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# Agency in and Around Videogames

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# Abstract

This thesis conceptualises player agency in avatar-based videogames as an affordance of game design (Gibson 1979). By examining how agency is discussed in different discourses surrounding videogames, such as those of game studies and game design, it puts forward a multidimensional heuristic framework for conceptualising agency in avatar-based games. Game studios with a particular design focus that draw on ‘game design lineages’ (Bateman and Zagal 2018) feature as case studies to demonstrate the analytical power of this framework, examining how agency is designed, and how developers discuss how it is designed. The combined methods of textual and paratextual analysis provides insight not only into how game designers think about agency but also into how design intentions can translate into features of the released game. Such an approach facilitates a way of looking at agency as designed, which is informed by the vocabularies of academic discussions concerning videogames, as well as the language used to refer to these phenomena by industry practitioners, thereby grounding abstract theory in production practices and discourses.

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# Introduction

*We have developed methods for capturing sights: drawing, painting, photography and film. We have developed methods for capturing sounds: written music, recording technologies, and wooden duck calls. We have even developed methods for capturing sequences of action to be performed—cookbook directions, dance choreography, and stage directions. Games are a method for capturing forms of agency.*

C. T. Nguyen 2020: 18

Technological advancement makes it possible for videogames<sup>1</sup> to offer increasingly complex gameplay experiences (Dovey and Kennedy 2006: 51; Kerr 2017: 29–30). This is perhaps even more powerfully felt now that we are on the doorstep of the next console cycle, with PlayStation 5 and Xbox Series X set to launch in late 2020, and *Microsoft Flight Simulator 2020* (Asobo), a game which recreates Earth’s detailed geography, live traffic, dynamic weather, and its every airport using Bing Maps and Microsoft Azure’s AI, having come out to PC in August 2020. With more sophisticated hardware and software comes more complex content, and the more power the player is promised to have over said content, the more attractive and marketable the product is—as seen, for example, throughout the marketing campaign leading up to the release of *The Legend of Zelda: Breath of the Wild* (Nintendo 2017), which offers the vast open world of Hyrule, the biggest and most homogenous one in the franchise yet.<sup>2</sup> This tendency to aspire for games offering more agency is ever so apparent when looking at the kinds of products videogame publishers have been favouring over the past decade or so: *The Witcher* (CD Projekt Red 2007–), *Assassin’s Creed* (Ubisoft 2007–), *Elder Scrolls* (Bethesda 1994–), or *Red Dead Redemption* (Rockstar 2010), just to name a few, are all videogame franchises with numerous instalments, all designed as open worlds where the player has more freedom to do as

they please compared to other, more restricted videogames. Recent installations of long-standing franchises offering linear gameplay also embraced this trend. For example *Call of Duty: Modern Warfare's* Spec Ops mode (Infinity Ward 2019) and *Call of Duty: Warzone* (Infinity Ward 2020) both feature more player freedom than previous instalments of the franchise, as does *Metal Gear Solid V: The Phantom Pain* (Kojima Productions 2015). This thesis will look into how this freedom to act is discussed by designers, and how that in turn reflects in their design principles. It will explore salient case studies to discover what these discourses around player action reveal about the nature of agency and game design.

Game studies is a vast interdisciplinary field, with clusters like education, humanities/social sciences, or computer science (Karhulahti and Koskimaa 2019; Martin 2018). That being said, as Deterding (2017) points out, a divide seems to be emerging, as human-computer interaction and communication researchers are increasingly favouring their respective disciplinary outlets. This observation is supported by the findings of two recently conducted meta-analyses into the state of digital games research, where the more technically oriented survey (Nguyen et al. 2018) and a more humanities and social sciences oriented one (Quandt et al. 2015) both pointed out that the other was notably missing from their datasets. Such a growing divide reduces the opportunities for knowledge exchange. Valuable and useful critical observations about how game design works, or could work, can be made from a perspective not necessarily informed by the observer's own design practice. Collins (2004) calls this 'interactional expertise', or 'the ability to converse expertly about a practical skill or expertise, but without being able to practice it, learned through linguistic socialisation among the practitioners' (ibid. 125). My 'interactional



expertise', cultivated over the years by playing and talking about games, reading design textbooks and forums, and attending the Game Design Workshop at GDC 2016, give value to my contribution to the scholarship not as a designer, but as a consumer of design. As such, this thesis will demonstrate that there is a space for non-practical expertise in better understanding game design.<sup>3</sup>

There are numerous different ways in which games and the industry that makes them can be studied, such as looking at the games themselves, how they are structured, or how they convey meaning (see, e.g., Atkins 2003; Juul 2005; Ryan 2006; Wardrip-Fruin 2009); observing players to see how they make sense of games, or what playing means for them (see, e.g., Gallagher 2017; Taylor 2006, 2018); or asking questions about how games are made, and what impact circumstances of production have on gameplay experiences offered (see, e.g., Benjamin and Keogh 2019; Deuze 2007: 123–144; Dovey and Kennedy 2006; Kerr 2006, 2011, 2017). This thesis pursues a design-oriented approach towards studying videogames and is concerned with better understanding player agency from this perspective. As such, it follows in the footsteps of similar studies that link agency to game mechanics (see, e.g., Boonen and Mieritz 2018; Cheng 2007; Habel and Kooyman 2014; Harrell and Zhu 2009; Jørgensen 2003a; King and Krzywinska 2006; Sicart 2008), as opposed to approaches with a more narrow understanding of agency as a player's ability to change the course of a videogame's story (see, e.g., Domsch 2013; Hammond et al. 2007; Stang 2019; Tanenbaum and Tanenbaum 2009, 2010). That being said, several of the above listed contributions at least acknowledge, if not explicitly draw on, Janet Murray's widely cited definition of agency as the 'the satisfying power to take meaningful action and see the results of our decisions and choices' (Murray 1997: 126). This definition, I will

argue, and the broader discussion within which it sits, frames agency as a concept relevant to videogames' narrativity, and is therefore somewhat limited. However, Murray does make some observations in the broader discussion of agency which are concerned with what she calls different parts of the 'game structure' (ibid. 129–140), and this will be the starting point for the multidimensional conceptualisation of agency presented in this thesis.

My conceptualisation of agency draws on J. J. Gibson's affordance theory, and frames agency as an affordance of game design (Gibson 1979). The aim is to examine how agency is conceptualised in different areas surrounding digital games, focusing on game studies and game design discourse, and to synthesise the findings to create a multidimensional heuristic framework for conceptualising agency in avatar-based games. In order to demonstrate its analytical power, as well as to explore how applying the framework to specific examples can bring added value to its foundations, I will look at three case studies. They will focus on individual games, the first two being part of franchises, and the last one being a stand-alone title, created by game studios with a particular design focus that draws on 'game design lineages' (Bateman and Zagal 2018), i.e. traceable lines of inspiration and evolution in game design practice over time, as enabled by technological progress and player practices. As such, the case studies, in part, offer a historical narrative of studios keeping such game design lineages alive, reconstructed primarily using the respective studios' communications. By framing the case study games and the studios that produced them as exemplifying game design lineages, rather than describing them in terms of genre, which tends to lack connotative consistency, I can observe not only *how* the games as artifacts afford and limit agency, but also *why* that may be.

The method I chose for this contribution is twofold. First, a paratextual analysis is conducted to establish what I call the design ethos of each studio. The word *êthos* is of Greek origin and can broadly be translated as the character of a person, a community, or an ideology.<sup>4</sup> In this vein, this thesis posits that we can reconstruct the design ethos of a game studio by looking at how the studio in question communicates their professional and artistic identity, what the aesthetics are of the games they produce over time, and how these are reported on in trade press and in journalistic outlets. Although such texts are often generated with promotional<sup>5</sup> intent in mind, and therefore need to be considered with a proverbial pinch of salt, the videogame industry is notoriously secretive (see, e.g., Foxman and Nieborg 2016; O'Donnell 2014), and so turning to sources like game reviews is a productive way around the invisible wall. Journalistic coverage of videogames often features suggestions for best play practice, and also speak to socio-historical context, state of the industry, technology, and trends, as well as containing recommendations for improving design, and hypotheses about design intention which exhibit various degrees of educated guessing, as found by for example Zagal and colleagues (2009: 221).

In this thesis, I will use 'paratext' to refer to such materials generated around the actual videogames themselves. The term 'paratext' was coined by Gerard Genette (1997a [1982]) to refer to materials that surround a literary text, created by the author, the editor, or others partaking in the publishing of a book.<sup>6</sup> While this notion has certainly appeared in game studies before (see, e.g., Aarseth 1997; Consalvo 2007; Jones 2008; Newman 2008), and neighbouring media disciplines, such as film and TV studies, have long embraced the analytical value of such sources (see, e.g., Caldwell 2011; Grainge and Johnson 2015; Gray 2010; Hesford 2013), it has only been in recent years

that the notion of ‘paratext’ has begun to creep in from the periphery in game studies (see, e.g., Booth 2015; Consalvo 2017; Dunne 2016; Fernández-Vara 2015; Švelch 2020; Vollans et al. 2017; Wright 2018), with some scholars still opting for alternative terms (see, e.g., ‘additions’ in Chapman 2016: 269). So how does this thesis conceptualise paratexts?

While Genette’s original work did elevate previously dismissed and ancillary materials to the status of worthy subject of critical inquiry, he still suggested a hierarchical relationship between the text and what surrounds it, and insisted that the author needs to authenticate such addendums, or else they cannot be considered paratexts (Genette 1997b: 9 [1987]). This hierarchy was reversed in game studies, most notably, by Consalvo (2007), who argued that paratexts shape gameplay experiences ‘regardless of the actual game itself’ (ibid. 8). Consalvo expanded the meaning of paratext in the context of videogames to encompass everything that surrounds games, such as magazines, strategy guides, and conventions, arguing that there is a paratexts industry that generates and manages such ancillary materials (ibid. 22–39). This expansion was not without risk, and, as Švelch (2020: n.p.) points out, the concept of videogame paratexts got so over-inflated that some even used it to describe such things as tie-in novels and web series. In this thesis I understand paratextual evidence as primarily including journalistic coverage (both subject specialist and more general); the trade press; conventions, conferences, and other trade events; analogue and digital marketing and advertising, such as packaging, TV spots, and trailers; developer, or ‘dev’ blogs; and official websites, blogs, forums, and verified social media accounts of games, studios, publishers, individual developers, and other participants in the production and distribution of videogames such as

hardware and software companies. This way, my understanding of paratextual materials is somewhat more expansive than Genette's original definition but is also not so broad as to include all related materials that would venture over into other realms, such as transmedia expansions.<sup>7</sup> By using paratextual analysis, this thesis takes into account the technological, economic, and socio-cultural context within which decisions about player agency are made.

Second, having established the design ethos of the studios in question, in the respective case study chapters I move on to look at how the latest (at the time of writing) games from the selected studios afford and limit player action, using the method of 'textual analysis'. In general, such qualitative study of videogames is an established methodology, though often deployed under different monikers (e.g., 'action analysis' in Jørgensen 2003a; 'close playing' in Bizzocchi and Tanenbaum 2011). Although 'textual' has been, on occasion, used to describe specifically components of games that are literally represented via written word (see, e.g., Newman 2008: 48), conceptualising a videogame as a whole as 'text' in a broad sense, and therefore critical engagement with said whole as 'textual analysis' is not novel (see, e.g., Consalvo and Dutton 2006; Kennedy 2002; Krzywinska 2003). In this thesis I will use 'textual analysis' as applied to the study of videogames by Fernández-Vara (2015). More specifically, the textual analysis conducted here focuses less on the meanings videogames create and how those meanings could be interpreted by different audiences, and more on how the elements that have the potential to generate meanings are arranged. In other words, it is interested in what Fernández-Vara calls the 'formal aspects' (ibid. 117-172) of the videogames in question, such as game mechanics or level design, which afford and constrain the possibility space for player action.<sup>8</sup>

The thesis is structured into four chapters, with Chapter 1 dedicated to the proposed theoretical approach, and remaining chapters to a case study each. Chapter 1 begins with a survey of game design and game studies literature, focused on how agency has been used, defined, and debated over the past decades. I will highlight the common denominators within respective traditions, in order to articulate a conceptualisation of agency that speaks to the threads that emerge. This chapter will also present my conceptualisation of agency as the possibility space for avatar action as afforded and constrained by game design. I will then, relying on both game studies and game design discourses, map the four dimensions in which I argue player action can be most prominently realised in. In simple terms, I will distinguish between agency in space, in time, by allowing customisation of the avatar and its surroundings, and over narratively charged content. This chapter will 1) identify and evaluate prominent perspectives on agency across disciplines; 2) extract common themes that appear across literature to be used pillars for a conceptualisation of agency and 3) distinguish between multiple dimensions across which player agency as expressed via avatar action can manifest during gameplay.

The following Chapters 2, 3, and 4 are dedicated to case studies of game studios that make avatar-based videogames, to examine how dimensions of agency support and undermine each other, and also to explore how individual contexts enrich the foundations of the heuristic framework. Naughty Dog, and their Indiana-Jonesian action-adventure game *Uncharted 4: A Thief's End* (2016) in Chapter 2 is the first case study of this thesis because it exemplifies a very high degree of designer control over player action, and subsequently, player progression. As such, the application of the

conceptualisation of agency proposed in this thesis, along with the multidimensional heuristic framework, onto a game that may at first seem so devoid of player agency highlights the analytical power of both. Exploring the studio's design history of the studio and the *Uncharted* franchise allows me to consider how the player's ability to act is discussed by developers coming from a fairly standard videogame production environment and adhering to a traditional press cycle, where the studio's design ethos and the franchise's brand identity remains relatively intact over the years. It also enables me to examine in what dimensions player action is afforded or constrained in the traditional 1990s genre of platforming, and trace how this design lineage evolved over the past two decades. This case study chapter will also introduce the notion of cinematic design, survey how this quality is conceptualised by developers, what this means for agency across dimensions, and compare these discussions to how a cinematic quality is achieved in the final product.

Chapter 3 is dedicated to the second case study of BioWare and their action role-playing game in a science-fiction setting, *Mass Effect: Andromeda* (2017). It is a counter example to the previous chapter, whereby both the design ethos of the studio and the brand identity of the franchise changed over the years. This chapter shows how changes in the composition of development and leadership teams, publishers, production pipelines, and technologies can impact player agency, and what consequences that has on the identity of the franchise. Moreover, it traces the evolution of the design lineage of role-playing games, and their subsequent merging with action-adventure design principles particularly in the AAA market, in terms of agency dimensions. By looking at an open world game whose gameplay is characterised by comparatively less salient designer control than the previous case study, this chapter

demonstrates the dynamic nature of agency dimensions and how they support each other, but it also shows how they can undermine each other and therefore obstruct meaningful play.

The final case study in Chapter 4 focuses on System Era's sandbox survival crafting game *Astroneer* (2019) and expands the scope of my inquiry by applying the heuristic framework to not just a different game design model, but also a different production context. As the studio was founded by former AAA developers who went independent, this case study is an opportunity to show how differently, compared to the other case studies, the game is produced, and how differently design intention is communicated with regards to player action. In this way, this case study is a good contrast to the previous two case study examples, which were both AAA games. Since System Era is a relatively young studio and, as such, there was not much in line of a design history to examine, this example instead allowed me to discuss what independence means in the context of videogames, and what implications that has for player agency. At the same time, the game exemplifies a game design lineage of survival crafting sandbox games stemming from *Minecraft*. The relatively few constraints that such a game places on player action make this an illustrative final case study that affords agency across dimension.

The ways in which videogames afford agency changes with the evolution of technology and diversification of production practices. This thesis contributes to our understanding of agency in videogames by offering a conceptualisation informed by game design and an analytical framework that speaks to multiple dimensions in which avatar action can be realised, and as such is flexible and could adapt to this



diversification. It provides a detailed examination of agency within a particular slice of the current videogame landscape, by tracing how different production contexts communicate design intention over time, and also how now-ubiquitous models of game design evolved in terms of how they afford and constrain player action. By doing so, this thesis brings to light agency dynamics in and around videogames.

# Chapter 1. Heuristic Framework for Analysing Player Agency in Avatar-based Games

## Understanding Agency

The notion of agency is generally understood to refer to our ability to act in the world, within the societal context that prescribes our everyday life. As such, thinkers interested in the human condition, such as philosophers, sociologists and anthropologists, have long been preoccupied with the meaning and impact of the term. Martin Heidegger (1977 [1932]) wrote that in the new technological age everything is either a representation (or picture), or a spectator of said representation, and therefore human agency is manifest in this cycle of expression and spectatorship. Michel Foucault (1982) saw agency as only ever existing as determined by power relations and argued that it is therefore conditioned by these relations. Sociologist Anthony Giddens (1984) famously argued for something similar in his ‘structuration theory’, where he attempted to reconcile a tension between whether it is societal structure, or human agency which moulds our behaviour. Within the context of science and technology studies, Bruno Latour (2005) expanded the notion of agency as part of his Actor-Network Theory, when he argued that not only human actors, but nonhuman actors, too, can be part of networks within structures of society and natural ecology. The concept of empowered ability to take action is also ubiquitous in media studies, not only with regard to media reception (e.g., ‘interpretive inference’ in Bordwell 1989; ‘participatory culture’ in Jenkins 2012 [1992]) but also with regard to medial representation (e.g., Meyers 2008 on women; Downing and Husband 2005 on race; Mukherjee 2017 on postcolonialism). However, ‘agency’ as understood in this thesis

is not so much about any of the above. Instead, I propose to take a step back and think about agency in videogames in terms of what creates the possibility for it to manifest in the first place.

Part I of this chapter consists of two sub-sections. The first will review prevalent ways in which the relationship between player and game broadly, and agency more specifically, have been theorised before, and will also be the place where I position my research within and against these traditions. The second part will then forward my conceptualisation of agency which, put simply, I frame as the possibility space for avatar action, as afforded and limited by game design. This conceptualisation is drawing on game studies scholarship as well as game design theory, so the second section of Part I will dive more deeply into such writings. Part II of this chapter will then unpack my multidimensional heuristic framework for analysing agency, also drawing on how game studies and game design have theorised different dimensions in which player action can be realised as afforded or constrained by design. Part II will be split according to the four dimensions I propose, which zoom in on agency in space, time, in terms of customising the avatar and its surrounds, and in terms of narrativity. As part of unpacking these dimensions, I will include a number of brief analyses of avatar-based videogames from different time periods, in different genres, and on different platforms, in order to illustrate the nuances of each dimension. These will be brief discussions of individual examples to support the theoretical arguments made, and the remaining chapters in the thesis will be more detailed case studies.

### Agency in Game Studies

Since my conceptualisation of agency stems from understanding it as emerging from the process of interaction with the game systems, I will first review terms and concepts

used to describe the relationship between player and game, such as ‘interactivity’, ‘agency’, and ‘player effort’, especially in the early years of game studies scholarship, in order to position my research in relation to these traditions. We can find three rather different approaches of these. First, agency is discussed in terms of diversity, representation, and community participation in and around videogames (e.g., Banks 2013; Gray and Leonard 2018; Joseph 2018; Ruberg and Shaw 2017; Shaw 2014; Sotamaa 2007), Second, we have narratologically oriented approaches which understand agency as a player’s ability to change the course of a videogame’s story (e.g., Domsch 2013; Hammond et al. 2007; Stang 2019; Tanenbaum and Tanenbaum 2009, 2010). These are mostly influenced by Murray’s definition of agency. Third, we have a linking of agency to game mechanics, platforms, and the material affordances of videogames (e.g., Boonen and Mieritz 2018; Brock and Fraser 2018; Cheng 2007; Habel and Kooyman 2013; Harrell and Zhu 2009; Jørgensen 2003a; Keogh 2018a; King and Krzywinska 2006). My research sits closer to the latter group, and I will engage with these sources in more detail in the section dedicated to establishing my conceptualisation of player agency. But before I do this, I will (1) review the prevalent narratologically oriented approach to thinking about agency and the advantages and disadvantages it has, and (2) identify some (other) early texts which paved the way for a broader conceptualisation of agency as avatar action.

The long conceptual history of agency in game studies is intertwined with the tides that have defined the field so far. First, and perhaps most fundamentally, the question of whether games are stories or not, and if so, how. In the early years, Murray (1997) and Aarseth (1997) spearheaded two rather different approaches to games and narrativity. Murray found computer games to be the next step in the evolution of

narrative, one that offers interactivity in a way literature and film do not, while Aarseth argued that we cannot simply regard games solely as derivative of literary texts and therefore we should study them with a new disciplinary approach. For a while, this opposition was referred to as the ‘ludology/narratology debate’, with further entries (e.g., Atkins 2003; Eskelinen 2001b; Frasca 1999; Jenkins 2006; Murray 2005a; Pearce 2004) complicating the issue even more.<sup>9</sup> However, most parties have since dismissed that there was ever much of a debate, and agree that it was a matter of misunderstanding and misinterpretation (Frasca 2003a; Aarseth 2014, 2019). There now seems to be, as Lisbeth Klastrup puts it, ‘a common agreement that most games project some form of fictional world, however limited it be’ (2003a: n.p.). These widely different approaches show that we can theorise the relationship between game system and player in many ways. In the following, I will review the most prominent ones, in order to outline the gap my research addresses, as well as to identify the traditions it draws on.

I first want to discuss a buzzword a lot of scholarship revolved around: ‘interactivity’. Carr et al. (2003) discuss interactivity in relation to games-as-texts; Klastrup (2003b) sets up what she calls a ‘grammar of an interactive piece of work’; and Ryan (2006) offers a typology of different kinds of interactivity. I will zoom in on Ryan’s approach in more detail because her work marks an important milestone in the evolution of thinking about player action and the videogame object, and highlight two concepts in particular. First, Ryan uses ‘interactivity’ to describe the many relationships that can exist between ‘a user and a text’ (ibid. 107), and identifies player (or rather, in her words, user) choice at the heart of the process. Second, while Ryan does cite game designer Chris Crawford on choice being a fundamental criterion of interactivity, this

observation is woven into an argument for choice being narratively relevant action when she argues for different ‘textual architectures’, or ‘structures of choice’ (ibid. 99). ‘Textual architectures’ are both traditional and interactive architectures, which Ryan splits into story (or plots) as predetermined, and discourse as individual runs of the story/plot.<sup>10</sup> These come in many forms and can impact the narrative experience in digital media in various ways (see Figures 1-2) and are an important reference point in the development of thinking about agency, because although they primarily highlight the narrative potential in interactive media, they can also be seen as strategies for how player action could be manipulated by design. Metaphors like ‘network’, ‘sea-anemone’, ‘tree’, or ‘maze’ are to this day recurrent when making sense of, as well as designing, progression in videogames (see, e.g., Adams 2010 [2006]: 171–175).

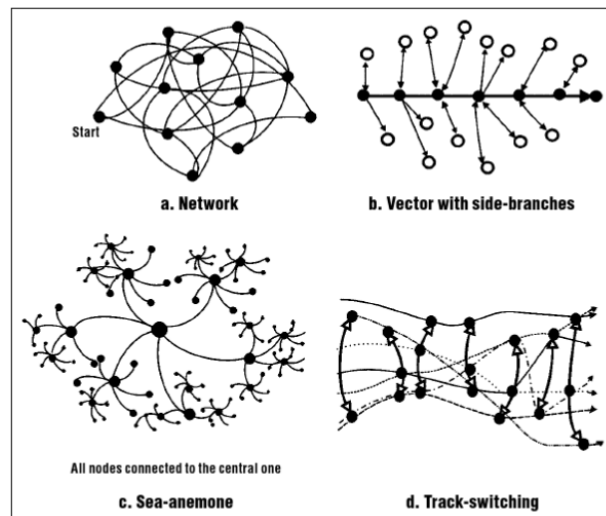


Figure 1: Interactive architectures affecting discourse (Ryan 2006: 103).

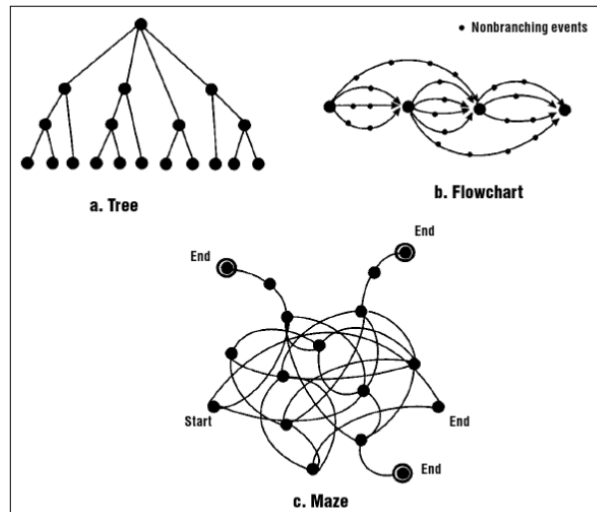


Figure 2: Interactive architectures affecting story (Ryan 2006: 104).

The nodes above represent choices a user/player can make, which then in turn determine what happens next in the story, the discourse, or both. Ryan goes on to propose different interactive architectures for different arrangements on the story and the discourse level, which inform different types of interactivity (ibid. 107–108). Although all her observations recapped here are primarily interested in games as interactive narratives, the points she makes about structure and the different kinds of player input are an early take on capturing how design can manipulate player agency.<sup>11</sup>

Another way to theorise player experience as afforded by the game is known by many names: ‘nontrivial effort’ (Aarseth 1997: 1–2), ‘player effort’ (Juul 2005: 36–43), ‘configurative action’ (Eskelinen 2001a: n.p., 2012: 275–293), or ‘player performance/playformance’ (Frasca 2007: 136–179). These approaches are in some ways different, but they concentrate less on meaning-making, and more on the mechanics of interaction between player and game systems. In this vein, they could be seen as a kind of formalist approach. When dissecting the aesthetics of ‘ergodic literature’, that is, a combination of a text and a machine that can produce multiple

manifestations of said text, Aarseth writes that ‘in ergodic literature, nontrivial effort is required to allow the player to traverse the text’ (Aarseth 1997: 1–2). This, Aarseth argues, is different from non-ergodic forms of literature, where trivial effort, such as eye movement, is required. This nontrivial effort is triggered by a text’s ‘traversal function’, which is ‘the mechanism by which scriptons are revealed or generated by textons and presented to the user of the text’ (ibid. 62).<sup>12</sup> Aarseth conceives of the traversal function as an object-property, thereby relocating the subject of query from the reader (or, rather, player) to the object (which to Aarseth in 1997 is the text). In this vein, I propose to think of agency as afforded by the mechanisms of the videogame. This, then, allows us to look at how a game’s design allows for interaction in order to better understand how player agency can manifest during gameplay.

Building on Aarseth’s notion of nontrivial effort, Juul speaks of ‘player effort’ which is exerted ‘in order to influence the outcome’ (Juul 2005: 36) of a game. Since most games include rules that prescribe how player action influences both the game state and the final outcome, he argues that player effort is part of the game (Figure 3).

**Table 2.3**  
The classic game model and the game, the player, the world

	The game as formal system	The player and the game	The game and the rest of the world
1. Rules			
2. Variable and quantifiable outcome			
3. Value assigned to possible outcomes			
4. Player effort			
5. Player attached to outcome			
6. Negotiable consequences			

Figure 3. Juul’s classic game model (2011: 37)



Besides 'rules' and 'variable and quantifiable outcome', Juul lists 'player effort' as a property of 'the game as a formal system', thereby making player effort the property of the game on an artefact level. From this review we can so far see that both Aarseth and Juul thus propose a way to think of player action as a possibility already prescribed into the game systems. This may go without saying, but it is important to emphasise, for it enables us to ask questions about agency not of the player, but of the videogame, which is what the heuristic framework presented in this chapter proposes to do.

Lastly, the term 'agency' was also used in early theorisations of the relationship between player and game, reader/user and text. Most prominently, Murray's definition of agency as 'the satisfying power to take meaningful action and see the results of our decisions and choices' (Murray 1997: 126) is widely cited in game studies and game design discourse.<sup>13</sup> Murray states that agency is a more precise concept than interactivity because '[a]ctivity alone is not agency' (ibid. 128). She argues that agency is better understood as 'aesthetic pleasure' which takes place in the mind of the person reading/playing (ibid. 128). This approach is quite problematic because it conditions the experience of agency with a 'narrative satisfaction' (ibid. 140), thereby narrativising the entire gameplay experience. It also implies that agency can only be achieved as a positive experience, so emotions like frustration (as triggered by a challenging in-game situation) or fear (the primary component in playing horror games) are not part of it. While videogames can certainly be considered as narratives in many ways which I will touch upon later, they are not exclusively that.

This being said, Murray does make two points I want to draw on. First, she argues that agency is more than mere interaction because it is 'meaningful', but this

‘meaningfulness’ needs further qualifying, which is what this thesis intends to do.<sup>14</sup> Second, while all of Murray’s points focus on how best to create a ‘compelling narrative structure that builds on these game structures without being diminished by them’ (ibid. 129), she does distinguish between different parts of what she calls the ‘game structure’, such as a virtual landscape offering spatial navigation (ibid. 129–137), or the problem solving challenges different spatial arrangements afford (ibid. 137–140). These are obviously not only narrative features and will be discussed later in this chapter.

As already stated, framing player agency as narratively meaningful action has permeated academic thought since Murray’s definition. I will zoom in on Domsch’s (2013) approach in particular, because it illustrates how over-used and under-defined the notion of agency can be within the discipline. Domsch links the concept of nodal structures (not at all dissimilar to Ryan’s textual architectures in interactive narrative) specifically to modern videogame agency. Drawing on Bode’s notion of ‘future narratives’, which Bode defines as potential narratives that can emerge from ‘nodal situations’ (Bode and Dietrich 2013: 1), Domsch argues that agency is narrative choice, insofar as a narrative is understood as what ‘happens in the mind of those who experience it’ (Domsch 2013: 99). He follows in Murray’s footsteps in that he rejects mere interaction as a true realisation of agency, and in that he regards narrative repercussions as a means to attribute meaningfulness to player action (ibid. 60–61).

There are two main limitations in Domsch’s approach. The first one is that he does not clarify what he means by terms with complicated conceptual histories, such as ‘games’, ‘rule’ and, perhaps most unfortunately, ‘agency’.<sup>15</sup> The second one is that

there is little critical engagement with previous scholarship on agency in game studies and game design discourse.<sup>16</sup> Despite these issues, he does make some points that, as we will see in my approach to agency discussed later in this chapter, outline interesting conceptual distinctions. Most saliently, while maintaining that ‘choice situations’ are communicated via ‘narrative forms’ (ibid. 31–34), he uses the notion of ‘existents’<sup>17</sup> to refer to building blocks of the gameplay experience which narrative does not account for. He lists game spaces and their qualities, non-player characters populating game spaces, and ‘the options available to the player in any given situation as well as the consequence of each action’ as such existents (ibid. 61). These, he argues, allow for different ‘choice situations’ which are not always narratively made sense of, such as ‘reflex choices’ in response to time-critical challenge (Domsch 2013: 117–120). Almost self-contradictorily, he therefore underscores the importance for agency (as afforded by a ‘choice situation’) not only of content that can be qualified narratively, but also of other kinds of content which is somehow different.<sup>18</sup>

This initial review of game studies has focused on sketching broadly how player action was theorised as interactivity, player effort, and agency, and also showing that agency understood as narratively relevant choice is restrictive in many ways, which is a gap this thesis will address. Generally speaking, I will use Murray’s definition of agency as a starting point in my theory, but I will also take into account broader conceptualisations of player action as afforded by the game. My approach to thinking about agency is drawing on a number of traditions within game studies by combining textual analysis of games as objects, considerations of design, and the paratextual surrounds of videogames. As such, it is an approach invested in better understanding game design. Next, I will review how game design theories have discussed the role of

design in influencing player action broadly, and the concept of agency more specifically.

### Agency in Game Design

As I will discuss in more detail throughout my case study chapters, the videogame industry saw an exponential growth from the late 1980s onwards. While some designers argue that the game development landscape is too fast-paced for there to be any consistent recording of design theories (see, e.g., Dille and Platten 2007), in parallel with the size of the industry grew a need for compiling knowledge of good design practices. Recognising this need, game designer Chris Crawford organised what would be known as the first Game Developers' Conference, or GDC, in his living room in 1988 (Campbell 2013). This spawned a new era in game design, where more and more effort was put towards creating a knowledge bank of design practice. In the early years, the most typical approach was to put one's own experiences into writing, usually without much reference to other designers' work, or existing theories.<sup>19</sup> An important first milestone in this journey is Costikyan (2005 [1999]), who does not discuss agency explicitly, but does identify the role of the designer as manipulator of player action.

Costikyan defines the computer game as 'a form of art in which participants, termed players, make decisions in order to manage resources through game tokens in the pursuit of a goal' (ibid. 196). The four factors he identifies as playing part in decision-making are goals, opposition, resource management, and information – we will see that all of these form fundamental parts of most subsequent discussions on how game design can enable player action. Most relevant for us, however, is how he theorises the relationship between player and game, which can be seen in a series of questions

he argues every designer should ask themselves as they work: ‘What are the players’ goals? Can the game support a variety of different goals? What facilities exist to allow players to strive toward their various goals?’ (ibid. 197). By asking these questions, Costikyan, like Aarseth or Juul, also recognises the importance of ‘facilities’ that the designer can create in order to enable players ‘striving towards their various goals’. As such, this shows that at a time when critical discussions around games were mostly pre-occupied by whether they are narratives or not, and by extension, whether agency is narratively validated player action or not, there were still some common truths acknowledged by both scholars and designers, namely that it is the entirety of game systems which facilitate player action in the first place.

What followed was an avalanche of game designers creating analytical models to better understand how the games they create facilitate play (e.g., the ‘400 Project’ in Falstein 2002; ‘Formal Abstract Design Tools’ in Church 2005 [1999]; ‘dramatic game dynamics’ in LeBlanc 2005; ‘neo-Aristotelian theory of interactive drama’ in Mateas and Stern 2005<sup>20</sup>; ‘game design patterns’ in Björk and Holopainen 2005; the ‘5 dimensions of play’ in Vandenberghe 2012). I want to unpack two contributions from this list in particular: Church for his foundational conceptual work which many draw upon in the following years, and Björk and Holopainen whose methodological approach I share. Others, such as Mateas and Stern (2005) and LeBlanc (2005), will be engaged with in more detail later in this chapter.

One of the ‘Formal Abstract Design Tools’ Church proposes is called ‘intention’ and he defines it as a

process of accumulating goals, understanding the world, making a plan and then acting on it [...] intention can operate at each level, from a quick plan to cross a river to a multi-step plan to solve a huge mystery.

(Church 2005 [1999]: 372)

Unfortunately, Church does not unpack these tools much further, leaving a lot of stones unturned. He does introduce, however, another tool he calls ‘perceivable consequence’, which is a ‘clear reaction from the game world to the action of the player’ (ibid. 373). This foregrounds ‘intention’ as realised in dialogue with feedback from the game systems – an approach that shares a lot with Murray’s definition of agency discussed earlier in this chapter. However, Church makes it clearer that intention is not a yes or no question, but a matter of degrees, and he also underscores the role game system feedback plays in this in ways that Murray does not. Thus, Church grounds Murray’s theoretical observations in more practice-oriented writing, thereby shifting the emphasis from narrative meaningfulness to the importance of all aspects of game design.<sup>21</sup>

Second, I want to focus on Björk and Holopainen (2005), who forward a way to analyse games, identify problems in design, and find solutions for them.<sup>22</sup> This text is especially relevant for my work because my multidimensional conceptualisation of agency follows closely in their footsteps when it comes to analysis and theory work. First, they propose the concept of ‘game design patterns’ to capture commonly recurrent formations, and a ‘component framework’ that these can be compiled into, which then, in turn, can be used to better understand individual iterations of game design. This is similar to how my heuristic framework for analysing agency is constructed: I propose analytical dimensions, which then can be used as a lens to look

at games with. Second, they argue that asking questions about gameplay can be done not just by collecting data from actual players, but also by studying the games themselves:

As a rule-based activity, however, games have explicit requirements and more clear-cut boundaries than other activities; their explicit formality makes it possible to study gaming activity in a detailed way without having to observe the people who play games, making it easier to focus on the activity itself instead of the people.

(Björk and Holopainen 2005: 422)

While this approach to analysis was implied in many of the texts I discussed in the review of game studies (e.g., Aarseth 1997; Juul 2005, Murray 1997), it is in game design writings that we find it articulated ever so clearly.

Somewhat overlapping with this early period of game design theorisation discussed so far was a time of game design programmes at colleges and universities being launched, predominantly in the US. For example, the Game Design and Development Program at Michigan State University launched in 2005 ([msu.edu](http://msu.edu)), the MIT Game Lab launched in 2006 (Whitacre 2012), as did the Computer Games Design programme at UC Santa Cruz (Stephens and McGirk 2019). As a result, there was an increasing need to create a systematic curriculum for game design students. This spawned the publication of several influential game design textbooks. Most of these offered detailed examinations of all aspects of game design (e.g., Adams 2010 [2006]; Fullerton 2014 [2004]; Rogers 2010; Rouse 2005; Salen and Zimmerman 2004; Schell 2015 [2008]), while others approached it from a very specific topic, such as dissecting what the notion of ‘fun’ means (Koster 2004), game character development (Isbister

2006; Sheldon 2004), or the elusive experience of good ‘game feel’ (Swink 2008). There was also a growing number of anthologies and more traditionally structured textbooks with multiple contributing authors who were typically a mixture of designers and scholars (see, e.g., Bateman 2007, 2009; Harrigan and Wardrip-Fruin 2004, 2007, 2009). Throughout this chapter I will draw on these works in various degrees of detail. For now I will limit my discussion to two in particular, in order to showcase two widely different definitions of agency doing the rounds in game designer discourse: Boon (2007) and Adams (2010 [2006]). By doing so I will show that there is a need not only in the realm of game studies, but also in game design, to have a more cohesive theory of agency, which my thesis aims to fulfil.

In Bateman’s 2007 textbook about game writing, a chapter by designer Richard Boon sketches an approach to agency similar to what I propose: as player action determined by designer-implemented rules. He writes: ‘[a]gency refers to the capacity for a player to effect meaningful changes in a game world, or at least the illusion that the player has this capacity’ which he also thinks about in terms of player action:

the rules of the game determine the possibilities for player agency; in totality, these rules create the game-space within which the player can act.

(Boon 2007: 63)

Although what ‘meaningful change’ means is not specified, it is implied when he argues that the main way to deliver narrative content that is meaningfully crafted is ‘to respond to the player’s actions within the game-space’ (ibid.). Again, although the notion of what constitutes a ‘game-space’ is not specified per se, the main point to take away is that player agency is facilitated not just by one game design feature, but in



collaboration amongst the many elements as determined by the rules of the game. Boon's approach echoes what has been surfacing in game studies discourse around the time, in particular represented by Jørgensen (2003a), King and Krzywinska (2006) and Sicart (2008).

A different definition of agency is offered by Adams (2010 [2006]), and it is one entirely restricted to narratively relevant player action. The keyword to Adams' work is 'player-centric game design', or 'an approach to game design that requires the designer to empathize with the player and concentrate on entertaining the player' (ibid. 518). As part of this approach, he defines 'agency' as '[t]he power to change the direction of the player's path through the plot, and perhaps the story's future events' (ibid. 213). Later, the idea of agency as 'letting the player influence the plot and change the outcome' is reiterated (ibid. 221). While he argues that interactive stories include three kinds of events, namely 'player events', 'in-game events' and 'narrative events', the example given to illustrate this suggests that we can only talk about agency if player action is validated narratively:

Consider a situation in which a player must find a way to get past a security guard to enter a building. You can give the player several ways to accomplish this: through violence, or trickery, or patience – waiting until the security guard goes off shift. No matter which approach the player chooses, he still enters the building through the same door and encounters the same things on the other side. If his decision does not actually affect the future events of the story, he has no agency. But his decision about how to get through the door contributes to the plot; his own actions are part of his experience of the game.

(ibid. 160)

In a somewhat contradictory manner, however, he also recognises what he calls ‘emergent narratives’, such as the many player stories generated by the game mechanics of *The Sims* (Maxis 2000), to allow for more player agency as afforded by the ‘core mechanics’ of the game:

The chief benefit of emergent narrative is that the sequence of events is not fixed by a linear or branching structure, so the player enjoys more agency. He can bring about any situation that the core mechanics will let him create.

(ibid. 176)

The only difference between the ‘violence, trickery, or patience’ tactics as afforded by the three paths to neutralise the guard in Adams’ first example, and the ‘core mechanics’ of building different houses or choosing between career paths in *The Sims* is the volume of options. Adams’s definition of agency therefore would have benefitted from a more in-depth discussion of games’ narrativity and their relationship to other game mechanics, which is what my heuristic framework will do.

That being said, although Adams regards agency as only expressed when the player can change the course of a game’s story, he does talk about various other ways in which agency can be expressed. The problem is, he does so always in relation to said story, which is rather restrictive as it does not account for any other dimensions in which player action can manifest. He frames game mechanics as ‘mechanisms for advancing the plot’, and they are: when a player ‘meets challenges or makes decisions’; ‘the avatar’s movements trigger the storytelling engine’, and when ‘the core mechanics don’t send triggers to the storytelling engine to advance the plot; rather, the storytelling engine advances the plot on its own and sends triggers to the core mechanics to indicate when it’s time to offer some gameplay’ (ibid. 180–182). In

other words, these are the internal clock of the game (determining both challenges and predetermined story progression), and spatial navigation of game spaces. Such a framing of game mechanics implies a primacy of narrativity in videogames, which is only one lens through which videogames can be looked at. At the same time, Adams' 'mechanisms for advancing the plot' offer a way to break down possible player action into different *dimensions*. Others who theorise player action similarly both in game studies and in game design (see, e.g., Calleja 2011), and I will engage with them later in this chapter.

With the proliferation of the internet, expertly curated online resources also became widely available, such as the *GDC Vault*, which is an online library of talks given at all Game Developers' Conferences to date, or *Gamasutra*, a website offering videogame-related news, job ads, blog posts, podcasts, and many more. Both showcase a mixed bag in terms of designers conceptualising agency. We can find talks and essays where developers define agency regarding overall game design (see, e.g., Casteel 2015; Costiuc 2018; Taylor 2017; Worch 2014). But there are also many who zoom in on narrative relevance (see, e.g., Bycer 2015; Leone 2019; Marchal and Yorke 2018). These two short lists represent what is broadly the case both in game studies and in game design: that, besides the more player-focused scholarship briefly mentioned in the introduction to this chapter, there are two main approaches to framing agency. One which frames it as having the power to change the development of a story; and one which argues that agency is something afforded by a broader variety of game components. In the following, I propose a multidimensional conceptualisation of agency which speaks to the many ways in which player action can be deemed meaningful.

## Toward a Conceptualisation of Agency

As the brief survey of agency in game studies and game design above showed, there are different ways in which player freedom and strategies for constraining it can be framed. In this thesis I propose a multidimensional framework that aims to capture this variety. But before I can develop said framework, I need to first establish what I mean by player agency. I am deliberately avoiding the term ‘define’, because a definition implies exclusivity, and by no means do I think in these terms, or want my argument to seem exclusive. What I want to propose is one way of thinking about agency, rather than a golden measure. Although there is danger in a conceptualisation being too loose, there is value in this flexibility: by steering away from solid definitions, the conceptualisation of agency and its multiple dimensions proposed here maintain the possibility for adapting to the constantly evolving medium of videogames. How, then, can we begin this process? Videogames being an interactive medium (in the sense Ryan understands the term), one could assume that they afford full agency, as that is the direct consequence of interactivity: I can only feel like I have a say in what happens on screen if I can, actually, do things on screen. Some scholars raised that that is not quite the case (e.g., ‘reactive agency’ in Arsenault and Perron 2008: 119–120; ‘illusory agency’ in MacCallum-Stewart and Parsler 2007: 6; ‘illusion of agency’ in Charles 2009). My conceptualisation of agency maintains that it could manifest to a very low degree, or indeed, be constrained altogether, but that it is equally as productive to explore how it is thus reduced or constrained as it is to point out how it is afforded.

I argue that agency can be conceived of as a matter of degrees. This approach is drawn from Ryan's (2009) conceptualisation of interactivity similarly being a spectrum. As such, I propose that, in the context of avatar-based games,

*player agency can be conceptualised as the possibility space for meaningful choice expressed via player action that translates into avatar action, afforded and constrained by a game's design.*

Below I build my conceptualisation of agency broken down into five statements. They draw on themes and concepts which surround agency in game design and game studies discourse: meaningful player choice, player/avatar action, affordance of design, being designed, and possibility space.

#### AGENCY IS MEANINGFUL PLAYER CHOICE

As Murray points out, 'activity alone is not agency' (Murray 1997: 128). Therefore, to argue that all player action is a manifestation of agency is problematic, as doing so would raise the question of why not just use 'interactivity' instead of 'agency' to describe this elusive phenomenon. But meaningfulness of action does not only come from narratively relevant consequences of said action. As discussed earlier, Murray attaches the notion of meaningfulness to that of agency, but proceeds to qualify agency as narratively meaningful later on, thereby reducing the concept's general applicability. Murray's definition is an important starting point, however, there are other ways of thinking about meaningfulness which speak to more than a game's representational qualities.

Notably, Salen and Zimmerman advocate for meaningful play to be ‘the goal of successful game design’ (Salen and Zimmerman 2004: 37), and offer two definitions: one ‘descriptive’, and one ‘evaluative’. I am including both in full below, as they form a core part of my conceptualisation of agency:

The descriptive definition of meaningful play: Meaningful play in a game emerges from the relationship between player action and system outcome; it is the process by which a player takes action within the designed system of a game and the system responds to the action. The *meaning* of an action in a game resides in the relationship between action and outcome.

The evaluative definition of meaningful play: Meaningful play is what occurs when the relationship between actions and outcomes in a game are both discernible and integrated into the larger context of the game.

Discernibility means that a player can perceive the immediate outcome of an action. Integration means that the outcome of an action is woven into the game system as a whole.

(Salen and Zimmerman 2004: 37, orig. emphases)<sup>23</sup>

There are two key take-aways from this. First, that meaningfulness of play emerges from the interaction between player and system, and therefore is not an inherent quality of either alone. It does not exist in and of itself, but emerges in the feedback loop between the two, one triggering the other. Second, for meaningfulness to successfully emerge, the impact of player action on the game system needs to be palpable and relevant within the game itself. Not only must there be a feedback loop, the points of interaction within the loop must be at least perceptible if not obvious to the player, and relevant within the context of the action. For instance, in a shooter game, the avatar may have a gun, and so the player may be able to make the avatar

shoot at an in-game object, such as a wooden crate. However, if the crate does not explode with a loud bang and cracks, if there are no splinters flying everywhere injuring the avatar, or if no non-player character comments on this mayhem, did they really shoot that crate? Was the action meaningful? This is what Salen and Zimmerman mean by ‘discernible’ and ‘integrated’ relationship between action and outcome, and this is how meaningfulness is understood in my conceptualisation of agency.

In a similar vein, I argue that player choice is meaningful choice about what action to take in the game. Game designer Jesse Schell draws on Salen and Zimmerman’s notion of meaningfulness when he writes:

[a] good game gives the player meaningful choices. Not just any choices, but choices that will have a real impact on what happens next, and how the game turns out.

(Schell 2015 [2008]: 179)

Meaningfulness is also at the heart of Jørgensen’s (2003a; 2003b) definition of agency: ‘[w]hen the player is able to solve the problems by finding solutions and executing them and thus initiate game progression, this is an example of *computer game agency*’ (Jørgensen 2003b: 1, orig. emphasis). Drawing on philosophical theories of action, she further adds that, ‘for an action to be labelled agency, however, it must be intentional, meaningful and have a certain effect, but the effect does not need to be expected’ (Jørgensen 2003b: 2). In a later contribution specifically theorising the many roles of interfaces in gameplay, she adds:

As long as game-system features provide appropriate information for meaningful gameplay, they are not alienating but create a sense of engagement and attachment by giving the player agency within the gameworld.

(Jørgensen 2013: 3)

Jørgensen's arguments are useful insofar as they ask questions about agency as an ability to take action, rather than meaning-making as triggered by said action. However, there are two ways in which her approach differs from the one I pursue here. First, Jørgensen is focused on the player, and I want to focus on the design of the game, because that allows me to look at many more possible iterations of player action than observing the few that take place in individual game sessions. Second, especially in her later work she draws largely on Nitsche's (2008) understanding of videogames according to spatial planes, and analyses the gameplay experience in terms of the spaces it takes place in, whereas I want to expand my conceptualisation beyond a spatial dimension.

In summary, so far I have established that my conceptualisation of agency is concerned with understanding, in crude terms, not only whether agency is there, but also whether it is not, and how. I also echoed others in saying that interactivity alone is, indeed, not agency, but that player action needs to have a quality of meaningfulness. The above has also clarified that meaningfulness in the conceptualisation forwarded in this thesis is understood not just in a narrative dimension, but more broadly when looking at the interaction between player and system. In avatar-based games, this most typically happens via an avatar, and this is what the next pillar is dedicated to.



#### AGENCY IS PLAYER/AVATAR ACTION

In an isometric strategy game such as *Age of Empires II* (Ensemble 1999) or in god games such as *The Sims* (Maxis 2000), the player gets to control multiple in-game entities, thereby exerting their capacity for meaningful action not just over one or two characters, but over entire families, or armies, while also getting to alternate which in-game entity they control at any given time. In avatar-based games, player action translates into the game via the actions of the avatar.<sup>24</sup> They interact with the gameworld<sup>25</sup> through that one entity, whether that is an actual human, like Gordon Freeman in *Half Life* (Valve 1998), animal, like Donkey Kong, or neither, like a strange sticky ball in *Katamari Damacy* (Namco 2004). The qualities of this in-game manifestation of the player, and the implications these qualities have on the overall experience, have been approached from different angles in gaming-related discourses (see, e.g., Blom 2019, Linderöth 2005, Meretzky 2001, or Willumsen 2018 for avatars in design; Isbister 2006 on a psychological approach to character design; Westcott 2009 for avatars and performativity; Bayliss 2007 on player engagement; and Klevjer 2006 or Vella 2015 on avatar as a phenomenological entity). A common thread in many, though not all, of these approaches is the differentiation between what a character is versus what an avatar is.

Generally speaking, an avatar can be described as a kind of ‘visual and [...] audial representation of a player within the digital game environment’ (Tymińska 2016: 102). Avatars can also be framed as a ‘vicarious body’ used to interact with the game system as well as its representational world (Klevjer 2006: 95–96). In a later publication, Klevjer emphasises a distinction between avatar as ‘playable character or persona’ and avatar as a vehicle for the player’s ‘embodied agency and presence’ (Klevjer 2012: 17) in the game. Vella draws solid lines between the avatar and character when arguing

that they are two elements of what he calls the ‘playable figure’ (Vella 2015: 221). He argues that besides its representational significance, the avatar, insofar as the game system is concerned, serves as the translator of player action to in-game action:

The player acts *on* the other components of the game system *through* the avatar, making it the singular point of origin of all the lines of action the player directs towards the components of the game system.

(ibid. 225, orig. emphasis)

This dual function of the avatar will be discussed in more detail when unpacking the dimensions of the heuristic framework. For now, it is sufficient to stress that indeed, as Vella argues, agency can be a kind of ‘capacity to act upon a gameworld’ (ibid. 167). Accordingly, avatar action is an important part of deconstructing agency, as it translates player choice into the game system. Looking at what the avatar can and cannot do therefore is indicative of how player action and from that, player choice, is allowed or constrained. This brings me to the next quality of agency: something afforded and constrained by game design.

#### AGENCY IS AFFORDED BY DESIGN

So far, I have established that agency can be framed as meaningful player action expressed as avatar action. It follows that we need to consider how a videogame allows said action. Atkins and Krzywinska (2007: 6) argue that ‘the parameters of what player can and can’t do are scripted into a game’. Wardrip-Fruin and colleagues (2009: 7, orig. emphasis) point out that agency is a phenomenon ‘that occurs when the actions players desire are among those they can take *as supported by an underlying computational model*’. Although there have been a variety of terms used to refer to the

building blocks of videogames (e.g. ‘unit operations’ in Bogost 2006: 42; ‘ludemes’ in Browne et al. 2019), this support can be better understood with the help of Juul’s description of rules.<sup>26</sup> These, he argues, do two distinct things:

rules specify *limitations* and *affordances*. They prohibit players from performing actions such as making jewellery out of dice, but they also add meaning to the allowed actions and this *affords* players meaningful actions that were not otherwise available; rules give games *structure*.

(Juul 2005: 58, orig. emphasis)

‘Affordance’ is a term introduced by psychologist J.J. Gibson in his seminal work *The Ecological Approach to Visual Perception* (2014 [1979]) and refers to an object property which enables interaction: for instance, the ‘grasp-ability’ of a handle, the ‘tie-ability’ of rope (ibid. 125). In other words, an object can afford some kinds of interaction by means of limiting others. Designer Donald Norman reiterates this in his similarly influential book *The Design of Everyday Things* (2002 [1988]): ‘the perceived and actual properties of the thing, primarily those fundamental properties that determine just how the thing could possibly be used’ (ibid. 9). Talking about the relationship between game rules and meaningful player action, Juul’s argument cited above underscores the importance of acknowledging that an affordance can also be considered a limitation.

Specifically with regards to agency, Mateas and Stern (2005) forward what they call a neo-Aristotelian theory for analysing game, as part of which they propose a

prescriptive, structural model for agency. A player will experience agency when there is a balance between the material and formal constraints. When the actions motivated by the formal constraints (affordances) via dramatic

probability in the plot are commensurate with the material constraints (affordances) made available from the levels of spectacle, pattern, language, and thought, then the player will experience agency. An imbalance results in a decrease of agency.

(Mateas and Stern 2005: 654)

I want to draw attention to two crucial points made here. First, Mateas and Stern, like Juul, use the term ‘affordance’ to refer to ‘formal and material constraints’ of a game. Second, they link the notion of agency to these affordances. However, Mateas and Stern only limit their observations to interactive drama, and as such, they do not discuss further the many types of ‘formal’ and ‘material constraints’ which are not primarily there to serve a narrative purpose.<sup>27</sup> Elsewhere, Salen and Zimmerman argue that ‘rules limit player action’ (Salen and Zimmerman 2004: 122). Eskelinen (2012: 275) points out that ‘the behaviour of every necessary element of the game, including its players, is controlled and constrained by rules’. Despite their many differences, all of these theorists seem to be in agreement that it is rules that afford action. But rules are a rather narrow category, as videogames are made up of much more than just rules. How can this be broadened out?

It is beyond the scope of this thesis to address the many ways in which the question about what a videogame is can be answered. Equally, there are numerous contributions to game design theory which propose different frameworks to better understand the structural components of games. For example, Hunicke and colleagues (2004) break down games into three distinct components of ‘rules’, ‘system’ and ‘fun’, which they then link to the design concept of ‘mechanics’, ‘dynamics’, and ‘aesthetics’. Additionally, as discussed in the literature review, Björk and Holopainen (2005) propose a component framework and design patterns which are commonly found

combinations of said components. Indeed, there is no shortage of terms used to analyse and classify what videogames are comprised of.

Since the conceptualisation of agency presented here attributes meaningfulness to the interaction between player and system, I am going to follow Sicart's approach who, when defining what game mechanics are, argues that they are 'methods invoked by agents, designed for interaction with the game state' (Sicart 2008: n.p.). The notion of game mechanics is an often discussed one, with designers and scholars alike trying to pin down the relationship between rules and mechanics with various degrees of complexity (see, e.g., Järvinen 2008; Jørgensen 2013; Rouse 2005). It is important to acknowledge the variety of definitions offered, but instead of the details of terminology, such as the relationship between rules and mechanics, what helps more with understanding how avatar action is afforded is the emphasis on the relational dynamic between the player and the game – in other words, the invocation, the act of affording or constraining in a broader, more holistic sense. As Gregersen and Grodal observe, '[t]he extent to which an embodied sense of agency, ownership, and personal efficacy is fostered by games is very much a question of *overall design*' (2008: 67, my emphasis). I will therefore use the umbrella term 'game design' to refer to that which affords avatar action within the software, as created by developers.<sup>28</sup> As such, we can understand more about player agency by looking at how it is afforded by the design of a game, both on an algorithmic level, as well as on the level of audiovisual rendering of its governing rules.

## AGENCY IS DESIGNED

Having framed agency as afforded by the game's design, I emphasised that it can be viewed as an object-property, in the veins of Aarseth and Juul's approach discussed in the brief survey of game studies literature above. In doing so, I slightly repositioned the emphasis from asking 'what' is enabling agency to 'who'. This may seem like splitting hairs, but it has important methodological consequences when it comes to applying this conceptualisation of agency, especially in the case of a medium where creative collaboration and fan labour are very common.<sup>29</sup> Developers are very much aware of their role in setting into stone what players can and cannot do. For example, Lankoski and colleagues (2003: n.p.) observe that 'by setting goals, scripting pre-defined actions and choosing what kind of actions to implement, the game designer can restrict the player's freedom'. Hunicke and colleagues (2004: 1).say this, too: '[a]ll artifacts are created within some design methodology'.

Indeed, as Costikyan's (2005 [1999]) essay demonstrates, designers have acknowledged that part of their work is ushering players in certain directions from early on. Following this line of thought, and what I already established about agency being afforded by game design, we can frame agency as designed. However, as, Salen and Zimmerman point out, design can only ever prescribe player action indirectly:

As a game designer, you are never directly designing the behaviour of your players. Instead, you are only designing the rules of the system. [...] Game designers create experience, but only indirectly.

(Salen and Zimmerman 2004: 168)

This emphasis on the fact that gaming activity will always be designed, and always indirectly, is reiterated by Björk and Holopainen as well:

Unlike many other activities, gaming activity is designed. As such it can be treated as an objective material to be shaped by the designer. Since the actual interaction cannot be designed, but rather artifacts and rules that encourage or discourage interaction, this view of game design has been called “second-order design” (Salen and Zimmerman, 2004).

