

# Abstract of Dynamic Range: When Game Design and Narratives Unite

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## ABSTRACT

As the clash between Game and Narrative rages on, many attempts to unite the two make their way. As heir of this tradition of reconciliation, the Dynamic Range is a tool brought forth to examine how different game systems can give freedom to the players. In its present state, I am going to use it as a compass to pinpoint the close relationship between game design and narratives, and perhaps understand how such a union can be successful.

## Keywords

Narratives, game design, emergence, dynamics

## INTRODUCTION

As the raging conflict between game and narrative has been tackled a great many times in the past years, it is beyond the scope of this paper to reiterate the various positions on this subject. My opinion is that, while the ludology argument (whether any ludologist really upholds it to the extreme or not[2]) is right in saying that there is no single theory currently out there that can account for the vast, multidisciplinary nature of digital games, the various theories set in place among the different fields of knowledge can nevertheless provide a helpful starting point. If, as academics turning our attention to games, we are going to develop a “ludology”, let it be the name by which we will refer to a new discipline born of the combination and reworking of already-existing theories, just as game design itself is a combination and a reworking of already-existing theories[7].

This paper is an abstract in the sense that I am using it to introduce a concept that will be the object of a more thorough development in the future: the Dynamic Range. Essentially, this paper is an in-depth version of my previous 2005 conference presentation.[1] Here I will concretely

apply the concept in comparative case studies, and argue that the design of games plays an active part in shaping narrative content following the openness of a game system. I am not using the term “narrative” here in the classical narratological sense of “somebody telling a story that has happened to someone”, but more as a general concept with its foundations laying at the crossroads of the terms “narration”, “fiction”, and “representation”. Likewise, the “openness” of a game system is not to be understood as a binary attribute that is either true or false. Games are not “open” or “closed”, but both, to varying degrees.

## DYNAMICS AND RANGE

Robin Hunicke, Marc LeBlanc and Robert Zubek established a model for understanding games called the MDA, which stands for Mechanics, Dynamics, and Aesthetics. They suggest that the rules of a game (the way it behaves, or its Mechanics) supplied by the game’s designer and the attitude and expectations (Aesthetics) of the player meet to create the Dynamics. In the case of a strategic military simulation game, for example:

Dynamics might include the ability to earn or purchase powerful weapons and spy equipment, and to develop tactics and techniques for stealthy movement, deceptive behaviour, evasion and escape. Mechanics include expansive tech and skill trees, a variety of enemy unit types, and levels or areas with variable ranges of mobility, visibility and field of view and so on. [3]

Dynamics, then, are the different variables over which the player has an influence. Just how much influence he/she has is precisely the goal of the dynamic range to discover.

## Surface Definition

I define the dynamic range as *a measure of the extent to which a player can manipulate a game’s dynamics in order to face a particular challenge.*

## Step-by-step Definition

*a measure of the extent:* The extent (of the player’s freedom in a resource-driven game) is determined by comparing the usual state of the game dynamics with the maximal fluctuation the player can reach by optimizing them (through actions such as changing equipment, trading resources, etc.). The measure shows the dynamics’ state before and after the manipulation. I found that a graphical chart is an effective way of portraying the change, and so will use it in this paper.

*manipulate:* this term, opposed to *spend* or *gain*, emphasizes that the player does not make an irreversible choice. The process of customization by which the player makes use of a game’s dynamic range has to be possible without a cost that would impair the player’s future odds of winning or chances of survival later on in the game. For instance, it is not an appropriate decision for a king to empty the chests of his kingdom to win a battle, if the resulting absence of gold will later prevent him from winning the war.

