, and worth in the game (deep rewards) and, by the way, they

gain, as well, an analysis that allows them to better narrativize (storify) their trajectory through the game (the player's story). Such games can achieve a good fit among game mechanics, reward signals, deep rewards, and the player's story.

My point—up to this point—is that video games are not a unified phenomenon. There are no necessary and sufficient conditions for what is or is not a video game. Furthermore, as the independent game industry has flourished, new types of games are evolving, widening what is already a "squishy concept".

The diversity of games means that when we do research on the effects or impact of games we need to specify the components of the game. Games compare and contrast to each other component by component. And the components interact with each other to form a system. In the best games there is a good fit among the components, though even here we need a theory of the various and different forms of good fit that games can have, even as we design new ones.

When we compare games to other learning media, we must compare the different components of each and compare them as systems. Asking how a game works for learning or other forms of impact is not like asking how vitamin E works in the human body. Rather, it is like asking how blueberries work in the human body. Blueberries are a myriad of chemicals (components) working together in complex interactions with each other and with the human body and its environment.

So we need a theory (really several different ones for different purposes) of the components of games (as we already have, albeit partial, theories of the components of blueberries at work in the human body) and how these components interact. Here I have offered but one quite partial (incomplete) theory. The components of the theory are:

Game Mechanics ←→	Content ←→	Game Story ←→	Difficulty ←→	Reward Signals
	Effect	Narrative Lucidity		Deep Rewards
	Genre	Player's Story		

So, for example, a game like *Two Brothers* uses a novel joint control mechanic (controlling the movement of the two brothers simultaneously) to enact a content about collaborative problem solving. The game has a game story about the two brothers seeking a remedy for their dying father. The game needs to be difficult enough—and in the right way—to let the player experience the effort behind collaboration and joint control. The rewards signals are the way the brothers pull off tricky physical moves together once the gamer has mastered the controls and the deep reward is a sense of emotional involvement and participation in the brother's plight and bond. The sense of participation is partly based on the player's having learned to manipulate sometimes tricky controls to facilitate the brothers' journey.

A game like *Call of Duty* uses control mechanics that allow quick actions and reactions in chaotic settings to enact historically connected stories about warfare. In my view, it is because of this mechanic, where players must react quickly on the basis of probalistic judgments that such games have been found to enhance a certain sort of math sense about things like frequency, distribution, and probability.

The reward signals are the classic staying alive and winning battles. The deep reward, for me, is an appreciation of the messiness, chaos, and "excitement" of war gained without real death. Vicarious experience is, of course, one of the deep rewards of literature, but in a game like *Call of Duty* it comes from action and not just story.

A game's genre—and designers are inventing new ones all the time—is determined by how all the components above interact and fit together as a system. In turn, a genre teaches players what to expect and how to play when confronted with a similar game. Eventually a genre can become pretty cut and tried and a bit ritualized, as has happened in many real-time-strategy games as designers have perfected and even standardized their components.

A video game is, for me, a system in which the above components interact. A good video game integrates and relates these elements together in interesting, meaningful, coherent, engaging ways. The issue of "fit" (in the sense of fitting together) is all important.