Narrative

Introduction

In the book *Elements of Game Design*, we discuss how games are designed and made, and we focus especially on gameplay and the moment-to-moment activities in the game – how to analyze them, how to design them, and how to build them.

In this extra chapter, however, we will look at an aspect of game development which is close to gameplay design, but requires a separate in-depth analysis – the task of *narrative design*.

A game's narrative needs to interact very closely with game design, because they both try to guide the player's behavior and experience in their own ways, and those attempts need to be coordinated.

Overview

Games often take place in some specific setting: maybe a historical place and time, or a fictional far-away land. Sometimes they also try to tell a specific story in that setting, and have the player participate in an unfolding narrative. In these games, gameplay and storytelling are tightly intertwined – but this can cause friction between authorial control and player agency.

As designers of narratives, we often want to control how the story will unfold, and in doing so we may want to limit the player's abilities to make sure everything happens as we intend. On the other hand, games are an interactive medium, and we need to support the player's ability to act in the game and be able to affect the game world, even though there is a risk that the player's actions will break the story. These two desires are at odds.

In this chapter, we discuss the elements of game design that support designers in this task. We look at structures present in narrative in games, how they work to enable different types of narratives, and how they interact with gameplay design. The chapter structure is as follows:

- We start the chapter with some basic taxonomies. First, we look at different levels of *game fiction,* from general *fantasy* of the setting, to more detailed and authored *story*. We then look at the tension between *authored storytelling* and *agency,* at what agency means in the context of games, why it's important, and why it creates problems for storytelling.

- In the middle of the chapter we analyze common narrative design patterns. We look at a number of different narrative structures that game designers use, starting from the most static-but-predictable forms, through ones that increase player agency at the cost of complicating authorial control. Specifically, we look at:
  - Linear structures
  - Static non-linear structures
  - Dynamic structures
  - Modular structures

- We also look at the extreme end of game design where storytelling is really hard to control, such as in simulation games. We look at what it means for a game story to be *emergent* rather than *authored*.

- Finally, we look at the theoretical discipline of *game studies,* and see how this tension between narrative design and game design is also reflected on the media theory side in the form of *narratological* and *ludological* approaches.

Also, one note about limitations of this chapter. In this discussion we examine narrative from the point of how it interacts with game design and gameplay. However, we do not touch on the *writing and storytelling* aspects of narrative – tasks such as world building, writing interesting characters and plotlines, setting up scenes, motivating and explaining character actions, and so on. However, the chapter ends with a Further Reading section with additional resources for readers interested in exploring those topics further.

Game Fiction

We can start with a very broad categorization of game narrative and storytelling approaches. Games vary greatly in what kind of a *game fiction* they present. In some games there is no fiction at all – abstract puzzle games or sports (think *Tetris*, *chess,* or *baseball*) don't really have a fictional element. In other games, there is a fiction but it's presented more as background material, and we can say the game presents some *player fantasy*. And in the most narrative-driven games, this fiction is very specific and highly authored, and we can say the game tries to tell a specific *story* which is crafted by the designer.

This kind of a distinction will help us analyze how different types and genres of games approach storytelling. Table 1 illustrates the types with some examples.

General Player Fantasy

First let's look at games with only a general player fantasy. When we start up a game from the *Civilization* series, we're transported into the role of a famous historical leader. The game features many famous figures, from Hammurabi and Julius Caesar, to George Washington and beyond, and we can take on the role of any of these renowned characters.

But the role is applied very loosely. We might gain access to some mechanics that are inspired by that specific historical figure, perhaps a unique American technology or Roman military units, our units and cities will be historically appropriate, and our empire's visual design will also

Type of game fiction	Game examples
No fiction	Puzzle games (*Tetris*), card games (*poker*)
General fantasy	Historical games (*Civilization*), simulations (*The Sims*)
Specific story	Role-playing games (*The Witcher*)

Table 1. Game fiction types and examples.

match. But beyond the theming, the game doesn't attempt to tell a specific story of that leader or country. Because each game starts from a small settlement on a randomized map, it's effectively a true clean slate, so even if we played as Julius Caesar, there is nothing historically Caesarian about what we end up doing – instead, we will create our own empire, our own vision of Rome.

This is an example of a player narrative having basically no authored storytelling components, and instead being purely a *player fantasy*. The game presents the player with the role of Julius Caesar or another historical figure, and supports it via writing, visual design, and other types of content. But what the player does in this role is completely up to them – the story of this particular Julius Caesar is up to the player to create.

In the end, a player fantasy doesn't exclude some level of authorship, but the crucial difference is that it doesn't try to tell a specific story. Rather, the authorship is in creating a setting, where the player can act and experiment in world.

Game Story

Now let's look at a game that does tell a specific story. Computer role-playing games are a good typical example, such as *The Witcher* or *Baldur's Gate* series.

In the world of *The Witcher 3*, the player takes on a very specific character – such as Geralt of Rivia, the titular Witcher – and they play the leading part in an intentionally authored narrative. As Geralt, the player will experience the story of the game in a prescribed way: travel and visit specific places from the books, talk with specific people, and overcome specific challenges.

In this case we can say that the game tells a *story*. It's not merely presenting a player fantasy of being Geralt – instead, the game creates the experience of being that singular character, going through specific events. There is a specific narrative in which the player will engage.

However, the *Witcher* game is still a game, so the player needs to have *some* freedom to do what they want – go places or refuse to go, fight or refuse to fight, pursue missions or abandon them. Even through the story is set, they need to have that kind of freedom.

But how much freedom can we give them?

Story Imposes Limitations

The problem is that, in trying to tell a specific story, the game necessarily has to constrain the player's choices. Sometimes the constraint is an obligation: the player is *required* do something to advance the story, such as visiting some location or speaking to some character. Sometimes it might be a restriction: the player must be *prevented* from doing something that could break the story, such as visiting locations out of order, or killing a key character.

If the game tries to tell a specific authored story, at a high level it must ensure that the storyline is experienced as intended. And at a more granular level, it means that a large number of very specific story beats must be guaranteed. If a guard must to be bribed to move the story forward, he *must* be bribed and not ignored, if a griffin must be killed to advance to the next story beat, it *must* be killed and not spared, if a letter must be delivered to advance the situation, it *must* be delivered and not lost, and so on.

For this reason, an authored story imposes limitations on the player's freedom, beyond what is already imposed by the game's mechanics and systems. But are those limitations serious or insignificant? Are they helpful, neutral, or harmful to the player's enjoyment of the game?

One way to answer this question is to look at what those limitations restrict, and that is the notion of player agency.

Agency

A fundamental concept in game design is the notion of *player agency*. Games are *structured activities* at their core, and by *agency* we mean that players can act *intentionally* within those structures, and formulate goals and act purposefully towards those goals (Church 1999, Nguyen 2020). Let's look into what that entails.

