Filling in the gaps: Creative imagination and nostalgia in ZX Spectrum Gaming

Will Brooker,
Kingston University, UK

Abstract:
The ZX Spectrum home computer and its fans have largely been neglected in both popular and academic histories of videogames. This article helps to address that omission through extensive audience research with players who fondly remember their experiences of playing ZX Spectrum games in the 1980s. Drawing on approaches from literary theory and visual art, as well as audience studies and games scholarship, it explores the ways in which these players 'filled in the gaps' of the computer's simple, often abstract graphics, and effectively co-created fictional worlds in which they became vividly immersed. It argues that the intensity of their nostalgic memories is precisely due to this imaginative, creative investment, and the fact that the experience cannot be recovered. Finally, it proposes ways in which this approach to ZX Spectrum players could be extended to other gaming systems, in other cultural and historical contexts.

Key words: Videogames, audience studies, fans, cultural history, literary theory

Introduction: Kingy in Avalon

Kingy shivered as he entered the cave, hearing the door creak shut behind him. It was cold, he later remembered; he was a 'dungeon explorer in this catacomb where few had walked.'[1] Rocky walls surrounded him, and he felt entirely alone ... until he heard approaching footsteps. A goblin warrior appeared through the opposite door, his sword drawn. 'He came malevolently towards me and I had no means of defence. I tried to escape but he followed me through rooms...'[2]

       Gordon King, aged ten in 1984, was crouched in his parents' house, shivering at the lack of central heating, his fingers moving fast over the rubber keys of a ZX Spectrum. He was playing *Avalon*, a game written by Steve Turner and released by Hewson Consultants, which Gordon – 'Kingy' was a school nickname – had painstakingly loaded from a tape cassette. The TV screen in front of him showed a

glowing green diagram of a cave, with a small white sprite flickering across it, chased by a jerky red graphic of a goblin. But Gordon didn't feel as though he was at his parents' house, gazing at a screen of symbols, and pushing rubber buttons. He was fully immersed in the dungeon. Now a podcaster for the *Retro Gaming Discussion Show*, he wrote up his experiences with a fan's enthusiasm on his personal blog, in 2017.

What magic took Gordon King from here to there, so vividly that he could immediately recall the experience thirty-three years later? This article begins to answer that question, as it investigates the relationship between teenage players and ZX Spectrum games – and the nostalgia with which they remember them as adults.

1. Gaps in History

The ZX Spectrum home computer was released by Sinclair Research Ltd in Britain in April 1982. Less technically sophisticated than other computers of the time, such as the BBC Micro and the Commodore 64, the 'Speccy' nevertheless attracted a lively fanbase, sustained by thousands of games and supported by magazines such as *Sinclair User, Crash* and *Your Spectrum*, until it was superseded by the new generation of 16-bit machines such as Nintendo's SNES and Sega's Mega Drive.[3] Despite upgrades that improved its memory, sound chip and keyboard, the power, speed and graphics of these dedicated consoles still overshadowed the Spectrum, and it ceased production in 1992, with its last official game released in 1993.[4]

However, as we approach its fortieth anniversary in 2022, the Spectrum still carries with it an intensely loyal community, many of whose members have followed it from the start. Gordon King is far from the only forty-something who fondly remembers the games of the 80s. A subgenre of self-published books – including Dan Whitehead's *Speccy Nation*, Will Barker's *Sent From My ZX Spectrum,* and Mark R. Jones' *Load Dij Dij* – reflects nostalgically on the home computer scene of that decade, celebrating the Spectrum's games from both a player's and a programmer's perspective: the home-grown, cottage industry around the ZX Spectrum made it easy to cross from one side to another, and there were stories, some of them true, of teenagers sending off games to companies, earning bestseller status and enormous salaries.[5] The title of Anthony and Nicola Caulfield's crowdfunded documentary about the 8-bit industry, *From Bedrooms to Billions* (2014) neatly captures this dynamic, while its interviews with coders and developers of the time provide further examples of a celebratory, nostalgic impulse.[6] Along similar lines, Andy Remic's low-budget, labour-of-love films *Memoirs of A Spectrum Addict* (2017) and its 2018 sequel *Load 'Film 2'* – both funded through Kickstarter – combine personal recollections from the director with further programmer interviews.

The ZX Spectrum Facebook group has 6500 members, and buzzes with daily discussion around both vintage and new games.[7] An Indiegogo campaign for a handheld Spectrum, the Vega+, attracted pledges of £100,000 within two days in March 2016, and a subsequent Kickstarter raised over £723,000 to fund production on the ZX Spectrum Next,

incorporating radical hardware improvements.[8] A spate of recent releases for PC, Mac and smartphone adopt the ZX Spectrum aesthetic while ignoring its limits: *Downwell* (Devolver Digital, 2015) *I Am Level* (Smiling Bag, 2016)*, Z-Exemplar* (Suminell Studios, 2016), *Hyper Sentinel* (Huey Games, 2017) and *Jetboot Joe* (Langford Productions, 2018) are far faster and more complex than anything possible in 1982, but nevertheless evoke the retro feel of the Sinclair machine through their distinctive graphics – *I Am Level* is advertised as 'a love letter to the ZX Spectrum' – and in some cases, pay tribute to specific games.[9]

Clearly, the ZX Spectrum continues to attract a dedicated fanbase, fuelled by nostalgia. However, while this community of gamers and programmers funds books, documentaries, magazines and even new computers, the study of video games has tended to overlook the ZX Spectrum: perhaps because its influence, though profound, was culturally narrow. Although Timex released a version of the Spectrum in 1983 for the United States market, it failed to make a comparable impact, and much of Europe only caught up with the Spectrum through cloned machines and pirated software.[10]

Indeed, the history of home video gaming in North America – influenced, in turn, by Japanese technology – follows an entirely different narrative, with the popularity of the Atari 2600 leading to a saturation of home consoles in 1983, followed by a two-year crash until the introduction of the Nintendo Entertainment System in 1985.[11] The Spectrum/Timex barely registered as a blip on this national landscape, and so tends to be excluded from or marginalised within both popular and academic accounts. As Graeme Kirkpatrick confirms:

> Discussion of the early 1980s in the best historical accounts tends to focus on the causes and consequences of the US crash, overlooking the positive developments that occurred within gaming in this period. The first half of the 1980s is cast as the lean years of gaming, with the industry re-booting only after Nintendo launched their Famicom console in the United States in Autumn 1986 [...] However, gaming was not only alive and well in Britain and elsewhere but was actually taking decisive first steps towards winning autonomy as a cultural practice, with its own terminology, values and institutions.[12]

Steven L. Kent's 2001 comprehensive *Ultimate History of Video Games* mentions the Spectrum once, tellingly, as 'a tiny computer that sold very well in Europe but never caught on in the United States,' Mark J. P. Wolf's academic anthology *Before The Crash: Early Videogame History* (2012) also excludes the Spectrum by locating that history, as Alex Wade points out, 'spatially in the United States, where the crash occurred,' and firmly before 1983, just when games 'were reaching mass critical acceptance in the United Kingdom.'[13] Although key Spectrum programmers, as Kent briefly notes, went on to develop games for subsequent systems and are still active now, the British home computer scene has often been treated as a minor detour from the dominant narrative of development.

Recent scholarship demonstrates a welcome turn away from this route and towards a greater critical appreciation of the British gaming community. Rebecca Levene and

Magnus Anderson's *Grand Thieves and Tomb Raiders* (2012) celebrates the British programming pioneers of the 1980s who laid the groundwork for blockbusting console releases. Tom Lean's *Electronic Dreams: How 1980s Britain Learned to Love the Computer* (2016) is a dedicated study of the industry during this period and offers a detailed chronological history. Graeme Kirkpatrick has written extensively on the culture of UK games magazines, including several articles and the 2015 monograph *The Formation of Gaming Culture*. Alex Wade's *Playback – A Genealogy of 1980s British Videogames* (2016) analyses the industry in relation to social and political discourses. There are fascinating articles on individual Spectrum games and their national contexts, such as Ignasi Meda-Calvi's 2016 account of *Bugaboo*'s Spanish production, and Helen Stuckey's 2017 study of *The Hobbit*.[14] Jaroslav Švelch's dedicated work on the Czechoslovakian ZX Spectrum scene between comes closest to my own current project with its affectionate but rigorous examination of the role that the computer and its games played in teenage lifestyles, friendships and family relationships. [15]

This article, then, contributes to a growing body of literature through a study of gamers who fondly remember their teenage experiences with the ZX Spectrum in the 1980s, investigating their memories of complete immersion in the story-worlds, despite the simplicity of the Spectrum's colours and graphics. While it draws on and contributes to games scholarship, its approach is also informed by audience and fan studies, a discipline that explores the meanings consumers make from popular culture, but which has largely overlooked this particular community.[16] Through qualitative surveys, email interviews and face to face, filmed conversations, it focuses on the process of interpretation, asking how players were able to read immersive depth into the minimally-sketched game environments, and explores the extent to which other factors, such as genre, home environments, and the game's paratexts, shaped their imaginative interpretations. It further suggests that the intensity of the nostalgic fondness currently surrounding the ZX Spectrum is directly related to the players' imaginative investment in the process of interpreting the computer's visual codes, which positioned them, in effect, as co-creators of the gaming worlds they inhabited. Finally, it explores the nature of their nostalgia as related to a pleasurably painful sense of lost time.

I opened, above, with a glimpse of a specific game, *Avalon*, designed and programmed by Steve Turner and published by Hewson Consultants in 1984, and the remembered experience of a single player, Gordon King. In the next section I return to this case study, as it demonstrates clearly the limits of the ZX Spectrum's graphics and memory, and the ingenuity used by programmers working within those limits; from the perspective of a gamer who was aged ten at the time, it then suggests how Turner's invention merged with the imagination of the young player to create a sense of immersion – astonishing, in the context of the game's visual simplicity – that suggests a creative investment in reading those graphics as clues to a larger, richer and more detailed environment. This case study raises key issues which are then investigated further in my interviews with Spectrum gamers.