(Björk and Holopainen 2005: 422)

Similarly, Schell calls design affording player action ‘indirect control’ (2015 [2008]: 284–298). In other words, game designers are only ever partially responsible for how the gaming experience unfolds. That being said, while acknowledging that there can never be direct control, Schell proposes a way to think about how player action can be designed. I will reconstruct his approach in some detail, because the terminology in his work is widely used by designers, as seen in their recurrence throughout the case study chapters to follow in this thesis.

At the core of Schell’s theory is a specific understanding of space, which to him is a mathematical construct characterised as discrete and continuous, with a number of dimensions, containing bound areas which may or may not be connected (ibid. 131). This space is populated by ‘objects’, which are the *nouns* of game space. They have ‘attributes’ and ‘states’, which are the *adjectives*, such as their position in said space (ibid. 136). He then ranks layers of ‘knowers’ according to how much of the attributes and states are revealed in the game, arguing that these dynamics are crucial to gameplay and game design:

Game playing is decision making. Decisions are made based on information. *Deciding the different attributes, their states, and who knows about them is core to the mechanics of your game.* Small changes to who knows what

information can radically change a game, sometimes for the better, sometimes for the worse.

(ibid. 140, my emphasis)

Schell argues that this decision-making translates into play via *action*. Actions are the *verbs* of game mechanics, and they answer the question ‘What can the player do?’ (ibid. 140). The more verbs there are, the more objects they can act on, the more ways there are to combine operative actions into resultant action, the more subjects there are to implement action, and the more emergent gameplay becomes (ibid. 142). Frasca (2007: 123–125) and Järvinen (2008: 263–265) also talk about mechanics described as verbs, but what they only imply about agency being designed, Sicart makes explicit: ‘[a]gency is designed, too: designers think about ways for players to experience the game’ (Sicart 2013: 50). Building on these approaches, I argue that agency as expressed via avatar action can be considered as the enactment, the realisation of these verbs. Therefore, agency can be thought of as designed, and we can therefore analyse a game’s design in terms of agency to understand more about how it affords or limits player action as expressed via avatar action.

#### AGENCY IS POSSIBILITY SPACE

A notion that links all the aspects discussed so far is that of ‘possibility space’, which can be described in terms of the affordances and limitations of game design. Framing videogames as systems that create, or withdraw, possibility for action has a long history in game studies and game design discourses: Aarseth (1997: 3) argues that ‘inaccessibility [of paths] does not imply ambiguity but, rather, an absence of possibility’; Murray (1997: 152) acknowledges that ‘interactors can only act within the possibilities that have been established by the writing and programming’; Järvinen



(2008: 254) frames game mechanics as a ‘means to guide the player into particular behaviour by constraining the space of possible plans to attain goals’; Bogost (2008a: 120) also says that the ‘possibility space of play includes all of the gestures made possible by a set of rules’; or, somewhat more poetically, Jensen (2013: 76) writes ‘[p]ossibility spaces are sites of constant conflict between order and chaos, between constraints and open-ended play’. My conceptualisation of agency as a possibility space taps into this tradition of describing the videogame artifact as a container of possible, yet unrealised player action. More specifically, and going back to the very core of how my conceptualisation of agency draws on the notion of meaningful action, Salen and Zimmerman forward a fitting definition:

[a possibility space] is the space of all possible actions that might take place in the game, the space of all possible meanings which can emerge from a game design [...] The space of possibility is designed (it is a constructed space, a context), it generates meaning (it is the space of all possible meanings), it is a system (it is a space implied by the way elements of a system can relate to each other), and it is interactive (it is through the interactive functioning of a system that the space is navigated and explored).

(Salen and Zimmerman 2004: 67)

Taking into account all of the above, and to conclude this section on theorising agency in avatar-based videogames, let me reiterate my conceptualisation of agency:

*player agency can be conceptualised as the possibility space for meaningful choice expressed via player action that translates into avatar action, afforded by a game’s design.*

How can we put this to action? This framing of agency yields a fairly accessible and feasible methodology: we can better understand how player agency can manifest by analysing a game's design. What follows is a heuristic framework offering analytical distinctions between main ways in which affordances and limitations of avatar action can manifest.

## A Multidimensional Heuristic Framework for Analysing Player Agency

There are many components to the design of a videogame, which means there are many ways in which agency can be afforded or limited by said design. As Carr and colleagues (2003: 150) note ‘different forms of agency operate in and around players’ engagement with the games’. King and Krzywinska also point out early on that

expressions of agency may be gameplay/goal-directed – puzzle-solving, shooting/killing, interacting with weapons, equipment, obstacles, or gateways – or free-form and *paidea*-oriented, such as the capacity to shoot up the environment in *Half-Life*.

(King and Krzywinska 2006: 119, orig. emphasis)

How can we group these different forms? In the following, I combine game studies and game design theory to create a multidimensional analytical framework for examining how player agency unfolds in avatar-based videogames.

Approaches to videogame agency that acknowledge multiple layers or dimensions are not new (see, e.g., ‘personal, proxy, and collective agency’ in Schott 2006). I will reconstruct two such frameworks in some detail, as they both propose conceptual and terminological solutions my approach will draw on. Harrell and Zhu (2008) propose to think of agency as a ‘set of actions allowed (by the system) to be executed by the user’ (ibid. 48). They highlight that agency phenomena have multiple *dimensions*, and break down the process of agency manifestation:

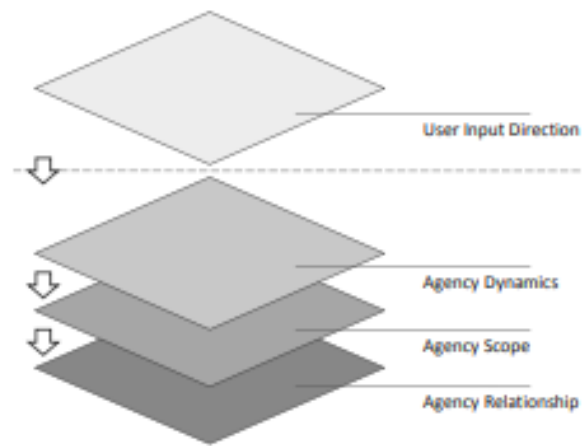


Figure 4: Harrell and Zhu's (2008) dimensions of agency play, where the arrows indicate direction of influence.

They argue that user input influences a system's reaction (which they term 'Agency Scope/Agency Dynamic'), which then in turn creates a co-dependency between user and game system ('Agency Relationship'). The introduction of agency dimensions is an important step forward, but there are two areas where Harrell and Zhu's model could be specified further. First, their model works towards facilitating narratively meaningful engagement in a gameplay session and is therefore in many ways restricting agency to only be narratively relevant. Second, it implies that there is unidirectional movement between these layers, based on cause-effect relationship between them. In a similar vein, Boonen and Mieritz (2018) introduce what they call the 'Agency Parameter Model', which also hierarchifies the relationship between the characteristics in game design which manipulate agency. I suggest that due to the constant feedback loop between player and game systems, a less rigid framework that emphasises mutual influence between dimensions is better suited.

Another multidimensional model is offered by Calleja (2011), who describes the different kinds of ‘player involvement’ that videogames facilitate. His six dimensions are:

control and movement (*kinesthetic involvement*), the exploration and learning of the game’s spatial domain (*spatial involvement*), co-presence, collaboration, and competition with other agents (human or AI) that inhabit it (*shared involvement*), the formation of an ongoing story and interaction with the scripted narrative written into the game (*narrative involvement*), the affect generated during gameplay (*affective involvement*), and the decision making undertaken in the pursuit of both game and self-assigned goals (*ludic involvement*).

(ibid. 4, orig. emphases)

The three key things to take away from Calleja’s model are that involvement occurs in multiple dimensions; dimensions are not necessarily simultaneously present to the same degree; and dimensions cooperate fluidly during gameplay (ibid. 35–45). I argue that these three observations can be adapted to agency, because player action is, in many ways, a pre-requisite to involvement.

That being said, as detailed as Calleja’s model is, it is not directly applicable to an analysis of videogame agency. First, Calleja’s analytical focus is the experience of play itself, rather than what the game affords. In contrast, I frame agency as a possibility space of the videogame’s affordances and limitations. As such, my conceptualisation does not capture how players interpret said affordances, but takes into account a broader range of different gameplay iterations. Second, and more importantly, Calleja mentions ‘choice’ and ‘agency’ only in the context of specific dimensions. ‘Choice’ is featured as part of ‘ludic involvement’, but arguably, all

involvement has choice expressed via action as its prerequisite. ‘Agency’ is specifically discussed in terms of ‘kinaesthetic’ and ‘spatial involvement’, where he links the notion to movement and control (ibid. 55–71, 75, 91). At the same time, ‘agency’ elsewhere is used as a synonym for empowerment (ibid. 198–199), resulting in inconsistency. In summary, Calleja’s multiple dimensions are exhaustive and apt in accounting for various iterations of gameplay, and it may well be that my model for agency feeds into his model of involvement. However, this thesis is not dedicated to understanding immersion and affect, it is concerned with how the possibility space for player action can be better understood.<sup>30</sup>

This is what my multidimensional heuristic framework for analysing player agency sets out to do. Each of the dimensions draw on themes emerging from how game studies and game design discourse discuss player action and avatar action. In the section on agency being afforded by design, I mentioned the importance of the support for action provided by ‘an underlying computational model’ (Wardrip-Fruin et al. 2009: 7). What I did not mention then was that Wardrip-Fruin and colleagues add that a designer’s task is to incentivise players towards satisfying experiences, such as ‘traveling across space, managing resources, engaging in battle, or making conversational moves’ (ibid.). In many ways, the four dimensions proposed below tap into this seemingly throwaway list.

Regarding methodology, the framework proposed is not a map of how agency is manifested in all avatar-based videogames, but it is designed to be used in asking interesting questions about such videogames. It is not so much a typology, or a ‘grounded theory’ as per the social sciences tradition, where a framework is generated

solely from data collection and analysis (Creswell 1997: 55–58), although the case study analyses did help qualify certain aspects of the dimensions. It is built as a toolbox of terms and concepts that can be used to analyse agency in avatar-based videogames. In this sense, it is a heuristic approach, which

suggests ways of looking at the problems and of categorizing them; it provides possible relations between statements, sets of statements, and the like; it facilitates seeing the consequences of proposed solutions; etc.

(Batens 2013: 61)

This approach was chosen for several reasons. First, the terms and concepts dealt with are rather complex in and of themselves, but also in relation to each other. Therefore, the kind of extensive conceptualisation of agency proposed here is better suited to acknowledge these complexities than definitional work.<sup>31</sup> Second, definitions tend to imply locked-in boxes, and would not allow for the flexibility that is necessary when analysing games due to the idiosyncrasies of the medium, such as the inherent ephemerality of each play session; the sheer volume of games, game genres, and genre mixes within the avatar-based spectrum; or games simultaneously catering to different individual playstyles.

The heuristic framework is designed to ask the seemingly simple question: what can the avatar do? More specifically, on what terms does the game's design allow or constrain the player's freedom to act via the avatar? I argue that, at its conceptual core, agency can be afforded in space; in time; in terms of how much the avatar and the gameworld can be tailored to players' preference; and in the development of a story. Below, I will unpack each of these dimensions.

### Agency Afforded in Space: The Spatial-Explorative Dimension

This analytical dimension zooms in on how the spaces that surround the avatar in videogames afford or constrain avatar action. Agency thus can be understood in terms of different ways of describing space in videogames. Fortunately, spatiality and its relevance to videogames has been theorized extensively and from early on, producing detailed categorisations (see, e.g., Aarseth 2000; Arsenault and Perron 2008; Juul 2005: 164–167; Klastrup 2003b; Nitsche 2008; Wolf 2001b). These approaches are typically concerned with how to describe various spaces within games, such as dimensionality or interface, but they rarely expand on how these spatial arrangements affect player agency.<sup>32</sup> The spatial-explorative dimension of agency presented here aims to do that by identifying game spaces according to functions the avatar can perform, allowing for a more fine-grained analysis of the many ways in which the spatiality of videogames affords or limits the manifestation of player agency.

A commonly used term to describe videogame spaces is ‘game world’ or ‘gameworld’. It typically refers to a totality of game spaces (see, e.g., Bartle 2004; Klastrup 2009; Klevjer 2006: 58; Wolf 2012), including interfaces (Jørgensen 2013: 56–58). At the same time, ‘gameworld’ sometimes describes a game’s fictional world (see, e.g., Jenkins 2006; Juul 2005: 131–162). ‘Gameworld’ is therefore not the best term to use as it could generate confusion. Instead I will draw on Thon (2016a) who distinguishes between different levels of representation in a way that has a spatial quality: ‘*locally represented situations* and the more complex *global storyworld as a whole* into which they are combined’ (ibid. 47, orig. emphasis). In the case of videogames, the two can be discrepant, which is a result of the medium’s interactive quality: players could be simultaneously cued into making sense of events as they happen in an individual gameplay session, which would likely differ in each instance, as well as what is



supposed to happen. For example, as Thon points out, an avatar running around in circles, which the player is able to make the avatar do, does not necessarily mean that the avatar (as a fictional entity) often does that, or that this behaviour is in line with their image of being, say, a fearless soldier or mighty warrior (ibid. 115–116). While the act of running is represented, and as such can be recognised as such by players, it is not in line with how the avatar is portrayed as part of the game's storyworld.<sup>33</sup> Arsenault and colleagues (2015: 93) make a similar point when emphasising the disconnect between a videogame's 'fiction' and its 'visual mediation'. Drawing on the above, we can distil two spaces of representation: a global storyworld, and local situations which may be discrepant with said storyworld. Accordingly, we can frame game spaces as affording either the former or the latter.

Moreover, there is a third spatial quality we can attribute to videogame spaces. Burn (2006: 73) differentiates between two kinds of avatar function: 'ludic' and 'representational'. These two functions are afforded or limited by a videogame's spaces, therefore those, too, can be qualified as ludic or representational. A similar distinction is made by Schröter and Thon (2014: 49–50), who argue that games can be described as 'ludic experiences' (where the character is being perceived as a 'game piece') or 'narrative experiences' (where the character is being perceived as a 'fictional being').<sup>34</sup> We can thus add ludic as the third quality of videogame spaces. Ludic space as understood here corresponds to what Schell calls 'space as a game mechanic [...] a mathematical construct' with all audiovisual layers stripped away; a merely 'functional space' (Schell 2015 [2008]: 159–163). In this vein, we can frame videogame spaces in three ways: there are game spaces that contribute to the representation of the storyworld; then there are game spaces that represent local

situations that may be discrepant with the storyworld; and last, game spaces can be described according to their abstract, ludic quality. Acknowledging that representation occurs in multiple layers is important, because it helps identifying the various game spaces within which the avatar can move.

Keeping in mind the above discussed complexity of representationality in videogames, I propose that we distinguish between space-as-ludic and space-as-representational. It would be an easy step forward then to argue that there is agency afforded by ludic space, and agency afforded by representational space: moving the avatar forwards or backwards is spatial agency, and running around in beautifully rendered valleys is representational agency. However, the situation is not quite that simple as the representation of game spaces and the gameplay that takes place in them will usually have both ludic and representational qualities at the same time. Even rather rudimentary representational game spaces have the capacity to create storyworlds. A good example of this is side-scrolling platformer *Thomas Was Alone* (Bithell 2012). While the avatar and other non-player characters are represented as rectangles (see Figure 5), and the world they inhabit is also quite conceptual in its geometrically rendered geography, the game's levels still contain recognisable shapes, such as islands in water, enriching the world created by the game.

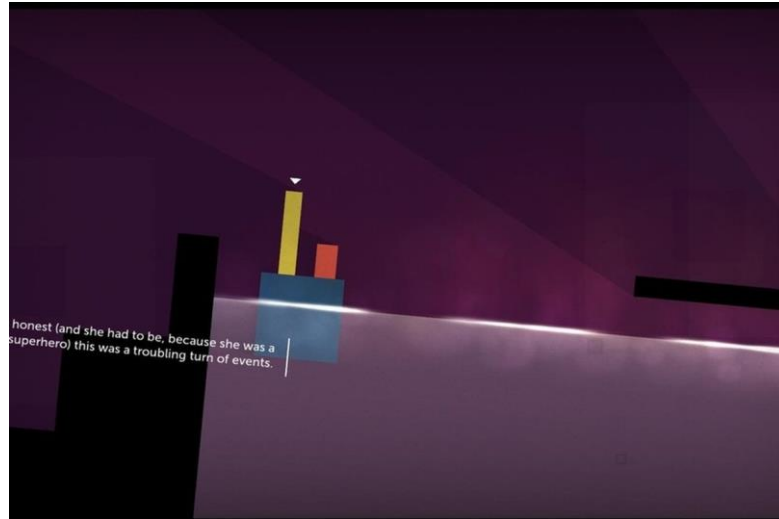


Figure 5: Rudimentary, but still expressive representation in *Thomas Was Alone*.

In order to better capture the different kinds of agency afforded by the navigation of ludic and representational space, I propose to further distinguish between *spatial* and *explorative* agency. On the one hand, framing agency as spatial allows us to ask questions with regards to the possibility space comprised of movements the avatar can and cannot do in the individual videogame spaces. For instance, what actual motions are afforded to the avatar by the game's design? Can they walk? Jump? Sprint? Take cover? Although these actions can be executed in both the game's ludic and representational spaces, spatial agency is more closely connected to the avatar's ludic functions. Furthermore, when thinking about navigation in videogames, increasingly it is not only the avatar's methods of locomotion that we can analyse, but also the environments that allow or constrain movement (Debus 2016). The analytical lens of spatial agency thus allows us to examine how game physics, level design and arrangement of in-game objects, and perimeters of spatial progression allow or constrain spatial agency.

On the other hand, contrasted with spatial agency's closer connection to self-contained game spaces and the avatar's ludic function, explorative agency allows us to examine how more ambitious spatial arrangements in videogames afford and constrain avatar action. Framing agency as such entails more than mere spatial navigation of the avatar. Indeed, King and Krzywinska (2003; 2006: 76–123) repeatedly emphasise the importance of exploration in action-adventure games to the overall feeling of presence and embodiment, of which agency is precursor to. An explorative framing yields questions like how the game spaces are relayed (for example, are they arranged into cities or other units, see, e.g., Vella and Bonello Rutter Giappone 2018; Vella 2019), which areas of the representational space can be explored by the avatar, through what mechanics exploration is incentivised, whether movement within representational space is continuous or interrupted (by, say, load screens), or what maps (as in navigation tools, not levels) and superimposed interfaces aid progress. For example, numerous games make use of warp mechanics to transport the avatar from one place to another (Gazzard 2009). Altogether, these are the kind of questions that the spatial-explorative dimension allows us to ask when trying to unpack how agency works in avatar-based games.

In terms of how these two kinds of agency relate to each other and to the two kinds of spatiality in videogames distinguished above, it can be argued that spatial agency tends to be oriented toward ludic spaces, and explorative agency tends to be oriented toward the representational spaces. That being said, the two are also rather difficult to detach from each other – as we will see is the case for the other dimensions as well. For instance, players *can* use the avatar to explore the game spaces as ludic space. Lara Croft running around looking for a hidden object on any given level of any given *Tomb*

*Raider* game is a manifestation of both spatial agency in the game's ludic spaces and explorative agency in the game's representational spaces, as it is both an in-game object with a collision box being moved within a rendered matrix, and a young archaeologist searching for treasure in deserted ruins. Also, as the example of *Thomas Was Alone* illustrated, spatial agency may privilege the ludic functions of game spaces, but these functions often do also contribute to the representation of the gameworld.

Let's look at a few examples in a bit more detail to see how these two analytical categories help us understand how the possibility space for spatial-explorative agency is created by design. In tactical shooter *Tom Clancy's Ghost Recon Wildlands* (Ubisoft 2017), the game's ludic and representational space are in near-complete alignment.<sup>35</sup> While launching a rocket into the skybox<sup>36</sup> is not quite possible, the vast landscapes, mountains, and ravines are freely explorable with the avatar without any loading time breaking up levels. The whole map is an island, so the edge of the world is masked with the endless vista of the ocean. On this island, whatever the eye can see, the avatar can reach (see Figure 6). *Ghost Recon Wildlands* is also a good example to illustrate why we cannot conflate ludic space with spatial agency, and representational space with explorative agency. While it takes just over 4 hours of playtime to walk across the entire map (TheyCallMeConor 2017), simultaneously affording spatial and explorative agency to a near-equal degree, during this epic walk, the sun rises and sets multiple times. Which means that the time frame only applies to ludic space, but not to representational space.<sup>37</sup>



Figure 6: Game spaces in *Tom Clancy's Ghost Recon Wildlands* (Game Pressure 2019).

In opposition to the complete freedom to explore both the ludic and representational space provided by *Tom Clancy's Ghost Recon Wildlands*'s level design is fighting game *Mortal Kombat X* (NetherRealm 2015). While it also boasts an expansive representational space comprised of numerous supernatural 'realms' like Earthrealm, Chaosrealm, or Dreamrealm, these are mostly brought to life through cut-scenes and non-interactive backdrops, and as such, cannot be explored with the avatar. In contrast, the many, smaller ludic spaces of *Mortal Kombat X* where the fights take place are all rather similar in terms of what kind of spatial agency they afford, and are navigable only to a very limited degree. This is mostly due to the side-scrolling tradition of beat-em-ups, a genre the *Mortal Kombat* series belongs to. While the player does control Takeda's movements, the avatar will never be able to leave this restricted space, both in a ludic and in a representational sense, to pet that animal in the background, or go for a wander by the castle walls (see Figure 7). They are locked into this limited space, where everything, except for the avatar's immediate surrounds, is an inaccessible decorative backdrop. In this case, the game's design affords spatial agency vertically

and horizontally (by allowing the avatar to move sideways, as well as to crouch and jump), but restricts explorative agency in almost every regard.



Figure 7: Side-scrolling view of *Mortal Kombat X* (Brown 2015).

Numerous elements of game design impact the possibility space for avatar action in a spatially relevant way. One such element is perspective, or in other words, the player's window into the game. How much of the avatar's surroundings a player can see and how precisely a game is able to emulate the avatar's spatial perspective audiovisually can have considerable implications for agency. Sharp (2013) presents a broad survey of perspective in the context of videogames, but it is Thon (2009) who offers a classification of perspectives that aligns to the conceptualisation of space presented above. He argues that perspective can be thought of as 'spatial' and 'actional', where the former is determined by a 'spatial position from which the game space is presented audiovisually', and the latter is the 'position from which the player can interact with the game space' (ibid. 279–280).<sup>38</sup> Perspective in both these senses is primarily relevant for spatial agency, particularly with regards to space framed as ludic, for it is one of the ways in which game designers can manipulate the possibility space for

player action, and also achieve desired effects. A good example of perspective manipulation's effect on agency is the original version of horror game *Resident Evil 2* (Capcom 1998). In the game (see Figure 8), camera angles are mostly locked in, which creates an interesting situation whereby the avatar's spatial perspective is severely limited while its actional perspective corresponds to a typical third-person game's, which makes the successful navigation of ludic space increasingly challenging. This, in turn, reduces the player's ability to understand the ludic and representational spaces around them, impairing their ability to control their avatar successfully, which ultimately contributes to the horror effect (Perron 2018: 114–115).<sup>39</sup>



Figure 8: Fixed camera angles in *Resident Evil 2* (Allsop n.d.)

Accordingly, the spatial-explorative analytical dimension can be used to identify perspective-related affordances that have a spatial element to them, such as numbers and configurability of vantage points, or degrees of camera control.

Similarly, level design plays a major part in how agency is afforded and limited in the spatial-explorative dimension, though even developers themselves disagree on what



level design is and how it relates to other aspects of designing a videogame, such as game design (in the sense of rules and challenges) or narrative design (Bleszinski 2000; Picard 2013). First, while levels, which can be thought of both as ludic and representational spaces, indeed have a spatial quality to them, they are also a unit in time (Picard 2013: 99). Therefore, looking at level design cannot simply be restricted to the spatial-explorative dimension in the analytical framework. Second, given that a ‘level’ is a result of collaboration between programmers, artists, game designers, and many more, it is difficult to identify where level design stops and game design begins. Kremers (2009) suggests that it is easier to understand level design through what it is for, and how it functions. He argues that its basic function is that

if a game designer designs the gameplay *rules*, the level designer designs *how* the player is confronted with those rules [...] a game designer *formulates* the game’s rules, while the level designer *interprets* them. [...] Level design is applied game design.

(Kremers 2009: 17–18, orig. emphases)

It follows then that we cannot quite look at level design in a game as a solely spatial-explorative agency affordance, but that, at the same time, aspects of level design that may afford or limit avatar action in the spatial-explorative dimension must be considered. By manipulating things like the overall layout of the individual game spaces (both in a ludic and representational sense), the arranging them into missions, maps, or levels, or the spatial conditions of progress that determine what is available and what is not, level design is an overarching and powerful way for game designers to influence how player action is afforded in this dimension.

In summary, the spatial-explorative dimension of agency allows us to ask questions about the game space both in a ludic and representational sense, with further complexities introduced to the latter. What movement verbs are afforded to the avatar? Can they walk? Jump? Sprint? Take cover? How is exploration incentivised? Can the avatar explore all of the represented spaces? Can they traverse the game spaces without interruptions, or are there, say, load screens or such that segment the space? Are there superimposed interfaces aiding navigation? For instance, maps, location markers, compasses, step counts? Arguably, answers to the majority of these questions will not only impact avatar action, and with that, player agency in space, but also in time. A definitive separation between the time(s) and space(s) of videogames risks causing more problems than it would solve, therefore the line of division I draw is primarily for analytical purposes, while maintaining that these dimensions rarely manifest in isolation.

#### Agency Afforded in Time: The Temporal-Ergodic Dimension

As important as it is to understand how videogames' spatiality afford player action, '[w]e should not forget that the temporal dimension of gameplay prevails on its spatial characterization' (Arsenault and Perron 2009: 113). Indeed, temporality in videogames could be construed as something above every other dimension. For example, Calleja's (2011) multidimensional model of player involvement does not separate 'temporal involvement' the way it does 'spatial involvement', but instead places temporality above all other dimensions he distinguishes between. However, I argue that an analytical dimension dedicated to unpacking how avatar action is afforded in time is a productive step towards understanding agency as afforded by design in videogames. In this section of the heuristic framework, I will first locate

existing theories on videogame time which are relevant for an avatar-based query into agency. Drawing on these theories as well as other game studies research, I will then propose my approach for thinking about agency within, and on, game time.

The complexity of the concept of time is evident when looking at the sheer volume of studies offering ontologies, frameworks, and other such structures to understand the relevance of time and temporality to videogames and play (see, e.g. Aarseth, et al. 2003; Adams 2010 [2006]: 93–95, 615–616; Alvarez Igarzábal 2019; Björk and Holopainen 2005: 421–422; Elverdam and Aarseth 2007; Eskelinen 2001b, 2012: 295–312; Hanson 2018; Juul 2005: 141–156; Lindley 2005; Tychsen and Hitchens 2009; Zagal and Mateas 2010). The different layers and levels these frameworks distinguish between allow and constrain avatar action, and consequently impact agency, to different degrees. A common distinction made is between time as played and time as happenings in the game, some form of game time versus play time, game events and player events (see, e.g., ‘internal’ and ‘external’ time in Elverdam and Aarseth 2007; ‘event time’ and ‘user time’ in Eskelinen 2001b: 178; ‘event time’ and ‘play time’ in Tychsen and Hitchens 2009: 174). While this is a productive distinction, it does not quite account for how most gameplay moments will have both a representational and a ludic quality to them.

Notably, Zagal and Mateas (2010) break down the abovementioned dichotomy further by introducing ‘temporal frames’ as a conceptual tool for analysing game time. Although the terminology could be seen as confusing, for reasons already unpacked in the previous section, the conceptual lines they draw between various ways of understanding time in videogames is useful nonetheless. The four temporal frames

listed by Zagal and Mateas are that of ‘real-world time’, ‘gameworld time’, ‘coordination time’, and ‘fictive time’:

**Table I.** Summary of Common Temporal Frames

Frame	Definition	Relevant Concepts
Real world	Real-world time is established by the set of events taking place in the physical world around the player.	Cycle, duration, countdown, trigger
Gameworld	Gameworld time is established by the set of events taking place within the represented gameworld.	Cycle, duration, countdown, trigger
Coordination	Coordination time is established by the set of events that coordinate the actions of multiple players (human or artificial intelligence) and possibly in-game agents.	Rounds, turn taking, tick based, action points
Fictive	Fictive time is established through the application of sociocultural labels to a subset of events.	Temporal schemata, sociocultural labels, story time, narrative time, discourse time

Figure 9: The four temporal frames and their definitions in Zagal and Mateas (ibid. 852).

‘Real-world time’ corresponds to Elverdam and Aarseth’s ‘external time’ in that it captures time as spent playing, ‘in the physical world around the player’ (ibid. 848). The novelty in Zagal and Mateas’ model is the breaking down of Elverdam and Aarseth’s meta-category of ‘internal time’ into ‘gameworld time’, ‘coordination time’, and ‘fictive time’, and it is these three ‘temporal frames’ that can be linked to the threefold distinction between various game spaces I proposed in the previous section. ‘Gameworld time’ they argue, ‘is established by the set of events taking place within the represented gameworld’ which

includes both events associated with abstract gameplay actions as well as events associated with the virtual or simulated world (the literal gameworld) within which an abstract game may be embedded.

(ibid. 849).

This quote shows the limitations of the term ‘gameworld’, as is seen to be used to simultaneously refer to represented ‘gameplay actions’ as well as ‘the literal gameworld’. It is therefore better to describe this kind of temporality in terms of what I argued to be locally represented situations. Related to this is ‘fictive time’ which is ‘established through the application of sociocultural labels to a subset of events’ (ibid. 850). Zagal and Mateas argue that labelling a round ‘day’, or a cycle of action and inaction as the biological needs of a character ‘strengthen the fictive frame’ of the game (Zagal and Mateas 2010: 851). This temporal frame can be connected to what I argued to be the global storyworld representation of game spaces. Lastly, ‘coordination time’ is ‘established by the set of events that coordinate the actions of multiple players (human or artificial intelligence [AI]) and possibly in-game agents’ (ibid. 850). As such, ‘coordination time’ is not connected to videogames’ representationality, and more to the abstract space which I labelled ludic space above. Once again, just to clarify, I propose to maintain the conceptual distinctions drawn by Zagal and Mateas, but suggest different terminology, which leaves us with: real world time (unchanged), ludic time, time of local representation, and storyworld time.

Relating Zagal and Mateas’ temporal frames to the threefold distinction of game spaces enables us to capture in more depth how game design affords and constrains avatar action in time. For example, day-night cycles or countdowns may be implemented in ludic spaces but not in storyworld spaces. A common such misalignment in design is when there is a ticking clock imposed in the game’s representational time that does not actually exist, or only conditionally, in ludic time. Bethesda games often implement such, arguably, deceptive measures. At the beginning of *The Elder Scrolls V: Skyrim* (2011), a non-player character prompts the

player to hurry and move up to the top of the tower to get away from the dragon attack (see Figure 10). But the avatar can be left stood at the bottom of the stairs for an indefinite amount of ludic time, and the dragon will not destroy the tower. Similarly, at the beginning of *Fallout 4* (Bethesda 2015), the player is repeatedly prompted to leave the house immediately and run towards the nearest nuclear shelter, as bombs are inbound. The prompt (see Figure 11) happens while the avatar is inside the house, but as long as they stay in the house, the nuclear attack does not begin. In situations like this, avatar action is constrained in storyworld time, but this constraint does not extend to the time of locally represented situations and ludic time.

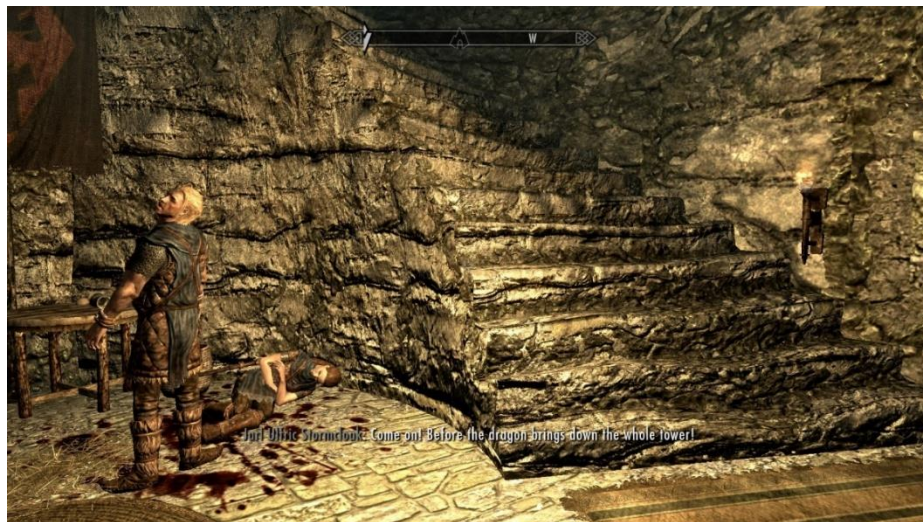


Figure 10:

‘Come on! Before the dragon brings down the whole tower!’ Disconnect between ludic and representational urgency in *Skyrim*.



Figure 11: The player avatar shouts ‘We need to get to the Vault. Now!’ in *Fallout 4*.

Conceptualising videogames’ temporality this way alone, however, does not account for how agency can be afforded by temporal structures. Not only can the temporal structures in a game’s design afford and constrain player action, there might also be a way to influence said temporal structures. Zagal and Mateas also make this point when they note that, ‘from a design perspective, player agency over a temporal frame offers novel options for gameplay while also introducing additional temporal anomalies’ (2010: 952). There is thus a need for an analytical distinction that addresses not only how temporal structures in videogames impact avatar action, but also whether it is possible for the player/avatar to manipulate these. In order to address this variable, I propose to distinguish between two kinds of agency as afforded in time: *temporal* and *ergodic agency*, which together make up the *temporal-ergodic dimension*.

Temporal agency is best described as the possibility for action as afforded and constrained within the temporal structures that constitute a game’s design. Framing agency in such a way brings to light the structure of pre-designed elements that constitute ludic and representational time in the game and allows us to explore how

the times of various game spaces relate to each other. We can ask, for example, how the passage of time is marked, what the victory and termination conditions are, or what ‘game over’<sup>40</sup> is, as well as how gameplay is paced (e.g., turn-based versus real-time games in Adams 2010 [2006]: 289–290), what kind of time-critical events there are (e.g., ‘ticking clocks’ in LeBlanc 2005), and how they are expressed in the ludic and representational spaces. A common example for a game mechanic that can shape the possibility space for temporal agency is the day-night cycle. Most avatar-based games with resource management and crafting feature such a mechanic, such as *Don’t Starve* (Klei 2013) or the *Animal Crossing* series (Nintendo 2001–). Day-night cycles tend to regulate ludic and representational time in a way that cannot be influenced by the player, and condition things such as availability of resources, or presence of danger, accordingly. Thus, the constraint imposed by design delineates the possibility space for avatar action, thereby affording temporal agency.

This being said, temporal agency alone does not speak to scenarios where the player/avatar is granted some degree of control over temporal structures in a game’s design. I propose ergodic agency as a separate analytical framing which allows us to interrogate whether such manipulation of ludic and representational time is allowed. The terminological choice is a nod to Aarseth (1997), who coined the term ‘ergodic’ to qualify literature where non-trivial effort is required to engage with the text. He later argued that ergodic time specifically depends on user action (Aarseth 1999). Drawing on the core idea of ergodicity encapsulating the player’s ability to manipulate or intervene, ‘ergodic’ in the temporal-ergodic analytical dimension enables us to identify those game mechanics and design elements affording or limiting player action in time that the player does have influence over.<sup>41</sup> As such, framing agency as ergodic



allows us to ask the seemingly simple question: can the player, through their avatar, either by a press of a button or by navigating superimposed interfaces and menus such as a power wheel,<sup>42</sup> influence temporal structures in the game? There are multiple ways in which this can happen. Oftentimes, ludic time, as connected to ludic space, and therefore not necessarily moving at the same pace as storyworld time, only progresses if the player makes the avatar takes a certain action, be it as simple as taking a first step after standing still, or as specific as passing a certain bush that triggers the appearance of an enemy soldier. This would be an example of how ergodic time depends on user action, as mentioned above. At the same time, there might be mechanics in place that allow ludic and representational time to be propelled forward or backward: in other words, mechanics that allow for actions like rewind, fast-forward, slow down, or speed up of time (see, e.g., Hanson 2018: 56–85; 135–155; Knutson 2018; Schmalzer 2020). Examples for this can be found in *Prince of Persia: Sands of Time* (Ubisoft 2003); *Braid* (Number One 2008), Remedy Entertainment’s action-adventure shooter games like *Max Payne* (2001) and *Quantum Break* (2016); in some games by Quantic Dream, such as *Detroit: Become Human* (2018).<sup>43</sup>

Now, let’s take a closer look at a few examples to understand how this dimension of agency can be illuminated by examining the different ways in which time is framed, as well as the degree to which the player can influence temporal structures. Oftentimes in avatar-based games there is a closer connection between real world, ludic and locally represented time, whereas storyworld time may be constructed in a way that may seem downright illogical. For example, as noted in the *Tom Clancy* example above, it takes about 4 hours of play to walk across the entire map of the game. While the pace of walking/running in the game corresponds to the pace of a person

walking/running in real world time, during the walk across the map the in-game sun rises and sets multiple times, thereby creating a temporal discrepancy.<sup>44</sup> A radically different way of affording temporal-ergodic agency is found in *SUPERHOT* (SUPERHOT Team 2016), a first-person shooter where compared to real world time, ludic and representational time is slowed down to such an extreme that in-game objects and non-player characters are barely moving unless the player makes the avatar move, in which case everything in the game spaces matches the movement speed of the avatar. One of the most salient visual indications of how much time is slowed down can be seen on the trails of red bullets leave behind them (see Figure 12). This way, in most gameplay scenarios (save cut-scenes), real-world time, ludic time, the time of locally represented events, and storyworld time are more closely linked together than was the case in the *Tom Clancy* example. As such, *SUPERHOT* represents a strikingly different approach to stereotypical first-person shooter game design, because instead of relying on their trigger reflexes, the player is required to think strategically, for extended periods of time, and about every one of their avatar's movements.<sup>45</sup> *SUPERHOT* thus creates an interesting challenge in manipulating the possibility space for avatar action in the temporal-ergodic dimension.



Figure 12: Bullets only moving when the player moves their avatar in *Superhot* (True Achievements n.d.)

Indeed, the notion of challenge is important here: the temporal-ergodic dimension can also allow us to ask questions about how temporal structures requiring time-critical action in videogames impact player agency. In simpler terms, and drawing on Pias's description of action games, players will often 'carry out actions under time pressure' (Pias 2004: 135). Game design textbooks often include lists of different challenges (e.g., 'physical coordination, factual knowledge, formal logic, pattern recognition, and so forth' in Adams 2010 [2006]: 418) and these often have a time-sensitive quality to them. Time pressure can take many forms. On the one hand, there are challenges that require dexterity, which have a rather obvious temporal quality to them: not only does the player need to position their avatar at the right place, but they also need to press the button at the right time in order to successfully jump from platform to platform. On the other hand, there are challenging scenarios where the pressing of a button is not necessarily as time-critical, but the challenge has a set time limit, thereby applying time pressure on the player: for example, while solving a puzzle may have a time limit on it, thereby requiring the player to think quickly, the individual actions taken by their avatar may not necessarily contribute to the outcome. Karhulahti (2013: n.p.) calls

these two kinds of time criticality ‘time-critical performance’ and ‘time-critical framework’. With the analytical dimension of temporal-ergodic agency we can therefore ask how time-critical action is designed, and how challenge design of both types shapes the possibility space for player action as expressed via the avatar.

More specifically, the temporal-ergodic analytical dimension can be used to interrogate the difficulty of time-critical challenges. Scaled difficulty has been part of videogames since the arcade era (Furze 2013: 149). If the player has the window of, say, one second to execute a series of inputs or actions, then it is the highest level of difficulty. If one extends that period to two seconds to do the same thing, the level of difficulty would decrease, as they would have more time. It is the designer’s role to match player skill to the difficulty of the challenge – in other words, to balance the game (Koster 2004). Therefore, by setting variables to the avatar, such as their health, damage output or, in case of shooter games, aim assistance, as well as those of non-player character characters, the designer can manipulate the possibility space in the temporal-ergodic dimension. Higher health points mean longer battles, while higher damage points mean shorter ones. Not only can this be pre-set, technology allows for some level of adaptivity to the individual player’s skill. This is referred to as ‘Dynamic Difficulty Adjustment’ (Hunicke and Chapman 2004). The temporal-ergodic dimension of agency therefore enables us to look at how game balancing creates challenge and scales difficulty.

To summarise before we move on to the next dimension, the analytical dimension of temporal-ergodic agency helps to identify elements of game design that afford or constrain player action in time. Some questions this dimension of agency in the

heuristic framework enables to ask are: how is the passage of time marked? What are the victory and termination conditions, or in other words, what is ‘game over’? What kind of time-critical events are there, and what are their scales? Is action live, or turn-based? Can the player manipulate temporal structures in the game through, for example, pause, fast-forward, rewind? If so, how? What impact does manipulation have on ludic and representational time? While the spatial-explorative and temporal-ergodic dimensions already cover a fair amount of possible gameplay scenarios, there are further dimensions in which game design can afford or limit player action. For one, since at the heart of the conceptualisation of agency proposed here is avatar action, there is a need for an analytical dimension to interrogate whether (and if yes, in how far) the avatar and the surrounding game spaces are mouldable, since that will inevitably impact the possibility space for avatar action. This is what the next dimension focuses on.

#### Agency Over the Avatar and its Surroundings: The Configurative-Constructive Dimension

There is a long tradition of players creating their own characters in tabletop role-playing games, and this feature is also adapted to videogames, particularly those with role-playing mechanics to them (see, e.g., Bienia 2016; Carr et al. 2006: 19–21; Hitchens and Drachen 2008). In addition, the degree to which the avatar’s surroundings (both in a ludic and representational sense) can be altered also impacts the possibility space for action. Being able to change the terrain or demolish buildings, though crucial to games like strategy games that have crafting and resource management as a core mechanic, is less typical of avatar-based games.<sup>46</sup> Or at least it had been, until a recent boom in independent games triggered by the likes of *Minecraft* (Mojang 2009, to be discussed in the final case study chapter). Therefore, this

analytical dimension will address the changeability of the attributes of both the avatar and the world which surrounds it.

As already discussed in the ‘Agency Is Player/Avatar Action’ section of this chapter, when wanting to better understand the relationship between agency and game design, we can frame what I term avatar in at least two ways: according to whether it is considered a game piece, or a representational object. In acknowledging this distinction, and in order to fit into the language used to describe analytical distinctions in this heuristic framework thus far, I framed the avatar according to their function as ludic and as representational (Burn 2006). In order to discuss how avatar characteristics can be modified I propose the term ‘configuration’. In game studies ‘configuration’ is typically used as a metaphor for the gaming process (Eskelinen 2001a; Sicart 2008, 2011; Simons 2007), but for the purposes of this heuristic framework, I use it very specifically to refer to avatar modification. This game design affordance is one of the key components of role-playing games (see, e.g., ‘characterization of player characters’ in Björk and Zagal 2018: 327–329), and is becoming increasingly prevalent in other videogame genres as well (Dahlsklog et al. 2015; MacCallum-Stewart et al. 2018: 173–177).

Framing agency as configurative allows us to ask questions about the degrees to which the avatar, both as a ludic and representational object, can be configured, as well as to track the impact and consequences of said configuration. What characteristics and variables does the avatar have? Can the avatar’s ‘figurative attributes’ (Willumsen 2018), such as name, appearance, costume, weapons, or inventory be changed? If so, to what end? Does the avatar change throughout the duration of the game, and if so,

how? What are the means of progress measurement and tracking (e.g., ‘stratified character progression’ in Peterson 2012: 341–359 v. ‘non-stratified character progression’ in Zagal and Altizer 2014: 2)? A common example of design affording configurative agency is the character creation process in role-playing games. Selecting visual features like hair colour, or building a character according to any one profile in the ‘holy trinity’ of role-playing game design, namely ‘tank, healer, damager’ (Björk and Zagal 2018: 326), can have implications for the avatar both in a ludic and a representational sense (Krzywinska 2007: 106).<sup>47</sup>

As to what kinds of attributes designers usually plan with in videogames, a non-exhaustive, but nonetheless thorough list is offered by game designer and writer Evan Skolnick:

name, sex, race/species, age, intelligence, education type and level, profession, vocabulary, backstory, character arc/change, desire, likes, dislikes, values, key flaws, vices, physical attributes, clothing, weapons/paraphernalia.

(Skolnick 2015: 134–135)

While some of the above listed attributes, such as hair colour or intelligence, may be more obvious than others when it comes to thinking about avatar configuration, it is not uncommon that characteristics like vices or values would have an impact on the avatar both in its ludic and representational function. For example, in role-playing detective game *Disco Elysium* (ZA/UM 2019), the avatar is addicted to smoking, alcohol, and drugs. Depending on which vice the player subjects the avatar to, their skills and attributes may become stronger or weaker, impacting both their ludic and representational functions. For example, smoking raises intellectual skill points, but damages health (see Figure 13); or, non-player characters may comment on being

interrogated by a detective high on speed, which could reduce their authority points, and therefore impact the success of the interrogation.



Figure 13: Smoking raising intellect skill in *Disco Elysium*.

Much like with our previous two dimensions, while it is generally more likely that ludic configuration would have a greater impact on ludic space and time, and representational configuration on representational space and time, it happens quite often that there is a discrepancy between, say, how powerful a chosen weapon or piece of armour is, and how it actually looks on the avatar. The analytical framing of configurative agency is useful in picking up on such discrepancies. Games like action-role-playing game *Diablo III* (Blizzard 2012) serve as good examples to pinpoint the potential for disconnect, particularly in the case of female avatars. In choosing armour, a player would most likely go for a set which raises the avatar's overall strength or resistance, but the visual design of the pieces may not necessarily reflect just how resilient or protective that particular piece of armour is (see Figure 14).<sup>48</sup> The discrepancy between avatar configuration with regards to the avatar's ludic and representational function becomes even more apparent on one of *Diablo III*'s secret



levels called Whimsyshire (Figure 15), which is designed to be brightly coloured and full of unicorns, quite unlike the usual theme of demonic hellscape in the game.

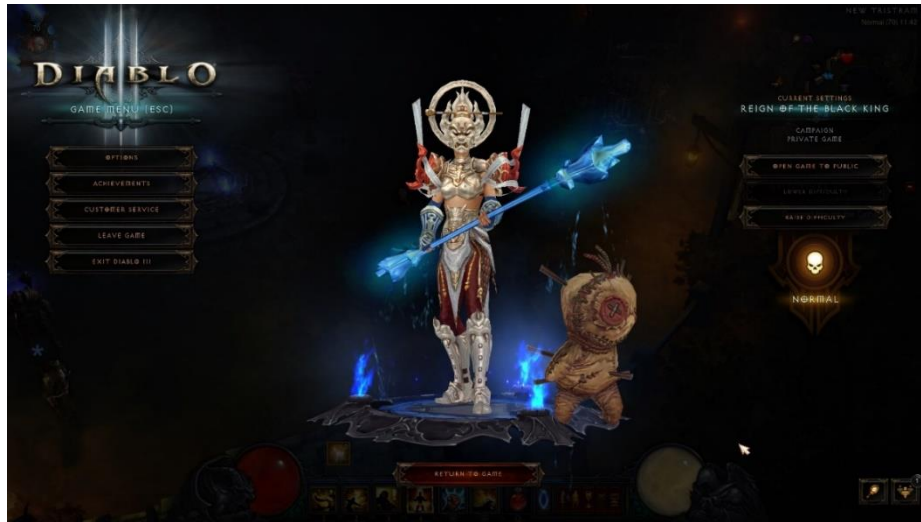


Figure 14: Avatar in *Diablo III*.



Figure 15: Whimsyshire.

Besides the configuration of the avatar, the degree to which the surrounding game spaces can be altered also shapes the possibility space for avatar action. Consequently, whether a game's design allows for this, and if yes, how, has relevance for agency.

Murray described this as ‘constructivist agency’ (1997: 147), but I want to slightly update the concept behind it, and in order to reflect these changes will use the term constructive agency instead. For example, by chopping wood in survival game *The Forest* (Endnight Games 2014) the avatar is able to gather logs which then they can use for building shelter, but the act also angers the cannibals local to the peninsula the game takes place on. Inquiries into constructive agency are thus concerned with whether, and if so, to what degree the player is allowed to change the spaces within which the avatar exists, and more importantly, acts. Can they determine the perimeter of the world they are in? Can they physically alter it by, for example, raising or lowering terrain? Can they mine, harvest, or in other ways gather materials? And if they can, do these acts actually change the game’s spaces? Can they add anything to the game space, either ludic or representational, for instance grow something or build things? These are the kinds of questions we can ask with the help of the analytical framing of agency as constructive.

Such game mechanics are typically found in non-avatar-based games, such as the dollhouse simulator *The Sims* franchise (Maxis 2000–), strategy games like the *Age of Empires* series (Ensemble Studios 1997–), or simulation games focused on the building and management of service providers and attractions, such as *Theme Hospital* (Bullfrog 1997) or *Roller Coaster Tycoon* (Chris Sawyer Production 1991). However, the past decade or so saw a rise of avatar-based genres which afford the alteration of the avatar’s surrounds to a similar scale. Apart from the already mentioned survival genre, or *Minecraft* (Mojang 2009), which will be discussed in more detail in the last case study chapter, another typical example would be games about farming, where the player can arrange plantations and buildings in any desirable formation so long as they

correspond with the rules of the storyworld (see Figure 16), such as *Harvest Moon* (Amccus 1996) or *Stardew Valley* (Concerned Ape 2016).



Figure 16: Farm layout in *Stardew Valley*.

Keeping in mind the threefold framing of space discussed earlier (ludic space, space of local representation, and storyworld space), we can identify interesting tensions in how constructive agency can manifest. In post-apocalyptic action-role-playing game *Fallout 4* (Bethesda 2015) the avatar can unlock ‘Settlement’ sites at 30 pre-set locations within the map. Certain structures, like ‘Water Purifiers’ or ‘Guard Posts’, are pre-designed, but it is also possible to build new structures from a big selection of customisable building blocks, consisting of types of ‘Walls’, ‘Floors’, ‘Roofs’, ‘Doors’, and ‘Windows’, as well as a similarly huge selection of ‘Furniture’ and ‘Decorations’ (Figure 17). These are made from components scrapped from found structures, such as ‘Steel’ or ‘Wood’. There is, however, an opposing logic to the surrounding world and the buildings of the ‘Settlement’. While exploring the wastelands left behind by a nuclear apocalypse, the avatar is surrounded by buildings that are visibly made of, say, concrete supported by iron beams, thereby creating the

physics of the storyworld with regards to how buildings are made structurally sound. Somewhat contradictorily, in the ‘Settlements’ it is possible to, say, place one metal sheet on the floor and erect a tower on it exclusively comprised of metal sheets, without any further structural support, and it does not fall over. Thus, in *Fallout 4* we can find a tension between the laws determining structural integrity within the level of locally represented space and the broader storyworld representation, which the analytical lens of constructive agency helped us identify.



Figure 17: Placing a wooden wall in *Fallout 4*.

This becomes even more interesting when looking at what Fordyce (2018) calls the ‘homesteading’ mechanic, found for example in *Assassin’s Creed II* (Ubisoft Montreal 2009). At some point in the game the player character Ezio and his family need to flee Firenze and take up residence in a nearby village called Monteriggioni. Here, they may choose to ‘Renovate’ their family mansion. Buildings like a ‘Bank’, ‘Doctor’, or ‘Blacksmith’ (Figure 18) can be renovated, while others like a ‘Well’ can be placed by paying in-game currency to an architect to do it. Once paid, the building storefronts transform, and each building increases the revenue Ezio gains at regular intervals, as



well as provide discount for certain gear and services. The buildings therefore have a ludic function, and they also form part of the global storyworld. But unlike in *Fallout 4*, the buildings can only be placed at their pre-set location, and there are no options for customising them either. In providing their ludic function, they are locked to the laws of the global storyworld. Therefore, while renovating these buildings comes with gameplay benefits, such as cheaper gear or increased revenue, the avatar does not actually accumulate lumber or spend time laying bricks for these buildings to come into existence. Their ‘construction’ also does not require the management of building staff or supplies, only the single in-game currency. This mechanic affords a much lower degree of constructive agency than *Fallout 4* does, as, although the buildings form part of the global storyworld of the game, and they are connected to an avatar’s ludic function and can therefore be seen as an extension of the avatar configuration system, the buildings themselves are not built by the avatar, nor do they require actual grafting, such as resource gathering and management, from the avatar.



Figure 18: Renovating Monteriggioni’s blacksmith will reduce weapon prices in *Assassin’s Creed II*.

As already argued in the example of *Assassin's Creed II*, a prime area of scrutiny relevant for the analytical dimension of configurative-constructive agency is that of in-game economies. Indeed, as Knowles and Castronova (2018: 310) point out, 'an economy is a game system that facilitates choice in play', and as such, in-game economies play a vital role in facilitating player agency. An oft-cited, illustrative list of the many resources that can make up a game's economy is offered by Costikyan:

“Resources” can be anything: Panzer divisions. Supply points. Cards. Experience points. Knowledge of spells. Ownership of fiefs. The love of a good woman. Favors from the boss. The good will of an NPC. Money. Food. Sex. Fame. Information.

(Costikyan 2005 [1999]: n.p.)

By establishing in-game economies, setting values for goods, creating storage units different in size, or lay down rules of trade, designers can manipulate the possibility space for avatar action, and subsequently, agency, in the configurative-constructive dimension. A common way to manipulate the possibility space for avatar action via resource systems is by creating systems of utility and scarcity (Fullerton 2014 [2004]: 78). Prominent ways for creating scarcity in virtual economies could be scarcity in creating the avatar, their appearance and skills; and scarcity in how goods and services are arranged (see, e.g., Baumgratner 2015; Castronova 2006).<sup>49</sup> Therefore, the design of research management systems, attribution of value to in-game objects, introduction of currencies and markets, are means in which the possibility space for avatar action in the configurative-constructive dimension can be shaped.

In summary, then, the configurative-constructive dimension of agency allows us to ask questions about whether and, if so, to what degree the avatar and their

surroundings can be configured by the player. Questions for the avatar could be aimed to explore what physical features, skills, mentality, or other variables the avatar has, whether they can be changed, and how those impact the avatar's ludic and representational functions. It could also illuminate whether, and if so, how avatar configuration is incentivised, as well as whether there are rewards or penalties for changing attributes. Furthermore, with this analytical dimension we can ask questions about how altering the avatar's environment impacts avatar action, and consequently, agency in both a ludic and representational sense. Could they raise or lower terrain, mine, harvest, or in other ways gather materials? How are the changes enacted on the avatar's surrounds impact the ludic and representational spaces? As repeatedly emphasised throughout the above discussion of the spatial-explorative, temporal-ergodic, and configurative-constructive dimensions of player agency, the affordances and limitations of game design can be framed in terms of ludic and representational functions. However, so far I have only briefly commented on how videogames can represent events with varying degrees of narrative quality to them, and how this representation shapes the possibility space for avatar action. This is what the fourth and final dimension will address.

#### Agency and Narrativity: Narrative-Dramatic Dimension

Videogame scholarship has long been occupied with examining exactly how games can be considered a storytelling medium. As mentioned at the beginning of this chapter, this topic has been hotly debated since the nascent years of the field (see, e.g., Frasca 2003a; Pearce 2005), but it is now mostly agreed upon that videogames can be perceived to exhibit various degrees of narrativity (see, e.g., Ryan 2005: 4). It comes as no surprise, then, that many have offered solutions for how to make critical observations about narrative in the context of videogames (see, e.g., Aarseth 2012;

Ang 2006; Atkins 2003; Backe 2012; Jannidis 2003; Neitzel 2014; Pearce 2004; Ryan 2006: 181–203; Thon 2016a). Accordingly, at the heart of the narrative-dramatic dimension of agency is the understanding that narrativity is not a yes or no question, but a matter of degrees. Notably, Ryan (2004: 9) argued that text ‘being narrative’ and ‘possessing narrativity’ are two different things. In making this distinction, Ryan shifted the emphasis from whether a text *is* a narrative, to whether it *has* a perceivable narrative quality to it. Juul (2005: 130–133) later made a similar point, as did Jenkins (2006) when he pointed out that videogames can be considered as ‘evocative spaces’ capable of relaying ‘spatial stories’ via what he termed ‘environmental storytelling’. ‘Spatial stories’, he argues,

can evoke pre-existing narrative associations; they can provide a staging ground where narrative events are enacted; they may embed narrative information within their mise-en-scene; or they provide resources for emergent narratives.

(Jenkins 2006: 676–677)

Although Jenkins foreground narrativity as a spatial affordance of game design, the point he makes about something other than predeterminedly narrative elements contributing to games’ narrativity is important nonetheless. In this vein, the narrative-dramatic dimension in the heuristic framework is useful to examine videogames’ potential to generate narratively charged events in all four ways listed by Jenkins, or as Ryan (2006: 7) puts it, videogames’ ‘storiness’. When thinking about this dimension, we can ask questions about what narrative elements there are in game design and whether the player has any influence over them; as well as how other, not so straight-forwardly narrative elements of game design facilitate avatar action with a narrative quality to it.