Games, sports, competitions, and the like, are structured activities, which players undertake for the enjoyment of the structure. Many other structured activities exist, of course – ceremonies, social functions, or even mundane everyday behaviors. But games and sports make the structured activity *enjoyable*. It's fun to play *chess* or *poker* or *soccer* specifically because of what they ask us to do, in the context of interesting situations, and a constrained setting where trying things out and learning from failure are expected and acceptable.

A big part of this enjoyment comes from having the freedom to act intentionally within the game's prescribed boundaries: players can form goals, then choose how to pursue those goals, evaluate what they've done and adjust their actions – and in the process, master the game. Players are not spectators, or actors performing a play – they are *doing things in the game,* participating in the feedback loop with game mechanics as well as other players.

Players are also typically acting very purposefully. Many games come with predefined large-scale goals or challenges that serve as scaffolding for intentionality (for example: survive the level, get the highest score). And on smaller scales, games also present a multitude of other, smaller possible goals, in a variety of loops with different frequencies. If I'm playing a racing game like *Need for Speed,* on the macro level I try to win a race, but on the micro level I keep worrying about passing the car in front of me, blocking off the car immediately behind me, keeping fuel level and engine temperature in check, leaning into the road curve just right so that I don't spin out of control, and many other countless little goals I have to track, all at the same time.

In doing this, I continually evaluate and adjust my actions. As I zip down the race track, I observe my own performance, and make tweaks. Should I be cornering faster or slower, should I be worrying more or less about the driver right behind me? These are evaluations I make all the time, little experiments in which I try different actions, and see what they do. And in the process, I learn how to play the game, how to get better at reaching my goals.

Of course, those goals don't have to be explicit or prescribed. In games like *Stardew Valley* or *The Sims*, the player is given great freedom to create their own goals, and act in the world as they see fit. The goals can be loosely defined as just "I want to go there and see what that's like" or "I want to pick this up and see what happens", then they are simply player's own goals.

But what's important is that, in all these games, players can have goals and pursue them, and master the gameplay over time. The aesthetic feeling of playing a game is the feeling of exercising this agency.

Tradeoff Between Agency and Authorial Control

Stories in games present a common dilemma for authors. In order for a story to play out in a specific way as devised by the author, it must necessarily constrain the player's freedom to do whatever they want. However, this also reduces the player's agency, or the ability to interact with the game in the way they want to interact and affect its outcomes.

Player agency is a crucial aspect of games. Players enjoy being able to act intentionally in the game, and to have the game react to their actions, changing the state of the game. Through this, players learn about how the game world works, so that they can improve their chances at affecting the future, or perhaps just to experiment and satisfy their curiosity.

However, agency interacts negatively with storytelling and authorial control, and story-oriented games can differ greatly in how much they choose to support it. We can imagine this as a spectrum, ranging from full to minimal support.

At one far end we have games which focus on telling a specific story and are willing to tightly control player agency to make it happen – for example, interactive fiction games, visual novels, or adventure games. They excel at telling a specific story but at the cost of drastically curtailing agency. The story is already written, character actions are completely prescribed, and the player's agency is reduced to occasionally coming across choice points in the plot and choosing what happens next.

At the other far end we have sandbox games in which the player has full freedom to experiment and affect the world, and the game responds in turn. This freedom is highly engaging and interesting to the player, but it comes at a price. When we let the player do just about anything, storytelling will suffer. The writer will have a hard time telling the story they want to tell in a world without restrictions where the player can very easily ignore the story and do their own thing or act in ways that contradict the writer's intentions.

Between these two extremes lies a vast middle ground of various tradeoffs between agency and storytelling. Most games attempt to find a suitable tradeoff, as seen in table 2, using some of the tools we will be discussing momentarily.

Effects of Loss of Agency

What does it mean for the player to not have agency?

Let's consider an extreme example: the board game *Snakes and Ladders*. Players alternate rolling their dice and moving up the track, and if they land on special squares, they get teleported forwards or backwards, and... well that's it, really. In this kind of a game, players have

Examples of genres and games	Authorial control	Player agency
Books and movies	Full	N/A
Interactive Story (*Depression Quest*)	Most	Least
Visual Novel (*Ace Attorney*)		
Story with minigames (*Dys4ia*)		
Adventure game (*Myst*)	Much	Some
Action-adventure (*Tomb Raider*)		
Open-world RPG (*The Witcher*)	Varies	Varies
Campaign-based strategy game (*StarCraft*)		
Management game (*Rollercoaster Tycoon*)	Least	Most
Sandbox simulation (*The Sims*)		
Esports (*Overwatch*)		

Table 2. Variations in authorial control and player agency across select genres.

essentially zero agency. The die roll and the snakes and ladders move them along, and there is nothing they can do intentionally to affect the outcome of the game. Their only input into the game system is rolling dice.

What is the aesthetic effect of playing this? The player experience comes purely from the surprise of randomness – sometimes they get to jump far ahead, sometimes they fall behind, and it's unclear who will "win" until the very last moment. But they can't affect the game in any *intentional* way. It's the aesthetics of watching a race, with the bare minimum of involvement.

But playing a game like *chess* or *poker* feels very different – and *is* very different. These game worlds have a wide action space, there are many actions players can do to affect the game state and their standing in it, and winning requires a great deal of focus and creativity. The feeling of playing these games is that of intentional, self-directed activity.

We can also consider the case of a game that switches between levels of agency – for example, an action game punctuated by extended non-interactive cutscenes. The feeling of the two is contrastingly different, and because cutscenes remove player's agency completely, it may feel like cutscenes are interrupting gameplay and getting in the player's way, even though they're just an agency-modulating part of the game.

In summary: *reducing or removing agency has significant aesthetic effects.* Decreasing agency makes a game feel less like a *game.* Players come into games expecting agency, expecting to be able to pursue intentional, self-directed activity, and removing that ability changes the player experience – and how the change *feels* to the player will depend drastically on what the game is asking the player to do, and what the player is expecting from the game.

Loss of Agency: A Problem Unique to Games?

The topic of agency is not central to most other storytelling media, since people typically interact with them as *audiences* experiencing the story, rather than as participants that can exercise intentionality.

Linear media are a particularly common case: books, movies, plays. We can say that they don't support agency, because a viewer can't affect a movie, and a reader can't affect their book. But we should clarify that what we mean is not the interaction with the piece as an artifact, but rather with the narrative that the piece is conveying.

A book as an artifact offers *some* interactivity: while I read *The Lord of the Rings,* I can skip pages or jump around chapters, or maybe decide to just read the ending and nothing else; similarly with a movie, I can skip and play and replay fragments in my chosen order, and maybe never even reach the ending. And my experience of the piece *will be different* if I do this than if I had let it unfold linearly. I have agency in how I follow (or not follow) the author's prescribed narrative, and how I interpret it.

