The Digital Gaze:

VISUAL PLEASURE AND THE VIRTUAL NARRATIVE
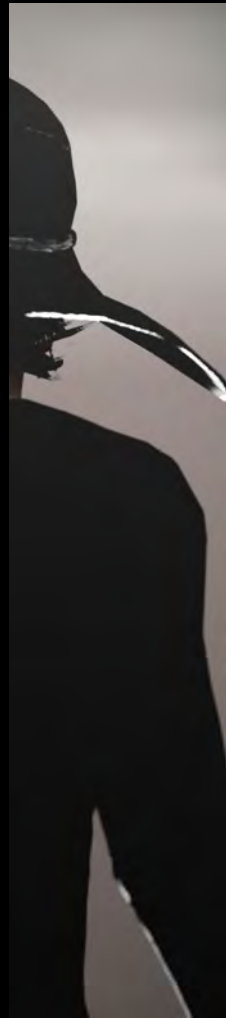
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Acknowledgements

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I was keenly aware throughout that at the heart of the project lay the brutal murder of a young, innocent woman, and I can only hope that in imagining a brighter future for someone for whom my admiration and affection only grew as the project evolved, I have not done too great a disservice to Mlle Toureaux, and the film is dedicated to her memory.

Abstract

The Crime of Laetitia Toureaux is a digital narrative which provides the foundation for an examination of the resources currently available to those experimenting with digital technology as a narrative tool. Inspired by a real-life incident in the summer of 1937, the history of the first murder in the Parisian Metro is re-imagined and re-told as a short narrative film. The primary objective is to use emerging technologies including Machinima (the use of game engines to create cinematic sequences), Virtual Reality (both interactive and immersive, 360-degree video), Photogrammetry, 3D scanning and AI texture processing (the creation of textures from photographic images) to build a narrative.

The project also looks at new and evolving workflows for model and texture creation, referred to as 'bridging tools', such as SpeedTree and Quixel Mixer. In order to provide an insight into the challenges facing a storyteller unfamiliar with digital tools, many of the applications – including the game engine itself – are used for the first time at the outset of the project.

The core creative objective is the creation of a 5-10 minute film in Unreal Engine 4, inspired by a love of cinema and cinematic narrative, and intended to adapt and rethink the spectacle of a cinematic experience in the gaming-dominated arena of Machinima and Virtual Reality.

The project asks if there is any place for classical narrative pleasures in a digital universe filled with radical possibilities for new and exciting narrative forms. Eschewing interactivity in favour of experimenting with the 'passive' digital spectator and ideas around visual pleasure and subjectivity, this paper examines to what extent these technologies can assist in immersing the viewer in the world of the story, and assesses the potential durability of such developments.

Introduction

During the long months of the lockdown this summer, I attempted to use the educational version of Minecraft as a virtual classroom for my students, many of whom were struggling to adapt to the hollowness of online classes. Although betrayed by a lack of experience, the experiment was a modest success, and we began to construct our classrooms and buildings in the game, gradually settling into our virtual world. Though lacking the sophistication and focus of Lotherington's case studies of digital narratives in elementary classrooms (in Page and Thomas, 2011), it was nonetheless a thought-provoking experiment.

One task in particular was very revealing - I asked the students to create their own stories in the game, suggesting they use signs, object interactions, maps, branching outcomes and any number of potentially exciting narrative tools. The result was a series of unfalteringly classical narratives, several of them reflecting the Aristotelian rules of classical drama (in Frye, 1957) and almost none of them employing any of these uniquely digital possibilities.

Like any passionate cinephile I recognised instantly the appeal of common narrative codes, as detailed by Barthes (1982). Whilst many of the films I most admire either subvert or reject these codes entirely (much of Godard's later work, for example) I have never taken pleasure in those narrative forms (gaming, interactive narratives) which require anything of the audience beyond passive spectatorship. Langer (in Page and Thomas, 2011) describes the experience of being in the theatre as a child when suddenly an actor tears through the fourth wall to ask the audience to attest to a belief in fairies. As a result of this intrusion into the fictional world, 'an acute misery obliterated the rest of the scene'. As well as being all too familiar with this unpleasant sensation, other aspects of participatory spectatorship have proved consistently disappointing.
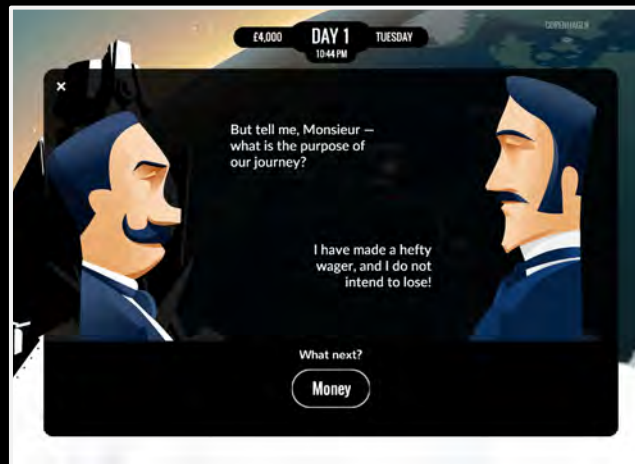
Inkle's '80 Days' contains over 750,000 words of dialogue

This led to the project's primary question, is there any future for the classical, cinematic narrative - and by extension its spectator - in the digital world? Examples of digital narratives, as well as academic research around them, are dominated by ideas of participation and interactivity. This is unsurprising, given the wealth of interactive possibilities on offer and their potential to create new narrative forms. However, the passive, silent, awestruck spectator of the cinema retains its appeal to many, including myself. For such people the implicit inclusion of interactivity as a component of digital narratives may seem to offer an entirely different, far less desirable, kind of pleasure.

For example, the branching narratives required of many participatory and interactive narratives (Ryan, 1991) seem only to tangle a single good story in a web of inferior ones. An example of this is Inkle's '80 Days', a vast 750,000-word branching narrative (Martens, 2014), in the form of a mobile and PC game, based on the Jules Verne novel. Beautifully designed, with well-crafted characters and intelligent dialogue, I nonetheless found within minutes that I was tapping randomly at anything I felt might speed the game to its conclusion. Not only was there an absence of narrative pleasure, but an almost immediate sensation of tedium, as well as something approaching resentment at having to create the story myself. It felt like buying an exciting novel to settle down with, only to find nothing but a pen and an empty notebook. Yet the game has won many awards precisely because of its narrative (Bafta, 2015), a narrative which if retold in isolation, once the game has ended, is full of repetition, inexplicable deviation and - beyond the 80-day goal - has almost no narrative structure at all.
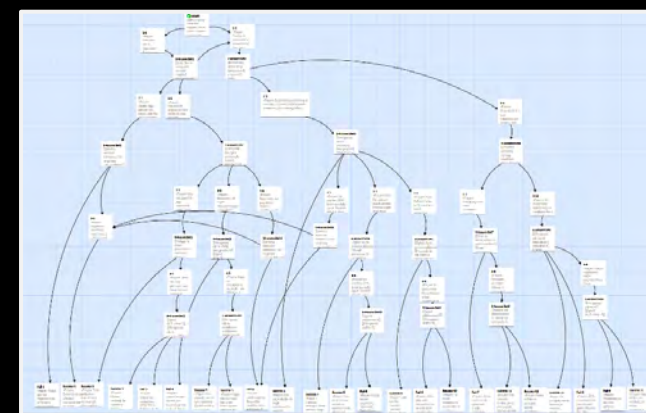
Dialogue tree from a single exchange in upcoming game 'cafe noir'

Introduction (cont.)

This may be purely a matter of taste, having never really enjoyed video games it was perhaps no surprise that the inclusion of gaming elements in a narrative structure (or, it seemed to me, the inclusion of narrative elements in a gaming structure), held little appeal. Yet this does not explain the strong draw of the conventional narrative to my students, of whom 80-95% play games at least once a week according to several brief, unscientific polls, and few had favourable opinions of the interactive narrative elements of such games. The extent to which conventional narratives are employed in VR applications offers an insight into their popularity and usage.

When I began to experiment with VR at the project's halfway point (not a single suitable headset was available in France in the first 5 weeks of the project, presumably due to a rise in their popularity during the lockdown period) the question emerged again in a different context. What appeared to be a VR performance of Shakespeare's Tempest (Oculus, 2019) turned out to require gaming skills to navigate the world and a substantial degree of audience participation, as an actor playing Prospero in a cancelled performance took our group through a series of ingeniously creative experiments. Whilst eventually discovering some non-VR narratives from the world of desktop gaming (see RDRII below) with much greater appeal, they were few and far between.

The academic research told a similar story, none of the key texts cited in this report, nor any I was able to find, consider the possibilities of classical digital narratives in the absence of some kind of participatory or interactive spectatorship; or not in any detail (though access to literature was limited to by the Covid situation, and there may be a number of such works).

Much of the academic writing on digital narratives assumes either a direct or implicit association with interactivity

   For example, though Ryan seems to agree with my feeling that 'interactivity conflicts with immersion' (Ryan 2001, p.283), it is by way of introducing virtual reality as a framework in which this need not be the case.

Whilst the arguments of Ryan and the other authors cited throughout the report are extremely persuasive - a contradiction returned to later - I wanted to discover if cinema and cinematic spectatorship really had no place in the digital world.

I had been planning for some time to build a story based around several of my own interests, a vaguely formed idea of a short narrative piece drawing on film noir, hard-boiled fiction and the detective magazines and comics of the 1930s and 40s, particularly the publisher EC Comics. If such a story could be told with the array of tools currently at the disposal of the digital storyteller, would this draw the author inexorably towards interactivity and new narrative forms? Or would it provide a new type of spectator to an old form of narrative, could game engines and virtual reality enhance the spectator's immersion in a narrative without insisting that they actively participate in it?

Laura Mulvey's pioneering 1973 critique of the cinematic gaze concludes that it is voyeuristic, objectifying and must be dismantled along with its narrative counterpart (Mulvey, 1973). In applying that same critique to the digital spectator as gamer, it is such an unedifying portrait that it seems we have stepped back several centuries and not forward several decades. The toxicity of gamergate in an industry already dominated by men (Turner, 2016), who need not even stray from their homes to gaze at absurdly oversized breasts bouncing improbably around (Chalk, 2018) as they are able to possess and dominate in ways which make classical Hollywood's voyeuristic regard seem almost quaint by comparison.

