

Narrative Structures and Systems: Leads to Improve the Production of Quest-based Role-playing Games

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Abstract

In this thesis I look at the place of narration in video games, through the structures and gameplay systems developed for it. I study some examples of each of these and their limitations, focusing on role-playing games. Seeing room to improve quest-based games, I then propose an idea for a quest production template.

Résumé

Dans cette thèse professionnelle je m'intéresse à la narration dans les jeux vidéo, à travers les structures et systèmes de jeu développés pour. J'étudie quelques exemple de chaque et leurs limitations, avec une attention particulière pour les jeux de rôle. Faisant le constat qu'il y a possibilité d'améliorer les jeux basés sur un système de quêtes, je propose ensuite une idée de template pour la production de quêtes.

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Introduction

Video games have always included narrative in their design, knowingly or not. It is a major selling point for many video games, and its structure can become the focus point of its production and marketing. When buying games, players can pick their favorite level of interaction, depending on the agency they want on the story, from a large choice of narrative structures, from linear stories to ones in which the player will change the end of the story by playing the game. Designers have followed suit, by creating systems adapting the narrative of the game without waiting for the player to choose consciously.

In quest-based games, several different ways of creating these quests have been mixed with systems to make the narrative evolve continuously in a video game. However, offering players as much agency as possible over the world and story doesn't always goes with giving as much creative liberty to the design teams.

Narrative structures in video games

First, what is a narrative structure? It is a framework defining how a narrative is presented to the player (in the case of video games) and in which order. It can be broken down in several components : the story, which is the full set of events as they happen chronologically; the plot, the set of events as they are presented in the work, and the setting, the space and time that compose the environment in which the events occur. A narrative structure determines the experience one has of a story by means of the plot and how it fits in its environment. Furthermore, narrative comprehension can be understood as an active process, one where players *assemble and make hypothesis about likely narrative developments* [1] based off of the information presented to them as clues to the story. A lot of different narrative structures exist, particularly in video games, a medium fit for narrative storytelling with the players actively taking part in the composition of the plot. Games can also mix and change their structure during the course of its experience. Here I will present some structure of interest to my thesis.

Linear structures

The most basic family of narrative structures is of the linear type, in which the plot and story only have one form. No matter what, the order of events shown and the chronology of events will be the same each time it is played. This type of structure has been the basis of most media since the beginning of fixed stories, i.e. stories contained in a physical object (a book, a disc, a hard drive, etc.), when it became impossible to alter the story after it reached the readers or viewers. Said media in turn inspired video games creators.

String-of-pearls model

The “string of pearls” is an early structure typical of video games. It consists of a series of gameplay phases – the pearls – intersected by cutscenes or dialogues to introduce narration – the bits of string between the pearls which tie the whole thing together. It was very popular in earlier games that tended toward telling a story with strong visual elements because it allowed for a better use of the technological and hardware resources available at the time. It is still widely used in games focusing on gameplay (puzzle games, action games, strategy games, etc.). Separating the moments when the player is in control of the action and moments when the game just tells a story in a non-interactive way allows for the use of gameplay elements which wouldn’t be able to convey story elements as deep as those shown in a cinematic.

Elastic stories

This term, originally *Bending stories* [2], comes from Quantic Dream’s David Cage, maker of games exclusively focused on stories rather than gameplay mechanics. While he used it in mostly non-linear games, like *Heavy Rain* [3], it is a structure that exists in and of itself. The idea is that the player’s choices of interaction dictate which part of the plot will be developed or not. Through their gameplay actions the player won’t necessarily cause meaningful changes to the story but they will change the amount of time and level of details allocated to each scene or character, therefore “stretching” the story like a rubber band, lengthening some parts and shortening others, in turn changing their own experience of the story. This structure is useful to adapt the narrative to the interests of the player without having to ask them what they want to see or not. One way to do that for instance would be to offer several mechanics in a same scene, the easiest and most

straightforward one being also the shortest: a player with less interest in this particular scene wouldn't try to search for other mechanics and would finish this "less interesting" scene faster. This type of structure, however, works better when telling several stories concurrently, in parallel.

Parallel narration

Telling stories and events that happen at the same time, from the point of view of different protagonists, is an old technique. It is used to show several points of view concurrently, and advance the events of the narrative side by side, in order to give a better understanding of the events, or different opinions and versions of those events (as seen in numerous investigation stories and thrillers). In video games, it most often comes down to alternating either between characters, realities, or time periods. The different storylines are usually linked with scenes where the protagonists of several (or all) of them join for a specific event or scene. *Fahrenheit [4]*, by aforementioned Quantic Dream, has the player control both a murderer and the police officer investigating him, which puts them in a position of knowing much more than any of the individual protagonists, giving them a much better understanding of the events and of the motivations of each character.

These structures are not exclusive to linear narrative at all. While they can suffice on their own as linear structures, they can also be (and usually *are*) mixed into non-linear ones. A string-of-pearls model can branch into several "strings" in the middle of the plot; elastic stories can complete non-linear structures by adding another layer of player agency; and parallel narration even works best when included in non-linear stories, where it makes player choices more interesting as they can be made in one storyline but have consequences on other storylines and characters the player also gets to control during the course of the game.