But one thing I *cannot* do is *change* the narrative. No matter how I skip around, in Tolkien's story Frodo will always reach Mount Doom and destroy the One Ring. There is nothing I can do to make the story happen differently. And if I try to read it out of order, I may come away with a different understanding and a different experience – but it does not change the events in the narrative, any more than hearing a friend's jumbled recollection of an event would change what had actually happened.

This is not necessarily a problem. A reader wouldn't necessarily expect to have any agency while reading a book, so it's not a problem for the medium because it's not central to what the medium is about. But it is a problem if either the author or the audience come in expecting agency.

Which is not to say that linear media don't try to explore non-linearity, but in those media, it happens mostly on the margins. Interactive movies and plays, for example, can be authored as several different branching plotlines, and audience participation can choose which get shown or skipped, and in doing so they will tell very different narratives. Similarly, we have hypertext novels that don't follow a specific narrative, but instead are composed of story fragments that can be seen or read in different order, and as the reader's mind fills in the gaps, they will infer very different narratives depending on the path they took.

As we will see momentarily, this is the area where non-linear storytelling starts to blend into games.

Authoring for Agency

From the perspective of the author, the main difficulty in writing a non-linear narrative compared to a linear one, is the sheer explosion of possible *trajectories* the narrative can take.

In the case of a book, we can say that the author is describing a single trajectory through the possible event space. Tolkien writing about Middle Earth created a single narrative, and what happened in the books happened in only one way. This also gives those narratives a feeling of inevitability as they unfold, which is delightful but hard to replicate in games.

Adding agency multiplies those trajectories. Let's say we allowed the reader to pick whether or not Frodo accepts the One Ring. With a single binary choice this narrative bifurcates, and as a writer, we now have to write two stories – one with the mission accepted, and one without. Does this mean we have to write two books?

And then suppose we give the reader more choices – whether to stay in Rivendell or keep going, whether to kill Gollum or spare him, and so on. If we kept going with this, soon enough we're creating a legion of independent narratives. From a linear story writer's point of view, this is nonsensical! But from a game point of view, this is exactly the direction we need to be pursuing. Our first binary choice point was the smallest quantum of agency, and each of these additional choice points increases player agency by a tiny bit more.

Unfortunately for us as writers, the ideal of full agency would be that the player can do *anything at any time* within the boundaries of the rules of the game. This is clearly unachievable, since this would mean authoring an infinite number of narratives. So, we're left with a few choices.

If we want to convey very specific narratives, we could try to find ways to limit or compress player agency in such a way that the player will not mind. For one example, we could make the whole game be about having few but highly meaningful choices. Or maybe we could offer ways in which players *feel like* they have choices, but those collapse to a few specific pre-authored trajectories. Alternatively, in a bit of a sleight-of-hand, we could give the player a great deal of agency *somewhere else,* in parts of the game not related to narrative (for example, combat encounters, or player character development), but keep the narrative very constrained.

Alternatively, we could switch away from making a specific narrative, to making a system that in which multiple narratives can be experienced. The intent is that the system, running alongside the player in the game, would be able to monitor player's actions and put together narrative elements to match. Practically speaking, however, the task is now very different – we're no longer crafting a narrative, we're crafting a narrative-enabling system.

All of these approaches show up in game design in some form or another, as they all represent different points along the same fundamental tradeoff, between supporting a specific human-authored narrative on one hand, and supporting player's agency and freedom to act intentionally on the other.

Narrative Structures

We can divide our discussion of narrative structures into several stages of complexity and interactivity, and examine how adding complexity changes both the designer's authoring experience, and the player's aesthetic experience of participating in this kind of a narrative. The stages are:

1. **Linear narrative.** Not all narrative needs to be interactive. We can start our discussion from looking at narrative that doesn't react to player actions, and how that affects user experience.
2. **Fixed interactive structure.** For narratives that are interactive, we will start with games whose narrative structure is fixed but the player can choose which trajectory to take. There are number of patterns we can use as designers to enhance the feeling of agency in an otherwise static narrative structure.

3. **Dynamic structure.** We will then consider an immediate enhancement: making the structure change based on how the game state is evolving, for example branching stories whose branches appear/disappear based on player's previous actions, and how that changes the experience.
4. **Modular structure.** Even greater complexity and expressivity comes from making the structure modular: built from separate independent narrative components which themselves can be arranged and experienced in different order, for example, quests and storylets.
5. **Emergent structure.** Finally, we will consider options with highest complexity and least authorial control, and having a narrative emerge out of game system interactions, for example in simulation games, life sims, and base builders.

We will see that as we increase narrative complexity, authorial *predictability* decreases, but *expressivity* increases. In the following sections we will describe them in detail.

Linear Narrative

Perhaps the most classic integration of narrative into games is in the form of linear narratives. These narratives are *non-interactive*, in the sense that the player's trajectory through the narrative is fixed, it doesn't change from one play-through to the next. In other words, the player experiences a fixed story that reveals itself over time, and although it is punctuated with challenges or problems to solve to propel the story forward, as shown in figure 1, there are no multiple storylines, multiple endings, or side quests.

Puzzle-adventure games, like the classic *Myst* or a modern one like *dys4ia*, are good examples. The player is faced with a linear, pre-written story, featuring challenges for the player to overcome (puzzles to solve, levels to beat), but the choice points are simple: succeed or fail. The story is set, and the player must succeed at the current challenge to advance the narrative to the next story point.

We see this pattern in many genres, such as action-oriented games with a linear progression of levels in which the story is more of a background element that augments gameplay. For example, action games as diverse as *God of War* (the 2005 version) and *Katamari Damacy* tell a great linear background story during interludes between challenging and interesting action levels. Similarly, strategy games like *StarCraft* or *Command and Conquer* often include a "campaign mode" in which various levels are arranged to follow an unfolding pre-authored story of a military campaign, and the player must prevail at each step to advance the campaign further.

This structure, although not interactive, is still a powerful storytelling mechanism. Even though the story is set, the player still has full agency in other parts of the game, which can make the
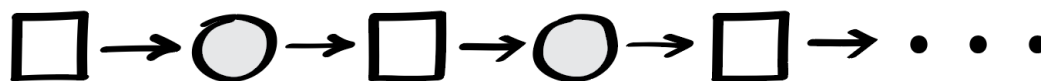

Figure 1. Linear structure, interleaving gameplay elements and story elements

linear narrative a pleasant respite from the burden of decision-making. The designer's challenge is different here: the job is to figure out how to merge gameplay elements and story together, so that dynamic gameplay and pre-written story can inform and illuminate each other.