The Crime of Laetitia Toureaux attempts to address these questions in several different ways. At its core it is a hymn to a love of cinema and visual spectacle, and a projection of that passion onto the digital landscape. It also attempts to build a contemporary digital narrative which avoids, it is hoped, the criticisms of classical Hollywood narrative outlined by Mulvey, allowing spectators of any gender to immerse themselves in the story with equal comfort or indeed, discomfort.

Narr@ive pleasure and interactivity
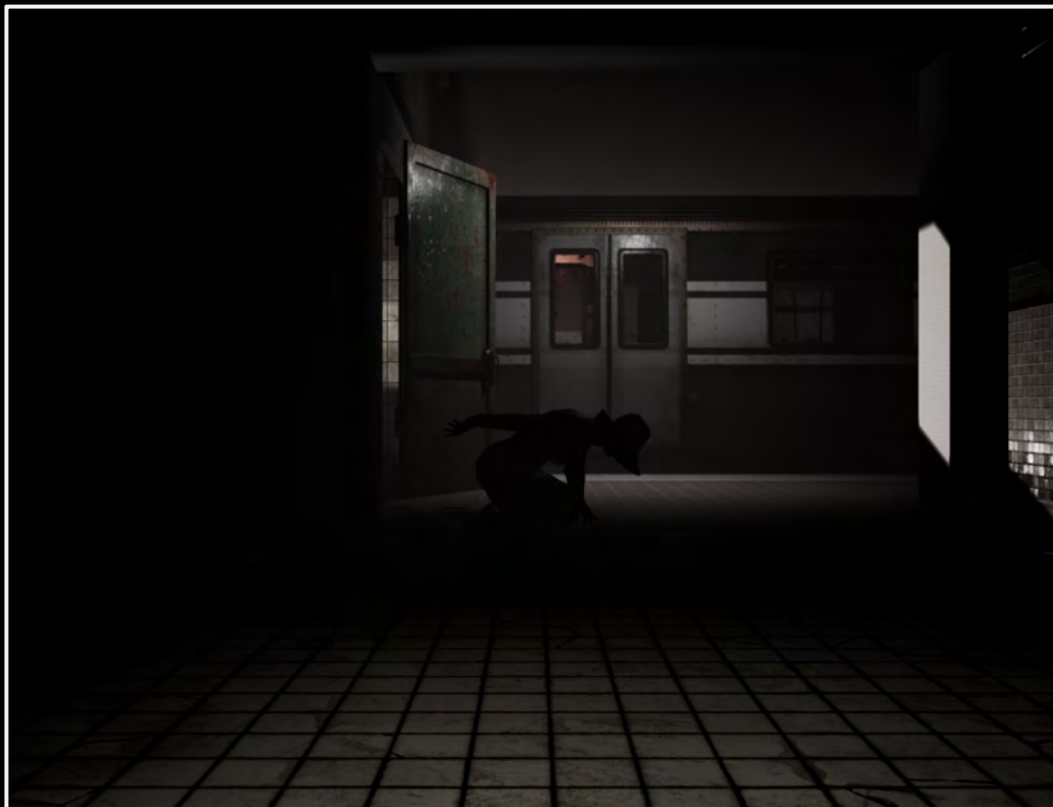
Ryan (2001) describes narrative in the following way:

The most widely accepted claim about the nature of narrative is that it represents a chronologically ordered sequence of states and events, which captures a segment of history-the history of the textual universe.

Although Godard's well-known aphorism that a story must have a beginning, middle and end, but not necessarily in that order («Toute histoire doit avoir un début, un milieu et une fin, mais pas forcément dans cet ordre-là.», Éloge de l'amour, 2011) might further refine the description to include narratives which are not linear or coherent as Ryan describes, it is not necessarily a definition we require. The existence of storytelling throughout human history suggests that it is something we understand at an almost primitive level. Even in Hemingway's possibly apocryphal example of a 6-word story – For sale. Baby shoes. Never worn. (Slate, 2013) – there is only one of the requirements for a narrative (there are no events, no order to those events, only the means by which they are expressed) yet we recognise this as narrative due to the chronology, and therefore the narrative, we impose retrospectively on the information given.

Therefore, even without direct interaction between spectator and narrative (such as that of a video game) we recognise the role of the spectator as narrative agent, capable of and prone to rebuilding structural forms, of choosing how to interpret the narrative which is presented. As with non-linearity, self-reflexivity need not be antagonistic to immersion. Whilst Ryan states that 'fiction implies its own denial' and cannot therefore step outside itself without pulling the viewer out as well, there is no reason that reflexivity cannot also sit within that fictional world, and therefore in denial of that fiction.

Narr@ive pleasure and interactivity

Equally an audience will have no problem immersing themselves in a non-linear narrative, especially when they can 'linearise' the story in retrospect such as in Quentin Tarantino's Jackie Brown (1997), where the same story is told from varying perspectives. When there is a coherence to and pleasure in the non-linearity, in Christopher Nolan's Momento (2000), for example, which tells its story in reverse. Or when it enhances some other element of engagement such as identification with a particular character, as in David Fincher's Fight Club (1999), where much of the film's narrative is ultimately revealed to take place in the imagination of the protagonist.

The problem with an insistence upon linear chronology and non-reflexive narration is that it creates a correlation between the proximity of a fictional world to our own and the extent of our immersion in it. Whilst familiarity may quicken the spectator's engagement, and we will adapt more easily to a world which is close to our own, it is that world's internal coherence which will ultimately immerse the spectator. For Ryan, privileging authenticity over narrative coherence leads to a hierarchy where interactivity and agency are at the top because they are key to our engagement with the real world and therefore pre-requisite to an engagement in VR. I would argue that in fact both agency and interactivity risk separating the spectator to a far greater extent than the Brechtian devices described by Murray (2001) and Ryan, drawing attention to their inauthenticity with limited narrative choices, unrealistic narrative structures, and in the case of virtual reality, far lower-quality graphics.

The Crime of Laetitia Toureaux contains a non-linear narrative, recounting the same incident twice from two different perspectives, the inclusion of the date of her death in the credits self-reflexively reveals the artifice of the story, as well as the many intertextual references within the film.

Yet it is not intended for any of these to break the viewers immersion in the narrative but, with the exception of the final credit, to engage their attention, curiosity and interest. These techniques are perhaps the classical equivalent of the rich narrative possibilities of interactive technology, and in highlighting them here I hope to show that the line between interactive and passive spectator is not as binary as it appears. Through the act of watching and interpreting a non-participatory narrative such as a film, we are interacting with that narrative and moulding it to the shape of our understanding. In remembering a story's telling we may change it substantially, wilfully or otherwise, creating our own telling and retellings.
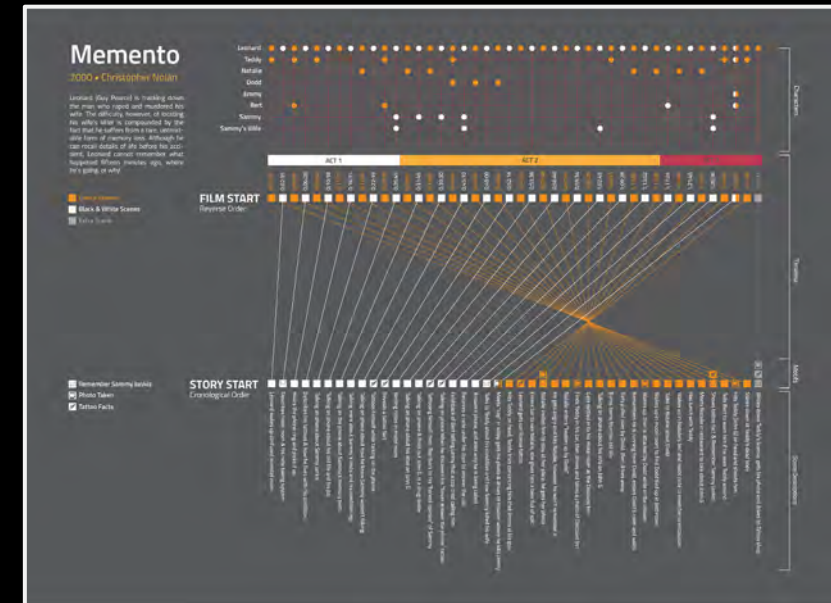
In spite of its complexity, the non-linear narrative of Momento has an internal coherence which enhances rather than detracts the viewer's immersion

The rewriting of Mlle Toureaux's story is a form of interaction with the historical record of events, as well as the presentation of those events in the years since. There is a dialogue between the past and the present, the narrator and spectator which is rich and full of possibility, an interaction of sorts inherent in the narrative process. That is not to suggest that VR, gaming and other immersive technologies do not greatly widen the possibilities of narrative forms, but throughout the project I attempted to engage and interact with the events described, their interpretation in the media, and ultimately with the film's audience in ways which both reflect and compliment the wider possibilities of digital narratives.

The project uses digital narrative tools to enhance the viewer's immersion whilst rejecting the conventionally-understood methods of 'interactivity'. Its use of non-linearity and self-reflexivity serves as an example as the classical source for the more radical narratives described by Murray (2016). Murray uses classical cinema throughout her work to illustrate VR, multiform and other directly participatory narrative forms. This indicates that whilst the line between interactive and non-interactive narrative is clear in a general sense (is the spectator required to do anything?), it is important to acknowledge that we interact with every narrative we encounter, whether or not we are likely to describe the encounter in such terms.

A Reactionary Narr@ive?

Many of the works cited in this report approach narrative and narratology in a way which appears to conflict with this project's goal of building an essentially 'classical' cinematic narrative. To give three distinct examples from three key texts:

- Mulvey's original 1973 analysis of visual pleasure and spectatorship concludes that these same cinematic codes produce an 'illusion cut to the measure of desire" and that therefore "cinematic codes and their relationship to formative external structures must be broken down before mainstream film and the pleasure it provides can be challenged".