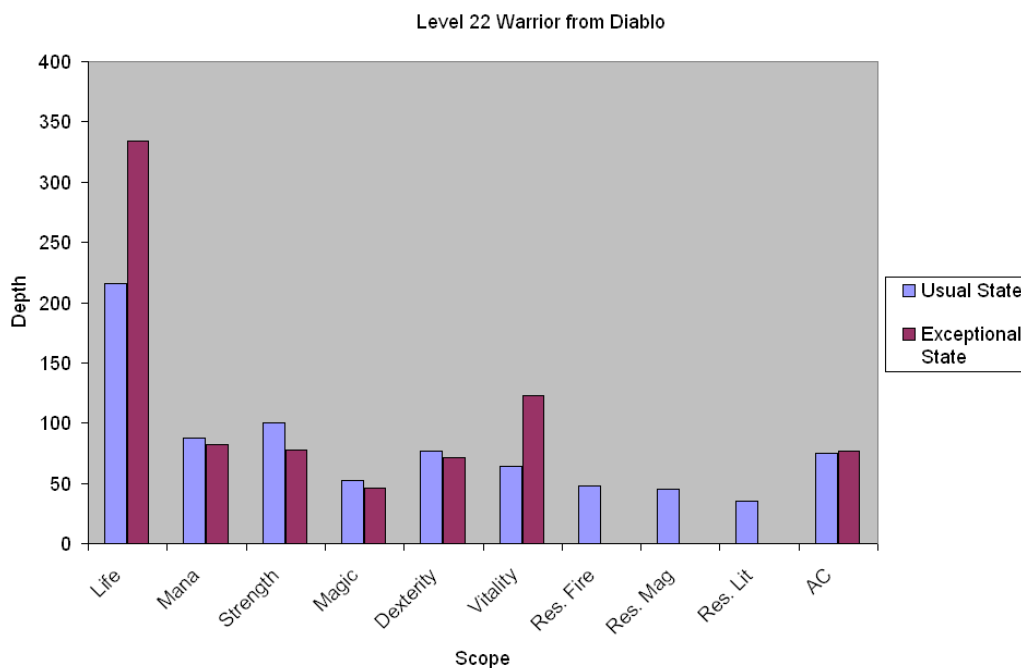
*game Dynamics:* as noted above, and derived from the MDA model’s definition, the different

variables over which the player has an influence.

*a particular challenge*: all challenges which a player faces can be observed from a “what do I need to win?” perspective. Defeating a fire-breathing dragon may require a certain degree of protection against fire, and defending the keep against an army of a thousand men may necessitate five hundred archers, ten catapults, and solid castle walls.

## RESOURCE-DRIVEN AND SKILL-DRIVEN GAMES: THE CASE OF *DIABLO* AND *SPLINTER CELL*

The number of game Dynamics that can be manipulated by the player, and the amount of control he enjoys over them, varies both between games, and between different moments in a given game. Some offer a vast amount of resources and give the player little control over them; others allow only a select few resources to be managed, but the player can do so at a great extent. Therefore, the first step in drawing a game’s dynamic range is to identify which Dynamics can be influenced by player input. This makes up the game’s Scope; the Depth is the actual difference between the standard and exceptional values of a given Dynamic – in other words, how much of an influence the player has over them. The chart below gives an example taken from one of my games of *Diablo*:



**Figure 1.1:** The dynamic range of a Level-22 Warrior from *Diablo*. In blue are the character’s usual game dynamics; in purple are his dynamics when he optimizes his equipment to excel in melee combat.