Fixed Structure

That said, we will now turn our attention to narratives that do react to the player. First, let us consider the case of *fixed-structure narrative* games, where the player can start to make choices that influence the unfolding story.

These are games where the story structure allows for player choice, but the structure doesn't change: if we represent it as a graph, with choice points as nodes and actions as edges, the layout of this graph remains the same during across play-throughs. But what *does* change is the player's trajectory through the graph. On different play-throughs players might be able to take very different paths, and as a result experience very different narratives.

Branching Choices

Perhaps the best-known fixed narrative pattern is a branching choice structure: the story unfolds in one specific way until hitting a choice point, and then the player's decision can transform the story in one of a few ways. For example, Frodo in *Lord of the Rings* might get decision points such as: at the Inn of the Dancing Pony decide whether to ride to Rivendell or go back to the Shire. Depending on how the player decides, the story would then follow a selected trajectory (see figure 2).

One of the earliest examples of these games are the *Choose Your Own Adventure* series of books, which were physical books with numbered paragraphs and each paragraph would tell a bit of the story and then end with either a jump directive (e.g., "turn to page 34") or with a choice point (e.g., "if you choose to attack the monster, turn to page 56, otherwise turn to page
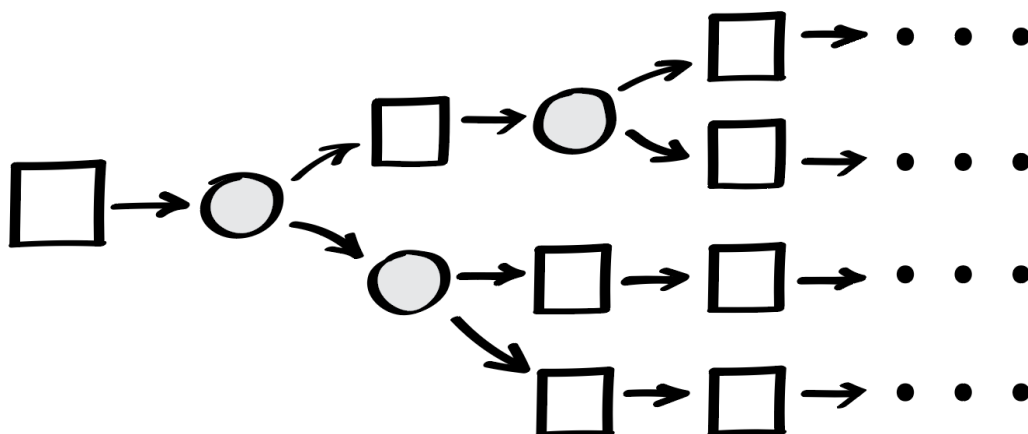

Figure 2. Branching structure, interleaving story/gameplay elements and choice points.

78"). As the player reads a *CYOA* book and makes their choices, the sequencing of paragraphs can produce very different stories on each read-through.

Unfortunately, a tree-like branching structure creates an authoring problem: the more choice points we give the player, the more content needs to be authored to make it work across numerous play-throughs so that every single trajectory is equally fulfilling. Written naively, this kind of a branching choice game would suffer from combinatorial explosion of content (Crawford 2005), and explicitly implementing all possible stories that arise from all possible combinations of choices would be impractical for all but the smallest of choice trees. In practice, only small narratives implement this kind of a topology, since it calls for a large amount of content (written story fragments, perhaps voiceovers, animated cut scenes, and so on).

Branch and Merge

We can simplify the authoring problem of branching stories by having the branching choices converge periodically, essentially converting a large and bushy tree into a sequence of small and more manageable subtrees. We can call this a "branch and merge" strategy shown in figure 3.

This approach greatly reduces the number of different paths that need to be authored. However, we have to be careful with making those choices feel obviously illusory. For example, if the player's choices in the middle of the subtree all lead to the same merge node in the end, are they meaningful "choices"? Will the player be disappointed if they find they had no agency all along?

In practice, this can be resolved by making each branching sub-structure sufficiently broad, to provide a lot of interesting choices, and camouflaging merge nodes as something that could suit any narrative. This works, because when the player is experiencing the story for the first time, they have no way to know the topology and no reason to think that some of their choices have less impact on the story than others. It is only on subsequent replays that players can start developing a sense for the topology for which of their actions produce what kinds of consequences.

We can also see this approach used often on a smaller scale, on the level of transitions between just two nodes. Games commonly utilize *false choices* where seemingly different actions in a
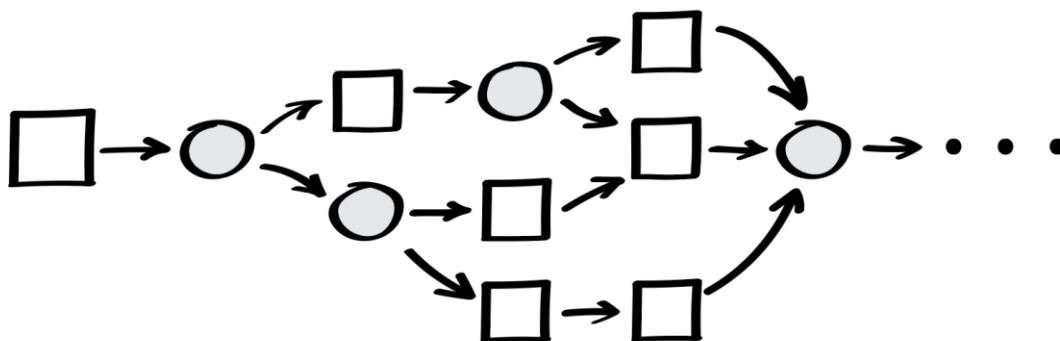

Figure 3. Branch-and-merge structure, where narrative merge points reduce authoring workload by reducing possible trajectories.

choice point both lead to the same next node, although the player does not know that (for example, a choice point with different utterances and replies, but which all lead to the same next node), and *flavor choices* which are actions that look or feel different but have the same effect (like picking a particular turn of phrase in a dialog), intended to enhance the player's fantasy and perception of the game world. These kinds of choice points can have a strong effect on the player the first time they are encountered without incurring much work, but at the cost of negatively impacting subsequent play-throughs if the player learns those choices were not impactful.

Hub and Spokes

Instead of pushing the player through a specific sequence of choice points, we might be able to give them flexibility in sequencing: present the player with a collection of narrative elements which all need to be experienced, but the player can decide in what order and at what time. For example, we could set up a situation where the player needs to speak to some specific character, clear monsters out some specific area, and produce some artifact, but in any order they choose.

This is commonly referred to as a *hub-and-spokes* pattern. There is a single situation which the player keeps revisiting and some number of story elements are linked to it like spokes in a wheel (see figure 4). The player can go and interact with any element, and then return to the hub and move on to another element, and so on.