- Whilst Gardner (in Ryan and Thon, 2014) shares my admiration for early comics, it is as examples of the first multimodal narrative forms, through their use of reader contributions, their "deliberate(ly) blurring the boundaries between front-page news and graphic narrative", and not the artfulness of their strips' construction or the artwork of their panels.

- In Hamlet on the Holodeck (2016), Murray proposes new and radical forms of narrative, seeing the same interactivity that this project rejects as interfering with narrative pleasure as fundamental to the creation of future forms of storytelling.

These contradictions are not easily explained, since I do not disagree with any of the above. In the case of Mulvey, whose ideas have greatly influenced my understanding of spectatorship, she acknowledges in her 1989 analysis of King Vidor's Duel in the Sun her own equally contradictory love of classical Hollywood melodrama (Mulvey, 1989), and concedes, in response to criticism that her earlier analysis does not account for female pleasure in cinematic narrative, the existence of 'tomboy' pleasures, a 'fantasy of masculinisation' which allows the female spectator to adopt the male gaze. Whilst this remains deeply problematic for Mulvey, I would argue that none of her criticisms of classical cinema could reasonably be applied to The Crime of Laetitia Toureaux.

A Reactionary Narr@ive? (cont.)

The female protagonist is the sole narrative agent and dictates the spectator's gaze throughout the film. She is neither possessed or repressed by a male 'hero', nor does a male protagonist encourage the spectator to 'indirectly possess her' (Mulvey 1973, p.154). Finally, she is never presented in a sexualised way, was modelled to have a perfectly normal physique and not one deformed to satisfy the desire of the voyeuristic gaze. Her movements are animated to be neither masculine nor particularly feminine, they are just firm-footed strides suggesting certainty of purpose. The only point at which she is sexualised to any degree comes directly after murdering her pursuer. Through the use of backlighting and roughness maps created in Substance Painter her skin is given a glistening sheen which, along with the gasping satisfaction of the animation, was indeed intended to sexualise – albeit very subtly – the moment. The reasons this was done are perhaps best left to the interpretation of the viewer but only the most unforgiving critic would consider, and would be incorrect in considering, that her objectification was amongst them.

The lack of any attempt to explore new narrative forms during the project, along the lines Gardner describes, has a more prosaic explanation. Whilst in agreement that such evolutions are an exciting and essential part of emerging technology, their reliance on (inter)active participation separate them from the type of dramatic narrative first described by Aristotle (Frye 1957) and, broadly speaking, unchanged since. This indicates certain fundamental, human pleasures exist in relation to the classical narrative, and that whilst other forms develop alongside them, the classical form will always be present. If it seeks to be radical in transposing itself onto new forms and media, then it may need to do so in other ways. This project is an effort to examine what those ways might be.

Michael Powell's wildly subversive dissection of the male gaze in Peeping Tom (1960). The masterful use of classical narrative techniques are fundamental to the film's radicalism, brutally assaulting the spectator with their own desires.
For this extraordinarily courageous endeavour, Powell was almost universally vilified (del Rio, 2001), effectively ending the career of one of the UK's greatest filmmakers.

A similar argument could be made with Murray's work, which proposes even more radical narrative departures such as multiform narratives, reflecting post-Einstein physics and requiring interactivity and heightened narrative sophistication on the part of both spectator and narrator (pp. 37-39). However, Murray's descriptions of and delight in narrative pleasure make her far more of a kindred spirit than it might appear, her ideas frequently inspired by films, such as the description of the multiform stories of Frank Capra's It's a Wonderful Life (1946). Murray states that 'the computer looks more each day like the movie camera of the 1890s', and does not intend it as a criticism of either.

Ultimately there was a personal dimension to the decision to work with a conventional, albeit non-linear, intertextual narrative. It is neither combative nor reactionary in intent or in practice, nor does it exclude the hope that new narrative forms will continue to emerge, or that I will be able to explore them more fully in the future. It is partly borne out of the innocent desire to share a private passion for a certain type of bold, cinematic narrative which it is hoped will never disappear altogether. It is also an attempt to create around a set of 'known' narrative techniques – those of classical Hollywood cinema. Orson Welles believed that 'the enemy of art is the absence of limitations' (Jaglom, 1992) and in imposing such limitations as I know on the creation of my own narrative, I was able to more easily navigate the vast, at times overwhelming, possibilities available to the digital storyteller.

Case study 1: Red Dead Redemption 2

Red Dead Redemption II has been widely praised for its narrative content, that it 'completely changes our notions of traditional storytelling' (Medium, 2018) through the realism of the world and our physical interactions with it, as well as the interactive elements, in the words of the developers 'You're partly experiencing the story, but partly shaping it' (Variety, 2018). As a non-gamer, it was far and away the most enjoyable of the games I played in researching the project, more for the above-mentioned realism and seductive beauty of the game's world than its narrative.

 Certainly the pleasure of the game was not, for me, a narrative one, and this same feeling has been expressed by two of modern cinema's greatest storytellers, Steven Spielberg and Guillermo Del Toro (Eurogamer, 2011 / Allociné, 2013). It is surprising, both being gamers themselves and Spielberg experimenting with many aspects of digital storytelling in his 2018 film Ready Player One. However, I shared their same frustration that cut-scenes, and some of the in-game character exposition (there are fairly long periods where you ride and chat with someone on the way to a caper) simply get in the way, two pleasures intruding on each other. In the narrative-altering decisions it is rarely revealed what difference our choice has made, which makes one wonder what the purpose is (couldn't the writers simply choose the more interesting one for us?).

To take one narrative example, is the excitement of being pursued after a bank robbery in the game equivalent to the excitement of watching an equivalent scene from a film?

 Although they may evoke very similar emotional reactions, I would argue that the pleasure in a film is one previously developed through the narrative, engaging and empathising with the characters prior to the robbery, and therefore the excitement of willing them to escape (or not).

In RDRII we occasionally have some kind of narrative relationship to our pursuer, yet the absence of that relationship makes almost no difference to the excitement of any given chase. The pleasure is closer to that of playing sport, the excitement of pushing our abilities to the limit. If we were suddenly to realise that we were being chased by a herd of elephants it would make little difference.

For those (fairly rare) moments where we are required to decide the narrative's direction, we still suffer from the "painful lack of agency that dreamers may experience" (Ryan and Thon in Ryan, 2014). These choices - for example, appease, fight or flee? - are so frustratingly limited that they detract from both the narrative and the players engagement with that narrative. I felt that RDRII's primary narrative appeal was in the well-told elegance of the overarching story, one which, like a great cathedral, is more easily appreciated from outside than within. If this is an example of classical narrative pleasure then it is one which, combined with the team of 2,000 and the 8 years of development, is beyond the scope of this and indeed most projects.

Here the player appears to be driving the narrative by deciding whether or not to spare a captured foe. The decision to spare his life simply results in the foe being instantly shot by someone else. Therefore the narrative remains unchanged and the decision only alters a minor element of the gameplay mechanics.

In spite of not experiencing any real pleasure in engaging with the narrative itself, it was the first time I had played a game with such stunningly realistic graphics and, along with Assassin's Creed Unity, it was a genuine pleasure simply to spend time in the world and the characters felt fully-rounded, for want of a better word, 'adult'.

However my lack of engagement with the game's narrative confirmed a belief that I should be focusing on a classically cohesive, non-interactive story. Equally, my lack of engagement with the gameplay confirmed a belief that non-gamers are unlikely to be drawn to the genre regardless of the inclusion of a strong central narrative.

The making of a murder – narr@ive construction
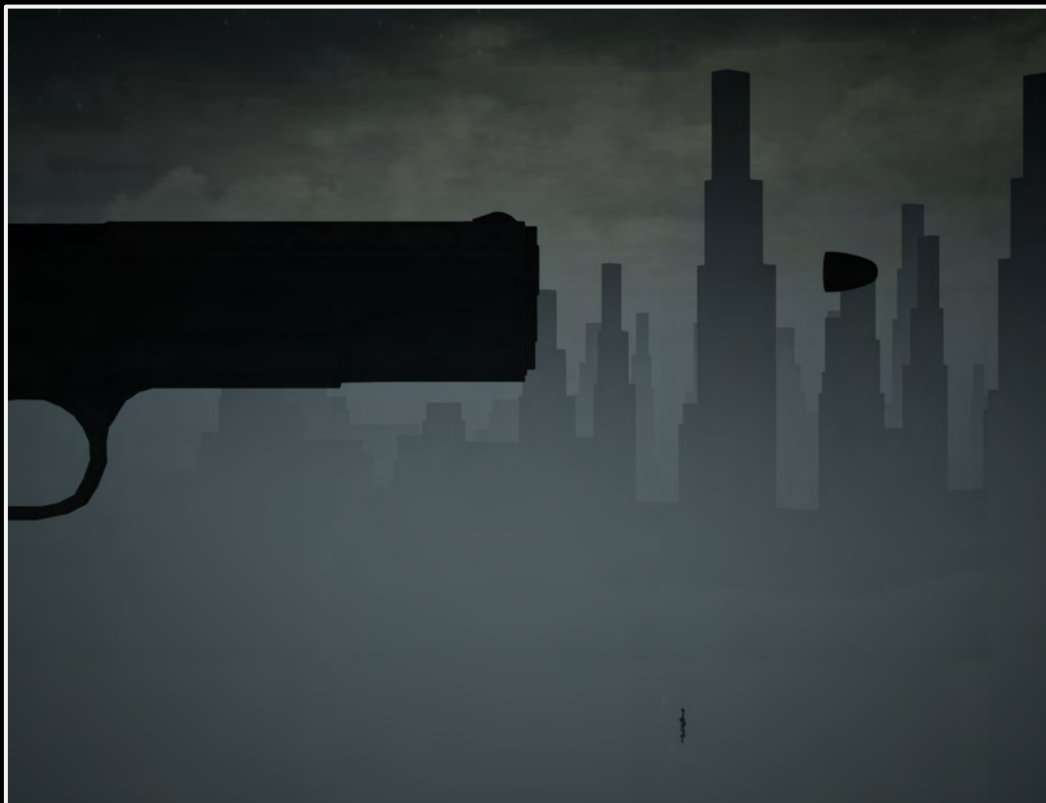
The notion of a digital narrative was not entirely new to me in practice. Having worked for a number of years as a broadcast editor I had the experience of organising footage into linear coherence, albeit rarely working on any kind of fictional narrative. I had produced a short 2D animation of Dorothy Parker's poem 'Resumé' and curate a site of Orson Welles' radio broadcasts, a collection which includes one of the great masterpieces of immersive narration, his 1938 broadcast of H.G. Welles' 'The War of the Worlds'. All of these are digital narratives of one form or another, but I had never tried to write, adapt or build a complete fictional narrative.