2. Setting the Scene

England, 1984. Steve Turner was working in his converted dining room at home, developing a new game for the ZX Spectrum. Deciding to create a *Dungeons & Dragons* scenario, Turner was inspired by *Atic Atac*, a game released by a rival software house, Ultimate, in 1983. 'That taught me that you didn't need a full backdrop, just lines, to suggest depth. So I experimented with some drawings to make a display a bit like a theatre, a 3D look without it actually being full 3D.'[17] He switched to practical materials and constructed a paper frame the size of a conventional TV screen, then moved scenes behind it, like a toy theatre. He realised he would only need one rear wall and two sides, positioned at an angle, to create the illusion of depth. Turning back to the computer and surveying his own previous work, Turner lifted the horizon graphic routine from his moon-based shoot-em-up *3D Lunattack*, and reused it to suggest the boundaries of a dungeon. (**Figures 1-3**)

Figures 1-3: *Atic Atac, 3D Lunattack, and Avalon*

Andrew Hewson, head of the small software house, summarised Turner's achievements in his 2016 memoir:

> Instead of trying to overload the screen with graphics, Steve had sketched in the defining features of each room, such as door frames and a modicum of brickwork to outline the corners. The empty blackness of the negative space between these sparse features was left to create the impression of darkness, much as it had in his earlier space-based titles...like everything Steve produced it was simple, elegant and efficient in terms of how it ran on the hardware, yet the overall effect was enough to create a convincing impression of space.[18]

'Technical constraints drive inventiveness,' Hewson comments. 'The very limitations of the Spectrum... allowed the very best coders to differentiate themselves from their rivals and showcase their virtuosity.'[19]

This story of *Avalon*'s production gives a vivid sense of the ZX Spectrum software industry in 1984, two years after the computer was first released. It was still a cottage industry – Hewson and Turner were friends, the company was small and family-based, and they worked out of their homes – and the process of designing games was independent and solitary, with one man (almost always a man) coming up with the idea, designing the

graphics and entering the code. 'At this time,' says Hewson, 'almost all games were developed by individuals or perhaps a pair of individuals working together.'[20] Turner's creation of *Avalon*, as we saw, involved creative leaps to convey space, depth and movement within the limitations of the ZX Spectrum. In addition to its 48k of memory – an expansion over the 16k model, but less space than this article would take up as a Word document – the Spectrum offered graphics of 8 x 8 pixels, which could be rendered in eight colours, including the exotic-sounding magenta (purple) and cyan (light blue). Only two colours could ever feature in the same 8 x 8 space, as ink (foreground) or paper (background).[21] Within that tight technical framework, programmers like Turner sought to create the illusion of convincing worlds.[22]

Turner and Hewson 'tested the games by playing them through from start to finish', but the real test of whether *Avalon* had achieved its aim of simulating an immersive, theatrical depth came when the game shipped to a market of British teenagers, in November 1984.[23] Here, a gamer can take over the story and provide further insight into the experience of playing *Avalon*. Gordon King remembers buying the game when he was aged ten. 'It was a cold winter night, so it must have been within the release of November/December 1984.' [24] Any game was an investment, on a pocket-money budget, so Gordon chose carefully, drawn by the packaging and promotion:

> I gravitated back to this game amongst the vast archive of John Menzies games section. I remember my dad moaning at me because he was bored waiting on me making my final purchase decision. I was young enough to be simply sold on the idea that *Avalon* was a 3D Adventure Movie. I was also young enough to be lured by the larger than standard cassette box with its bold front cover... I remember wolfing my tea down rapidly after my return home. *Avalon* ... well-crafted *Avalon*; it gave me something beyond my expectations. It gave me irrevocable suspension of disbelief as if I were reading a compelling book. I fired it into the cassette player and read the instructions and lore contained within. Oh, I was able to taste the anticipation. Surely the hype could not be bettered by the game itself. The world map and the poem contained within the box just fuelled my desire to get playing it.[25]

While he loaded it from cassette – which would take up to five minutes – Gordon, at age ten, was already imagining the game from what, after Gérard Genette, we can call its paratexts; the supplementary materials that in literature would include the cover and preface, and in this case included not just cover art and promotional boasts, but a map and scene-setting poem. [26] We'll return to the role of these paratextual materials below.

With the game loaded, he could begin.

> And there I was, zapped into the cold damp dungeons of the Gatehouse level. I had completely forgotten the instructions I had just read... Now I became this dungeon explorer in this catacomb where few had walked.
>
> It was soon that I came across my first adversary – a goblin warrior. He didn't have a fixed path – he came malevolently towards and I had no means of defence. I tried to escape but he followed me through rooms with the creepy footstep sound effects making me panic enough to make fatal mistakes.
>
> I think the cold damp house with no central heating that I grew up in added to the atmosphere in Avalon. I felt I was personally in the dungeon and I lamented [the lack of] warmth. It's the perfect winter game and it always resurrects memories with a tsunami of nostalgic fondness.[27]

Those memories are bound up with Gordon's life at the time, rich with the local and period detail of working-class Fife, Scotland in 1984 – the Friday night evening meal or 'tea', the John Menzies store where he bought the game, his dad 'moaning at me because he was bored waiting on me making my final purchase decision', and intriguingly, the house without central heating that contributed to his feeling of actually being in a dungeon.[28] But the most striking aspect of Gordon's account is the sense of absolute immersion. 'There I was, zapped into the cold dark dungeons.' He wasn't just controlling sprites on a screen: he was the protagonist, shivering in a damp cave, and the sights and sounds of an enemy goblin evoked a genuine physical fear.

Steve Turner's use of graphics was ingenious. However, they remain basic: limited to eight colours, with the characters rendered as flat, flickering sprites in a single shade – white for the protagonist Maroc, green for goblins. The environments were sketched through outlines of cyan or magenta, with the mere suggestions of bricks or rocks. How did Gordon become so entirely invested in the story-space – to feel panic and cold, as if he really was in a dungeon – based on such minimal visual cues?[29] He must surely have made a creative, imaginative investment himself, aided partly by his own chilly home environment, and by drawing on paratexts such as the box art, the poem and map.

Could it be the case, in turn, that Gordon's powerful sense of immersion was because of, rather than despite, the simplicity of Turner's graphics: a form of creative co-creation between programmer and gamer, both of whom were making creative, imaginative leaps within the ZX Spectrum's technical limitations, and collaborating in the construction of a simulated world? Turner had provided a diagrammatic stage set; it needed young Gordon, shivering in Scotland, to bring it to life as an immersive dungeon. Were they meeting in the middle, in the realm of *Avalon,* between the roles of programmer and player? And is it possible that the rush of nostalgia Gordon feels for the game is bound up in this sense of personal, creative interpretation – a sense that he invested something of his young self, and his home environment, into the framework Turner constructed?

These questions prompted and shaped my own original research. My aim was to investigate the dynamic further, beyond this specific example.

3. Ready Player Seventy-Seven

I initially recruited respondents through the Facebook ZX Spectrum group. I explained that I was gathering research on imagination, nostalgia and Spectrum games for an academic article, and invited those interested to contact me by email. I then sent respondents a questionnaire in April 2018 with five open-ended questions, some with images (screengrabs, box art) as prompts. Each question encouraged respondents to write as much as they liked and confirmed that there were no correct answers. I followed the initial survey with five further questions, following the same format, in September 2018, and then wrote to individuals with specific further questions by email in November 2018. In total, I received responses from twenty-five Spectrum gamers. Some of their answers were brief; others were essays. My compilation of the most relevant comments totalled over 20,000 words.

These respondents were all male, broadly typical of the 1980s ZX Spectrum demographic.[30] The oldest was 53, and the youngest 39, with the majority aged between 42 and 49; that is, between 6 and 13 in 1982, when the computer was first released. They gave their initial period of Spectrum fandom as starting in 1982 or 1983 and ending in 1986 at the earliest, and 1991 at the latest; one claimed to have never stopped playing, but most identified a second period, from 2010 onwards, when they'd rediscovered Spectrum games through emulation software on their PCs. Most were from the UK, with one respondent from Sweden, one from Argentina, one Australia, one Croatia, and one Portugal; those international players all had slightly different experiences from their British counterparts, dependent more on pirated software and in the case of the Argentinian gamer, a clone of the Timex machine rather than an authentic Spectrum.[31] Some wished to remain anonymous, or to only have their first names included.

In order to avoid the risk that the Facebook group had shaped a group discourse and encouraged similar answers, I conducted further research in 2019 and 2020, starting this time with a general appeal for respondents on Twitter which was amplified, shared and reposted on popular fan sites. I received seventy-seven emails in total, and as a result, met twenty individuals for semi-structured, filmed interviews either at Kingston University or another location more convenient to the respondent, including a family home in Essex, a workplace near Birmingham, a computer museum in Cambridge and a hotel near Manchester. All of these respondents were British and in their forties; two were female. Again, some asked only to have their first names included. Transcriptions from those interviews – which remove hesitations and repetitions – are also included in the findings below. There was no overlap between the 2018 and the 2019-2020 groups of respondents.

My initial survey question in April 2018 asked whether players felt they had used their imagination when playing Spectrum games. The responses were striking:

> I found *Valhalla* [Legend, 1983] very immersive, it seemed like you were looking in on a real little world. It became almost like reading a book sometimes, the text and graphics disappeared and the story seemed to exist purely in the imagination.[32]

> There's a game called *Cruising on Broadway* [Solarsoft, 1983] which had very limited graphics even for back in the early 1980s, yet I imagined I was driving a car and being chased by police, even though my car was just an 8x8 pixel block, and so was the police car except that it flashed.[33]

> *Mercenary* [Novagen, 1985] was an open world game with almost no graphics, just a couple of lines here and there. The fact that you could interact, buy, sell and freely roam the city was enough to encourage me to role-play and imagine the situations in more detail.[34]

> In both *Avalon* and *Heavy on the Magick* [Gargoyle Games, 1986] I felt as if I were moving through a space much larger than what I was seeing on screen. The story, the puzzles and my progression related to things not on screen, but only in my head.[35]

> I have memories of playing the likes of *Lords of Midnight* [Beyond, 1984], *Doomdark's Revenge* [Beyond, 1985] and *Elite* [Firebird, 1985] which captured my imagination and felt extremely immersive. I created a reference book for each character…I would want to map the world and engage with it through different tactical decisions in order to act out different narratives I had developed through my imagination.[36]

We can immediately see that Kingy's memory of entering fully into the world of *Avalon* was not an exception or exaggeration; these respondents report similar experiences of imaginative immersion. We might expect such testimonies about virtual reality experiences, or perhaps about a more recent release like *Red Dead Redemption 2* (Rockstar, 2018), but not from 1980s 8-bit graphics in eight colours.[37] This is clearly a broader phenomenon, worthy of further investigation.