The analytical framing of agency as narrative enables us to ask broader questions regarding representationality and avatar action. In other words, about what prototypically narrative elements there are, and to what degree they afford or limit avatar action. For example, is there a back story (Myers 2003)? What are the main ‘story beats’ (Mochocki 2020)? Are there sequences of highly limited player action that remediate other forms of media (such as photography, cinema, or comics), also known as cut-scenes (Glassner 2004: 285–288; Klevjer 2002, 2013)? Are there predetermined events that take place in the game spaces while affording some degree of avatar control, or in other words, are there scripted events (Thon 2016b)? Some have argued that cut-scenes constrain player agency (Falstein 2005: 92–65; Grodal 2003; Juul 2005: 135), but that is not quite the case. For example, shooter games typically make use of cut-scenes to deliver narrative content, which may constrain agency in other dimensions as cut-scenes suspend the core gameplay loop of time-critical shootery, but they contribute to the avatar’s representational function by giving them, say, motivation, or adding layers to their personality. This is what Cheng calls ‘representational agency’, or ‘the feeling of being a star of the action movie’ (2007: 17).<sup>50</sup> In addition, besides cut-scenes and such, framing agency as narrative also allows us to ask whether there are dialogue mechanics, where the avatar interacts with non-player characters via superimposed menus, as well as whether there are any elements of level design or art that can add to the represented storyworld, such as writings on a wall (‘environmental storytelling’ in Jenkins 2006). Last but not least, what kind of dialogue and scripted behaviour do non-player characters have? Through what means is game lore established? As such, narrative agency is primarily connected to the avatar’s representational function, and for analytical purposes is more productive

when approaching the subject of analysis as narrative representation, rather than as interactive simulation (Frasca 2003b; Thon 2016a: 107; Klevjer 2019).

Furthermore, the analytical lens of narrative agency allows us to catalogue not only what prototypically narrative elements there are in a videogame, but also how they are structured, and to what degree the player is allowed to meaningfully intervene in the designed structures. As the brief overview of game studies and game design literature earlier showed, this is a prevalent way in which the term ‘agency’ is understood. Scholars and designers alike have proposed different ways in which narratively relevant content can be arranged in videogames<sup>51</sup>, and a general theme such structurations revolve around is whether the player is guided through a singular path in their experience of the predetermined narrative, akin to the kind of experience film or literature typically offers, or whether the narrative experience is planned to be less linearly designed. This problem has been thoroughly discussed under the moniker of ‘nonlinearity’ and variations thereof.<sup>52</sup> While the concept of nonlinearity is at the heart of the analytical framing of narrative agency, we need to distinguish between the kind of nonlinearity that stems from the interactivity inherent to the medium of videogames, and a nonlinearity that is designed into the narrative affordances of the game (Thon 2016b). Focusing on the latter, by framing agency as narrative, we can ask questions such as: are there forking paths in the story (Aarseth 1994)? What metaphors can be used to describe their structure, for instance: a vector with side branches, a tree, or a maze (Ryan 2015: 165–175)?

A straightforward example of design affording narrative agency can be found in games by studios like Telltale Games and Quantic Dream. These studios are well-known for

making games where the core gameplay loop is centred on players making decisions in dialogue trees or Heads-Up Displays (or HUD) about how the narrative should progress. In *Detroit: Become Human* (Quantic Dream 2018), the player controls three avatars whose individual plotlines collide several times during the overarching narrative thematising the complications of self-aware artificial intelligence. Gameplay mainly consists of narratively meaningful decision-making challenges embedded in scripted events which restrict avatar action to various degrees in the other dimensions. As the player/avatar is repeatedly prompted to choose between options for how the plot should continue (Figure 19), they realise any one of many complex sequences of events as afforded by the vast network of choice trees in the game (Figure 20).



Figure 19: A choice-making situation in *Detroit: Become Human*.



Dramatic agency can be facilitated by what Chandler (2007) calls ‘mythocentric narrative design’, which, juxtaposed to ‘logocentric narrative design’ which is controlled and highly predetermined by the designer, is

[w]ide-open and free-ranging and consists of arenas for player action that have been created by the developers. The player, as author of the core experience, gets to choose the goals and means of the game experience. Unlike logocentric design, the developers are *facilitators*, *not creators*, of the events that transpire.  
(Chandler 2007: 108, my emphasis)

Framing agency as dramatic therefore targets narrative quality that is emergent, ‘facilitated’ and not ‘created’ by design, thereby exhibiting a different degree of predetermination in the delivery of narratively relevant content when compared to the affordances discussed in the section above on narrative agency. Because they are so closely connected to the mechanics that govern ludic functions in the game, dramatic agency affordances create a possibility space for stories that are context-dependent, and therefore will not recur in the same way across different playthroughs, unless we are to re-enact each step taken by the player/avatar that generated the first iteration, and even then, depending on how sophisticated the audiovisual representation is in the game, they may end up with a different series of events. As such, the manifestation of dramatic agency is more connected to the avatar’s ludic function than narrative agency is, but not exclusively so: ludic events, regardless of whether they align with the storyworld, can also be represented locally. For example, the ludic function of the avatar to traverse the level as designed can be represented as running, riding a horse, or driving a car.

Choosing ‘dramatic’ to capture this kind of agency is a nod to an existing tradition in game design to refer to the kind of agency facilitated by a game’s rules and goals as ‘dramatic’. Building on Aristotelian categories for the dramatic form, Mateas (2000, 2001) proposes to think of agency in interactive drama as an inherently dramatic experience afforded by a good balance in design. Similarly, Murray describes dramatic agency as ‘the cueing of the interactor’s intentions, expectations, and actions so that they mesh with the story events generated by the system’ (Murray 2005b: 85). Specifically, dramatic agency as conceptualized in this framework is concerned with better understanding how game design supports the iteration of ‘the plans and gambits, the bluffs, the stratagems, the reversals of fortune [...] a climactic struggle that builds to a satisfying conclusion’ (LeBlanc 2005: 439). As such, it can be used to interrogate how what Fullerton calls ‘dramatic elements’ ‘engage the players emotionally by creating a dramatic context for the formal elements’ (Fullerton 2014 [2004]: 41). For the purposes of analysing avatar-based videogames, dramatic agency can be used to ask how game design allows or constrains the emergence of a ‘player story’ (Rouse 2005) in moment-to-moment gameplay. What features of the ludic system facilitate the emergence of these stories? Are they coherent with the storyworld as represented via more predeterminedly narrative game design affordances, and/or the story ‘written’ by the player/avatar so far (i.e., not a result of cheating, modding, or glitches)?<sup>54</sup>

Given its close connection to the game as a ludic system, it is likely that we can observe at least some degree of dramatic agency being afforded in most gameplay scenarios in avatar-based games. There are, however, certain design features that, when incorporated into a game’s design, increase the possibility space for dramatic agency

to be realised. For example, the basic design formula of roguelike games is: randomly (or semi-randomly) generated levels, inventory and experience point management, and permadeath (meaning there is no saving the game, defeat results in having to restart from the beginning of the game). Any given gameplay sequence in *Spelunky* (Mossmouth, LLC 2008), *The Binding of Isaac* (McMillen 2011), or *Enter the Gungeon* (Dodge Roll 2017) is therefore likely to be unique: the player/avatar will traverse an environment that's arranged differently in every playthrough, facing challenges that appear at different times and varied locations, earning ever-changing rewards from successfully overcoming said challenges (Figure 21). Since avatar death is penalised with the loss of all progress, the player will likely have to replay the same levels multiple times before succeeding. In this way, roguelike games' narrative quality can be best described as, drawing on Chandler's (2007) terminology once more, less as 'authored', and as such, delivered via standard narrative elements like cut-scenes or scripted events, and more as 'facilitated' by other, less standardly narrative, game mechanics. As such, roguelike games generally afford a high degree of dramatic agency.



Figure 21: One of many iterations of random level design in *Binding of Isaac: Rebirth*.

To sum up, the analytical dimension of narrative-dramatic agency in the heuristic framework is useful for asking questions about how game design's narrative quality enables or constrains avatar action. Narrative agency, on the one hand, is aimed at identifying what narratively charged elements there are in game design, how they afford and constrain avatar action, what formation their structural arrangement takes, and whether the player/avatar can meaningfully intervene in their structuration. How does the game use cut-scenes, scripted events, or non-player characters in order to deliver predeterminedly narrative gameplay moments? Are there forking paths in the story? Dramatic agency, on the other hand, can be used to better understand how elements of game design that are not typically (or at least not directly) supposed to be vehicles of narrative content still contribute to the emergence of 'player stories' (Rouse 2005). How do game mechanics, such as traversal of game spaces or resource management, facilitate the manifestation of events that can be linked together in a way that they can be interpreted by the player as stories? How do these chains of events relate to the globally represented storyworld?



At this point it needs pointing out that although dramatic agency does rely on agency affordances of the other dimensions described above, this does not mean that the possibility space for avatar action in those dimensions is fundamentally foregrounded by narrativity, or that there is a hierarchy of agency across dimensions. On the contrary, this chapter has demonstrated that agency can be better understood as more than a one-dimensional phenomenon, and although it is important to acknowledge how dimensions support each other, it is equally as interesting to ask how they do not. These questions are what the following case studies will explore in more detail.

## Conclusion

This chapter established my conceptualisation of agency, and my multidimensional heuristic framework I propose to analyse agency in avatar-based videogames. Part I reviewed game studies and game design theory literature around the relationship between game system and player more broadly, and agency more specifically, in order to identify and evaluate approaches to the topic, as well as to position my own approach. I then proceeded to forward my conceptualisation of agency as *the possibility space for avatar action as afforded and constrained by game design*, which I built on main themes found in discussions of player action in game studies and game design. In Part II, I proceeded to introduce my *heuristic framework* and its four dimensions, *spatial-explorative*; *temporal-ergodic*; *configurative-constructive*; and *narrative-dramatic*, the nuances of which I illustrated using a diverse range of examples within avatar-based games. Although the heuristic framework separated different ways in which game design can shape the possibility space for player action, these distinctions were made for analytical purposes. In no way do I want to suggest that these dimensions are, in fact, working in isolation. In the following chapters, I

will turn to three case studies to first, test the applicability of the heuristic framework, and second, to examine the relationship between game design and player agency in more detail. The remainder of this thesis will explore how agency manifest in these case studies through not only the games themselves, but also through the framings and paratexts that surround the games.

## Chapter 2. ‘Playable Cinema Blockbuster’: Player Agency in and Around Naughty Dog’s *Uncharted* series

This case study chapter will examine player agency in and around Naughty Dog’s games, and the *Uncharted* franchise (2008–) specifically. *Uncharted* is Sony Interactive Entertainment’s PlayStation-exclusive tent pole franchise, with sales over 41 million units (Bachelor 2017), and it follows a tradition of highly linear games that restrict player action in multiple dimensions by streamlining progress. While Naughty Dog has gone through several iterations as a studio throughout its decades-long history, it retained a relatively consistent style of design. Even *Uncharted*, their longest-standing franchise, managed to keep its core brand identity of offering an ‘active cinematic experience’ (BluRay Trailers 2009: n.p.), despite drastic changes in leadership, which impacted the design. It is a good first case study to demonstrate the analytical power of the multidimensional heuristic framework for two reasons. First, the studio’s adherence to traditional gaming press cycles and consistency in design ethos makes a relatively straight-forward example for how to extract design intention from paratexts. Second, by examining a game where avatar action is rather constrained, I will provide a good foundation against which the higher degree of agency afforded by the other two case study games is all the more salient. That being said, the argument of this chapter is not that *Uncharted*’s design does not afford agency, but that we can still sketch the possibility space for agency to be manifest across dimensions despite its apparent constraints on player/avatar action.

This chapter will show that Naughty Dog's design ethos in general, and the brand identity of the *Uncharted* franchise in particular, revolves around the notion of 'cinematic'-ness. When used in relation to videogames and gaming, 'cinematic' typically has two connotations, which are also somewhat connected to one another. First, as King and Krzywinska (2002: 2) pointed out well before the insurgence of high-fidelity 3D animation, '[m]any games draw on cinematic devices, tropes and associations in a more diffuse manner'. Indeed, a cinematic, or filmic, quality, in the context of videogames, has connotations regarding audiovisual representation both in terms of form and content. Devices in game design such as 'dynamic lighting' (El-Nasr et al. 2007), weather simulation (Barton 2008), 'scripted staging' (Girina, 2013), framing and composition (Chang and Hsieh 2018), as well as the borrowing of genre tropes such as horror, action, or adventure, are just some of the many ways in which game design re-appropriates other audiovisual media in general, and film in particular. Bolter and Grusin (2000: 19) call this 'remediation', which is the idea that a medium 'refashions its predecessors and other contemporary media'.<sup>55</sup> Following this concept, Rehak (2003: 103–104) and King and Krzywinska (2002: 4) both suggest that videogames can be considered as remediating cinema. The latter two in particular argue that the 'cinematic dimension [...] is a substantial component of the specific experience offered by the game as a game, and not merely something imported externally as a weak form of comparison between one medium and another' (ibid.).

Second, and somewhat connected to this, is that 'cinematics' is another name for cut-scenes. As I discussed in Chapter 1, while this stance is increasingly less prevalent, cut-scenes have been seen as breakers of interactivity, and subsequently, immersion, especially in the late 1990s/early 2000s. Nonetheless, I want to draw on this aspect of

cinematics to make a point that goes beyond audiovisuality being the only connotation of ‘cinematic’-ness, and has implications for agency. Cut-scenes do restrict the avatar in many ways, but they simultaneously work towards facilitating an emotional reaction akin to that triggered by films. ‘Cinematic’-ness in games therefore also suggests that gameplay experience might trigger an emotional reaction akin to those triggered by film viewing. With this in mind, in this chapter I will show that Naughty Dog’s aspiration for an ‘interactive cinematic experience’ goes beyond the photorealism of audiovisual representation and the re-appropriation of genre tropes, and explore how this design intention impacts agency across dimensions.<sup>56</sup>

First, I will look at the early years of the studio to identify the main themes in Naughty Dog games’ design. I will trace the development of the studio’s design ethos along their two most famous game series, *Crash Bandicoot* (1996–1999), and *Jak and Daxter* (2001–2013), which laid the foundations for linear 3D character-based action gameplay with platforming and shooting elements, and memorable characters. Then, I will move on to how Naughty Dog left behind the world of cartoonish animation in favour of a more realistic audiovisual style in the instalments of the *Uncharted* franchise, while transporting game mechanics from their past titles. Then I will turn towards *Uncharted 4: A Thief’s End* to examine how designers discuss their design priorities in terms of player agency. This will be followed by an analysis of how agency is afforded and limited by the game’s design across dimensions to achieve this cinematic quality in the game. The chapter argues that Naughty Dog maintained a consistency in style of design despite changes to leadership; and that the cinematic quality of the *Uncharted* series is achieved by affording and restricting agency across a variety of dimensions. I will argue that player agency can be realised in a number of

dimensions but remains restricted in others. Thus, this chapter will examine the interplay between those dimensions and how agency is understood, sacrificed, and afforded in the development of cinematic gameplay.

## Naughty Dog

*But other publishers, like EA, Activision, Sony, Microsoft, said  
“make the biggest splash you can”.*

Jason Rubin, Founder

The Early Years of Naughty Dog: *Crash Bandicoot* and *Jak and Daxter*  
Naughty Dog was founded in 1984 by old school friends Jason Rubin, an artist and visual effects designer, and Andrew ‘Andy’ Gavin, a programmer. This duality in leadership continues to be a defining trait of the studio’s production culture to this day, with joint leads, each with their specialty, assigned to projects. Building a reputation for unique, recognisable design has been an aspiration since the studio’s formation. As Rubin reminisces:

We had this vision, even back in 1987 when we changed the name to Naughty Dog, that we wanted a game that stands out. That, someday, people would pick up a box and say ‘Oh, Naughty Dog! I know that company! That’s a good company!’

(TheDarkStation88 2011: n.p.)

The most recognisable characteristic of their games is a cinematic quality. First, I will trace how this priority came to be, and how it evolved up to the first *Uncharted* game.

The 1990s saw a boom of 3D games for mostly PC: shooters in the footsteps of *Wolfenstein 3D* (id 1992) and *Doom* (id 1993) gained popularity, while *Tomb Raider* (Core 1996) merged action and adventure genre conventions in 3D space, thus creating the template for many blockbuster titles to come. These games invited players to ‘move through a sensationally realistic 3-D world of amazing detail’ (Mobygames 2002a), or raid tombs in the ‘most breath-taking 3D worlds yet seen’ (Mobygames

2002b). At the same time, 2D platformers like *Sonic the Hedgehog* (Sonic Team 1991–ongoing) on Sega Megadrive, and *Super Mario Bros* (Nintendo 1985–ongoing) on the Nintendo Entertainment System, and its successor, the Super Nintendo Entertainment System, dominated the console market. The only games with 3D worlds on consoles at the time were those that were designed to run with Nintendo’s graphics enhancement hardware, the Super FX chip for SNES, such as *Star Fox* (Nintendo 1994):



Figure 22: *Star Fox FX* (Nintendo Life n.d.)<sup>57</sup>

In 1994, after years of small-scale projects (mostly action and fighter games), Naughty Dog, at this point no more than 3-4 people, moved to Universal Interactive Studios’ lot, who funded their work (Naughty Dog 2019). Universal and Sony greenlighted their first pitch for a project as an exclusive title for the newly released PlayStation game console.<sup>58</sup> With *Crash Bandicoot* (Naughty Dog 1996), the studio aspired to create a side-scrolling action game that introduced a mascot for the new PlayStation to compete with Nintendo’s Mario and Sega’s Sonic. However, when it came to the looks of the game, *Crash Bandicoot* offered something its competitors did not. Most



importantly, it innovated in terms of texture design.<sup>59</sup> Co-founder Andy Gavin said about those times:

No one else used the shading. Everyone else used the full textured mode [because] it reduced your poly count, like, dramatically. We used the textured polygons in the backgrounds for the most part—almost exclusively—and the shaded polygons in the characters. They worked well with our cartoon style.

(qtd. in Nishita 2017: n.p.)

In other words, with this game, Naughty Dog aimed to recreate the depth and complexity of cartoon animation, which made them stand out in a market populated by rudimentary pixel figures (see Figure 23). Although not yet explicitly alluding to cinematic conventions, Gavin's words above suggest they were thinking of their design in terms of another medium's visual codes.



Figure 23: Shading in *Crash Bandicoot* (Ofisil n.d.)

It was not only the cartoonish style that made *Crash Bandicoot* stand apart, but a complete overhaul of avatar-based game design. The typical approach to platformer design in these years was to make it a side-scroller, that is, the avatar moved from left

to right and had to sprint, crouch, jump, or in other ways undertake challenges created by level design (see Figure 24). Naughty Dog had a slightly different approach, as co-founder Jason Rubin recalls:

We realised that the simplest conceptual way to do this was to take a 2D world that was flat, and simply rotate it. So the gameplay happened without moving it to left and right, and rather in and out. This concept we called ‘Sonic’s ass’. [...] The advantage to our method was, by turning the camera 90degrees and keeping the character restricted, we could draw a lot more polygons. And the look, the density of the foliage, the amount of detail in it gave it a competitive edge.

(TheDarkStation88 2011: n.p.)

Thus, *Crash Bandicoot* was, in many ways, a different approach to character-based platformer games thus far championed by the likes of *Sonic* (Sonic Team 1991) and *Super Mario Bros* (Nintendo 1985).



Figure 24: 2D side-scroller platformer *Sonic* (Mobygames n.d.)

As for gameplay and agency affordances, *Crash* shared a lot with these two games, in that the player had to navigate an avatar through levels designed to set traversal challenges. Gavin underscored the inspiration they drew on from film production:

We sort of tried to take a Warner Bros style cartoon and put it in 3D. We came up with the idea of putting a camera on a kind of dolly, like they do in a movie scene. Therefore, you knew where the camera was going to be, and have a decent vantage point on the action.

(TheDarkStation88 2011: n.p.)

By ‘keeping the character restricted’, the possibility space for player agency in the spatial-explorative dimensions was limited, but *Crash Bandicoot* being a platformer, time-critical action was crucial to gameplay. The game had a linear narrative and progression, with cut-scenes arranged to happen at the same place and time, thereby restraining narrative agency. At the same time, the game’s design afforded a low level of dramatic agency, as the platforming challenges would often generate infinitely variable player stories of trial and error. A low degree of configurative-constructive agency was also afforded by collectible items with extra lives and other benefits, and the ability to activate mechanisms that make box-bridges materialise over previously un-crossable drops, pits, and ravines. *Crash Bandicoot* was an international hit, and its avatar was marketed as the PlayStation’s mascot. The franchise now includes several sequels, and a recent remake of the original trilogy for the PlayStation 4, *Crash Bandicoot N.Sane Trilogy* (Vicarious Visions 2017). By 2000, Universal sold its publishing rights to Sony, and with that, Naughty Dog became a wholly owned subsidiary of Sony Interactive Entertainment, a relationship that exists to this date. While the PlayStation allowed for low budget production, things changed with Sony’s next generation hardware.

From a technological point of view, the PlayStation 2 supported the ‘digital versatile disc’ format, or DVD, which was heralded as the ‘most successful consumer electronic device since the black and white television’ (Brookey 2007: 199). Compared to their predecessor, the CD-ROM, DVDs had more storage space, while the PlayStation 2 itself had increased processing power and memory, allowing for more polygons to be displayed at any time, which meant more sophisticated visuals and more complex aesthetic and gameplay design. The console premiered titles such as *Metal Gear Solid 2* (Konami 2001) and *Grand Theft Auto III* (DMA Design 2001), which would raise the bar for 3D gameplay and cinematics (Klevjer 2013: 302–303). Naughty Dog released their next commercially successful original IP for the PlayStation 2 called *Jak and Daxter* (2001), which was another platformer game but on a new game engine.

This time, they offered not only the illusion of 3D virtual space like in *Crash*, but proper 3D, thereby expanding the possibility space for spatial-explorative agency to be realised. Founder Jason Rubin attributed this decision to the advantageous financial position of publishers, who were to become the goliaths of today’s videogame market:

On the PS2 at the beginning, publishers were saying eesh, these games are really expensive. That ended up killing them. But other publishers, like EA, Activision, Sony, Microsoft, said “make the biggest splash you can”. And Naughty Dog went from a team that was always trying to save money, to work as tightly as we could, to “Hire Big, Think Big”, let’s put everything we have into making these games

(PlayStation Europe 2014: n.p.)

*Jak and Daxter* featured Jak, the silent protagonist and player character, and his voiced side kick Daxter, who provided comic relief and banter. While, in essence, *Crash*

*Bandicoot* was a rotated side-scroller, *Jak and Daxter* was an open world<sup>60</sup> platformer game with a fairly simple designer story. It fit into the same basket as other cartoonishly animated platformers around that time, like Sony's own *Spyro the Dragon* (Insomniac 1998) or Nintendo's *Banjo-Tooie* (Rare 2001). It also shared the general directions in gameplay: the player navigates the avatar through open world levels with traversal challenges to collect items, framed by a fairly simple narrative centred on defeating a series of mini-bosses, and eventually, once enough items are collected, a main boss (see Figure 25). The dominant agency affordances in *Jak and Daxter* were in two dimensions. On the one hand, with the avatar's movements ranging from double jump, rolling into a long jump, slide-punch, slam, and spin-kick, the game's design afforded agency in the spatial-explorative dimension. On the other hand, as these actions were time-critical in that they required the player to push the right button at the right time, there was a considerable possibility space for avatar action in the temporal-ergodic dimension. The game also featured vehicle navigation on certain levels. Combat was mostly restricted to melee, and although the game did not have shooting elements per se, the player could use special powers that would enable certain ranged projectile attacks, such as fireballs. Traversal between locations was seamless, without any loading screens, which contributed to the whole experience being more fluent, less segmented by idle time spent waiting for the game to load. As I will show below, this feature was often emphasised in marketing, but *Jak and Daxter* was not yet marketed as film-like per se.



Figure 25: Open world level in *Jak and Daxter*.

The game was heralded by critics and gamers alike as the best 3D platformer game on the console market (Satterfield 2001; Zdyrko 2001), and similar Sony titles capitalised on the winning formula with other similar games, such as *Ratchet and Clank* (Insomniac 2002).<sup>61</sup> Its sequel, *Jak II* (2003) introduced several novel mechanics, and a much bigger, darker storyworld. Jak got a voice, and the game itself was bigger, thanks to Naughty Dog revising their engine to fine-tune the overall gameplay experience. On this, Rubin said

[a]fter *Jak and Daxter* [...] we had an engine, we got polygons on the screen, so the beauty of that is that in this game, we got to spend all of our time, the entire two years, getting better gameplay, getting more intelligent creatures, getting more stuff out there, adding to the gaming experience, as opposed to just fighting to get the stuff on screen.

(Otana 2009: n.p.)

This included the introduction of a shooting mechanic, and the improvement of non-player character behaviour through more sophisticated AI: allies were joining fights, and enemies had better environmental awareness. This meant that agency was

increasingly afforded in the temporal-ergodic and spatial-explorative dimensions. At the same time, with set characters, and a heavily predetermined narrative, there was not much narrative agency afforded, but due to the open-world design, plenty of dramatic agency through the exploration incentivised by the large virtual space. In terms of ‘cinematic’-ness, the current studio director Evan Wells said this of the *Jak and Daxter* series in retrospect:

We were looking at the PS2 hardware and said okay, this world has to be seamless. We don’t want any loads, it’s got to feel immersive, we don’t want there to ever be a break from the action, or for you to say “oh, now’s the time to put down the controller, I finished the level”.

(PlayStation 2012: n.p.)

In a medium where play was thus far typically structured by systematically inserted loading screens between levels, this was something of a novelty, arguably inspired by the seamlessness of other audiovisual media, such as film or cartoons. Though ‘cinematic’-ness per se was not mentioned yet, it would very clearly become a priority when the studio moved away from cartoonish animation, towards the realm of photorealistic representation.

After the release of *Jak II*, the studio saw a major overhaul of staff. Studio leads Rubin and Gavin left, transitioning leadership to Evan Wells and Christophe Balestra, who were also a designer-artist duo much like their predecessors. Wells identified the safeguarding of Naughty Dog’s unique company culture as a priority during the transition:

We were dealing with making sure that we kept intact all of the flexibility that we were accustomed to working with and that we weren't changing our company culture.

(PlayStation Europe 2014: n.p.)

Although Naughty Dog had become Sony's subsidiary, they continued to work as an independent studio, with almost no producers influencing design decisions, which is how they worked at the time of *Uncharted 4*'s development. There were no dedicated producers or managers, the 'lead' position entailed less of taking charge and more a channelling of information to the department (Reilly 2011). For an average of three hundred people, they reportedly employed two production coordinators, which, in an industry where the average is one producer for ten members of staff, is remarkably low (Digital Dragons 2018). Despite major changes like these, the studio maintained its design ethos.<sup>62</sup>

To summarise, Naughty Dog always drew on cinema and animation conventions to create character-based action games, with platforming and shooting as core mechanics. Prioritising visual effects, or VFX, as early on as the early 1990s with *Crash Bandicoot*, the slowly growing team of developers that constitute the studio gradually began to focus on interesting characterisation and personality-building demonstrated by the introduction of a voiced main character in *Jak and Daxter*. Cinematic quality was not yet an explicit concern, but there was repeated mention of reference points in cartoon animation and Warner Bros style characters, which indicates a curious look towards other narrative media.



The *Uncharted* Franchise: Creating an 'Active Cinematic Experience'

As mentioned in the introduction to this chapter, besides the surge of cartoonish platformers on consoles in the early 2000s, another genre of game rose to prominence in the late 1990s and early 2000s: the third person action-adventure. Games like *Prince of Persia: The Sands of Time* (Ubisoft 2003) aspired for the success *Tomb Raider* harnessed in the late 1990s, and Naughty Dog also took on the challenge. There was also a rise in popularity of shooters with deeper, darker themes and more complex forms of narrative, such as the original *Halo* trilogy (Bungie 2001–2007) and *Tom Clancy's Splinter Cell* (Ubisoft 2002). These were both exclusive titles and are tent pole franchises to this date on Microsoft's game console, the Xbox. Sony was yet to enter this market. With the enhanced technological capacities of the PlayStation 3 released in 2006, Naughty Dog was looking to develop an original IP to flagship Sony's hardware, which ended up being *Uncharted: Drake's Fortune* (2007). According to Don Poole, former environmental modeller at Naughty Dog, *Uncharted: Drake's Fortune* was at first going to be yet another game with fantastical elements, much like *Crash Bandicoot* and *Jak*, but due to pressure from Sony to conform to changing market trends, it moved away from this original intention:

The market had changed a lot by then. The demographic was older and gritty shooters were really dominating. Sony wanted very much to get into that market share; it pushed all of its developers in this direction. So the big push from Sony, not just at Naughty Dog but at all of Sony's development companies at the time, was to craft games for PlayStation 3 that were much more realistic. The pressure from Xbox's success with gritty shooters was a very real force on our direction at that time.

(qtd. in Reeves 2011: n.p.)

And so, with *Uncharted: Drake's Fortune*, Naughty Dog took the avatar-based 3D action-platformer formula and revamped it in realistic-looking style, as a deliberate step away from the cartoony aesthetics of its preceding releases (Caron 2007). The core mechanics of the series were traversal/platforming, shooting and brawling, and puzzle challenges. It was from this point onwards that the studio began to display a consistent style of game design, in terms of both audiovisual aesthetics and gameplay. The franchise currently consists of five main titles for the PlayStation 3 and 4, and some smaller handheld and mobile games, which I will not focus on, as Naughty Dog did not develop them. The first four main games, namely *Uncharted: Drake's Fortune* (2007), *Uncharted 2: Among Thieves* (2009), *Uncharted 3: Drake's Deception* (2011), and *Uncharted 4: A Thief's End* (2016) feature Nathan Drake as protagonist, and a recurring cast of friends and foes. The latest title, *Uncharted: Lost Legacy* (2017) is a smaller, shorter game led by two side characters featured in earlier games. This chapter will zoom in on the fourth title of the franchise, the one that concludes Nathan Drake's story. But before we can explore that, we need to look at the franchise's development until then, to examine the role it played in the formation of Naughty Dog's design ethos.

All *Uncharted* games focus on the protagonist embarking on an action-packed adventure across exotic locations, trying to retrieve some kind of treasure, while racing time and rivals. They take place in a world highly resembling our own, meaning they share geography, physics, languages, and other such things, but there are also occasional fantastical elements in all but the fourth instalment. The overall tone, narrative, pacing, style, and characterisation in the franchise draws heavily on pulp

and action-adventure films and television shows. As long-time *Uncharted* developer Richard Lemarchand said about the inspirations for the IP:

So we looked at loads of those matinee serials: lots of chases, running around looking for treasure, unlikely allegiances with a whole crazy cast of characters, lots of narrow escapes and risky situations.

(XoZen 2007: n.p.)

The first game was well-received, with many praising how it was much like playing a pulp action or adventure film of old times, and it was nominated for numerous awards from press outlets. ‘Blockbuster vibes’, Indiana Jones, and the film *National Treasure* are mentioned repeatedly on the game’s Metacritic page.

While *Uncharted: Drake’s Fortune* paved the way in a new direction for the studio, it was with the second instalment of the series, *Uncharted 2: Among Thieves* (2009) that Naughty Dog crystallised their design ethos. This time, as Lemarchand said in a conference talk, they ‘wanted to create a fully playable version of a big summer blockbuster action adventure movie’ (GDC 2017a: n.p.). With *Uncharted 2*, Naughty Dog’s signature gameplay crystallised into a linear narrative-driven experience with complex characters and playable high-octane chase sequences in epic set pieces with a monumental score, with actors’ movements and voices captured live simultaneously as if it was a theatre production (PlayStation 2009b; 2009c). The guiding thought behind the production of each game, as Creative Director and Lead Writer Amy Hennig summarised it, was: ‘how do we best replicate that action-adventure movie experience?’ (Nguyen 2011: n.p.).

Indeed, it was with the second instalment that a cinematic quality became an explicitly worded priority for the studio. They pledged to create an ‘active cinematic experience’ with their games: not only was this phrase used as a promotional hook (BluRay Trailers 2009: n.p.), it was also presented at the Game Developers Conference as the essence of everything they do with their game design (GDC 2016a: n.p.). As Game Director Bruce Straley and Co-Lead Designer Neil Druckmann summed up at the conference, cinematic stands for ‘anything of filmic quality. The cameras, pacing, performance of the actors, music, everything that makes your favourite movies great’ (ibid.). This presentation also revealed that production consisted of the simultaneous development of story in tandem with gameplay, with staff members being both story and gameplay designers at any time, constantly communicating; and that the *Uncharted* brand had been based on a compiled document of action-adventure genre ‘conventions and tropes’ from Hollywood blockbusters like *Indiana Jones and the Raiders of the Lost Ark* (1981) and *National Treasure* (2004), such as walking into the enemy trap, or being left behind on a plane without a pilot (ibid.). These then became inspiration for ‘game mechanics, set-ups, or just the tone and the vibe of the story’ (ibid.). The topics discussed and language used in this GDC talk indicate that design intention was to aspire for a cinematic quality, and that the brand identity of the *Uncharted* franchise was anchored in the cinematic genre of pulp action-adventure. How did Naughty Dog create the ‘active cinematic experience’, and what did that mean in terms of the player’s agency?

The bulk of the narrative in all three games is often delivered via cut-scenes, though the proportion of these versus gameplay sections shifts with each instalment, in line with the enhancement of the hardware. These cut-scenes allowed designers to, as

*Uncharted 2*'s Game Director Bruce Straley said in the GDC presentation mentioned above, 'leverage the language of cinema by using things like composition, close-ups, wide angle shots, basically any shot that's not over the shoulder player camera, dramatic editing' (ibid.). Aspiring for a cinematic quality in representation meant that designers placed a heavy emphasis on storytelling by creating plenty of design affordances which would deliver predetermined narrative moments in order to relay a linear story, thereby limiting narrative agency. As was to become a typical feature of the games, cut-scenes were embedded seamlessly, without any loading screens, which created a more organic flow, and a more filmlike experience. They typically focused on adding layers of motivation and personal history to characters, as well as exposition and context to the key moments in the plot, which left the action set-pieces to be experienced via gameplay. The *Uncharted* games also incorporated genre tropes of action-adventure, such as the overall focus on treasure hunting, the main characters' personalities, and their relationship management, drawing on melodrama.<sup>63</sup> All these being said, *Uncharted* game's 'cinematic'-ness is not solely achieved via cut-scenes and genre inspirations, but also via game design.

From early on in the franchise, Naughty Dog developers have been vocal about the need to restrict avatar action in order to deliver the kind of experience they had in mind for *Uncharted* games. They called this design priority 'focused'. Speaking of the first game, Lemarchand and Druckmann said:

Except for a few vehicle-based sections, *Uncharted's* gameplay is tightly focused on a few core mechanics. This was quite a difference from the design approach of the *Jak and Daxter* series, where much of the fun was derived from the sheer variety of gameplay in the missions. This focused approach, along with the realistic world we created for *Uncharted*, made game design on

the project quite challenging. [...] This resulted in what we feel is a much more elegant design overall.

(Lemarchand and Druckmann 2008: n.p.)

This ‘focused approach’ can be further broken down with the help of the multidimensional heuristic framework. In order to enable the fast-paced gameplay at the heart of Naughty Dog’s evolving design ethos within the technological restrictions of each hardware’s processing power, the games’ design considerably restricts the possibility space for avatar action in all four dimensions. Time-critical action is at the centre of the gameplay experience, thereby enabling ergodic agency to manifest, albeit not to a degree that is considerably more prevalent than it would be in any other action game. As the games’ narrative structures are linear, in order to maintain the predetermined direction and pace of storytelling, besides genre-typical movement verbs often found in action-adventure games (such as run, jump, or take cover), agency in the spatial-explorative dimension is severely restricted throughout the first three games, though the levels gradually became larger as technology allowed, and the designers became more proficient in making use of it.<sup>64</sup> For the sake of maintaining designer control over player progress, temporal agency is also restricted, along with both the configuration of the avatar and the construction of objects in the game’s space (bar a very low degree of agency expressed by customising the avatar’s weaponry). Such a high degree of designer control over avatar action results in agency also being impaired in the narrative-dramatic dimension, though due to increasingly sophisticated technologies in animation and graphics processing, this constrained game feel began to gradually be counterbalanced with rich and lifelike representation of the game spaces and those inhabiting them.

Let's take a moment and look at how developers talked about creating an 'active cinematic experience', through the specific example of *Uncharted 2*'s train level. I chose this example as developers said these levels were particularly challenging to design, requiring a complete overhaul of Naughty Dog's game engine in order to obtain the desired results (Gregory 2010), which shows the level of effort put towards creating a filmlike gameplay experience. The train levels were widely praised by fans and the press (Yin-Poole 2018), and fellow developers still look at Naughty Dog's feat with 'an almost religious fervour' (Bramwell 2013: n.p.). 'Chapter 13: Locomotion' and 'Chapter 14: Tunnel Vision' make up a roughly twenty-minute-long playable set piece in *Uncharted 2*. They comprise of a continuous level that takes place entirely on a moving train, which Drake, the player/avatar, has to fight his way through. Unlike similar levels in other games, this train, and everything in it, is designed to move constantly, thanks to what Naughty Dog call 'Dynamic Object Traversal System'.<sup>65</sup> As Lemarchand explains in the game's post-mortem:

This system provided us with the ability to have player character Nathan Drake and all of his allies and enemies in the game able to use all of their traversal and combat abilities on any moving object. This might not seem like a big deal, but for those of us who had been working on 3D character action games for a while, [it] was pretty much the Holy Grail.

(GDC 2017a: n.p.)

On these levels, we can observe three main ways in which Naughty Dog discussed the creation of an 'active cinematic experience': through audiovisual means, through difficulty, and through level design.

First, the audiovisual features in gameplay granted characters and environments a more cinematic appeal. Amongst these were the use of filmic colour palettes<sup>66</sup> (GDC 2017a), varied camera angles, contextual move-sets in animation, such as Drake stumbling on ice, covering his face as he runs by explosions, or furniture dynamically reacting to events.

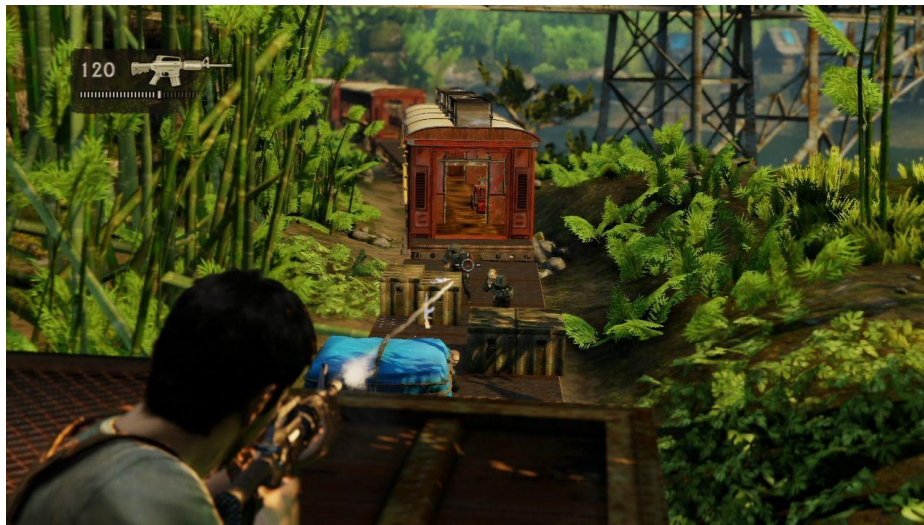


Figure 26: Train level in *Uncharted 2* (mobygames 2011).

As Mike Hatfield, Lead Technical Artist on *Uncharted 2* said,

All we want to do is blur the line between pre-computed physics stuff that we pre-process in our 3D software, and the stuff that's happening live in the game, dynamically reacting to explosions and gunfire.

(PlayStation 2009a: n.p.)

Environments reacting dynamically to play allow for a degree of dramatic agency to be realised. Explosions are a good example of this, as they are not predetermined in occurrence, but happen only when the avatar or an enemy unit throws a grenade in the proximity of objects with explosive attributes, such as a crate. With features such as



this, *Uncharted* games afford a degree of dramatic agency: the game's ludic systems, when interacted with, create player stories unique to the individual playthrough, as triggered by the interactions then and there - albeit to a lower degree than I will show in the other two case study chapters.

Second, while the player's agency is severely restricted as the player cannot get off the train, the game's design, particularly in terms of traversal and combat challenges, can be rather forgiving when it comes to difficulty. Besides the lack of loading screens and minimal, if any, superimposed interfaces, this organic quality is also no doubt in service of the fluency of an 'active cinematic experience'. This is negotiated with the help of 'Dynamic Difficulty Adjustment', a technology that Naughty Dog has been using profusely since *Crash Bandicoot* (Gavin 2011). As I discussed in the previous chapter, 'Dynamic Difficulty Adjustment', or DDA, is a systemic way the game's difficulty is adjusted depending on how much the player struggles.<sup>67</sup> Therefore the challenge posed in combat situations affords agency in a temporal-ergodic dimension, which is further supported by this safety measure, in case the challenge proves to be too difficult for the player to ease through that section. Manipulating temporal-ergodic agency in such a way enables a more organically flowing gameplay experience.

Last but not least, another way in which Naughty Dog enhances the cinematic quality of the train level in *Uncharted 2* is by manipulating the game spaces, thereby impacting agency in the spatial-explorative dimension. Since the game could not be made as a truly open world game, as it would not have allowed for the high degree of designer control on avatar action, an alternative method was devised to create a realistic experience of progressing through a moving train. This was necessary as it

would not have been possible to store and run such a resource-heavy level at the time, and similar train levels, such as the one in *Final Fantasy VIII* (Square 1999), appear to have a static train with moving background to create a similar feeling of movement. The way Naughty Dog created the illusion of the train progressing forward was to have the train not be static, but move in circles on a loop (Figure 27), while the background occasionally changes when the avatar is in a high-walled train carriage, or while a cut-scene is played (Gregory 2010). Thus, there is a considerable discrepancy between the ludic, locally represented, and storyworld spaces: although the player/avatar's agency affordances are restricted in the ludic and locally represented space, it appears as though the train is moving along a long, continuous path in the storyworld space.



Figure 27: Train on a loop in *Uncharted 2*, where only the train tracks' immediate surrounds, and the distant vista, are rendered (Gregory 2010).

Thus, the player's spatial agency could remain quite restricted, but an illusion of movement is created in the game's representational space thereby affording explorative agency, which builds up into an action set piece. Therefore, the train levels

contribute towards the franchise's brand identity as an 'active cinematic experience', thanks to the design solutions observed.

After the success of *Uncharted 2*, Naughty Dog split into two teams: one working on *Uncharted 3*, the other, led by the key developers associated with the franchise, Neil Druckmann and Bruce Straley, moved on to create a new IP for the PlayStation 3. This new game would become *The Last of Us* (2013), a multiple BAFTA-winning action-adventure-stealth survival-horror game. Unlike any of the previous Naughty Dog games, *The Last of Us* was much darker in its narrative themes. It also introduced a more diverse stealth system and placed large emphasis on crafting, which afforded gameplay with a much slower flow, especially compared to the *Uncharted* franchise. The game became the studio's biggest hit, elevating its creators to a rock star-like status, them being interviewed by international entertainment press outlets like *The Rolling Stone* (Suellentrop 2016) and talk show host Jimmy Fallon (Monacelli 2012). In the meantime, a small team led by Amy Hennig continued to work on the next, and planned to be final, instalment of *Uncharted*, as led by Nathan Drake.

Thus far, I have demonstrated how in *Crash Bandicoot* and *Jak and Daxter* Naughty Dog laid down the foundations for a fast-paced action game, with a curiosity towards the expressive potential of other audiovisual media, such as film and television. I then highlighted how in the first three games of the *Uncharted* franchise, providing an 'active cinematic experience' became a priority for the studio. Through the example of the train level in *Uncharted 2: Among Thieves*, I explored what this meant for how player agency was afforded, and indeed more importantly, limited through game design. In other words, Naughty Dog's design ethos was identified as one centred on

restricting avatar action in order to achieve gameplay with a cinematic quality. I tracked the development of this ethos in the years leading up to the beginning of production of the *Uncharted* game that was set to bring Nathan Drake's story to an end. Now, I will move on to a more focused paratextual analysis, where I will unpack what developers, primarily via the promotional surrounds of *Uncharted 4: A Thief's End*, communicated about design intention, and what implications that foreshadowed to have for the game's design.

## Developing *Uncharted 4: A Thief's End*

*'The level of detail that's happening across all disciplines is just incredible to me.'*

Lead Designer Ricky Cambier  
(Hanson 2015b)

The paratextual analysis below will first identify major moments of change in the circumstances of production and examine the impact these had on design intention. I will then interrogate how developers relate their design intentions to a filmic quality, and what implications these foreshadow to have for player agency in the design of the game published. The underlying hypothesis of this section of the chapter is twofold. On the one hand, although both the team and the project were majorly overhauled, the studio's ethos prioritising 'cinematic'-ness in game design, and the *Uncharted* brand's identity as a videogame equivalent of a summer cinema blockbuster, remained intact. On the other hand, however, I trace some changes in what this notion meant to Naughty Dog, and how developers used it when reflecting on their intentions.

The notion of an 'active cinematic experience' was discussed in a slightly more deconstructed way by *Uncharted 4*'s developers compared to previous instalments. As I have shown in the historical overview above, 'cinematic'-ness in general for Naughty Dog encapsulated an aspiration for the recreation of a summer cinema blockbuster, inspired by a mood board of Hollywood action-adventure classics and pulp television series. Not counting the fairly self-explanatory cinematic quality of the games' cut-scenes, we saw how developers repeatedly emphasised three tools at their disposal in order to achieve this goal: pacing, restricting player action to core mechanics, and a high audiovisual quality. *Uncharted 4*'s designers, however, no longer promoted the 'active cinematic experience' motto, and were generally less clear on what a filmic

quality meant for them, though their words continued to revolve around the themes of cultural references to pulp films, creating interesting stories with believable and complex characters, and very high quality art and animation. This may have been due to the change of Naughty Dog's public perception, particularly post-*The Last of Us*.

Up to this point, the studio was still in the process of revamping their design ethos from making cartoony platformers to producing realistically animated action-adventure games, and the voices across the paratextual surrounds promoted explicit cinematic aspirations accordingly. Developers repeatedly expressed a desire to create filmic games, as if 'filmic' was a quality marker. Indeed, when videogames still struggled to be recognised as a medium capable of offering worthwhile entertainment value, 'cinematic' in the context of games was often used as a praise, a way to elevate the cultural status of the product, especially in a promotional context (King and Krzywinska 2002: 7). However, especially after the explosive success of *The Last of Us*, Naughty Dog no longer needed to rely on such means to market their work, because by then their design style was a recognisable brand in and of itself, one with connotations for high production values and stories told akin to those of cinema blockbusters. Therefore, throughout the years leading up to *Uncharted 4*'s release, developers were increasingly less consistent in their usage of descriptors like 'cinematic' or 'filmic', and discussed more the design priorities they established as a studio over the years, in a self-referential manner. Design intention also increasingly became about story construction and character moments both via performance captured cut-scenes and what developers described above as 'live' gameplay that elicit an emotional reaction in their players, feats that the studio championed in *The Last of Us* as well. But what did this mean for the studio's brand and image in general?

Naughty Dog is a Sony subsidiary, turning over large revenues. As such, it would not be too radical to suggest that growing pressure from market demand would steer their style of design towards crowd-pleasing mainstream—in this particular case, towards the open world action-adventure games that dominated sales across the globe, such as Ubisoft’s *Assassin’s Creed* and *Far Cry* series. However, Naughty Dog’s developers did not acknowledge these trends as relevant in any way, and instead repeatedly stressed the importance of staying true to the *Uncharted* brand, and to Naughty Dog’s design ethos. On higher levels, as Co-Game Director Bruce Straley said that measuring against industry trends was not a concern:

I don’t care what the industry is doing. I wanna make a game that I wanna play. [...] We’re not comparing what we’re doing here with what other people are doing. We’re comparing what’s the evolution of *Uncharted*, what can we do with this franchise.

(qtd. in Hanson 2015a: n.p.)

Lower level members of staff shared this sentiment. Audio Lead Phil Kovats felt like they had ‘a lot of responsibility’ to stay true (PlayStation 2016a: n.p.) to the brand’s legacy. As Co-Game Director Druckmann reminisced:

Sometimes we’d have a brainstorm meeting looking at different mechanics [...] and people would go “oh that’s really hard” and someone in the room will eventually say “We’re Naughty Dog”. And that statement has so much weight, and the pressure is to make sure that statement always has weight going forward. “We’re Naughty Dog. We’re gonna make one of the best games out there.”

(qtd. in Hanson 2015a: n.p.).

This shows the degree of pride developers on all levels take in producing content that lives up to the high bar set internally, suggesting that *Uncharted 4*'s development was predominantly driven by delivering on the standards the studio set for their very self.

Although market trends, apparently, did not play that much of a part in the decisions made during *Uncharted 4*'s development, there are two major moments of change in the circumstances of production that need to be considered. First, there was technological innovation with the introduction of the next-generation gaming consoles by Sony and Microsoft. Second, there was the change in almost all leading personnel and cast members about halfway through production. In the following, I will examine how these factors set the groundworks for how player agency was to be thought about by developers.

#### Changes in Hardware and Personnel

In the early 2010s, there was much anticipation around the game that was said to conclude Nathan Drake's storyline. Fans and journalists alike pitched several ideas to Naughty Dog about where they wanted the last game to go (IGN Staff 2011; Miller and Altano 2012). By this time, the *Uncharted* franchise was Sony's flagship IP on the PlayStation. Thus, it was not surprising when the company announced at the next-generation console PlayStation 4's launch that a new *Uncharted* game was also in the making. The announcement took the form of a highly suggestive trailer, with a camera pacing over a map while a man, presumably the new villain, spoke about having been abandoned by Drake and how this gave him a new purpose of revenge (PlayStation 2013). Shortly after the release of this trailer, mo-cap actors shared behind-the-scenes photos on their social media (Monaghan 2013; Stashwick 2013), but apart from these leaks, there was little coming from the studio until early 2014. After the release of *The*



*Last of Us* (2013), its team freed up, and thus the studio was able to turn their full attention to the slowly blooming new *Uncharted* game, only to find it markedly behind schedule, and without a feasible plan for production (Schreier 2017a: 36–38). Soon after, long-time *Uncharted* Creative Director Amy Hennig, *Uncharted 4* Game Director Justin Richmond, lead character artist Michael Knowland, and Art Director Nate Wells left Naughty Dog, along with actors Alan Tudyk and Todd Stashwick.

Although it is not uncommon for creators or key talent to leave production due to delays and a general state of disorganisation, the specific reasons for their departure is yet to be officially explained. Many fans and journalists seem to be of the opinion that they were pushed out by the rockstar-like developer duo leading the development of some *Uncharted* games and *The Last of Us*, Bruce Straley and Neil Druckmann (Orland 2015). Naughty Dog's co-presidents attempted to disperse these rumours on their developer blog, but did not clarify further (Wells 2014). Wherever the truth may lie, Druckmann and Straley (Labbe 2015: n.p.) did admit to a complete overhaul of the project as it stood, beginning with the story, which, as the historical overview above showed, is what determines game mechanics in *Uncharted* games. While the transition was abrupt, it was well-organised. As Lead Environment Artist Tate Mosesian recalls, 'they had a plan, a clear plan, and they expressed it to the team. It instilled confidence' (Schreier 2017a: 41). The new directorial duo continued to press the original priorities set out by Naughty Dog's then co-president Christophe Balestra, who said at the PlayStation launch event:

We're gonna be pushing storytelling and performance capture, like always. But graphically, we're gonna see a big jump with what the team is working on right now.

(PlayStation 2013: n.p.)

This early statement set the direction in design intention as one focusing on storytelling and sophisticated audiovisuals, as consistent with the *Uncharted* brand. The big jump in graphics, in particular, was made possible with the power of the PlayStation 4 console, and as we will see, developers regularly referred back to the technological affordances of the new hardware as a decisive factor in why certain decisions were made during the development of *Uncharted 4: A Thief's End*.<sup>68</sup>

As Sony's then-President and CEO Jack Tretton summed up, the new console delivered 'powerful graphics and speed, intelligent personalization, deeply integrated social capabilities, and innovative second-screen features' (Tretton 2013: n.p.). Most notably, with the revamped PlayStation Network, Sony expanded the kinds of services provided by the console, including new communication and social features, film, television, and music streaming, and a cloud gaming library containing previous PlayStation titles. Furthermore, the console brought about three novel technological changes which are relevant for *Uncharted 4*'s design intention. Firstly, compared to the PlayStation 3 single-core central processing unit (CPU), or the brains of the machine, as it were, the new hardware sported an eight-core CPU, with expanded memory. This meant that it could process an increased amount of data that is more complex, and at a faster speed. It also featured a more powerful graphics processing unit (GPU), which could render higher resolution 3D and a higher framerate, resulting in more pixels being displayed simultaneously, which were refreshing at a higher rate

per second. In very simple terms, this meant that game systems could be more complex; the games themselves would have more audiovisual detail; and they could run more smoothly on the PlayStation 4 compared to its predecessors, or even its competition. Indeed, when it came to the competition, at its launch the PlayStation 4 outperformed its rival, Microsoft's Xbox One. Flagship franchise games such as *Call of Duty: Ghosts* (Infinity Ward 2013) or *Assassin's Creed IV: Black Flag* (Ubisoft Montreal 2013) ran at higher resolution on the PlayStation 4 (Hamilton 2013).

Moreover, it was with the PlayStation 4 that Sony revised their previously infamously problematic shading language for the PlayStation 3 (Sinclair 2017). Shading, in the context of 3D animation, refers to the process of creating ways to imitate material qualities and textures of a real-world object (Paquette 2013: 185–218). By determining valuables assigned to pixels that make up 3D objects in virtual space, such as glossiness or specularities, it is possible to imitate surface characteristics. With the new hardware, the PlayStation Graphics Library (PSGL) was replaced by PlayStation Shader Language (PSSL), which optimised the efficiency of the new console's GPU (Stenson and Ho 2013). It streamlined production pipelines because it gave programmers a new set of tools to write shaders in exactly the way the artists wanted them (Leadbetter 2013) and the PS4 had the power to execute them. Therefore, Naughty Dog, as a Sony subsidiary with access to this technology, had certainty and consistency in using development tools. This in turn made production more efficient. Such combination of technological feats meant that developers would be able to make the best of the hardware's affordances regarding game systems and graphics. These changes in hardware and personnel already hint towards how agency was shaped by design intent in *Uncharted 4*. Looking deeper into interviews with developers will

reveal the ramifications of these in more detail. In the following, I will unpack how Naughty Dog's developers reflected on their intentions to make *Uncharted 4* honour the franchise's identity, particularly when it comes to affording player action.

#### A 'Cinematic Feel'

As briefly touched on in the introduction to this section, *Uncharted 4*'s developers relied increasingly less on filmic terminology when expressing an aspiration for cinematic quality in their design. Instead, they spoke to aspects that crystallised as the studio's design ethos, loosely associated with this historic priority; and a refined commitment to story construction and consequently, conveying characters' emotional complexity. Straley said they would have loved to have mechanically interesting and new game components as a design challenge. However, although such features would have granted spectacle without doubt, he admitted that it would not be consistent with the franchise's brand identity rooted in a 'cinematic feel':

We wanna make jetpacks, laser beams, those ideas are simple. But [the challenge is] to actually go [and focus on] what's going to create the most rich experience, and keep the pacing, so it keeps that action cinematic feel that *Uncharted*'s known for.

(GameSpot 2015: n.p.)

Indeed, it is a cinematic, or filmic 'feel' that design intention as per *Uncharted 4*'s promotional paratext seems to revolve around the most. Elsewhere, Straley expanded on this concept in more detail:

We're thinking in filmic terms, but what's important for us is how much of that we can put on the [analogue] stick. That's what we start with in the story discussions. Then, when we talk to the designers, it's like, 'This is where the

characters are at, this is what we're trying to do, and these are the mechanics we're trying to exploit at this point. Let's pull those things together and make the player feel what the characters are feeling'.

(qtd. in Staff 2015: n.p.)

While he acknowledged that their frame of thinking is centred on creating a film-like experience, their secondmost priority seems to have been to translate this filmic framing into interactive terms. That being said, while the desire to 'put things on the stick', that is, give as much control to the player as possible, was being acknowledged, the general approach to development is still that mechanics stem from 'story discussions'. In the historical overview of the *Uncharted* franchise, I explored how the design intention in previous instalments centred on the idea of creating an 'active cinematic experience'. At that time, developers discussed extensively how when it came to creating the game, and planning large scale structural matters like pacing, they thought in terms of the conventions of film and television. *Uncharted 4* was no different in this regard, and a focus on story-ness was reiterated by Druckmann:

We have become more conscious of, more proficient at, storytelling. Whatever meeting we're having—even if it's background or character artists—we're speaking the same language. We're speaking as storytellers.

(ibid. n.p.)

Designers of all disciplines set out to approach all parts of the game as a 'scene', a part of a whole, where each part is building up to an overarching narrative:

What we're trying to do is look at everything, even the moments between cut-scenes, as a scene. There's always something that's happening with the character arc that's important.

(qtd. in Staff 2015: n.p.)

Interestingly, this approach is not uncommon in film. Bordwell and Thompson (2004) propose to frame a neo-structuralist engagement with film texts through the lens of ‘narrative as formal system’. They argue that a film’s formal structure can be mapped according to how it deploys ‘cause-effect, story-plot differences, motivations, parallelism, progression from opening to closing, and narrational range and depth’ (ibid. 103). By discussing the building blocks of the designed gameplay experience in terms of ‘scenes’, we can argue that Naughty Dog takes an approach to structuring the game according to formal qualities also found in films.

This aspiration for filmic quality was mostly consistent with the *Uncharted* brand, as well as Naughty Dog’s design ethos. That being said, in terms of the language used by developers across the paratextual corpus, there was less consistency with regards to what this ‘cinematic’-ness meant, and increasingly more focus on evoking emotions in players. As to how Naughty Dog’s developers intended to achieve this via design, there were two main themes salient in interviews and other paraphernalia: restricting player action to core mechanics and aspiring for never-before-seen levels of audiovisual detail. A recurrent influential factor in developer discourse around these two topics, as I will show, was how the new technology of the PlayStation 4 facilitated innovation, and how the studio was predominantly motivated less by having to adhere to industry pressure, more by delivering design that fits the high standards laid down by their previous games.