In order to make an animation whose primary purpose is to engage and immerse the viewer, the source material needed to be dramatically engaging, to offer the possibility of excitement and spectacle. A cleverly woven but emotionally frigid puzzle, of the type written by Agatha Christie and many 'locked room' authors risked being neither emotionally engaging nor a fruitful starting point for experimentation.

I researched and recollected those authors, directors and other narrators who place narrative at the centre of their work. From the elegantly-sewn cleverness of Saki to the rough-edged novels of Raymond Chandler and the detective magazines of the 1930s, as well as entire genres of fiction like the mystery / murder novel, there was no shortage of literary references. From cinema the sultry noirs of the 40s and 50s were the key narrative and thematic inspiration, as well as directors like John Dahl, Henri Clouzot and Quentin Tarantino for their deft storytelling and inspired narrative conceits. Basic Instinct (1992) and the many erotic thrillers released in its wake were another key reference, with their twisty plotting and sleazy, noir-esque atmosphere. This highlighted a tendency for less respectable cultural forms to be more dependent upon their narrative conceits and therefore more useful as resources, something further explored below.

The making of a murder (cont.)

Above all EC Comics – particularly their 1930s series Crime Suspenstories – were the primary resource, their shameless devotion to narrative pleasure, their radically progressive ideology (Diehl, 1996) and their stark, sparse visual style made them the perfect resource and it is still unclear why, in the hundreds of stories researched, none felt suitable. However, one strip – about a writer whose story of a perfect murder (a locked room mystery – see blog) is rejected by every publishing house he sends it to until, angry and desperate, he realises that he can simply carry out the murder himself... It all ends horribly, of course. Although the story had none of the romance and excitement I hoped for – greed is the dreariest motive of them all - the locked room aspect reminded me of a story I had read in another type of detective magazine of the same era, several thousand miles apart. The magazine was Detective, a French true-crime magazine from the 30s (continuing today as Le Nouveau Detective) and the story was that of Laetitia Toureaux.

The facts are as simple as they are extraordinary – Laetitia Toureaux, a 29-year-old factory worker, got into a 1st class carriage at Porte de Charenton, a metro stop in the east of Paris. The carriage was empty apart from Mlle Toureaux, and no-one was seen to enter from either of the busy second-class carriages on either side. At the next station – Porte Dorée – Mlle Toureaux was discovered dead in her chair, stabbed in the neck by a knife or, as some of the press preferred to later imagine, a stiletto (rather bizarrely this embellishment also appears in some of the marketing materials for Finley-Croswhite and Brunelle's 2010 academic study of the murder).

Further details of the crime itself can be found on the project blog, and Finley-Croswhite and Brunelle's 2010 study recounts the events surrounding the crime in detail. It is worth highlighting where the project departs, and it departs far and early, from the known facts. Mlle Toureaux was both a member of La Cagoule and was working as a police informant. Jean Filliol, a La Cagoule assassin, was considered one of the most likely suspects in her murder, which remains unsolved. She did not work in an abattoir but a glue factory, which the factory of the film was originally supposed to be. Such factories slaughtered horses in order to use their bones to produce glue, hence the unexplained slaughter of a horse in an abattoir, but this detail was lost during one of many efforts to pare down and simplify the narration. She did not meet anyone in the sewers that night, and the Francis character is entirely invented, as are the other assassins. The story of her going dancing, entering the carriage and being discovered at the next stop are all true. The departure station is a short walk from where I live in Paris, a small panel describing the incident on the southernmost platform. The crime is little known today in France, and only one person of the 20-30 I have asked has known anything about it, and only as a result of this small panel. There is absolutely no evidence to suggest she was not the victim, nor that she committed any kind of murder herself. As far as I am aware the idea has never been suggested by anyone.

The decision to take this particular story and start re-telling it is explained in more detail later, but I was immediately intrigued by every aspect of Mlle Toureaux and of the crime itself. It had many drawbacks, the apparent tastelessness of the venture, the need to write something entirely original, the loss of every idea I had about an LA-set noir and the work already begun on it. It also took place in Paris, quite literally the last place I would ever choose to set a story, coming as it does ready-formed in most people's minds. It was irresistible though, and the more I read about the events of her death the more I found myself utterly immersed in the story of the life and death of Mlle Toureaux. This, at least, in the context of the project's objectives, could only be a good thing.

One of the few known photographs of Laetitia Toureaux, circa 1937

Case study 2 & 3 – Jurrassic World / Ciota

The viewer selects from one of two experiences and within seconds we are suspended in space as the frighteningly large Universal logo thunders into view. After a few vertiginous seconds dangling in space, the spectator is transported to a jungle setting, fixed to the spot, the image slightly blotchy, imperfect, but utterly absorbing. A dinosaur appears, the impatient viewer may not have realised that this is our friendly companion and draw back in fright. We slowly but startlingly begin to glide through the scene, for the VR first-timer a wave of nausea may hit as a second dinosaur appears and the pair set about each other, their limbs flailing and thrashing before the viewer. Before the fight is over, there may be some who, heart racing, palms sweating, have torn the mask off and placed it at a safe distance, eyeing the thing with profound distrust, shivering at these visions of dinosaurs we know full well to be extinct.

The story goes that those who attended the first screening of the Lumiere Brothers' early 50-second film of a train slowly drawing into the station at La Ciotat fled the cinema in panic, terrified at the sight of thousands of tons of steel bearing down upon them. Though perhaps apocryphal and sometimes ascribed to a later 1938 screening of the same film in 3D ("Editors Guild Magazine – Cut/Print". Editorsguild.com), it is difficult not to dismiss the reaction as a naivety so profound it borders on idiocy – after all, trains aren't black and white and do not confine their presence to a single square in a single dimension. In the hundred years since, as the moving image has spread from cinemas to televisions to mobile devices, such a reaction has become ever more difficult to comprehend. For some however, their first experience of VR - Jurassic World in my case – may be enough to convince them that the story is not only possible but more likely than not.

3D or stereoscopic cinema has fluctuated in popularity since the earliest days of cinema, and might appear the logical bridge between the immersive possibilities of 2D cinema and VR. However stereoscopic vision has a surprisingly limited impact on our perception of depth (Salvesen et al., 2018), and even in its current state of development it is as likely to distract the audience from the narrative than to further immerse them.

My own experience at the outset of 3D cinema's most recent resurgence in popularity was the 2012 film Prometheus. The discomfort of the glasses, the frequent moments of unintended double-vision and the unwatchably distorted image at the horizontal edges of the screen were consistent distractions from narrative engagement.

In contrast, what both the Lumiere brothers' and their contemporary VR counterpart achieve is not in increasing the accuracy of their vision's realism but increasing the closeness of the spectator to their vision. This aspect of VR is what makes its potential so exciting for an immersive narrative, realising a promise that 3D cinema has never been able to fulfil.

The wrong kind of trash

Any lover of film-noir or hardboiled fiction must by necessity be fairly comfortable with the idea of murder for pleasure, but I had never thought of (re)writing one myself. Nor did I really know anything of murder in the world outside of fiction. Research into the real-life nature of such crimes led to other types of digital narrative, including the true-crime podcast, a truly digital phenomenon (this is further explored on the project blog).

One popular example of such a podcast is NBC's Dateline, unusual in the genre as it is simply the audio soundtrack from an existing television program. The program is horribly addictive primarily due to the cynical brilliance of its storytelling, using classical cinematic and literary tropes (suspenseful music, narrative twists, unreliable narrators) to powerful effect. However, its approach to its subjects has drawn 'widespread derision' (Ruel, 1997) from many, including myself.

One example I noticed was when asking interviewees to describe the person who eventually turns out to be the 'murder(er) du jour' (Ruel). Questions are asked in the present tense, pushing the interviewee to describe their feelings towards the murderer prior to their crime. This allows the program makers to hide the identity of the murderer until their chosen moment. So they ask a murderer's wife: 'OK, it's 2010, you've just gotten married, how do you feel about him?', and of course the responses do not give the game away. Equally the murderer, if interviewed, is filmed so as not to reveal their surroundings (and vice versa for a potential, but ultimately innocent suspect). Such breathtaking cynicism, set alongside the disingenuous eulogising for the victim, made it very clear what to avoid in the world of digital crime narratives. Yet there is no denying the awful genius of the storytelling on display, as well the remarkable number of mystery-novel-like murders which seem to take place on any given day in the US.

Press coverage in the aftermath of Laetitia Toureaux's murder was equally revealing, especially of the prevailing attitudes towards women, and this is the central theme of Brunelle's academic study of the case. Initially portrayed as 'a gentle lamb' and 'victim of cruel fate' (Brunelle), the press rapidly turned upon her once details of her private life – particularly a married affair – were revealed. Subsequently labelled a prostitute, cocaine addict and serial breaker-up of marriages, her name was dragged through the mud with great relish by the bourgeois press, though few of these stories had any basis in fact.

True crime is the far and away the most popular podcasting genre (currently accounting for 11 of the 20 most popular podcasts), each employing narrative techniques in different ways. In 'My Favourite Murder', gruesome murders are recounted much like campfire stories, the two presenters giggling with delight at their own appalled horror at the events they describe.
The myth - if such a myth exists - that true crime attracts a largely male audience is belied by the predominately female audience of the true crime podcast, accounting for roughly 73% of listeners (Boling and Hull, 2018).

As both an admirer and defender of 'gutter' media such as detective comics, exploitation cinema and pulp novels, it was interesting to note that Detective (the magazine counted Andre Gide, Jean-Paul Sartre, Simone de Beauvoir amongst its readership), the magazine in which I first discovered the story and which is still considered today – in the words of a neighbour – 'un peu trash', was one of Mlle Toureaux's only defenders.