As confirmation that the recent responses were not shaped by the specific Facebook group, consider how Chris O'Regan, from my 2019 filmed interviews, described *Lords of Midnight* when asked about his favourite games:

> It was a world that was very similar to *Lord of the Rings* ... there was Luxor the Moonprince, and also Morkin, and Rothron, and Corleth the Fey ... these are names that still I remember, after all these decades. [...] My friend and I were just stunned, and got completely drawn into this world. And many other worlds.[38]

Mark Hibbert's in-person interview, which singled out the same game as a particularly rich memory, echoes the above responses, while insightfully commenting, with retrospect, on

the importance that imagination played in developing the sometimes-minimal text and graphics:

> You were given so little about the characters, and I think that tiny little gem of information made it just grow inside your head ... you'd wander round, and there's this one character called the Utarg of Utarg, who dresses like a normal soldier, and in my mind you think, well this is clearly the socialists of Midnight, they're the ones who rule themselves. And the Lord of Blood, I always imagined as a stern figure ... and there's nothing there! There's absolutely nothing in it to give you that information.[39]

We can also verify that my respondents are not themselves unusual. The professional journalists who contribute to the 2015 volume *Sinclair ZX Spectrum: A Visual Compendium* remember the same games, such as *Lords of Midnight,* in similar terms: 'As I played it,' writes James Leach, formerly of *Your Sinclair* magazine, 'my imagination did all the work; it was simply enough to see the landscape change as the armies flooded across the plains.' Robin Candy, a writer for *Crash* in the 1980s, added that 'although the game featured no sound, as night fell you'd swear you could hear the sounds of battle – and [villain] Doomdark's mocking laughter.'[40]

Furthermore, these responses are not unique to the rose-tinted recollections of gamers three decades later. Reviews from the time also fully bought into this sense of convincing and immersive environment: *Crash* said of *Mercenary* in 1987 that the 'vector graphics are ... uncannily realistic. They more than adequately convey the feeling that this strange, 3D world actually exists,' and the magazine's 1984 review of *Lords of Midnight* drifted from straightforward description into imaginative fantasy prose that positioned the player, in this case veteran reviewer Derek Brewster, as a fully-fledged participant in the world and its narrative.[41]

> The graphics which show your journey through the Land of Midnight are little short of stunning. The panoramic views are drawn in full perspective and consecutive moves see mountains, forests, hills, citadels, towers and fortresses rising in stature as you approach or fade to distant outlines as you leave.
> At the end of the seventh day at nightfall, when looking throughout the eight compass directions, I could see the silhouettes of the towers, citadels and armies that surrounded me, my thoughts turned north to Morkin who I now knew had this very day penetrated deep into the dark Mountains of Ugrorn, into the Tower of Doom and at this very moment was wondering how he might get back with that precious object held tightly within his grasp. He had the Ice Crown.[42]

These interpretations, then, are not just clouded by nostalgia; players at the time also felt as if they were really there, in the worlds sketched by these simple graphics. [43] (**Figure 4**)

Figure 4: *Lords of Midnight*

4.   Does Genre Matter?

We might then note that the same game titles recur several times in these responses, and ask whether this form of immersive experience was related to genre. *Lords of Midnight*, cited repeatedly along with its sequel *Doomdark's Revenge*, is an epic war game with a quest element, inspired (as Chris noted) by Tolkien's *The Lord of the Rings*. *Avalon* and *Heavy on the Magick* draw, similarly, on Arthurian legends, Celtic folklore and the conventions of *Dungeons & Dragons*. *Valhalla*, in turn, explores Norse mythology, while *Elite* and *Mercenary* are based around exploration, trading and combat within large-scale science fiction settings, comparable to the world of Frank Herbert's *Dune*. While they rely on graphics, rather than telling their stories solely through text, all of these games could be categorised broadly as 'adventure' (with aspects of 'strategy') rather than purely 'arcade', and all are based to an extent on existing narrative forms, which would enable players to bring prior knowledge to the scenario. Some of my respondents, as we'll see later, remembered that fantasy literature and movies shaped their imagination when playing these games. While bearing in mind the long-established argument that games should not be treated as straightforward narratives, we might nevertheless assume that players would be most likely to experience an imaginative, creative immersion of the type described above when playing epic adventures with a strong back-story and a sprawling world to explore.[44]

Some, certainly, made this generic distinction, explaining that they saw arcade games simply as puzzles, rather than gateways to an environment and narrative. 'Looking at *PSSST!* [Ultimate, 1983] or *Boulder Dash* [Front Runner, 1984]' wrote Christian, 'I didn't stop and think about what I was looking at, but simply enjoyed the game.' José agreed: 'The sense of immersion in a fantasy world is not the same when you were playing *Raid Over Moscow* [US Gold, 1985] or *Arkanoid* [Imagine, 1987].'[45] Neil voiced similar views:

> I don't think I ever viewed *Space Raiders* [Psion, 1982] as an alien invasion, more of a test of skill. Removing the advancing sprites before they reach the

bottom. Platform games were the same for me. I never really thought that *Manic Miner* [Bug-Byte, 1983] was collecting the pieces to escape the mine, to me it was a test of skill and puzzle solving. Shoot-em-ups do what it says on the tin; kill everything in sight, not much real thinking to be done. More of an eye-to-hand coordination exercise.[46]

Becky, in a filmed interview, explained that:

> ... because of my age [she was 4 years old in 1982] and the types of games I played, I didn't really feel that immersed in them. I didn't play many of the role-playing games, it was more the platformer-type and the quick session games, I suppose you'd call them these days ... but if you define immersion as being totally absorbed in something, yeah, I used to spend hours trying to play *Frogger* [A'n'F Software, 1983] and *Travel With Trashman* [New Generation Software. 1984]. So in that way, you could say it was quite immersive.[47]

Becky offers a useful reminder that 'immersion' can also simply mean an intense engagement or 'being totally absorbed', without any imaginative investment in the game world – not the sense in which I am using the word here, but a useful reminder of the term's ambiguity. However, she too draws a clear distinction between genres, suggesting that the 'role-playing' type, like *Lords of Midnight*, would be more likely to 'immerse' players in the sense of drawing them into a fantasy environment. Other responses blurred even these generic lines. One player proposed that:

> Fantasy and space exploration games in general had realistic, extensible settings, which encouraged an imaginative approach. *Jet Set Willy* [Software Projects, 1984] by contrast lacked such a setting. It was also difficult to revisualise a 2-dimensional platform game in meaningful real-world terms. 3D shoot-em-ups did facilitate the use of imagination, however, and allowed the fulfilment of *Star Wars*-type fantasies.[48]

But just as he, unlike Neil, was able to feel imaginatively drawn into shoot-em-ups – again, by bringing his knowledge of another franchise, *Star Wars*, to bear on the game – so another respondent, Paul, saw the platform game *Jet Set Willy* (a sequel to *Manic Miner*) as a world to explore, rather than a two-dimensional puzzle:

> Open-ended games such as *Elite* fostered a fantasy land/universe much better than goal-oriented games. Larger maps with more to explore would also help – *Jet Set Willy* was fantastic in that regard, as were other platformers of the time.[49]

Two-dimensional presentation was not necessarily an obstacle.[50] Jan cited a list of games that 'felt like worlds to me', including *Avalon* and its sequel *Dragontorc* (Hewson Consultants, 1985)*,* but also *Sabre Wulf* (Ultimate, 1984) which involved exploring multiple screens of a jungle by slashing enemies, arcade-style, and was presented as a flat, top-down maze. By contrast, Jan categorised *Skool Daze* (Microsphere, 1984) an early example of sandbox gaming set in a detailed and busy comprehensive school, as a puzzle, alongside *Manic Miner*: 'where the games just felt like a set of rules and mechanics you had to beat.'[51]

These responses are echoed in professional reviews. We saw that *Lords of Midnight* evoked imaginary worlds for the journalists of *ZX Spectrum: A Visual Compendium*, but another contributor, Matt Wilsher, writes about the arcade game *Wheelie* (Microsphere, 1983) in similar terms: 'I entered a nightmare set inside a mysterious cave-like system... a dark, tense and claustrophobic atmosphere.'[52] Dan Whitehead, similarly, describes *Turbo Esprit* (Durell, 1986) – a direct precursor to Rockstar's *Grand Theft Auto* series – as 'a chase-around-the-maze game, essentially, but one that springs into astonishing life thanks to the shift in perspective. You're not simply guiding a car-shaped lump around from above, but actually driving down real streets in a fully-mapped city.'[53]

Genre and graphic style clearly did not, then, rule out a vivid sense of immersion in the sense of the player enjoying the illusion of really 'being there'. One respondent, Frank, 'could almost feel the hands in the neck and the belt, when patrons shoved you across a bar in *Tapper* [US Gold, 1985]'– a straightforward adaptation of the Bally Midway arcade machine – and another, Jon, quoted above, imagined he was driving a car when guiding the simple blocks of *Cruising on Broadway* around a minimal maze. [54] Similarly, Christian enthused about the equally blocky, visually-flat *Light Cycles* (PSS, 1983): 'man, I was that *Tron*-like motorcycle!'[55]

Another correspondent, Paul, had even more vivid memories of *Sabre Wulf*, which, despite its top-down arcade aesthetic, 'immersed me in the jungle. Lost and disorientated, trying to run away but the keyboard layout getting in the way. I played that one during the winter and the depressing weather in the north of England seemed to add to the feel of being in a damp, dark forest.'[56] His account intriguingly echoes Gordon King's recollection of *Avalon,* where the game was immersive enough to evoke panic, and the surrounding, real-world environment contributed to the fictional atmosphere: again, this aspect of the experience will be explored more fully below.

The fascinating diversity in these responses, suggesting that genre and graphic style were neither a guarantee of nor a barrier to imaginary immersion in a game-world, parallel Jesper Juul's observation about a far later release: 'If we play a game of *Quake III Arena* [id Software, 1999] we are invited to imagine a fictional world where players can change directions in mid-air, and attack each other using a wide range of futuristic weapons. However, we can also refuse the invitation and still play the game...we can agree to believe in the fiction, and we can agree not to.'[57] Even with the increased graphical realism of a first-person shooter, players could engage with *Quake III* as a pure exercise in rapid hand-eye co-ordination, rather than as a gateway to another environment: 'less interested in the

representational/fictional level of the game and more focused on the rules…'[58] The same was true in the 1980s with the crowded comprehensive of *Skool Daze,* the sprawling mansion of *Jet Set Willy* and the globetrotting tableaux of *Travel With Trashman*, all of which could be enjoyed simply as absorbing puzzles against the machine. As Becky's response suggests, this form of involvement is no less pleasurable.