Soon after Straley and Druckmann took over the project, they changed not just the story, but also the majority of game mechanics planned during pre-production. Previously, Hennig and her team were prototyping a variety of new ideas, which

Straley recalls were mostly ‘theorycraft’; a sort of ‘wouldn’t it be cool if...?’ stage in game design where there is no implementation per se, just planning, and more often than not, over-planning.<sup>69</sup> When Straley and Druckmann got on board, they immediately identified a new priority. As Straley recalls:

[T]he thing that I needed to do more than anything was to pin down what the core mechanics were going to be. Sifting through the prototypes and seeing what was going to work and what wasn’t. What scales. What works with something else.

(qtd. in Schreier 2017a: 45)

This proved to be quite a challenge, especially given how much more content they could now create on the new platform. As Druckmann said, a recurrent issue they were having as developers was how to create a game that offers more player choice while simultaneously maintaining the linear, filmic pacing of previous games:

The challenge for us, the thing that has been super hard, is how do we give you more choices, and make the pacing feel just as intense as when things have been more linear.

(PlayStation 2016b: n.p.)

They set out to overcome this challenge in a way that, at first glance, may seem somewhat contradictory: by limiting player action to what they called ‘core mechanics’, a very basic set of simple game mechanics that the player can familiarise themselves with relatively quickly.<sup>70</sup> It could be argued that if player action is limited by design, then player agency is restricted accordingly. However, as Calleja points out, ‘even the most free-form activity in a virtual environment is constrained by the code which enables it’ (Calleja 2011: 148). Indeed, as I argued in Chapter 1, agency

could be thought of not as a yes or no question, but a matter of degrees. As such, constraining player action does not automatically mean that the player has no agency. In Straley's words, it is precisely because the design puts forward simplified game mechanics that the player can 'feel empowered':

[T]he challenges that we put in front of you in layout, and designs, and enemy designs, and classes of enemies, and the turret truck, etcetera, you have to be so familiarised with your core mechanics and dexterous on the stick, so familiarised with that language of interaction with that world that we're creating, that you need to feel empowered as a player.

(GameSpot 2015: n.p.)

Core mechanics were already a design priority in previous games, particularly in *Uncharted 2: Among Thieves*, whose development was also led by Straley and Druckmann (PlayStation 2014b; PlayStation 2016b) and continued to be for *Uncharted 4*. The studio's idea for what the core gameplay would look like was publicised with two gameplay trailers: one shown at PlayStation Experience, or PSX for short, in 2014, the other at E3 in 2015 (IGN 2014; PlayStation 2015a). *Uncharted* being the product of a studio with a long history in platforming games, the first gameplay trailer showed what implications this carried for the avatar's move set. It is a roughly 15-minute-long gameplay section, and it features a traversal and combat-stealth section in an open environment much bigger in size compared to previous *Uncharted* games. This trailer revealed the traversal mechanics already present in previous games, such as running, jumping, or climbing. It also introduced the new core mechanics of the climbing spike and the rope (Figures 28 and 29).





Figure 28: Spatial agency affordances as shown in the *Uncharted 4* trailer: spike.



Figure 29: Spatial agency affordances as shown in the *Uncharted 4* trailer: rope.

As Lead Game Designer Kurt Margenau said, ‘the biggest design thing that came out of the new hardware was literally just the bigger spaces’ (PlayStation 2016b: n.p.). These were conceptualised by Naughty Dog’s level designers as ‘wide linear’ levels, a phrasing with which they aimed to reconcile the tension between the freedom of open world level design and the constraints that go hand in hand with linear

progression design (Sinclair 2016). Nevertheless, Margenau stressed elsewhere that they still intend to maintain some degree of direction:

Everything you see, you can go to. We're not going to arbitrarily block you. It's still a directed experience. We have our beats, our big moments that we want to pitch you to, but we want to make the player come to them on their own. We're not shoving them down their throats.

(qtd. in Farokhmanesh 2015: n.p.)

Specifically talking about spaces, co-lead game designer Anthony Newman said that thanks to the technological affordances of the new console, they could now increase the possibility space for avatar action in a spatial-explorative dimension:

We really wanted to give more player choice, a greater sense of freedom, and exploration on these levels. [...] So one thing we're definitely doing is we're opening it up a lot more, and the memory of the PS4 is definitely allowing us to do that.

(PlayStation 2015b: n.p.)

This approach came to be marketed as 'wide-linear' level design (Crossley 2015). In summary, developers expressed concerns about the challenges of mitigating increased player freedom with the simultaneous adherence to the necessary constraints that the linear narrative required, all the while wanting to expand the possibility space for the spatial-explorative dimension of agency. This design intention can be deduced from the expansion of level sizes as well as the core move set of the avatar to make traversal options more diverse, as shown in the trailers.

The trailers also reveal what core mechanics utilised in combat afforded by such 'wide-linear' design looked like at this stage in development. Technology did not just

allow for there to be bigger spaces, it also allowed for non-player characters in said spaces to be more proficient in traversing them, thereby increasing the challenge in these scenarios. Designers set out to revise enemy and ally behaviours. Previously, they were scripted to a high degree, but with *Uncharted 4* the studio worked on more sophisticated AI systems that actively make decisions based on their understanding of space and their knowledge of where the player's avatar could be. Lead Animator Jeremy Yates said on this:

We didn't want a game where you just sit behind cover, you know, the stop-and-pop, we really wanted you to move through the environment, to outsmart them, flank them, for them to be able to chase you around, just have that constant motion.

(PlayStation 2016c: n.p.)

By designing more reactive, less predetermined non-player character behaviour, *Uncharted 4*'s designers endeavoured to create more challenging combat scenarios. This suggests that another key area for design intention in terms of designing agency was in the temporal-ergodic dimension. However, applying restrictions to the player character's core mechanics while diversifying non-player character actions became slightly more difficult to balance when it came to *Uncharted*'s trademark action set pieces, and example of which was revealed in the gameplay trailer showed at E3 2015 (PlayStation 2015a).

In high-octane vehicle chase sequence shown in this trailer (see Figure 30), Drake has to advance to the front of a convoy to catch up with his brother. In doing so, he has to climb on board a truck, then move gradually towards the front all the while travelling at high speed, and shoot enemies both in his way, and on other vehicles in the convoy.

During this sequence, the player is shown to have complete control of the avatar, bar a few scripted moments.



Figure 30: Restricted player action in set piece trailer (PlayStation 2015a).

Indeed, it is with such fast-moving set pieces that a very good command of the core mechanics becomes fundamental and facilitating this was a priority for the studio. As Straley said,

So much of what we're trying to make with our games is, we wanna make them accessible. We as a studio we try to make them accessible. Accessible doesn't mean, like, dumbed down, or "press one button and the whole sequence plays on". We just wanna make it so that you understand that you have a relationship with the mechanics, that you chunk them easily, and you can engage them. And now you want to exploit them, and it's up to you to have that choice.

(qtd. in Hanson 2015a: n.p.)

What he emphasised was the importance placed on facilitating players' 'relationship with the mechanics' as a prerequisite of enabling the player to successfully navigate these fast-paced gameplay sequences easily. This ease of access would then enable

players to ‘chunk them easily’, and to ‘exploit them’ which would in turn, rather contradictorily, enable players to still tailor their playstyle to their preference to a certain degree. This emphasis on accessibility, combined with the amplified size of levels and the adaptive behavioural diversity of non-player characters suggests another tangent to design intention. Besides telling the linear narrative via predetermined, largely non-interactive cut-scenes and scripted events that do not afford much narrative agency, designers’ focus seemed also to be on enabling emergent, narratively charged sequences of events, thereby affording a degree of dramatic agency to players. This focus on dramatic agency becomes even more evident when examining the other theme emerging from a survey of paratextual sources, an emphasis on highly detailed and filmic audiovisual quality.

From the first trailer since Straley and Druckmann’s takeover, a photorealistic aspiration in design intention was evident. The beginning of the trailer reads ‘The following trailer was captured directly from a PlayStation 4 system’, which underscores the importance of the new hardware in achieving this. Although it is cinematic pre-animated footage, and not gameplay footage, the trailer still showed that the hardware is capable of successfully running incredibly detailed animation (PlayStation 2014a). The photorealistic details in animation, such as Nathan Drake’s stubble, wrinkles, strands of hair (see Figure 31), as well as the wet patches of his shirt, or his torso reflecting the light (see Figure 32) showcased the power of the new technology:



Figure 31: Screenshots from the 2014 E3 *Uncharted 4* trailer.



Figure 32: Screenshots from the 2014 E3 *Uncharted 4* trailer.

Talking about how much more visual detail the new hardware allows them to convey, Druckmann said of the trailer:

From a character standpoint, the tech really allows us to get more subtlety. We're seeing hints of that in the trailer, you know, how much we can show pain or grimaces [...] it's a subtle touch, but as he raises his eyebrows, the colour of his skin changes, the blood flows away from that compression. All

those things let a realistic character become much more grounded, much more believable.

(PlayStation 2014c: n.p.)

The key words to take away here are ‘grounded’ and ‘believable’, which hint towards an aspiration for a photorealistic quality. This priority in design intention is underscored by Naughty Dog’s animators as well (GDC 2018). Throughout production, not only would Naughty Dog hire animators with a strong background in film, they would also host visiting seminars by animators from studios like Pixar. They also often used filmic reference points such as Roger Deakins’ work for the Coen brothers (PlayStation 2015b). This suggests that on their quests to ‘grounded’ and ‘believable’ representation, they were greatly inspired by cinematic conventions.

Naughty Dog as a studio has long had a reputation for outstanding animation and art. However, as the train level from *Uncharted 2* discussed earlier demonstrates, it is not only in cut-scenes, but also in gameplay sequences that the studio works towards highly detailed audiovisual representation. It was with the subject of art and animation that the studio’s developers toured high profile game design workshops and industry events across the globe, such as the Game Developers Conference and the Special Interest Group on Computer Graphics and Interactive Techniques (SIGGRAPH), where they share their knowledge and educate other developers on their work. Just in the past few years, several such talks and seminars were given by animation and art team members on the development of *Uncharted 4*, dissecting the technical aspect of their work in great detail.<sup>71</sup> Talks on performance capture of not just cut-scene, but gameplay sections, such as climbing movements, as well as panels and interviews with performance capture staff and actors, were also common (PlayStation 2015c;

Spottinggames 2017), which demonstrate the studio's dedication not only to creating, but also promoting the importance of visual detail. Naughty Dog Artist Adam Littledale revealed a key objective for their department:

We create the plants by hand. We go for more of an illustrative look, and more idealized to how we want to see it. We want realism but pushed a little in the ways that we want them to be pushed.

(Reiner 2015a: n.p.)

Such attention to detail was made possible by the technological prowess of the PlayStation 4. As Druckmann said

[t]he resolution involved in that requires a lot more work, and a lot more thought, and a lot more time. It's not just "eh, any old dirt will do". It's a very specific dirt, how wet is that dirt, how many pebbles are pushing up in that dirt, and you take that consideration and you apply that to everything. [...] The new hardware allows us to achieve what we've been trying to achieve the whole time, and that's just believability and complexity.

(PlayStation 2016b: n.p.)

Druckmann here underlined the importance of consideration of minute detail and ties it back to the studio's design ethos by saying they have been working towards 'believability and complexity'. While a lot of effort was put towards designing environments with highly detailed visuals, the character model of Nathan Drake also benefited from similar attention. Reportedly, there are approximately 1200 bone-like parts in his face alone, compared to *Uncharted 3*'s 250 (Reiner 2015b). In addition to environment art and character facial animations, ragdoll animations (that is, the way bodies are animated) also benefited from the PlayStation 4's technological



affordances. The console allowed for the creation and implementation of more complex movements through the game's systems. Lead Animator Jeremy Yates said

We also want more contextual animations. If Drake has a pistol in his hand, his animations will be different. If he has an assault rifle, those animations will be different. These differences are subtle, but you can see they are there. [...] The hit reactions have nothing to do with the animation from the attacker. It's all based on the angle from which Drake punches, and where he hits them on the body. We have a huge library of hit reactions. It's very dynamic, and you can come at it from any angle.

(Reiner 2015b: n.p.)

Such emphasis on the enrichment of the representational world not only in cut-scenes, but also during gameplay, indicates that Naughty Dog placed demonstrable emphasis on affording dramatic agency as not only do these in-game objects and animations enrich the predetermined designer story told largely via cut-scenes, they also contribute towards a photorealistic quality in the emergent player story. Furthermore, each gameplay session, style, and angle of approach would generate a unique sequence of emergent player stories.

The same is true for the audio design team. Senior Sound Designer Robert Krekel's words reveal a salient cinematic inspiration:

What's unique about *Uncharted* is its pulp adventure roots. As a sound guy, we all kinda feel like we always just go back to Indiana Jones.

(krohgie 2016: n.p.)

The pulp adventure inspiration did not just mean sound designers thought in terms of filmic reference points like Indiana Jones – they recreated actual sounds from the films

using similar methods as foley artists would for film. For instance, Senior Sound Designer Jeremy Rogers went and bought the same brand bullwhip as used by Indiana Jones.

I think one of the big sounds that's gonna show up that's iconic is the grappling hook. [...] I actually went and bought a David Morgan bullwhip, which is the same bullwhip maker that did the Indiana Jones whip that Ben Burtt, big sound designer, used for all the whip cracks and whooshes and everything. [...] We did a whole series of recordings with that. And because of that, I think it's an homage to Indiana Jones, and I think it becomes one of the iconic sounds of this *Uncharted* game.

(krohgie 2016: n.p.)

Actions like this show that a cinematic quality was very much of import to sound design. More specifically, developers endeavoured to capture the richness and complexity of real-world aural environments. Besides the filmic inspirations, as Audio Lead Phil Kovats summed it up, they 'really tried to make sure that as the player progresses through the story, they really felt that they were being held into different locations across the world' (krohgie 2016: n.p.). Technological prowess of the new hardware made it possible to design very high level of detail and variation to sounds. It allowed for things such as the implementation of what Naughty Dog's designers called a Dynamic Foliage System, which meant that depending on speed of traversal and the kind of environment, for instance running or walking through a bush, or driving on different surfaces, everything was made to sound different:

On the jeep, each tyre is individually synthed on what it's driving on, how it's driving, is it skidding, is it losing any pressure, those kinds of things. And it really brings the jeep to life.

(krohgie 2016: n.p.)

Not only were the sounds complex and realistic, developers also emphasised their efforts towards creating emergent, situation-specific sound. A degree of dynamicity is not uncommon in videogames, considering that they are an interactive medium: the player could have their avatar shoot a weapon, and the sound of gunfire would be triggered then and there, as a result of the player's action, not scripted to happen in that particular moment in time.<sup>72</sup> However, as Senior Sound Designer Jeremy Rogers emphasised, due to the advanced sound engine, they were able to create a seamlessness in the game's audio that tied together cut-scenes and gameplay sequences into one:

I believe the world we have created is more film-like and expansive than ever. The sound engine itself is incredibly advanced. Because of that, the audio experience is more realistic. Usually, in a game, you can tell when there is a cutscene with baked-audio in 5.1—in this game, it is seamless. There are times where we bake the audio into the scene, and there are times when the audio is happening in the actual environment on the fly.

(Andersen 2016: n.p.)

Such a high level of detail inspired by aural cinematic tradition, but translated to the language of videogames, not always predetermined in occurrence but deliberately crafted so that they are reactionary and relative in occurrence, suggests that sound designers were placing emphasis on enabling a degree of dramatic agency not just via visual, but also audio design.

To sum up, the paratextual analysis revealed that the general direction in design intention was motivated not so much by market pressure, but by internally setting high standards primarily with regards to detailed audiovisual quality. I identified the two

main contextual factors with influence as the technological innovation of the PlayStation 4, and the changes in personnel, which in turn led to an overhaul of the project. The new directive was to create a game that balances a cinematic feel with as much available to the player ‘on the stick’ as possible. This primarily translated into working towards allowing player freedom on bigger than before levels, and giving players agency to traverse the space and tackle enemies in ways they see best fit, therefore creating a game that would afford agency in the spatial-explorative and temporal-ergodic dimension. Developers identified the challenge of balancing the freedom provided by ‘wide-linear’ levels with largely linear progression required to tell a story, and endeavoured to tackle this by implementing measures that still maintain some degree of control by restricting player action to core mechanics. While the heavily predetermined linear narrative structure would not leave much space for narrative agency to manifest and therefore developers did not discuss it, the emphasis placed on delivering photorealistic audiovisual detail suggested that dramatic agency would be of import to designers. In the next, and final section of this chapter, I will explore how agency is afforded or limited by the design of *Uncharted 4: A Thief’s End*, and will question whether it matches the designers’ stated intentions.

## Textual Analysis of *Uncharted 4: A Thief's End*

*Well, let's see here... I ruined my marriage. Drove my best friend away. Got two psychos and their army after me. And now my brother's gone missing. But, on the bright side, there's no one around to tell me I'm an idiot.*

Nathan Drake

This third and last section of the chapter examines how player agency is afforded and limited by the design of *Uncharted 4: A Thief's End*, specifically looking at how the discourse of 'cinematic'-ness interweaving the paratextual surrounds privileges certain types of agency in the game itself. The analysis below will show that indeed, the main verbs afforded to the avatar can be qualified as a limited number of core mechanics, which would imply that agency is restricted—and it is, in many ways, but not entirely. Conceptualising agency as degrees in my heuristic framework will help to identify how *Uncharted 4's* design affords agency in spatial-explorative, temporal-ergodic, and even in the narrative-dramatic dimensions. More specifically, I will look at how audiovisual quality boosts dramatic agency supported by affordances in the spatial-explorative and temporal-ergodic dimensions. I will relate these observations throughout to the design intention of creating a game with a 'cinematic feel', as identified in the paratextual analysis, to determine whether they match.

In terms of the general make-up of *Uncharted 4*, the main mechanics are traversal, puzzle-solving, and combat. The main types of gameplay sequences are 'wide-linear' levels, set pieces, and cut-scenes. In order to deliver a tightly authored story, these are arranged in a linear fashion, with no branching options in the main plot. Since the game is story-driven, there are more cut-scenes at the beginning, when the main conflict is set up, while the second half of the game shifts focus toward 'wide linear' levels, with a few cut-scenes scattered for major story beats. Within wide-linear levels

and set pieces (brought to life by scripted events of varying complexity), there is some degree of sideways gameplay, as opposed to the forward movement dictated by the predetermined story. For example, *Uncharted 4*'s set pieces are fully playable sequences of car chases, escapes of collapsing buildings, or a climb out of a car hanging off a cliff. Such scenes are typically represented by cut-scenes in most games as it would be rather challenging and resource-intensive to implement them in live gameplay. Set pieces in *Uncharted 4* sacrifice player freedom for spectacle and controlled pace, but there is still some degree of optionality within them: for instance, different paths are afforded down the hill in the Madagascar car chasing sequence, although they all lead to the same road. These gameplay sections afford agency across all dimensions and will be discussed accordingly. I will discuss agency in the spatial-explorative, temporal-ergodic, and narrative-dramatic dimension, since these are the most prominent ones in this game. I will not be touching on configurative-constructive agency, because in order to maintain consistency of storyworld and those that populate it across playthroughs, only a very low degree of agency is afforded in this dimension, bar the ability to change Nathan Drake's weapons, and the occasional movable platform.

### Spatial-Explorative Agency in *Uncharted 4*

Generally speaking, in terms of how ludic, locally represented, and storyworld spaces relate to each other, there is no notable discrepancy besides the ones typical of videogames: objects populating the 3D spaces are surrounded by non-visually represented collision boxes, there is a skybox which creates the illusion of the storyworld being bigger than the locally represented space, and there is a minimally intrusive HUD disrupting the storyworld space with ludic information. This is not to say there is nothing noteworthy of spatial-explorative agency affordances in the game's design. What developers referred to as 'wide linear' levels afford the largest possibility space for avatar action across dimension in *Uncharted 4*. I will first discuss them in terms of how they afford the navigation of game spaces. The avatar's essential move set is comprised of running, jumping, climbing, rolling, and the context-dependent crouch and taking cover. There are also the objects of swinging rope and a climbing spike, which add some variation (see Figure 32).



Figure 32: Roping mechanic in *Uncharted 4*.

While these spatial agency affordances are fairly standard for action-adventure games, assessing them within the tradition of the platformer genre, the like of which Naughty Dog produced historically with *Crash Bandicoot* or *Jak and Daxter*, reveals that they are rather reduced and simplified. The main challenge in platformer games is time-critical traversal of levels populated with obstacles. As discussed in the first section of this chapter, in platformer games of old, spatial agency affordances such as a ‘double jump’ or ‘slide and jump’ also enable agency to manifest in the temporal-ergodic dimension, whereby the player is required to, for instance, press X twice on the PlayStation controller within a short window of time in order to have their avatar successfully execute a double jump. In *Uncharted 4*, the platforming challenges are somewhat more forgiving in two rather salient ways. First, the area on a platform from which a jump is to be launched in order to be successful, as well as the landing zone, are quite generous and do not require the kind of precision platformer games tend to. This could be seen as a way to sacrifice challenge for organic-ness of flow, moving the imaginary toggle of player experience from ‘game’ towards ‘film’.

Second, there are visual markers that indicate what areas in the avatar’s immediate vicinity are available for jumping on, climbing, rope-hooking, or to be climbed with the spike. Discoloured or highlighted edges, specifically textured rock surfaces, or straight-up pop-up icons indicate whether a certain move is executable or not. This, again, is arguably a means to smooth player progression, for constantly falling off of edges or unsuccessfully attempting to rope every tree branch breaks the fluidity of traversal, thereby staggering the fast-paced action feel that was said to be design intention. In this way, *Uncharted 4*’s design restricts spatial agency from manifesting, and this restriction fits within design intention to keep mechanics core.



Looking at explorative agency, the PlayStation 4 is able to run larger levels efficiently, and these require the player to be able to read more complex terrains and object relations (see ‘spatial literacy’ in Pearce 2008). In comparison to the game’s other, more constricted sections, the navigation of these wide-linear levels allow for a larger degree of freedom in planning the avatar’s progression. While compared to previous instalments of the franchise, such design expands the possibility space for explorative agency, however, there is still a degree of designer control in guiding the player/avatar towards the correct route. The main routes are still labelled with *Uncharted* ‘s trademark yellow/white lines along edges (see Figure 33), and developers also often use light and in-game objects as obstacles to point the player in the right direction.



Figure 33: Climbing coloured ledges in *Uncharted 4*.

These denote primarily routes across the levels, so they curb the incentive to explore available space. Girina calls these devices ‘expressive lighting’ and ‘scripted staging’, where the former serves the purpose of decorum as well as functionality (Girina, 2013: 52), the latter

allows for a compromise between the freedom granted to the player and the control guaranteed to the narrative instance. The ultimate goal of staging is to believably convey the illusion of free will while channelling the player's activity on a predetermined route.

(Girina, 2013: 49)

Elsewhere, he adds '[s]cripted staging creates constraints on the freedom allowed to the player in order to make him/her experience the designed cinematic situation' (Girina 2015: 78). If we were to use Girina's terminology, we would say that these techniques thus deployed in 'wide-linear' levels ultimately convey an 'illusion of free will'. However, if we think of agency in terms of degrees, it could then be argued that there is explorative agency being afforded, only to a certain degree, with some designer authority still curbing the possibility space for avatar action, as a means of achieving the effect desired by the 'designed cinematic situation'.

In *Uncharted 4*'s set pieces, the situation is rather different, whereby avatar action in the spatial-explorative dimension is somewhat more restricted, as and when the set piece requires it to be. In general, and quite logically, the player's explorative agency is severely constrained, meaning they cannot deviate from the area in general, as well as the direction of progress. The Madagascar set piece (see Figure 34) is a good example of this. It is *Uncharted 4*'s longest interlinked sequence of action set pieces, ushering the player/avatar through a market area, an entire multi-story house, including rooftop chase, a car chase through the city, being dragged behind an enemy vehicle, fighting enemies and jumping from truck to truck, then driving again, and eventually riding the back of Sam's motorbike.

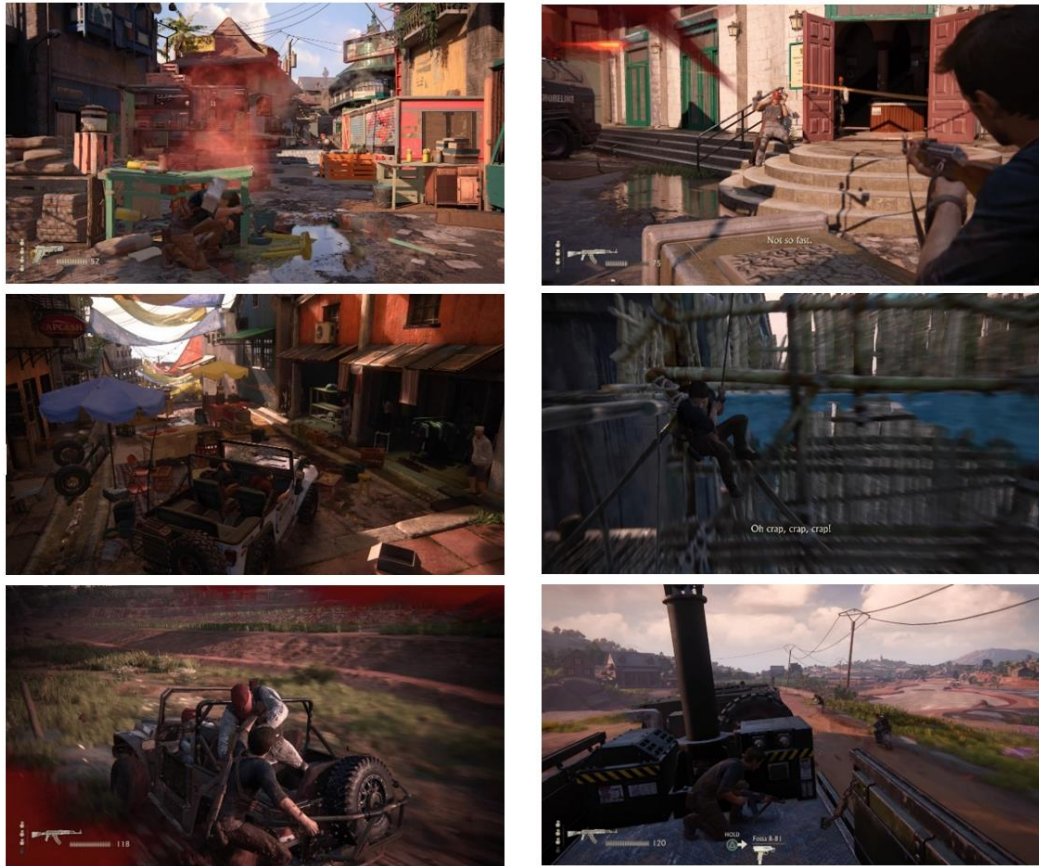


Figure 34: Madagascar set piece in Uncharted 4.

The individual sequences within this chain of events afford and limit avatar action in the spatial-explorative dimension to different degrees. At some points, for instance in the market section, all spatial-explorative agency affordances are enabled, as it is a freely navigable, albeit small, wide-linear arena. At other times, for instance while riding a motorbike that Nathan Drake's brother Sam is driving, there is no agency afforded in this dimension: Nathan Drake is stuck behind his brother, and the only thing he can do is shoot at the truck in pursuit. While this section is heavily scripted, all three spaces the avatar is traversing are aligning as much as they tend to during regular gameplay (not in cut-scene), as the avatar still has control over the camera. If they were to traverse a projected video, the moving of the camera would result in a distorted perspective. It can thus be seen that during such set pieces, while the game

spaces appear as only slightly altered from how they tend to align in regular gameplay, the game mechanics are not only limited to core in and of themselves, they can also be further reduced if need be. This supports the delivery of a ‘cinematic feel’, which in this case means adhering to genre conventions of action-adventure cinema.

Last but not least, agency in the spatial-explorative dimension is most rigorously restricted in certain scripted events where the avatar is required to remain in close proximity to the non-player character who is delivering a predetermined narrative content. An illustrative example of one such sequence where only spatial agency is being afforded is in ‘Chapter 2: Infernal Place’ (Figure 35). The chapter begins in a prison with an extended walking sequence where the avatar is escorted by to the grounds by the warden. In the sequence, the avatar’s hands are tied back, thereby visually signalling the restriction on agency, and the navigable level layout is made up of one-way corridors and strategically placed guards obstructing the player, should they try to diverge from the laid-out path.



Figure 35: Nathan Drake walking through the prison.

Sections like these slow down avatar progression in order to deliver narrative content. In this case, the interactions the avatar has during his walk introduce his character for those who might be unfamiliar with its previous iterations. In summary, then, agency affordances in the spatial-explorative dimension vary depending on what type of gameplay segment we are looking at, but in general they are rather restricted, and are designed to enable ease of progress through the game in order to deliver the pace and intensity of the game's story.

#### Temporal-Ergodic Agency in *Uncharted 4*

*Uncharted 4*, being a story-driven game, does not allow for much tinkering when it comes to the temporal structures of the game that determine order of events and pace, since, though we can easily think of action-adventure films where time manipulation is a central theme, doing so would disrupt the specific 'playable cinema blockbuster' game feel that Naughty Dog is going for. That being said, we can still review how the game's design shapes the possibility space for avatar action in this dimension. Most prominently, Quick Time Events, or 'prompt[s] that forc[e] players to make a split-second action or suffer usually painful or fatal consequences (Rogers 2014: 196), are used in *Uncharted 4* to two ends, both having to do with enhancing the cinematic quality of gameplay by restricting avatar action even beyond core mechanics. First, these 'ergodic punctuations' are deployed to 'lend the whole scenario a sense of enhanced participatory involvement' and prompt the player to maintain more attention even to cut-scenes (Newman 2002: n.p.). During a QTE, a flashing icon pops up showing what button of the controller needs to be pressed repeatedly at a fast pace (such as the green triangle in Figure 36 below), which is often accompanied by haptic

feedback from the controller itself. At times, a slowly growing ring-shaped progression metre indicating how long this repeated action needs to be maintained for.



Figure 36: Quick Time Event in *Uncharted 4*.

Second, there are QTEs in *Uncharted 4* which are unavoidable due to the game's linear progression, such as a door being locked that requires the forceful removal of an obstacle, or freeing the avatar from a headlock in close quarters combat. These embellish the avatar's core move set in certain situations (for example, there is no 'keep pounding on the gate' verb). By doing so, such QTEs allow the player/avatar to realise a slightly more complex action, thereby enhancing the realistic and natural quality in the avatar's actions.

Besides this simple prompt to time-critical action, there is more to discuss when it comes to temporal-ergodic agency affordances in *Uncharted 4*. As I mentioned in the paratextual analysis, the new, more capable hardware meant that there was more space to be filled with content. As a result, *Uncharted 4* has, especially towards the end, several wide-linear combat arenas, which afford gameplay comparatively more



reminiscent of open-world games than any of the previous *Uncharted* games did. The most salient consequence of this is that *Uncharted 4*, no doubt inspired by *The Last of Us* in this, significantly expands game design affordances that enable stealth gameplay. For a franchise that was primarily geared towards run-and-gun combat, this expands temporal-ergodic agency in a novel way: by allowing the option to significantly slow down the pace of gameplay. What does this mean in practice? Players may choose to storm into a given combat arena; or, they can sneak closer to enemies to tag them, much like in the genre defining stealth series *Metal Gear Solid*. Combat arenas of levels are designed in such a way that they allow for plenty of opportunities to lurk up on enemies by providing cover such as tall grass or rock walls (see Figure 37).



Figure 37: Ample coverage for stealth in *Uncharted 4*.

These arenas also have multiple levels (i.e. storeys, not levels in a game design sense), which means the player can take verticality into account when planning. This is a textbook example of when an aspect of game design simultaneously affords agency in the spatial-explorative and temporal-ergodic dimension, however, in what follows, I

will focus on the latter. Once enemies are tagged, the player/avatar is free to squat behind cover and strategize how best to approach the situation without any penalties in place. Thus, level design affords variation in playstyles, creating more opportunities for the player to plan and execute stealthy take-downs, such as breaking the enemy's neck, which the avatar enacts in hasty fashion at the press of a button once in correct position (see Figure 38). By allowing such variation, *Uncharted 4* expands the possibility space for avatar action in the temporal-ergodic dimension by giving the player more power to regulate the pace of their gameplay experience.



Figure 38: Attack from behind in *Uncharted 4*.

In addition to level design, non-play character behaviour, particularly that of enemies, also contributes to the expansion of agency in the temporal-ergodic dimension. In *Uncharted 4*, enemy actions are less authored, more reactive, and in a way, dynamic. This means that compared to previously hand-crafted enemy behaviours, such as the enemy always hiding behind that one corner, waiting to flank the player/avatar but only beginning to do so once they pass that one bookshelf or tree, enemy AI in *Uncharted 4* exhibits more systemic behaviour. That being said, Naughty Dog's level



designers still programmed some degree of authorial control into these behaviours by tagging combat arenas with an entrance and exit, as well as placing key strategic spots labelled with variable qualities, such as ones likely to be targeted by stealth or open combat playstyles. This was called the Post System. Naughty Dog Game Programmer Allen Chou shared one such application of the system (Figure 39). Each colour represents a likely position to be taken by the avatar depending on whether the player prefers to engage in, for instance, open combat, or stealth. Programmers could then tell non-player character AI to read these variables and adjust their behaviour accordingly (Chou 2016).

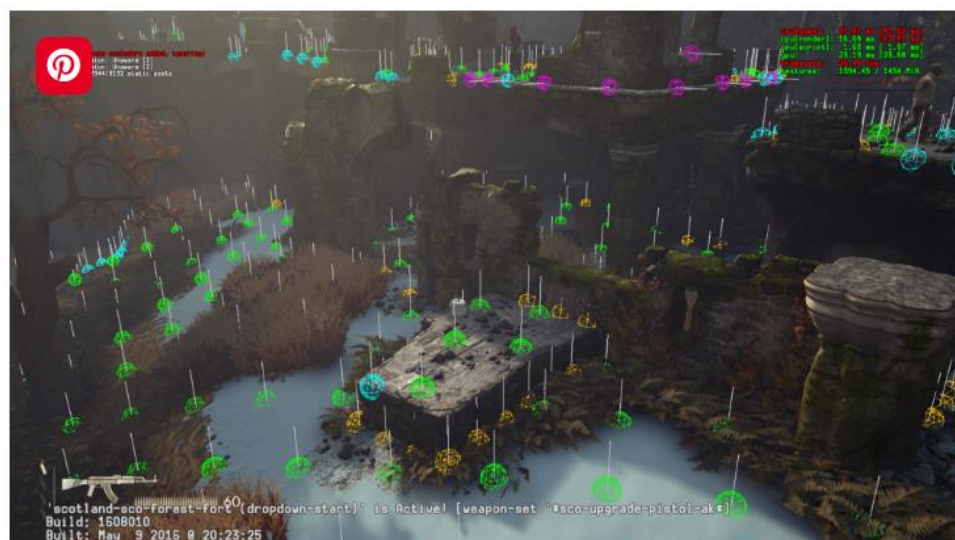


Figure 39: Posts with different variables in Uncharted 4 (Chou 2016).

This is combined with other additions to enemy AI behaviour, which add further textures to game mechanics requiring time-critical action. As per default, each enemy has a set variable in their behaviour, such as inclination to flank, taking cover, or their commitment to chasing the avatar (Sinclair 2016). When on the lookout, mercenaries have three distinct states: perceived threat, investigate threat, and confirm threat.

Should the enemy AI enter any of these states, they light up in white, yellow, and red, respectively, with a deltoid icon hanging over their head (see Figure 40), to indicate to the player the change in their state, which is also accompanied by a sound effect for accent. This is particularly useful in stealth playstyles.



Figure 40: Orange indicates medium awareness in *Uncharted 4*.

When investigating, enemy AI is likely to do it in pairs, with one non-player character investigating, while the other keeps watch. These mechanics further challenge the player to either perform a stealthy take-down, or go into further hiding.

To summarise, the most notable way in which *Uncharted 4* expands the possibility space for avatar action in the temporal ergodic dimension when compared to previous instalments of the franchise is in wide-linear levels, where level design and non-player character behaviour are deployed in tandem to give more control to the player over the pace of gameplay. That being said, in all other types of gameplay sections, avatar action is restrained in this dimension in order to adhere to the pace and structure that is not to discrepant with that of a film, as authored by the designers.

### Narrative-Dramatic Agency in *Uncharted 4*

Since *Uncharted 4*'s narrative structure is largely linear in its delivery, it does not afford many possibilities for the player to meaningfully intervene in its development. That being said, there are a few moments of branching in the narrative, even if regardless of player choice the story returns to its main trajectory. Notably, certain cut-scenes offer dialogue options for the player/avatar to choose from. While these gameplay situations do offer slightly different responses to non-player characters' questions, and as such they invite the player to construct slightly different interpretations of storyworld events, the player's choices here do not actually result in any alteration of the major plot as designed to be delivered. In a cut-scene from early in the game, for example, Elena catches Nathan Drake wandering off in thought while she tells him about her day, and tests whether he paid attention with a question the player/avatar has to answer. None of the answers provided (see Figure 41) are actually correct, and there is no way the player could answer them correctly as Elena's voice was muffled for the majority of her monologue. All three lead to her reacting the same way—sarcastically smirking.



Figure 41: A low degree of narrative agency in *Uncharted 4*.

As such, we can argue that a very low degree of narrative agency is being afforded through sections such as this. Similarly, certain QTEs present a challenge the player can actually fail, resulting in different death sequences as reacted upon by non-player characters. This is nothing new in story-driven AAA games, but a particularly noteworthy example of such sequence is the boss battle, as it were, from the end of the game. In this series of QTEs, should the player/avatar fail one such challenge, each point of failure triggers a different death scene including a different reaction from the game's antagonist Rafe (see Figure 42). This way, each failure activates one of many many pre-existing branches of the avatar's death, therefore contributing to narrative agency to emerge.

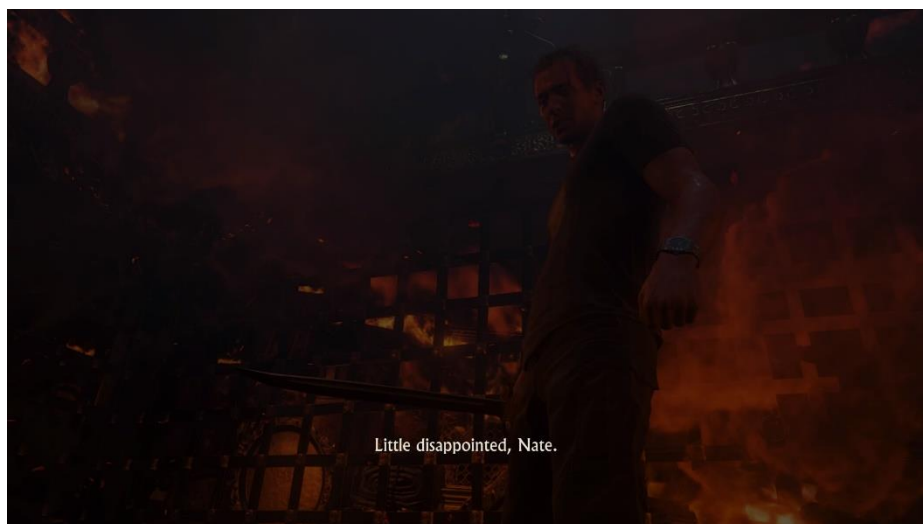


Figure 42: Some possible branches in the final fight in *Uncharted 4*.

Besides a few more instances like the ones above, all other cut-scenes the game contains are more traditional, although Naughty Dog disposed of the black letterbox framing that used to appear in previous instalments. Such framing, remediating filmic traditions of maintaining aspect ratios when transferring widescreen footage to be displayed on screens with different aspect ratios, such as TV, has been typically used in videogames to distinguish cut-scenes from playable sequences in games. *Uncharted 4*'s disposal of this tradition makes transitions between cut-scene and gameplay even more seamless, blurring the boundary between film-y and game-y sections. The fluency of the resulting gameplay experience is, in a way, more reminiscent of a film-viewing experience.

Besides recalling the 'familiar voice of a genre' (Klevjer 2013: 305), cut-scenes in *Uncharted 4* make use of further cinematic storytelling tools: acting, mise-en-scene, and cinematography. An example that is rich with such devices appears about halfway through the game, when Nathan Drake's wife Elena tracks him down to confront him about a lie (see Figure 43). The function of this cut-scene is to convey character emotions and trace changes in relationships, as well as to inform on where each character is heading next. The scene begins with the camera panning out in a long aerial shot of a construction site, which was the scene of the previous gameplay section. This is followed by a wipe scene transition, *Star Wars* style, to a hotel, which is where the rest of the cut-scene takes place. Here, Nathan Drake and his brother Sam quickly brief Sully (and with that, the player) on the next mission objective. As the three walk in the hotel room, they find Elena there, standing by the desk, looking at maps and holding letters, which indicates that she discovered the lie, albeit not yet in all its details.





Figure 43: Early screenshots from hotel room cut-scene in *Uncharted 4*.

The scene then continues with an alternation of straight on close ups and medium shots of the couple, as they argue (see Figure 44). They are framed together again when Elena prompts Drake to be honest with her, and he begins by introducing his brother Sam as the camera blurs the two and sharpens focus on Sam's figure. It then cuts to Elena as she walks slowly backwards in disbelief, and stumbles as she tries to grab hold of a chair, her body language and empty gaze reflecting the emotional state Drake's betrayal left her in. As she is listening to his excuses, she plays with her wedding ring, which suggests that she is now questioning the very vows they made to each other. Their argument concludes with a tense instrumental score playing as Elena walks out in anger.



Figure 44: Hotel scene continued.

This cut-scene is a perfect example of how more advanced technology allowed has allowed videogame characters to be created with increasing correspondence to a naturalistic acting style,<sup>73</sup> as opposed to the highly stylised, over-the-top acting designed to get an absolutely necessary amount of information across that was typical of videogames in the decades preceding. That being said, as Wolf (2003: 57) points out, just because digital performance is further removed from real human acting, it is not of a lower quality. Indeed, this cut-scene in *Uncharted 4* makes use of filmic tools such as framing, body language, and score to portray character emotions and changes in relationships. In doing so, it constrains avatar action and thus agency in all dimensions, as it is a crucial moment in the linear story that cannot accommodate



player intervention. By doing so, cut-scenes such as this work towards facilitating a cinematic experience by remediating filmic storytelling devices, all the while constraining agency across dimensions.

While many aspects of the overall gameplay experience, and in particular, the player/avatar's narrative agency, are considerably constrained, we can still identify means to expand the possibility space for dramatic agency to be realised in the design of *Uncharted 4*. The technological prowess of the PlayStation 4 did not only allow for complex game systems to be implemented, but, as discussed in the paratextual analysis, extremely detailed audiovisual representation, and consequently, believability. Looking at *Uncharted 4*'s design reveals that this aspect of the communicated design intention was very much adhered to. As far as audiovisual richness is concerned, there are an exceptionally large number of animations for Drake's traversal which are triggered by the same button press, but which all depend on the terrain and surrounding objects: momentary stumbles, pushing non-player characters out of his way, or turning left or right by an object and putting his arm up. Climbing also has a similarly diverse set of animations, depending on the angle of reach and direction of movement. In combat, one melee button press may result in left or right punch to head, stomach, legs, or a kick, or even jump kick, depending on the enemy AI's movements. In-game objects will also react dynamically: the sausages at the marketplace will sway as bullets hit them, leaves will react to a character traversing through the jungle, mud will spray where the jeep traverses wet terrain (see Figure 45). Moreover, contextual sounds adapt to what terrain the avatar is moving through, or what objects they impact with their movement: there are distinct running sounds for different terrains such as pebble, concrete, or mud; distinct ambient sounds for the

Scottish highlands, Madagascan cities, or the jungle; different sounds for a variety of surfaces and materials the avatar grabs when climbing, such as pipes, or ledges; the list goes on.



Figure 45: Climbing, taking cover, and pushing non-player characters out of the way in *Uncharted 4*.

These contextual animations and sound effects are not predetermined in occurrence but emerge dynamically from play. However, due to *Uncharted 4*'s constraints to core mechanics, many of these happen as a result of one button press. As such, the diversity of avatar action does not match that of player action, that is, the player does not have to deploy different combinations of buttons in order to better traverse, for instance, sticky mud. *Uncharted 4*'s detailed audiovisual content can thus be used to expand our catalogue of how dramatic agency can be afforded by game design. Girina makes this connection between detailed animation and potential for narratively charged, but not predeterminedly occurring, gameplay events when he discusses typical differences between physics and animation engines:

Contrary to physics engines, animation engines generally do not substantially affect the gameplay, but rather *enrich* the quality of the staging by enhancing its level of “realism” and the amount of interaction available. [...] the implementation of physics engines in contemporary productions *generates the proliferation of micro-procedural*<sup>74</sup> *narratives* that allow the player to experiment with the game environment creating events resulting from the procedurally calculated effects of the player’s action in the game world.

(Girina 2015: 85–86, my emphasis)

In other words, Girina argues that animation can enrich the narrativity of videogames by allowing for the inhabitants of game spaces, humanoid or else, to be represented audiovisually as reacting to moment-to-moment player/avatar action, thereby creating what Girina above calls ‘micro-procedural narratives’, which are, in the terms used in this thesis, player stories. Thus, it can be argued that highly detailed and diverse audiovisual representation adds texture to the player story, and thus contributes to the amplification of dramatic agency, all the while constraining avatar actions to core mechanics.

In summary, as comparatively restricted as they may be, *Uncharted 4* affords agency in the spatial-explorative and temporal-ergodic dimension via gameplay in wide linear levels, which then in turn enables dramatic agency to emerge. This, then, is further amplified by the high quality and detail in audiovisual presentation. Therefore it is not only the predetermined cut-scenes and other such events that evoke a ‘cinematic feel’ in the game, but also the sections that allow more player freedom. Indeed, as Veale (2012) argues when discussing ‘interactive cinema’, such modes of entertainment have less to do with visual aesthetics, more with the interactive object evoking a feeling the like of which is elicited by film.

## Conclusion

In this chapter, I set out to explore player agency as conceived and communicated by Naughty Dog, and as enabled by design in their most prevalent franchise, *Uncharted*. I focused on the most recent instalment concluding the story of lead character Nathan Drake, told across four games for the PlayStation 3 and PlayStation 4. I showed that the studio's authorial voice is grounded in a history of character-based platforming games, and that their design ethos crystallised with the *Uncharted* and *The Last of Us* franchises into one that is concerned with cinematic quality in design. Having done so, I moved on to discuss the fourth game, *Uncharted 4: A Thief's End*. After having pinpointed two important contextual factors in the circumstances of production, namely evolving technology and changes in staff, in the paratextual analysis I then identified three main themes regarding design intention: a cinematic feel, the reduction of possibility space for player action to core mechanics, and a dedication to high audiovisual detail. All three were regarded by Naughty Dog's developers as means to the end of facilitating a 'cinematic feel'. Against this background, the textual analysis set out to examine in how far design intention matched the final outcome by deploying the multidimensional heuristic framework for analysing player agency. I found that the cinematic quality inherent to the *Uncharted* series was achieved by restrictions to avatar action in the spatial-explorative, temporal-ergodic, and configurative-constructive dimension in order to regulate the pace of gameplay so as to make it more akin to action-adventure blockbuster movies. Furthermore, this case study showed that despite the restriction to core mechanics, the rich audiovisual detail amplified the narrative quality of mundane moment-to-moment events, therefore expanding the possibility space for dramatic agency to manifest, despite the constraints on avatar action in other dimensions. I concluded that these design affordances contribute

towards a ‘cinematic feel’ by remediating the film-viewing experience by relying largely on cinematic devices throughout the game’s design, as was aspired for by developers, and therefore that design intention was met. This aspiration fits within the broader strategy seemingly pursued by Naughty Dog parent company Sony’s recent launch of video production studio PlayStation Productions, which is said to adapt proprietary videogame content to the screen (BBC 2019). This branching out carries on the intention of creating bridges between the two media.

Now that I have explored agency in and around a studio with a set design ethos, a franchise with a consistent brand identity, and a videogame where most aspects promoted were realised, I will turn to a case study that exemplifies some typical complications that tend to arise during videogame development, and what consequences these can have on player agency.

## Chapter 3. ‘A Compelling Story with Choices that Matter’: Player Agency in and Around *Mass Effect: Andromeda*

The first case study looked at Naughty Dog, a studio with a long history in action-adventure games, and their game *Uncharted 4*, which exemplified how a high degree of designer control on player progression does restrain agency across a number of dimensions, but some can still emerge. The second case study will focus on the similarly established studio of BioWare, whose design history is in making role-playing videogames; and their game *Mass Effect: Andromeda* (2017), whose design is steeped in the same heritage but is also merging with other generic design features, primarily from the shooter genre. In science-fiction action role-playing game *Mass Effect: Andromeda* (henceforth referred to as *Andromeda*), the player/avatar, aided by their motley crew of squad mates, is tasked with finding a new home for humanity in the *Andromeda* galaxy through space operatic adventures not at all dissimilar to those depicted by the *Star Wars* franchise. Player progress is not as highly authored as in *Uncharted 4*, but there are still plenty restrictions on avatar action that constrict the possibility space for agency to manifest. Furthermore, the game marks an important milestone in the transformation of BioWare’s design ethos. As such, this case study will complement the previous one in terms of how differently design can enable agency to manifest.

The hypothesis of this chapter is that, compared to the consistency seen in the previous case study, both the design ethos of BioWare and the brand identity of the *Mass Effect* franchise changed over the years, with a particularly salient shift in how agency was

conceptualised. This way, this chapter will show what consequences changes in the composition of development and leadership teams, publishers, production pipelines, and technologies have on a franchise's brand identity, and how these impact how player agency is to be afforded and constrained by design. Moreover, the chapter traces the evolution of the design lineage of role-playing games, and their subsequent merging with action-adventure design principles particularly in the AAA market, in terms of agency dimensions. A fourth instalment in the franchise with only marginal connections to the original *Mass Effect* trilogy, *Andromeda* contains multiple large open world areas, where gameplay is characterised by comparatively less salient designer control than the previous case study. By looking at such an example, this chapter will demonstrate the dynamicity of dimensions in support of agency, as well as how they can undermine each other and therefore obstruct meaningful play.

I will begin by establishing BioWare as a studio, the kinds of games they are known for, and how that forms the foundation of a particular style of game design, with recurrent themes and features. I will then briefly discuss how the *Mass Effect* franchise came to be, and how its identity was shaped by each instalment. This will allow me to outline the brand identity of the franchise in terms of how they afford or limit player action, which I can then use as a basis of comparison when looking at *Andromeda* as a text. I will argue that due to open world game design allowing more opportunity for combat encounters, which are also more diverse compared to the original trilogy, the previously central importance assigned to traditional role-playing mechanics affording narrative and configurative agency in BioWare games changed, prioritising agency in the temporal-ergodic and spatial-explorative dimension. However, while this shift would in theory support the expression of dramatic agency, I will show that

*Andromeda* struggles to attach what narratologists call a quality of ‘eventfulness’ to these emergent player stories, and therefore ultimately fails to truly afford a high degree of dramatic agency.



## BioWare

*'Creating worlds of adventure, conflict and companionship that inspire you to become the hero of your story.'*

'Values' from bioware.com

### BioWare: The Beginnings

Three Canadian doctors, Ray Muzyka, Greg Zeschuk, and Augustine Yip formed BioWare in 1995 during their student years. Going from programming medical software to making games under the BioWare name, their first successful games on PC were *Baldur's Gate* (1998), and its sequel *Baldur's Gate II* (2000). These were based on medieval fantasy tabletop role-playing game *Dungeons & Dragons* license. BioWare established their fame in the genre, with *Baldur's Gate II* still ranked at 6<sup>th</sup> place on Metacritic's list of the best PC games of all times. Player progression in these games was structured nonlinearly, with plenty side quests and branching options in the main quest, and as such were regarded as games affording narrative agency (see, e.g., Carr et al. 2006: 22–24; Jørgensen 2003a). In the following, I will look at the evolution of BioWare within an ecology of studios, consumer trends, and technological possibilities, particularly from the time when they began expanding the boundaries of the role-playing genre.

The early 2000s saw a shift in game development trends, leaving behind an era dominated by neatly clustered genre masterpieces like the first-person shooter *Doom* (id Software 1993), point-and-click adventure *Myst* (Cyan, Inc. 1993) or massively multiplayer online games like *Ultima Online* (Origin Systems 1997). Technological advancement had an impact on PC performance, and, as already discussed in the previous chapter, new games consoles PlayStation 2 and Xbox were launched, joining

what is known today as the ‘console wars’ between Nintendo and Sega (Blake 2014). While their respective consoles, the SNES and the Mega Drive, had enjoyed popularity in the market up to this point,<sup>75</sup> Sony and Microsoft proved to be fierce competition, with PlayStation 2 sales in particular skyrocketing. As Kerr (2006: 67) observed, ‘Sony’s installed [hardware] base of PS2s at over 100 million dwarfs Nintendo’s 8 million and Microsoft’s 6 million’. While PC game sales were negatively impacted by the console competition, the platform retained relevance due to the player bases of MMO and strategy games. This is noteworthy because many games in these genres share game mechanics with role-playing games, securing the continuation of this model of game design across platforms. This being said, in this hardware environment, game studios either focused on building games which could make use of the advance graphics cards and CPUs of computers or had the certainty of a uniform hardware architecture of consoles.

The first-person shooter genre grew in popularity with *Halo* (Bungie 2001) being an Xbox launch title. A more significant momentum in this period, however, was the release of *Grand Theft Auto: Vice City* (Rockstar North 2002). The game received critical acclaim, while quickly becoming synonymous with controversies and lawsuits over its depiction of violence and sexually explicit content (Anon. 2003; Thorsen 2007).<sup>76</sup> Nevertheless, with this game Rockstar revolutionised open world gameplay. While horror titles like the *Resident Evil* series already offered open world experiences around this time, *GTA: Vice City* contained thus far unseen numbers of in-game objects available for interaction (Egenfeldt-Nielsen et al. 2016: 105). First-person shooters like *Far Cry* (Crytek 2004) drew on this development, but also added more destructible environments, resulting in a virtual world that felt, overall, more alive.

Given that in videogames genre is determined not only by narrative tradition like in other audiovisual media such as film, but also by gameplay mechanics, the growing technological affordances allowed for the design of bigger, more complex games, with powerful graphics, simultaneously loosening genre boundaries.

In the early 2000s, BioWare's traditional role-playing games were competing against such mixed genre games. Blizzard's role-playing hack-and-slash hit *Diablo II* (2000) was so popular it was featured in the 2000 edition of the Guinness Book of World Records for being the fastest selling PC game ever sold, while Ion Storm's first-person shooter with stealth and role-playing game elements, *Deus Ex* (2000) rose to a cult status. Alongside the popularity of these two titles, BioWare carved out a space for themselves in the market by polishing the core mechanics of the role-playing genre: configuration of avatars via classes and skill trees, an iteration of turn-based combat (typically realised via the ability to pause the combat to make strategic decisions and assign commands to both the avatar and their squad mates), and conversations with non-player characters. These mechanics primarily create a possibility space for player action in three dimensions. First, character classes and skill-trees that determine, for instance, attack strength statistics or available special powers, afford configurative agency. Second, turn-based combat enables temporal-ergodic agency within which temporal constraints determine the pace of combat and the window for non-trivial effort is also predetermined. Last, but not least, non-player characters tend to provide details of the overarching storyworld and game lore, or offer quests, and as such can be considered a narrative-dramatic agency affordances.

These three mechanics were central to early BioWare games, polished further with *Neverwinter Nights* (2002), another *Dungeons & Dragons* inspired title. This was the first BioWare game to afford online multiplayer gameplay, previously only available via local area network (LAN) cable connections. Besides the *D&D* style role-playing games, the studio expanded their portfolio with *MDK 2* (2000), a game which critics around the time approached with caution as it introduced an entirely new mechanic to BioWare's repertoire: '[w]hile BioWare had become known for its high-quality role-playing game *Baldur's Gate*, it wasn't exactly known for its quirky 3D shooters' (Wolpaw 2000: n.p.). *MDK2* featured three playable characters, each with specific design affordances: one focused on shooting, one on puzzles, and one on exploration. BioWare founder Zeschuk said in an interview that their 'aim with *MDK2* [was] to explore new directions and expand beyond the constrictive environments established in other 3D games' (IGN 1998: n.p.). However, this expansion only began with *MDK2*. BioWare continued to work on medieval fantasy style role-playing games with their first original IP, *Dragon Age* in development from 2004 onwards, but two other games were released before *Mass Effect* which both laid down the foundations for the quintessentially BioWare formula of game design.

In 2000 BioWare announced that they were working on a *Star Wars* game for LucasArts, to be released in conjunction with the film *Star Wars: Episode II - Attack of the Clones* (Lucas 2002). *Star Wars: Knights of the Old Republic* (2003, from here on referred to as *KOTOR*) was developed for the Xbox, thus allowing BioWare to take advantage of a single uniform hardware architecture. Working with this certainty allowed them to polish how avatars moved in a 3D environment, a feature the studio had already experimented with in *MDK2*, while incorporating more typical role-

playing mechanics. The two key aspects of BioWare's vision for *KOTOR* according to its creators were a 'choreographed combat system' and a 'cinematic storytelling camera' (Bertz 2016: n.p.). The game sold out within days of its release, and won 48 'Game of the Year', 33 'RPG of the Year', and numerous other awards. *KOTOR* is repeatedly cited amongst the best videogames ever made throughout the years (IGN 2007, 2018; Polygon 2017).