The wrong kind of trash (cont.)

The edition of 'detective' the week following the murder of Mme Toureaux

 Although the magazine delighted in recounting the lurid goings-on of criminals, prostitutes and drug addicts and, like Dateline, makes extensive use of the present tense – *"qui a pour vertu de supprimer la distance et le doute"* (Evrard, 1997) - *"which has the virtue of removing distance and doubt"*. Both Deleu (2014) and Brunelle's feminist analysis of the murder acknowledge that Detective's stories tended to focus on strong, resourceful women, and that their coverage of society's outcasts, prostitutes in particular, was far more favourable than that of the 'respectable' bourgeois press.

In contrast to Dateline NBC's glossy cynicism, they simply shared an honest, albeit salacious, curiosity about the excitement of these people's lives and, prurient though it may be, they are largely sympathetic towards the unfortunate people they write about.

The changing attitudes towards Mme Toureaux can be seen in the newspaper coverage in the weeks after her death, as she is increasingly considered responsible for and even deserving of her demise.

So, in the spirit of Detective or EC Comics, I set out unafraid to create a piece of 'trash', it just had to be the right kind. Certainly, in the gory shooting at the beginning, the spattering blood, the absurdity of the leap from a firing gun, the sexual undertones of the murder itself, there is more than enough to place it in the realms of the trashy, but I hope redeemed – if redemption is required – by its portrayal of the central character.

Laetitia Toureaux

I sincerely hope that the affection I have for this extraordinary person, for her short, tragic but wildly exciting life is clear throughout the film. She is not presented as perfect, after all she commits a frenzied murder, but she is engaging, thoughtful, curious and - I hope – as fully-formed as a character can be in twelve weeks and seven minutes. Confined to my home for two months along with much of the world, I felt a little jealous of someone who seemed to have lived several lifetimes all at once.

The blood-covered carriage inspectied in the hours following the murder

She is portrayed as both instigator and agent of the narrative and as outlined in the project objectives, there are none – as far as I am aware – of the problematic traits described by Mulvey (1973), or by Stache (2013) in her study of female violence, not 'given male permission' to commit violence, nor avenging her disempowerment. Rather she punches because she gets punched, and kills because someone is attempting to kill her. Unlike the archetypal mystery story (Shmid, 2016) we do not follow a male detective but a perceived female victim, who has more in common with what Mayersberg terms the 'active protagonists' of Otto Preminger's films such as Laura (1944) (Mayersberg, 1972) than any passive object of desire.

So whilst my version of events is no more honest than those reported in the press of the time, it at least does not to pretend to be so (I was careful to include the date of her death in the closing credits) and attempts, successfully or not, wisely or not, to cleanse a name that has been dragged through so much mud.

Bridging

The scale and ambition of the project needed to be taken into consideration from the outset, in retrospect the very idea of creating a seven-minute animation in just twelve weeks is beyond foolhardy. This duration was filled with 6 distinct levels of varying complexity, 18 characters using 70+ animations, 47 different cameras, many thousands of individual keyframes, over 300 in-game sequenced edits and several hundred models alongside a similar number of materials. If I had hoped to build every model from scratch, create every texture from my own photography, I would still be waiting to open UE4 for the first time. In addition I had presumptuously created some models in the months prior to the project assuming I would be making an LA-based noir-type film, almost none of which I was able to use.

I limited the time spent polygon modelling by concentrating on 'hero objects', high-polygon models which are focal points of the film. These included the oversized gun, Eiffel Tower, abattoir (adapted from a model created for a previous course) and several others, all of which were built from scratch, using reference images and – if available – 3D-scanned reference models. I scoured previous courses for models I had built, finding some modular buildings and other construction elements built for a game design course.

I then began to explore what might be termed 'bridging' tools, software and techniques which both widen the creative possibilities and save valuable time on less creatively important tasks. The typewriter was a combination of a model built from photos taken of a typewriter in my flat, processed in Meshroom to produce a high-polygon model which was rebuilt in Maya, along with the animated arms which were simple to model, though their rotating, angular motion made them less simple to animate. In fact only 5 arms are animated, something I hope the viewer is not as painfully aware of as I am.

A similar process was used where 3D scans were found on sites such as Sketchfab, rarely suitable for a gaming engine, they would also be rebuilt in Maya, either using Quad Draw onto a live surface or, much like an image reference, as an accurate guide to measurement and placement.

Unreal's regular offerings of free resources were also used, I regret not having time to build the train but, given its fleeting appearance in the film, I used a pre-built model provided by Unreal and re-textured it as best I could. It is the most incongruous model of the film, looking little like trains of the period and one of the first things I would remake given more time to complete the film. The free access to Quixel Mixer's vast library of tools is an excellent example of this 'bridging' process. All manner of materials are available, with highly detailed maps of diffuse and every other texture as well as decals and atlases and a limited number of base meshes. These are of limited use until they are modified and personalised in Mixer, a process which requires some skill but far less patience than building them from scratch.

In only one or two instances was a model used with little or no creative alterations, the sad horse at the beginning was only slightly modified to simplify the heavy mesh, and although the Leica camera at the opening was retextured and remeshed, it is a hero-type model that I would have liked to attempt organically.

SpeedTree was used to create trees, a deceptively complex program which nonetheless focuses time spent on decisions directly impacting the final form, and not in, say, duplicating thousands upon thousands of leaves. Of course these programs make it easier to click a button or two and produce something of professional-level quality, but these models are as close to useless as those taken from 3D scans until they are adapted to the goals of the project.

Further examples are given in the workflow diagrams below, but overall it was refreshing to discover so many techniques which might seem on the surface to be 'cheating' in their ease of use but in fact require a similar degree of creative and technical skill which is more tightly focussed than a workflow based solely on organic model and texture creation.

Characters

My greatest concern over the modelling was the characters. In games they had been the first thing to break any sense of immersion, with unrealistic expressions, movement and an inhuman quality which makes them more difficult to empathise with than a simple cipher, like an animated stick drawing. Not only this but I have no experience in character modelling, and limited skills in character animation. This worried me from the outset, there seemed no point in attempting to build any kind of narrative around a character who looked plasticky or corpse-rigid or cartoonish, it was difficult to even find any reference material from gaming which I felt might work. Red Dead Redemption II has very convincing character models, but I didn't have their skill, or 8 years of development time. Mixamo and Fuse turned out to be a good 'bridging' solution, albeit without the sophistication of Speedtree or World Creator. Once the textures are built at 2048 and 4096 pixel scale, then repainted in Substance, the models are certainly not 'uncanny' enough to throw the spectator out of the narrative, and have a style of their own which I tried to work with.

I shot characters from the feet up, emphasising their movement through the narrative, and simplifying the process of animating them. The faces are rarely seen, and Laetitia's is never properly seen (except in the interactive VR experiments). There might have been many interesting reasons to do this, but the main one was fear that a lack of facial expression would prevent the spectator from empathising with the character, and from losing themselves in the story. Having decided to do this I worked on making it as effective as possible, as part of a highly stylised-way of shooting, like that of The Third Man (Carol Reed, 1949) or Sin City (Frank Miller, Robert Rodriguez, 2005), stopping short of the Dutch angles employed by both films, difficult as they are to use effectively, Battlefield Earth (2000) highlighting the risk.

Conclusion

The central question which this project attempts to answer is whether there is a place for the classical cinematic narrative and its passive spectator in the contemporary digital world. The simple fact that it was possible to achieve any kind of outcome, in the form of a 2D work of machinima, is itself revealing. In the absence of recent additions to film-oriented tools in Unreal Engine such a project would have been difficult to achieve even five years ago. Epic Games are increasingly devoting resources to develop such projects, and the word 'cinematic' appears frequently in the application's toolset.

However, the delayed and patchy success of the experiments in virtual reality forced the focus of the project towards the narrow, and less academically fruitful, creation of what is essentially a short, animated film, little different to those which have existed for over a century. The film can be rendered live at 1080p on a high-spec computer, but in the absence of any spectator-driven changes (or indeed any changes at all) it is difficult to see what the point would be.

Experimenting with development in VR, with 'bridging tools', with game engines and the subjective gaze of a digital spectator, all revealed something of the challenges and opportunities facing those creating cinematic narrative in the digital space. Yet the primary challenge for non-interactive narratives in an interactive space will be to adapt these tools to their purposes. Sounds could change their location depending on the spectator's position, or be used to encourage the spectator to look in a certain way. Virtual cameras could be adapted to suit the eyesight and height of the viewer, or adapted to those less physically mobile. If connected to some kind of body monitor, narrative surprises might be slipped into the story when the heartbeat of the spectator suggests they are most susceptible to them.

None of these would necessitate the breaking of the viewer's immersion, indeed they would be attempting to enhance it. Nor would they require direct participation in either the narrative or the interactive world, and this type of experiment would go a long way to bridging my interest in the evolution of non-interactive narratives, and the dominant focus on the interactive narrative capabilities of such tools. Murray (2017) details several projects with similar goals, such as researchers at Carnegie Mellon University using AI to build a murder mystery whose outcome varies depending on what choices are made by the participant. However, this is still a more sophisticated version of the same branching narrative system over which my doubts remain – there must be some versions which are more narratively successful than others, therefore why not simply offer the spectator / player the best one? And if the viewer is unaware of their influence on the narrative (unclear from the description), would it not risk being identical to a non-interactive version of the project?

The current graphical limitations of live-rendered narratives on a VR headset are a substantial drawback, both in creating and viewing narratives, and I confess to being horrified at the total absence of shadows, texture detail and almost everything which gave The Crime of Laetitia Toureaux its visual appeal in the PC version. However, this will no doubt improve as time goes on, as will the speed and ease-of-use of VR-creation tools. Even the relatively simple task of rendering out a 360-degree version of the film was heavily complicated by the primitive nature of the tools (only a beta plugin currently exists for the Unreal Platform and it is a fiddly, poorly-documented process), as well as the long rendering times, a 360-rendering of the entire film would have taken days if not weeks. For my own practice VR is more a technology of the future than the present, but it is an imminent future, and an exciting one at that.