Finally, some respondents expressed a preference for text adventures, which describe each scene in words, and tell their story based on the player's typed input. Neil, for instance, recalled that

> One of the first games I owned was an adventure, *Ship of Doom* [Artic, 1982]. Playing this game required you to imagine the scenes that were described, just like you would when reading a book. I would think everyone's imagined scenes would be different, apart from the necessary props (door on the east wall, food on the table), making it a personal experience.[59]

'Adventure games were more text based,' Mike considered, 'but somehow they drew the player into the game, relying on atmosphere rather than visuals.'[60] For Bjorn, 'the games that trigged most vivid imagination would be the text adventures, in those you were very much forced to create your own representation … the strongest immersion was always with text adventure games (and illustrated adventure games as well).'[61] Matt also stated a preference for the hybrid 'graphical text adventures', where the descriptions were augmented by static images, like pictures in a book. Games like *Seabase Delta* (Firebird, 1986) 'really did draw me in,' he recalled. 'I could easily get lost in that world and even though I never escaped the sea base, I repeatedly went back to the game to feel the claustrophobic atmosphere of being trapped under the sea.'[62]

Clearly, text-based or minimally-illustrated adventures could immerse players as much as – or in some cases, more than – their more visual equivalents like *Lords of Midnight* or *Avalon*. However, as before, there was a great deal of variation in the replies. As Frode pointed out, 'different people immerse differently. I never understood other people's attraction to adventure games.'[63] In Marko's words, 'It's like preferring reading over watching the same content served as a movie. Or maybe preferring crime drama movies over action/special effect-loaded ones.'[64] Overall, there was no sense that a single genre was more immersive or involving than another; arcade conversions, war games, text adventures, graphic adventures and the hybrids between each category all had the potential to draw my respondents into their imaginary environments.
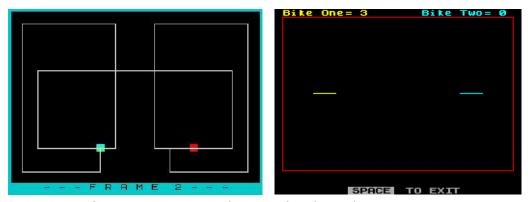
5.   Filling in the Gaps

So the question remains: how did players interpret this combination of plain text and 8-bit, eight colour graphics as immersive worlds? First, we need to draw further distinctions between different approaches to representation on the Spectrum. Graphic designer Ste Pickford argues that:

the artists on these games ... were making the most realistic images they could within incredibly restrictive limitations, often without any tools more sophisticated than a sheet of paper and some felt-tip pens. [...] a 16x16 pixel sprite could take hours of careful plotting and unplotting, just to somehow suggest a left foot or a right arm on a tiny animated body.[65]

Within the tight framework of the Spectrum's capabilities, then, these programmers were, Pickford argues, not trying to simplify, but aiming for the closest possible approximation of what Egenfeldt-Nielsen, Smith and Tosca term 'photorealism': they were simply falling short.[66] While this accurately describes Steve Turner's creative process for *Avalon*, which involved careful plotting on squared paper, the extent that this was true varies from one game to another – some games deliberately sacrificed complex visuals for speed – based partly on when they were released, as programmers steadily pushed the Spectrum's capabilities during the 1980s, and players expected greater sophistication.[67]

Figures 5 and 6: *Cruising on Broadway*, and *Light Cycles*

For example, the early *Cruising on Broadway* and *Light Cycles* (Figures 5 and 6) both from 1983, make no attempt to even suggest the shapes of cars and bikes: their coloured blocks work much like the player-character cursor in Warren Robinett's classic Atari game *Adventure* (1979-80), or the buttons and pennies that might represent players in a board game like Ludo. In Mark J. P. Wolf's terms, they are abstract and functional.[68] Within C.S. Peirce's taxonomy of signs, these graphics are symbolic: they stand for a referent (a car and a bike, respectively), but the relationship is arbitrary, based on a social convention rather than visual similarity.[69] Marie-Laure Ryan makes a similar point about pre-Renaissance painting, which 'was more a symbolic representation of the spiritual essence of things than an attempt to convey the illusion of their presence.'[70]

However, rather than representing 'objects as they believed them to be', as in the pre-Renaissance mode (or, as Ryan suggests, in a child's drawing), games like *Cruising on Broadway* make a conscious decision to reduce the world to pure, simple shapes, more like the art movements of the early 20th century that, in Ryan's description, converted pictoral

space into 'a play of abstract shapes and colours that openly displayed its two-dimensionality.'[71] The designers of *Cruising on Broadway*, released in 1983, could have opted for detailed, cartoonish sprites like those of the contemporaneous *Atic Atac*: they were not restricted to the basic geometry of squares and lines.

Even on the Atari 2600, though, as Wolf shows, most graphics attempted to represent a real-world referent not just through a symbolic understanding (this graphic is 'you') but also through visual similarity: what Peirce calls a 'likeness' (or an iconic relationship) between sign and referent, and Wolf simply terms 'representational.'[72] While the objects in Atari's *Raiders of the Lost Ark* (1982) needed a glossary to define them, they were also meant to represent a whip, a gun, and a bag of gold through visual resemblance: another example of graphics aiming valiantly for realism, but falling short, and falling back on an instruction booklet to bridge the gap.

Avalon and its sequel *Dragontorc* take a step closer towards **'**photorealism' – a goal that contemporary games have now arguably achieved – and need no glossary to explain that the white sprite is a wizard, and that he is moving through caves and forests. In the art-historical terms of Ryan's account, *Avalon* corresponds to paintings after the discovery of perspective, which 'allowed the projection of a three-dimensional space onto a two-dimensional surface.'[73] Turner quite literally converted three-dimensional objects – a plasticine model, a cardboard theatre – into a flat representation on-screen, and animated it, to an extent at least, according to the laws of real-world physics and perception.

Nevertheless, because of the Spectrum's technical limitations (particularly the restriction to only two possible colours per 8 x 8 character square) the process of interpreting *Dragontorc*'s 'tree' graphics is clearly different to recognising a forest in *Red Dead Redemption 2*, and requires more active, imaginative work.

To focus more closely on this question, I asked my survey and email respondents how they knew that a specific red graphic within *Dragontorc* meant 'tree.' (**Figure 7**). They agreed that it required deliberate interpretation rather than instant recognition, based on the graphic's partial resemblance to the real-world object, and other contextual pointers, shaped both by the game's paratexts and by generic expectations.[74]

Figure 7: *Dragontorc*

There are multiple visual cues: trunks, leaves; they are presented in a varied organic fashion. It is pretty clear what is represented. There was also in-game text and accompanying physical materials indicating the presence of the forest. One might even go so far as to say there would have been an expectation of a forest: the forest was a typical location in fantasy settings.[75]

It's no different from a kid's drawing of a tree. We get a vertical thicker part with smaller parts sticking out. Combined with the bit of extra detail in the foreground – the larger branches with very recognizable leaves – our mind adds the rest.[76]

It's sort of a puzzle for the mind, seeing something treelike, then determining it is a forest (or rather a forest clearing, in my mind). The tree-symbols, being grouped by themselves and then these groups being arranged around the perimeter makes the association quite clear.[77]

As Sean Fenty puts it in his chapter on 'old school' video games, 'players are given signs about what affordances they can take from the real world and apply to the game world.'[78] Rather than the immediate recognition of photorealism, this is a process of detection, which requires the player to read a shape and work out what it stands for, guessing at the programmer's intentions and drawing both on contextual clues and their own personal experience. Within *Dragontorc,* the relationship between this graphic and 'tree' is consistent, and only needs to be understood once, but this interpretive process would have to be carried out again for other games: a 'tree' in *Knight Lore* (Ultimate, 1984), *Highway Encounter* (Vortex, 1985), and *Green Beret* (Imagine, 1986), to give just a few examples, is represented by a graphic which also attempts to suggest the real-world referent through resemblance, but does so in a slightly different way, foregrounding various aspects of branches, leaves and trunks through shape and colour.[79] (Figure 8) Each game, then, employs its own slightly different visual language, and those codes cannot be directly transferred from one game to the next.[80]
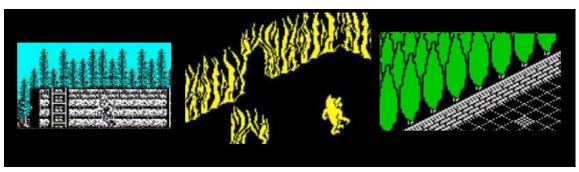

Figure 8: 'trees' in *Green Beret, Knight Lore and Highway Encounter*

From this starting point, as the comments above already begin to suggest, players extrapolated further, and expanded the world through their own imaginary interpretation of the environment; each of them will, in this sense, have experienced a slightly different version of the 'forest clearing' in *Dragontorc*. The Spectrum's technical constraints – the fact that trees in a shadowy wood had to be depicted in red, for instance, rather than more subtle shades of ochre – actually enabled and prompted this next stage of the process. As Rob explained, 'the red colouration of the backgrounds, in my imagination, was due to the character being in some sort of unreal astral plane.'[81] To James, however, 'the red gives the whole scene a sinister aspect as it suggests blood, but it also suggests the scene is lit by firelight.'[82]

Again, further research confirmed that this experience was not unique to my survey respondents. Mark, in a filmed interview, commented of *Heavy on The Magick* that the limited Spectrum colour palette enhanced his enjoyment of the game, enabling imaginative leaps from simple primary shades to textured environments constructed from a startling range of materials:

> The caverns themselves were monochrome, but different colours, so you could imagine in your mind's eye, the red screens being red brick ... the magenta screens being crystal caverns ... the green screens being slime-covered caverns ... the cyan screens being icy caverns ... and the white screens being marble-lined halls.[83]

Working out the relationship between a graphic and its real-world referent was, then, simply the first step in their interpretation of the on-screen visuals. Players then engaged in further imaginative work to construct a vivid, atmospheric environment around their character and to transform the programmer's creation into a more complete, immersive world. To Gordon King, interviewed in 2019, this added work added to *Avalon*'s appeal, enhancing the sense of personal investment and involvement.