Compared with the directed graph approaches we have discussed so far (the linear, branching, or branch-and-merge patterns), the hub-and-spokes approach gives the player more freedom in choosing when and how the narrative will be advanced. Some of the earliest examples of this pattern, such as action-platforming games like *Mario64* and *Jak and Daxter*, embedded this pattern directly in their level design, by having a variety of levels that presented bits of the game world, linked to central hub areas.

Network

Finally, we can mention one more structure: a network of narrative elements and decision points, arranged into a graph which the player can traverse in any order they choose (see figure 5). An example of narrative like that might be nonlinear *hypertext stories,* which let the reader
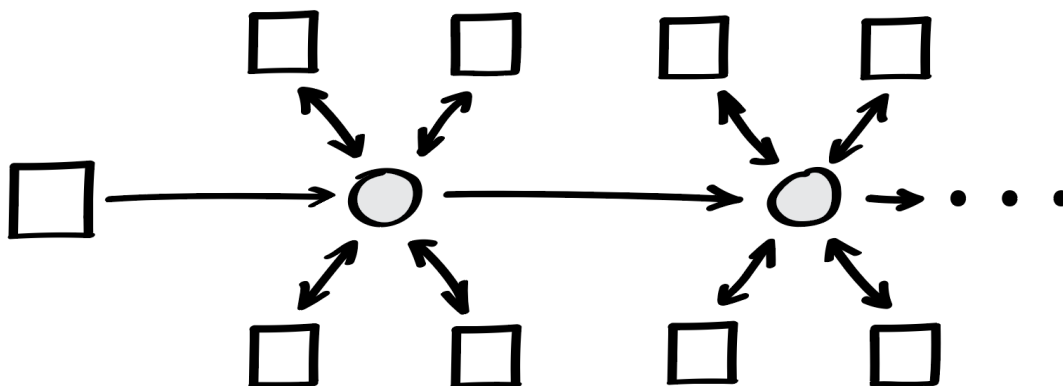

Figure 4. Hub and spokes layout, where spoke nodes can be experienced in any order.
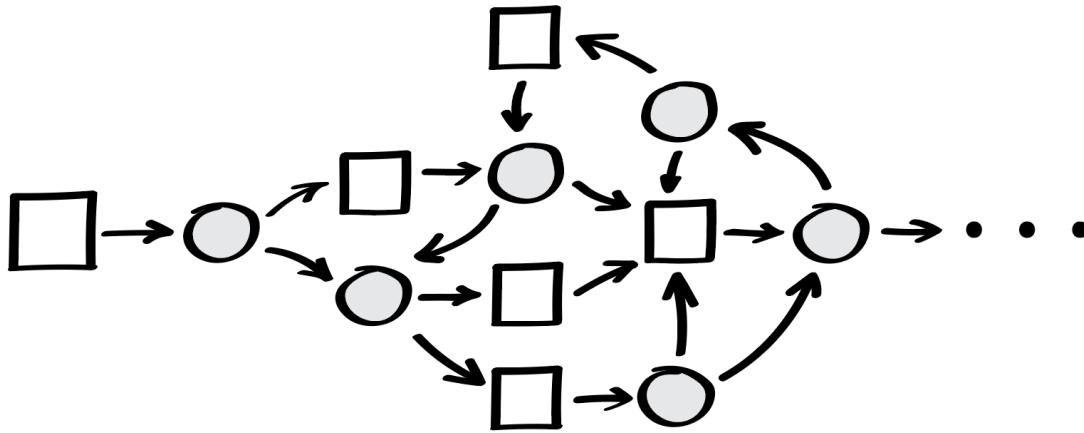
Figure 5. Network layout, in which nodes can be revisited multiple times and in different order.

jump around between loosely connected fragments, similarly to how a Wikipedia reader might follow links in an unexpected pattern.

Network structures are not frequently used to tell specific narratives, but they are commonly used as a higher-level compositional pattern, which we will discuss later when we look at quests.

Dynamic Structure

So far, we have looked at static structures. Those all share a shortcoming: their topology, and the selection of choices in choice points, don't react to player's actions in the game, and whenever you reach a specific decision point node, you always face the same choices. This makes it difficult to create more complex kinds of narratives, which respond to player's past actions in the game.

But we can easily enhance static narrative structures, by making nodes and edges of the narrative graph *dynamic*, that is, enabling or disabling them based on the state of the game. For example, some story graph edges might be only shown if the character has the right stats, or perhaps nodes may be hidden based on whether the player did (or failed to do) something specific in the past.

This kind of dynamism helps us by greatly simplifying authoring of those more complex narratives.

Example: Dynamic Branching

Consider how we might implement a branching tree conversation, but with the following effects: one, at every choice point you can choose to insult the other person, and two, later in the conversation, they will respond differently based on whether you ever insulted them in the past.

We could try to model it using a static branching choice structure, but since the player could choose to insult at any number of choice points, we would have to add an enormous number of
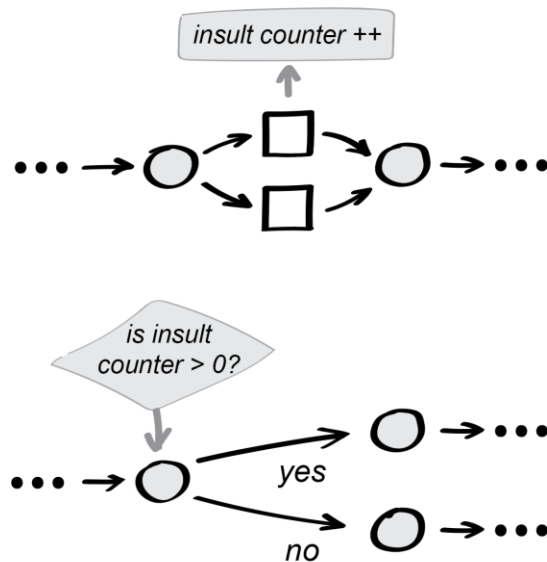
Figure 6. Example of annotating narrative actions with a bit of state change (for example, incrementing a counter), and then having other nodes check state.

extra duplicate paths to handle these kinds of optional behaviors, and the resulting graph would be untenably large.

Instead, we can add *conversation state* for tracking what the player does, including an insult counter that gets incremented every time the player reaches a choice point and decides to insult someone. Correspondingly, later on, we would add a new type of a conversation transition, that only activates if the insult stats exceed our threshold (see figure 6).

We can also imagine how we might enhance this further. Beyond conversation variables, we can also test any other kind of game state. We can filter choices based on character stats (health, stamina, etc.), interpersonal relationship (for example representing friendship strength as a number), and other such, and then change those stats in response to player's choices.

This lets us greatly increase the complexity of the narrative without a huge authoring cost, and has become a very commonly used approach.