Although we draw different conclusions from the assertion, I entirely agree with Ryan (2001, p.284) that with VR:

... there is a potential, even more arresting than the images of Gibson or Vinge, for taking your body with you into worlds of imagination

In my case it may just require a little patience. Finally, there is the question of my personal motivation in creating the piece. I hoped to share a passion for an art form which has given me so much pleasure, and to offer something of the drama and spectacle I feel is missing from so much of the modern digital - and digital narrative - experience. On these terms the project exceeded my modest expectations and if anything, the wider goals of the project may have suffered as a result. Such was my enthusiasm and delight in eliciting those first tentative shivers of narrative excitement that it became the focus of every waking hour to make it as effective at possible. Inevitably this came at the expense of the project's wider development, and the rigour of its academic framework. It certainly reveals that not only are there a great many tools available to the classical narrator in the digital space, but these tools allow a degree of control, autonomy and creative opportunity that is thrilling in its possibilities.

It is all but impossible to quantify the extent to which the film engages its viewers, or to assess the pleasure of its spectators. Under the trying circumstances of its creation I doubt any of the friends or acquaintances who were asked to provide feedback would have dared express that it was an unenjoyable experience. So, if the only measure I can apply is the pleasure I found in its creation, the project was an unqualified success. In spite of all the missteps and failures along the way, I enjoyed every exhausting moment, and hope that some small fraction of that pleasure makes its way to whoever might find themselves in front of it.
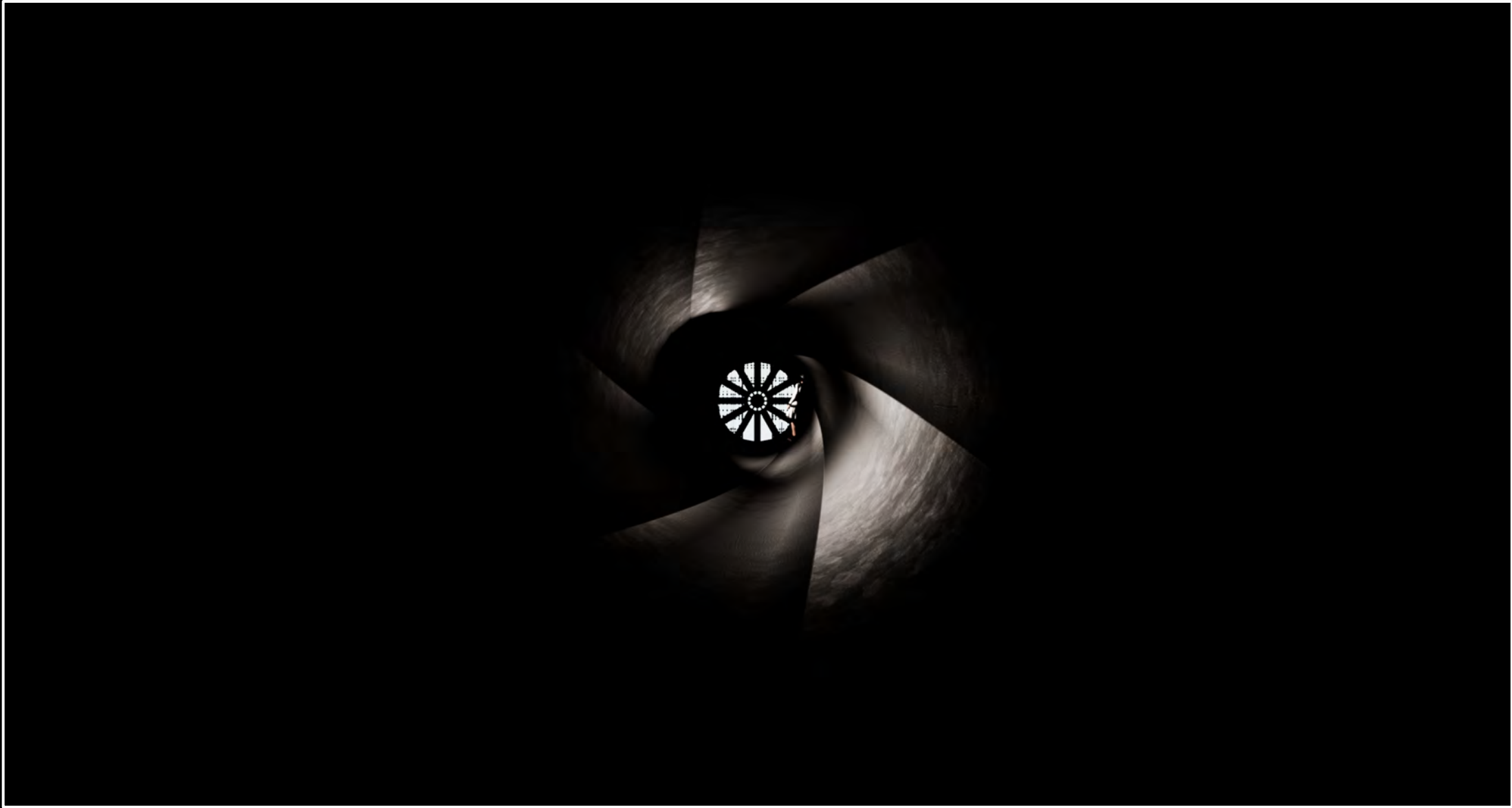
The Crime of Laetitia Toureaux
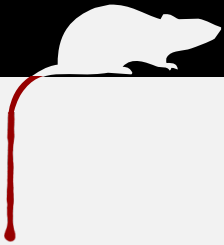
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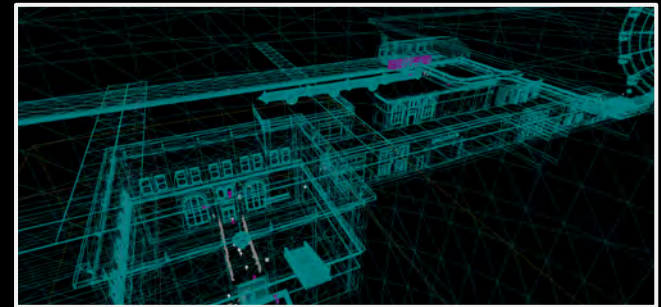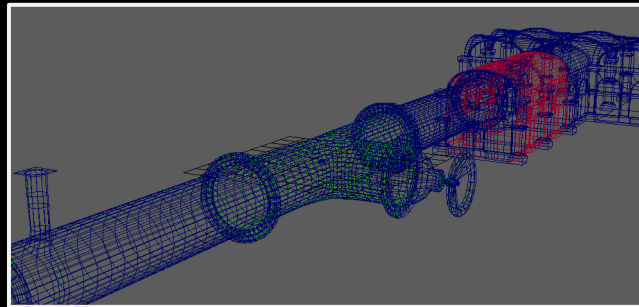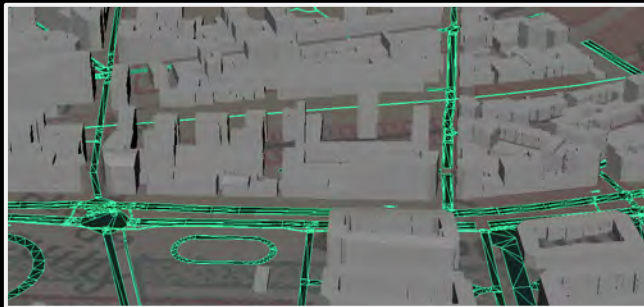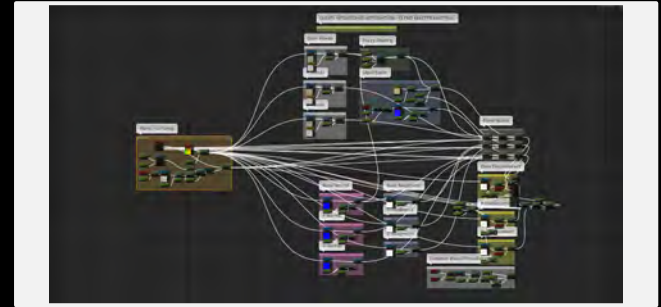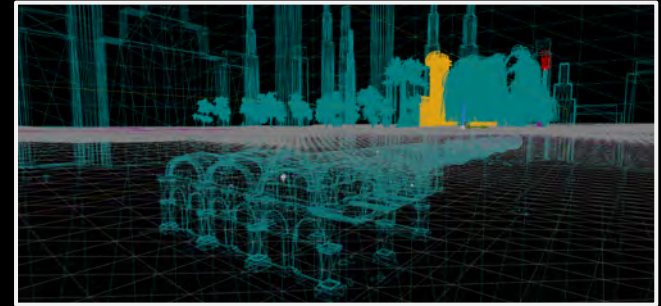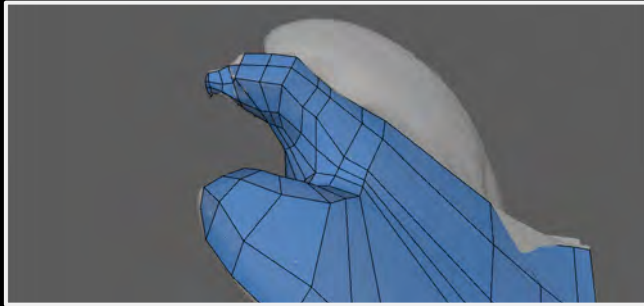
Take / retake

Images from Persona (Ingmar Bergman, 1996) and Sin City (Frank Miller, Robert Rodriguez, 1999)

Liv Ullman's performance in Persona was an important character reference, and the style of Sin City a key visual one.
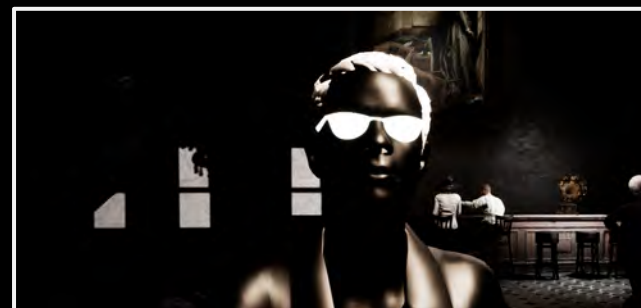
Take / Retake

Kill Bill Part One (Quentin Tarantino, 2003)

Strangers on a Train (Alfred Hitchcock, 1951)

Raiders of the Lost Ark (Steven Spielberg, 1981)

Some films were closely mirrored in the animation, in all three cases I studied the way the original sequence had been shot. The three shots of Mlle Toureaux running through the barrel of a gun were initially set up to exactly replicate those of the Indiana Jones film, as a boulder nearly thwarts his escape.
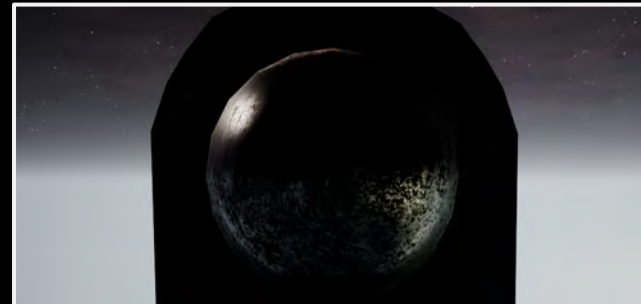
Take / retake

That Night's Wife (Yasujirō Ozum 1930)

Un Flic (Jean-Pierre Melville, 1972)

La Jetée (Chris Marker, 1962)

Ozum's use of light and shade was an invaluable reference, and the cold melancholy of Melville and his heroes, particularly Delon, also inspired something of the films overall feel, its desaturated colours and grey mists.