Non-linear structures

Non-linear narrative, coming from the oral tradition of storytelling in which the narrator tells a story and adapts it in real time according to the listeners' reactions, is a thing many creators across all media tried to achieve before video games existed with more or less success. Early examples include gamebooks, interactive movies like *Kinoautomat [5]*, where a live narrator periodically interrupts the film so the audience can choose between two scenes to play next, and of course role-playing games. From the onset of video games existence these games, tabletop and live-action, have been one of their main influences besides films and novels. Because of these media's complex sets of rules, role-playing games players and designers soon saw video games as a way to simplify access to them. Video game could emulate the rules, do calculation impossible in real time with pen and paper, and introduce new types of random algorithm. It could also bring visual interfaces to a medium mostly deprived of it. Thus video games included the structures of role-playing games early on, especially non-linear narrative structures.

Branching stories

To increase a player's feeling of agency, a common (not to say universal) technique used in narrative media, more prominently in video games but also in older types of narrative media such as gamebooks and tabletop role-playing games, is the branching story. That is to say a type of structure in which the player or reader may make choices at several points along the way to influence the narrative. In gamebooks it translates as choices the reader makes at the end of a paragraph, which makes them jump to a new, predetermined paragraph. In tabletop role playing games it is managed by a set of game rules and by the

game master, who reacts to the choices the players make by adapting the story and making changes to the game world. In video games, it can take different forms, depending on which elements of the game compose the nodes of the narrative.

To better understand these structures visual representations were developed, the most widespread being narrative trees (or, depending on what it uses as the basic unit: quest trees, conversation trees, etc.). Boxes (or nodes), each representing a chosen base narrative unit, are connected by lines representing the causal links between these units. Narrative units can range from a single line of dialogue to a full quest, it can also be switched for spatial units in some cases, in which case the tree represents spatial movement. There are many types of trees and techniques to choose from to build (or visualize) a narrative with these representations. Here are a few examples.

The most basic form is the branching tree (*Figure 1*). The story starts at one point, and each choice encountered along the way that is important enough will create at least two new versions of the story (the branches). By default, each branch has its own ending.

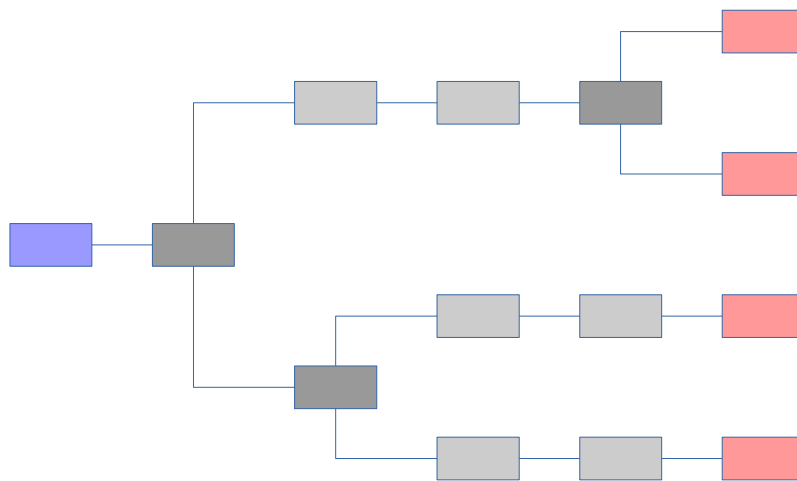


Figure 1: Branching tree

A structure with two main branches and four sub-branches. In blue the beginning of the plot, in dark gray the choices, and in red the endings.

Another common structure is called a hub (*Figure 2*). It features a central “hub” (a level, an event, etc.) from which all the branches will start. At the end of each branch, the player will come back to the hub to choose a new branch to start. It is used for instance to simulate missions or expeditions, all launched from the same place, or to show players the fate of different characters after one specific event, restarting at the event after finishing each character.

A problem arising quickly with non-linear narratives is what's commonly referred to as *combinatorial explosion*. Adding more choices can make the number of branches grow very rapidly, which in turn requires even more game assets to be made, create more opportunities for story inconsistencies and so on. The production costs, especially when compared to what players will eventually experience in the game, get out of control and become unsustainable. To prevent that designers introduce choke points (*Figure 3*), moments shared by different branches, in their plot in order to keep the number of branches under a manageable threshold.