Regarding the genre and game mechanics, *KOTOR*'s combat was still a kind of turn-based d20 system<sup>77</sup> in the vein of traditional role-playing games, but in spectacle, the combat sequences were more dynamic and cinematic. The game retained other typical role-playing game elements like tiered class and skill management, and featured conversations with non-player characters, though the main character was not voice-acted. These fairly typical genre mechanics aside, *KOTOR* also introduced what was called an 'alignment system', which kept track of how the player/avatar's actions were perceived by non-player characters, and turned the consequences, as it were, into rewards, some less favourable than others. As such, this 'alignment system' was the precursor to the morality system in the *Mass Effect* franchise.<sup>78</sup> The alignment system in *KOTOR* kept track of certain decisions and actions undertaken at key moments to determine whether the player character aligns with the good or evil side. Correspondence with either determined the avatar's visual appearance, unlocked special powers, or changed behaviours and reactions of party members and other non-player characters. This mechanic emphasised the importance of player choice, and subsequently, agency, to BioWare's design in many ways.<sup>79</sup> For instance, it framed choice according to the epic warring sides of the *Star Wars* universe, affording narrative-dramatic agency. Moreover, repeatedly choosing an inconsiderate or

aggressive conversation option would take the player character closer to the Dark side, which then in turn would unlock special Dark-side-only powers, thereby linking narratively meaningful choice to other agency dimensions. *Mass Effect* games would further develop this feature, affording avatar action in even more complex ways.

While *KOTOR* still featured a combat system that allowed the player to pause time and assign commands as opposed to real-time action, BioWare's first original IP released took combat to the next level. With *Dragon Age* still in development, the action role-playing game *Jade Empire* (2005) moved away from turn-based action completely and featured real-time combat while keeping the by then characteristic BioWare formula: an ensemble of characters on a grandiose quest. As Zeschuk said in an interview: 'In the case of *Jade Empire*, we're really trying to pursue a goal of carefully matching a fully interactive real-time combat system with sublime story and character elements' (Tuttle 2004: n.p.). As such, although the game was one of BioWare's minor achievements, it still managed to evolve the studio's design ethos as it was a clear demonstration that BioWare was indeed capable of producing original content that is also keeping up with the technological developments in gaming. With *Jade Empire*, BioWare moved away from licensed content, developing an original game mixing genre mechanics, which also corresponded to market trends demanding dynamic combat in 3D environments.

Looking at BioWare's early games reveals not only the foundations of the studio's design ethos, but also what agency dimensions were becoming increasingly emphasised in design. Traditional role-playing games like the *Baldur's Gate* series or *KOTOR* predominantly afforded narrative agency through choices made in the

branching narratives, and configurative agency through the management of avatar and party member skills, gear, and other resources. With combat in earlier BioWare games being designed in the turn-based d20-style rooted in tabletop role-playing games (meaning time is either stopped regularly or could be paused mid-combat to plan attacks and defences), temporal-ergodic and spatial-explorative agency were quite different, if not limited, compared to live action games. However, the studio experimented with three different modes of play in *MDK2*, and *Jade Empire* developed real-time 3D combat. Thus, BioWare may have contributed to the current landscape of videogames, where there are no longer pure genres like those of the 1990s, but instead games tend to combine a variety of genre-typical mechanics. In any case, with their early games, since their formation in the mid-1990s, BioWare laid down the foundations for a design ethos as one rooted in role-playing traditions with a taste for generic hybridisation. This eventually crystallised with the *Mass Effect* trilogy.

#### The *Mass Effect* Franchise

The success of *Baldur's Gate* and *KOTOR* showed that BioWare could develop intricately designed role-playing games. With *MDK2*, the studio experimented with incorporating exploration and shooting as core mechanics into their repertoire. Last but not least, *Jade Empire* was proof that BioWare could create original IP and could reinvent their approach to combat. With the *Mass Effect* trilogy, the studio condensed all these features into one brand. The IP was intended to be a trilogy from the early stages of development, with complex cause-and-effect relations designed into the narrative of each game, their availability depending on the choices players made at critical moments (see Figure 46). The games could be played in isolation, but the player was given a choice at the beginning of each game to import the saved character

they built from the previous instalment, alongside with the main decisions made, and squad members who are still alive.





This conditional structure of predetermined story elements afforded a thus far unseen degree of complexity in the possibility space for narrative agency. At the time of the third game's release, its Lead Writer Mac Walters reminisced:

[w]e had a paragraph written on what would happen in ME3 when finishing up ME1; the story was straightforward, in a sense. But still, this game took months of planning to get a handle on every different permutation.

(qtd. in Diver 2012: n.p.)

The three games in the trilogy are *Mass Effect* (2007), *Mass Effect 2* (2010), and *Mass Effect 3* (2012). The games' premise is that humanity discovered new alien cultures with the development of high-speed space travel, which brought war to Earth's doorstep. The player character is Commander Shepard, the woman or man, who leads a battle against the looming threat. Throughout the three instalments, Shepard develops as a soldier and as a person, builds and manages a reliable squad, fights enemy forces, explores alien planets, forms interplanetary alliances, and negotiates galactic diplomacy. Casey Hudson, credited for a variety of design and lead roles throughout the trilogy and for *Andromeda*, recalled the circumstances of the franchise's inception as follows:

[w]e wanted to make a console RPG on the PC, on the console, and we wanted it to be a little bit more accessible in terms of action that people understand, versus a kind of D20 turn-based thing. And there was another challenge out there, which is "What if we could create our own universe for this?" That was really the genesis.

(qtd. in Game Informer 2011: n.p.)

Hudson identified three main trajectories for design intention: a role-playing game; with less time-pausing and more live action in combat; set in a wholly original world. But what did this mean in terms of game mechanics? BioWare studio founder Ray Muzyka summarised what he calls the ‘activity pillars’ of all BioWare games, and specifically *Mass Effect*:

At BioWare, we see the types of character and story-driven games we make as having four key activity pillars. There’s story and characters, there’s exploration, there’s combat/conflict/action, and there’s customization/progression. All of our games have those, to some extent.

(qtd. in Tuttle 2007: n.p.)

With the phrase ‘activity pillar’, Muzyka anchored the identity of the *Mass Effect* brand not so much in its genre, like Hudson did, but in its defining game mechanics. The four activity pillars are the foundations of the BioWare brand of games as far as design is concerned, however, it is important to note that they do not map directly onto the four heuristic dimensions they seem to have similarities with. In order to illustrate the differences, I will look at how *Mass Effect* revolutionised conversation with non-player characters in avatar-based games, a predominantly narrative agency affordance, and the implications this had for player agency.

The *Mass Effect* trilogy placed considerable emphasis on affording narrative agency with an intricate structure of predetermined story permutations that carried over each instalment. The narrative building blocks of this structure were typically delivered via interaction with non-player characters. Such design was not uncommon for role-playing games, however, it was novel when comparing it to shooters—a genre the *Mass Effect* franchise increasingly moved towards with each instalment, especially

with the introduction of the multiplayer mode in *Mass Effect 3*. As Mac Walters, *Andromeda*'s Creative Director, reminisced:

I think the multiplayer was probably easily the single most thing that moved our gameplay forward. Obviously, I think the switch from more of a role-based sort of gameplay system in *Mass Effect 1* to more of a twitch-based in *Mass Effect 2*, that was a big shift.

(qtd. in Hussain and James 2017a: n.p.)

Indeed, the shift was eminent; the trilogy was a 'cool shooter-RPG hybrid', as described by *Andromeda* Producer and long-time BioWare developer Mike Gamble (Hussain and James 2017h: n.p.). All three games were developed in the Unreal engine, which is a game engine that has typically been used for first-person shooter games, but in recent years is increasingly used in projects of diverse team sizes, genres, and platforms (Toftedahl and Engström 2019). Generally speaking, Unreal is optimised to afford game design specific to this genre, such as complex navigable environments, destructible objects, collision detection, and live-action combat (Unreal n.d.). This change had a major impact on how the games afforded avatar action in a temporal-ergodic dimension, because it facilitated a completely different way of challenging players to the previously typically BioWare design of turn-based action, increasing the possibility space for player/avatar action in this dimension. Configurative agency affordances, such as character and squad member skill trees, profiles, gear, and power management were carried on from previous BioWare games, and, conversation with non-player characters also saw a major revamp with the first *Mass Effect* game.

In *KOTOR* and *Jade Empire*, BioWare's activity pillar of 'story and characters' manifested primarily in cut-scenes, and conversation with non-player characters. Dialogue was presented as alternating shots of the participants, capturing their figures in cinematically arranged, but relatively static frames. Only non-player characters were voice acted, the protagonist remained silent. Overall, the flow of conversation was quite fragmented, rendered in cut-scenes rather than in engine (see Figure 47-48).



Figure 47: Dialogue during a swordfight in *KOTOR*.



Figures 48: Dialogue with non-player character in *Jade Empire*.

*Mass Effect* introduced a more cinematic way of presenting conversation, with more emphasis on camera movement and atmospheric lighting. BioWare hired voice actors to breathe life into Commander Shepard, which could be seen as an explicit effort to augment and legitimise the dramatic scope of the characters. But more importantly, conversation happened in-game through a tool called the dialogue wheel (Figure 49), which revolutionised how interaction between the player's character and non-player characters is modulated in videogames. BioWare was very aware of the value of this solution, so much so that they patented it to the very last detail, and indeed, most AAA games today use some form of the tool.<sup>80</sup>



Figure 49: Dialogue wheel mid-action from *Mass Effect*, with both Paragon and Renegade options available.

The dialogue wheel enabled narrative agency to be realised, but it also afforded agency in other dimensions due to *Mass Effect*'s morality system. *KOTOR*'s alignment system already did this to some degree, but the dialogue wheel in *Mass Effect* was a more complex tool enabling the morality system to have wider implications for agency. In *KOTOR*, the nature of responses given would contribute towards a path of the avatar,

leading to the good or evil side. This alignment to either sides would change character appearance, unlock special powers and bonuses, and may result in non-player characters intervening with certain acts they do not share an alignment with. In *Mass Effect*, BioWare expanded the effect these paths taken (called Paragon and Renegade) have on the unfolding of the overall narrative, accessibility of character skill bonuses, and non-player character reactions, making the player's choice feel even more impactful.

Seemingly, BioWare's activity pillars of story and character translate directly onto the narrative agency. However, a closer look at the dialogue wheel shows this is not the case. While the wheel is the primary vessel for delivering narratively relevant content, what also happens simultaneously is that the game keeps track of decisions made, contributing to Paragon or Renegade points. Going down either path makes certain narrative arcs available, affording agency in a narrative dimension as the two paths become branches of the skill tree, making certain conversation shortcuts available depending on Paragon or Renegade points accrued. Moreover, the path chosen could give the avatar stats bonuses, for instance, the ability to run faster or jump higher, a shorter power cool-down, more health, or more damage points. Thus, through choices made in the dialogue wheel, which is framed by developers as primarily a story and character affordance that enables narrative choice (Hussain and James 2017h), the *Mass Effect* trilogy afforded agency in other dimensions: in the spatial-explorative, as well as temporal-ergodic and configurative-constructive.

By the time the second and third instalments of the trilogy were released, BioWare as a studio had gone through a lot of change in management and in production strategies.

Most importantly, it was subsidised by publisher Electronic Arts, or EA for short, and soon after, the founders left the studio to pursue different projects. Greg Zeschuk called this change ‘an EA bear hug [...] well-meaning, but vigorous’ (Crecente 2013: n.p.). Despite these significant changes, the brand pillars of the franchise were well-established and stable. Muzyka’s vision of BioWare’s ethos grounded in the four activity pillars was manifest to various degrees in each instalment of the trilogy. *Mass Effect* featured planetary exploration and hub-worlds with less predetermined spatial progression design, as well as plenty options for customising playstyles; *Mass Effect 2* focused on story and character with tweaks to action; and *Mass Effect 3* perfected combat mechanics, while keeping a tight grip on the story and with that, spatial progression. This franchise therefore could be seen as the one which represented a crystallised design ethos.

Before we move on to the paratextual analysis, a summary is due to recap the main points about BioWare’s early years and the development of a design ethos and brand identity of the *Mass Effect* franchise prior to the release of *Andromeda*. Ever since their foundation in the mid-1990s, the studio polished their typical style of game design with each game released. With *Baldur’s Gate* and *KOTOR*, they solidified their roots in traditional role-playing games, developing successful games with d20-style turn-based combat mechanics and compelling stories delivered via their characters; *MDK2* and *Jade Empire* took on the challenge of producing for an increasingly technologically advanced market which demanded 3D action and shooter games; and with the *Mass Effect* trilogy the studio tried their hand at making hybrid games that still prioritise the delivery of a predetermined narrative with considerable branching options.



While the *Mass Effect* trilogy is heralded as one of the best franchises of the previous console generation (Albert 2013), fan reactions to the third instalment were overwhelmingly negative, primarily due to its ending deprived players of a sense of agency. There was an inconsistency between how the game was marketed (as one where all decisions made throughout the trilogy would impact the ending) versus how it actually ended (with a decision to be made between three only mildly differing outcomes, available irrespective of previous choices). Some fan groups sued (Thier 2012a), others turned to more unconventional ways of protesting, such as sending the studio cupcakes with icing in three colours (representing the three final choices in *Mass Effect 3*) that all tasted the same (Thier 2012b). As a result of this failure to please fans, the trilogy's conclusion became one of the most controversial endings in the history of gaming (Clarkson 2013; Thier 2012c). Narrative agency was at the heart of the franchise's brand identity, but the ending did not fit this. In an attempt to remedy the situation, BioWare released an *Extended Cut* as downloadable content (DLC), free of charge, to offer something in lieu of a conclusion. After this debacle, BioWare did everything to distance the new *Mass Effect* game from the trilogy. 'You tend to think of the next [game in the series] as the next step, but really, we are taking a leap' wrote Chris Wynn, then-Senior Development Director in a BioWare blogpost early in pre-production (Pierse 2014: n.p.). Indeed, *Andromeda* marks a major shift in what is understood as a typical BioWare game. While the dialogue wheel and the connected morality system was central to the franchise, *Andromeda* would take a slightly different approach, which is but one of the ways in which it departs from the franchise's identity.

## Developing *Andromeda*

*Enter a new era of storytelling as the power of the critically acclaimed Frostbite engine brings the visuals, action, emotion, and worlds of Mass Effect: Andromeda to life like never before.*

‘About’ on masseffect.com

A salient indicator of the shift in the franchise’s brand identity was how BioWare’s design philosophy changed with *Mass Effect 3*’s release. It was the first game in the trilogy that allowed a lower degree of narrative agency than previous instalments, with a greater focus on combat. This was especially true in the game’s multiplayer mode, where players fought in an enclosed space against timed hordes of enemies.<sup>81</sup> Before *Mass Effect 3*’s release, BioWare’s design philosophy was summed up on their website’s ‘About’ section with a quote from founders Zeschuk and Muzyka, in a manner that suggests a focus on narratively rich design: ‘BioWare’s vision is to deliver the best story-driven games in the world’ (BioWare 2010: n.p.). Sometime later in 2013, the section began with a different quote: ‘BioWare’s vision is to Create, Deliver, and Evolve the Most Emotionally Engaging Games in the World’ (BioWare 2013: n.p.). Story-driven-ness is removed from the design philosophy, and replaced with the broader idea of engaging players emotionally—which, as Perron (2005) argued, is not necessarily connected to experiencing a story, but could also be elicited by gameplay (‘gameplay emotions’), or the qualities of the game as an object (‘artifact emotions’). As such, this change of communicated design philosophy on the studio’s website is a notable sign that there is a corresponding change in how BioWare games post-*Mass Effect 3* afford agency.

The following paratextual analysis will unpack this change in design philosophy, as communicated during *Andromeda*’s development, examining how the four activity

pillars of ‘story and characters’, ‘exploration’, ‘combat/conflict/action’, and ‘customization/progression’ were discussed by developers in *Andromeda*’s promotional discourse during production; and what implications these discussions have for design intention regarding agency in *Andromeda*. I will identify themes in design intention emerging from the early paratext, and then focus on how these were expanded upon towards the end of the press cycle. The analysis will look at how developers discuss what the player’s avatar would and would not be able to do, and how that relates to the four dimensions of agency afforded and limited via game design.

Before I begin, one final note is due in order to contextualise my analysis of the promotional surrounds. *Andromeda*’s development was riddled with increasingly conflicted studio politics and key staff departures, which enhanced the veil of secrecy surrounding its production, unusually so even for such a highly secretive industry. According to Aaryn Flynn, BioWare’s General Manager during *Andromeda*’s development, this increased secrecy was due to a desire to feel more confident when eventually sharing details:

sometimes those things shift and adjust, or maybe we cut a follower because we can’t get it done to quality, and then we feel like argh, we feel bad now because we mentioned that kinda thing.

(qtd. in Hanson 2016a: n.p.)

However, there is quite possibly another reason for it. *Andromeda* was received terribly (though critics were generally mixed in their reviews, it is at 4.9/10 User score on Metacritic at the time of writing), with most commenters criticising its animation and writing. From this climate, post-release interviews and reports emerged, revealing

the circumstances of production, either featuring anonymous developers who were bound by non-disclosure agreements, or departed staff members (Schreier 2017a; 2017b). These sources helped contextualise promotional material, adding an additional layer of caution to the already critical reading of the promotional surrounds.

### General Themes in Design Intention

*Andromeda*'s development began immediately after *Mass Effect 3*'s release in 2012.

The game was announced by Yannick Roy, then-head of BioWare Montreal (now closed). This was the studio that worked on *Mass Effect 3*'s multiplayer, and developed the combat-focused DLC *Mass Effect 3: Omega* (2012). In a dev blog post, he shared that BioWare Montreal was taking over as the main studio developing the new game. Besides a short introduction to the team, Roy revealed two noteworthy things about the forthcoming game that have implications regarding player agency. The first one concerned the choice of game engine:

[the game] will be built with the amazing technology of Frostbite as its foundation, enhanced by many of the systems that the *Dragon Age III* team has already spent a lot of time building.

(BioWare 2012: n.p.)

'Dragon Age III' refers to *Dragon Age: Inquisition* (2014), the third instalment of BioWare's original IP that carries forward the traditions of *Dungeons & Dragons* style traditional role-playing games. It was the first BioWare game to be developed in Frostbite, EA's proprietary in-house engine. Choosing this engine for *Andromeda* carried meaning regarding design intention, for it marked a shift away from what had previously been a typical BioWare game. The Frostbite engine was first built for open world first-person shooter *Battlefield: Bad Company* (EA DICE 2008). It is optimized

for ‘large scale multiplayer interactions in dynamic destructible environments’ with ‘changing weather, adaptable cities, landscapes and complex events’, ‘ultra–realistic animation’, and ‘stunning visual effects’ (EA 2017: n.p.). While these features support largely predetermined progression design the like of which is often found in shooter and sports games (which both happen to be EA’s flagship genres), they are not very accommodating of more typical role-playing game mechanics, such as managing avatar and party member skill trees, which is a game mechanic affording configurative agency.

Much like tech trees in strategy games, which are ‘a rule set of certain premises that have to be fulfilled to unlock a technology, which then has certain consequences, often including unlocking the path to newer technologies’ (Ghys 2012: n.p.), skill trees in role-playing games are branching structures of object properties assigned to the character/s. Each skill’s availability is conditioned by progression in the game, measured by the accumulation of an in-game currency (most typically, Experience Points, or XP). Compared to typical first-person shooter games, such as the *Call of Duty* series, where the player controls one avatar whose most prominent statistical variable (determining attack or shield strength) tends to be their weapon and armour, skill trees in role-playing games are highly complex relations. While, as we have seen, the *Mass Effect* trilogy was leaning towards the shooter genre in its mechanics, which typically does not have the same degree of configurability of avatar as role-playing games do, it still retained a fairly complex interfacing and implementation of this mechanic.<sup>82</sup> Using Frostbite for *Dragon Age: Inquisition* meant that the game looked even flashier than *Mass Effect* did in Unreal, and so the decision to develop

*Andromeda* in Frostbite signaled the importance of this priority for the new *Mass Effect* game too.

Opting for Frostbite to be the new game's engine guaranteed extensive software engineer support and shared workload with EA's other studios, but it also meant that every tool had to be completely redesigned to fit role-playing mechanics and character animation, which resulted in a long crunch period and the final release being postponed numerous times, according to developers (Schreier 2017a). Choosing Frostbite as the new *Mass Effect* game's engine already suggested, at this time in production, that the ways in which player action was historically afforded in BioWare games would change with *Andromeda*. Avatar configuration and player choice-triggered branches in the plot would become increasingly difficult to implement, as there are only so many tasks a game engine can simultaneously process. At the same time, the possibility space for action in the form of 'combat/conflict/action' and 'exploration' pillars would grow, due to the engine's optimization, which suggests a drawth towards temporal-ergodic and spatial-explorative agency as centre of the designed gameplay experience. Indeed, as *Andromeda*'s development carried on, the two pillars of 'exploration' and 'combat/conflict/action' in particular were repeatedly emphasized, while the others took a backseat.

In June 2014, two years into development, following relative radio silence (with minor exceptions of concept art of vehicle and environment design published), BioWare screened a developer diary-style video featuring key *Mass Effect* personnel at E3. The video was a standard talking head format, with behind-the-scenes footage and concept art from previous *Mass Effect* games, the then-forthcoming *Andromeda*, and the

studio's new, not yet revealed IP (which now we know to be *Anthem*). The background music was one of the most popular tracks from the trilogy, 'Uncharted Worlds' from the original soundtrack of *Mass Effect*. This track was used in the game while players navigated the Galaxy Map and explored planets. Its usage in promotional material is arguably quite suggestive of the theme of the forthcoming game: exploration. This thematic focus becomes even more evident when looking at Casey Hudson's words on what the player would be able to do in the new *Mass Effect* game. Several of the verbs he used are connected to movement:

One of the things that fans have told us most about what they want for the next *Mass Effect* game is to go somewhere new and to move forward [...] we're taking you to a whole new region of space. This world is so vast you can just kinda continue on with the horizon, and there's more and more experience for the player to enjoy. Pick a planet, across the other side of the galaxy, and fly there and see what you'll discover.

(GameTrailers 2014: n.p.)

As I discussed in Chapter 1, actions are the verbs of game mechanics (Järvinen 2008: 139–143; Schell 2015 [2008]: 130–144). Through this lens, Hudson's words can be seen as indicative of agency affordances. 'Continue on', 'fly', and 'discover' suggest the theme of exploration, while another salient theme is volume: 'vast worlds', 'horizon', galaxy' and 'more and more experience for the player to enjoy' all evoke a sense of grandeur in the viewer.

Despite the sense of unity displayed at E3, 2014 saw a major change: several members of staff, including *Mass Effect*'s Creative Director Hudson and then-game director of *Andromeda* Gérard Lehianny, left BioWare. In response to worrying fans, and possibly to even more concerned stakeholders, BioWare General Manager Aaron Flynn

published a dev blog post towards the end of the year, introducing development team leads (Pierse 2014). In his introduction Flynn mentioned Frostbite being a challenge, and the new console cycle being an exciting factor, but concluded that ‘no matter what changes, stories are timeless, and a great story needs to be at the heart of the next Mass Effect game’ (ibid. n.p.). While he did point to ‘a great story’ being ‘at the heart’ of the new game, there seems to have been a shift in how this story was planned to be delivered to players via game design. As discussed earlier in this chapter, each game in the previous trilogy focused on one or two of the four BioWare activity pillars: the first game attempted to innovate in all four but premiered exploration of uncharted planets, while *Mass Effect 2* focused on characters, and the third perfected combat mechanics. Creative Director Mac Walters wrote in the same post that they were ‘working to bring back some of that wonder and sense of exploration that [they] had in the original trilogy’, with ‘deep characters and compelling story with choices that matter’ (ibid. n.p.). However, few details were offered beyond this vague aim, and those that were had to do with means of affording exploration.

For instance, Producer Fabrice Condaminas’ duties in bringing back ‘the original *Mass Effect* feel’ were anchored in ‘evaluating the features that players have fond memories of, such as the Mako, and finding ways to integrate them into gameplay in a better and more versatile way’ (Pierse 2014: n.p.). The Mako was *Mass Effect*’s vehicle for planetary exploration that became memorable amongst fans for its clunky controls, simultaneously frustrating and endearing. No other iconic element of the trilogy, such as its alien races, was mentioned specifically in the dev blog post, which really draws attention to exploration. Beyond revisiting previous mechanics affording

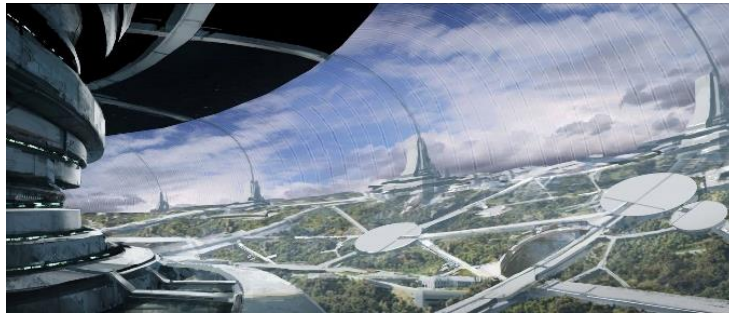


agency in this dimension, the building of worlds available for exploration was also discussed. Art Director Joel MacMillan and his team

are creating immersive worlds that interact with the player. Using set pieces, lighting, and environmental weathering, his team is building lived-in worlds that tell their own stories. And whether it's shattered doorways and the scars of battle, or overgrown with moss, he says the environments can convey stories about what's happened and what may be yet to come.

(qtd. in Pierse 2014: n.p.)

Despite Walters' reference to narrative affordances as characters and 'choices that matter', the details provided about environment design suggest that there is a reliance on these environments in providing the foundations of the possibility space for agency in the narrative-dramatic dimension, as opposed to characters or quests. This makes sense when taking into account the studio's choice of technology, as the Frostbite engine is rich in world-building tools. The focus on environment and vehicle design is also evidenced by concept art BioWare shared on their dev blog and Facebook page around the same time, all promoting environments and vehicles (Figures 50-53).



Figures 50-53: Concept art shared by BioWare for N7 Day (Mass Effect 2014).

Schreier's (2017b) investigative report into the production of *Andromeda* provides context for the above identified focus of design intention to afford a high degree of spatial-explorative agency. According to Schreier, by 2015, the game was nowhere near where it should have been. The plan was to make procedurally generated planets, like those of *No Man's Sky* (Hello Games 2016),<sup>83</sup> but technological limitations stood in the way of implementing such a resource-heavy design challenge. As two developers told Schreier separately:

In an ideal world you'd have one of those [planets] proven out so the process is repeatable. But we were still answering those questions of if we could do that type of thing.

(qtd. in Schreier 2017b: n.p.)

We started to realize by summer 2015 that we had great technological prototypes, but we had doubts they would make it into the game.

(qtd. in Schreier 2017b: n.p.)

With development dedicated solely on realising procedurally generated planets, it makes sense that most of the paratextual surrounds thus far had focused on the creation of worlds and exploring them. Without these foundations, other teams, such as writing, art, or indeed, game design, could not begin developing those mechanics that afford player agency in other dimensions, such as conversation, or time-critical challenges. This contextual information points towards a sense that design intention mid-stage was more focused on affording player action in a spatial-explorative dimension, building the very spaces, both in a ludic and a representational sense, that the avatar would be able to traverse, as well as the means of traversal.

While *Andromeda*'s development underwent rescaling, and the idea of procedurally generated planets was slowly abandoned (Schreier 2017b: n.p.), another design priority started to emerge. The activity pillar of 'combat/conflict/action' was increasingly emphasized from 2015 onwards, which suggests that affording agency in the temporal-ergodic dimension by creating plenty opportunity for time critical challenge was a theme very much present in design intention. This assumption gains further credibility when looking at a marketing survey allegedly circulated by the studio, asking participants to express their opinions on gameplay and story details, leaked by a (since then deleted) user on *Mass Effect*'s Reddit forum (Anon 2015). In this enumeration of potential game mechanics that decision makers were considering to include, each BioWare activity pillar was discussed, albeit in various degrees of detail. In the 'context' section, a look at the verbs used to describe the playable character's activity affordances reveals that most activity pillars were touched upon, with 'exploration' being slightly more prominent. Besides the main character being described as a 'combat-trained but untested explorer', and the actions available being described with verbs such as 'lead an expedition', 'survive and colonize', or 'explore [a] sprawling series of solar systems', the sheer volume of the space available for players was repeatedly underscored throughout the text. 'A cluster of 100s of solar systems' was mentioned numerous times, and the promised game claimed to be 'over 4x times the size of *Mass Effect 3*'.

Typical BioWare design features, such as resource management, avatar and team skill trees, and dialogue and action-based choices were also mentioned, but there was also significant time spent detailing features that are slightly less characteristic of the franchise. The inclusion of mechanics such as deploying strike teams, participating

actively in strike team missions, vault raids and elite vault raids, and enemy outpost occupation suggested by the survey would result in increased gameplay time dedicated to combat to such a degree that it is indicative of a shift in emphasis in between activity pillars. Combat situations primarily consist of affording avatar action in a possibility space restricted in space (predominantly ludic and locally represented space in particular) and time (by temporal structures such as powers cooling down dictating the pace of combat), with configurative agency affordances enabling the customization of the combat experience. Furthermore, as opposed to narrative agency afforded by predetermined story elements such as interactions with no-player characters, combat scenarios create space for dramatic agency to emerge, whereby they create the possibility space for less predetermined narratives to emerge from play, such as the use of an epic combo.

Indeed, the emphasis of design intention on combat, alongside exploration, is prominent when looking at the different trailers released during the last few years of *Andromeda*'s development. The *Announcement Trailer* showed at E3 2015 featured a character standing at the helm of a space shuttle, scrolling through planet surface vistas, then landing on one, driving a six-wheel-drive vehicle, making use of a jetpack, and engaging in combat (see Figure 54).

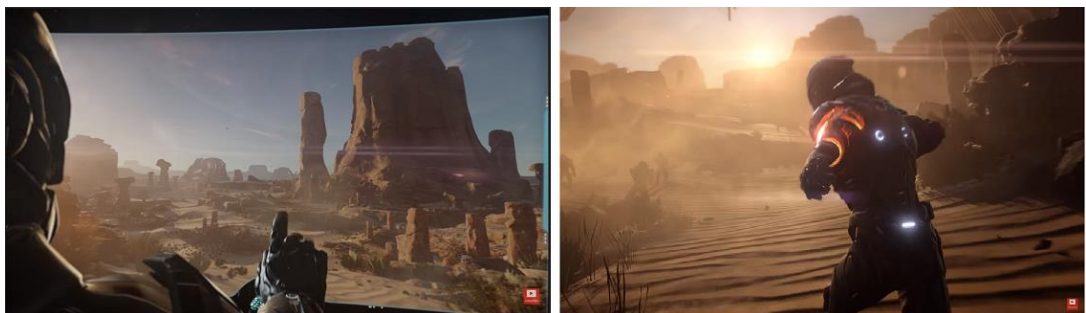
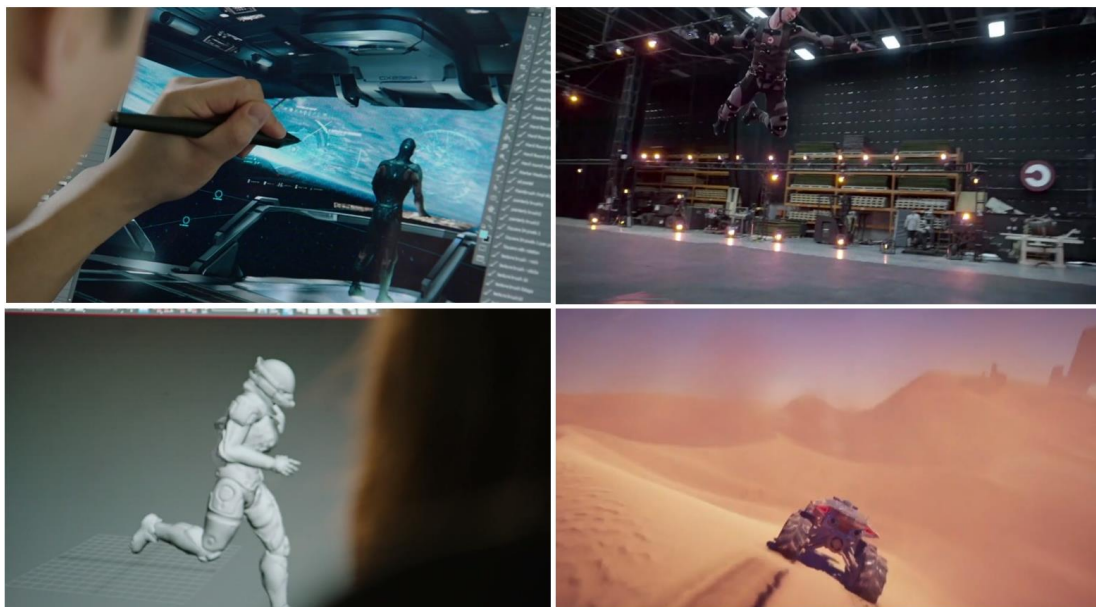


Figure 54: Screenshots from Announcement trailer (Mass Effect 2015).

The sequence hints at four game mechanics affording agency, out of which one is a particularly noteworthy one. Interplanetary travel, vehicle driving, and combat were present in the original trilogy, but there was a new feature: the avatar's mobility was promised to be enhanced by a jetpack, which would introduce new axes of movement. Although this was not a gameplay trailer but a cinematic one, meaning it was pre-rendered rather than a collage of captured actual gameplay, it is nonetheless suggestive of the general direction of design intention behind *Andromeda* being exploration and combat. The E3 2016 trailer, in turn, featured behind-the-scenes footage of developers creating design affordances enabling the avatar's traversal of space (see Figure 55). Ever so slightly more specific than previous year's trailer, this one revealed more concrete details about how avatar movement in the game's space was being developed.



Figures 55: Screenshots from E3 2016 Trailer (GameNewsOfficial 2016).

To sum up before I move on, so far I discussed the general environment in which *Andromeda*'s production began. I argued that the change of engine was a significant

circumstance, as due to its optimisation serving open world shooter mechanics better than role-playing ones, it marked a shift in what a typical BioWare game was considered to look and feel like. Furthermore, I identified two general themes in design intention, exploration and combat, as these emerged from the paratextual analysis of early dev blog posts, trailers, forum posts, and news coverage. A survey of this material revealed that a main design objective until relatively late in production was to create an explorable world of procedurally generated planets, with more playtime dedicated to combat encounters than in the previous *Mass Effect* trilogy. I argued that these decisions have potential implications regarding the possibility for player agency to manifest, whereby they allow for avatar action in the spatial-explorative and temporal-ergodic dimension, while somewhat marginalising configurative and narrative agency, which were central to the franchise's brand identity up to that point.

In the following, I will turn to the special coverage of two gaming press outlets published shortly before the release of *Andromeda* in March 2017, as these, due to the nature of the press cycle, saw developers speak more freely of the design features and intentions behind them. This will allow me to unpack the themes of exploration and combat in terms of game mechanics. *Game Informer* writers were invited by BioWare to interview department leads and play the game itself at BioWare Montreal, for a special cover story and a month-long online coverage. *GameSpot* produced a two-episode documentary on the *Mass Effect* franchise based on extensive interviews with the same department leads and producers, and a few new faces, transcripts of which were simultaneously published on the website.

## Developers on Game Mechanics

*Andromeda*'s designers discussed creating mechanics to offer player freedom in an open world-like environment in terms of letting the player go wherever they want, and interact with whomever they want. I argued that early trailers and blog posts suggested design intent emphasising exploration as one of the main activities. The central role of this activity throughout production was further confirmed by a variety of developers and producers. BioWare Montreal studio lead Yannick Roy said they 'wanted to reinvest heavily in exploration' (Hussain and James 2017b: n.p.). Level designer and Space Lead Jessica Campbell said about what motivated design: 'I think the legacy of what *Mass Effect* was trying to do [...] coming back to exploration, returning to the uncharted worlds was kind of that dream' (Hussain and James 2017c: n.p.). Producer Fabrice Condominas said exploration is 'at the centre of this game' (Hussain and James 2017d: n.p.), and level designer Chris Corfe hopes 'fans take away their [sense of] exploration and discovery' (Hussain and James 2017e: n.p.). What game mechanics were mentioned in the promotional surrounds of late production that would afford spatial-explorative agency? The four design elements (as, arguably, they are too complex to be reduced to mere game mechanics) mentioned which were designed with the intention to afford exploration are the Nomad (planetary vehicle), the planets themselves, the Tempest (space shuttle), and the map interface. In all four cases, what is emphasised most is volume: actual volume, as well as the illusion of it.

*Andromeda* Space Lead Jessica Campbell said she 'gets a kick out of' how much bigger the Tempest feels due to putting up windows' (Husseini and James 2017c: n.p.), while Creative Director Mac Walters said building the levels with the Nomad's horsepower in mind meant they scaled up the size of levels, as well as 'the way how we approach things like density, and the types of gameplay we put on levels' (Hanson



2016c: n.p.). In terms of how this change in level size and structure related to the design of the original trilogy, Producer Mike Gamble said:

There are so many different elements we can bring in by putting it on those planets with exploration areas. It makes the number and the type of side quests that we can do that much more interesting, whereas before if you're on the hub you're kind of limited to a fetch quest type of thing [...] This is the biggest we've ever gone, in terms of number pieces of content.

(qtd. in Wallace 2016: n.p.)

A fetch quest is a typical role-playing game mechanic with a somewhat derogatory reputation due to its over-use in recent role-playing games, such as BioWare's very own *Dragon Age: Inquisition*. It is often used to incentivise exploration, and begins with the player's avatar interacting with a non-player character, who delivers a short narrative, which calls the player to action in the form of going to another place in the storyworld and retrieving an item. Some scholars classified quests as primarily narrative vehicles (Juul 2001; Ryan 2015; and specifically with regard to *Mass Effect 2*, Jørgensen 2010). Indeed, the mechanic of interacting with the non-player character is a narrative affordance whereby it delivers a predetermined story element. As we have seen with other *Mass Effect* games, this interaction happened in the dialogue wheel, the real-time paraphrasing-based conversation tool contributing to a Paragon/Renegade metre. There, selecting certain conversation options resulted in skill bonuses and other modifiers. Therefore, depending on whether the fetch quest, or side quest, is on the main path of progression set so by developers or not, or the kinds of challenges posed, it has a rather complex impact on the manifestation of agency, with all dimensions supported to varying degrees.

*Andromeda* was not to feature the Paragon/Renegade mechanic, and instead would introduce a system of expressing opinion that had no impact on the game beyond affording role-play, according to Creative Director Mac Walters:

So, Paragon and Renegade is gone [...] With agree and disagree it changes by the circumstance and it changes by the character you're talking to, so you have to actually be more engaged in what's going on, to know if you're going to do that.

(qtd. in Prell 2017: n.p.)

The available choices were no longer promised to be strung along a morality metre like in previous *Mass Effect* games, but rather, the player/avatar could choose whether they 'agree' or 'disagree' with what is being said, which Walters argued would lead to more engaging conversation scenes. While the decision may have been motivated to get players 'more engaged', and Gamble's words above suggest 'more interesting' side quests, removing the morality mechanic from the dialogue wheel, and with that, from the game as a whole, foreshadows the opposite effect on player agency in all dimensions—a reduction of the ludic impact of decisions made in dialogue. Furthermore, interesting-ness seems to have been measured in quantity of quests available, despite Creative Director Mac Walters' insistence that as large as the game may seem, they 'continued to restrain the scope as much as possible so that [they could] bring quality to each of these areas and make each one memorable' (Wallace 2016: n.p.).

But instead of promoting these 'more interesting', primarily narrative, affordances, developers emphasise the size of the world, and locomotion. Indeed, getting planetary navigation right was a central concern. As Producer Mike Gamble explained:

a big focus for us is making sure that the Nomad handles better, drives better, cascades better—that it has all the nimbleness that the original Mako did without any of the frustrations.

(qtd. in Wallace 2016: n.p.)

Arguably, developers wanted to avoid spoiling content for fans and therefore withheld crucial details of the plot, but even with that in mind, as the evidence shows, design intention placed emphasis on designing means of exploration, rendering everything from level design through mechanics delivering narratives to fit this objective.

An important contextual influence behind this decision was, as implied by early dev blog posts, the move to a more powerful game engine. As then-General Manager Aaryn Flynn's words show, getting into gear with the new development tool was a challenge, especially with regards to how it relates to the franchise's identity:

With *Andromeda*, we had more confidence, but we switched to Frostbite, and we spent a lot of time lifting every rock and going back to the original vision document for *Mass Effect* saying “what did we really want to achieve with this original game, or even the trilogy, that we didn't, because of time or budget constraints, or the technology, because we couldn't do it on that generation of hardware”. That created ambiguity for sure.

(qtd. in Hanson 2016a: n.p.)

Reconciling this ambiguity was a central concern throughout development. Developers wanted to ‘do more open world things with the game, you know, give people more planets to explore, as opposed to straight up linear missions’ (Hanson 2016a: n.p.); and maintain what they identify as their goal, which is ‘telling stories,

and we love doing it in these amazing universes’ (Hanson 2016a: n.p.). But what did ‘telling stories’ mean to BioWare at this point?

In the very few instances of story elements discussed in the paratext, while the characteristically BioWare loyalty missions and romances were occasionally mentioned, even Lead Writer Cathleen Rootsaeert said very little beyond stating that yes, characterisation and story are ‘core of what BioWare does’ (Hussain and James 2017f). Of course, discussing narrative affordances could spoil key moments, so it is only logical that these were not talked about. The predetermined mechanics of interacting with non-player characters, which would afford narrative agency (such as *Mass Effect*’s characteristic romances and loyalty missions), were also not discussed and promoted as much as other features affording spatial-explorative were. What did appear, however, was a strong intention to distance the gaming experience offered by the new game from the lengthy, complex, yet in a way still one-directional path of progression in the original trilogy; and a decision to do away with the morality system, a mechanic which translates choices made in conversations into power bonuses and other ludic functions.

One of the most prominent reasons for this can be deduced from interviews contextualising production. As disclosed anonymously by developers after the game’s release, there was a severe delay in development due to the difficulties of the engine, and badly managed production (Schreier 2017b). With development still focusing on actualising the idea of procedurally generated planets mid-way through production, work was stalling in several departments—most crucially, writing. As one developer disclosed:

What you see [in the final game] is writing that has been done in the past two years rather than the full five years of writing [...] The writing team – writing the characters and everything – was unleashed too late, just because of too many discussions about the high-level direction.

(qtd. in Schreier 2017b: n.p.)

Therefore, due to the combination of market pressures to reinvent the franchise as an open world game, and difficulties in production, it would seem that BioWare's design ethos founded on a specific kind of storytelling that gives the player agency over how the designer story develops was changing with *Andromeda*. This begs the question: how would stories be told in *Andromeda*?

The conceptualisation of narrative-dramatic dimension of agency offered in Chapter 1 is built around the distinction between designer story and player story. Thus far, we have seen how creating a series of openly navigable worlds (planets), *Andromeda*'s developers endeavoured to afford what they conceptualised as player freedom, in a desire to move away from the more critical-path-focused trilogy. An illustrative example of various game mechanics in tandem affording dramatic agency is that of combat scenarios. In these, coherent chains of events connected by cause-and-effect relations, such as tales of heroic escapes and epic combo moves, also have a narrative quality to them, but in a very different way to, say, a cut-scene. Besides exploration, the other salient theme in the focus of design intention as implied by early trailers, and the growth in the amount of time dedicated to fighting as suggested by the leaked survey questions, was that of combat. Trailers released throughout 2017 (see Figures 56-57) showcased high-octane fights, with developers proudly detailing how certain weapons, powers, level design, or the quality of graphics would enable this experience.



Figure 56 and 57: Screenshots from the Official Gameplay Trailer (Mass Effect 2016).

According to then-Montreal Studio Lead Yannick Roy, they were ‘going to stick with what we have with combat’ from *Mass Effect 3*, but eventually ‘ended up, actually, progressing that action quite a bit far’ (Hussain and James 2017b: n.p.). In a similar vein, Level Designer Ian Frazier opined ‘I think we are, as you say, more of a shooter, more of an action game than any previous *Mass Effect* games’ (qtd. in Hussain and James 2017g: n.p.). Producer Fabrice Condaminas described the general motivation: ‘We can summarise the overall idea by saying we want to get back to the depth of *Mass Effect*, with the action of *Mass Effect 3*’ (qtd. in Hanson 2016d: n.p.). He

promoted fluidity, increase in pace, more responsive controls, and less predictable layouts as facilitators of the ‘sheer fun’ *Mass Effect 3*’s multiplayer offered players (Hanson 2016d). On how they captured that in terms of mechanics in the singleplayer experience, Condominas said:

The most obvious one will rightaway be the jump. It’s not a permanent rocket that you will have and you can fly around with, there is a beginning and an end to it, there’s really a curve, a momentum curve that is based on when you do your input. Is it after a sprint? Walk, Etc. Yes, you can hover, so for example if you jump and hover, it gives you time to see the combat layout, even shoot at enemies.

(qtd. in Hanson 2016d: n.p.)

This expansion of the avatar’s core move set predominantly would increase the possibility space for spatial agency, primarily in the game’s ludic and locally represented spaces. In previous instalments of *Mass Effect*, vaulting over covers was an automated mechanic, which could be activated when pressing a directional button while sprinting towards cover. The introduction of a jumping mechanic in *Andromeda* enables player agency to manifest in another dimension, beyond spatial, and that is temporal-ergodic. On the one hand, it introduces an ability that the player develops by spending skill points earned, afforded by configurative agency mechanics, which allow for longer hover time and more precision. On the other, Condominas details how this addition of verticality changes their attitude to level design:

[Y]ou can jump above cover, you can have different stages of cover on a single layout, and for multiplayer, we also took the idea that enemies can spawn in different places in the layout not necessarily facing you. Again, the challenge will remain the tactical aspect that the player loves [...] it is obviously a

challenge when you can go up, down, sideways, people can spawn behind you, enemies can spawn on the side, etc.

(qtd. in Hanson 2016d: n.p.)

The timing of jumping, and the end to which this means is used, creates challenge for the player. In this sense, the jump mechanic itself affords not only spatial or configurative, but also temporal agency. The fact that these features were discussed in such detail, that they were given this degree of visibility before the game's launch suggest that they were deemed a selling point of the game. Moreover, with the contextual knowledge revealed by Schreier's interviewees referred to earlier, combat was the only thing that was more or less finalised early in development, which further reinforces that design intention was pre-occupied with game mechanics affording agency in the spatial-explorative and temporal-ergodic dimensions. This observation is also supported by Lead Designer Ian Frazier, who located the overall design intention in creating a, compared to the previous trilogy, scaled up 'sense of freedom' (qtd. in Hussain and James 2017h: n.p.), where freedom was predominantly understood as the freedom to move.

Not only does the plan to enhance mobility in combat has the potential to expand the possibility space for agency in the spatial-explorative and temporal-ergodic dimensions, it also promises to impact configurative agency positively by enabling more complex and diverse styles in combat was also given increased consideration by designers. According to Frazier:

Why not let players, instead of just having that class choice in the beginning, you're going to be a Sentinel for 60 hours or whatever, just say, no, you're



going to get to decide a thing and then morph and change and expand that over the course of the experience, and it ended up fitting really, really well.

(qtd. in Hussain and James 2017g: n.p.)

Sentinel refers to one of the many classes players could play in previous instalments, with locked in buffs and debuffs, that is, temporary enhancements or diminutions on different abilities. This feature afforded configurative agency whereby players could spend experience points earned in specialised skill trees as well as the readily available ones. Once committed, players could not change these classes. What was the intention behind changing this to allow more flexibility? Frazier argued that the change to redistributable class points and changeable profiles, affording more configurative agency, were motivated by creating a more diverse and customisable combat experience

We've tried to do more moment to moment before, with the jump, with locomotion in general, how you get around the world, with some of the gunplay, and the powers and the way that you remix them. In that way, it is more of a shooter than it used to be.

(qtd. in Hussain and James 2017g: n.p.)

As to the broader motivations for such changes, Producer Fabrice Condaminas stressed the importance industry trends played in this decision:

But obviously, it's been five years, you know, the industry has changed, and I think the stop-and-go aspect of the third person shooter will not remain for long. There's still games doing that and that's great. But we are responsive, *Overwatch*, *Halo*, *Destiny*, all that, you see that idea that we want a more responsive, more fast-paced thing. The key thing here is to balance between the accessibility, the sheer fun of the action, and the depth of RPG systems.

(qtd. in Hanson 2016d: n.p.)

All the games listed by Condominas were best-seller shooter titles, singleplayer as well as multiplayer, and they each tick the same boxes in terms of game mechanics. This alone would afford a broader possibility space for emergent player stories, and through that, dramatic agency. However, especially when reading it in conjuncture with the observations made so far regarding agency in the spatial-explorative and temporal-ergodic dimensions also being prioritised by developers, it becomes even clearer that the story told with *Andromeda*, and the methods of its telling no longer correspond to BioWare's historic design ethos and the *Mass Effect* brand's identity. While this is, of course, entirely normal, and could be considered a mundane observation even (after all, the studio and the franchise are old and change is inevitable), the textual analysis below will explore in more detail the consequences these design decisions had on player agency.

In summary, the following points need stressing. The observations regarding design intention during early- to mid-production reveal that the two emergent themes were that of exploration and combat. Dev blog posts stressed the technological affordances of the new Frostbite engine; announcements, trailers, and concept art published revealed environments and vehicle design; and the leaked survey suggested there would be more time dedicated to combat. Looking at in-depth interviews solidified my hypothesis that these foci were partly selected due to a desire to respond to industry trends of creating more open world games with more free movement afforded to players, and more dynamic, customisable combat encounters. As to how this freedom was conceptualised by *Andromeda*'s designers, my heuristic framework allowed me to identify how designers intended to realise agency across dimensions. It proved

especially productive when looking at the detail regarding intentionality behind certain game mechanics offered by paratextual evidence from the end of the press cycle. Having surveyed *Andromeda*'s paratext, we can now conclude that as far as design intention is concerned, the meaning of 'compelling stories where your choices matter', as per Creative Director Mac Walters' words, changed with *Andromeda*. Although designers still claim to have maintained *Mass Effect*'s brand identity, and upheld the importance of 'story and character' as one of the four BioWare activity pillars, there seems to be a move away from how these stories are designed to be told: less through an elaborate, but nonetheless predetermined structure of branching options, more via creating opportunities for individual and diverse player stories to be realised. A critical examination of the game-text itself through the analytical lens of the heuristic framework will shed some light on whether the final product matches design intention. By doing so, we will find more clarity as to how the way agency is discussed could translate into how agency is afforded in a typical avatar-based videogame.

## Textual Analysis of *Andromeda*

*No one is a Pathfinder until they've path found.*

Director Addison to Ryder

The *Mass Effect* trilogy is widely discussed in game studies. Some scholars examine narrative characteristics (Jørgensen 2010) and narrative agency ('bounded agency' in Bizzocchi and Tanenbaum 2012), while others concentrate on the representation of morality (Patterson 2014), religion (Irizarry and Irizarry 2014) colonialism (Fuchs et al. 2018), community management (Reardon et al. 2017), and gender and sexuality (Adams and Rambukkana 2018; Condis 2015; Gallagher 2012; Krampe 2018) in the franchise. In their quest for patterns in meaning-making, most of these analyses tend to not distinguish in much detail between more specific dimensions in which not only narrative representation, but other aspects of the gameplay experience occur. From such a perspective, any examination of how player agency manifests risks oversimplification. Applying the heuristic framework to *Andromeda* will enable me to consider these more specific dimensions. The first goal of the textual analysis is therefore a general appropriation of how the game's design affords and limits avatar action, as observed through the analytical lenses of my multidimensional framework.

Second, and perhaps more interestingly, the textual analysis of *Andromeda* will reveal not only how game design allows for the different dimensions of agency to manifest and support each other, but also how these dimension can break down, if not integrated in a meaningful way. The paratextual analysis revealed that *Andromeda*'s developers intended to make a game which afforded freedom of exploration and combat in abundance, while also adhering to BioWare's design ethos of telling 'compelling stories where your choices matter', as per Creative Director Mac Walters' words. It

was clear that, while BioWare development leads extensively discussed realizing spatial-explorative and temporal-ergodic agency affordances, the studio was aiming to continue privileging narrative agency with this new addition to the *Mass Effect* franchise. The textual analysis of this particular case study will show that within the game, the other agency dimensions can not only struggle to support that privileging, they can also undermine it.

Regarding *Andromeda*'s design in general, the keywords is volume. There are numerous explorable planets, thousands of lines of dialogue were written, and the combat situations are more dynamic than they were in the original trilogy. Apart from the small and contained scenes of key plot moments, each star system and planet offers a large number of side quests and minigames, making up for 130+ hours of gameplay. This is significantly more than the average offered by competing open world titles for the same retail price: *Far Cry Primal* (Ubisoft 2016) contains 55+ hours of content, while newcomer studio Guerilla Games' *Horizon Zero Dawn* (2017) offers just under 100 hours of play, all included.<sup>84</sup> Keeping this in mind, in this textual analysis I will argue that the delivery of a predetermined branching plot affording narrative agency took the backseat amongst other design priorities, in particular, the large volume of spatial-explorative, temporal-ergodic, and configurative (but not constructive) dimensions of agency affordances.

Earlier I conceptualised dramatic agency as one emerging from play, creating the 'player story', as opposed to the 'designer story' (Rouse 2005: 203). Hence, logic would dictate that the more opportunities there are to, say, flaunt special combo moves in the many combat situations stumbled upon in the vast explorable space of

*Andromeda*, the larger the possibility space for dramatic agency to manifest is. However, I will argue that these encounters become gradually less meaningful, whereby their abundance decreases what narratologists call a quality of ‘eventfulness’ (Hühn 2010, 2011; Schmid 2003). Therefore, the following will unpack how the potential for dramatic agency is devalued by the plenitude of other agency affordances enabling exploration and combat in *Andromeda*. Undertaking such an investigation will allow me to articulate how the ways BioWare talked about their design ethos translated into actual design, and highlight how *Andromeda*’s text does not quite match the design intention of ‘telling compelling stories with choices that matter’.

#### Spatial-Explorative Agency in *Andromeda*

In terms of an overview of game spaces, there are seven main planets of which five are explorable both on foot by the in-game six-wheel-drive vehicle called Nomad, one is only traversable on foot, and one is the tutorial and as such cannot be revisited. There is also a self-contained hub-world (a space station called Nexus) which serves as a sort of centre of operations (similar to the Citadel in previous instalments), and numerous smaller similarly self-contained spaces (such as asteroids or space debris) which typically can only be visited once for events relevant to the overarching plot of the game, or that contain smaller optional missions (like squad member loyalty missions). In terms of how these game spaces can be navigated, we can draw on Bizzocchi and Tanenbaum’s (2012) ‘graduation of storyworld scale’ in *Mass Effect 2* to dissect the game’s spaces and therefore better understand how each affords agency. Bizzocchi and Tanenbaum (ibid. 399–400) distinguish between ‘the Milky Way galaxy, star regions, individual stars, solar systems, individual planets, space stations, multiple locations within each planet or space station’. Applying a similar filter to *Andromeda* yields the following list: Heleus cluster of the *Andromeda* galaxy, star

systems, individual units within that system (for instance planets, comets, or debris), surface of these units, and if available, multiple locations within some of these units (see Figure 58).

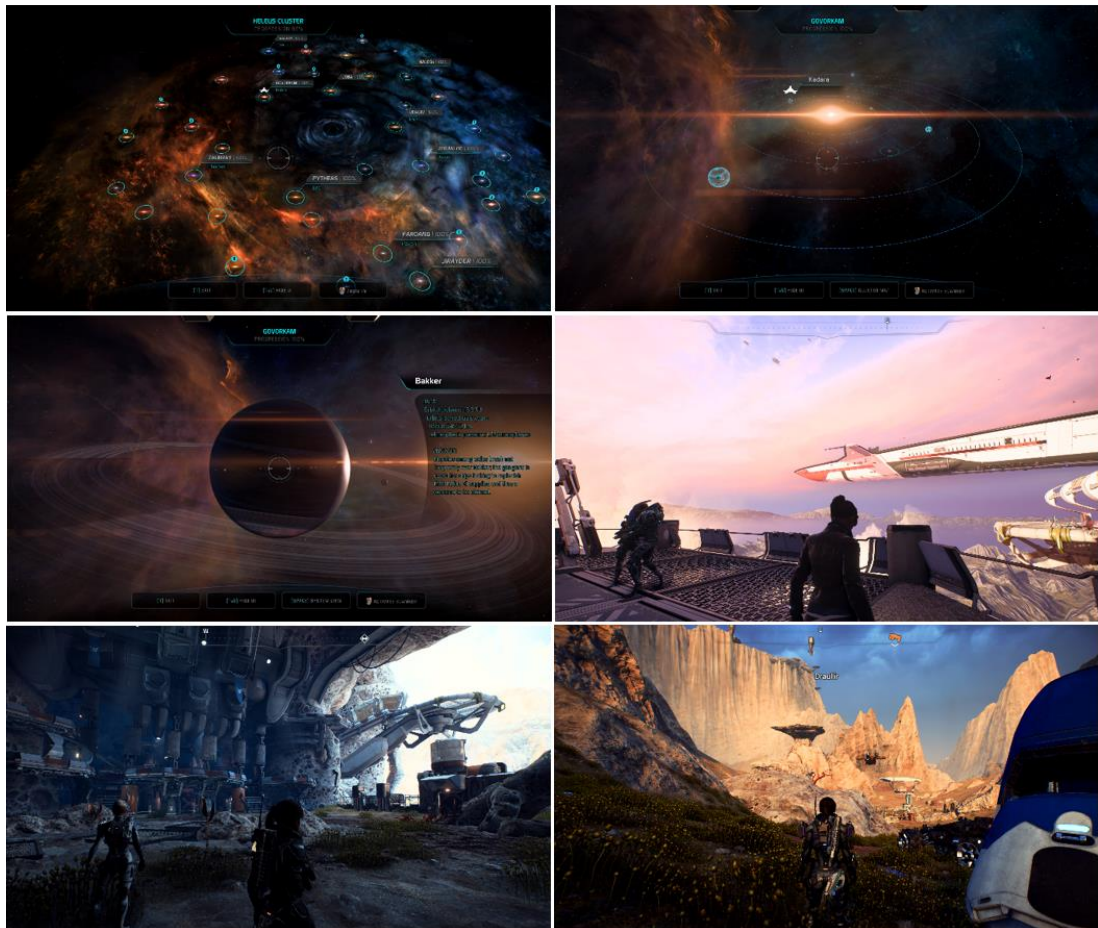


Figure 58: Graduations of space in *Andromeda* while travelling to ‘Kadara’.