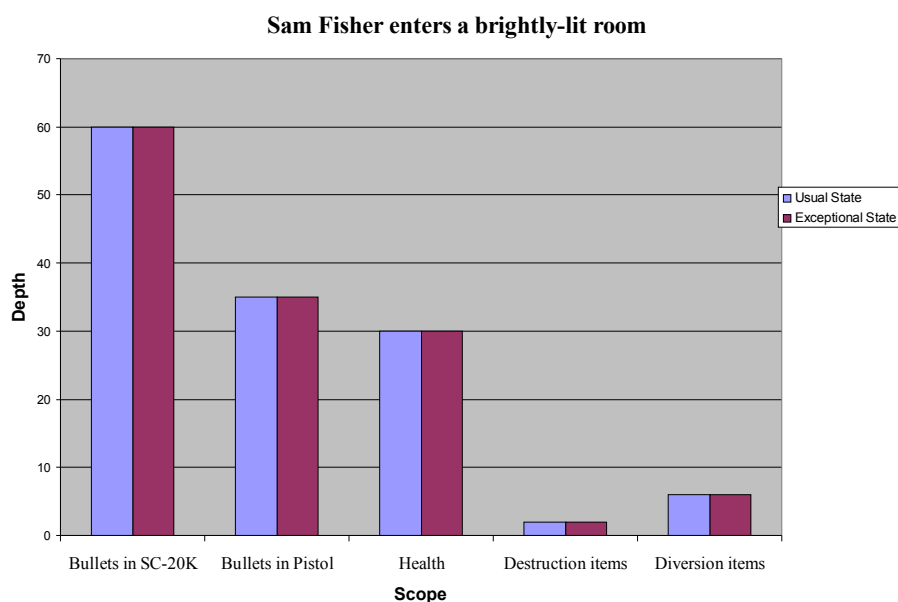
The synopsis: my level-22 Warrior, equipped so as to face a variety of challenges, ventures in the 14<sup>th</sup> floor of the dungeon, meets a horde of Blood Knights, and dies. As I reload my saved game,

I ask myself: “What can I do to improve my odds of survival? How can I manipulate the game dynamics?”. Since the Blood Knights are Warrior-type monsters, I can change my character’s equipment, replacing the pieces that give me magic resistance for instance. I decide to focus on Vitality and Hit Points, because the monsters do a lot of damage with each attack. After fiddling around with my equipment on hand, I take a look at the things the blacksmith has for sale, and decide to purchase a crown that significantly boosts my Vitality. Since the crown costs only 5,600 Gold out of my 122,000-and-some, it is not a transaction that is going to affect my future chances of survival. Now geared towards physical combat, my Warrior fearlessly descends in the horrid darkness below and effortlessly slaughters the Blood Knights.

Now let us compare this experience with one of my *Splinter Cell* games.

The synopsis: Sam Fisher enters a brightly-lit room. Two guards, their back turned to him, are discussing. He figures he could shoot one down, and by the time the second guard realizes what is happening, get him too. Sam pulls out his SC-20K, aims, holds his breath, and fires. The guard falls, and, as predicted, the second turns around and briefly panics: enough for Sam to lodge a bullet in his head. However a third guard, which Sam did not see, was patrolling on a catwalk

at the other end of the room, and immediately rings the alarm. Lambert’s acidic tone cuts through his ears: “Pull out, the mission is cancelled.”. As I reload my game, I ask myself: “How can I manipulate the game dynamics?”. If we were to draw *Splinter Cell*’s dynamic range based on my experience, it would look something like this:



**Figure 1.2:** The dynamic range of Sam Fisher from *Splinter Cell* illustrates the lack of options that players face when they are stumped in skill-based games.

This example shows an important difference between two types of game systems. In *Splinter Cell*, it is not the game’s content itself that needs to change in order for Sam Fisher to overcome

this challenge, but the player's skill. The game relies on the *importation* of elements external to its system (in this case, a player's expertise at aiming, and his knowledge of the room layout and of the guards' positions) rather than the *manipulation* of its internal elements (as was the case with *Diablo*). The dynamic range can only measure a game system's internal manipulations, and only on the level of the constitutive rules (as coined by Katie Salen and Eric Zimmerman in *Rules of Play*: "The constitutive rules of a game are the underlying formal structures that exist "below the surface" of the rules presented to players." [8]). If we look back at my *Diablo* example, for instance, the dynamic range I have drawn does not take into account whether the player faces the Blood Knights one at a time or all at once, or whether or not the player attacks as fast as he is allowed to, or if he uses potions of healing in the best circumstances. All these actions are a result of *Diablo*'s operational rules, and since they can hardly be measured, it is important to remember that the dynamic range is situational, not absolute; it always refers to a specific moment or aspect of a game. Likewise, it would make little sense to discuss the dynamic range of *Splinter Cell* that I have presented earlier; being a skill-based game, one would need to evaluate a player's skill to draw an effective "aesthetic range": a measure of the player's "aesthetics" as defined by Hunicke, LeBlanc and Zubek, that is, what he or she brings into the game. Such a measure could be achieved by placing an array of various sensors around the player to evaluate his response time, ease with the controls, focus, etc.