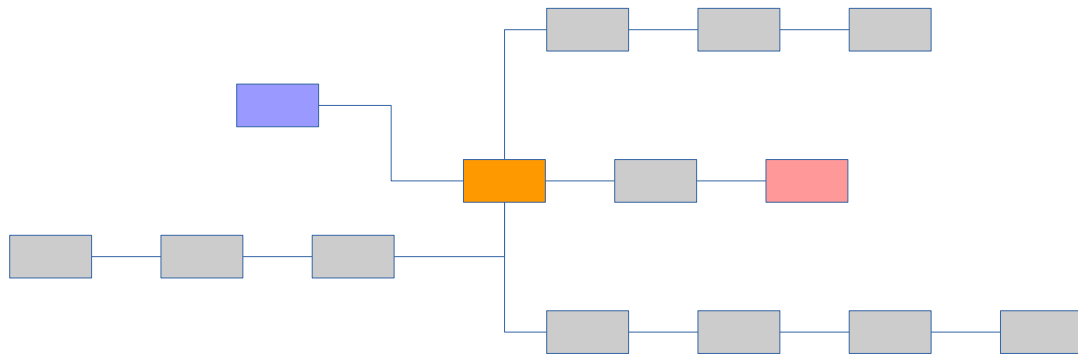


Figure 2: Hub tree

A structure with a starting event (in blue) introducing the hub (orange), after which 3 different branches can be traversed before going through the final one, with the ending (in red).

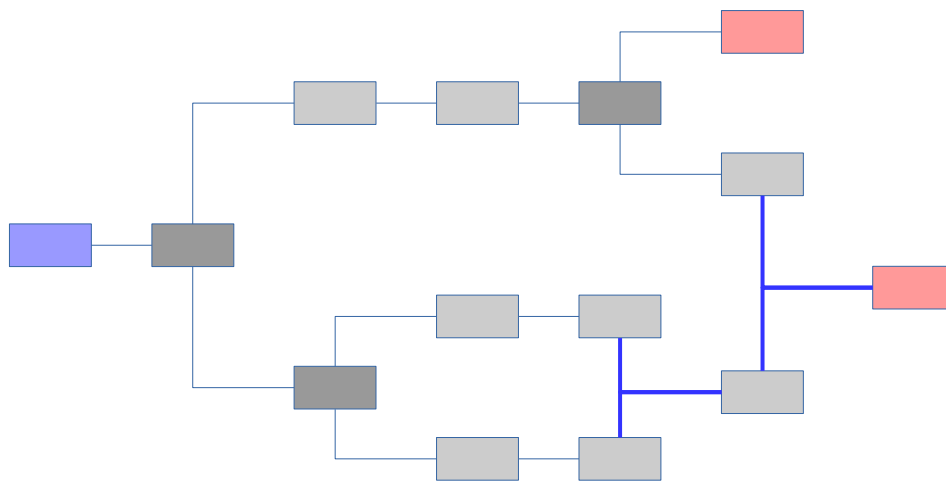


Figure 3: Tree with choke points

A structure with four branches, as in Figure 1, but reduced at the end with choke points (thick lines) so there is only 2 endings, in red, instead of 4.

These structures can be combined with others, as in the example of the inverse branching tree (Figure 4), a combination of parallel narration and choke points. Several starting points open on different branches following the narrative from different points of view. Then some branches gets combined to reduce their number. It can be used for example to follow the fate of several characters in parallel, and have them meet and continue together later in the story.

All these underlining structures can be hidden or not. When openly admitted, they can be used as a narrative device to confront the player with their playing style and previous choices, their position toward the events unfolding or toward the characters attitudes, Openly admitted choices are the main selling-point of many role-playing games, and it reflects in how they're presented to the player. In the *Mass Effect* series [6], the choices are presented next to each other, and some choices are colored blue or red, to indicate whether they are considered "morally good" or "morally bad" in a straightforwardly way (see Appendix 1). It can go even further by completely showing the structure to players, as

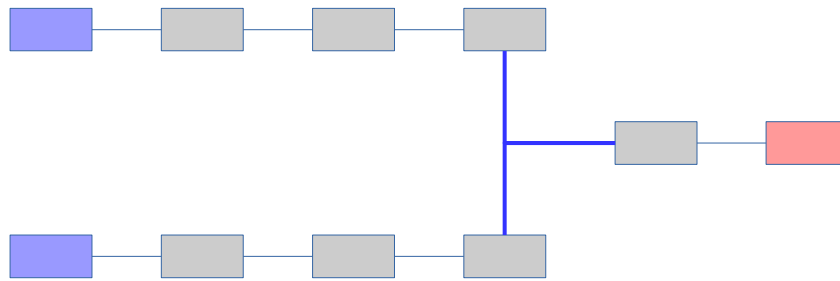


Figure 4: Inverse branching tree

A structure starting (in blue) with two parallel branches, later combined (thick lines) in one branch leading to a single ending (in red).

in *Detroit: Become Human* [7], in which each chapter ends with a flowchart showing all the branches the player went through and all the branches they didn't use, and might have gotten had they chose other actions (see *Appendix 2*). Alternatively, some games hide their systems, and resolve narrative choices with actions the player made elsewhere or with other, seemingly unrelated choices. For example in a game like *Fallout: New Vegas* [8], some quest choices are dependent on the level of certain stats your character has, and the player is notified of the link between a stat and an option only at the moment they have to make a choice.

Ultimately, these systems are here to give freedom to the player by letting them choose the narrative or by adapting it to their playing style. However the final experience is linear, *the player (consciously or unconsciously) creates one series of events from several possible alternatives, thus actualizing one of several latent stories* [9]. Non-linearity is there to validate the choices, because without it they wouldn't have any meaning and the player wouldn't have any real agency on the game world.