> What was so special about this game is ... it was basically wire-frame, so it was all about suggestion, and that's what I really liked about it [...] it was minimalistic, so your imagination fired up. It was maybe a few bricks on the wall, or a pile of bones, or a pile of rubble, and that's all the game suggested to the player. It felt personal, as if you were on a real, owned quest by yourself ... the immersion was unbelievable, it was so profound.[84]

He compared *Avalon* favourably to more recent games like the *Gears of War* series (Epic Games/The Coalition, 2006-2019), whose detailed aesthetic left nothing to the imagination of younger players: 'The whole thing is there for them. The industrial environment that you're fighting in, it's not just a bit of rubble, it's the whole factory. You know you're in a foundry because it looks like a foundry. Kids are not used to filling in the blanks...'[85]

Variations on that phrase also recurred, unprompted, throughout the responses to my 2018 survey. I have added italics below, to highlight the similarity:

> In *Avalon*, it looks like key elements of the background (the lines along the doors, the floor at the back) are present to give an impression of what the full detail would be, but are left sparse to help the speed of movement. I think *our minds fill in the rest of the picture,* and of course in those days we really had to do that due to the relative lack of graphical detail in many games.[86]

> It's a common tactic to use when resources are light – hint at something and *the mind fills it in. Avalon* showed old creaky doors made of wood, and mossy stone walls, with surprisingly few visual cues.[87]

> *Avalon* uses a very clever system of only showing the main details of the scene and letting *our minds fill in the blanks*. I think this system also used up less space in memory.[88]

> There are all sorts of visual tropes that users of these games will have been used to and so *their brains know how to 'fill in the blanks'*. I don't think this means you're necessarily imaging a 'realistic' scene, but everyone's perception of the world in *Atic Atac*, for instance, will be different.[89]

> *Our minds are very good at filling in missing details* (probably a good thing in the 8-bit era!). The artists add just enough visual cues for your mind to fill in the gaps.[90]

> I would say that *our minds filled in the rest of the picture* (like when you're reading a book with no pictures and you just imagine). In addition, I used to have a black and white tv set which means that besides the landscapes it was also necessary to imagine the colours…[91]

> I was and still am a big fan of sci-fi and fantasy so engaging reading material with a game really would enable *your mind to flesh out the world of the game and fill in the blanks*.[92]

In Fenty's words, these games 'put players on the threshold of another world and make players work to enter that world.'[93] To transition between the two involved the creative labour of interpreting symbols and imagining what occupied the space between them. 'It is the effort involved,' Fenty proposes, 'the struggle to learn and overcome – that makes the games memorable.'[94]

How can we explore this phenomenon further? The initial step in 'filling in the gaps', as many of the responses above indicate, simply involved completing an image from minimal clues. 'A classic example' from a Spectrum game, offered by James,

> ... is *Knight Lore*, which just shows a few bricks spaced out at odd intervals to give the impression of stonework. You need just enough to give the right impression: too much and the detail becomes overwhelming. When the graphics are limited you fill in the gaps with your imagination.[95]

To understand this aspect of the process, we can draw on a model based around visual understanding, linked to the above responses through that key phrase. Gestalt psychology, as Mark J. P. Wolf points out, involves 'the automatic *filling in of gaps* by an observer.'[96] He explains this psychological approach simply and aptly as seeing 'the whole as being more than the sum of its parts,' noting that 'most Gestalt principles apply to vision, and the way one perceives and completes an image, adding details, connections, or forms that are not actually present.'[97]

Dudley Andrews, posing a question that chimes with the present enquiry – 'what sort of labor is required to learn to watch cinema?' – also finds an explanation in Gestalt:[98]

> Essentially, the Gestalt view downplays the original element ... in favour of the field of configuration of which it is a part. Certain forms (at the base, these are invariably geometrical) are innate, structured into the physiology of the eye and the neural arrangement of the brain. We cannot help but see certain patterns in the world when stimuli bring these patterns into play.[99]

Neil's comments on the trees in *Dragontorc* suggest a very similar process. Though he makes a comparison with reading, he is referring here not to visualising scenes from an author's sentences, but to a more fundamental stage where the reader sees the 'configuration' of a word from its individual elements, or letters. 'The graphics are detailed enough and contain just enough elements for the brain to recognise them as trees. A little like the brain recognises words without reading all the letters.'[100]

His assessment of *Knight Lore* agreed with James', above. 'There are enough brick elements in the walls to create the idea of the whole wall being there. You can visualise where the wall meets the floor even though there is no demarcation. These games are known as "isometric", so maybe our brains are doing the isometric projection without us realising.'[101] Similarly, Andrews writes of 'every man-made representation' that 'the viewer works to decipher the marks, using his experience with the system and interpreting the strategy of the artist to interpolate a complete scene'.[102]

To an extent, as Andrews notes, this applies not just to art, but to 'all visual life' – we all have to work out how to judge the distance and spatial relationship between objects, based on cues such as size and brightness.[103] Most of these rules remain usefully consistent

– we learn the difference between a square and a triangle by age two, and never have to learn it again – and the same is true of 'representational painting', with its agreed conventions of perspective.[104]

However, interpreting ZX Spectrum games involves distinct challenges because of the idiosyncrasies and variations in its approach to depicting the world within technical limitations: a player would have to learn various systems of visual representation, and adapt that understanding to each new game. The vector graphics of science fiction combat games *Rommel's Revenge* (Crystal Computing, 1983) and *3D Starstrike* (Realtime, 1984) attempt to convey a first-person perspective through simple outlines. However, *Sabre Wulf* takes a top-down view that depicts characters in profile, more like Egyptian hieroglyphics than post-Renaissance painting, while *Knight Lore*'s isometric perspective bears no relation either to *Sabre Wulf, Starstrike* or to the way we see the real world. A player familiar with *Zaxxon* (Sega, 1982) and *Q*Bert* (Gottlieb, 1982) in arcades, or the earlier Spectrum game *Ant Attack* (Quicksilva, 1983) might understand its depiction of objects and characters, but a newcomer to this form of perspective would have to work out how to navigate the environment through trial and error. While the same protagonist, Sabreman, is central to both *Sabre Wulf* and *Knight Lore*, and both games were released by the same company, Ultimate, in 1984 – with the same designer, Tim Stamper – their representation of the world follows entirely different laws.

Of course, once a player had learned the rules of *Knight Lore*, they would be equipped for subsequent, visually-similar games such as *Fairlight* (The Edge, 1985) and *Head over Heels* (Ocean, 1987), but as we saw, even the depiction of simple objects like a tree varied wildly from one text to the next, and each new game required a new process of interpretation. As Bjorn commented, above it was 'a puzzle for the mind.'[105] This kind of learning is more equivalent, in Andrews' terms, to 'artistic paintings' rather than 'natural vision and picture viewing'; that is, each Spectrum game can be seen more like a work of abstract art than either a real-world view or a conventional painting.[106] Switching from Tim Stamper's *Knight Lore* trees to the trees designed by Costa Panayi in *Highway Encounter* is like looking from a tree in a Dalí painting to a Cubist rendition by Picasso; they both bear a relationship of resemblance to the real-world object, but the aspects they choose to foreground, distort, imply and detail are entirely different.

By contrast, the box art which accompanied each new game was usually far more representational and 'realistic', often with a glossily airbrushed aesthetic (Figure 9). Magazine covers, particularly those by *Crash* illustrator Oliver Frey, served the same purpose: they provided a visual key to guide the player's understanding, showing what the game-world and its characters would 'actually' look like. If the on-screen graphics were symbols, these were the real-world referents they stood for. Inevitably, these paintings guided player interpretation, while still leaving gaps, as we'll see, for surprisingly personal readings.
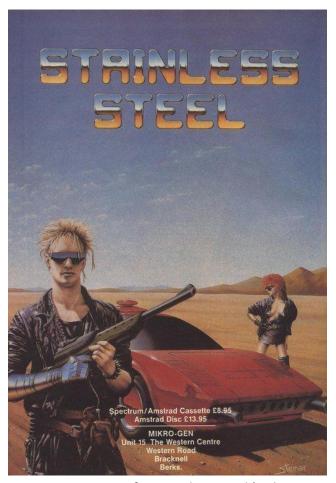
Figure 9: Cover art for *Stainless Steel* (Mikro-Gen, 1986).

6.   Cover Art and Outside Influences

As Laurie Taylor argues, 'from their beginnings, videogames have often unwittingly used concept art to generate the belief of an ideal ...the combination of the concept art with the culture of videogaming led to the popular and industry approved belief that concept art was the "real" of each videogame.'[107] ZX Spectrum box art fulfilled a very similar purpose to the paintings on the side of traditional arcade cabinets, in that they provided a far more detailed representation of the on-screen graphics, and so implied that those graphics were not simply functional symbols ('you', 'alien'), but imperfect renderings of another world where such objects, figures and environments actually exist. The cabinet for *Space Invaders* (Midway, 1978), for instance, features marauding creatures who seem to descend from spaceships and tower over a mountainous landscape, whereas *Pac-Man*'s cabinet (Namco, 1980) shows the main character and his ghostly antagonists as cute, squashy cartoon creatures. [108] Wolf points out that the Atari 2600 box art served the same function. 'The boxes and advertising were eager to help players imagine that there was more to the games...' [109] This relationship was playfully confirmed by the contemporary movies *Tron* (Steven Lisberger, 1982) and *The Last Starfighter* (Nick Castle, 1984) where the graphics of video games actually correspond to the motorcycles, spaceships and warriors of another world.

Crash artist Oliver Frey suggested a very similar relationship between computer games and their cover illustrations:

> ... the actual pixels and the moving sprites didn't live up to whatever the games' titles were at all. You needed art to create the make-believe. You had to get the atmosphere across, so in the player's mind the little blob over there was actually Indiana Jones or whatever. My entire work with *Crash* and with computer games covers was to create the world for the gamer to imagine.[110]

Many of my correspondents agreed. 'The cover art encourages us to see what the character "really" looks like,' Lucio stated, while Jason's response was almost identical, again holding the idea of realism in quotation marks, at a sceptical distance:[111]
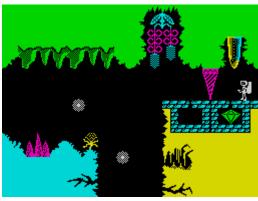
> As a child the artwork was your only true key to what the game 'really' looked like. It may have been a few pixels on the screen, but you *were* that astronaut. I think due to the limited hardware abilities of the day; game designers *needed* this extra level (the box art) to get what they were trying to achieve across. As a child, you would look deeply at the supplied artwork to really help immerse yourself in the environment that was trying to be displayed on screen. You would play along, but in the back of your mind was the amazing artwork from the cover or book.[112]

Frank also remembered that 'the one case where the cover art did help a lot with imagining what the "character" really looked like, to me, was *Tranz Am* [Ultimate, 1983] – because of the small size of the car in the game, the extra detail given in the cover art made a very big difference.'[113] Again, the use of similar phrases in these answers is telling, suggesting a shared experience. David's suggestion that game art was 'like the front cover of a book' was echoed by Matt, who agreed that the covers work 'much in the same way that book covers give you an idea of the intentions of the author in building their world.'[114] 'The on-screen graphics were in a way replaced with the cassette inlay image,' Stig remembered.[115]

The artwork associated with these games played a more important role than a conventional book cover. Gérard Genette states merely that a vivid book jacket is designed to 'attract attention', through 'a garish illustration, a reminder of a film or television adaptation, or simply a graphic presentation'.[116] Images of Proust on the cover of *À la recherche du temps perdu* (1913-1927) may subtly shape its reception by 'drawing the *Recherche* toward the status of autobiography', but Oliver Frey's painting of Ziggy, the protagonist of *Backpackers Guide to the Universe* (Fantasy, 1984) transforms the stick figure of the on-screen graphics into a fashion-model hero, elevating him to a different level of realism, and, in the absence of any other textual cues about the character, significantly guides the player's imaginative process.[117] (**Figures 10-11**).