Now that I have presented the dynamic range, I will use it as an approach to study the relationship between game design and narratives. As a student coming from literary and cinematographic studies, I am interested in, and most familiar with, narratology. That is why, even though I believe its applications are multiple, I will use the dynamic range in relation with narratives: simply because that is what I know best.

## GAME DESIGN AND NARRATIVES

The term "narrative" has acquired a number of distinctive definitions and features in the last years, becoming an increasingly engrossing and complex word that goes beyond its classical definition laid by Aristotle. Henry Jenkins, in "Game Design as Narrative Architecture", identifies four types of narratives that result from the design of space in games: among these four, emergent narratives are defined as: "not pre-structured or pre-programmed, taking shape through the game play". [4] Jenkins places at the heart of the creation of narratives the concept of spatiality, one of the four great characteristics that define digital environments according to Janet Murray, who states, in *Hamlet on the Holodeck*: "Digital environments are procedural, participatory, spatial, and encyclopedic." [6]

Taking Jenkins' vision of emergent narratives and applying it to another of these four great characteristics, the procedural, gives us a pretty good definition of emergent game-play, a topic that is very present in Katie Salen and Eric Zimmerman's *Rules of Play*. Given their view on emergence, one would think it should be something always sought by game designers:

if a system is emergent, exploring possible relationships among game elements is continually engaging. Players will play a game again and again if something about the experience continues to engage them with "variety, novelty, and surprise." [...] A successfully emergent game system will

continue to offer new experiences, as players explore the permutations of the system's behaviour.  
[9]

Emergence does have its limitations, however. Jesper Juul distinguishes two types of game structures: games of emergence, and games of progression:

In progression games, the player has to perform a predefined set of actions in order to complete the game. One feature of the progression game is that it yields strong control to the game designer: since the designer controls the sequence of events, this is also where we find the games with cinematic or storytelling ambitions. [5]

Juul states that games with storytelling ambitions will often be games of progression. There is indeed a problem in trying to carve an intricate storyline in a game where two players can get a totally different experience thanks to emergent game-play. Emergence is characterized by a simple set of rules leading to complex, often unforeseeable consequences; thus, it is impossible for a game designer to write and implement a storyline with enough branching narratives to suit every possible unfolding of a player's experience. All games do not need to be emergent; what all games need is consistency, and that involves having a game system matching the designer's narrative intentions.

### **DISCREPANCY: THE CASE OF *KNIGHTS OF THE OLD REPUBLIC II***

One blatant example of discrepancy between design and narrative that results in incoherence can be found in Obsidian Entertainment's *Star Wars: Knights of the Old Republic II: The Sith Lords*. The sequel to one of the finest games to have graced our consoles and PCs in recent years mainly revolves around the player's character slowly re-establishing his connection with the Force in order to face the evil Sith lord Darth Nihilus. When I (and, if I trust the many discussion forums dedicated to the game on the internet, countless other gamers) finally got to face Nihilus, I chopped off half of his Hit Points in a few easy lightsaber strikes. I then had to watch a confusing cut-scene in which my allies were saying things like "Unnnh...he's too strong...." "Don't... give up...we can...do it...". When I regained control of my characters, I promptly butchered up the remaining half of Nihilus' life force faster than you can say "Master Speed".