Open worlds

Currently a staple of the blockbuster video game industry, the open world is a popular version of non-linear narrative structures. Centering their design around the spatial context of video games, it gives players an open space to freely explore without, in its "purest" form, giving them indications. Introducing narrative elements in the world, so the player comes across them and learns about the history of the game universe by just moving their avatar in it, it is an approach which is, as Henry Jenkins puts it, *examining games less as stories than as spaces ripe with narrative possibility* [1].

As players wander a big space freely, without interruptions, and find bits of narrative scattered in this space by themselves, open worlds are theoretically the less linear experiences available currently in video games. In practice though, the narrative is usually broken into several, separate trees centering around a main one to keep an understandable sense of story, to avoid the liberty of movement making the plot happen in a random order. This main tree is presenting the story of the most important characters of the game, the one the designers want to tell, along with several secondary ones whose purpose can vary, for instance telling the story of a secondary character or filling a place with activities to prevent the game space feeling empty. This result in the narrative being often experienced linearly, as the units composing the trees can just be played one after the other. It is amplified by gameplay systems like markers showing where to go next to continue the main tree, or difficulty scales that make some areas of the world harder to

explore than others (e.g. by putting harder enemies in it), forcing players to explore the easier zones first, in an order decided beforehand - thus defeating the idea of an “open” world.

On the other hand, some systems in open world games exist solely to force the player to follow the narrative non-linearly, by making it impossible or extremely difficult. For instance by making the main storyline quests’ difficulty non-linear, to force players to complete secondary quests in-between main quests in order to make their avatar stronger, or by asking the player to collect resources in other activities to be able to progress an objective on the current plot branch. The storyline can also be divided into parallel narrative trees, representing different parts of the story happening “at the same time”, like in *Fallout: New Vegas* [8] in which different factions each have their own story arc, the player being able to advance in them independently up to a point where they have to choose only one. These narrative trees can be completely disconnected from each other, and only start when players reach a certain area.

A common narrative device in open world games is to reveal the end goal of the story directly at the beginning, to start an adventure following the hero’s journey template. All the content of the game is then seen as challenges or obstacles to overcome in order to finally be able to achieve this end goal. Some designers use this template and the open world system to get rid as much as possible of intermediate parts in the story, and make the world itself the challenge. A famous example would be *The Legend of Zelda: Breath of the Wild* [10], in which the player is given their final objective very early after the game starts, and no game system prevents them to go and accomplish their goal directly. In it, the open space around the only area the player has to complete is entirely optional, even though it constitutes the core of the game experience, the body of the main character’s journey.

Open world structures are an attempt at maximum narrative liberty on the part of the player using one of the specifics of video games, being able to move around in a virtual space, to create a stronger degree of agency.

After this (of course non-exhaustive) overview of narrative structures, it is possible to infer that narration in video games with open, non-linear stories is a construction between the author(s), who create the structure and events so the player is able to experience it, and the player(s), who by going through the game is actually creating the pace, timing and order of the events - the plot -, thus creating the final story. Unlike some other media, where the readers/spectators/users encounter finite experiences (i.e. experiences where the full sequence of events and images - where applicable - is set before the beginning of the experience), the work of video games authors ends before the narration is finished. The final touch is made by the player, as they assemble the elements of gameplay and narrative to form their own specific story. Thus, video game design and production tends, in some cases, toward including the player as an agent of the narrative from the start, by creating systems capable of reacting to players actions or to allow them to make choices on different levels of gameplay.

Narrative gameplay systems

Authorship in video games with non-linear narratives tends to be moved away from just creating, explaining and showing a sequence of events directly. It has to take into account the specific features of the medium, such as how a story's pace is modified by the gameplay activities the players have to go through. It means including the act of playing itself in the narration, using the unique features of the medium to tell a story, which itself leads to bridging game systems and narrative structures. It ranges from creating several sequences of gameplay, each showing a different part of the plot, to creating systems able to manage the players' progression in the game and to adapt the events to their progression. This led to the relatively recent explosion in the number of narrative designers in the video game industry, whose role is not only to create narrative content, as writers do, but also, and in some cases exclusively, to design ways to experience this content. These often comes down to finding how to tell stories with (or through) systems.

Proactive systems

The most evident kinds of systems are the explicit ones, those that often take the center stage in a game's marketing and around which the games are built. Marketing material often refers to these systems as *reactive* [11] [12], and explain the player may play however they like and the game environment will react to their actions. In truth these systems are more akin to something we would define as *proactive*. They are composed of multiple subsystems, some of them interacting with specific player actions and some interacting with other subsystems. The extent of interactions the system can interpret is limited, and therefore can be considered planned in advance. Thus, players actions are anticipated, not reacted to. The seemingly reactive nature of the game system is due to the number of interactions anticipated and the interaction between subsystems, which creates emergent paths and ways to play. The designers anticipated how each activity and system can interact with the player and other systems, but not necessarily how they could "chain-react" with each other.