Figures 10-11: Oliver Frey cover, *Crash* issue 9
(October 1984); *Backpacker's Guide to the Universe*.

Some of my respondents, particularly those outside the UK, relied on pirated software without illustrations, but keenly sought out cover art and advertising. Marko, from the former Yugoslavia, recalled that while he bought bootlegs from catalogues, and 'never got the packaging ... I managed to get a subscription to *Sinclair User* and quickly fell in love with those artworks, knowing very well that there's no way they'd be representative of actual game play and that they are there for our imagination only. They set the player up mentally for the game and helped me get into the mood.'[118] Dario, similarly, explained that 'I must clarify, here in Argentina most the software was pirated, which meant no cover images or a very bad photocopy. I was always delighted to find actual cover images in full colour within magazines, and I always looked at them very closely.'[119]

Clearly, despite the players' healthy pragmatism, the cover art was of central importance in imagining game worlds and their characters. Where the game fell short of the artwork, they compensated with their own imagination, filling in that gap too. John remembered that:

> I think when you bought the game that's what you might expect it to look like. I bought *Schizoids* (Imagine, 1983) based on the cover. It was ace, the cover that is. The game was awful. I came up with my own images instead.[120]

> The pictures we saw in magazines that advertised games and the game covers were a fantasy that didn't relate to the actual graphics but they built part of the story, the narrative, the internal picture that overlaid or merged with the actual graphics.[121]

Some games, such as *Elite*, were supplied not just with brief back-story blurbs but entire novellas, which further aided player immersion. Peter even ingeniously incorporated the

nuisance of the 'Lenslok' anti-piracy device, a plastic magnifier that enabled the player to read and enter a security code, into his enjoyment of the game.

> I did though enjoy reading [novella] *The Dark Wheel* before playing Elite, and that was a very effective way of becoming immersed quickly in the game. The protagonist inherits a Cobra Mark 3, with a nice intricate back-story; and so the player, starting out in the same ship, could well believe that that back-story was also their own. I also remember pretending that the Lenslok, to start *Elite*, was actually an authentication device for me to get into my Cobra Mk3.[122]

Every player who bought the game would have encountered the same box art and, in the case of *Elite*, the same novella and anti-piracy device, but as Peter's example shows – as we would expect from decades of findings within audience and fan studies – they made use of them in their own unique ways. Other supplementary texts, beyond the official promotional material, further shaped individual experiences of the game world. We saw that one respondent above drew on *Star Wars* to enhance his enjoyment of shoot-em-ups, and that Christian inevitably thought of *Tron* while playing *Light Cycles*; similarly, James explained that while he 'would feel completely immersed in the world of *Lords of Midnight*; I'd imagine epic plains and fantasy landscapes', his immersion was due partly to his familiarity with fantasy literature:

> I read a lot at the time and was used to using my imagination – maybe the descriptions of worlds I'd read so well described by Tolkien, Stephen Donaldson and the like helped feed my imagination for games such as this and if I didn't have those very literary reference points the pixel art on its own wouldn't feel anything like as immersive? Hard to say. Any piece of culture will be interpreted according to other culture we've already consumed so it'll be different for everybody and the more imagination that's required, the greater those differences will be.[123]

James confirms that these games, partly due to their visual simplicity, became an intensely personal experience, unique for each player. The process of 'filling in gaps' clearly involved more than simply completing a visual pattern, and to understand it requires further critical tools.

Several players made a comparison with reading, and theories of the reader's relationship with the novel provide a useful parallel. Egenfeldt-Nielsen, Smith and Tosca remind us that 'filling in the gaps' is the term used by Wolfgang Iser to describe the means by which readers transform 'the literary text from artefact into aesthetic object... a text begins as a "dead" object with a lot of potential meanings that only become actualized through reading.'[124] To Iser, 'the convergence of text and reader brings the literary work into existence.'[125] As such, then, these players were – as Bjorn suggests – effectively

bringing the artefact, the game text, to life through their creative engagement; a process described by Brendan Keogh, in *A Play of Bodies,* as a '*coming together* of the player and the videogame.'[126] Games, he argues, 'do not simply allow the player to "step into" a world that is waiting for them. [...] Rather, immersion requires the player to actively construct the illusion of diegesis...they call for the player to *actively make belief...the player makes the virtual world make sense*.'[127]

Fenty uses a similar metaphor, and also links the process to print media.

> All worlds on screen or in print, no matter how strenuously authors and directors and game designers try to cover this fact up, are incomplete and limited. Readers, viewers, and players *connect the dots and ignore the gaps* to immerse themselves in the texts.[128]

He quotes the D. B. Weiss novel *Lucky Wander Boy*, which employs almost exactly the same phrase that my respondents used:

> In cool games, graphic minimalism goes hand-in-hand with the absorptive, World Unto Itself quality that makes these games special... When we play these games, the sketchy visual detail forces us to *fill in the blanks*, and in so doing we bind ourselves to the game world. Even more, we participate in its creation, we are a linchpin, a co-creator, crucial to the existence of the game world as it is meant to be experienced.[129]

'Under such a premise,' Fenty argues, 'new video games ... represent the game world more realistically and thus require less effort on the part of players to fill in the blanks, allowing them to immerse themselves more easily in the game world.'[130] Again, the implication is that the more abstract graphics, and the imaginative labour they ask of players, lead to a greater investment: a creative collaboration that 'binds' the player to the game.

Fenty explains this dynamic through literary theory, arguing that 'surprisingly ... video games are in some ways closer to novels than much of television and film ... in novels, as in video games, significant effort is required to enter this imaginary space.'[131] Remember that Kingy compared *Avalon* to 'reading a compelling book,' and that many others echoed his analogy. Rather than Wolfgang Iser, Fenty draws on Umberto Eco's suggestion that 'a novel is first and foremost a world, and entering this world requires effort.'[132] Eco explains in his *Postscript to The Name of the Rose* that 'Entering a novel is like going on a climb in the mountains: you have to learn the rhythm of respiration, acquire the pace; otherwise you stop right away.'[133]

While *The Name of the Rose* offers a deliberately demanding example, such a challenge is, Fenty points out, inherent to an extent in any book, as the reader must always 'interpret the words on the page and imagine the world they describe.'[134] As Terry Eagleton

observes, a more conventionally realist novel like John Updike's *Couples* also 'involves us in a surprising amount of complex, largely unconscious labour':

> The reader makes implicit connections, *fills in gaps*, draws inferences and tests out hunches; and to do this means drawing on a tacit knowledge of the world in general and of literary conventions in particular. The text itself is really no more than a series of 'cues' to the reader, invitations to construct a piece of language into meaning … without this continuous active participation on the reader's part, there would be no literary work at all.[135]

Fenty draws a comparison between this reading experience and *Ms. Pac-Man* (Midway, 1982) which invites players to learn the ghosts' personalities and movement patterns. 'Entering these worlds requires effort; the experiences are active ones.'[136]

He refers here to picking up the patterns of *Ms. Pac-Man*'s gameplay, rather than the visual language of its graphics: its clean, simple layout and symbols (ghosts, pills, a maze, 'you') are easily understood. Games like *Dragontorc,* which more ambitiously attempt to depict real-world environments through their semi-abstract visual cues, demand a further level of interpretation before the player can begin to learn the internal rules, let alone engage with the game's overarching plot. The first task for a player new to *Dragontorc* is to process and interpret the shapes on screen, deciphering this arrangement of symbols as trees, this cypher as a stone circle ringed with grass, this stretch of darkness as sky, and this identical darkness below it as ground. The player must put in this initial work to fill in the gaps left by the graphics, in order to construct – to collaborate in, through 'active participation' – a coherent on-screen world.

Daniel Vella argues that the reader-response model employed by Iser can lead us to a fuller understanding of the 'game-as-played'; the phenomenon of the 'object-of-thought [...] not to be equated with the actual art object, but with its re-presentation in the imagination.'[137] Iser, he reminds us, suggests that 'the meaning of a literary text is not a definable entity but, if anything, a dynamic happening.'[138] 'We can suggest,' Vella continues, 'that precisely such a "happening" also holds sway in games, with the act of playing constituting a bringing-to-being of aesthetic form.'[139] He finds a direct echo of Iser's 'happening' in Dominic Arsenault and Bernard Perron's 2009 conceptualisation of gaming which sees 'the game and the gamer as two separate entities meeting at a junction point.'[140] Similarly, Gordon Calleja relates Iser's 'combination of the textual properties of the printed page with the internal synthesis of the reader' to the process whereby players engage in the 'active construction of an ongoing story' through their interaction with the game.[141] The intersections of literary theory with game theory are clearly suggestive and productive.