La Jetée was, like Godard's Alphaville, an extraordinary resource for unique visions of Paris. Godard's film used a similar technique to the project's of simply covering things in posters, shadow and using unusual angles to disguise the fact that his Paris of the future was simply the Paris of today.

The Third Man

TheThird Man (Carol Reed, 1949) inpsired several of the films visual elements, and the work of Graham Greene was behind a lot of ideas around the protagonists.

His female characters are often the highlight of his novels, and usually more entertaining than the men, particularly in the case of This Gun for Hire (below).
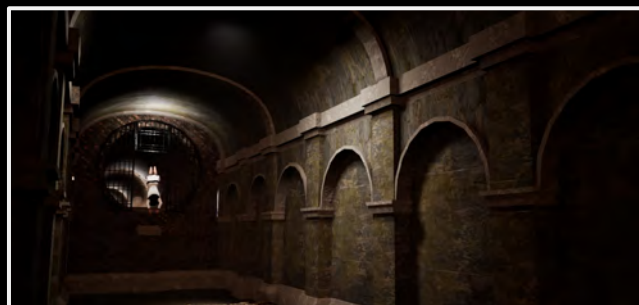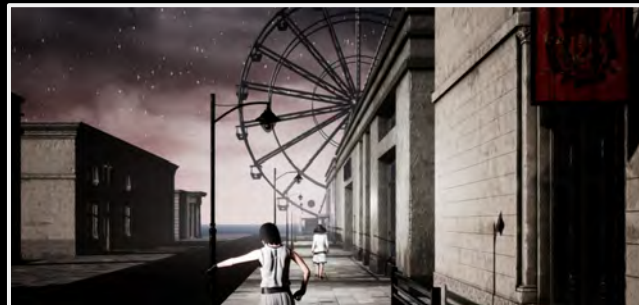
Anna Karina / Jean-Luc Godard

FILM REFERENCE:

Bande à part (Jean-Luc Godard, 1964)

One of my all-time favourite films from one of the great film partnerships, Godard and his wife Anna Karina.

Not only was the film itself, and my affection for it, a fundamental reference for the project, but the attitude, manner and style of the characters and of Godard himself have always been a source of inspiration.

Though not an easy person to work with - I was present at a festival in London where he blithely punched a reviewer in the face for no immediately obvious reason - his utter devotion to cinema and the seriousness of his work around it is difficult not to admire.

In spite of this seriousness of purpose, the film is alive with the joy of cinema and of life itself. The scene of the characters dancing in silence as a voice-over talks the viewer through their emotional states (far right) is one I can't watch without a shiver of delight creeping up the spine.

A big part of this joyous, often comic aspect to the film is Karina's performance, and many of her other performances in his films. Her death halfway through the project was a sad moment, the person my thoughts returned to most often when imagining the cinematic character of the protagonist suddenly no longer with us.

Anna Karina / Jean-Luc Godard

I'm not hungry.
I want to see a film. Goodbye

It's not really rebelling. It's annoying
not to be able to do what you want.

Why does everyone look
so sad and miserable?

Shades of meaning

The reflective sunglasses from Cool Hand Luke (Stuart Rosenberg, 1967) and the officer from Psycho (Hitchcock, 1966).

Another technique to keep characters' facial expressions obscured, I adapted it with these memorable cinematic moments in mind.

Exposition Intern@ionale

In 1937 Paris held the Exposition Internationale, with the striking image of the German and Soviet pavilions face-to-face in front of the Eiffel Tower.

Much like the Berlin Olympics of the previous year the event was heavily politicised, and these two statues reaching into the sky introduce the film's setting, as well as foretelling the conflict to come.

I found this extraordinary image interesting in so many ways, both in relation to the narrative and its wider historical significance. It was the only significant sequence where I attempted to create an accurate visual representation of Paris in 1937, and presented a unique set of challenges. Not only the creation of the tower, sculptures and plinths but determining their placement and scale.

Perhaps to compensate for the somewhat fluid sense of time and place, I doggedly insisted that this single image be as accurate as possible. The creation of the sculptures was time-consuming but there are many photographs of both, and of course the Eiffel Tower has not moved in the intervening years.

The greatest difficulty, surprisingly, was to scale and place the models correctly. Even with a fairly good idea of the location of each element (on either side of the Seine), the different lenses used in photographing the models face-on made it very difficult to distinguish between scale and proximity.

Ultimately I was confident the models were very close to the correct scale and placement but the wide lens used in the top-left photographs demonstrates this issue, the very narrow lens I used creating a far tighter composition.

Music notes

The soundtrack to the film was carefully chosen to draw the spectator along with the story, largely from the extended playlists of public-domain jazz which played in the background as I worked, and from which songs were plucked and inserted intermittently. Although several of the recordings were made in Paris in the 1930s, there was again no attempt to use the soundtrack to create a sense of time or place, with musicians and music from Trinidad, Haiti, Senegal, Portugal and the US. Instead I focussed on the emotional impact of the music and its effect on the sequences themselves. Directors like Quentin Tarantino (Inglorious Basterds, The Hateful Eight) regularly use anachronistic musical accompaniments to great effect, what is lost in historical authenticity is gained in a richer, deeper relationship between image and sound.

Space does not permit developing these decisions on a scene-by-scene basis, but I can highlight the two musical choices which were made independently of the above-described method. Firstly, Duke Elington's soundtrack to Otto Preminger's Anatomy of a Murder, having recently slipped into the public domain is used briefly (from 04:25 – 04:40) but is perhaps the only piece instantly recognisable to anyone familiar with the film. Not only do the thumping drums and screeching trombone provide a perfect backdrop to one of the film's key dramatic moments, but it evokes something of the atmosphere of a film and a director who were fundamental influences on the project.

There are also three pieces by Hazel Scott, a virtuoso jazz pianist of the era whose work I had in mind from the very start. Melancholy and reflective yet crackling with the urgent energy of the technical and creative genius, her work was a musical reference point from which all others departed. Scott's reworking of Bach's Two-Part Invention No. 13 in A minor which plays over the opening scene was the first piece selected and does everything I could hope for in seducing the viewer into the story.

Hazel Scott was also a pioneering figure in the civil rights movement, something I confess to not having been aware of prior to beginning the project. Although having no compunction in seeking inspiration from those engaged in the most odious of political projects (the frightening technical brilliance of Lehni Reisensthal, for example), there is something highly intimate about the relationship between the musician and their listener which can feel almost betrayed by the inadvertent discovery of some appalling character trait or other. Such was my admiration for the content and spirit of her music, it came as no surprise to learn that behind it all lay the same bold, courageous determination which is celebrated in the film.

Workflow notes

I decided to focus from an early stage on the wider mise-en-scene than on details of time and place. This was a pragmatic decision taken in a zero-sum trade off between the macro and micro, there was time to build the Eiffel tower and a Rue Morgue sign, or to create small sets of textures and models evoking Paris streets of the 1930s, but not both. The inevitable cost is that we can rarely say with any certainty where or when we are, and we are merely given 'signposts' to being in Paris (titles, the tower, posters). There are wild anachronisms throughout, in previous versions a policeman appeared in 21st century uniform, simply because I had limited options available in the confines of Fuse and Mixamo for character creation.

One of the disadvantages with relying – in part – on acquired resources is that time must be spend modifying and adapting them to the project. A train was needed but I could not justify spending 2-3 days modelling it for such a fleeting appearance, and could only find a model of a tatty New York Subway train from some point in the past few decades and coincidentally given away for free by Unreal in the first month of the project. Game engines makes it easy to apply decals to such models (though not in VR), and in designing some of these I was at least able to leave a creative mark, but no amount of stickering can hide the incongruity if it. It was not a particularly pleasant aspect of the creative process, papering over unsuitable models, but took a tiny fraction of the time required to model from scratch. It was done sparingly though, the train being the most obvious offender, and is the first thing I would change given more time.

The film was lit on noir principles, low and dark with occasional fog, taking advantage of the cinematic lighting, ray-tracing and physical cameras available in Unreal. Lighting proved to be an excellent way of evoking atmosphere in the limited time available, and an opportunity to experiment with many different setups quickly and with instant feedback from the game engine, something which is a joy to anyone used to slowly rendering single frames with Arnold in Maya.

Workflow

MODELS

SOUND

FINAL OUTPUT

2D reference image (single)

2D Images (photogrammetry)

High-poly 3D Scan from real-world object

Polygon model (from other source)

Model created in dedicated software (Speedtree, WorldCreator)

Recordings (voice over, FX)

Open source music / FX

Polygon modelled from scratch based on reference

3D model created using Meshroom based on images

Built with Quad Draw based on reference model

Model optomized, adapted and rebuilt if necessary

Zoom recordings edited and remixed

UV mapping and unwrapping

UV mapping with textures adapted to PBR workflow

Exported to optimised format

Final Export from UE4 to uncompressed image sequence / gaming build

Images compiled in DaVinci Resolve

4K Video (H264 / 5)

Textures painted in Substance Painter

Normal / Roughness / Height maps created in Alchemist from references

Textures built with Quixel Mixer

Integration with UE4 via installed plugin

360° Video (Stereo, 8192x8192)

Final adjustments to raw image

Textures rebuilt in UE4's nodal system and (re)applied to model

GAME ASSEMBLY IN UE4

Playable VR application (Oculus Quest running Steam VR via Virtual Desktop)

Workflow (cont.)