The sandbox model, in which a finite game space is filled with activities, AI life and objects to interact with, is a great – and not hidden – example of this kind of system. Games such as *Minecraft* [13] or *Rust* [14] feature open spaces, systems like crafting to create objects, resource gathering and building, and make all this available without giving clear goals. The player is given things to do, but no explicit motivation. The narrative is chosen by the player when they decide what to build, where to gather resources, which part of the world to explore, etc. The narration is created in real time by the player when they use the systems in-game, there is no need for a pre-written story. This is exacerbated by the online nature of these games, which means players can create their narrative by interacting with each other.

Immersive sims are a specific genre of games with ties to sandboxes. They also feature high player agency and the simulation of a believable space, but are much more story-driven. In it, the player are told what to do but not how to do it, and will have to pick their own gameplay styles and routes toward the given objective [15]. In *Dishonored* [16], one of the most famous series of game in the new (around 2012) wave of immersive sims, the player is given detailed goals - "Kill person X or Y", "Retrieve object Z" -, some equipment, a basic set of actions (look, move, attack, shoot, jump), and is then left to their own

devices in a delimited area filled with different types of NPCs and short quests. It is then up to the person playing to figure out and set their own intermediate goal, like finding out how to get access to the assassination's target apartment, set up a deadly trap, distract guards and so on, to help them achieve the end goal. Along the way, several hidden end goals will be unlocked and may change the course of action they initially chose. While the idea is to offer players a play area as open as possible, the goals can only be achieved in a finite number of ways. The more a path involves narration and specific actions, the more limited it is. The system is not reacting and creating a new route to the objective based on players actions, it is making available an already existing path and triggering events when players do the necessary sequence of actions or the right choices.

In these examples, the narrative comes from the system, with which the player will determine the order of events and which events occur or not. It is not up to the game itself (to various degrees) to determine what *will* happen, but what *could* happen.

Reactive systems

On the other hand, there exist game systems that take an opposite approach. Less visible, because of their hidden nature, their goal is to create a narrative during play, or at least manipulate it. Those systems include the ability to create or modify other game systems; they follow sets of instructions but await players' input to know what to do. As such, they can be called *reactive*, contrasting with the systems presented earlier. Such systems have been implemented and theorized very early in the development of game design, as early as the 1980's [17]. One of the first examples of an adaptive system is what's called dynamic game difficulty balancing, systems aimed at making sure a game is never too easy or too hard by modifying enemies' strength, number, etc. Other systems followed, building upon it, around the same idea of managing the pace and difficulty of a game over time, in order to create an "optimal" game experience for the player. With time and newer technologies, game spaces increased in size and density, and new game systems were designed to answer to the problem of populating these spaces, to save production time and to create a better feeling of belonging while traversing them.

An idea that has been present in the game industry for a long time, owing to the origin of video game RPGs, is systems emulating the role of a tabletop role-playing game *game master*, whose role is to manage the universe and quests made available to players, react to their actions and orient them toward the narrative they created. Such systems have been implemented in various ways, but a relatively recent and famous one is *Left 4 Dead's* [18] AI Director. This game is a 4-player cooperation game where the team of players has to work together to cross a level, surviving waves of zombies along the way. The AI Director works by computing the stress level of individual players, their progress in the level and their field of view to adapt the number and strength of the enemies encountered to create a desired pace with unpredictable moments of heavy intensity following longer moments of calm [19]; it also reacts to the characters' positions relative to each other and their equipment, e.g. to take advantage of a weak player's isolation to put them in danger, forcing the rest of the team to come to the rescue. It benefits from the limitations of the game (linearity of the levels, little narrative content) and the strengths of its production (years of game AI research to rely on). This system has several advantages: it guarantees an experience corresponding to the intentions of the designers whatever the player team's composition and it creates emergent narrative through gameplay mechanics, efficiently instilling specific emotions in players without relying on external assets like text or voice

acting. It has, however, fairly high production requirements - *“they were built on years of Counter-Strike bot navigation work, hundreds of motion captured animations from professional stunt people, and years of additional work”* [20] - even though it is still cheaper than solutions bigger studios might have chosen - *“If we were a larger studio, perhaps another solution would be to build many maps, or many, many variants of populations within a map.”* [20].

Games that give player large open spaces to experience, especially open world role-playing games, suffer from an inherent problem: emptiness. Between the places hand-filled with content by level designers lie vast spaces the player has to go through. If these spaces are empty and don't lead to interactions often enough, it might hinder the game experience. This is one of the motivations behind secondary content, such as quests not linked to the story, mini games, craft systems, etc. These elements of gameplay are not rich in narrative content, when they have any, and systems have been developed to address this problem and create new narrative in gameplay areas otherwise deprived of it. A prime example of such systems is the Nemesis System developed for the *Middle Earth* [21] series. It was created to add narration in encounters with “trash mobs” (enemies found in the open space, not linked with any mission or quest), and at the same time to link these to the main gameplay content. It means that in the games, if the player avatar is defeated by a mob it makes this normally standard, unnamed enemy a Nemesis of the player, giving it a name, an improved graphic design and making it harder to beat afterward. Over time the player can come across and fight this enemy multiple times, and even eventually recruit them as a companion. It creates a stronger sense of belonging to the game world, as any basic enemy feels like a “real” entity able to influence and be influenced by the player. It is limited by the fact it relies on pre-written lines for dubbing and sometimes on specific versions of 3D models for the Nemesis, but its strength is that any basic enemy can become a Nemesis, as they're generated randomly by combining systemic character traits (like sets of attacks, vocabulary, where they can be found), weapons and 3D models [22].