Coupling Between Game State and Story Structure

This is a simple example, but it already shows the main benefit: dynamic structure lets us compactly represent narrative and gameplay dependencies across time and space. For example, it becomes easy to implement narrative changes based on player's past actions (such as, you can no longer befriend that NPC because you insulted them five minutes ago), and entire narrative arcs might become available or unavailable based on player actions in the game.

This kind of tighter *coupling between game state and story structure* also enhances the player's perceived feeling of agency in the game. If the player's actions have narrative consequences down the line, it means their narrative space is not static, but rather changes dynamically based on trajectory so far. The player will feel like they can affect not only their *experienced* narrative

arc, but also the total space of *possible* arcs. This makes the process of problem-solving and pursuing one's goals much more difficult and interesting.

Because of its benefits, this kind of approach is very commonly used in narrative games, including interactive fiction, adventure games, visual novels, and others.

However, we should also acknowledge that this narrative complexity also increases authorial complexity. Now the author must worry about not just local effects of choice points but also future effects in a variety of different places and times. Imagine a choice point where player's decision affects their stats in some way – but then those stats are also used to show/hide choices during a much later choice point. We need to make sure that the designer is aware of these distant interactions, especially if there are multiple designers who are independently authoring different aspects of the narrative – and this might require building special story authoring and debugging tools. Generally speaking, adding dynamic conversation state enables a kind of "spooky action at a distance" which makes debugging potentially much more difficult.

Modular Structure

Looking back at branching structures, they also share another shortcoming: the danger of combinatorial explosion of authoring work. Imagine an open-world game, where the player can visit any of a number of locations and NPCs, in any order, and those interactions change the story going forward – it's not feasible to write that as a pure branching story.

Instead, designers turn to *modularization* as a tool for managing authoring complexity: we can chop up the overall story into smaller sub-stories, and then use dynamic techniques described above to control not just individual choice points, but entire modules. This simplifies the authoring problem, and is also a very commonly used narrative technique.

Example: Modules and Nesting

Consider the open-world game again, perhaps *The Witcher 3,* or *Baldur's Gate 3*, or another similar role-playing game. A common narrative element in these games is a *quest:* a short narrative module which gives the player some specific challenges, whose structure is pre-authored, and asks the player to resolve it, with different paths producing different rewards or game state updates.

One of the early quests from *The Witcher 3* is a good example: in this quest, you are tasked with killing a griffin that has been terrorizing the area. The quest involves several independent sub-quests, including finding out why the griffin is hostile, meeting a local herbalist, finally setting a trap and killing the monster, and collecting a reward. Those sub-quests are loosely connected, and some of their elements are optional, but the overall quest only ends once the monster is slain.

A quest like this is a self-contained narrative module: it has its own structure, for example, a network structure which asks the player to go talk to several NPCs in any order and finally face a final challenge. Moreover, it's a module that relies on smaller sub-modules, nested recursively. For example, the herbalist sub-quest is itself a small narrative module, maybe structured as a small branching story with different endings, or a small branch-and-merge conversation with a single, inevitable outcome (see figure 7).
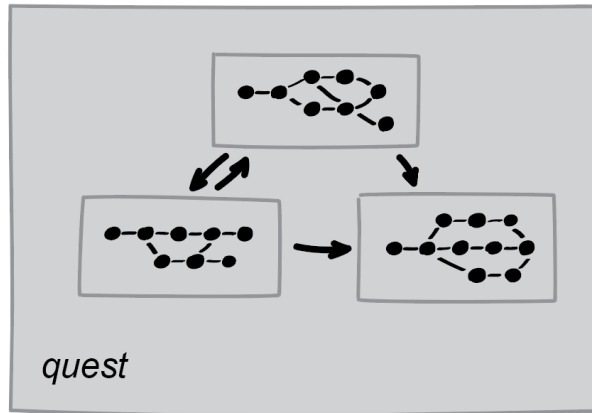
Figure 7. Example of a quest composed of several sub-quests, each of which has its own narrative structure.

Hierarchical Nesting of Modules

Zooming out in our *Witcher 3* example, we can see that the open world game is full of these quests. The player can travel across the game world, and find interesting quests in various locations. Moreover, they are usually not forced to take them in any specific order (although it's wise to finish easier quests before moving on to harder ones).

However, quests are not all available at all times – the resulting narrative would be incoherent. Instead, the game follows a "story quests and side quests" structure, in which there is a main line of quests chained in a linear narrative, one unlocking the next, and progression through those quests unlocks access to new areas. Separately, side quests are scattered through the world, and once unlocked they can be engaged with in any order (see figure 8).

Structurally speaking, we can see how quests themselves are arranged in higher-level dynamic narrative structures. The main quest line is typically a linear structure, and progression through it unlocks further content. Meanwhile side quests are a very loose network that can be
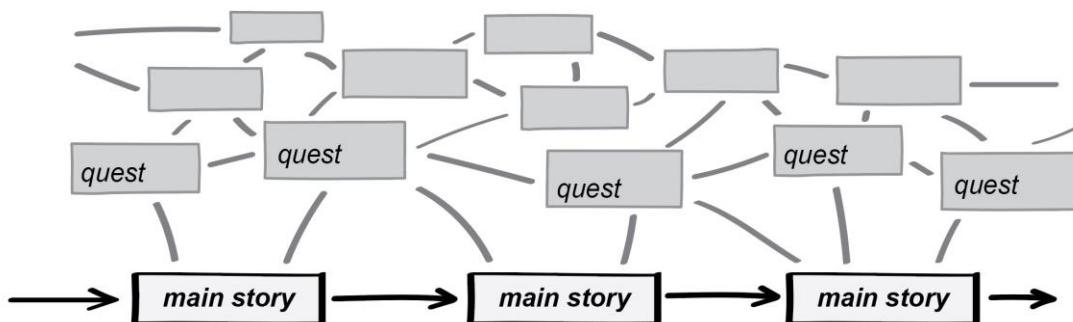

Figure 8. Example of an open-world structure composed of nested story modules, some of which are arranged in a linear main story, and others as a network of optional side quests.

experienced in any order, but they have dynamic preconditions for starting up, such as having talked to specific NPCs or visiting specific areas of the map.

In effect, the overall structure is a hierarchical recursive structure, where each top-level node can be decomposed into modules, which can in turn decompose into even smaller modules as necessary.

Story Fragments / Storylets

What if a quest did not have a specific goal that the player is trying to achieve? While quests are a very common pattern, popularized by role-playing games and others, we can generalize it further by removing the assumption about presenting the player with a specific challenge or goal.

These kinds of modules are often called *story fragments* or *storylets*. A story fragment is a module made of the following: some dynamic pre-conditions for starting it, a small dynamic narrative structure, and some "post-conditions" that affect the game state based on what the player did. As a more general structure, they are capable or representing different narrative beats than what might be possible with just quests (see figure 9).