However, Vella argues that the experience of a game is nevertheless radically different from that of other artworks, including the novel, not because of its visual form but because of its more partial and therefore more personal aspect: while we can be confident

that we have read the entirety of *Couples* or *The Name of the Rose*, only Steve Turner knows every inch of *Avalon,* and even Kingy's extensive immersion will have left corners of the caverns undiscovered.[142] Vella points out that, in Espen Aarseth's words, 'the player cannot access a *general* play session (unlike watching a movie or reading a novel) but only *particular* ones', and that therefore 'the player's engagement with the game reflects, in a crucial sense, the individual's phenomenal relation to the world.'[143] As my respondent James Closs suggested, 'everyone's perception of the world in *Atic Atac*...will be different'. While this is also true of the novel, through which, Iser says, we travel with a 'moving viewpoint', experiencing 'the lack of availability of the whole work during the act of comprehension', the effect is amplified with a game that we can never experience completely, and never in the same way as the next player.[144]

That ZX Spectrum games enabled a very particular, individual experience for my respondents is emphasised by the fact that, in addition to drawing on promotional art, paratexts and other media influences to enrich their sense of the simple graphics, these young players invested not just creative imagination, but aspects of their lived experience to bring the games to life; we could adapt Calleja's term '*alterbiography'*, 'the story generated by the individual player', to convey this synthesis between personal history and the game text.[145] Rob, for instance, drew not just on a favourite film, but also on memories of his surrounding environment when exploring games based on Celtic mythology:

> *Tir Na Nog* [Gargoyle, 1984] reminded me of real places I'd been to, hedge mazes, and very old cottages seen in the countryside. Some places in *Avalon* reminded me of times I'd been in the woods at night, old churches … I'm also a big fan of John Boorman's *Excalibur* [1981] so sometimes I'd be reminded of that too.[146]

This experience was not uncommon:

> *Dun Darach*, and similar games, tended to remind me of walking around the various castles that we'd visited on family holidays, like Caernarvon Castle.[147]

> *Tir Na Nog* and *Dun Darach,* as well as *Lords of Midnight*, linked me to visits and holidays involving forests, medieval architecture and towns. It encouraged me to learn more about Celtic folklore, paganism and ancient British traditions. It actually influenced holidays I have subsequently taken with my family too, and stories I made up and told my children when they were young.[148]

> We interpret the blanks according to our experience. This isn't just the culture/media we've consumed but also the places we've visited, people we've met and so on. I tend to supplant the Welsh countryside on any game scene purely because I spent an awful lot of time holidaying there as a child.[149]

We can now surely see why these games are remembered with such intense affection: because they were loaded with the childhood and teenage memories of these players' home towns, holidays and family relationships. The simple graphics and ambitious scenarios provided a framework which young people filled in with the details of their own experiences. Some of these experiences were from special occasions, like vacations; but some, as we saw in Gordon King's case above, where the lack of central heating seeped into *Avalon's* dungeons, were shaped by mundane aspects of the everyday home environment. Peter remembered the feelings of independence he associated with the arcade game *Tranz Am*, which involved driving across the United States:

> ... one night, for reasons I can't remember, my dad connected the Spectrum up to the big colour TV, then took my brother out to do the weekly food shopping, leaving me 'in charge' of the Spectrum, alone, for the first time. I remember the feeling of happiness and responsibility that I had, while crashing into things around Albuquerque.[150]

Paul associated *Sabre Wulf* with 'the depressing weather in the north of England', which, in an echo of *Avalon's* freezing caves, 'seemed to add to the feel of being in a damp, dark forest'. At another seasonal extreme, he associated the shoot-em-up *Ikari Warriors* (Elite, 1988) with the heat of summer, linking the Spectrum's primary-colour scheme to the scorching temperature. 'It was hot outside, the sun was merciless and the sandy yellow vertically scrolling "road" still makes me think of that time.'[151] His memories of another arcade platform game, *Booty* (Firebird, 1984), are similar to Peter's:

> My parents would work until 6pm so it was just me, my brother and a Speccy at 10 years old after school until they got home. Exploring the ship, and knowing we were alone in the house, are tied together. I still get a feeling of loneliness when I hear the title tune and see the animated ocean on the title screen. But also some comfort, because that game kept me occupied until my parents got home.[152]

Real life merged with the games, and the young players' imaginations meshed with the programmers' ingenious creations. As Jon put it, 'I could visit places, half-imagined by myself, which other people couldn't find.' His phrase 'half-imagined' neatly captures this act of co-creation. Keogh, as noted above, describes it as a 'coming together', and proposes that player and game 'are made in the relationship with each other.' The player is embodied both 'in and as' the game text; the players constructed their own unique versions of these games, but the games also constructed the players in their fictional worlds, as adventurers and pilots, warriors, explorers and magicians.[153]

7. Lost Time

No wonder ZX Spectrum players recall these simple games with such nostalgia; they invested them with deeply personal, often precious memories, co-creating a unique environment and experience in each case. My questions prompted men in their forties – strangers to me, but bonded by a shared fandom – to open up with surprising honesty. One correspondent thanked me for the opportunity, confiding that:

> I've got detailed and happy memories of my Spectrum gaming days (and that whole era, really), so being able to spend some time writing about them was a win-win. Our Dad died last year after a long illness, so it was also nice to have a chance to look back on happier times.[154]

Gordon King, when I first contacted him for a personal interview, returned immediately to *Avalon*:

> Still to this day to I think back to that time. This was door shut, lights out and completely immerse yourself in an alternate world. The solitude in those dank dungeons echoed my own solitude. The stale smells, the drips of water, the wicked footsteps of the creatures that lurked there. Steve Turner managed to turn words into hex, which in turn emanated in a glowy bloom from my portable TV, and my imagination filled in the blanks.[155]

'Hex' is short for 'hexdecimal', the language used in programming machine code for the Spectrum; but of course, it also means magic. Gordon, and the other players I surveyed – and, if their experiences are representative, many thousands of others – were engaged in a kind of alchemy, bringing their own imagination and teenage experiences to these simple frameworks, sparking them into vivid life, and helping to create immersive worlds.

Tellingly, though, they saw this experience as lost to history; as a cherished memory, rather than an ongoing experience. One respondent evoked the particular scent of the Spectrum in Proustian terms. 'The rubber keyed Speccy gave off a faint aroma of heated rubber when it had been on for a while. A smell which can still evoke fond memories when I experience it today. A big part of the experience back in the day was the actual hardware; the loading from tape, the smell of burning rubber.[156]

These responses echo Fenty's statement that the process of engaging with a game 'alters players, making return impossible.'[157] He subsequently proposes that while players can still enjoy old games, 'it can never be a true return...we may try to recapture the joy of playing these games years ago, but something is not quite the same.'[158] Retro games like *Z-Exemplar, Downwell, I Am Level* and *Hyper Sentinel* were admired by my respondents as technical achievements, distinct from the 1980s originals. Something has been lost in these affectionate tributes, and while vintage hardware, with its endearing quirks and flaws – rubber keys, plastic cassette boxes – might bring players closer to the original, a key aspect

will still be absent. Like the protagonist of *Lucky Wander Boy,* these players find even the original machines are now 'lacking...missing their aura.'[159] 'Nothing like the experience of the time,' Graeme concluded. 'And it wasn't just the tape loading, or the CRT TV, but the whole experience of the early 80s.'[160] Stig agreed. 'Part of the nostalgia I feel is about that precise time, with those games. Modern ZX games have no interest to me.'[161] To Lucio, the experience of playing ZX Spectrum games 'is something you can only know if you were there at the time, in the 1980s.'[162] Vasileios was adamant that 'I have not played Spectrum games on anything else besides my original ZX Spectrum, nor I will plan to play them again. I can watch them on YouTube, because it is all about memories.'[163] Peter, similarly, suggested that 'to really have thoroughly experienced ZX Spectrum gaming – you had to be there, at that time.'[164]

Bjorn was particularly reflective, and his words provide an apt conclusion:

> It is hard to relive the joy of the old games. I do get nostalgic warm feelings when trying them and remembering so much I thought I forgot, but I don't find the games so entertaining by themselves anymore. It is the idea I had of the games that lures me to play them again, and that is an interesting thing I guess. It is my imagination being built around the original game experience, and that is a memory I have carried for 30 years.[165]

Rather than the artefact itself, then – the hardware, the graphics, the box art or even the surrounding media culture and historical context – what made these games come alive were the personal meanings that teenage boys invested in them when they filled in the gaps.

Conclusion: Where now and what next?

While this project aims to make a significant contribution to research around the ZX Spectrum, it is inevitably just a start, on a relatively small scale. An obvious next step would be to expand the audience research beyond these respondents to a larger and perhaps more diverse group. But could these ideas also be applied more broadly, to other gaming systems and their players? In some ways, the Spectrum was unique; its distinct 8-bit aesthetic was unlike any other at the time. However, its community of bedroom coders and home-grown software houses, driven by a pioneering spirit of amateur exploration and national pride – 'the boom had an element of patriotism to it,' notes Lean – and distinctly British references, including humour in the Monty Python mode, were common to other home computer systems of the 1980s.[166] There are clearly aesthetic overlaps with contemporary arcade machines, with the abstract graphics of the Atari 2400 console, and with the colourful but blocky sprites of the Commodore 64, which shared an irreverent magazine culture with the Spectrum and was positioned as its main rival. The process of interpretation would not be identical, but no doubt it would follow a very similar process of deduction and speculation based on real-world experience, on-screen cues and supplementary materials.

While more recent games certainly approach photorealism, they inevitably still fall short – what seemed cinematic ten years ago now looks comparatively primitive – and the experiences they offer are also supplemented by players' real-world and media experiences. Ian Bogost and Dan Klainbaum, for instance, briefly explore the extent to which *Grand Theft Auto: San Andreas* (Rockstar, 2004) both corresponds to and contradicts player knowledge of the actual Los Angeles, and note that *Grand Theft Auto: Vice City* (Rockstar, 2002) relies on 'pre-existing imagery of popular culture' like *Miami Vice* (NBC, 1985-1990).[167] Similarly, Zach Whalen argues that *San Andreas*, rather than reproducing LA, allows players to explore a mediated city familiar from news footage (the Rodney King riots) and movies like *Get Shorty* (Barry Sonnenfeld, 1995).[168] The graphics of the *GTA* series come far closer to representing the real world than the ZX Spectrum's 8-bit renditions, but the process described here is similar to Peter comparing *Dun Darach* to a walk around Caernarvon Castle, and Christian reliving *Tron* through the simple blocks of *Light Cycles*. This dynamic, whereby even the more detailed worlds of contemporary console and PC games are enriched, and made more precious and personal, by the imaginative and remembered maps that each individual player brings to the game, also deserves further examination, and could be approached through the kind of open-ended audience research I use here.

My respondents' memories of ZX Spectrum games were invested with their experiences of growing up in the 1980s, primarily in the United Kingdom. How would the same game be remembered differently by a player who experienced it in Kyoto or Anchorage? One of my respondents, for instance, vividly recalled his childhood in Madeira:

> Often, before or after playing with the Spectrum of ZX, we walked through the field where we could climb trees, pick and eat apples and plums. During these walks we used to talk about issues related to the ZX Spectrum and we wondered about what would be the future of this computer and computers in general. Other times we used to play soccer.[169]

Just as a hot English summer, damp winter or cold Scottish bedroom became bound up with the graphics of *Sabre Wulf* and *Ikari Warriors* for Paul, and *Avalon* for Kingy, so the fields of Madeira surely had the potential to uniquely inform, and transform, a player's understanding of *Tir Na Nog*'s Celtic environment, or the snowscapes of *Lords of Midnight.* Similarly, consider Marko's memories of the former Yugoslavia, where 'you couldn't get toothpaste, coffee or other daily necessities in stores in those days, let alone ZX Spectrum games. We got our games pirated: you'd find ads in newspapers or magazines, call up the guy or write to them with your address.'[170] *Avalon* offered a temporary escape from Kingy's working-class Fife, though his dark, damp and chilly home environment also seeped into the game-world. Did the Spectrum's fantasies of magic and space flight allow Marko to forget that experience of empty shops and making-do, or did his everyday life shape *Avalon* into a hybrid, Yugoslavian-Celtic imaginary?[171] I have only been able to hint here at the extent to which players incorporated aspects of their surroundings into the game experience; further

research could valuably explore this phenomenon across diverse cultures, far beyond the Spectrum's British base.