Contrary to proactive systems, these systems act to create narrative and make it emerge from gameplay. The exact sequence of what could happen is not managed, to instill a sense of discovery in the player and hide the systems as much as possible during their playthrough, but what will happen - like where will the player encounter a horde of zombies in *Left 4 Dead* - is decided in real time depending on what players do.

Narration in role-playing games, or at least in games with direct control of an avatar, is build for/around the player, who is a subject, choosing their actions, not a passive hero, living through their fate, of the narrative. Many other genre outside of the ones including role-playing elements and direct control of an avatar include narrative systems, or gameplay systems that create narratives. Simulations, management and strategy games haven't been covered on purpose.

The integration of narrative and gameplay

Although these systems help with the integration of gameplay and narrative, and are a step forward in the realisation of the full potential of video games as a medium, they are just that, a step. In the subset of games of interest to this thesis, there are several problems with the narrative systems presented, both from a designer and player point of view.

Room for improvement

The problems encountered when integrating systems into narratives, or narrative into systems, are twofold: they can exist from a player's perspective, when they are experiencing the final product, and they can exist from a creator's perspective, during the design and production of the game. These problems can feed each other, as trying to avoid a player problem can lead to production ones, or the other way around.

During most role-playing games production, the creation of the global narrative outline precedes the physical and gameplay design. Moreover, it tends to not change very much during the game's development, because the nature of this genre (putting the player in the role of a character in a story) means they're created as a way to tell a story, or at least to recreate the experience of being a hero in a story, from the start. The systems developed later are then either not directly related to the narrative, or are created to serve it. In organizational terms, it translates as narrative and gameplay being often produced in parallel. With different teams working on each of these parts, it comes down to the management of the respective teams to ensure they communicate well. It can lead to issues with both how each team understands the others' work, and miscommunication introducing delays in production as people scramble to solve the emerging problems (bugs, inconsistencies, etc.). Different studios have different solutions, neither being perfect, to solve these complications. While bigger ones will try to have an efficient production team dedicated to managing communication and schedules between the other departments and a QA team working to find bugs as early as possible, smaller studios may choose to alternate between designing narrative and gameplay features, such as starting by putting in place some narrative, then adapting the mechanics to it, going back to work on the narrative and changing it to fit their progress on gameplay, and so on. A common result of bad coordination arises when the game starts being playtested: if the feedback suggests a boring narrative arc it will hardly be corrected at this point in development, and inconsistencies will be hard to correct (which will potentially lead to some content being simply deleted from the game).

From the player side, games sometimes feel imbalanced, like if gameplay was subordinated to narration (or the other way around). It is sometimes real and intended as designers wanted to focus, were more interested in, or were better at creating one of the aspects. The developers are also influenced by the players (i.e. the persons buying their games), who sometimes ask them to focus their attention on one side of game development. This is a recurring debate that touches on what video games are at their core, as seen in recent years with the debate around "walking simulators" following the release of *Dear Esther* [23], a game in which the only interactions available are moving and looking, and its critical acclaim, with one side arguing that they didn't have enough game mechanics to be considered games, while the other was asking for an opening of

the definition of video games and calling for it to be considered an art form separate from other media. While interesting and challenging, it is at least partially sterile, as narrative and games cannot truly be considered separate. Any actions made in a game will be mentally linked to others by the player to form at least a proto-narrative.

There is multiple other issues met by players. Narrative systems are difficult to hide, and their presence can be made obvious by reaction delays. For instance, non-playable characters can be blocked in a state where they're waiting for player input to continue their routine or story briefs can talk about "an urgent task to accomplish" but have the player free to take their time and do whatever they wish to do before. Narrative structures suffer from the same problem. It can be felt that secondary missions have been added as filling in the environment, which makes them appear unnecessary, without consequences or impact. Inconsistencies left out in the final product will get the player out of their immersion, reminding them they're playing a game, not "living" an adventure. Systems can also be detrimental to narrative freedom, as in the example of *Left 4 Dead's* AI Director, which exists and works very well, but to the expense of spatial freedom, the levels having been made smaller to allow the system to be efficient.