Story fragments may be scattered around the world, like quests in an open-world game. But they also work well with another system called a *drama manager*. This is an automated system that keeps track of all story fragments and the player's progression through them, and proactively picks what the player should experience next. For example, this might be implemented by finding all fragments that haven't been seen yet, filtering out those whose pre-conditions don't match, scoring the remaining ones on some kind of a scale provided by the designer (for example, based on player's stats), and starting the highest-ranked one.
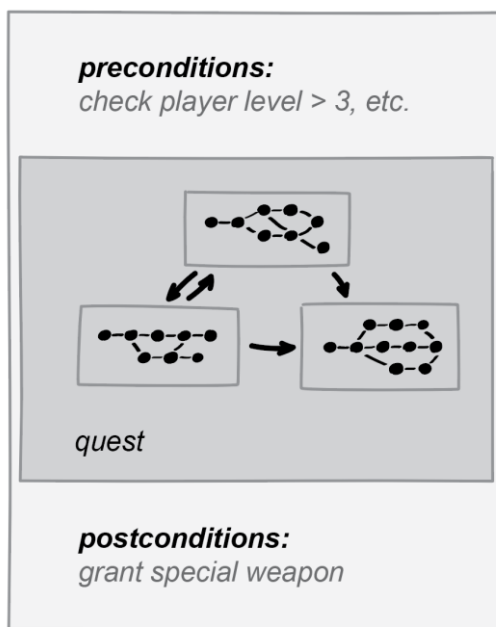

Figure 9. Example of a story fragment, annotated with preconditions which must be met for this module to be picked, and postconditions that will apply after it's done.

The resulting overarching narrative can be highly dynamic, and highly responsive to player's past actions and changes in game state – but at the same time, it allows the designer to create very specific narrative pathways by chaining pre-conditions and post-conditions in such a way that the drama manager will pick them in a sensible order. Games such as *Reigns* or *Fallen London* are notable for building complex narratives in this fashion.

Emergent Narrative

There is one broad category of games, however, which make narrative design especially difficult. These are games featuring a high level of procedural content generation, or simulation-based gameplay, or worse yet, both.

In a game like *Dwarf Fortress,* the game begins by simulating the entire creation of the world through the ages, until the player arrives at some specific point in time where they are tasked with starting a new dwarf settlement – and how the game unfolds from that point on is based purely on forward-simulation of the world based on player's actions. Similarly in a game like *Crusader Kings 3,* the player may be placed in a historical setting as a medieval monarch ruling a specific duchy or kingdom, but the game's trajectory is also based purely on the human player's and AI players' actions in the simulated medieval world.

It is difficult to author specific narratives in a setting like this. The game's design is optimized for procedurally generated content and for maximal agency for the player, which means that the game state is unpredictable: it might generate very different characters and situations every time.

We can take a look at two tactics for narrative design in such a challenging setting.

Systems-Driven Narrative

For the first example, consider a game like *The Sims 4*. It's a life sim game, in which players have great freedom in directing the lives of their little computer people.

In this kind of a game, a kind of narrative *emerges* from system interactions. Individual sims have their own needs and demands, goals and aspirations, likes and dislikes, and the AI systems are tuned to react to the world in interesting, drama-producing ways. And so, once you start following and directing a sim, it is very easy for them to get into all sorts of individual dramas, from small quotidian ones like oversleeping and being late to work, to larger interesting ones like falling in unreciprocated love with another sim.

In this kind of a design, we're no longer designing a specific narrative, but rather we're authoring a system that will itself produce narrative fragments. This is a difficult higher-level problem in design and implementation, but it can produce gameplay effects that are truly unique and responsive to player agency.

Storylets With Roles

Another solution is to manually create story fragments, but make them more abstract so that they could fit a large number of procedurally-generated situations, and lean on the drama manager to make them work. This is the idea behind *storylets with roles,* popularized by games such as *Wildermyth.*
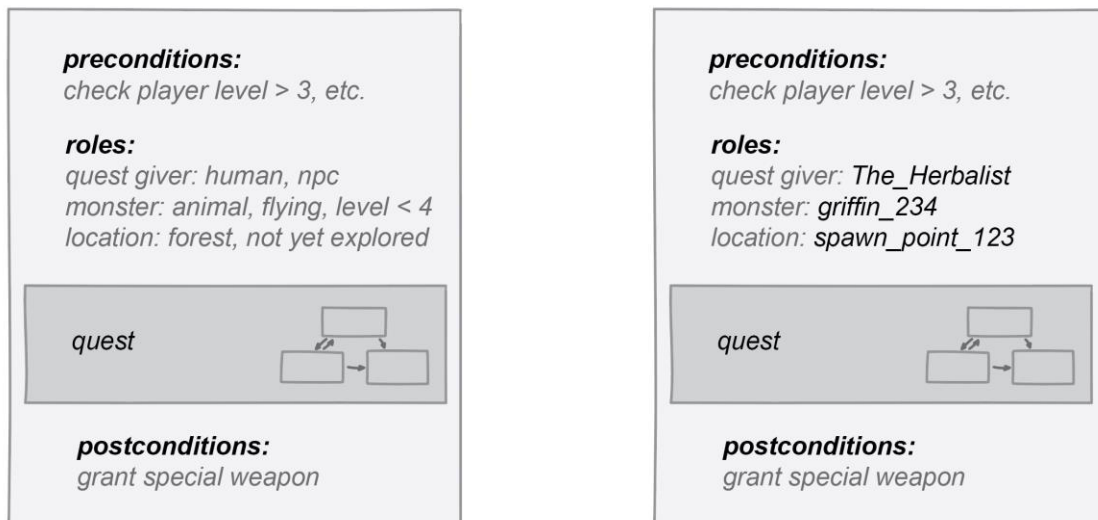
Figure 10. Example of a storylet with roles that need to be filled for this fragment to be engaged. On the left, unfilled roles with their own preconditions. On the right, roles have been filled with matching in-game entities.

Let us consider the griffin quest example once more. We can't expect this specific quest to work in a procedurally generated world – the locations, monsters, and NPCs may be different each time – but we can attempt to apply it as a general pattern applicable in many situations.

In this case, we would rewrite it as a storylet with variables, or *roles* instead of specific people or places. For example, we might use a domain-specific definition language to express an idea such as: "This fragment has roles: M for a monster, Q for a quest giver, and L for a location, where M is a weak flying animal, Q is an existing NPC, and L is inside an unexplored forest."

The drama manager's job then becomes more complicated: when it picks story fragments, it must attempt to find characters and locations that fit those patterns, as if it were doing a *casting call* to find actors that fit specific roles. Then once it finds them and picks the best fragment, it *instantiates* the fragment by replacing all variables with their specific values, and the storylet can then proceed just as if it was authored by a human writer (see figure 10).