SOFTWARE

UNREAL ENGINE

UE4 was the central hub of the project, used for the construction and compilation of all final builds.

MAYA

Used for all modelling, UV mapping and some texturing.

AFFINITY PHOTO / DESIGNER

All image adjustments and the majority of the image processing were done in the Affinity Suite.

DAVINCI RESOLVE

Both video and audio editing were done using DaVinci's Resolve.

QUIXEL MIXER

Many of the textures were built using Quixel Mixer, typical of a modern workflow offering full creative control despite adapting existing resources.

SUBSTANCE PAINTER

Substance Painter was used for all original texturing, height maps and masking - almost every material passed through it at some point.

SUBSTANCE ALCHEMIST

I took some tentative steps towards full texture creation with Alchemist, its limited functionality meant it was something of a dice roll each time but was extremely successful for certain objects (the dance hall coin, etching on camera lens)

MESHROOM

I would have liked to use photogrammetry for everything as the textures have a fascinatingly odd quality but in the time available was only able to create 4 models with this method.

SPEEDTREE

All foliage was built in SpeedTree, luckily I had used it before since - as with many 'bridging' programs, it is far more complex than it appears.

WORLDCREATOR

Several maps were created in WC, though ultimately only one was used (the ground height details outside the abbattoir).

FUSE CC / MIXAMO

All characters were created in Fuse and more than half of the animations in Mixamo, though all characters were subsequently remapped and re-textured in Substance to avoid too generic a look.

ANDROID SDK

Though not a creative tool, the Android SDK was so time-consuming to learn and use that it deserves some kind of a mention.

PUREREF / DRAW.IO / AUDACITY / CONNECTOR / HANDBRAKE / GRAVITY SKETCH / VISUAL STUDIO CODE

Various other programs were used for technical and other tasks - it is difficult to imagine planning without Draw.io or assembling images without PureRef and they all played a vital role in constructing the project.

ADAPTATIONS

One of the goals from the outset was to use, where possible, software with which I had no previous experience. This was primarily to see what challenges a storyteller might face using digital tools for the first time, although clearly my experience with similar packages was a huge advantage. Due to Covid-related economies I also abandoned an 8-year subscription to Adobe CC and hoped to explore the alternatives, using only Fuse CC and Mixamo for character creation alongside Bridge CC for file management on Windows, all of which are free to use.

UNITY → **UNREAL ENGINE**

The most ambitious decision was to abandon Unity, an application I knew very well but had never really liked. Opening UE4 for the very first time 12 weeks prior to submission was easily the riskiest technical decision taken in the course of the project.

After several comparisons between the two I was hugely impressed by UE4's superior graphics which ultimately convinced me to switch. Luckily UE4 was a joy to use and exceeded my expectations in almost every way.

ADOBE ILLUSTRATOR / PHOTOSHOP → **AFFINITY DESIGNER / PHOTO**

Both of these had become a chore to use, with far too much time spent navigating the software's increasingly eccentric workflows and slow performance.

Much like UE4, Affinity's suite was better in every single way than Adobe's, extremely easy to learn and user-friendly without sacrificing functionality.

MAYA → **HOUDINI**

Like many of its users I have a love / hate relationship with Maya, phenomenally powerful but making almost no concessions to ease of use with its protracted, inconsistent workflows and .

I had hoped to use Houdini for all modelling but this proved to be a bridge too far. For all its faults there is still nothing faster for polygon modelling than Maya and although I felt instantly comfortable with Houdini and still plan to switch in the future, it was simply taking too long and within days I had slunk back to Maya.

ADOBE PREMIERE PRO → **DAVINCI RESOLVE**

When I started out as a video editor 15 years ago, Premiere Pro was something of a joke in the industry, reliably crashing within the first few minutes of use. Though vastly improved in the meantime and an excellent all-rounder, I had no hesitation abandoning it for what were only quite simple editing tasks.

It was very interesting to explore another NLE and although surprisingly different in approach compared to PP I was up and running within minutes. The project didn't require very much of the software and I would be keen use it again on a more ambitious editing project.

DREAMWEAVER → **VISUAL STUDIO CODE / MOUNTAIN DUCK**

Not a major element of the project but necessary for building the project's blog, I uninstalled Dreamweaver with a sigh of relief. Buggy, bloated and full of superfluous functionality, I only ever used it for synching to the server and for its find / replace tools.

VSC is as good a code editor as I know, and can be extended to offer similar functionality to Dreamweaver. The one thing I missed was site synching, something which Mountain Duck made far easier than Dreamweaver ever had.

C# → **BLUEPRINTS**

Not wanting to learn C+ in order to code the project, I was intrigued by UE4's Blueprint system, though aware of a certain divide amongst developers over its usefulness. As hinted at by several of these choices I am much more comfortable with node-based systems, so approached Blueprints with an eager, open mind.

For a project which relies on coding more for its design elements (particles, SFX, non-user interactions) than its functionality I found Blueprints easier to use than pure coding, though it took some time to get used to and made certain things, particularly HUD and titling elements, more complex than necessary. Overall however they became more and more useful the more I learnt and in spite of being UE4-specific I hope to explore them further in the future.
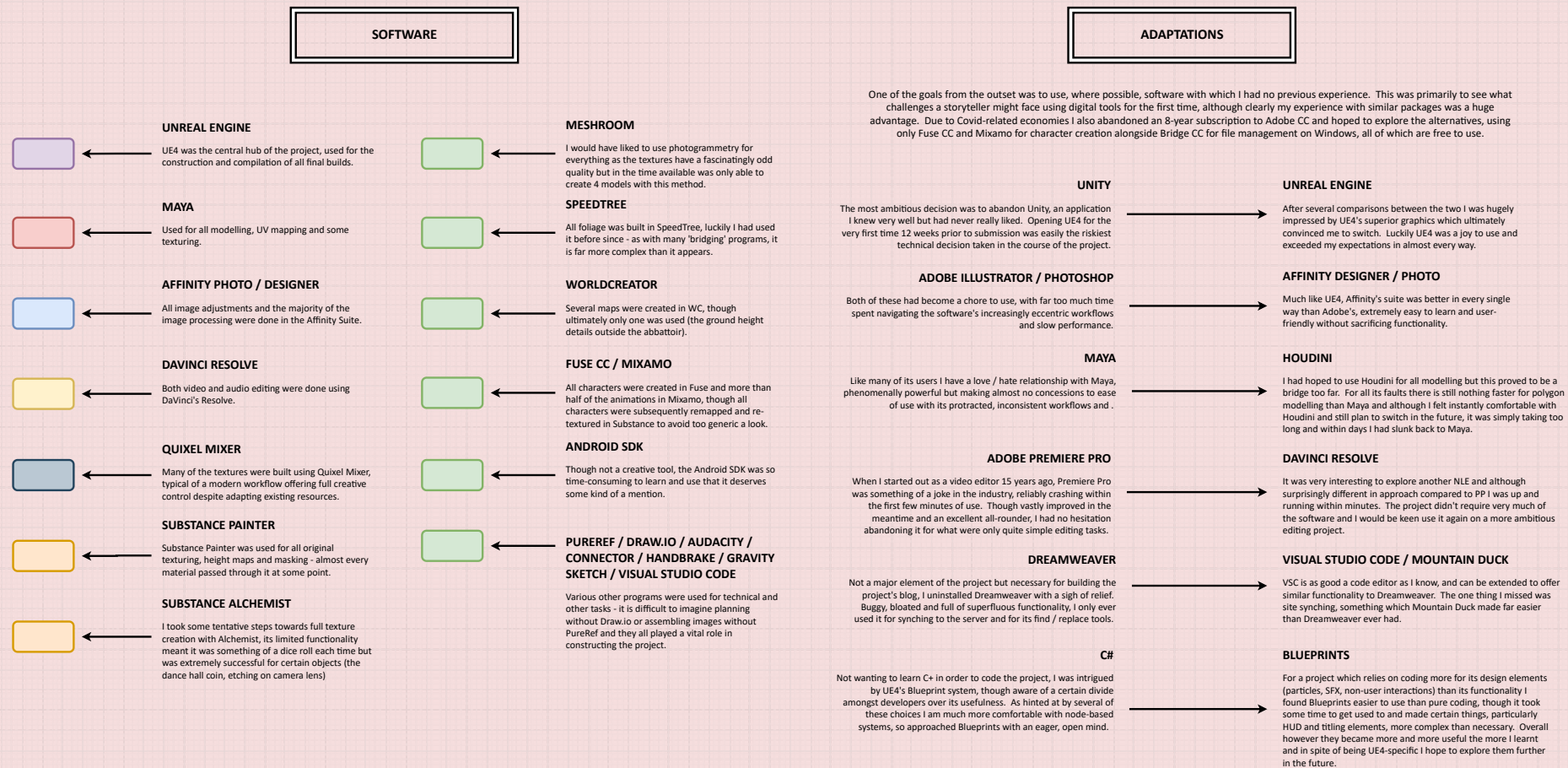
References – music

All the musical recordings were taken from jazz-on-line.com and are, to the best of my and the site owner's knowledge, in the public domain

Hazel Scott - Prelude In C Sharp Minor, Two-Part Invention In A Minor, Nightmare Blues

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http://www.jazz-on-line.com/a/m3u/BB502271.m3u

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Duke Elington – Anatomy of a Murder Theme, Tyrolean Tango

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Shorty Rogers and his Orchestra – Wild One (Hot Blood)

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Machito Y Su Afro-Cubano Salseros - Un Poquito De Tu Amor -http://www.jazz-on-line.com/a/m3u/DH495771.m3u

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(Created by Reddit user r/Smoothos)

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