The problems listed here are of course not common to every video game, but they tend to represent a standard for role-playing games with a strong story component, one that is moving really slowly. I speculate that many of these problems - for quest-based games - could be sorted out, or at least be rendered less significant, by changing the way the quests are produced to better integrate narrative and gameplay freedom

A quest template

Quests originates from old texts about heroes going on a journey to achieve great feats, one the most famous being the quest for the Holy Grail in the Arthurian legend. In these, the quest itself is the journey, the act of seeking to obtain the goal. This concept has been reused in tabletop role-playing games to give a objective to players, and to make the adventures they go on more interesting. In modern computer role-playing games, it is can be simply defined as *an activity in which players must overcome challenges in order to reach a goal* [24]. They are an important concept in video game design, widespread, well-known and well-understood, which makes them a strong basis on which to build a game structure. Their versatility and their isolated nature are very useful. Quests act as *a conceptual bridge that can help to join together many pairs that are often considered separately* [24], in our case gameplay and narrative, in a single, encapsulated unit.

I will propose here a template to analyze and build quests. It consists of a database of quest, linked to other databases managed by the different development teams, from which the game system will pick up the quests that can be made available to the player in real time. First, we need to decompose and to lay out the blueprints of the template (*Figure 5*).

Variables are values, stored in a database with descriptions attached, that represent the current world state. They can be, for example: money, a number that represents the money the player character has; a name, a string of characters representing the name of a specific character; a skill ID, to identify if a player has acquired this skill, etc. These variables can be permanent (external) or tied to a specific resource (internal)

Actions are possible interactions available to the player like walking, talking, pushing a button, etc. They can act directly on some resources outside of quests. Those are created by programmers, animators and game designers and can be used by the quest designers.

Resources are the objects available in the game. They can be fixed objects like the 3D model of building, movable ones like an object the player's avatar can carry, characters existing in the story and game world, from the player character to the enemies they can encounter, narrative entities like dialogues, or logic objects like an invisible trigger to activate an event when the player passes through it. It could also be anything else that can be used by quest designers. Quests themselves are included in the resources.

Quests are the narrative/gameplay unit. They contain :

- *Variables IN*, the Variables states required for the quest to be available. If the variables in the database match the states stored in this set, the quest becomes available;
- *Variables OUT*, the Variables states required for the quest to be considered finished;
- *Internal variables*, a set of Variables only used in this quests, context. They are tied to this specific quest;
- *Changes*, a list of changes the finished state of the quest will bring to the Variables and Resources;
- the *Quest sequence*, the sequences of actions the player has to do, the resources which need to be called during the quest etc.

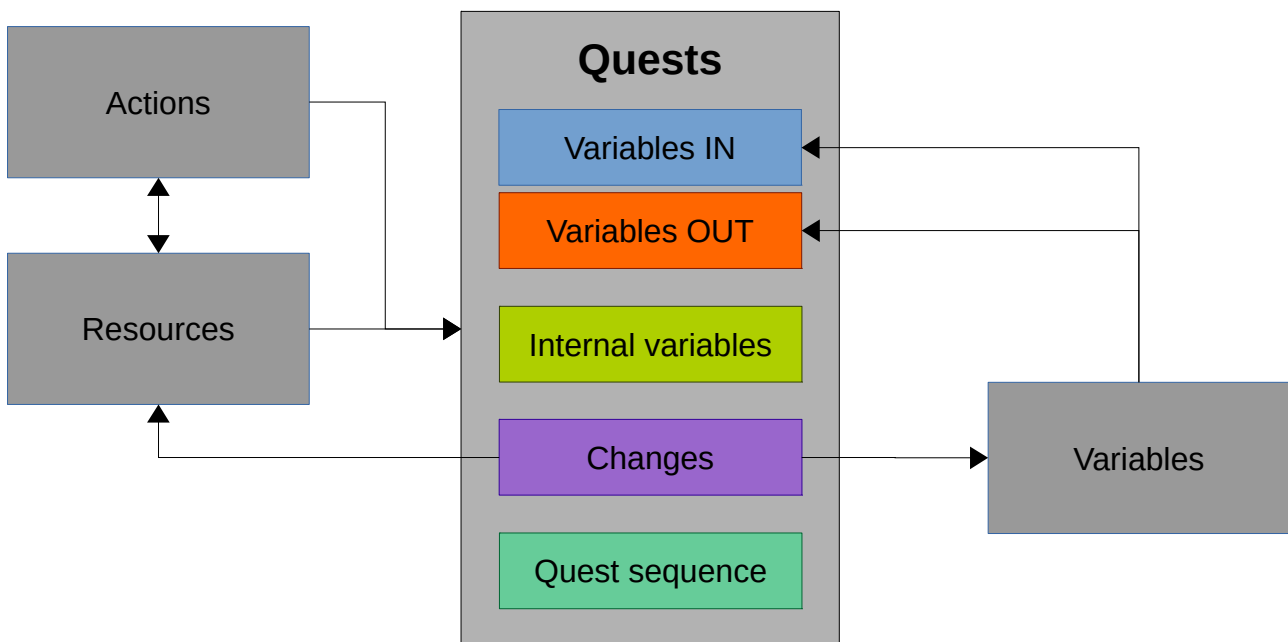


Figure 5: Organisation of a quest in the template

This structure resembles what actually ends up being implemented in other quest systems. The difference here is in how quest design is approached. Here, the idea is to separate the design of the different elements. A quest designer would lay out the quest sequence (for a lone quest or a series, to create a branch or tree) they want to create, then consult the database of variables, resources and actions, so as to know what to call for the quest and to create the variables it would require. They would then create and store the final structure, without necessarily knowing when their quest could be played in the final game except related to the quests they used as resources in their own. In some cases, quest designers can ask for the creation, under supervision from the game design, art and narrative teams, of actions or resources specifically for a quest.