Clearly, there was in that moment a huge discrepancy between game-play and narrative. The game designers had carefully balanced that fight so as to be challenging enough for my characters to despair in weakness: there was a huge gap between the actual strength that my characters possessed, and what the game designers thought they would have. This is because *Knights of the Old Republic II's* game system is somewhat emergent due to a number of devices: most of the items the player will find are randomly generated; there is no "level cap", or maximum level which characters can reach and not improve thereafter; the player can, by having some skills high enough, break down items into parts or chemicals, and use these to create stronger items or item modifications; in short, the overall dynamic range of the player is quite wide. Yet the game's storyline is carefully crafted as in games of progression. Thus the designer expected the player to arrive in front of Nihilus at a certain strength level, while in fact there was no way to make any prediction regarding this in a game system such as this. The lesson is that an emergent game-play system can not be used with a pre-written storyline without resulting in a

“system shock”, or discrepancy, between the two.

### **CONSISTENCY: *DIABLO* AND *THE ELDER SCROLLS III: MORROWIND***

*Diablo* provides a wonderful example of how successful a game can be, even without emergence. Do the three different character classes and 26 spells, along with the 31 armor pieces and 39 weapons – each one possibly enchanted with one or two of the 285 possible magical effects – provide an emergent game-play system? Perhaps, if we are a Cyclops that knows only mathematics. But in truth, there is very little difference between playing a Sorcerer attacking his enemies with a Venom Quarterstaff of the Bat, and playing a Warrior attacking his enemies with a Soldier’s Long Sword of Thunder. Sorcerers can wear plate mails and wield heavy axes, Warriors can cast advanced spells, and Rogues can have their weapons repaired at the blacksmith. The dungeon floors may be randomly generated, but they never contain anything “special” that would distinguish one random first floor from another. The only things a player can do is enter the labyrinth and kill monsters, take some loot and sell it, buy equipment, and undertake quests, which amounts to the two first possibilities mentioned: the only way to go is forward – deeper.

Why is *Diablo* successful? As he goes deeper in the labyrinth, the player faces increasingly challenging monsters, and gets to buy and find increasingly stronger equipment. The carefully-crafted balance makes the game addictive: the player is always fairly challenged, yet never overpowered. The success of *Diablo* is due to the fact that a progression-based game-play system matches the linear, pre-written story of an adventurer descending deeper in a dungeon to defeat the evil Lord of Terror.

Let us at last turn our attention to arguably the most “open-ended” (emergent) game ever, Bethesda Softworks’ *The Elder Scrolls III: Morrowind*. This game manages to achieve narrative emergence by leaving the player free to roam the world and undertake many quests in almost any order. There are many pre-written narratives that usually consist in a block of quests that need to be done in order, but the player is free to start multiple blocks at once, ignore them, or do quests that are not part of any block. Virtually anything can happen on the road between two towns: the player’s character can fall and get stuck in a cranny, be surprised by unexpected monsters, or stumble upon an ancient shrine. The game’s extensive navigable space and high number of dungeons, towns and treasures creates a very large space of possibility.

The genius of *Morrowind* is that, unlike several older games that left plenty of tasks and spaces open to the player without giving him enough influence on the game dynamics to actually explore them, the dynamic range of a player can cover the entire space of possibility. A level-2 character can defeat the strongest monsters in the game if he drinks up a dozen bottles of Sujamma (a substance that boosts the character’s strength) and uses an invisibility spell to sneak up to his target; if he does not know the spell or can not cast it, he can buy a magical scroll with the spell on it. My character, when he wears his magical rings and casts the spells I specially designed, can jump over the entire island of Vvardenfell (several square kilometres in size) in one flex of his legs. There is much to be done and, consistently enough, there is much that the player can actually do.

## THE DYNAMIC RANGE'S DYNAMIC RANGE

Throughout this paper I have presented several ideas: the introduction of the dynamic range, a theoretical tool with which we can observe a game's system, led me to distinguish between different types of games: resource-driven or skill-driven, and emergent or progressive. Through the various case studies, I tried to convey a single idea: that game designers need to achieve a balance and unity between their game design and narrative ambitions if they want to make games that are symbioses of those two, often conflicting, worlds. I believe the dynamic range can help in that matter, but also in other game design battles. The dynamic range's dynamic range has yet to be fully tapped by academic gamers.

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