While Bizzocchi and Tanenbaum’s graduations are a productive way of scaling the game’s space, they still leave some stones unturned. First, they conceptualise the game’s space as storyworld. While they do acknowledge this space is characterised by ‘ludic challenge and narrative enrichment’ (ibid. 399), little is said in terms of the specificities of how the storyworld offers these, and consequently, what ‘storyworld’ means in each regard. Second, their analysis does not distinguish between the different

perspectives afforded by the game's design, and its various effects on player action. The three levels, for lack of a better term, of game spaces I argued for in Chapter 1, namely that of ludic, locally represented, and storyworld space, will help us better identify how agency in this dimension is afforded by *Andromeda*'s design.

For example, as direct control of the avatar's spaceship in the ludic and locally represented spaces is not available, designers endeavoured to enhance the feeling of traversing the storyworld through audiovisual means and pacing. Every time the player/avatar decides to travel to a different planet, an unusually long medley of scripted scenes plays out. It features interactable cluster and galaxy maps, info sheets of celestial objects, and cut-scenes of take-off, acceleration, deceleration, and landing, which all contribute to recreating the laboriousness of navigating the vastness of space (see Figure 59).

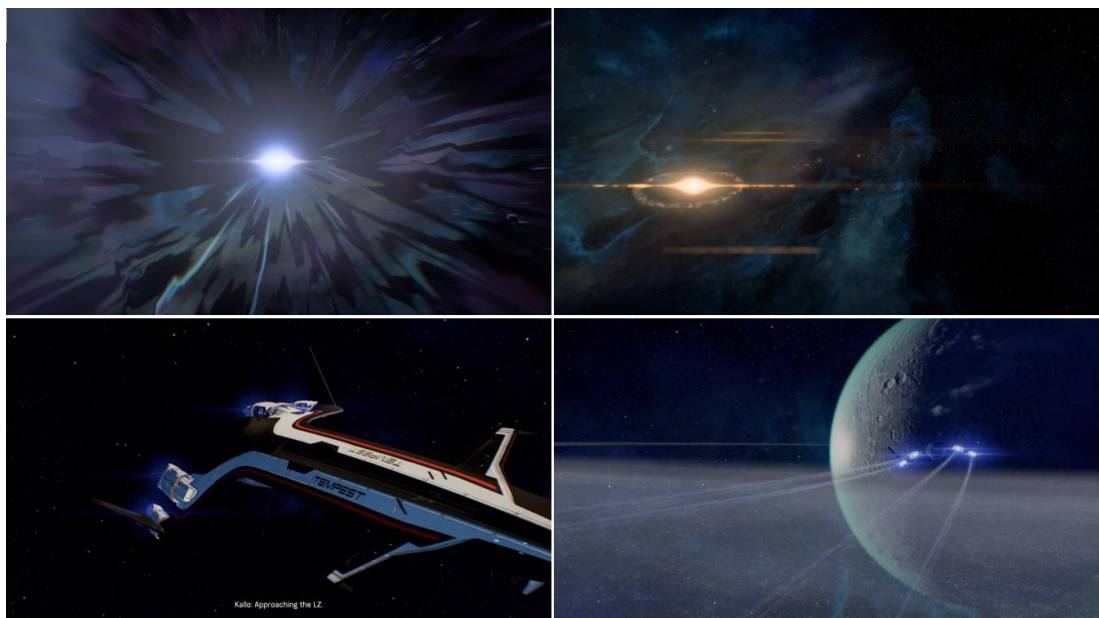


Figure 59: Cut-scenes of space travel in *Andromeda*.



Space Lead Jessica Campbell said they ‘wanted [the player] to be able to fly around the system so you could see the movement’ (Hussain and James 2017c: n.p.). Indeed, with this sequence of events, the space of the storyworld in *Andromeda* seems larger, and traversal of it slower.

Things change when the player/avatar decides to land. Here, the possibility space for player action manifests not just in the storyworld space, but in ludic and locally represented space as well. On the majority of planets, space stations, and other game spaces, a new set of avatar actions afford spatial agency such as walking, running, taking cover, and vaulting medium-height objects, as well as movements afforded by the newly introduced jetpack, such as jumping, hovering, and evading attacks mid-air. If the Nomad is available, then further spatial affordances are offered in acceleration, brakes, handbrake, steering, thrusters, boosts, and a change to four-wheel drive for better traction uphill. Some planets, such as Eos (see Figure 60), offer complete free movement on foot and via the Nomad, with a superimposed interface showing prioritised quest markers and nearby points of interest, and a button-activated map of the whole area featuring all points of interest and fast travel mechanics is also accessible. On these planets and such spaces, ludic and representational spaces align as closely as is typical of similarly designed games, and the player has spatial and explorative agency to move around relatively freely. The background vista is not merely a 2D backdrop, every boulder, desert, and cliff seen is directly accessible, and offers game content in quests and other challenges.



Figure 60: Alignment of game spaces on 'Eos'.

Such extensive freedom of movement is regulated by level design features such as the occasional terrain and environmental hazards. Radiation or extreme temperatures can render certain areas difficult to navigate, or entirely inaccessible, which, again, is a rather common means to counter more practical issues like how much of the planet is actually rendered at any given time, or which areas designers would rather the player/avatar avoids for storytelling and pacing purposes. For example, an orange meter in the bottom left corner of the screen signifies radiation exposure (see Figure 61). If the avatar or their vehicle remains exposed to radiation, their shield capacity eventually reduces, resulting in eventual death.



Figure 61: Environmental hazards and level design in *Andromeda*.

That being said, although such areas temporarily limit spatial-explorative agency, as the player progresses in the game, quests for removing some of these hazards are gradually made available.

The above enumeration of design elements and game mechanics shows clearly that the player has considerable spatial-explorative agency afforded by *Andromeda*'s design, as intended by BioWare's developers. This scaling up is especially salient when compared to the mostly linear space and level design of the previous *Mass Effect* trilogy. Those three games featured a largely predetermined order of progression in the narrative and cover-based combat, or as Producer Fabrice Condaminas referred to it, 'stop-and-go aspect of third-person shooters' (Hanson 2016d: n.p.). Both of these changed with *Andromeda* by the expansion of game spaces, and the simultaneous loosening of designer control on how the player/avatar progresses through them. What follows looks at what there is to do in the space or, in other words, the gameplay affordances that the spatial design and basic movement-related game mechanics provide in the temporal-ergodic dimension of agency.

### Temporal-Ergodic Agency in *Andromeda*

Temporality in the *Mass Effect* series was mostly examined as an aspect of narrative representation (Carvalho 2014; Zakowski 2014), there are, however other ways in which temporal structures in *Andromeda* impact the possibility space for player action. As mentioned in the paratextual analysis, *Andromeda*'s design headquarters were BioWare Montreal, the studio previously responsible for *Mass Effect 3*'s combat and multiplayer development. It also emerged from the analysis that besides exploration, combat was another dominant theme in design intention—something the Montreal studio already knew how to design well. Developers also spoke about the avatar's jetpack, which introduced verticality to movement that is especially useful in combat, expanding the possibility space for spatial agency to manifest. Since reacting to enemies suddenly spawning behind the avatar is time-critical, we can say that spatial affordances support agency to be realised in the temporal-ergodic dimension.

*Andromeda*'s most prominent means of affording agency in this dimension is time-critical challenges during enemy encounters. As customary for third-person shooter games, but quite unlike the turn-taking fights in BioWare's earlier games, combat in *Andromeda* is live-action and real-time, meaning player actions tend to trigger near-immediate feedback from the objects in the game system: pressing the appropriate buttons will result in near-instant evasion of attacks, firing of a gun, or the usage of powers. Besides the fights connected to the predetermined narrative of the game, Ryder can randomly encounter troops of AI-controlled enemies at almost any point in the game, whom they would fight off with the help of squad mates. During combat, a superimposed interface displays squad member status, health bar, shield charge level, power cool-downs, and ammunition left (See Figure 62).



Figure 62: Combat in *Andromeda*.

The most basic challenge in combat scenarios is staying alive and killing all enemies. This can be achieved with proficient navigation of, predominantly, time-critical game mechanics. In *Andromeda*, evading enemies, melee or range attacking moving targets, or combining the avatar's powers with the squad members', are all manifestations of temporal-ergodic agency. Furthermore, the player can customise the level of challenge presented by adjusting the difficulty level (Narrative, Casual, Normal, Hardcore, or Insanity).<sup>85</sup> The four design elements that seem to be impacted most by difficulty settings, which have an effect on player agency in a temporal-ergodic dimension, are aim assistance; enemy stats and AI; shields; and environmental conditions. The level of difficulty changes the degree of aim assistance, for example, meaning that the time available for taking a shot varies: the lower the difficulty, the longer the window is. This is achieved by, for instance, a slower enemy AI, or by the centre of the aiming reticle being drawn towards the target for the player. Enemies' health, damage and accuracy statistics determine the length of combat encounters, while enemy AI may react differently, faster or slower to avatar action.

Certain enemies, such as the Cardinal, an enemy type belonging to the class of ‘Ascendants’ (see Figure 63), regenerate their shield on a regular loop, therefore determining the size of the window in time available to deal damage to them. Last but not least, some levels where combat scenarios take place feature areas where environmental hazards drain the avatar’s health—the higher the difficulty, the faster the drain, the greater the challenge. Particularly in this last case, spatial agency afforded by level design supports the challenge constructed via temporal-ergodic agency affordances.

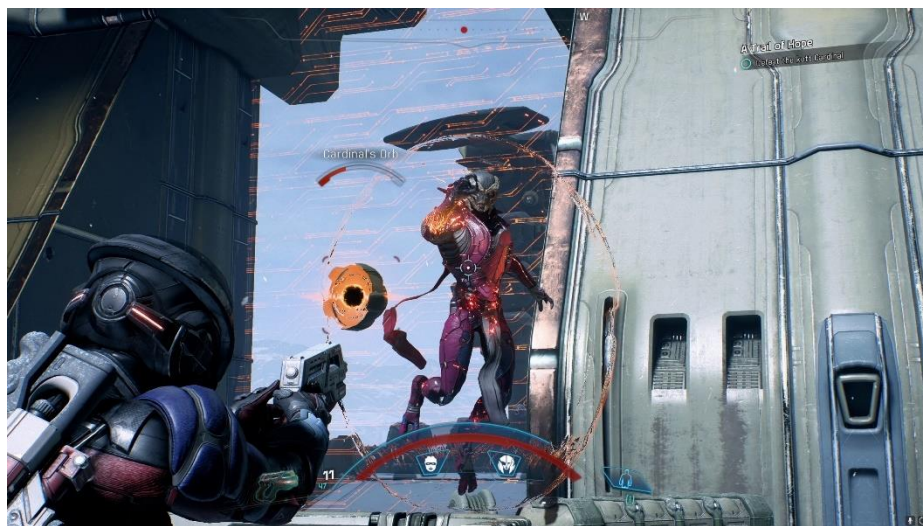


Figure 63: The Cardinal, an ‘Ascendant’ enemy type

Besides these, there are four sets of design affordances that dictate the pace of combat regardless of difficulty settings, thereby facilitating or restricting non-trivial effort in time: combos, reloading weapons, reviving squad members, and power cool-down times. In other words, detonation of squad members’ previously planted attacks to get an advantage in damage output is time-critical; reload rates and reviving fallen squad members impact the time/frequency of being disengaged from every other action,



therefore exposing the avatar to damage; and finally, powers are not available for a certain amount of time after having been used. Most of these features were present in the previous trilogy, though those games allowed greater control over squad mates, a feat reminiscent of BioWare's turn-taking role-playing games.

What is different in *Andromeda*, however, is the frequency of gameplay sequences regulated by these temporal structures, or in other words, combat encounters. Accordingly, with the considerable increase of spatial and explorative agency affordances in *Andromeda* (in the form of a more diverse avatar move set, and a large number of navigable planets), the amount of time spent overcoming challenges set by agency affordances in the temporal-ergodic dimension increases as well. As a result, while there is not much innovation or expansion regarding how agency in the temporal-ergodic agency is afforded by time-critical challenge in *Andromeda*, there is definitely a growth in the frequency of such events. However, there is another dimension, that of configurative-constructive agency, that contributes to this growth.

#### Configurative-Constructive Agency in *Andromeda*

In *Andromeda*, almost every single design affordance listed above as creating possibility space for agency in the spatial-explorative dimension and the temporal-ergodic dimension is open to configuration via resource management. For instance, the Nomad can be upgraded to go faster, or the player's avatar can develop new skills, and improve existing ones. While most of these configurative and constructive agency affordances are represented either on a local level, on that of the storyworld, or both (for example, the avatar's chosen gear is displayed both during gameplay and in cut-scenes), configuration is even more impactful in a ludic sense. Indeed, while not as central to role-playing games as it is to survival or strategy games, managing the in-

game economy of resources, items, and other such things is an integral part of role-playing games' challenge (Picard 2014). As we have seen in the overview of the studio's previous games, BioWare established their reputation with role-playing games, and the *Mass Effect* trilogy thus far contained role-playing mechanics of various complexity. This continues to be the case in *Andromeda*, where all of the powers and skills, as well as avatar and squad member health, damage, accuracy, and other stats affording or limiting avatar action in combat are modifiable by investing in skill trees and upgrading tools.

The acquisition and development of weapons, armour, and other useful items is made possible by resource gathering. This game mechanic thus not only affords configurative agency but also further incentivises explorative agency in *Andromeda*. With the help of tools like the scanner, the mining drone, or the mundane act of looting, the player can gather natural resources, collect items used for crafting, or trade goods to accumulate wealth. These objects can also be scanned to earn research points, which can be invested in researching and developing 'Blueprints' for weaponry and armour, 'Augmentations' for these, and other special items (see Figure 64). These assign additional bonuses to the already determined stats of the item, such as headshot bonus for range weapons, or longer shield endurance when the avatar's health is low. This shows just how much configurative agency players are afforded by the game's design to experiment with the different combination of gear for their avatar. Such agency affordances thus open up additional avenues for personalising combat, supporting agency in the spatial-explorative as well as the temporal-ergodic dimension.





Figure 64: 'Development' menu in *Andromeda*.

As typical of similar role-playing/shooter hybrids, the player/avatar's progress through the game is measured and communicated by a variety of currencies. 'Experience Points' (XP) are earned in bulks after certain actions. Once enough XP is accumulated, the avatar levels up, earning them skill points that can be invested in skill trees for both the avatar and their squad members, thereby affording configurative agency. Not only can the player spend the skill points earned in order to level up their avatar, but they can also fully re-specify (or re-spec, in gaming lingo) the avatar. This means that all skill points spent can be redistributed at any point in the game. This game mechanic expands the possibility space for temporal-ergodic agency within the game, as by being able to completely change the strengths and weaknesses, special powers, and other such skills mid-game, the player is incentivised by design to seek out more and more combat encounters where they can try out the different specifications. At the same time, it creates a disconnect between the avatar as fictional character and as game piece, which, in turn, is at odds with the delivery of a highly authored designer story, previously important to BioWare's design ethos.

The three main skill groups are ‘Combat’, ‘Biotics’ (similar to magic), and ‘Tech’, each containing skills and powers specific to the group. For example, an avatar specialising in ‘Tech’ skills and powers (see Figure 65) can focus on perfecting the ‘Invasion’ skill (see Figure 66), which shoots nano-projectiles towards enemies to disable their shields. Each power and skill can be developed further by the investment of skill points, with options available to pursue slightly different trajectories of the skill, such as deciding whether to improve how far the projectiles reach or how broad an area they cover. It is also possible to zigzag between branches, giving the player even more freedom in configuring their avatar and their abilities on the battlefield.



Figure 65: One possible configuration of Ryder in *Andromeda*.



Figure 66: Skill tree management in *Andromeda*.

With enough skill points invested in certain skill trees, new profiles become available for the avatar, which determine pre-set configurations of strengths and weaknesses on the battlefield. In previous *Mass Effect* games, the avatar could specialise in, and from there onwards was limited to, one profile. *Andromeda* has a similar feature also, but it also expands upon it, thereby broadening the possibility space for configurative agency in two respects. First, it allows the player to combine profiles. For example, the ‘Tactical Assassin’ profile (see Figure 67) is a combination of the ‘Soldier’ and ‘Engineer’ profiles, specialising in ‘Combat’ and ‘Tech’ skills. Second, not only can the player combine profiles, they can also alternate between other unlocked profiles, such as the ‘Adept’ (see Figure 68), which focuses on ‘Biotic’ powers. Each profile offers a plethora of specific bonuses and other such things. For instance, assigning the ‘Tactical Assassin’ profile (Figure 68) grants a profile-specific tool (the ‘Tactical Cloak’), and skills (‘Combat Fitness’ and ‘Tactical Cloak’), as well as a variety of bonuses to avatar stats.



Figure 67: ‘Tactical Assassin’ profile combining combat and tech skills in *Andromeda*.



Figure 68: ‘Adept’ profile focusing in ‘biotic’ powers in *Andromeda*.

In terms of constructive agency, there is but one prominent feature of design that facilitates its realisation albeit to a rather low degree: colony building. Notably, ‘Andromeda Viability Points’ (AVP) are accumulated by completing planet-specific missions—the more there is, the more colonists the player/avatar can send out to establish ‘Science’, ‘Military’, or ‘Commerce’ colonies. These colonies only exist in the game’s storyworld space, and although are not represented locally, only as a

catalogue of still images in a menu, they do have ludic functions, such as regular access to resources, or additional weapon slots on the avatar's holster. As such, they unlock rewards that impact the avatar's attributes, thereby contributing to further expansion of configurative agency affordances.

In summary, the large variety of resources, items, and currencies enable configurative agency to a degree none of the previous *Mass Effect* games did. This richness in features recalls the early years of BioWare's games, when in *Baldur's Gate* or *KOTOR*, hours could be spent contemplating the best weapon, armour, and power configuration for each member of the player character and their party. While constructive agency is rather limited, such a sizeable possibility space for configurative agency to manifest supports agency in the spatial-explorative and temporal-ergodic dimension, due to the various options and systems designed to encourage the player to tailor when, where, and how they face the time-critical challenges posed by combat situations. What does this mean for *Andromeda's* narrativity and agency? This is what the next and final section of this chapter will explore.

#### Narrative-Dramatic Agency in *Andromeda*

As demonstrated in the first section of this chapter, BioWare's design ethos has been historically centred on weaving elaborate branching plots that demand limited spatial freedom and a more or less straight-forward ushering of the player along the game. In this way, games in the *Mass Effect* franchise afford a high degree of narrative agency, which is in line with the philosophy of BioWare summed up by Walters as 'telling stories'. But do these stories feature 'choices that matter'? As a first step towards

answering this question, I will review how agency is afforded by design features that contribute to the narrative structures within *Andromeda*.

The game was intended to contain a comparatively complex variety of narrative agency affordances. As Creative Director Mac Walters said, quite a large number of assets were created to contribute to the creation of *Andromeda*'s vast storyworld:

*Mass Effect 3* had something like 670 characters in it and *Andromeda* has over 1200. The dialogue lines [are] basically *Mass Effect 2* plus *Mass Effect 3*. We've doubled down on characters, and yet our story isn't necessarily, like the critical path story, I would say, isn't necessarily that much longer.

(Hussain and James 2017a: n.p.).

Characters could afford agency in the narrative-dramatic dimension to various degrees, which we can scale according to the degree to which encountering them is accidental or predetermined. On one end of the spectrum, there are the quests, or missions. First, there is what Walters above called the 'critical path', or in other words, the predetermined plot afforded by 'Priority Ops'. These consist of 18 missions that are gradually added to the 'Mission Journal' as the player progresses in the game, and take roughly 19 to 25 hours to complete, depending on difficulty level. While 'Priority Ops' afford some forking paths for completion thereby granting the player/avatar some flexibility when it comes to the order of completion, they all lead to the same final mission regardless of which route the player went down on. This makes *Andromeda*'s narrative structure nonlinear, albeit not to the same degree as previous *Mass Effect* games have been (as illustrated in this chapter by the many outcomes of *Mass Effect 2*'s final mission). For example, there are multiple 'Priority Ops' available for pursuit, such as 'Hunting the Archon' which directs the player to the next mission

in the main plot centred around the antagonist figure called the ‘Archon, while ‘Elaaden: A New World’ leads to a newly discovered planet, where additional quests are available to support the odds of success in the war (see Figure 69).

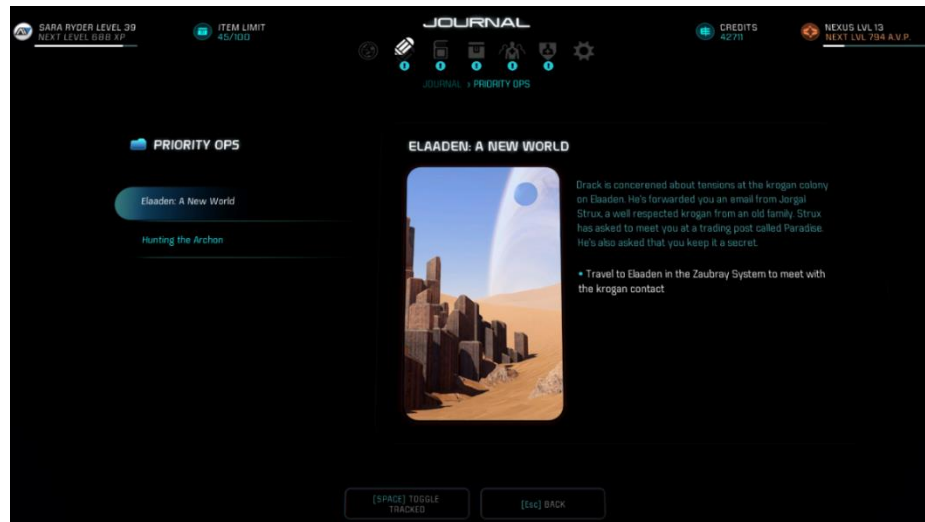


Figure 69: Multiple ‘Priority Ops’ available as part of the critical path in *Andromeda*.

Additionally, there is a large number of different side missions, some of which are connected to allies, some to planets or other locations, and which can take 100+ hours to complete, depending on difficulty, pace, and other variables (see Figure 70).



Figure 70: Mission journal, listing the different mission categories on the left hand side.

These missions are also predetermined in that the dialogue, scripted events, cut-scenes, and environmental objects delivering elements of the designer story are, of course, designed. However, they are also optional, that is, not necessarily crucial in order to successfully complete the critical path of the game, and as such can be considered further narrative agency affordances. This is a major step away from previous *Mass Effect* games, where quests connected to allies and relationships were more strictly conditional to overall success. Some of these side missions are relatively closely tied to the ‘critical path’, in that their completion could have some impact on its development, as they yield rewards that can be used to improve the variables of other agency affordances, such as stats, items, or XP.

For example, the 42 conditionally structured (i.e. they are only unlockable in a certain order) ‘Allies and Relationships’ missions strengthen relationships with allies which in turn brings rewards like new powers, increasing squad members’ combat competency, while also affording configurative agency in newly unlocked skills and powers. Other mission groups, named after locations like the planets ‘Aya’ or



‘Elaaden’, are structured similarly, and are targeted at increasing a planet’s viability. They usually involve undoing environmental hazards, or pacifying local armed forces, predominantly affording agency in the spatial-explorative and temporal-ergodic dimensions. On top of these, there are an additional, 80+ set of miscellaneous missions acquired most typically by talking to non-player characters scattered across the open worlds. The completion of these is largely inconsequential regarding the critical path. These side missions, listed under ‘Additional Tasks’, can be classified according to the three commands, or calls to action they present: go somewhere, shoot something, or push a button.

Before the game’s release, developers spoke about how they were working on ‘side quests that we can do that are much more interesting’, as opposed to repetitive ones like fetch quests (Wallace 2016: n.p.). However, *Andromeda*’s side quests fail to actualise this design intention. For example, the missions ‘Better Crafting’, ‘Roekaar Manifestos’ and ‘Unearthed’ (see Figure 71) can be acquired by talking to a non-player character (barman/alien scientist/sage respectively), who asks the player/avatar to visit different spots, interact with a certain number of game-objects (beer ingredients/datapads/alien devices), and they all yield XP and some inconsequential information about the non-player character never to be seen again, as they disappear after the task’s completion.

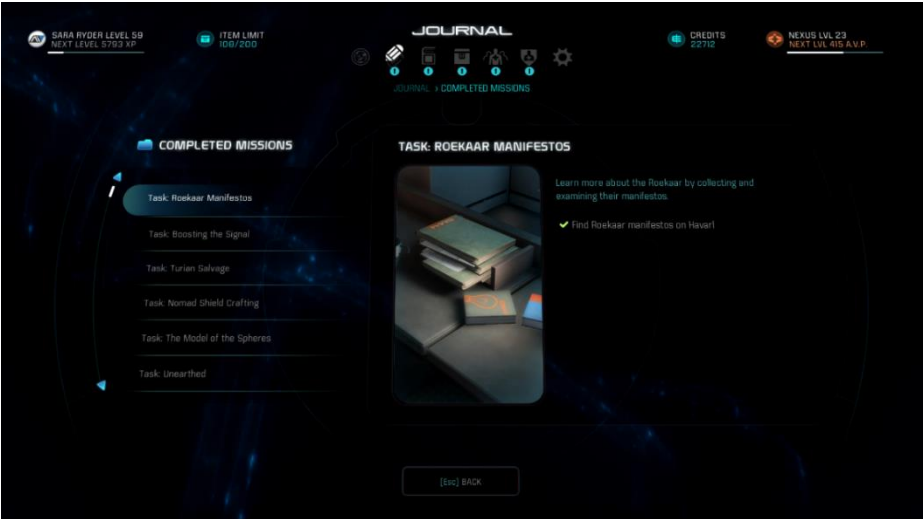
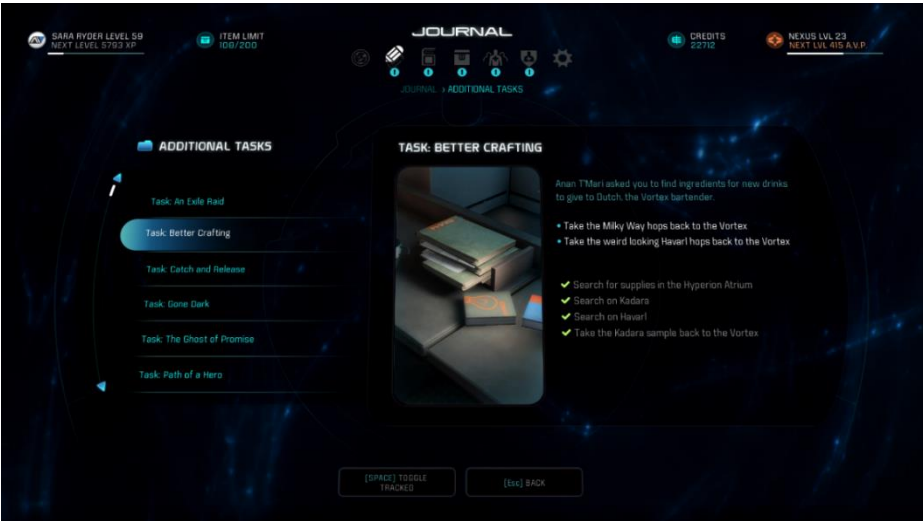
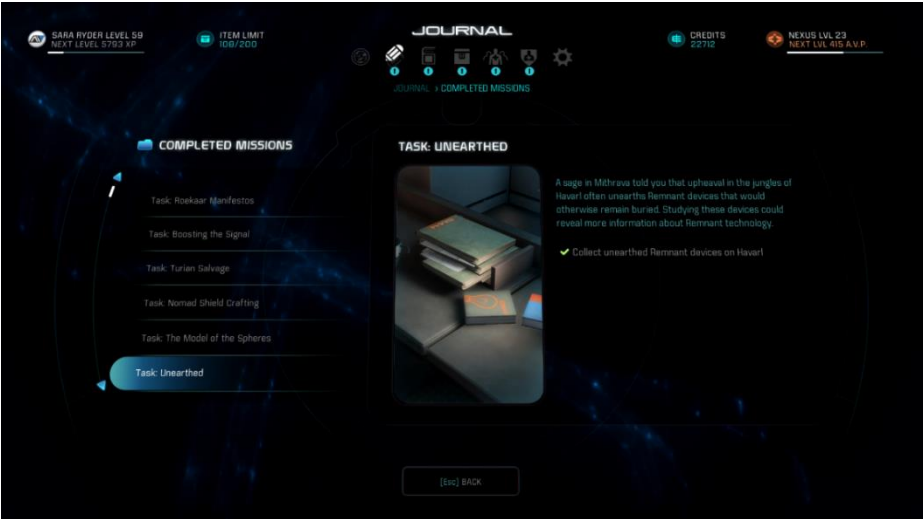


Figure 71: Repetitive tasks in *Andromeda*.

In comparison, previous *Mass Effect* games offer similarly structured optional quests, but they have a more elaborate impact on player agency. For instance, *Mass Effect* sets a task of scanning the ‘Keepers’, the mysterious alien caretakers of the galactic capitol called the ‘Citadel’. This task can be acquired via one of two missions, each presenting different sides of a quarrel between two scientists. ‘Citadel: Scan the Keepers’ (see Figure 72) and ‘Citadel: Jahleed’s Fears’ provides different contexts for the same act of scanning, which I will unpack below. These two missions in *Mass Effect* offer further opportunities for the player to characterise their Shepard (*Mass Effect*’s player character) through actions and choices.



Figure 72: ‘Citadel: Scan the Keepers’ mission description from *Mass Effect*.

Rarely anything is black and white in the first *Mass Effect* game, and as such, neither scientists are completely innocent or transparent about their motivations for asking the player/avatar this favour. This way the game provides opportunity for dramatic agency to emerge: the player/avatar has to decide whether to take the scientist’s life, spare him, or spare him and carry out the immoral work of scanning ‘Keepers’ for him (see Figure 73). Thus far, this seems to have a lot in common with *Andromeda*’s repetitive

missions. However, besides incentivising the exploration of the hub-world, the missions in *Mass Effect* yield more than just XP and money. If the player/avatar decides to not scan all ‘Keepers’, they earned ‘Paragon’ points (as scanning ‘Keepers’ is not an ethical thing to do in the game’s storyworld), which, as the overview of earlier BioWare games showed, have implications for agency in the configurative-constructive and temporal-ergodic dimensions. This way, the player/avatar’s interaction with the game as a ludic system gains relevance within the storyworld. Should the player/avatar decide to ignore this ethical principle, they would get levelled XP for each scan, appropriately reflecting the avatar’s development in the progression system, and by extension, the player’s decisions, leading up to this point. In this sense, the decision about whether to scan ‘Keepers’ and the implications it has on the avatar’s development is unlikely to happen in exactly the same way in different gameplay sessions. Such design adds a distinct quality to dramatic agency that is not present in *Andromeda*. Narratologists refer to this quality as ‘eventfulness’.



Figure 73: Decision moment in the mission ‘Citadel: Jahleed’s Fears’.

When discussing eventfulness, Hühn distinguishes between two types of events in narratives. He argues that while any change of state can be classified as a type I event, type II events acquire significance from contextual factors, implying ‘change of a special kind’ (Hühn 2011: n. p.) Type II events must

be brought into being and related to its surroundings by an entity (character, narrator, or reader) that comprehends and interprets the change of state involved.

(Hühn 2011: n.p.)

In other words, eventfulness is a quality of change where significance is attributed to the event based on a contextual factor. Furthermore, as Schmid (2003) argues, eventfulness could be regarded as not a binary, but a matter of degrees, depending on how events adhere to different qualities they ought to possess, such as ‘relevance’, ‘unpredictability’, ‘persistence’, ‘irreversibility’, and ‘non-iterative-ness’ (Schmid 2003: 26–29).

In this vein, the inconsequentiality of *Andromeda*’s repetitive side quests leads to a low degree of eventfulness, as they fail to be relevant to the storyworld. The exceptionally large number of miscellaneous missions feature calls to action that are barely more than the above mentioned ‘go somewhere’, ‘shoot something’, or ‘push a button’. Because they are exactly that, miscellaneous and additional, no ‘entity’ in the game attributes significance to them. They are not ‘comprehended’ or ‘interpreted’ in any way, besides being a mindless grind with little in-game consequence. The most salient characteristic of this content is, alas, volume. *Andromeda*’s side missions eat up more than two-thirds of playable content. Even reviewers pointed it out that the game ‘works better as a management simulator’:

People bumbling around futuristic IKEA colony outposts tell you about their friend who got lost, or the medical supplies that got stolen, or the data samples they always need help collecting [...] You then add it to your quest list, a log that by the end of the game has more in common with Microsoft Outlook than a readable plot summary.

(Gach 2018: n.p.)

The proportion of hours invested in the main plot events versus all the ‘management’ done in side missions that afford predominantly spatial, temporal, and configurative agency means that narrative agency affordances are outweighed by the 100+ hours spent roaming the many planets and other celestial bodies, encountering all kinds of enemy troops in between quest locations. Agency affordances in the spatial-explorative and temporal-ergodic dimensions enable player stories to emerge from the gameplay, which is further supported by the wide range of options for configuring the avatar to perform better in combat. This should create a possibility space for dramatic agency to emerge. However, the game-text fails to integrate the design features to afford dramatic agency in a compelling way. The sheer volume of inconsequential tasks results in dramatic agency losing its value. In the paratextual analysis, ‘interesting’-ness of side quests was qualified not in terms of complexity, depth, or socio-cultural relevance. Since they are inconsequential in the game-text, ‘interesting’-ness is also not manifest when we define it according to BioWare’s design ethos of ‘compelling stories where the player’s choice matters’. For the vast majority of the game, the player’s choices do not really matter. *Andromeda*’s text therefore seems to reinforce not only the assumption that BioWare’s design priorities in terms of player agency shifted, but also that the game-text does not match design intention.

## Conclusion

In this case study chapter I turned to *Mass Effect: Andromeda* to show how different ways of affording or limiting player action have been both at the forefront of developer discourse surrounding production and within the game's design. *Andromeda* was developed across numerous studios of BioWare (and by extension, EA), a studio known for designing role playing games where the player has a real sense of import in shaping their characters and stories. During the development of the original *Mass Effect* trilogy, which played a significant part in the formation of the franchise brand and studio's authorial identity, BioWare was subsidized by EA, an industry giant with uniform production tools. This move brought about significant changes not only in staff and production cultures, but in the general direction of the studio's authorial trademark style as well—most notably, due to the shift to Frostbite. While the *Mass Effect* trilogy stepped away from BioWare's signature combat system allowing the player/avatar to manipulate time and allow for strategic decision making rather than the success rate of trigger-reflexes deciding the outcome as typical of role-playing games, and *Mass Effect 3* in particular foreshadowed some of the major implications of this change in the increased effort put towards perfecting single-player and multiplayer combat, it was with *Andromeda* that this shift in focus became most evident. In the game's paratextual surrounds we saw that developers acknowledged the shift, but they attempted to reconcile the tension between this newfound direction and BioWare's ethos.

In turn, while the analysis of the game-text revealed a correspondence to the paratextually communicated design intent regarding the focus on exploration and combat, it also revealed that there was, indeed, a disconnect between how BioWare's developers conceptualised their design ethos versus how *Andromeda*'s features relate

to this ethos as defined across the two decades of BioWare's works. The main disconnect was between BioWare's intention to continue to prioritise the narrative-dramatic dimension of agency, and the game's design being unable to deliver due to the lack of eventfulness in the abundance of side quests. Previously, BioWare games, and the *Mass Effect* franchise in particular, placed significant emphasis on delivering 'compelling stories with choices that matter'. This meant that the player could shape the development of the main plot, typically by making non-reversible decisions concerning politics or a non-player character's fate, through tools like the dialogue wheel. However, *Andromeda* features a significantly larger game space, populated with, predominantly, combat encounters, which I have shown make use of spatial-explorative, temporal-ergodic, and configurative-constructive agency affordances. Such disconnect between what kind of player experience designers intend the game to offer (and so how it is marketed), and how the game is actually designed, draws attention to both the accuracy of promotional paratexts and conflicts in what different parts of the industry perceive as important to players/about games.

This case study, along with the first one, illustrated how agency is discussed and designed in different contexts, yes, but still within the AAA segment of the videogame landscape, with its characteristic production cycles and preferences of gameplay features. As such, they raise the question of what similarities and differences we could find when looking at the discourses surrounding agency in yet unexplored (within this thesis, that is) production contexts, as well as how agency is afforded by game design fitting into a game design lineage tapping into different models of game design. This is what the final case study will demonstrate.



## Chapter 4. ‘The World Is Your Play-Doh’: Player Agency in and around System Era’s *Astroneer*

While the previously discussed case studies were produced from budgets rivalling those of Hollywood blockbusters with team members often in the hundreds, such games are not the only ones in the market. It is therefore worthwhile to include a case study from a different production context, especially one where both design intention and the possibility space for player action are articulated and realised in ways that the previous two case studies did not account for. By doing so, we can not only demonstrate the diverse applicability of the framework to a variety of production contexts and game design models, but also add to it whatever findings emerge from this particular analysis. The aerospace-themed, procedurally generated survival-crafting game *Astroneer* (2019) by System Era Softworks (henceforth referred to as System Era) is one of many such videogames released over the past decade, since the success of *Minecraft* demonstrated audiences’ desire for this model of game design. *Astroneer* exemplifies several characteristics of a specific path in independent game design, characterised by less direct designer control on moment-to-moment gameplay, and a more direct relationship with the player base that informs the design of the game. As such, it is an illuminating case study for demonstrating the applicability of the heuristic framework to a broader spectrum of game production and game design.

Since System Era is a new studio and *Astroneer* is their first game, there is no historical design ethos to speak of. Nonetheless, its developers, who all came from the biggest studios in the AAA industry, were outspoken about what this move toward

independent production meant to their professional identity, their work ethic, and the kind of game they wanted to make. Therefore, in lieu of a historical reconstruction of the studio's design ethos, I will survey what connotations the labels 'independent' and 'indie' have, and what game design model milestones there have been over the years. In light of such a tradition, I will then interrogate the promotional paratexts of *Astroneer* for a founding ethos – namely how the independent tradition influenced the formation of the studio and aspects of game production. I will then expand this discussion into an analysis of design intention as communicated via the promotional surrounds, particularly zooming in on how developers conceptualised player agency, and what implications design decisions can have on how avatar action would be afforded or limited in *Astroneer*'s design. I will argue that the design intention was to afford free, experimental, creative, i.e., 'paidic' (Caillois 1961) play which I will attach to the notion of 'playfulness' (Huizinga 2009 [1949]; Millar 1968; Sicart 2014; Stenros 2015). Finally, in the last third of the chapter, *Astroneer*'s design will be more closely examined via the heuristic framework, to identify how agency is afforded by game mechanics across dimensions; and more specifically, how *Astroneer*'s design affords playfulness. Thus, this case study will not only engage with a tradition of making videogames that showcases many typical features of the independent sector, it will also examine the role of player agency in an approach to game design that is rather different from the previous two case studies: one less preoccupied with storytelling or role play, and more focused on affording play for play's sake. As the first step towards this, I need to ask: what, then, makes a game independent? What separates this sector of videogames from the broader gaming landscape?

## Independent Games: Definitions and Trends

*This game wasn't made in a vacuum.*

Adam Bromell, Founder  
(System Era 2017a)

As the previous two case studies have shown, the design ethos of Naughty Dog and BioWare became part of their brand image. Both studios became tied to their reputation and heritage in ways that made it difficult to innovate, or even break, from them. System Era, being a newly founded studio, does not have this problem, but it is still a worthwhile endeavour to explore what influences contributed to the foundation of the studio and the making of the game. In the following, I will first briefly sketch what this context was: initially, by unpacking what ‘independent’ can mean with regards to videogames; and then, by providing a historical overview of what genres independent developers seem to have gravitated towards over the decades. From this, we will see generally what groundworks System Era was founded on, and what that foreshadows about how player agency is typically afforded.<sup>86</sup>

### Defining Independence

The term ‘indiepocalypse’ is now used in the gaming community to refer to an overabundance of a certain subset of videogames, which makes the market of these games so saturated that it is difficult for developers to reach their audience (GDC 2016c; Lipkin 2019). But what exactly is an independent game, and is it the same as an indie game? Generally speaking, these qualifiers are used inconsistently, and interchangeably, in discourses surrounding videogames. For instance, ‘indie games’, ‘indies’, ‘independent developers’, ‘indie sector’, or ‘indie sphere’ are phrases often used by journalists without any comment as to which aspects of the mainstream

videogame industry there is an independence from (see, e.g., Diver 2016: 8). There has been ample debate around the decoding of ‘independent’ and ‘indie’ labels both in journalistic and developer discourse (Antropy 2011; Gnade 2010) as well as in academia (Garda and Grabarczyk 2016; Juul 2014, 2019; Lipkin 2013; Ruffino 2013; Simon 2013; Thon 2019; Wilson 2005; Zimmerman 2002). What these approaches have in common is that they emphasise the importance of context—technological, industrial, socio-economic and political—when attributing the ‘independent’ label and its different variations and iterations. Garda and Grabarczyk (2016) identify three main ways in which a game can be ‘independent’, each determined by what it is that the game is independent from:

- (A) financial independence (constituted by the developer – investor relation),
- (B) creative independence (developer – intended audience) and (C) publishing independence (developer – publisher).

(Garda and Grabarczyk 2016: n.p.)

An important result of this distinction is that games can be considered independent so long as they tick at least one of the three above specified criteria. A somewhat similar list of conditions is provided by Juul (2019), who draws on three types of independence in American cinema identified by King (2005):

1. Financially independent in terms of its “industrial location.”
2. Aesthetically independent [...] in its “formal/aesthetic strategies.”
3. Culturally independent [...] in its “relationship to the broad social, cultural, political or ideological landscape.”

(Juul 2019: 12)

Juul also adds, that these three types of independence have ‘competed with each other over time’ (Juul 2019: 15). Meaning that how independence is understood tends to pivot around what is at the focus of broader socio-cultural discourses in any given decade: the power dynamics between various stakeholders within the specific landscape of videogame production and distribution, as well as within the entertainment media industries as a whole; broader socio-cultural issues such as gender or diversity both on and off screen; or corporate work ethics.<sup>87</sup> Considering all this we, can conclude that independence in the context of videogames should always be understood according to context-specific terms.<sup>88</sup>

Upon first look, a salient difference in the two aforementioned approaches is that Juul argues independence can be better understood as a matter of rhetorics rather than a property of an object or quality of the circumstances of production. Ruffino (2013) makes a similar point when he underscores that independence in the video game industry is a discursive construct, and as such, ‘narratives of production’ (Ruffino 2013: 106) should be studied and historicised accordingly. That being said, Garda and Grabarczyk’s typology does account for this in type (B) creative independence, which they argue is supposed to capture how developers assign themselves the label ‘in direct developer’s quotes describing the game in promotional materials, interviews, product description and other paratexts’ (Garda and Grabarczyk 2016: n.p.). In this way, while the lists do not necessarily align, they both address the same issues at least to a certain degree. What we can draw from this is that independence in the context of videogames is discussed as a means to locate and/or position both product and producer within the landscape governed by cultural politics and production logics.

The second main difference is the extent to which the two typologies include ludo-aesthetic associations attributed to the independent label by participants of the discourse. On an overall level, Garda and Grabarczyk's typology does not account for what Juul calls 'cultural independence', which is supposed to capture how games are promoted to be about culturally, politically, and morally diverse topics, and are also made by culturally and politically diverse teams who work under, as Juul points out, better conditions than their corporate counterparts who often face extended periods of crunch in order to meet deadlines. On a more specific level, while Juul specifically argues against drawing terminological distinctions, Garda and Grabarczyk distinguish 'indie' from 'independent', where the former refers to videogames coming out in the mid-2000s with a certain 'indie look' and 'indie feel' to them. These, they argue, are characterised by digital distribution, experimental aesthetics, a smaller budget and lower retail price, smaller team size, a retro style looking back at early videogames with nostalgia, coming from a certain scene (such as the Independent Game Festival in a North American context), or using similar development tools (2016: n.p.). This historical approach, though productive in a way, only applies to a specific group of videogames made around this time period. A more nuanced description is offered by Juul (2014, 2019), who argues for there being a certain 'independent style' which

is a representation of a representation. It uses contemporary technology to emulate low-tech and usually cheap graphical materials and visual styles, signalling that a game with this style is more immediate, authentic, and honest than are big-budget titles with high-end, three-dimensional graphics.

(Juul 2019: 38)

Juul argues that games employing an 'independent style' claim authenticity by mimicking the aesthetics of older game styles which could be considered more

authentic as they tap into romanticised values such as individual artisanship, small-scale production, and more direct relationship between producer and consumer. This, in turn, Juul links to the Arts and Crafts movement of the 19<sup>th</sup> century, which emerged as a counter-effort to robust change brought about by the industrial revolution (ibid. 34–37). As such, we can talk about independence not only in the sense outlined above with regards to the (cultural) politics of production and distribution, but also with regards to aesthetics.<sup>89</sup>

In terms of System Era and *Astroneer*, we will see both a discourse of independence woven by developers, as well as design features that could be seen as belonging to Juul’s ‘independent style’. For terminological simplicity, I will use ‘independent’ throughout, to encapsulate all the complexities discussed above. Before I explore both, I will now look more closely at some typical ways in which degrees of independence impact production and distribution, and what implications these have for the aesthetics of independent videogames. In doing so, in lieu of a founding ethos for the studio, I will reconstruct the environment and tradition in which System Era began working on *Astroneer*. While the previous chapters focused on the console market more, here the focus is more oriented towards the PC market.

### Independent Games: A Brief History

As Kevin Toms, developer of the original *Football Manager* series (Toms 1982–1992) said, ‘[w]hen I released *Football Manager* it was January 1982, and at that time, all of the games developers were indies’ (Baker 2018: n.p.). However, if everyone was independent, then in a sense nobody was, because the industrial structures had not yet formalised yet, so there was nothing to be independent from (as also pointed out by Garda and Grabarczyk 2016: n.p.). Lines of division started to appear with the growth

of big game publishers as I have discussed in the previous case study chapters. In the 1990s, budgets grew and teams multiplied, which marginalised many developers who did not want to join the increasingly corporatised production culture that gradually chipped at the authorial power of the individual designer (i.e., a proper industry) that had begun to emerge (see, e.g., Keogh 2015: 155; Kerr 2017: 34; Nichols 2014; O'Donnell 2012). Still wanting to produce games and find a way to distribute them without relying on established channels of retail typically controlled by corporate entities (which, at the time, mostly meant buying copies off the shelf), many developers opted for shareware. Designers with visions who were marginalised by the growing publisher and retailer dominance could reach out to players through what were called bulletin board systems, or BBS, a pre-internet dial-up modem that facilitated networked communication (Camper 2007: 155). Back then, developers could share parts of their games for free, and then if players liked it, they could purchase the whole version as a physical copy, directly from the developer. As developer David Braben said, then, 'games were distributed by stuffing envelopes from home with cassettes you duplicated yourself and photocopies of instructions that you folded up and put into the cassette box' (Diver 2016: 13). This approach to distribution, namely fewer middlemen and a resultant reduced distance between those who make games and those who play them, continues to distinguish independent game production from AAA today.

An important turning point in this came with growing support for players to modify contents of released games in the 1990s. Games like *Doom* (id 1993) or *Quake* (id 1996) allowed for player-generated maps, while Valve released an official modding kit in tandem with their game *Half-Life* (1998) called Worldcraft. Better known today



as the Valve Hammer Editor, this modding kit was a training ground for many young game enthusiasts interested in developing (Laukkanen 2005: 18–63). This established a tradition of game developers handing over their means of creation to their player base, thus involving potential audiences in production. This tradition, although not atypical of the practices of AAA studios (think Bethesda, at least for a time), is certainly more prevalent in independent production. In the early 2000s, besides events and trade shows dedicated to videogames gradually opening up their floor to non-corporate affiliated productions (Parker et al. 2018), as well as festivals being dedicated to promoting and awarding independent games (Juul 2019: 57–124), Valve opened an online videogame distribution platform called Steam. It was set up in 2003 to connect developers and customers, thereby cutting out the publisher. From the store, games can be downloaded directly onto PC. While the field of rivals grew with time, with powerful contenders such as EA’s Origin or the Epic Store offering similar services, Steam, for now, is the most popular online store for PC games (Wilde 2019). The launch of Steam spawned an era often referred to as the ‘indie boom’, from the mid-2000s onwards.<sup>90</sup> It was within this general production and distribution landscape that System Era was founded and created their first, and to this day only, game, *Astroneer*.

In terms of the aesthetics of independent games, considering at their core is a DIY attitude to creativity (Guevara-Villalobos 2015; Juul 2019: 34–38; Westecott 2013), it should not come as a surprise that they come in many shapes. Still, it is possible to identify some typical patterns without risking oversimplification. In terms of visual aesthetics, the games of the ‘indie boom’ of the mid-2000s, such as *Braid* (Number One 2008), *Super Meat Boy* (Team Meat 2010), *Limbo* (Playdead 2010), and *Fez*

(Polytron Corporation 2012) popularised the low-key, underscored, often pixelated visuals typically associated with independent games (see Figure 74). These games also had similar game mechanics centred around puzzle-solving and platforming.



Figure 74: Platforming and retro aesthetics in *Fez* (Polytron Corporation 2012).

At the same time, there has also been a boom in narrative-driven games with simple mechanics, also called walking simulators, such as *Dear Esther* (The Chinese Room 2012) and *Gone Home* (The Fullbright Company 2013).<sup>91</sup> Independent production and distribution models also helped the proliferation of horror games like *Amnesia: The Dark Descent* (Frictional Games 2010)<sup>92</sup> or *Five Nights at Freddy's* (Cawthon 2014), as well as experimental art games like *Kentucky Route Zero* (Cardboard Computer 2013)<sup>93</sup> or *Untitled Goose Game* (House House 2019). No less importantly, so-called roguelike games, that is, typically procedurally generated top-down dungeon crawlers such as *Spelunky* (Mossmouth, LLC 2008), *The Binding of Isaac* (McMillen 2011), or *Enter the Gungeon* (Dodge Roll 2017) are also critically acclaimed and boast sizeable fan bases (Bailes and Shaw 2018).<sup>94</sup> There is one further genre, as it were, often associated with independent game design which form the background against

which System Era developers refined the directions their studio in general, and their game in particular, would take. This is the genre of sandbox games, of which *Minecraft* in particular stands out as an exemplary case.

*Minecraft* redefined the videogame landscape, changing the way games are perceived, made, and played. Its creator, Notch, was heralded as a poster boy for independent games, and *Minecraft* has been one of the most popular streamed games on Twitch (Gandolfi 2016).<sup>95</sup> It was hugely relevant to the development of *Astroneer* not only because the game greatly inspired System Era's developers (System Era 2016c, 2016e), but also because former Lead Artist on *Minecraft* Spencer Kern joined the studio as *Astroneer*'s Art Director (Noclip 2019). In the simplest of words, *Minecraft* is a 3D survival-crafting sandbox game with blocky visuals, and a procedurally generated gameworld. Its appeal lies in that it can be enjoyed by players of various abilities and backgrounds: the average player can mine, build, and fight whatever and whomever they please; more tech-savvy gamers can mod freely, creating entire games within the game; and packages like the *Minecraft: Education Edition* (Mojang and Xbox 2016) offer educational resources and facilitate interactive in-game classrooms, accompanied with websites and learning materials. *Minecraft* is an 'editor game' (Abend and Beil 2015), a kind of 'virtual LEGO' (Schutz 2014: 237), where the main goal is less to win, more to play:

These play- or sandboxes pose new questions regarding the player's motivation(s) and the appeal of a gameplay that consists of building a game world rather than playing within one – thus, the material agency of the game (which usually becomes visible via the rule set, the game world, or the narration) seems to dissolve.

(Abend and Beil 2015: 2)

While Abend and Beil's argument that sandbox games' design 'dissolves' agency is perhaps not the most fortunate way to describe the relationship between such design and the player's expression of meaningful action (as *Minecraft* affords a high degree of agency in the constructive-configurative dimension), their point about games like it facilitating a somewhat different possibility space for player action compared to games with more direct designer direction is nonetheless a valid one. I will explore how this plays out in *Astroneer* in the textual analysis part of this chapter, but in order to do that, I will first explain what I mean by sandbox design, and how it differs from what I call open world design, like that of *Mass Effect: Andromeda* discussed in the previous chapter.

The two terms 'sandbox' and 'open world' refer to a similar concept, that of design that lets the player roam around freely and decide what goals to pursue, and as such, they are often used interchangeably (see, e.g., Deen 2011; Gazzard 2011; Sites and Potter 2018). However, I argue that a subtle difference can be drawn when looking at their usage through a historical lens. With the release of *The Sims* (2000) and *Grand Theft Auto III* (2001), 'sandbox' and 'open world' entered gaming vernacular (Breslin 2009). At the heart of such design, according to *The Sims* creator Will Wright, is a 'metrics of progression, but it's not mission based' (Smith 2011: n.p.). Indeed, this design model 'gives players latitude in experimentation or in devising their own game tactics and goals' (Giddings 2014: 259). Such games are often without goals, or incentivise the player to shape their own goals, tailor their playstyle (Juul 2007: 191). Accordingly, both descriptors refer to a game's level design and degree of predetermined-ness in progression. There was, however, a paradigm-shift in how sandbox and open world design was understood as triggered by *Garry's Mod*

(Facepunch 2004), a player-created mod of Valve's *Half Life 2* (2004) (where there are no set goals, only a gameworld and objects that can be spawned and manipulated) and subsequently, *Minecraft*.

With *Minecraft* thrown into the mix, the heavily predetermined encounter types of most games previously described as open world or sandbox appear rather less unconstrained. There is a difference in the degree of constraint levied on avatar action, in, say, *Grand Theft Auto* games' open playable cityscapes and the construction blocks of *Minecraft*, as the verbs determining these tend to be broader: the interaction verb 'shoot' in *Grand Theft Auto* games is slightly less versatile in its implementation than 'break' or 'shovel' which can be applied to a plethora of things in *Minecraft*.<sup>96</sup> Nitsche points out that, while the term 'sandbox' emphasizes the 'placeness of game worlds', it 'focus[es] on their use, which is very different' (Nitsche 2008: 171). In this vein, I argue that 'open world' describes a more limited possibility space for action, whereas 'sandbox', with its reference to children moulding the sand into whatever shapes they want at playgrounds, implies that there is a broader possibility space for the player to do whatever they like, particularly in the configurative-constructive dimension. In this sense, I describe *Minecraft* and games in its wake, such as *Astroneer*, as sandbox rather than open world.

To summarize, this first part of the chapter looked at independent design as a tradition which had an impact on the circumstances of production of *Astroneer*, as well as the game's design itself. This was necessary because, contrary to the other two case study chapters, where the studios examined had a long history of game development and reviewing that helped contextualising design decisions, System Era was only founded

recently and *Astroneer* is their first game. Therefore, tracking the studio's design ethos was not possible. Yet, having provided a brief survey of the independent landscape of videogames, their production and distribution practices, I sketched the specific type of post-2010 independent climate that System Era designed *Astroneer* in. I also discussed, albeit in broad terms, what models of game design have been favoured, and then focused on sandbox games in particular, underscoring that sandbox games have a much larger possibility space for action than the games discussed in the previous chapters. I will now move on to look at System Era's founding ethos, and the design intention behind *Astroneer*, as communicated by its developers.

## System Era's Founding Ethos, and Design Intention

*We're all triple-A developers so we think we know how to make games.  
But it's completely different, making your own game.*

Former Lead Designer Jacob Liechty  
(Wawro 2015)

As mentioned in the introduction to this chapter, System Era is a new studio, and *Astroneer* is their debut, and to date only, game. It therefore makes more sense to establish a founding ethos, rather than a historically developed design ethos the like of which I reconstructed in the previous two case study chapters. Albeit not as cemented as an ethos formulated over decades, I will show how the founding ethos influenced decisions about development nonetheless, which then, in turn, impacted how player action was to be enabled or constrained by the game's design. In a first step, I will explore what going independent meant for System Era's founders, and what implications this move had for future design decisions. I will then look at two games regularly occurring in the early paratext as sources of inspiration, and highlight two features in particular that they have in common, a sandbox design and procedurally generated content, which represent the general design direction System Era was heading towards. This will allow me to identify what direction *Astroneer*'s design would take with regards to affording agency.

### Independent Studio, Independent Audience

Five game developers, all of whom had several years of experience working on AAA videogames, founded System Era around 2015, 'to see how much we can get done entirely ourselves' (Microsoft Developer 2018: n.p.). They set out to make a game about 'wonder, discovery, power, greed, mystery, and grand endeavour in a new age of expansion on the fringes of humanity' (admin 2015: n.p.).<sup>97</sup> The team was inspired

‘less by *Star Wars* and more by *Cosmos*, the Space Race, the Apollo program, and SpaceX.’ (ibid.). Adam Bromell was Lead Artist and Art Director on Ubisoft games *Assassin’s Creed: Unity* (2014) and *Watch Dogs* (2014); Jacob Liechty, Brendan Wilson, and Paul Pepera worked at 343 Industries’ take on the *Halo* franchise (2011– ) as Graphics Engineer, Software Development Engineer, and Art Lead, respectively; and Riley Gravatt spent years working on *The Sims 4* (2014) as Audio Asset Manager at Electronic Arts, and as Sound Designer at Disney Interactive. The initiative to leave the big budget world stemmed from a desire to make a game that they have ‘wanted to play for a very long time’ (System Era 2016a: n.p.). Yet, developing independently from corporate structures was a steep learning curve for the team. As to what unforeseen consequences going independent had in store for the team, Jacob Liechty said:

We spent the first year of that learning hard lessons, and the next year doing something better. We’re all triple-A developers so we think we know how to make games. But it’s completely different, making your own game. [...] Because you jump into [indie development] and you think you’re working on the right thing, and then actually no, you aren’t, and you realize six months later you could have been making a lot more progress. My own failures are all tied to having this overly triple-A mindset about what you’re working on. [...] Coming from triple-A, you kind of feel like...at a distance from indie devs. They seem like these super-spry, almost crazy kind of people who think they can do anything, Triple-A people also feel like they can do anything, but they have this chip on their shoulder that like...they’re the pros, you know? That they’re the real pros.