While this approach is somewhat complicated, it presents a great solution for attempting to tell narratives with structural cohesion in games that are heavily reliant on procedural generation and simulation.

Review of Structures

Games can vary greatly in how much they focus on narrative. Sometimes no fictionalization is necessary at all, as in the case of abstract board games (*checkers*) or puzzle games (*Tetris*). At other times, a general player fantasy is well suited, as in the case of strategy games (*Civilization*), action arcade games (*Super Mario Bros.*), and others. And in numerous other games, some type of specific narrative can be very desirable.

As we saw, narrative and player agency can be in a contentious relationship with each other. As designers, we want to provide coherent narrative, but at the same time, allow the player to experience the agency of playing a game, which is likely to impact the narrative.

As a result, a number of narrative design patterns developed in game design, which correspond to different levels of tradeoffs between predictability and control, and between having the player impact the story or merely go with the flow.

We can frame this taxonomy as follows:

- A *non-interactive narrative*, where the story is set and unchangeable, typically intertwines gameplay elements with a pre-authored linear storyline.

- An *interactive narrative*, where the story can change based on player's actions, starts allowing player agency in the narrative itself. There are several approaches, which offer different levels of interactivity, and different authoring workloads:

  - *Fixed structure*, where the story is interactive in the sense of picking branches, but the graph of narrative nodes and edges is always the same. This model is somewhat limited, and is more typical of older games, or as a smaller building block in narrative modules.

  - *Dynamic structure*, where the graph changes dynamically based on game state, can be very expressive, and is commonly used. Managing complexity becomes a challenge, however, as the graph gets more and more integrated with mutable game state.

  - *Modular structure,* where the graph's nodes are themselves smaller narrative graphs, nesting recursively, is a common solution to the complexity problem, for example in quest structures in open-world games.

- An *emergent narrative,* where the story is not authored by the designer, instead the designer creates systems which produce narrative elements as the player plays the game. This is the most unpredictable and difficult format, but allows for very high level of player agency and autonomy.

In the end, the choice of a narrative structure, or whether to even include a narrative structure at all, needs to be guided by the desired player experience. What do we want the player experience to be like, and how important is the authored story, compared to supporting player agency, in our particular game?

Narrative and Gameplay – Theoretical Perspectives

Beyond the perspective of game design practitioners, game narratives have also been studied theoretically, typically from the traditions of literature studies and media studies.

Some of the earliest games were heavily text-based. In the 1970s and 80s, alongside action-packed arcade and console games, there was also a thriving community of text-based adventure and storytelling games. Infocom titles like *Zork* or *The Hitchhiker's Guide to the Galaxy* were played entirely in text – players would type in commands, and get back textual descriptions of

the evolving situation. Computer networks such as Arpanet and Internet also enabled the creation of MUDs, which were multi-user virtual environments, also entirely text-based. These games experimented heavily with dynamic storytelling structures, and a text-only interface worked well with resource-starved microcomputers of that era.

Correspondingly, some of the early studies of games looked at game design from the perspective of literature. Works such as *Hamlet on the Holodeck* (Murray 1998) focused on games as a kind of a new literary form – very much unlike traditional linear narratives, and yet stunningly similar, and perhaps one that could be analyzed using tools developed for literary analysis.

Other approaches looked at it from the perspective of non-linear transmedia storytelling. Aarseth's book *Cybertext* (1997) especially influenced the nascent field, and introduced a notion of "ergodic literature": text produced by a computational engine which requires nontrivial work (*ergon*) from the reader to traverse. It was an early theoretical model for understanding the player's and the computer's joint role in producing narrative in an interactive way.

However, many objections were raised at the time about these models not paying sufficient attention to gameplay. Games are, after all, about *playing* them, and models for understanding games need to consider this as a central aspect. As early as 2001, Jesper Juul was already noting that "the relation between the reader/viewer and the story world is different than the relation between the player and the game world" (Juul 2001). The player actively takes actions in the game and changes the game state, but that was not something that narrative analyses were well equipped to handle.

An ensuing back-and-forth of arguments on the topic of whether games should be analyzed primarily based on gameplay or on narrative became known as the *ludology/narratology debate*. Once this tension has been brought to the foreground, it became very clear that neither extreme approach is enough in separation, and games have to be understood from both perspectives simultaneously.

A more synthetic approach has been gaining momentum since then. An example of one such synthesis is the introduction of *game logics* (Wardrip-Fruin 2020), which examine games in terms of both player agency, which defines what the player *does*, and the meaning-structures that the game presents, which describe what player actions *mean*, in a single model which unifies both analytic directions.

Further Reading

As mentioned at the beginning, this chapter doesn't touch on the questions of *writing* narratives or stories, only on the topic of designing a narrative structure and how that works with overall game design. However, on the topic of writing and story-crafting, two comprehensive resources are *Video Game Storytelling* (Skolnick 2014), and *The Game Narrative Toolbox* (Heussner et al. 2024), and for higher-level storytelling approaches in games, see *A Game Design Vocabulary* (Anthropy and Clark, 2014).

On the topic of player agency, Nguyen's *Games: Agency as Art* (2020) is a great introduction to the main concepts of agency, and why it is a central concern for games, while Juul's *Half-real* (2005) discusses in detail the tension between gameplay and fiction from a media theory perspective.

On the topic of narrative structures, Emily Short has written a considerable number of very approachable articles. Two highlights:

- "Storylets: You Want Them" (Short 2019) is a great introduction to both narrative structures in general (including a list of some interesting patterns), and to storylets in particular.

- "Beyond Branching: Quality-Based, Salience-Based, and Waypoint Narrative Structures" (Short 2016) presents detailed ideas for modeling dynamic modular narratives, including the notion of pathfinding through narrative space as a method for selecting modules.

On the topic of storylets, of particular historical interest might be Doug Sharp's "Story vs. Game: The Battle of Interactive Fiction" (Sharp 1989). It is a design post-mortem of the interactive fiction game *The King of Chicago,* written in the late 1980s, and it appears to contain the first recorded description of storylet-like structures in games. Its discussion of the tradeoffs between interactivity and narrative control also anticipates future developments in the space. Additionally, for a more general and recent work on storylets, Kreminski's survey "Sketching a Map of the Storylets Design Space" (2018) is a great general overview.

Finally, in this chapter we have been using the terms "narrative" and "story" in the traditional sense, denoting a temporal ordering of story elements that the player is experiencing. There are other notions of "narrative", of course, for example in a more broadly semiotic sense (e.g., "*Space Invaders* presents a hostile, militaristic narrative of humanity"). Those senses of narrative are beyond the scope of this chapter, but Aarseth (1997) contains detailed discussion for readers interested in the topic.

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