A template like this one allows for the streamlined creation of quests. They can be created, modified, added to existing branches, at any moment by the team, and the underlying system manages which are available or not in real time. If a variable, resource or action ends up being cut, from the game during production, the quests related will automatically be left out. This system detects which resource is never used, technical discrepancies (a quest requiring an object that doesn't exist) and narrative inconsistencies (like a character being present in two quests in two different places at the same time). The variables created by quest designers can be used by other designers, edited by other game systems, etc. External resources can help to sort the database and track its composition to ensure sufficient diversity, like Smith's *Quest Pattern Library* [25].

The downsides of this template is that it needs a strong database with most likely an advanced visual interface to be accessible by all the different production teams and more tools programming manpower, who will need to create tools to follow production to avoid problems such as unused content being included in the game, it being filled with inconsistencies, and so on. Depending on the size of the teams, it is possible to imagine that too much content could be created, with an imbalance between the number of quests and the number of resources leading to a profusion of quests using the same game assets over and over. It particularly requires more resources allotted to the production teams because it has to follow more content created by more scattered people, and avoiding duplicates and unused material is critical to the database health (and therefore to the production).

Making the creation of quests more modular in the production of a role-playing game is a way to instill more "life" in the game world, to create a more vivid base of quests to support the main story and to take more advantage of the open world system, while giving the creative teams more creative leverage.

Conclusion

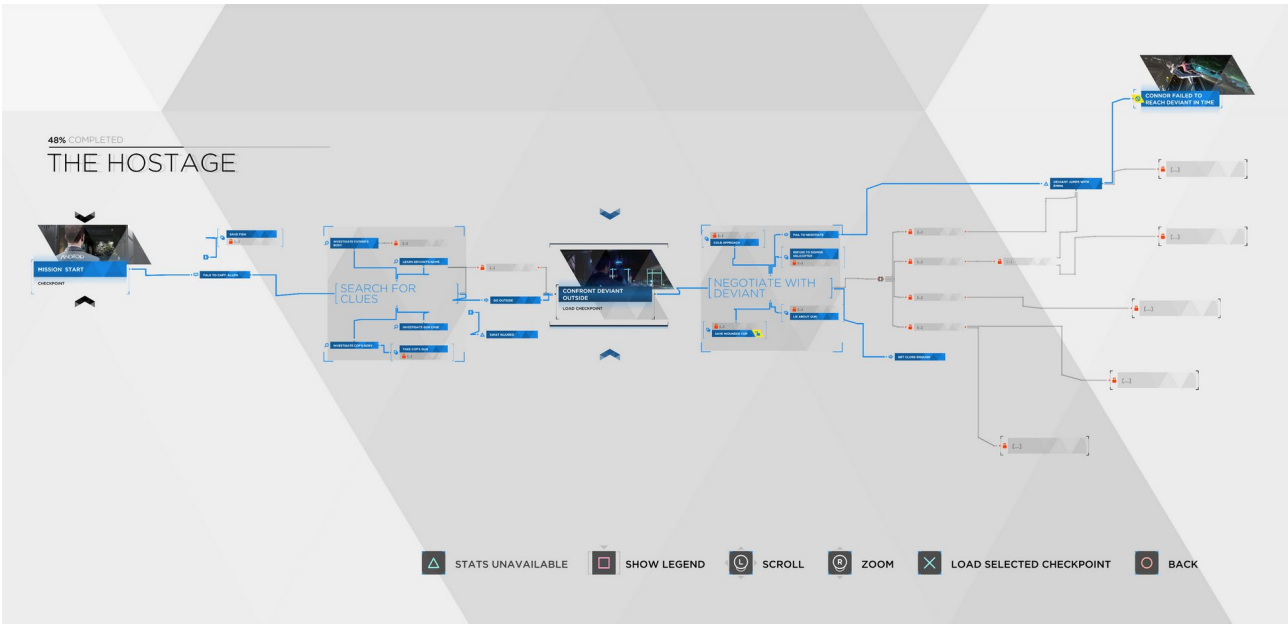
Narrative systems are important to video games as they are one of their unique features, with the ability to offer people experiencing games more agency than in any other medium. While they construct narratives through gameplay mechanics, in some cases they are not enough to avoid game worlds feeling empty, or to give the player enough freedom.

The template proposed earlier will have to be worked on much more, and will need to be tested in an actual video game prototype, to test the process of creating and integrating quests, and to ensure it would not complicate production with extra databases to the point where it becomes unmanageable. In the future, it could also be combined with other systems such as quest generators, like the ones developed by Smith et al. [26], or Kybartas and Verbrugge [27], among many other research attempts on the subject.

Appendix



Appendix 1: Mass Effect 3 dialogue system



Appendix 2: Detroit: Become Human end chapter flowchart

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