(Wawro 2015: n.p.)



Not only did they have to reconsider workflow and priorities, but also reconcile the changes in their professional identities. Brendan Wilson further underscored how difficult it was not having someone calling the shots for them:

When you work at a big company, there's still so much that is, sort of taken care of for you. Leaving the walled garden of the corporate culture, in America... that's when you're really on your own, and you feel how difficult that is.

(Tirado 2016: n.p.)

While it was stressful to not be produced in this way, it did come with its benefits, notably an increased authority over all aspects of game-making. Adam Bromell said he was much more attached to the game, whereas, he says, in AAA it was more common to experience a detachment from work, which altered their attitude to work:

I'm never not working basically. And I think that's the same for everybody. But we could do all these things ourselves in our spare time [...] We work 8 hours as developers, and then we spend our extra time doing marketing and things like that. We don't work with any third parties and stuff, it's all handled [by] ourselves.

(System Era 2016a: n.p.)

While not in line with how the notion is conceptualised in the heuristic framework presented in this thesis, it is nonetheless evident that agency lies at the heart of the studio's ethos—that of the individual developers to be making their own, independent decisions over all aspects of their work, from content production through management all the way to promotion. A crucial step in accomplishing this was the decision to release the game via Steam's Early Access mode, which is a distribution plan Steam offers where developers can release unfinished versions of their games which players

purchase for a reduced price.<sup>98</sup> It is different from pre-purchasing a game (a format often offered by AAA publishers) for two main reasons. First, once the consumer buys the game in Early Access, they will likely have continued free access to all upcoming content, including a final, release version, and beyond. Second, players are often given means to report bugs and provide feedback. This strategy promotes not only more direct engagement between game-makers and consumers, it also advocates players' involvement in the game's production.

System Era's reasons to follow this path were numerous, as co-founder Brendan Wilson recalled:

There were sort of three options. Get a publisher, do Kickstarter, or do Early Access and self-fund. The publishing side was difficult. We were kind of being presented with two options. One was either maintain more the level of control that we wanted to have over the title, but for the cost of a very low budget, while still being under the pressure of publishing milestones and things like that; or, accept a much higher budget, but really give up most of the effective ownership of the title. There were deals that were, there were publisher around who would say things like "Yeah, you know, you're gonna keep all of your IP, but we're gonna take what they call exploitation rights" which sort of like effectively gives them the IP without giving them the IP. It was important to us to be in control, that was why we wanted to be independent.

(Noclip 2019: n.p.)

Not only did the decision to release via Steam's Early Access enable System Era to maintain creative independence, it also enabled them to have their audiences more involved in production. Arguably, there is a less romantic aspect to this: quality assurance testing is very time- and resource-expensive, and while System Era did outsource some testing to a small company, it was never going to be enough for such

an ambitious project. By releasing the game in Early Access, the studio, in their own words, benefited from the community in that they could ‘basically have every single CPU, GPU on the market testing the game [...] and solving those issues’ (System Era 2017a: n.p.). In addition, Steam Early Access enabled the studio to build a strong, direct relationship with their audiences. As Artist Adam Bromell said:

It’s really liberating to work on a thing where you kinda don’t care about the problems, cause it’s just so fucking fun. It’s just this thing like, people will get it. If we talk about it honestly, they’ll understand what we’re doing. We’ll tell you not to buy it if you don’t want to buy a broken thing. We’ll be as honest about this thing as we can.

(Noclip 2019: n.p.)

The studio’s founding ethos was thus centred around the notion of independence, and agency—for themselves, as well as for their audiences. But what is the kind of game they wanted to develop, the one they felt like they did not have the space to pitch in a AAA environment?

#### Games That Inspired

‘[T]he four of us started the company [and] we just sort of had a desire to play a game like this’ said Adam Bromell in a Twitch live development stream (System Era 2016a: n.p.). What overall aesthetics were they going for, and more specifically, what mechanics did they say they felt were missing from games they worked on before, like the photorealistic sci-fi shooter *Halo* or historical action-adventure *Assassin’s Creed*? ‘This game wasn’t made in a vacuum’ disclaimed Adam Bromell (System Era, 2017a: n.p.). Indeed, survival-themed fiction is not new—think *Robinson Crusoe* (Defoe 1994 [1971]), *Lord of the Flies* (Golding 2009 [1954]), or *The Road* (McCarthy 2006) in

literature. Popular culture is also increasingly saturated with survival-themed content, such as TV shows like *Man vs Wild* (Channel 4 2006–2011), or *I’m a Celebrity, Get Me Out of Here* (ITV 2002–), and better not get started on zombies. The popularity of survival games also exploded recently, and *Astroneer*’s developers name-check numerous influential survival-crafting titles across the paratextual surrounds. *Factorio* (Wube 2012) is cited for its ingenious approach to automatization (System Era 2016a; 2017a), the chaotic, goal-less freeplay in the early months of *DayZ* (Bohemia Interactive 2013) is thought of fondly (System Era 2016a), but it is three games—*Minecraft* (Mojang 2009), *Space Engineers* (Keen Software House 2013), and *Subnautica* (Unknown Worlds Entertainment 2017)—that are repeatedly mentioned during the first few years of development as sources of inspiration for the broader strokes of the game in the making (System Era 2016a, 2016b, 2017a). As such, interrogating how they afford and constrain avatar action reveals general directions regarding how System Era’s developers thought about designing agency in *Astroneer*. Arguably, this is a slightly less direct way of distilling design intention from promotional paratext than done in the previous two chapters, but since System Era is a studio with effectively no credibility they could use as promotional advantage, it makes sense for them to cite popular games they are inspired by as a means of appealing to audiences, as opposed to promoting the game with grandiose statements about authorial intention, at least pre-Early Access.<sup>99</sup>

All three games mentioned above are voxel-based<sup>100</sup> survival-crafting games featuring an avatar, and are built on similar foundations. They are all sandbox games (or at least offer a sandbox mode); and they all contain some degree of procedural content generation. *Astroneer*’s developers consistently described the game as sandbox<sup>101</sup>;

and, at least in the first two years of development before the launch of *No Man's Sky*, also highlighted procedurally generated worlds as a key feature while promoting the game (DevGAMM 2017). In the following, I will briefly review how the sandbox worlds of these games were designed with the help of procedural generation, and what implications such design has for how agency would be afforded in *Astroneer*.

As my reconstruction of the history of independent tradition showed, *Minecraft* was a game-changer in many ways. Not only were the original founders of System Era ‘huge fan[s]’ of the game (System Era 2016e: n.p.), they also sketched *Astroneer* as a ‘very *Minecraft*-like’ game (System Era 2016c: n.p.) in terms of open-world design and lack of linear narrative content. They also hired Spencer Kern, former Lead Artist on *Minecraft* (post-Microsoft acquisition), as the new Art Director on *Astroneer*.<sup>102</sup> Space exploration-themed *Space Engineers* (see Figure 75) offered NASA-like space exploration ‘fantasies’ System Era also wanted to tap into (System Era 2016a), while they saw *Subnautica* as one of those ‘cool game[s]’ that ‘shipped very non-assuming releases, and then been out for some time and they just keep making the thing better’ (System Era 2016b: n.p.), which made it ‘massively inspirational’ (System Era 2017a: n.p.). As far as their setting were concerned, they all were space-themed games less in the vein of alien shooting or intergalactic politics defining the sci-fi genre in videogames, and more emphasising the joy of exploring and leaving a mark on the world discovered. They were also regularly mentioned together, with *Minecraft*, in gaming-related discourses (see, e.g., Birnbaum 2015; Hayward 2014). In true crafting-survival game fashion, the avatar typically started from scratch with a rudimentary toolkit, only to slowly work their way towards crafting more and more complex gear that help their avatar stay alive and thrive in the world they found themselves in.

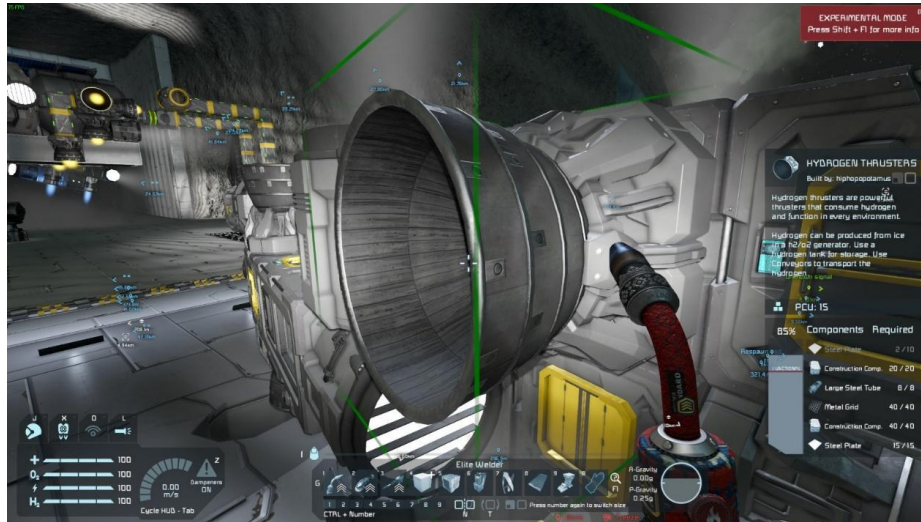


Figure 75: *Space Engineers*.

As I argued in the first section of this chapter, the open world label has implications for level design, while sandbox foreshadows more about the game goals. I also suggested that we can think of distinguishing sandbox games from open world games historically, i.e., in the post-*Minecraft* era, sandbox games acquired a very specific meaning. Both *Space Engineers* and *Subnautica* followed in the same vein of sandbox design as understood post-*Minecraft*. This understanding of sandbox, as argued, connotes a preoccupation with game goals, and with implications to level design, but is increasingly geared towards a specific model of gameplay determined by the actions of crafting and building, with the aim to survive and reach whatever goal, if any, provided by the game.

The design of these two games was primarily geared towards affording avatar action in the spatial-explorative and configurative-constructive dimension, as in order to thrive, the player had to constantly explore new territories for valuable resources, and work towards establishing and expanding a secure base. In *Space Engineers*, this was

done on the variety of customisable maps the player can set up for themselves using ‘World Settings’ and selecting ‘Scenarios’, which then in turn determine sometimes hard, sometimes soft goals for players within the sandbox itself. *Subnautica* also has various modes, such as ‘Survival’ or ‘Creativity’, which affect variables like hunger or thirst, as well as optional permadeath (see Figure 76).

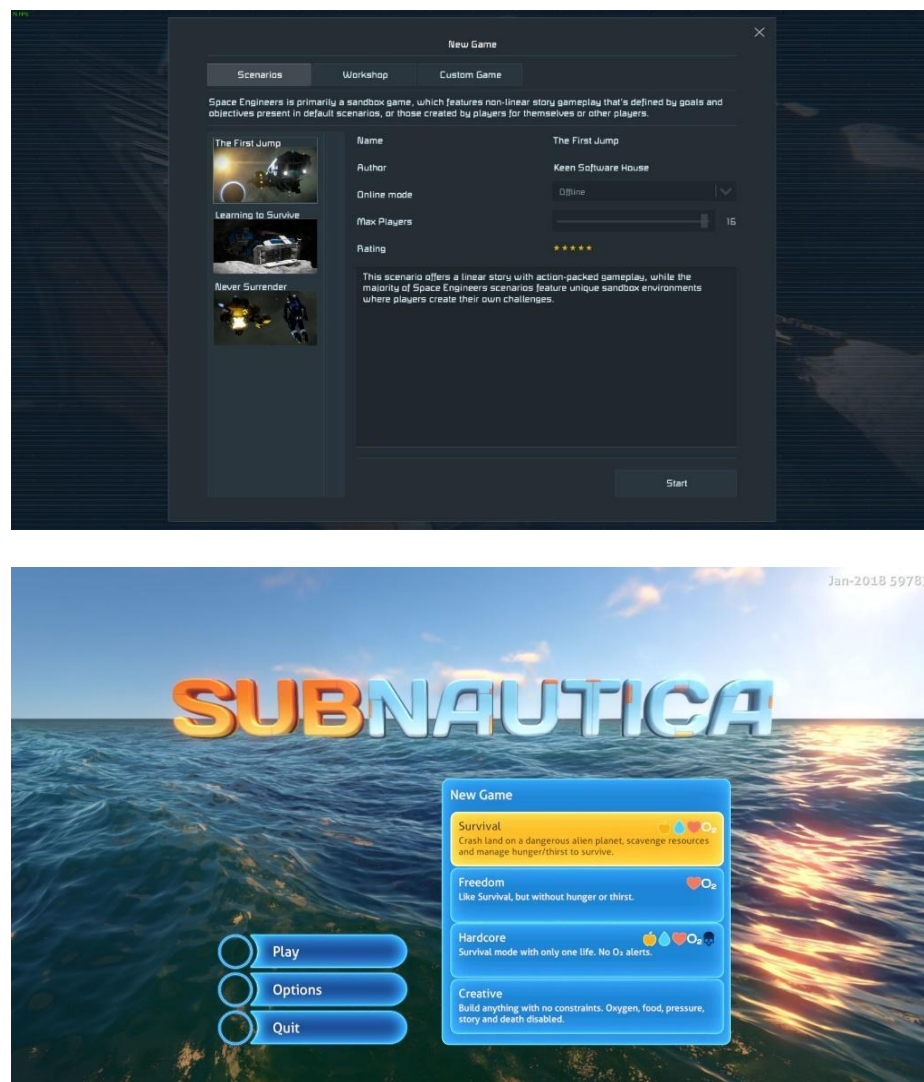


Figure 76: ‘New Game’ interfaces of *Space Engineers* and *Subnautica*.

The keyword is optionality: both these games offered the player choice over how difficult they wanted to make their experience by allowing them to set challenge

levels. In neither case was there a breakdown of predetermined checkpoints in progression that all have to happen in a certain sequence, at certain times. In summary, then, *Astroneer* developers being inspired by these games foreshadows intention behind theme, things to do, and general world design of the game.

The way in which sandbox games are designed is another thing *Minecraft*, *Space Engineers*, and *Subnautica* had in common: they made use of a method called procedural content generation either to generate terrain, resources, or both.<sup>103</sup>

‘Procedurality’ is an important quality of the digital to Janet Murray (1997: 71), who defines it as a device’s ‘defining ability to execute a series of rules’. In Ian Bogost’s words: ‘[t]o write procedurally, one authors code that enforces rules to generate some kind of representation, rather than authoring the representation itself (Bogost 2007: 4). Such design is interesting with regard to designing agency, because it is a different way of exerting authorial control over the game’s affordances to what was discussed in the previous two case studies. Procedural content generation in the context of videogames means that, as opposed to hand-crafting every single detail, the system randomly arranges things like level layout, or location of resources, according to rules predetermined by the designer.

While Bogost is concerned with the rhetorics of representation, computer science provides more practical definitions of procedural content generation which are more relevant for an investigation concerned with how player action is afforded by a game’s design, it not being concerned with the intricate processes of meaning-making. In the context of computer science, procedural content generation is generally understood to mean ‘the algorithmic creation of game content with limited or indirect user input’



(Togelius et al. 2016: 1), where content is understood as everything contained in a game, bar non-player character behaviour, and the engine itself: ‘levels, maps, game rules, textures, stories, items, quests, music, weapons, vehicles, characters, etc.’ (ibid.).<sup>104</sup> System Era’s developers decided early on to pursue a mixed approach regarding how much content would be pre-designed and how much would be generated on the go. This intention was further signposted by the studio switching engines. They started prototyping using Unity, an engine favoured by independents for its accessible user interface and its versatility regarding implementation of other software (Nicoll and Keogh 2019), but upon the release of the Unreal Engine 4 in 2014, System Era quickly changed tools. They relayed several reasons for this in vlogs and interviews, the most prominent of which was that having come from AAA, they all had more experience working with this engine, and it was also the ‘definition of out of the box’ with plenty tools already implemented (System Era 2016d: n.p.). Besides the software being more familiar than Unity, and Unreal 4’s then-newly introduced ‘Blueprint’ feature, which visualises code in a way that allows non-programming developers to work on the logic of the game, it was really in the procedural content generation that this change in technology helped.

While the below excerpt is from Unreal’s own website and therefore a promotional motivation is undeniably present, Jacob Liecthy’s list of reasons for using Unreal is noteworthy nonetheless:

With procedural generation, you really have to make sure that the “randomization knobs” have the right range. If you give up too many parameters to the generator, you’re going to get a lot of noise that isn’t fun or interesting to the player. We’ve solved this issue by introducing artist-designed biomes.<sup>105</sup> These biomes are picked semi-randomly and distributed

on our planets, and the placements of all the plants, minerals, and features are fully random. But, at the end of the day, each environment is one that we know is going to be fun and play well each time we hit the 'generate' button. [...] We've ended up coupling many of Unreal Engine's features deeply into the terrain engine, especially from Unreal's Actor system. Each biome is an Actor, which lets us easily create variations that share certain parameters without having to create them from scratch. We can also add Components to decorators that can be read by the generation algorithm to customize their placement criteria. By fully embracing the modular nature of the engine, we've been able to spend a lot more development time designing our biomes instead of writing the code to generate them.

(qtd. in Rowe 2016: n.p.)

Specifically, it was *Minecraft* developer Markus 'Notch' Persson who based terrain generation on what is known amongst 3D animators and programmers as Perlin noise (Notch 2011). Noise-based generation is a technique often used in this approach to terrain creation in videogames. It was created as a solution for 'develop[ing] naturalistic looking textures' (Perlin 1985: 287) in computer-generated imagery for Disney, and today has many variants. In general, it is most useful 'whenever small variations need to be added to a surface (or something that can be seen as a surface)' (Shaker et. al. 2016: 58). System Era artist Adam Bromell explained noise-based generation in *Astroneer* as:

the simplest way to think about it is random frequency that we represent by waves, and those waves you can think of as mountain peaks and valleys, and we manipulate them to make terrain.

(System Era 2018a: n.p.)

This manipulation is typically done by setting variables such as 'amplitude' determining maximum value output, or 'persistence' that refers to the time amplitudes

are applied (libnoise). Bromell further explained what this looked like in practice, and what it meant for design authority over the game:

So it is literally different every time we do it, within a set of rules that we apply. As an example, the exotic moon is made up of three different biomes [...] so we can do things like flat terrain [...] versus the dips down into the crater system, and then out into a mountain. [...] It's not just terrain that we get the benefit from, it's the control over the assets.

(System Era 2018a: n.p.)

In *Astroneer*, developers worked towards combining procedural content generation with hand-crafted assets, as a means to achieve balance between overly resource-expensive detail and procedurally generated chaos. Engineer Zabir Hoque said

The goal with procedural content is to provide novelty, but we want some level of familiarity, so the player isn't just experiencing chaos. [...] From a technical side I think the most important thing to consider when building procedural systems is how to allow for artistic control at various authoring levels. You want to allow for authoring a rule set for general use cases, and then provide enough vectors of configuration so users can exercise artistic control when needed. [...] With our terrain system, we could just use Perlin noise everywhere in the terrain with random values and say 'Look! It's different every time!' but this is what leads to the feeling of bland repetition. Instead, we try to think of how the player will play the game and when they'll seek out novelty, and that is where we try to introduce variation.

(qtd. in Bradley 2018: n.p.)

The kind of gameplay afforded by a game design so devoid of designer control is one that gives more freedom to the player to exercise their creativity. Deciding on making a sandbox game with procedural content generation, where the levels and goals are

not as defined as they tend to be in games such as the two discussed in previous case studies here, signals design intention is less to restrict avatar action and therefore agency across dimensions, and more to enable exploration, experimentation, and a broad possibility space for avatar action in general.

From early 2017, the studio's means of engaging with their audiences changed markedly. This was due to numerous reasons: the explosive success of the game's launching into Early Access in December 2016, in contrast to thought-to-be competitor *No Man's Sky*'s fall from grace earlier that year; Lead Designer Jacob Liecthy leaving the studio; and most importantly, and indeed, most tragically, the passing away of Lead Artist Paul Pepera (Noclip 2019). Following a few silent months in early 2017, while the remaining developers began their journey towards recovery from this loss, the studio's promotional methods as well as the game's branding changed. Procedurally generated worlds were no longer at the heart of their marketing efforts and were replaced by something new. In the next section, I will look at what newly hired designers said about how they think about the mechanics. Diegetic user interface and modularity were introduced as the pillars of design, which I will argue allow for more direct interaction with the gameworld and more freedom to act. These characteristics will be framed according to paidic play, and the notion of playfulness. I will also look at a new promotional tool deployed by the studio, namely trailers, to evidence further design intention revolving around the notion of playfulness.

## Designing Playfulness

In early 2017, soon after entering Early Access on Steam and Game Preview on Xbox, *Astroneer* developers were astonished by the explosive success of the game. ‘Watching dozens of simultaneous gameplay streams at once was a surreal experience that I’ll never forget’ wrote System Era co-founder Brendan Wilson in a blog post (admin 2017b). Soon after, a lot would change for the studio. In order to tackle increasing demand for updates as well as to stay on top of performance and quality of life issues in the game, System Era made several new hires, which became ever so important as game designer Jacob Liechty left the company to work outside of games, and artist Paul Pepera passed away, leaving studio founders devastated in grief. Brendan Wilson reminisces:

I always felt like as long as we had, I had Paul working next to me, everything was gonna be fine. And so without him, it was just gonna be, it was just, like, hard to know how we’d go on the same way.

(Noclip 2019: n.p.)

These dark events led to a few months of radio silence as the studio scrambled to meet game patch demands. In time, however, and with the help of new members of staff, development got back on track. In particular, the hiring of community manager<sup>106</sup> Joe Tirado streamlined studio communication to the player base, and two game designers, Aaron Biddlecom and Samantha Kalman had very specific ideas for how they imagined the future for *Astroneer*’s gameplay and were quite vocal about it too. Biddlecom outlined the design objective as follows:

One of our primary goals with *Astroneer* is to provide an open-ended gameplay experience that incentivises creative problem solving.

(admin 2017a: n.p.)

This design intention can be qualified with the help of the distinction between two types of play proposed by anthropologist Roger Caillois in the 1960s. He posited that on one end of the spectrum there is rule-regulated play, which he called ‘ludus’, while on the other is free, unconstrained, creative play, which he referred to as ‘paidia’. Paidia is an ‘an almost indivisible principle, common to diversion, turbulence, free improvisation, and carefree gaiety’, an ‘uncontrolled fantasy’; a ‘frolicsome and impulsive exuberance’ (Caillois 1961: 13). Ludus, the other end of the spectrum, restricts paidia by ‘arbitrary, imperative, and purposely tedious conventions’ (Caillois 1961: 13). Now, it is important to keep in mind that while paidic play is free play, it is still constrained by rules, as all play is ‘free movement within a more rigid structure’ (Salen and Zimmerman 2004: 304). As Frasca (2003b: 230) points out, ‘a child who pretends to be a soldier is following the rule of behaving like a soldier and not as a doctor’. Frasca calls such rules in videogames, for example those governing the behaviour of in-game objects, ‘paidia rules’ (2007: 116). Keeping this caveat of sorts in mind, Biddlecom’s ‘open ended gameplay’ incentivising ‘creative problem solving’ would then fall into paidic territory, whereby there are ample possibilities for player agency to be realised via avatar action.

When reviewing Caillois’ discussions of ludus and paidia, Frasca argues that paidia is ‘the form of play present in early children (construction kits, games of make-believe, kinetic play)’ (Frasca 2003b: 229). Interestingly, *Astroneer*’s elevator pitch<sup>107</sup> was that ‘*Astroneer* to Play-Doh is what *Minecraft* is to LEGO’ (DevGAMM 2017; Microsoft Developer 2018). All three of Frasca’s examples match both Play-Doh and LEGO. While some argue that LEGO’s potential supersedes that of modelling clay whereby

it ‘empower[s] people to build’ (Gauntlett 2014: 191), the LEGO ethos of Systematic Creativity, which ‘is about using logic and reasoning along with playfulness and imagination, to generate ideas or artifacts that are new, surprising and valuable’ (Ackermann et al. 2009: 4) rings true for Play-Doh. Psychologist Susanna Millar articulates playfulness in succinct terms when she describes it as ‘throwing off constraint’ (Millar 1968: 21). It is in this sense that playfulness becomes relevant for agency in *Astroneer*.

Paidia does not have a winner or a loser in the strict sense, no game goals to speak of, as opposed to ludus, which Frasca says ‘provides us with two possible endings: winning and losing’ (Frasca 2003: 230). System Era Game Designer Aaron Biddlecom’s words show that they designed according to a logic of paidia: less to create a winning situation, more to facilitate creative problem-solving:

We see ourselves as a puzzle-based survival game in the sense of, you’re this stranded engineer kinda McGuiver-ing your way to success. The obstacles that we wanna introduce are obstacles that you can solve, rather than defeat.

(System Era 2017d: n.p.)

This attitude is echoed by fellow game designer Samantha Kalman, who described the design process as following a script commonly found in the ‘open world survival crafting’ genre:

It’s a script that has emerged with sort of more open world survival crafting games, which *Astroneer* is that. There’s a lot of like, open ended gameplay, and you can make up your own goals, and so like we’re trying to more, like give you toys to play with. Do you wanna play with this? No? Okay there’s like 30 other things over here, maybe you like one of those.

(Giant Bomb 2018: n.p.)

Kalman's words reinforce the idea that the studio's design intention was less to create a game where the player's path is guided, more to provide tools for the player to do as they please. As such, the intention seemed more to be about creating a game still constrained by rules (primarily in a way all games are by definition), but were also increasingly about incentivising experimentation and tailoring the play experience to player preference. Generally speaking, this would mean that the player has a large degree of agency across all dimensions. This incentive aligns with the general principle of designing paidic games, according to game developer and theorist Chris Bateman: 'to support paidia we need to encourage and allow for the player's capacity to experiment freely, and assist the player to express the most obvious implied actions for each game element' (Bateman 2005: np). There were two topics recurrent in the paratextual surrounds of *Astroneer*'s development that relayed how designers thought about enabling creative experimentation and playfulness. One is the notion of 'diegetic interface', and the other is the 'player archetypes'.

Although it could be argued that distinguishing between diegetic v. non-diegetic elements of game design presupposes the presence of fictionality (see, e.g. Jørgensen 2013: 66), System Era developers find it a productive term to describe their approach to interface design nonetheless. 'Diegetic'-ness appears repeatedly throughout the corpus of paratexts surveyed (System Era 2016a; DevGAMM 2017). What this term, borrowed from Aristotelian scholarship popularised in literary studies by Genette (1983), means to *Astroneer*'s developers was most neatly summarised by Brendan Wilson at a GDC talk:



The biggest standout feature in *Astroneer* is diegetic interaction. “Diegetic” refers to elements that are rendered in the world in a way that the characters would be able to see and interact with them. A HUD overlay with a health metre is non-diegetic, but, like, a readout on an oxygen tank rendered in the world, that would be diegetic [pause for video demonstration]. This direction emerged from the desire of clever improvisation to be part of the gameplay, we wanted *Apollo 13*, we wanted Mark Watney<sup>108</sup>, tinkering and jury rigging, we wanted that process to feel alive and deeply interactive. [...] it brings out that sort of tactile joy that you get from physical toys.

(Microsoft Developer 2018: n.p.)

Minimising the overcast user interfaces on *Astroneer*’s gameworld was thus a step towards wanting to facilitate playful, experimental interaction in the game by removing obstacles which phase said interaction with said gameworld. Wilson furthermore adds the notion of ‘tactile joy’ as a desired impact, the like of which is elicited by playing with physical toys. This aspiration is also mentioned elsewhere by game designer Samantha Kalman:

[T]he other designer Aaron and I did this analysis of what are all the sort of emotional aesthetics of the game. And we found that tactility is one of our key aesthetics. When I played the game with controller, the sort of [brief pause] metaphor that arrived in my mind was that, like, I used to play with action figures, where you like squeeze the legs and you punch or something like that, so to me it was like, the controller becomes some sort of action figure. I feel like when I’m playing *Astroneer*, I’m playing with action figures.

(System Era 2017e: n.p.)

It is this almost visceral feeling of playing with actual toys that the diegetical implementation of research logs, craft menus, backpack management, and other features normally relayed by superimposition, was working towards.

System Era developers conceptualised this free experimentation along two strands of player archetypes, which then in turn determined the design decisions they made. The studio internally referred to these as the ‘pioneer’ and the ‘engineer’ player, as game designer Samantha Kalman recalled in a documentary:

We identified pretty early on that there are a couple of different archetypes for players. We talked a lot internally about the pioneer who wants to focus on exploring, and the engineer player that wants to focus on building. Because the game requires both exploring and building, that sort of evolved into “well, the pioneer must do a little engineering to be able to explore and vice versa [...] We spent some time trying to design two different games, like, “let’s have *Astroneer*: the pioneer game and *Astroneer*: the engineer game” and then sort of, after some time and encountering difficulties with that approach, we did come to the conclusion that the real *Astroneer* experience is sort of wavering back and forth.

(Noclip 2019: n.p.)

On the one hand, ‘*Astroneer*: the pioneer game’ forecast a theme of exploration, which would potentially translate into spatial-explorative agency affordances. On the other hand, designing ‘*Astroneer*: the engineer game’, as per Kalman’s words, would concentrate on affording agency in the configurative-constructive dimension, by means of research and base building.<sup>109</sup> However, Kalman also acknowledged that there would be a flux in between the two, and certain goals players would set for themselves require alternating between these two archetypal modes of playing the game. Fellow game designer Aaron Biddlecom’s words suggest this was because they wanted to give as much agency to the player as possible:

We think the game is most interesting when the player has as much agency as possible over how they tackle a given challenge. And so as much as possible we don't wanna give you pre-baked solutions to things. We wanna give you the pieces and the tools so that you can build up your toolbox and use those tools dynamically as you encounter a problem, in a different way each time.

(System Era 2017d: n.p.)

Wanting to design a game where the player can set their own goals would contribute to a fluidity in difficulty levels, which would then alleviate constraint on avatar action in the temporal-ergodic dimension by giving the player/avatar the power to tweak how long they take to perform certain tasks, and also selectively choose which challenges they want to engage with. Although it is not discussed in terms of this terminology specifically, with such freedom, the possibility space for dramatic agency to be realised could also be significant: by creating such a ludic environment, there would be plenty of opportunity for player stories to be realised that are highly unique to the individual gameplay session. In summary, then, we can say that System Era's developers seemed to have conceptualised agency as a synonym for creative freedom, playful experimentation reminiscent of child's play and physical toys, and the power to tailor the level of challenge to their preference. Such design intention revolving around the notion of playfulness therefore implies that player agency would be afforded to a high degree across all dimensions.

These themes in design priorities were also interlaced in the way the studio promoted the game. System Era developers attended numerous expos and conventions where they made playable demo version available to anyone who walked by, which generated hype for the experience of playing the game. They also used trailers, many of which turned out to be award-winning. Typically, as we have also seen in the previous two

case study chapters, videogames, especially AAA ones, have cinematic trailers edited and presented in a way similar to those of the film trailers. They tend to include storylines and spoken dialogue, possibly using footage captured in-engine, but not quite showing what the actual gameplay would look like (Cassidy 2011: 298). *Astroneer* trailers are a different story. *Astroneer*'s trailers, however, were largely comprised of footage captured by developers, and in some instances, by players themselves who sent in footage they had recorded during the lengthy Early Access period of the game. The resultant trailers all had a humorous, self-referential, and often self-deprecating tone; were accompanied by endearing, cartoon-like sound design and soundtracks bringing space fantasy nostalgia to mind; and featured tiny astronereers gleefully running around exploring, slotting together base-building units, and reacting to all sorts of situations via emotes often based on internet memes and pop culture references. For instance, the 'Basebuilding Update Trailer' (System Era 2018b), which introduced the new modular base building mechanics and a new UI for the research catalogue, was a supercut of gameplay footage, where a song-like rhythm and melody was created from the in-game sound effects of clicking, snapping, and plonking, as several astronereers assembled various platforms and modules, and browsed the research database. This made the whole process of unpacking and assembling units seem like a musical performance and dance of some sort.

Vollans, drawing on Hesford (2013), argues that videogame trailers 'perform the experience of their products rather than presenting that experience' (Vollans, 2017: 124). In this vein, *Astroneer*'s trailers perform the experience of playfulness afforded by the game's design. They still contain narratives—such as an astronereer reminiscing about all the ways the rover used to be buggy before sitting in the new rover for the

first time in the rover update trailer (see Figure 77), or the astronereers controlling each other through a mock screen with a controller in the PlayStation 4 announcement trailer (see Figure 78). The trailers placed less emphasis on a compelling designer story or photorealistic visuals often presented by AAA counterparts, and more on the myriad ways in which the design affordances of each update package further facilitate playfulness.



Figure 77: An astronereer sitting behind the wheel in the Rover Trailer (System Era 2018c).



Figure 78: An astronereer controlling another in the PlayStation4 Announcement Trailer (System Era 2019).

So far, this chapter has looked at what independence could mean in the context of videogames and outlined the main characteristics of independent design by focusing on recurrent trends since the mid-2000s, when the label re-emerged. It then discussed how System Era positioned themselves against the background and history of independent games. By looking at three games System Era developers named as inspiration, I showed that part of design intention was to design a procedurally generated sandbox game, which has implications for how player action would be afforded in the spatial-explorative and configurative-constructive dimension. As development progressed and the game launched in Early Access, with monthly updates being published for nearly two years, the theme of playfulness emerged as a dominant direction in design intention. Developers aimed to facilitate by the introduction of features such as LEGO-like modularity and a diegetic interface. The game was designed with two player archetypes in mind: the game for pioneer players would emphasise and incentivise exploration thereby enabling spatial-explorative agency to manifest, while the game for engineer players would afford player action in terms of crafting and building, opening up the possibility space for configurative-constructive agency. Following System Era developers' discussions of their work, I argued that such conceptualisation would not hold up in practice, only if they also allowed for the two ways of playing the game to be intertwined, thereby enabling the realisation of dramatic agency. Developers saw this as enabling the player to tailor challenge levels to their preference, thus creating a different experience of agency afforded by temporal-ergodic agency mechanics. In the textual analysis below, I will interrogate *Astroneer*'s game text to explore how playful design was achieved, and what that meant for player agency as afforded by the game's design.

## Textual Analysis of *Astroneer*

*Beep boop beeboop.*

Astroneer

I have concluded from the paratextual analysis that the design intention revolving around playfulness would likely translate into actual design by affording agency predominantly in the spatial-explorative, temporal-ergodic, and configurative-constructive dimension; and that although the intention to afford agency in the narrative-dramatic dimension was not discussed explicitly, the main themes in design intention could potentially lead to narratively charged sequences of events to manifest. In the following textual analysis, I will look at how the game's design works towards these goals. The textual analysis will concern itself with the overall game design and game mechanics present in the launch version of the game, released January 2019, titled *Astroneer 1.0*. Since then, several content updates and patches were released, and are planned to be released in the future. Some of these introduce new objects, like storage units or lights in the 'Summer Update'; time-sensitive events, such as a temporarily discoverable model of the Eagle on in-game moons in celebration of the Apollo anniversary; or new game mechanics, such as flying with jetpacks, or the ability to capture in-game photos in the 'Exploration Update' (see SES\_dev 2019). Wanting to make critical observations about a subject in such flux raises the challenge of what Elizabeth Evans calls 'instant history', or 'the value of charting a moment within a period of change' (Evans 2011: 79). While these updates add a great deal to the playing experience, they do not fundamentally change the game's core gameplay, which is why the analysis below focuses on the *Astroneer 1.0* release alone.

The textual analysis is split into three sections according to how developers conceptualised the types of engagement preferred by player archetypes, as conceptualised by System Era's designers. As previously pointed out, dimensions of agency can hardly be identified in complete isolation. In practice, there is always some degree of interrelation between mechanics. For instance, in *Astroneer*, the various suits available to dress the avatar in enable agency both in the spatial-explorative and configurative-constructive dimension, due to the fact that their availability depends on how much of planets' surfaces have been explored, and what achievements have been unlocked. Similarly, on the avatar, there are two tools that enable agency to manifest in both the spatial-explorative and configurative-constructive dimension. These are the 'Terrain Tool' (see Figure 79), which is a multifunctional terraforming tool, and the 'Backpack', which functions as the avatar's inventory. The 'Terrain Tool' is based on a simple idea: it can Hoover up or flatten terrain, and provided the avatar has a canister on them, it can spew out the soil thus collected. It can then further be configured with the addition of modifications, or 'Mods' for short (which is a game mechanic intrinsic to the game, not a player-added modification), which either improve its hoovering function, or introduce further functions. Some Mods impact the scope of terraforming ('Narrow' and 'Wide Mods'), others improve speed and efficiency ('Boost Mod'), and there are also drills of different strength that enable the avatar to dig through harder terrain ('Drill Mods 1, 2, and 3'). On the one hand, the 'Terrain Tool' affords spatial-explorative agency: once equipped with a 'Canister', it allows the player to Hoover up terrain which it can then spew back out, thus allowing the player to alter the level layout. From makeshift paths and bridges over ravines to laboriously perfected underground ramp systems, it puts up no boundaries to the player's desire to mould their terrain, much like Play-Doh. On the other hand, the



‘Terrain Tool’ is the key to unlocking the possibility space to crafting and base building, thereby supporting agency in the configurative-constructive dimension. It is with the ‘Terrain Tool’ that the player can mine resources, which is the first step towards progress.



Figure 79: ‘Terrain Tool’ mining materials in *Astroneer*.

While the examples above clearly demonstrate a coopertion between agency dimensions, it is nonetheless productive to sift the game’s design features and mechanics through the sieve of the heuristic framework, as by doing so we can get closer to understanding how free, creative play can be facilitated by a game’s design.

#### Spatial-Explorative Agency in *Astroneer*

As discussed in the paratextual analysis, System Era’s designers approached their task by theorising different player types to enjoy different gameplay experiences. The first one they called the ‘pioneer’, whose primary activities would be connected to exploration. Filtering game mechanics according to this player archetype we can look at how avatar action is afforded in the game in the spatial-explorative dimension.

Compared to *Uncharted 4*'s Nathan Drake and *Andromeda*'s Ryder, the movement affordances of *Astroneer*'s avatars are comparatively limited. First off, all avatar movement depends upon a steady access to 'Oxygen'. *Astroneer*'s planets are all hostile, meaning the avatar must always be connected to an oxygen generator, or 'Oxygenator', for short. Tethers help build networks with oxygen access, while 'Oxygen Tanks' on the avatar supply a limited amount of oxygen, thus allowing some brief excursions into areas with no tethers. There is no crouching, climbing ledges, dodging bullets, or stealth. The avatar can move forwards, backwards, left, and right in the 3D space, as well as walk, sprint, jump, slide down slopes, and eventually, drive vehicles (see Figure 80).



Figure 80: 'Large Rover' and 'Buggy' from two ends of the vehicle size spectrum in *Astroneer*.

As the paratextual analysis showed, exploration was one of the main features the developers focused on, and indeed, there are many ways in which the game's design not only enables, but incentivises this activity. There are altogether seven planet types created by System Era: 'Terran', 'Terran Moon', 'Arid', 'Exotic', 'Exotic Moon',

‘Tundra’, and ‘Radiated’. In *Astroneer*, each planet type generates one particular planet at the beginning of a new game, though there being planet types foreshadows that there may be further planets to come in the future. The currently generated seven planets are ‘Sylva’, ‘Desolo’, ‘Calidor’, ‘Vesania’, ‘Novus’, ‘Glacio’, and ‘Atrox’, respectively. Besides differing widely in visual terms, with surface and underground colour palettes ranging from serene pastels to popping primaries, certain other properties of each planet type are also determined by designers prior to procedural generation. For example, on medium difficulty planet ‘Vesania’, the availability of resources, general features like atmosphere or terrain, and options for harvesting power are locked in in every round of generation (see Figure 81). These variables allow the player/avatar to tailor their exploration efforts to their preference, balancing the need for a certain resource, the likelihood of finding that resource, and the difficulty of terrain. It is perfectly feasible to stay on one planet for quite a long time. Interplanetary travel becomes necessary only when certain planet-specific resources need to be acquired, such as ‘Helium’ from the very hard planet ‘Atrox’, which is needed to craft a late game energy generator device called ‘Radioisotope Thermoelectric Generator’.



Figures 81: Page from the one of few non-diegetic interfaces:  
Astropedia's planet descriptions for 'Vesania'.

*Astroneer*'s planets are procedurally generated, which means that all these celestial bodies will always be built from scratch at the launch of a new game, with the abovementioned initial properties definitely making an appearance on each generation. While there is a strong procedural element to level design, planet generation is also predetermined insofar as the planet-specific details are concerned. As Engineer Zafir Hoque explained:

On the technical side we take two general rules of Perlin & Billow noise and blend them using artistic discretion based on play-tests. When the player has explored for a bit and has enough experience to leave the home planet, other planets then use these noise functions in different ways to create more difficult and varied terrain. In this way, we are combining simpler general rules to provide a more tuned experience.

(qtd. in Bradley 2018: n.p.)

For instance, on the starting planet ‘Sylva’, surface biomes include purple forests (see Figure 82), mountains, ravines and green plains (see Figure 83), while underground there are rock formations, different looking flora and giant mushroom forests.



Figure 82: Forest on planet Sylva in *Astroneer*.



Figures 83: Grassland on planet Sylva in *Astroneer*.

Not only are planet surfaces generated procedurally, but the underground layers as well. All planets and moons have similarly structured terrain in that they are divided



into drillable layers from mantle to core, and each have different values for, amongst others, colour, thickness, scarcity of resources (to be discussed in the next subsection), biomes, hazards, and gravitational force. These values have various degrees of influence on how player agency as expressed via avatar action is afforded or limited in the spatial-explorative dimension (see Figure 84).



Figure 84: Planet cut in half, as shown in a developer vlog (System Era 2018a).

It is easier to dig terrain closer to the surface, but the resources are more valuable the deeper astronereers venture. The deeper the astronereer digs into a planet's core, the lower gravitational force is, meaning that what were simple hops on a planet's surface turn into extended periods of floating mid-air near-uncontrollably. Biomes and hazards are either targets, thus enabling, or obstacles, thus constraining, avatar action. Such diverse level design incentivises the player to move further out from a given planet's starting base, as well as to dig deep in the ground, to seek out new areas with discoverable items and resources, thereby providing a broad possibility space for spatial-explorative agency to emerge.

Planets being procedurally generated in this manner increases the game's replayability, as besides presence and likelihood of appearance, the exact location of resources, hazards, landing zones, and other such things are not designed to be present at the same location, in the same size, or in the same quantity for each generated planet. There is always going to be forests on 'Sylva', forests will always have purple and blue terrain, and there will always be a possibility for 'Ammonium' to be found in those forests, but the exact nature of where and how to find 'Ammonium' changes with each planet generation.

There is more than harvestable resources and interesting flora that can be found in the game spaces. While there is no fauna to speak of, no aliens to shoot, there are hostile plants who attack in defence if the avatar is within a set proximity. All bearing quirky names like 'Spinelilies', 'Bouncevines', or 'Thistlewhips', they will snap, spew poison fluid, or emit toxic clouds in the general direction of the avatar, should they venture too close. These attacks can be tackled less in the vein of the science fiction shooter tradition of laser guns, more driven by the pacifist attitude of scientists: by digging them out, and then replanting the seeds for decoration purposes, or to research them. However, should the avatar find themselves too close to such flora, they could get hurt in the shockwave triggered by the plants defence mechanism (see Figure 85). The element of randomisation in the location of these environmental hazards has a twofold impact on the player's explorative agency: they may incentivise it (for example, if the goal is to harvest seeds and plant a garden nearer to base), or they may hamstring the desire to wander off (for example, they may be present in such high concentration around a singular path across a ravine that they cannot be dug up one at a time, therefore presenting a genuine risk to the avatar's health).

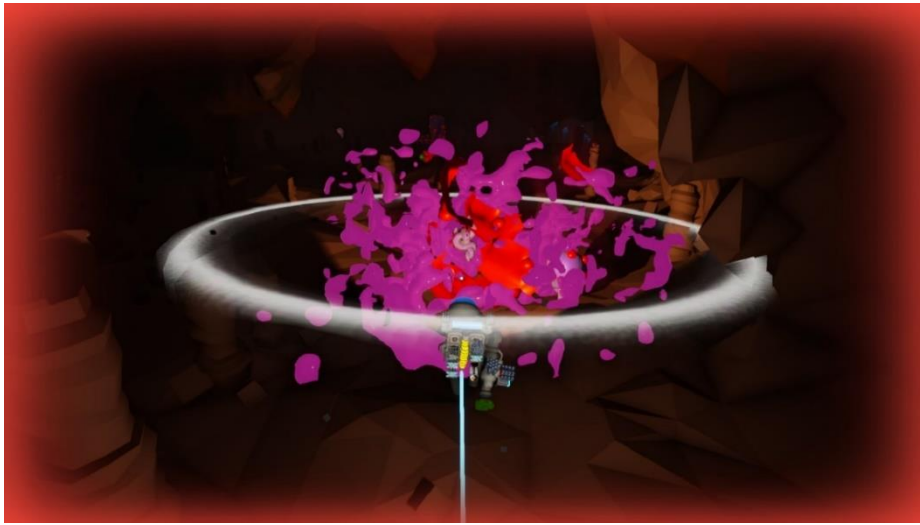


Figure 85: Explosive plant attack in *Astroneer*.

There are also collectibles and other discoveries that provide ample reason to explore *Astroneer*'s planets. For example, research items can be found both above and underground, either lying around as carryable rock-like or organic formations, or locked in triangular pods called 'EXO Dynamics Research Aid', which require the player to insert a specific resource into it before they can open. Furthermore, there are small salvageable objects like a solar array, damaged base building items like platforms (see Figure 86), broken down rovers, or as large as a crashed satellite. These can be transported back to the base to be turned into 'Scrap' (to be discussed below). They also tend to contain consumable resources like 'Oxygen Filters' or 'Power Cells'. There are also a few extra rare items hidden on planets, which players can only find out from forums and hype that the developers themselves lean into. One such item is the mythical 'Zebra Ball', a geometrically perfect globe that does not have much function besides emitting a faint glow.<sup>110</sup> Much like the various types of terrains, biomes, and hazards, these discoverables are also procedurally generated, and as such,



they each serve to incentivise exploration of game spaces both above and below the planets' surfaces.



Figure 86: Debris from a platform in *Astroneer*.

In terms of navigating the game's spaces, the primary affordance at the player/avatar's disposal is the network of 'Tether' lines that can be crafted and laid down to provide steady access to oxygen wherever the astroneer wanders. These serve like trails of crumbs scattered in a labyrinth, eventually leading back to the starting base or oxygen source placed on the planet by the player, thereby supporting free-roaming within the game spaces. Besides this tool, while there is no map or HUD overlay to speak of, there are other, more traditional means of navigational functions offered by the game's design. Looking up from every planet's surface, all other celestial bodies are visible in the sky, quite like they would be looking up at the night sky on Earth. If the mouse hovers over the avatar, a compass reticle pops up, further assisting with navigation. The player can also collect soil and erect artificial towers as pointers, or research the 'Beacon' to use as means of navigation. These all facilitate a submersion in the joy of exploration in beautifully designed landscapes, but the main reason for exploring

*Astroneer*'s vast lands is to find resources. Therefore I will next look at the game mechanics which make up what designers refer to as '*Astroneer*: The Engineer Game', and how they afford and limit player agency.

#### Configurative-Constructive Agency in *Astroneer*

Besides exploration, the other game model System Era's developers kept in mind was base building and crafting, which developers aimed for with the 'engineer' player archetype. As mentioned at the beginning of the textual analysis, the main function of the 'Terrain Tool' is to terraform, which is a means of exercising agency in the spatial-explorative dimension, but it also is the way raw, unrefined resources can be gathered. When supplied with a 'Canister', the 'Terrain Tool' will store hoovered up soil, which then can be put through the 'Soil Centrifuge' as a means of refining for finer resources available on the planet. There are raw minerals that can be mined freely above or over ground, some of which can be further refined by smelting. There are naturally occurring gases that can be harvested from the atmosphere, and last but not least these raw and refined resources can be combined with gases to make even more refined materials. Besides the 'Terrain Tool', resources can be mined with the 'Rover' and its attachable 'Drills', as well as the 'Crane'. Some resources collected thus are useful in and of themselves, such as 'Compound' or 'Resin' to make basic items like 'Oxygen Filters' or 'Canister', while others can be refined by the Smelter, the 'Atmospheric Condenser' and the 'Chemistry Lab'.

Altogether there are 42 resources that can be gathered, refined, and combined in *Astroneer*. Of these, the ones that can be mined on every planet type are, in no particular order: 'Compound', 'Resin', 'Organic', 'Ammonium', 'Quartz', 'Graphite', 'Clay', 'Laterite', and 'Astronium'. Using these, most items required to set up a base

as well as venture out to look for further resources can be crafted from the ‘Backpack’, as well as the two things required to take off from any planet: a ‘Small Shuttle’, and a disposable ‘Solid-Fuel Thruster’. Once the avatar leaves the starting planet to explore other ones, rarer resources are made available, which enable more complex recipes to be created. Each planet type has further resources which are either specific to them, or occur on multiple planets. For instance, ‘Tungsten’, a smelted refinement of ‘Wolframite’ found on ‘Desolo’ and ‘Calidor’, is necessary for the printing of the ‘Chemistry Lab’ and the ‘Medium Solar’ panel, which are mid-game items, whereas ‘Hematite’ from ‘Novus’ and ‘Glacio’ yields ‘Iron’ after smelting, which is the basic component, amongst many other things, of the ‘Atmospheric Condenser’, which is a top tier object capable of harvesting gases from a planet’s atmosphere. As a last resort of resource accumulation, for it is rather energy expensive, discoverables can be dragged back to the base to be put through ‘Scrappers’, which break them down into ‘Scrap’, to be traded at the ‘Trade Station’ for a resource of choice.

While such listing of most (not even all) things consumable may offer a dry reading, it is nonetheless essential to give a glimpse into the detail-richness and complexity of *Astroneer*’s resource bank. Resource management is one of the core mechanics of *Astroneer*, one which affords agency in the configurative-constructive dimension by incentivising the player to transform the game’s terrain not only for traversal reasons, but also to mine resources. In the process of mining, the avatar deforms terrain, thereby effectively changing the very matter of the game spaces. There being so many resources and so many mechanics for combining them (see Figure 87), in different ways further expands the possibility space for agency to manifest in this dimension. While in survival games, the mere repetition of tasks such as chopping wood

contributes to a mesmerising game-feel facilitated by rhythmic interactions (Costello 2018), and even though *Astroneer*'s sound design does reward such actions with satisfying beep-boop, the mere gathering of resources would not make for particularly engaging gameplay, unless the player in question has a fascination with accumulating things. Indeed, in *Astroneer*, resources serve a variety of purposes that in general, and rather simple terms, could be described as building things: small, portable objects, means of transport, platforms, machinery, all of which ultimately make up bases. The construction of all these happens not via manual labour, but by using 3D printers, thereby affording constructive agency.



Figure 87: Astroneer's resources and printable objects cheat sheet posted on Reddit in March 2019, before most updates (kilavam 2019).

As I briefly mentioned earlier, one of *Astroneer*'s key features relevant to agency in the configurative-constructive dimension is modularity: platforms, devices, and other machinery can be assembled, disassembled, stacked, and dragged in any shape the player desires it to be done, such as a circular layout of platforms and devices, with a power system built on an overhanging cliff (see Figure 88). As long as there are cables connected to plugs ensuring a secure flow of power from generator to device, the opportunities are near-endless.



Figure 88: A circularly arranged base layout in *Astroneer*.

All in-game objects, including printable base-building components, are split into four tiers, depending on how many slots they take up, and whether they can be carried by hand, or require other modes of transport. The four tiers are, rather self-explanatorily, 'Small', 'Medium', 'Large', and 'Extra Large'. Some, like the 'Beacon' mentioned above, are small objects: they require one ingredient to print, take up one slot, and they fit into, and can be printed from, the 'Backpack'. 'Medium' tier objects, such as 'Medium Storage', require two ingredients, can be carried by hand, and can be printed from the 'Small Printer'. 'Large' objects require three ingredients, cannot be carried

by hand, and so on. *Astroneer* does not have buildings per se, but instead the avatar can print Platforms of various shapes and sizes, arrange them in whatever formation they desire, and place functional objects like the ‘Smelter’ or the ‘Chemistry Lab’ on them.

However, not all such objects are available to print from the start, and they do not work immediately upon having been placed on the platforms. While the game does not pressure players to follow any specific path or pace, there is progression available to those who choose to pursue it, and it hinges on two currencies: ‘Bytes’ and ‘Power’. ‘Bytes’ are the research currency, which can be accumulated by scanning a variety of different medium-sized objects called ‘Research Items’ in the ‘Research Chamber’, yielding varying amounts of ‘Bytes’ depending on where they were found. Those lying around the surface would have lower ‘Byte’ counts attached to them, while the deeper underground the avatar goes, the more the ‘Byte’ count rises. Thus, reward scales with level of challenge. With enough bytes, recipes can be unlocked in the ‘Research Catalog’ attached to the ‘Backpack’. The higher tier the researchable object is, the more ‘Byte’-expensive it will be. Thus, resource gathering enables crafting and building, which then in turn adds further layers to how *Astroneer*’s design affords agency in the configurative-constructive dimension.

What ‘Oxygen’ is to spatial-explorative agency, ‘Power’ is to configurative-constructive. Besides the ‘Backpack’ and the ‘Shelter’ which have their own steady supply of power, everything else in *Astroneer* requires power. Much like ‘Oxygen’, it cannot be scooped up with the ‘Terrain Tool’ or dragged back to the base, it has to be generated. There are many ways in which power can be harnessed and managed:

power can be fossil fuel-like (burning ‘Organic’ on the ‘Small Generator’, or using ‘Carbon’ on the ‘Medium Generator’), or renewable-like (solar and wind panels and turbines), and eventually, endlessly supplied (from the ‘Radioisotope Thermoelectric Generator’). It can also be stored in consumables of various sizes. Base building modules need to be powered to be operational, objects must be placed on ‘Platforms’ in order to connect to power, and ‘Platforms’ need to be connected to a power source (generator or storage), in order to power the modules placed on them. Each power generator and storage item has a set amount of ‘Power’ it can produce, measured in ‘Units’ and represented by yellow bars, and thus power management becomes the absolute necessary requisite of configurative-constructive agency: without ‘Power’, there is no mining, no building, and no operating of anything. Further complexity is introduced by the possibility to build power networks, using directional cables, extenders, splitters, and the like. ‘Bytes’ and ‘Power’ are two currencies that enable avatar action indirectly. They enable the option to tailor circumstances for avatar action to the player’s preference, such as different base layouts and functions. Base size and efficiency depend on careful management of these currencies, and so does its profile. It could focus on mining operations near a resource deposit, could be a research outpost in the wilderness, or could be dedicated to refinement and manufacturing. Thus, these two currencies indirectly support the manifestation of agency in the configurative-constructive dimension. But the freedom granted by *Astroneer*’s design certainly does not stop here.

The fact that there is no single ‘right’ way of building a base enables the creative freedom required for the playful experience that ‘throw[s] off constraint’ (Millar 1968: 21) to be realised. As long as modules are on powered platforms, they will work. There



are no limitations to how bases should look, no preferred paths in crafting or power management, and the modularity of building allows for the LEGO-like assembly of base and vehicle modules. This, complimented with the terraforming ability of the ‘Terrain Tool’, really means no boundaries to both the aesthetic and functional construction of bases, whether they be stationary, or moving. An aerial megabase can be constructed by simply erecting towers from hoovered up soil, then using some more soil to make a flat platform on top, and set up all equipment there (see Figure 89. Similarly, to make a sinister underground mining station one need only pick a cave, flatten its floor, set up storage and printing facilities, power up with ‘Large Batteries’ or a ‘Radioisotope Thermoelectric Generator’, and get working. Whatever the player builds does not even have to be strictly speaking functional, because the game allows them to simply build—thus affording agency in the configurative-constructive dimension.



Figure 89: Tower base in *Astroneer* (luckyluuk28 2019).

### Temporal-Ergodic and Narrative-Dramatic Agency in *Astroneer*

In games where some, if not all, goals are not clearly defined and the player can set them for themselves, a playful attitude is required. Salen and Zimmerman (2004: 304) conceptualise three levels of playful activity, and their relation to each other:

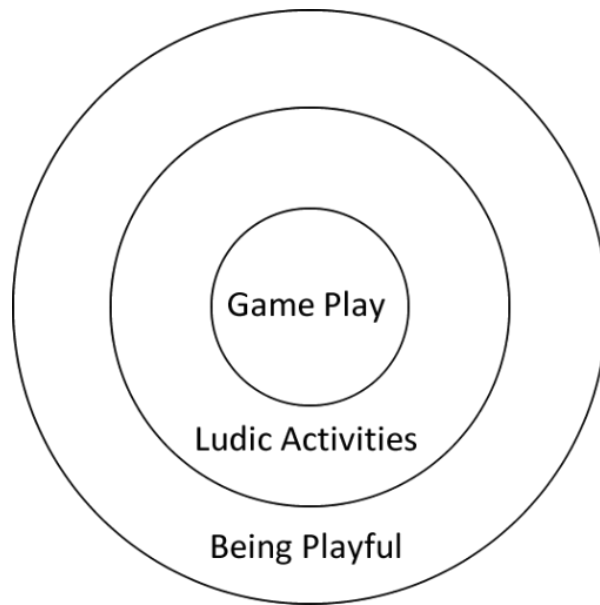


Figure 90: Three categories of play by Salen and Zimmerman (2004: 304).

They argue that ‘gameplay’ is the most narrow kind of activity where the players adhere to the clearly set rules of a game, ‘ludic activities’ they define as those that may not necessarily take place within the confines of a clearly defined game, such as animals playing with toys, and ‘being playful’ is the broadest category that encompasses not only the activity of play, but also the attitude, or ‘spirit’ of play (Salen and Zimmerman 2004: 303). Indeed, the distinction made between play as an activity and a playful state of mind is commonly drawn in studies of play (see, e.g., Bateson and Martin 2013; Sicart 2014: 22), but a perhaps even more encompassing definition is drawn up by Stenros (2014) who defines ‘playfulness’ as a

metamotivational state, or an attitude [...] It is innate to the player, and characterised as being voluntary, spontaneous, and wherein the activity itself

is its primary goal. It is present in the moment and can be sparked in an instant, change drastically at any time, and can disappear without warning. Although it is possible to foster and harness playfulness, it cannot be fully tamed. [...] Playfulness does not have a moral dimension; it is neither good nor bad in itself – it simply is.

(Stenros 2015: 77)

Not only does this framing of playfulness acknowledge the conceptual distinction between play as an activity and playfulness as a mindset, it also broadens out the definition so that it covers any activity governed by a playful attitude, regardless of duration, the confirmation of other players or spectators, or even universal values such as ‘good’ or ‘bad’ play. In this way, Stenros’ understanding of playfulness encompasses both categories of ‘ludic activities’ and ‘being playful’ proposed by Salen and Zimmerman, and more.

There is a condition to play in *Astroneer*, namely survival, but as long as the avatar is connected to oxygen, there is no pressure imposed by the game’s mechanics to do anything whatsoever. As Game Designer Samantha Kalman phrased it, the ‘*Astroneer* experience is sort of wavering back and forth’ (Noclip 2019: n.p.) between the two player archetypes of ‘pioneer’ and ‘engineer’, depending on what specific goal the players set themselves. Accordingly, the kind of challenge posed by the game’s design depends on what goal the player wishes to pursue. Such goals can be anything: gathering resource from a nearby field, finding a way to explore underground caves, or some more inventive activities that may appear less in tune with the theme of the game, such as making a chess board with harvestable minerals as figurines. As such, and in Stenros’ words, *Astroneer*’s design does not aspire to tame, but instead to ‘foster

and harness' playfulness, and consequently, agency. We can better understand this through the analytical dimensions of temporal-ergodic and narrative-dramatic agency.

Before the 1.0 release, there were player-constructed challenges circulating on forums for anyone keen to take them on.<sup>111</sup> With the release of *Astroneer 1.0* came the introduction of 'Achievements', which is an optional game mechanic integrated into the distributor platform offering unlockable plaques for completing certain tasks. They are accessible not via in-game interfaces, but the player has to temporarily leave the game to view them in the distributor's superimposed menus. The game's design does not prioritise amongst the achievements. Players can either pick one and follow their chosen goal or accidentally unlock them as they play. This mechanic is very common in similarly structured survival-crafting games, such as *Don't Starve* (Klei 2013) or *Rust* (Facepunch 2013). Besides the Achievement being marked as unlocked on the player's Steam, Xbox, or PlayStation account, they do not come with any other tangible rewards. There are over 50 such challenges in *Astroneer 1.0*, and they all have quirky titles (see Figure 91). Some are awarded for something as mundane as doing things for the first time, for instance 'One Small Step' is for visiting 'Desolo' for the first time, or 'Making a New Friend' is for planting a seed. Others are awarded for happy accidents, such as 'Where We're Going, We Don't Need Roads' for driving an airborne rover for 10 seconds, or 'Hang 10-Squared' for sliding uninterrupted for 10 seconds. Some Achievements even go meta: 'EXO Dynamics Outreach Advocate' is unlocked after the player having spent a minimum of four hours in multiplayer, or 'Research Scientist' goes to those gaining over 100,000 'Bytes' across all games played from the same account.

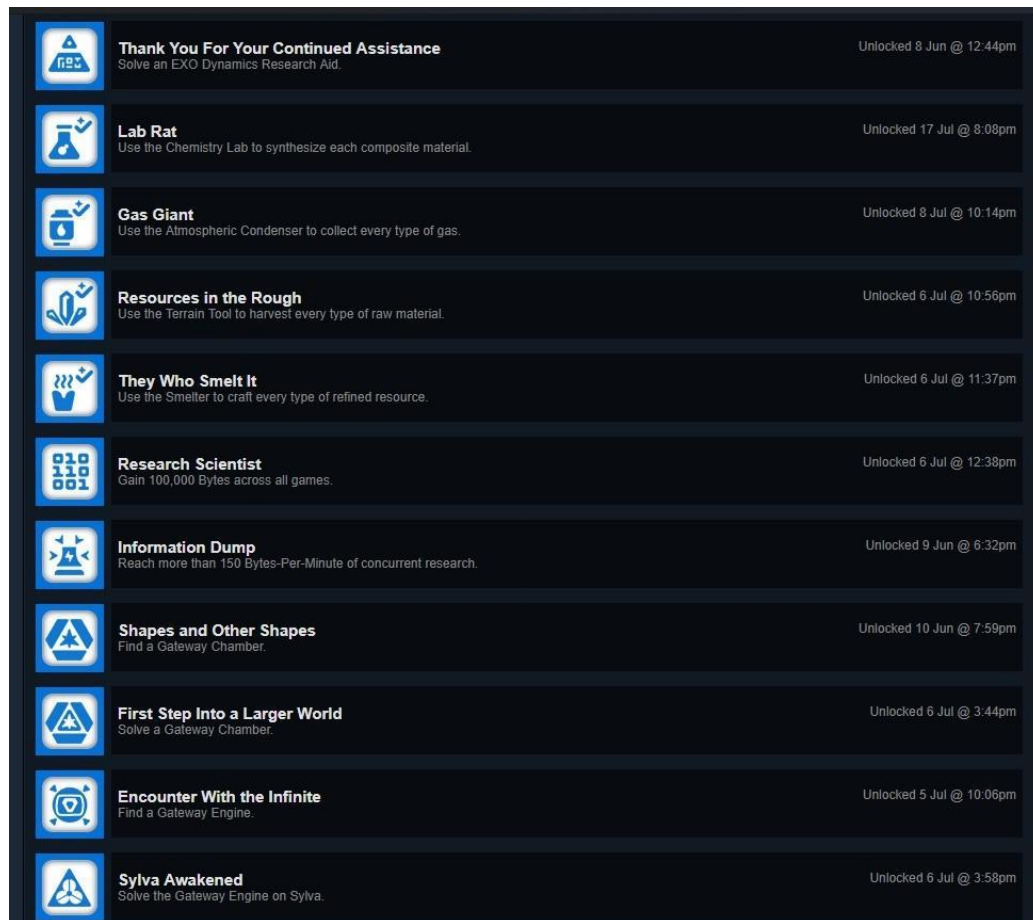


Figure 91: Some Achievements in *Astroneer*, as displayed on Steam.

It is in the possibility space generated by the optionality of these achievements that *Astroneer* most saliently affords temporal-ergodic agency. They may impose time-critical challenges of various complexities onto the player, but they can just as easily be ignored. As a result, *Astroneer*'s difficulty curve is rather malleable. There is nothing in the game mechanics to limit time spent doing menial tasks such as mining or running around freely on 'Sylva'. These tasks are influenced by temporal structures in the game, such as the day-night cycle (solar power can only be harvested in the daylight), or how much power there is in the 'Terrain Tool', and how long it takes to recharge it, but they are not time-critical as such. It is entirely up to the player how much challenge they want to opt in to. That being said, there is some degree of pre-

determination in how difficulty is scaled: each planet has a difficulty level associated with it, and the rarer the resources on it are, the higher this difficulty is. The more complex the recipes are, the higher tier base building items can be printed, which in turn enable the seeking out of even higher degree of challenge. Thus, in *Astroneer*, agency in the temporal-ergodic dimension is jointly supported by spatial-explorative and configurative-constructive agency mechanics, and vice versa.

The same optionality applies to whatever predetermined narrative content there is in the game.<sup>112</sup> At first glance, there is very little in the way of such design features. New playthroughs begin with a highly scripted sequence of events that show a landing capsule transporting an astroneer departing a space station and entering a planet's atmosphere, with the player only being capable of moving the virtual camera around before the shuttle lands and they take full control of their avatar. In addition, throughout any given playthrough, the various instances of interplanetary travel that the game mechanics allow for are relayed via similarly scripted sequences of events showing the avatar's take-off and landing. The player/avatar can also unlock cross-planetary transporter beams as part of *Astroneer*'s endgame (see Figure 92), which is rewarded with a more traditional filmic cut-scene (see Figure 93).



Figure 92: Unlocking a gateway chamber in *Astroneer*.

Adopting the audiovisual vocabulary of cinema in traditional non-interactive fashion, the cut-scene shows the player's avatar at a crossroads: entering a cosmic gate into the unknown in the spirit of adventure, or awaiting a familiar space vessel, presumably a rescue ship, nearing their location. The cut-scene ends with the astronereer stepping into the unknown, which triggers another astronereer being printed aboard the spaceship, suggesting that astronereers are not humans, but artificial creations designed to pursue a corporation's objective. Finally, the player/avatar can find debris that was presumably left behind on each of the planets by previous astronereers and thus also hints at a broader backstory.

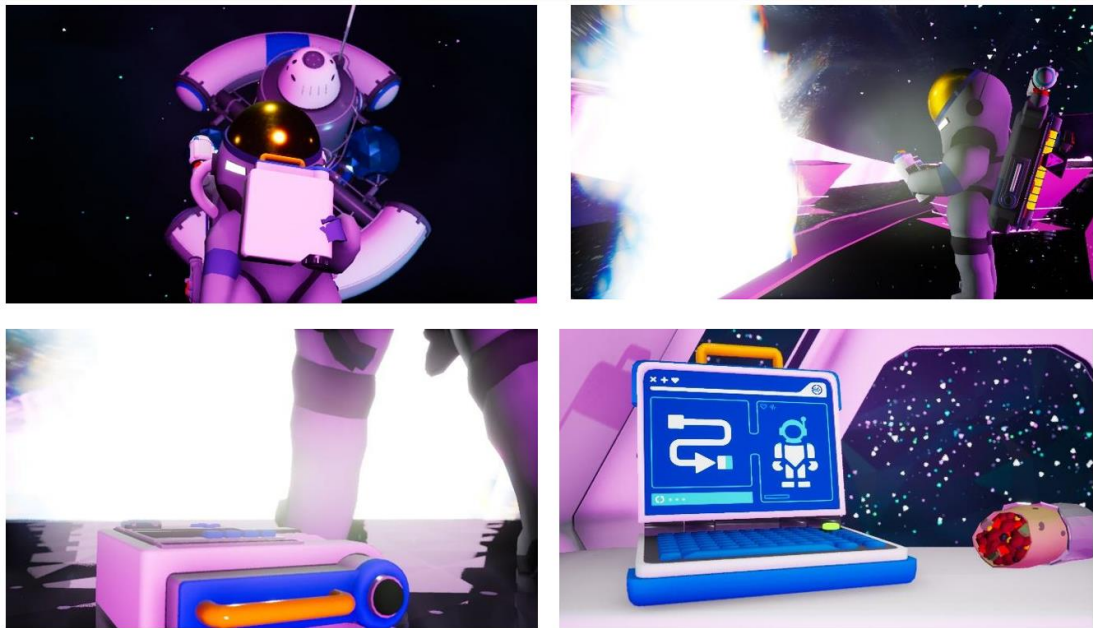


Figure 93: Screenshots from the final cut-scene in *Astroneer*.

Throughout the game, there are no explicit text boxes, lore menus, or databases to chronicle these adventures past. In fact, there is very little text (only in the rudimentary menu cataloguing all resources and planet descriptions), and no spoken word whatsoever, in *Astroneer*. Nothing about the reasons for the presence of monoliths, space junk, or any deeper lore is relayed in the game except that they look visually different to other in-game objects, which implies alien origin. The order and means in which astroneers unlocks these chambers is not prescribed, or is, in other words nonlinear, meaning *Astroneer* does afford some narrative agency. What I want to focus on more, however, is how it affords dramatic agency.

*Astroneer* features a variety of animations to represent certain events that we could attribute a basic degree of eventfulness to, such as the avatar's death (see Figure 94). The avatar grabbing their throat as they run out of oxygen allows for the attribution of



at least some degree of narrativity to what would be considered primarily ludic events from a structural perspective.



Figure 94: Avatar suffocating in *Astroneer*.

More importantly, *Astroneer* affords dramatic agency on a bigger scale as well. The combination of agency affordances across dimensions can generate infinitely different emergent playthroughs, which in turn creates possibility space for a very high degree of dramatic agency to be realised—highest of the three case studies in this thesis. The player/avatar is almost entirely in control of creating their stories: they can set their own goals, which create narratives of different volumes and durations. If, say, they want to go to a hill on the horizon, all they need to do is mine some ‘Compound’, a commonly found resource, and print ‘Tether Poles’ from the printer in their ‘Backpack’, which allows them to traverse the surface with a safe supply of ‘Oxygen’. But if they want to make ‘NanoCarbon Alloy’, a complex chemical necessary for printing ‘Radioisotope Thermoelectric Generator’, the most powerful generator in the game, they are in for a longer adventure. They first need to travel to ‘Astrox’, the highest difficulty level planet and the only planet with ‘Helium’ in its atmosphere,

which is the necessary fuel for creating ‘NanoCarbon Alloy’. In order to be able to condense ‘Helium’ from ‘Astrox’, the player must build the biggest available shuttle, which would be able to carry a packaged up ‘Atmospheric Condenser’. The machine then would need to be supplied with sufficient energy, and ‘Astrox’ is very low in solar and wind power. In order to overcome this problem, large batteries must be printed, which require ‘Lithium’, available to mine on ‘Vesania’ or ‘Novus’. And the story goes on. The ‘Radioisotope Thermoelectric Generator’ is not a necessary and unavoidable obstacle to progress in the game. It is not even necessary for the game’s endgame, as there are many other ways to generate energy. It is an option. An expensive, slightly more efficient, but ultimately non-crucial option. Therefore, while the production chains are predetermined, their optionality affords emergent gameplay, and subsequently, dramatic agency.

When looking at the player community, one can easily find a variety of creative base camp building solutions that make rather ambitious use of the terrain tool, for example, tower bases or sky bases are common (see, e.g., Tactile Object 2019). Some players create intermedial references, such as the magical gauntlet of Thanos from the Marvel Cinematic Universe (see Man in a Van with a Plan 2019), while others create games within the game, such as an oversized chess board with various platforms and organic materials and minerals as pieces (see u65535 2019). Arguably, these kinds of player practices shift the focus from narrativity to creativity. In other words, *Astroneer*’s gameplay could be described as predominantly paidic (Caillois 1961) play. As long as the avatar is connected to oxygen, there is no pressure imposed by the game’s mechanics to do anything whatsoever. The playful wavering back and forth between exploration and crafting, and the flexibility to set their own goals, facilitates player

stories to emerge. It is because of the procedurally generated environment that creates a new and unique possibility space for exploration and a varied landscape of resources that each *Astroneer* playthrough is unique, and unlikely to be repeated. And it is because of this ability to pursue whatever goals the player sets themselves that *Astroneer*'s design makes possible the emergence of narratively meaningful content, which then, in turn, affords dramatic agency. While there is some predetermined 'designer story' in the Achievements and some hints at lore with the endgame cutscene, the large majority of *Astroneer* is all about the 'player story' emerging from the procedurally generated assets. In summary, *Astroneer* affords a low degree of narrative agency by nonlinear branching structures of the discoverable alien sites that can unlock interplanetary travel, and more importantly, affords a high degree of dramatic agency by encouraging playfulness.

## Conclusion

In this final case study chapter, I expanded the scope of the inquiry at the heart of this thesis by applying the heuristic framework to a very different production context and game design model when compared to the previous two chapters. System Era was chosen for two reasons. First, its founders all moved away from the AAA space, and offered articulate accounts about what changes this departure brought about both in terms of their working processes and in terms of their intentions for the game they set out to make. Accordingly, I had plenty of material to look through for insight into their workings. Second, said game, *Astroneer*, exemplifies a specific model of game design commonly referred to as survival crafting sandbox, which draws on very early videogame genres in its design, such as procedurally generated dungeon crawlers. In addition with technologies improving, evolved less in its visuals like AAA games did,

but more in terms of their game design. This made it an interestingly different candidate to showcase the analytical power of my heuristic framework.

The chapter first surveyed common connotations of the ‘independent’ label, and provided a brief history of milestone games standing out for their design innovations over the decades. This was done to sketch a background against which System Era, a new studio lacking a historical design ethos like Naughty Dog or BioWare, positioned themselves, which I called their founding ethos. Having identified inspirations for their game in the early years of development, I then moved on to interrogate post-Early Access-launch paratext in a quest to identify a more crystallised design intention, which I argued to be focusing on facilitating paidic play, and consequently, playfulness. In the textual analysis, I then connected this notion to agency being afforded in the spatial-explorative, configurative-constructive, and temporal-ergodic dimensions through mechanics facilitating free, unconstrained, experimental, creative play.

While these agency dimensions enable player stories to emerge, I showed that *Astroneer*’s design incentivises less a ‘write your own story’ kind of game, as there is not even a semblance of pressure to narrativize the experience. Instead, *Astroneer*’s overall design and its specific game mechanics enable, and more importantly, encourage a state of creative experimentation, curiosity, and playfulness. Besides the optional Achievements, there is a lack of a tangible reward system that would force time-critical decision making on to the player. Instead, the difficulty ceiling is in constant flux, depending on what goals players set themselves. While there is an argument to be made for how playfulness seemingly inherently affords dramatic

agency, precisely because of the high levels of other agency forms, the point I want to emphasise is that it is in the spatial-explorative and configurative-constructive dimensions that *Astroneer*'s design predominantly affords agency.

# Conclusion

Videogames have come far from merely being considered a more interactive version of films, and with the relentless march of technological advancement, the ways in which videogames engage their players in interaction will only become more complex. At the same time, the videogame market has also become increasingly saturated over the past decades, and so the marketing of videogames has simultaneously become more centred on highlighting how the given product will offer a player experience that grants even higher volumes, or even more distinct kinds, of player freedom. It is therefore important to examine not just how the games themselves can afford agency, but also how those who make them think about the issues around player freedom and facilitation or restriction thereof. The heuristic framework proposed in this thesis, and the subsequent case studies, addressed this dual perspective, and by doing so, demonstrated the complexity of agency within the current videogame landscape. With the research questions I asked how agency can be conceptualised in a way that is informed not only by scholarship but also by game design; what can be understood about agency design intention through observing the way videogame developers talk about their games; and how avatar-based games' design affords and constrains player action.

Whether the player is escorted along a linear path of progression signposted by level design and scripted events or is free to engage with the gameplay mechanics offered by the game in a chosen order has an impact on how their agency manifests. Equally, configurability of character appearance and skillset, as well as the gameworld affects the player's possibility of exerting agency, whereby these features allow the player

various degrees of designing the challenge, tailoring it to their preference. As a means of addressing these variables, in this thesis I framed agency as an affordance of game design. I examined how agency is conceptualised in different discourses surrounding videogames, as discussed in game studies, and as theorised by game design discourse. The findings in these parts were synthesised to create a multidimensional heuristic framework for conceptualising agency in avatar-based games. Game studios with a particular design focus that draw on ‘game design lineages’ (Bateman and Zagal 2018) were selected as case studies to demonstrate the analytical power of this framework, examining how agency is designed (textual analysis) and how designers discuss how it is designed (paratextual analysis). Such an approach facilitated a way of looking at game design which is informed by the vocabularies of theoretical and academic discussions concerning videogames, as well as the language used to refer to these phenomena by industry practitioners, therefore grounding abstract theory in production practices and discourses.

Chapter 1 drew on game design and game studies literature in order to develop a conceptualization of agency as the possibility space for avatar action, as afforded and limited by game design. I then distinguished between four dimensions in which player action can be realised, which, put simply, can be described as agency in space, in time, over customising the avatar and its surrounds, and as narratively meaningful action. I argued that avatar action in these dimensions can be observed according to the avatar’s function in the game being ludic or representational, and proceeded to further complicate how these two functions unfold in each dimension of agency. I first unpacked what forms the interplay between game spaces affording ludic and representational functions can take, and how it can sometimes lead to interesting

tensions. I called the possibility space for action determined by these interplays the spatial-explorative dimension of agency. Then, I focused on the two main ways the possibility space for action in time can be shaped. I called this the temporal-ergodic dimension, and argued that it can be shaped by game design: by discussing how avatar action afforded or constrained in time can be a means to present challenge; and how the ability to influence temporal structures can impact the possibility space for avatar action to be realised. Next, I unpacked how design features such as avatar attribute systems, in-game economies, or whether the power to alter terrain is granted can shape the possibility space for avatar action in what I called the configurative-constructive dimension. Lastly, I argued that narratively relevant content in avatar-based games can be identified according to degrees of predeterminedness. Looking at whether, and if yes how, such content is presented (such as by non-player characters or environmental storytelling) shapes the possibility space for avatar action in what I termed the narrative-dramatic dimension. I concluded Chapter 1 by emphasising that the separation into the four dimensions was done for analytical purposes, and that these dimensions can support or undermine each other in various ways. I then moved on to the case studies to demonstrate the analytical power of this multidimensional heuristic framework, and to show how agency dimensions play out in individual cases.

Chapter 2 was dedicated to the first case study, *Uncharted 4: A Thief's End* (Naughty Dog 2016), a game which represents a game design model that can be traced back to the action and adventure games of the 1990s and is characterised by a high degree of designer control on player progression. I began by tracing the development of the studio's design ethos from their early games, which laid the foundations for the studio's trademark linear 3D character-based action gameplay with platforming,



shooting elements, and memorable characters. Then, I discussed how with the *Uncharted* games Naughty Dog left behind the world of cartoonish animation in favour of realistic rendering of human characters in recognisable environments, all the while adhering to the genre mechanics of action–adventure games. I showed that the studio’s design ethos, and with that, the brand identity of the *Uncharted* franchise was interwoven with discussions of a cinematic quality in games both in terms of audiovisual aesthetics and gameplay. This, as the paratextual analysis showed, continued to be the case with *Uncharted 4: A Thief’s End*. Then, a textual analysis of the game showed that the cinematic quality of the *Uncharted* series was achieved by restrictions to avatar action in the spatial-explorative, temporal-ergodic, and configurative-constructive dimensions in order to regulate the pace of gameplay so as to make it more akin to action-adventure blockbuster movies. Furthermore, this case study showed that despite the restriction to core mechanics, the extremely detailed, motion-captured, and rich audiovisual detail amplified the narrative quality of gameplay sequences, and therefore afforded a degree of dramatic agency. This chapter examined the interplay between dimensions of agency and how agency is understood, sacrificed, and afforded in the development of cinematic gameplay.

Chapter 3 looked at BioWare and their game *Mass Effect: Andromeda* (2017), a game that taps into the tradition of role-playing games, but also exemplifies an adaptation to the current videogame market. The hypothesis of this chapter was twofold: that BioWare’s conceptualization of player freedom, and subsequently, agency, has changed with *Andromeda*; and that the communicated design intention only partially matches the actual design of the game. I began by establishing BioWare’s design ethos, which I argued was based on the typical mechanics of the role-playing genre,

and as such predominantly afforded configurative and narrative agency. I then outlined the brand identity of the franchise, as shaped by its various instalments, in terms of how the games afford or limit player action, which I then used as a basis of comparison when looking at *Andromeda* as a text. I argued that open world game design allowed more opportunity for combat encounters which are also more complex when compared to the original trilogy. An emphasis on these gameplay features caused a shift that was not quite reconcilable with BioWare's historic design ethos. Previously, role-playing mechanics affording narrative and configurative agency were of core importance. This new focus led to the possibility space for player action to be predominantly shaped in the temporal-ergodic and spatial-explorative dimension. I concluded the chapter by arguing that, although this shift would in theory support the expression of dramatic agency, in reality, *Andromeda* struggled to attach a quality of eventfulness to these emergent player stories, and therefore ultimately failed to truly afford a high degree of dramatic agency.

With the final case study, in Chapter 4, I expanded the scope of the inquiry at the heart of this thesis by applying the heuristic framework to a different production context and game design model. The independent studio of System Era was chosen for two reasons. First, its founders moved away from AAA studios, and thus had articulate opinions about their past experiences in this section of the videogame industry and why they chose to abandon it. This meant the paratextual material was rich enough to be analysed in terms of design intent. Second, the game they set out to make, *Astroneer*, exemplifies a specific game design model of survival crafting sandbox games. These draw on very early videogame genres, and with technologies improving, they evolved less in their visuals like AAA games did, but more in terms of their game

design. The chapter began by surveying common connotations of the ‘independent’ label and providing a brief history of milestone games standing out for their design innovations over the decades. This was done to establish a background against which System Era, a new studio lacking a historical design ethos comparable to those of Naughty Dog or BioWare, positioned themselves, which I called their founding ethos. Having identified various inspirations for their game in the early years of development, I then moved on to interrogate the paratext starting from the launch of the Early Access version of *Astroneer* paratexts in a quest to identify a more crystallised design intention. This intention, I argued, was a focus on facilitating playfulness. In the textual analysis, I then connected the notion of playfulness to agency being afforded in the spatial-explorative, configurative-constructive, and temporal-ergodic dimensions through mechanics facilitating free, unconstrained, experimental, creative play. I further argued that dramatic agency is inherently playful.

In the case studies presented, I have laid the groundwork for analysing agency in a way that combines paratextual analysis and textual analysis. Such application of the multidimensional heuristic framework provided insight into not only how game designers think about agency, but also into how intentions can translate into features of the released game. The investigation mapped three ways in which communicated design intention and the final product can relate to each other as well as to the design ethos of the studio (and the brand identity of the franchise in the first two chapters). Naughty Dog showed alignment, BioWare showed discord, while System Era showed fluidity. The case studies showed that circumstances of production, such as technology used and management of production and distribution, impact how player action is thought to be afforded, and is eventually afforded. It would appear that the fewer

stakeholders are involved in negotiating a studio's design ethos, the more consistently it evolves over time; and the more transparent a studio is about their progress during development, the smaller the discrepancy between game-as-promised and game-as-released.

Generally speaking, the thesis offers a design-oriented approach to understanding agency, and the case studies symbolize three kinds of experiences videogames can offer: spectacle, role-play, and free play. Furthermore, they also mark a gradual relaxation of designer control on player action: from highly linear, through open world, to sandbox. *Uncharted 4* showed that despite a high degree of designer control, player agency can still manifest in multiple dimensions, and it underscored the importance of highly detailed animation in dramatic agency. *Mass Effect: Andromeda*, while maintaining the configurative freedom typical of role-playing games, served as a cautionary tale for what happens to agency when gameplay moments lack a quality of eventfulness. Lastly, *Astroneer* exemplified how a high degree of agency across all dimensions can result in paidic play. The three case study chapters showed that the multidimensional conceptualisation of agency in the heuristic framework is but the first step towards better understanding agency in videogames, and that with each example come further complexities in the way that production context and design intent shape player agency.

The conceptualisation of agency presented in this thesis can be further expanded in a variety of ways. It will often yield interestingly different results when used to analyse other avatar-based games and different circumstances of production. Although many potential applications may result in similar findings, there will likely be other, highly

specific cases that would expand our understanding of how agency is discussed and designed across the diverse field of videogame production. It would also be worth asking how dimensions support or obstruct each other in non-avatar-based genres, such as strategy or god games. Or, as a somewhat radical departure, it would be worth exploring what further dimensions of agency can manifest in different forms of media, such as augmented and virtual reality. The heuristic framework also has the potential to be the starting point in an investigation into agency in multiplayer games. It would be interesting to observe how the infinite variable that is the other player, as well as approach to audience management in ongoing support for online games, could impact affordances and restrictions of player action both on the level of game design, but also in terms of communication and social interaction. While this thesis has already done substantial groundwork for this kind of expansion, producing results that are in and of themselves are interesting, such an approach would then move the focus from the game to the player. It would therefore be concerned with cultural politics as well, as in multiplayer games, besides the game rules set in place by designers, player-to-player interaction is designed to a degree as well. In this case, the multidimensional framework would be used in an audience studies project, with more empirical methodologies that examine actual player interaction. The notion of agency, and by extension, the player's ability to act is an inherent feature of the medium of videogames, and so the more the medium evolves, so will the questions around player agency.

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Remedy Entertainment (2016). *Quantum Break* [PC] Microsoft Studios.

Rockstar San Diego (2010). *Red Dead Redemption*. [PlayStation 3] Rockstar Games.

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Square (1999). *Final Fantasy VIII* [PC] Square.

Rockstar North (2002). *Grand Theft Auto: Vice City*. [PC] Rockstar Games.

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The Fullbright Company (2013). *Gone Home*. [PC] The Fullbright Company.

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Ubisoft Montreal (2014). *Assassin's Creed Unity*. [PlayStation 4] Ubisoft.

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Ubisoft Montreal (2016). *Far Cry Primal*. [PlayStation4] Ubisoft.

Ubisoft Paris (2017). *Tom Clancy's Ghost Recon Wildlands* [PlayStation 4] Ubisoft.

Unknown Worlds Entertainment (2017). *Subnautica*. [Microsoft Windows] San Francisco, CA: Unknown Worlds Entertainment.

Valve (1998). *Half Life* [PC] Sierra Studios.

Valve (2004). *Half-Life 2*. [PC] Valve.

Vicarious Visions (2017). *Crash Bandicoot N. Sane Trilogy*. [PlayStation4] Activision.

Wube Software LTD (2012). *Factorio*. [Microsoft Windows] Prague, Czech Republic: Wube Software LTD

ZA/UM (2019). *Disco Elysium* [PC] ZA/UM.

# Filmography

*Indiana Jones and the Raiders of the Lost Ark.* (1981). Directed by Steven Spielberg. USA: Lucasfilm Ltd.

*I'm a Celebrity, Get me Out of Here* (2002–). ITV.

*Man vs Wild* (2006–2011). Channel 4.

*National Treasure.* (2004). Directed by Jon Turteltaub. USA: Walt Disney Pictures; Jerry Bruckenheim Films; Junction Entertainment; Saturn Films.

*Star Wars: Episode II – Attack of the Clones.* (2002). Directed by George Lucas. USA: Lucasfilm Ltd.

# Endnotes

<sup>1</sup> From here and throughout, I will use ‘videogame’ as an umbrella term to encompass the various labels used to refer to these interactive artifacts, such as computer game, digital game, electronic game, etc.

<sup>2</sup> See for example how Reggie Fils-Aimé, Nintendo America’s president, speaks about the game at E3 2016 (Nintendo 2016), or *Zelda* creator Shigeru Miyamoto’s words on how important it was for them to offer players more choices in the new open world environment (Hilliard 2017: 44).

<sup>3</sup> After all, some studios are already looking for ‘Game Concept Designer’ roles where technical experience is not among the essential criteria. See Jouin (n.d.) hiring for Ubisoft, for example.

<sup>4</sup> Notably, Aristotle lists ‘*êthos*’, or ‘character’ in most translations, as one of three modes of persuasion in *Rhetoric* (cf. Cope 1970 [1877]).

<sup>5</sup> For more on videogames and marketing, see, e.g., Kline et al. 2003; Kerr 2006: 43–101; Nieborg 2011: 113–118; Zackariasson and Dymek 2017; Zackariasson and Wilson 2012.

<sup>6</sup> Genette (1997b: 5 [1987]) later breaks down paratext into the subgroups of ‘peritext’ (all things within the immediate surrounds of a book, such as its cover, the title, or notes intertwined) and ‘epitext’ (materials that are more loosely connected to the text, such as interviews with the author), however, this spatial distinction is of little relevance when applied to a digital artifact such as a videogame (cf. Švelch 2020).

<sup>7</sup> For more on transmedia, see, e.g., Jenkins 2008 on general conceptualisation; the chapters in Freeman and Rampazzo-Gambarato 2019 for a variety of approaches to the topic; Ryan 2013 or Thon 2016a on transmedia narratology; Clark 2012 or Evans 2011 on transmedia television; Freeman 2016 on early transmedia storytelling; and Kinder 1991 for an early exploration into transmedia and videogames.

<sup>8</sup> I am not concerned with establishing what a game is, but there will be a more detailed discussion about formal aspects in Chapter 1. Many tackled the definitional challenge though, as it is an important one (cf. Arjoranta 2019), and the following is but an illustrative list. See, e.g., Avedon 1971 or Redl et al. 1971 for early definitions; Wolf 2001a framing videogames as media; Juul’s classic game model (2005: 37); the multidimensional typology of games in Aarseth et al. 2003; further classification of games in Elverdam and Aarseth 2007; Karhulahti 2020 for a phenomenological approach or, for a game design perspective, Costikyan (2005 [1999]), Crawford (1997 [1984]), or Salen and Zimmerman (2004: 80).

<sup>9</sup> See Eskelinen 2012: 211–233 for an in-depth discussion of each contribution.

<sup>10</sup> In simple terms, ‘story’ is what is told, whereas ‘discourse’ is how it’s presented to the reader (see, e.g., Chatman 1978; Culler 1981). Furthermore, the difference between ‘story’ and ‘plot’ is often articulated as something to do with the temporal arrangement of events, where ‘story’ is regarded as a simple chronological rendering of events, whereas ‘plot’ is a more complex construction. For more on the many conceptualisations of ‘plot’, see Dannenberg 2010.

<sup>11</sup> For a deeper exploration into the poetics of interactive narratives, see Ryan 2009.

<sup>12</sup> ‘Scriptons’ are strings of information ‘as they appear to readers’ and ‘textons’ are strings of information ‘as they exist in the text’ (Aarseth 1997: 62).

<sup>13</sup> Murray’s writings on agency had considerable influence in game studies and game design (e.g., Darley 2000; Grodal 2000, 2003; Montfort 2007; Tanenbaum 2008; Tanenbaum and Tanenbaum 2009, 2010; Dinehart 2009; Gazzard 2013; Mukherjee 2015; Koenitz 2018), as well as in other disciplines (e.g., in television studies see Hills 2009; Mittell 2009).

<sup>14</sup> In more recent work, Murray moves away from a narrative-heavy approach: ‘[a]gency results when the interactor’s expectations are aroused by the design of the environment, causing them to act in a way that results in an appropriate response by the well-designed computational system. This matching of the interactor’s participatory expectations and actions to the procedural scriptings of the machine creates the pleasurable experience of agency’ (Murray 2011: 12). Here, she introduces the importance of, to use her terminology, the design environment communicating clear responses to interactor input. In game design, Salen and Zimmerman (2004) explored this in more depth, which will be discussed in the ‘Agency is Meaningful Player Choice’ part of this chapter.

<sup>15</sup> For example, his focus seems to be on avatar-based games as implied by the underscoring of the player character as a spatial stand-in for the player (Domsch 2013: 4). Most of the examples drawn



on are avatar-based games such as *Bioshock* or *Deus Ex*, however, other times Domsch analyses ‘world-building games’ (ibid. 23), or non-digital games like chess or Tic-Tac-Toe (ibid. 117). Similarly, the notion of ‘rules’ is used to describe a variety of things, from real world physics through simulated physics (ibid. 14–48), game design (ibid. 53–72), and social contracts and value systems (ibid. 163–167). The term ‘agency’ is at the core of his argument, and yet there are conflicting definitions (at times, as I mentioned above, he is drawing on Murray, other times, talking about human agency; see ibid. 60).

<sup>16</sup>For example, even though he describes the building blocks of narratives as nodes, and then goes on to dissect in detail how these nodes can create either linear or nonlinear narrative (Domsch 2013: 58–95), he does not engage with neither Aarseth’s writings on nonlinearity, nor Ryan’s ‘interactive architectures’ discussed above, which are also mapped as nodal structures. Another illustrative example is when Domsch talks about videogames’ storyworld in terms of affordances and limitations with only a passing mention of Juul, and Salen and Zimmerman in a footnote (ibid. 16). This detracts from the validity of his observations. In a book review, Backe singles out the lack of engagement with previous academic discourse as one of the greatest weaknesses of the book: that while it engages with core theory, ‘the way the established theories are used is puzzling’ (Backe 2017: 766).

<sup>17</sup> Things that make up a story, such as characters, spaces, or events. See Chatman 1978: 107 for the original definition; Prince 1978 who includes events, or Herman 2002: 115–169 for a more detailed breakdown of different existents contained within a storyworld.

<sup>18</sup> Another significant portion of Domsch’s book is dedicated to dissecting how moral choices (which he calls ‘valorisation choice’) impact agency. My focus here is not morality, but for a detailed examination of ethics and agency see Sicart 2009, 2013.

<sup>19</sup> Notable exceptions are Bartle 1996, 2004.

<sup>20</sup> See also Mateas 2000, 2001; Mateas and Stern 2007.

<sup>21</sup> Though some argue that there are differences between their approaches, with regards to their philosophical implications (see, e.g., Backe 2017).

<sup>22</sup> It needs stressing that they do so with thorough cross-referencing of existing game design research, as well as influential work from other disciplines, such as Christopher Alexander and colleagues’ (1977) seminal work on pattern languages in architecture and urban design.

<sup>23</sup> This understanding of meaningful action has a lot in common with that of action theorist Donald Davidson (2002: 43–63), who argued that for agency to manifest, the action must be intentional, meaningful, and have a certain affect.

<sup>24</sup> Originating in the Sanskrit word *avatāra* (अवतार) (Liboriussen 2014).

<sup>25</sup> I use gameworld to refer to the entirety of game spaces, including non-diegetic interfaces, menus, etc. Terminology will be discussed in more detail later.

<sup>26</sup> Some challenge the primacy of rules (and mechanics) in game-related discourses. For example, Vargas-Iglesias and Navarrete-Cardero (2020) argue that a formal analysis of videogames should focus on the reality constructed by both the game systems and the player.

<sup>27</sup> It must be added that Mateas and Stern introduce additional complexity to their understanding of agency a few years later when distinguishing between ‘local’ and ‘global’ agency, where the former is ‘when the player’s actions cause immediate, context-specific meaningful reactions from the system’ and the latter is when ‘the global shape of the experience is determined by player action’ (Mateas and Stern 2005: 203–204).

<sup>28</sup> Agency and technology are explored in more detail in science and technology studies. See, e.g., Callon and Latour 1981 or Latour 2005 for an introduction to ‘actor-network theory’. For more on actors in and around gameplay, see, e.g., Taylor 2009 or De Paoli and Kerr 2010. More specifically, agency in the creation of videogames is discussed in, e.g., Banks 2013; Deuze et al. 2007; Dyer-Witthof and de Peuter 2009: 3–33; Keogh 2018b; Hadas 2020: 141–179.

<sup>29</sup> For more on fan co-creation, see Kücklich 2005 on playbour; Pearce 2002 or Poremba 2003 on the player-author; Consalvo 2007 or Sotamaa 2010; or more recently, Joseph 2018 on modding.

<sup>30</sup> This is not to say there isn’t plenty of research on these topics. See, e.g., Csikszentmihalyi 1975 on flow, Mäyrä and Ermi 2005 or Ryan 2015: 85–114 on typologies of immersion; Järvinen 2009 or Perron 2005 on classifying emotions elicited by game design; Perron 2018: 66–127 on fear specifically; Swink 2008 or Isbister 2016: 1–42 for designer perspectives on emotion and games; Grodal 2009: 158–181 on agency and emotions during gameplay; Gregersen and Grodal 2009: 66–69 or Keogh 2018a on agency and embodiment; or the essays on cognition, affect, and emotion and videogames in Perron and Schröter 2016.

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<sup>31</sup> Though we could argue that extensive conceptualisation is a kind of definition, albeit longer. In this vein, the conceptualisation of agency and the multidimensional heuristic framework proposed in this thesis is best described according to the philosophical tradition of ‘explication’, which fundamentally is inexact and therefore cannot be proven right or wrong (Carnap 1950: 3–4), deployed when ‘one wants both to rely on an *old*, existing meaning and to attach a *new*, proposed meaning’ (Belnap 1993: 116, orig. emphasis).

<sup>32</sup> This being said, the notion of agency and videogames’ spatiality have been linked before, albeit through rather narrow lenses. See, e.g., Taylor 2003 for a psychoanalytical approach; Morris 2002: 89 who argues that first person shooter games have more agency because of a sense of presence and involvement granted by the immediacy of the action genre and the unique FPS perspective; or, as already mentioned, Calleja 2011: 75 for an approach from the perspective of immersion and ‘habitation’.

<sup>33</sup> For more on how videogames cue players into making sense of multiple layers of representation, see Thon 2016b, 2017.

<sup>34</sup> A third category they introduce is the game as a ‘social experience’, through which lens the character is a ‘representation of the player’, but this is not relevant here since my investigation is limited to singleplayer design.

<sup>35</sup> Except for the map’s edges of course, where the world beyond is indirectly represented as part of the skybox.

<sup>36</sup> Videogames’ tool to create the illusion that a virtual world is bigger than it actually is.

<sup>37</sup> Aarseth (2008) talks about a similar disconnect between how big *World of Warcraft*’s space is supposed to feel like compared to how big it is. This will be revisited in the following section on temporal-ergodic agency.

<sup>38</sup> Thon also talks about a third kind of perspective, which he calls ‘ideological perspective’, but this captures how game events are evaluated by the player, it is not relevant for the conceptualisation of agency presented here.

<sup>39</sup> Interestingly, this no longer applies to the recent remake of the game (Capcom 2019), where a combination of chase cams and moveable cameras are used. The feature has been sorely missed by original fans of the game, and there is now a Fixed Camera Angle Mod for the game for those with a nostalgic flair.

<sup>40</sup> See Copic et al. (2013) on permadeath, Fassone (2017) on endings in videogames, and Herte (2020) for how various ways of ending narrative videogames correspond to broader, more conventional expectations of conclusion and closure.

<sup>41</sup> Newman (2002) further developed the concept of ergodicity and argued that an entire videogame cannot be described as ergodic, but instead, there are ‘ergodic elements’ in a long sequence of segmented instances of gameplay. My analytical category of ergodic agency sheds light on this potential for variability.

<sup>42</sup> Power wheel, command wheel, or weapon wheel are all terms used to refer to a wheel-like design in action and role-playing games, which facilitate quick access to the avatar’s powers or weapon inventory. It not taking up a whole screen is particularly useful in combat and other time-critical scenarios.

<sup>43</sup> See, e.g., Alvarez Igarzábal 2018: 147–148, Atkins 2007, Davidson 2008 on *Prince of Persia: Sands of Time*; Stamenković and Jačević 2015 on *Braid*, Hanson 2018: 167–179 on *Quantum Break*.

<sup>44</sup> For more on the paradox of simultaneous immediacy and atemporality in audiovisual media, see Doane 2002.

<sup>45</sup> See Backe 2016 for a more detailed analysis of how *SUPERHOT* challenges the player in time.

<sup>46</sup> For more on how strategy games emulate historic methods of research gathering and construction, see Grufstedt (forthcoming).

<sup>47</sup> While my focus is singleplayer games, the social and self-expressive function of avatars in massively multiplayer online games is a widely researched topic. See, e.g., Banks 2017; Bartle 1996; Burn and Schott 2004; Jenson et al. 2015; Taylor 2006: 93–124; Van Looy et al. 2014.

<sup>48</sup> A similar observation is made by Thon (2016a: 112), pointing out the discrepancy between how many items an avatar carries versus how big their apparent carrying item (e.g., backpack) is.

<sup>49</sup> Castronova also talks of scarcity of social roles, though this aspect is not relevant for my conceptualisation, as it relates more to how the player makes sense of their experience.

<sup>50</sup> It is also important to keep in mind that cut-scenes might be favoured by developers as a means of cost-cutting. See Sheldon 2004: 183.

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<sup>51</sup> See, e.g., 'interactive structures' in Ryan 2015: 165–175; 'logocentric v. mythocentric narrative design' in Chandler 2007: 102–108; 'three act structure' in Skolnick 2015: 12–26, 'The Hero's Journey' adapted to videogames in Rollings and Adams 2003: 93–109, or Ip 2011b.

<sup>52</sup> See, e.g., Aarseth 1994; Backe 2012; DeMarle 2006; Ip 2011a; Miller 2004: 124–125; Rouse 2005: 223–224; also 'multilinearity' in Nelson 1993; 'non-unilinearity' in Domsch 2013: 75–95.

<sup>53</sup> The two kinds of narrative quality we can attribute to videogames is a well-established distinction amongst scholars and game designers alike. See, e.g., 'embedded narrative' and 'emergent narrative' (Salen and Zimmerman 2004: 382–385), 'designer story' and 'player story' (Rouse 2005: 203–206), 'push and pull narrative' (Levine 2008: n.p.), or 'scripted narrative' and 'alterbiography' (Calleja 2011: 113–134). These distinctions can all be related to another, widely discussed binary framing of videogames as systems of progression v emergence. See, e.g., Adams and Dormans 2012: 43–59; Juul 2005; Baljko and Tenhaaf 2008; Soler-Adillon 2019.

<sup>54</sup> See, e.g., Laukkanen 2005; Sotamaa 2003, 2010 on modding; Consalvo 2007 or de Paoli and Kerr 2010 on cheating; and the chapters in Mortensen et al. 2015 on transgressive and subversive play.

<sup>55</sup> The process of remediation, they argue, is determined by what they call the logic of immediacy and the logic of hypermediacy, where the former is a desire to make new media be like our real world surroundings in terms of ease and transparency, 'natural' in a way (Bolter and Grusin 2000: 23) which would eventually lead to the erasure of the fact that the artifact is a representation; and the latter 'acknowledges multiple acts of representation and makes them visible' (ibid. 34).

<sup>56</sup> Another context-sensitive connotation of a cinematic quality in videogames appears in discussions about adaptation of IPs from other media such as film and TV, and convergence in film and game production (see, e.g., Brookey 2010). However, since Naughty Dog's games are all original IP, this is not relevant to this chapter.

<sup>57</sup> Known in Europe as *Lylat Wars*.

<sup>58</sup> See Gershon and Kanayama 2002; Alvisi et al. 2003 on Sony's position in the interactive media market in those years.

<sup>59</sup> In the context of 3D animation, texturing is the process of applying layers with a certain quality, such as light reflection, colour, or ruggedness, to objects and environments. For more on this, see Bogost 2008.

<sup>60</sup> I will discuss in more detail the history of the 'open world' descriptor in the last chapter, when juxtaposed with the similarly often-used moniker of 'sandbox'. For now, let it suffice that I use 'open world' to refer to the arrangement of game goals within the game spaces, and 'sandbox' to refer to the nature of said game goals in the first place.

<sup>61</sup> For what *Ratchet and Clank* got right from a designer perspective, see Heir 2008.

<sup>62</sup> It is becoming increasingly apparent that the work culture at Naughty Dog is unsustainable. Although the studio tried to dismiss these as a necessary evil on the route to true excellence (Reiner 2015c), numerous Naughty Dog developers have spoken up about unsustainable working conditions (Schreier 2020). On game industry labour more broadly, and how game workers regard their own situation, see, e.g., Chia 2019; Deuze et al. 2009; Dyer-Witthford and de Peuter 2005, 2006; Schumacher 2006, and the section on independent games in Chapter 4 of this thesis.

<sup>63</sup> For how influential melodrama is in contemporary entertainment media, see Mittell 2015: 233–260.

<sup>64</sup> This changed with the latest instalment, *Uncharted: Lost Legacy*, where the studio experimented with open world design.

<sup>65</sup> A particularly interesting example illustrating just how difficult it is to create a moving train sequence is what happened with *Fallout 3* DLC *Broken Steel*, where developers created the illusion of train travel by attaching the train carriage to the avatar as equipment, while an animation plays to create the surrounding environment (Grayson 2015).

<sup>66</sup> For more on how videogames remediate how colour is used in cinematography to convey basic spatio-temporal information (e.g., time of day), mood and atmosphere of a scene, and characterisation, see, e.g., Calahan 2000, Girina 2015: 104; Niedenthal 2013; or Seifi et al. 2012.

<sup>67</sup> See Hunnicke and Chapman 2004; Adams 2008 on DDA in general, and Silva et al. 2016; Baldwin 2016 on DDA in multiplayer specifically.

<sup>68</sup> Fans were very enthusiastic about this release as shown by Twitter activity (Kim and Chandler 2018).

<sup>69</sup> Theorycrafting refers to the process when, especially in online multiplayer games, 'expert players reverse engineer the game and use its underlying algorithms to calculate maximized play strategies'

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(Ask 2016: 190). See also Paul 2011. Straley here uses it in the broader sense of ‘analyzing theoretical scenarios, speculating possibilities, performing statistical reports, planning strategies for unexpected events, or simply “connecting the dots.”’ (Vu 2017: n.p.).

<sup>70</sup> Core mechanics of a videogame are those that the player uses repeatedly to achieve the game goal. Important to note however that repeatedly performed actions, such as running, may be core mechanics in a platformer game for example, but may not necessarily be considered as such in a videogame with more complex mechanics, such as a stealth game. For more on hierarchies of game mechanics, see Salen and Zimmerman 2004: 316–318; Sicart 2008; Wardrip-Fruin (2020).

<sup>71</sup> See Andrew Maximov 2016; Foundry 2014; GDC 2016b; GDC 2017b; GDC 2018; Gnomon 2015; Minotti 2018; Pixologic ZBrush 2016; PlayStation 2014c; Substance 2016.

<sup>72</sup> For more on videogame audio, see, e.g., Collins 2007; Zehdner and Lipscomb 2004; or contributions in the recently launched *Journal of Sound and Music in Videogames*.

<sup>73</sup> As drawn on the late 19<sup>th</sup>-early 20<sup>th</sup> century theatrical tradition popularised by Stanislavski. More on types of acting styles in film and tv, see, e.g., Baron 2016; Pearson 1992; and parts Three and Four in Wojck 2004.

<sup>74</sup> I will discuss the aesthetics of procedural content generation in more detail in Chapter 4. For now, I will just say that ‘procedural’ in this quote is used to refer to something that’s brought to life on the go, as it were, as opposed to activating something manually placed.

<sup>75</sup> For overviews of the Japanese game industry, see Consalvo 2016; DeWinter 2015.

<sup>76</sup> See Part One in Garrelts 2006 for more on the relationship between the game, its violent content, the reputation it generated over the years.

<sup>77</sup> D20 is a tabletop role-playing game mechanic which got adopted by computer games. The name refers to a 20-sided dice. In essence, players would roll a 20-sided dice in response to an event in the game that required player/avatar action, and then modify the number according to their character’s stats (such as strength or stamina). If the end result meets or is above the target number (Difficulty Number) set by the Dungeon Master (person/system upholding game rules), the action was successful.

<sup>78</sup> See Zagal and Altizer 2014 on reputation systems in role-playing games, Sicart 2009: 207–212 for a detailed analysis of alignment systems and its limitations, Wardrip-Fruin 2009: 59–69 on the strengths and weaknesses of the dialogue tree and the quest system in *KOTOR* specifically.

<sup>79</sup> Although some would argue the opposite, see, e.g., Mejeur 2018: 208.

<sup>80</sup> Excerpt from the patent: ‘A system and method for creating conversation in a computer program such as a videogame. A plurality of classes of dialog is provided and a conversation segment is assigned to each class. A graphical interface is displayed during operation of the program that provides a choice indicator, wherein the choice indicator has a plurality of selectable slots, each associated with a dialog class. The graphical interface is consistent as to the position of dialog classes throughout at least a segment of the program’ (Sinclair 2012: n.p.).

<sup>81</sup> Also known as ‘horde mode’.

<sup>82</sup> Interestingly, while shooting was a central activity in the *Mass Effect* trilogy, the first instalment was more a ‘hard-core RPG dressed as a shooter’, according to game designer Christina Norman, who worked on all three games (Fullerton 2014 [2004]: 25). She said ‘[w]hether you hit enemies or not was determined by an invisible die roll. This meant that even if you aimed perfectly, you could miss, so guns felt weak and unreliable’ (ibid.). *Mass Effect 2* and *3* however, feature more traditional shooter mechanics.

<sup>83</sup> I will discuss *No Man’s Sky* and procedural planet generation in more detail in Chapter 4.

<sup>84</sup> All statistics are from howlongtobeat.com, a website processing player-submitted data.

<sup>85</sup> There is a possibility that the game’s AI can also scale enemies according to the avatar’s level in a certain encounter, despite difficulty setting being pre-set. It seems only minor adjustments are made to accuracy and damage output in *Andromeda*, whereas other studios in the same genre, like Bethesda, do this to a larger degree. This question is extensively debated on several forums (see, e.g., Muzle84 2017).

<sup>86</sup> I will not discuss mobile games, as my focus is on console and PC games. For more on how mobile games fit into the broader landscape of independent games, see, e.g., Juul 2009.

<sup>87</sup> See, e.g., Dyer-Witheford and de Peuter 2009: 3–93, Johns 2005, or Ruffino 2013 on the politics of labour and capitalist mechanics of videogame production; Harvey and Fisher 2015 on women in independent game production; Kennedy 2018 on women in game jams; and Gallagher 2017 or Guevara-Villalobos 2015 on identity politics in and around independent games.

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<sup>88</sup> A good example illustrating the complexity of independence is the studio Bungie. They bought themselves out of Microsoft's corporate ownership in 2009 and thereby asserted themselves as an 'independent studio' (Destiny Dev Team 2019) after having developed the Xbox's flagship shooter franchise *Halo* (2001–). Shortly after in 2010, they signed a deal with publishing giant Activision to develop another highly successful AAA shooter franchise *Destiny* (2014–), only to part ways in 2019 and take over its publishing, thereby regaining their independence. See Martin and Deuze 2009 for an analysis of the first buy-out.

<sup>89</sup> Notably, as Juul argues, big-budget games could also be of an 'independent style': for example, LEGO games tend to present blocky versions of franchises such as Star Wars (Juul 2019: 56). The contrary is also true: multiplayer online shooter *PlayerUnknown's Battlegrounds* (PUBG Corporation 2017), or survival-horror game *The Forest* (Endnight Games 2018), although could be considered independent from a production perspective, very much showcase efforts towards realistic-looking animation, typically seen in bigger budget productions.

<sup>90</sup> See Lipkin 2019 for a detailed analysis on how Steam contributed to an oversaturated market of independent games from the mid-2010s onwards, referred to as the 'indiepocalypse'.

<sup>91</sup> For more on this genre, see, e.g., Kagen 2018; Muscat et al. 2016; Zimmerman and Huberts 2019 and the rest of the articles in a recent special issue of *Press Start* 5(2) on walking simulators.

<sup>92</sup> See Thon 2019.

<sup>93</sup> See Mitchell 2014.

<sup>94</sup> For more on roguelikes, see Craddock 2015 or Ross 2020 for a historical overview; Harris 2011 or Nutt 2014 for main design principles; and Smith and Bryson 2014 for the role of procedural content generation in dungeon design.

<sup>95</sup> Interestingly, *Minecraft* was purchased by Microsoft, which muddles the discourse establishing its independent status.

<sup>96</sup> These are much more permitting than some mechanics found in AAA games. It is enough to think of the infamous moment (now meme) from *Call of Duty: Advanced Warfare* (Infinity Ward 2019), where the player attends a fellow soldier's funeral, and a prompt appears on the screen after the cut-scene that reads 'Press X to pay respect'.

<sup>97</sup> On the *Astroneer* developer blog, poster identity is indicated inconsistently throughout the years. I will cite the username who is shown to have posted the article, rather than the signature, if there is one.

<sup>98</sup> The game is now also available on Xbox and PlayStation 4.

<sup>99</sup> A fourth game that needs acknowledging is *No Man's Sky*. It was developed for a while in parallel with *Astroneer*, but was released earlier, to dreadful reception. Early on during production System Era developers often received questions about their relationship to the game. They acknowledged shared traits (System Era 2016c), but saw difference in their audience management and marketing strategies, with *No Man's Sky* being solely backed by Sony, a corporate giant (System Era 2016b; DevGAMM 2017).

<sup>100</sup> Voxels are in a 3D grid what pixels are in 2D.

<sup>101</sup> See, e.g., Microsoft Developer 2018; System Era 2016a, 2016b, 2017b, 2017c, 2018a.

<sup>102</sup> This was not an entirely conscious decision. Kern, a self-professed fan of the game, posted a self-made *astroneer* model and sample merchandise on social media, as well as physical copies to the studio, which sparked conversation. This is how the team found out about Kern's previous role in *Minecraft* and proceeded to interview him for the role of Art Director at System Era (Noclip 2019).

<sup>103</sup> Not to be confused with story generator algorithms, which focus on language-based content generation. See, e.g., Gervás 2012; Koenitz et al. 2015; Rishes et al. 2013.

<sup>104</sup> Though some contest the ubiquity of this term due to the overly generalised and restrictive nature of 'content' in videogames. See 'generative methods' in Compton et al. 2013.

<sup>105</sup> Biologists would use 'biome' to refer to a group of flora and fauna that live in a specific area due to having similar needs. In procedural content generation, biomes are a (not necessarily organic) group of pre-set objects and associated values or properties that have the possibility to occur within a given gameworld.

<sup>106</sup> For more on the role and impact of community managers in the videogame industry, see, e.g., deWinter et al. 2017; Zimmerman 2019.

<sup>107</sup> A short summative description used by the team for reference during development as well as for promotional purposes.

<sup>108</sup> Wilson is referring to the film *Apollo 13* and the book/film *The Martian*.

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<sup>109</sup> They also mention a third one, the socialeer, seeking social and co-operative play, but in later interviews this boils down to the engineer and pioneer types.

<sup>110</sup> Since the Summer Update, they also have a hitbox registered by an in-game printable object called 'Recreational Canopy', which functions as a football goal.

<sup>111</sup> See the 'Smelt Me Not' challenge (ApoNono 2017), or the Solar System Challenge (Marck 2017).

<sup>112</sup> This has changed somewhat with the 'Wanderer Update', but it is still not to the same degree as *No Man's Sky's* similarly narrative update packs.