To an extent, the Spectrum's position in the home distinguished the experience of its games from arcade machines, despite their similar aesthetic. Certainly, Kingy's extended, solitary immersion in *Avalon* would be hard to reproduce in a busy arcade, but Sean Fenty notes that his memories of *Galaga* (Midway, 1981), *Donkey Kong* (Nintendo, 1981) and *Ms. Pac-Man* are also infused not just with colours and sounds but 'the smells ... a laundromat close to home, filled with the smell of dirty clothes and strong detergent.'[172] The role of the surrounding environment – the cabinet art, the controls, the lights, the crowds, and indeed the smells and tastes – in enhancing the experience of playing arcade machines also offers rich potential for further exploration through audience research.

Nostalgia, as Fenty points out, implies not just 'the yearning to return to some past period or irrecoverable condition', but specifically 'the yearning to return to a place.'[173] But when players fondly, painfully remember these games, are they simply recalling a real place – their home environment during a certain period of their lives, with all the specific surrounding details of family, culture, furniture and temperature – or are they also harking back to something more elusive: a threshold between the real and the virtual, a point of transition, and in temporal terms, the first moment of stepping into a new world? Fenty describes the experience of 'classic video games', with their distinctly abstract graphics, as 'being on the threshold of something entirely different – not a real space or a virtual space trying to be real, but a distinct, abstract, computer space – a game world of symbolism, graphic minimalism, and ideal forms.'[174] New games, he argues, with their 'increasingly complex and sophisticated graphics ... offer an interactive space for cinema-like representation', but cannot reproduce that precise experience of entering a world with its own conventions and aesthetics, which demands active interpretation and decoding before the player can even start to engage with its characters and narrative.[175] We could note here that Genette's *Paratexts*, in the original French, was called 'thresholds'; this path could lead us towards theories of liminality and pilgrimage, such as those of Arnold Van Gennep and Victor Turner.[176]

My respondents, as noted, remembered key events and vivid details of their adolescent years, using games as a prompt, but they also recalled the crossing of that threshold, the journey between worlds, and the escape that the Spectrum games offered from the petty restrictions and oppressions of their lives. Take Frank, for instance:

> Sitting on the wooden floor in the living room in front of the 'big' TV (looking back, it was probably a 21-inch screen) hoping my sister would not come home from a friend's early. Actually getting my dad, who would always proclaim that games were of no use, to play *Manic Miner*. Playing Spectrum games, just like reading books, was a way to escape to a different world. At least there were no bullies. Apart from that, the games allowed me to go to places where I would

probably never be able to ever go and do things I would never be able to do in real life.[177]

Though he begins by recalling the tactile experience of his environment, and the role that the computer played in his family relationships and friendships – wryly commenting on his own false memory about the TV's size – Frank segues effortlessly into a reflection on the Spectrum as a bridge to other places. Matt offered a remarkably similar recollection:

> I can vividly remember the 'kerchunk' noise the little TV silver channel selectors made. I had a dark red wooden foldable chair and a little desk, with cassettes and Lego all over it. My room was a fantasy in pine; the smell of it I can still remember. I was quite a shy kid, so the Speccy gave me a world to be something else, to escape to. Those games with a more rounded 'world' obviously gave you more to be immersed in, but any gaming back then was a welcome period of 'me time' ...[178]

It was not just those precise details of their environment – the scents, the sounds – or the worlds of the games that they remembered, but the magical transition between the two. That process of escaping to a place they co-created through their own mastery, interpretation and creative imagination – an individual achievement, something that a teenage boy could own, independent of siblings and school bullies – was an important part of their nostalgic memories. And of course, we can now understand why it could never be fully recovered; the games haven't changed, but the players have. As Fenty aptly observes,

> While the feeling of nostalgia can be evoked by these games – while they may remind us of our past – they cannot truly return us there because we have changed. The games themselves have helped change us.[179]

The ZX Spectrum, as I argued above, still offers unmapped territory for scholarship. As in an adventure game, the question now hovers like a prompt: where now, what next? I have suggested multiple possible routes. Rich paths of further discovery lie ahead.

Biographical note:

Will Brooker is Professor of Film and Cultural Studies at Kingston University, London. His research interests focus on popular culture and its audiences, and the way the meanings of popular texts change over time, in different contexts. His books include *Batman Unmasked, Using the Force, The Blade Runner Experience, Hunting the Dark Knight, Forever Stardust* and the BFI volume on *Star Wars*. Contact: w.brooker@kingston.ac.uk.

Notes:

[1] Gordon King, 'Avalon – The Greatest Game of All', *GirnyGamer* (April 13, 2017), http://girnygamer.scottige.com/2017/04/13/avalon-the-greatest-game-of-all (accessed October 29, 2018), n.p.

[2] ibid.

[3] 1188 games were released for the Spectrum in 1983 alone: see Tristan Donovan, *Replay: The History of Video Games*, Lewes: Yellow Ant (2010), 116. The *World of Spectrum* website currently holds 10,724 games in its archive. See https://www.worldofspectrum.org/archive.html (accessed November 9, 2018).

[4] Sinclair had sold the brand to Sir Alan Sugar of Amstrad in 1986.

[5] See Tom Lean, *Electronic Dreams: How 1980s Britain Learned to Love the Computer,* London: Bloomsbury Sigma (2015), 175. Two independent publishing companies, Bitmap Books and Fusion Retro Books, also cater for the nostalgia market.

[6] *From Bedrooms to Billions* has a crowdfunded 'companion piece' book: see Alex Wiltshire, *Britsoft: An Oral History*, London: Read-Only Memory (2015).

[7] At the time of writing, in March 2020.

[8] See 'Sinclair ZX Spectrum Next', https://www.specnext.com/about/ (accessed October 29, 2018). The Vega+ was delayed in production and stripped of its right to use the brand, and the units that reached backers have been reviewed as severely disappointing.

[9] 'I Am Level', http://www.smilingbag.co.uk/ (accessed October 29, 2018), n.p.

[10] The Timex 2068 was also released in Portugal and Poland, while illegal clones and pirated games led to the computer's popularity across Continental and Eastern Europe. However, the official industry remained almost exclusively British. Exceptions include a thriving Spanish industry and the Australian software company Melbourne House: see Donovan, *Replay*, op. cit., 121-122 and 209, and Meda-Calvet and Stuckey, cited below. Jaroslav Švelch's work, also cited below, covers the Czechoslovakian context in great detail.

[11] See Steven L. Kent, *The Ultimate History of Video Games*, New York: Three Rivers Press (2001), 220-240, and Simon Egenfeldt-Nielsen, Jonas Heide Smith and Susana Pajares Tosca, *Understanding Video Games*: *The Essential Introduction,* New York: Routledge (2017), 75-76.

[12] Graeme Kirkpatrick, 'How Gaming Became Sexist: A Study of UK Gaming Magazines 1981-1995', *Media Culture & Society* 39, no.4 (2017): 453.

[13] Alex Wade, *Playback: A Genealogy of 1980s British Video Games*, London: Bloomsbury (2016), 15.

[14] Ignasi Meda-Calvet, '*Bugaboo*: A Spanish Case of Circulation and Co-production of Video Games, *Cogent Arts & Humanities*, vol 3. no.1 (2016) https://www.cogentoa.com/article/10.1080/23311983.2016.1190440.pdf (accessed March 1, 2020); Helen Stuckey, 'The Curious World of *The Hobbit*: An Early Example of A Dynamic Gameworld', *Well Played* vol.6 no.2 (2017), https://press.etc.cmu.edu/index.php/product/well-played-vol-6-no-2/ (accessed March 1, 2020).

[15] See for instance Jaroslav Švelch, *Gaming the Iron Curtain*, Cambridge: MIT Press (2018), Jaroslav Švelch, 'Keeping the Spectrum Alive: Platform Fandom in a Time of Transition', in Melanie Swalwell, Helen Stuckey and Angela Ndalianis (eds.), *Fans and Videogames: Histories, Fandom, Archives*, Oxon: Routledge (2017), and Jaroslav Švelch, 'Say It With A Computer Game: Hobby Computer Culture and

the Non-entertainment Uses of Homebrew Games in the 1980s Czechoslovakia', *Game Studies* vol. 13, no. 2 (December 2013), http://gamestudies.org/1302/articles/svelch (accessed March 1, 2020).

[16] *Transformative Works and Cultures*, a leading journal on fandom, includes one article on ZX Spectrum gaming, from 2009: I wrote it.

[17] Graeme Mason, 'The Making of: *Avalon and Dragontorc*', *Retro Gamer* (May 17, 2018), https://www.pressreader.com/uk/retro-gamer/20180517/281736975088605 (accessed March 17, 2020), n.p.

[18] Andrew Hewson, *Hints and Tips for Videogame Pioneers*, Manchester: Hewson Consultants Ltd (2016), 68.

[19] ibid., 69.

[20] ibid., 68.

[21] Lean gives more technical details of the resulting 'colour clash': see Lean, op. cit., 121.

[22] The ZX Spectrum was, of course, distinct in some ways from other 8-bit consoles and computers (such as colour clash) but typical in others. Much of what I discuss below is transferrable to other systems of the same period.

[23] Chris Wilkins, *The Story of the Sinclair ZX Spectrum In Pixels*, Kenilworth: Fusion Retro Books (2014), 218.

[24] King, op. cit., n.p.

[25] ibid.

[26] Gérard Genette, *Paratexts: Thresholds of Interpretation*, Cambridge: Cambridge University Press (1987). Scholars have also applied Genette's frameworks to more recent games, with their more extensive and elaborate paratexts: see for instance Daniel Dunne, 'Paratext: The In-between of Structure and Play', and Jan Švelch, '"Footage Not Representative": Redefining Paratextuality for the Analysis of Official Communication in the Video Game Industry', in Christopher Duret and Christian-Marie Pons (eds.) *Contemporary Research on Intertextuality in Video Games*, Pennsylvania: IGI Global (2016).

[27] King, op. cit., n.p.

[28] ibid.

[29] Much more could be said about the way the ZX Spectrum's limited sound chip also seemed to create (or is remembered as creating) immersive effects beyond its technical capabilities, but this article focuses on graphics for reasons of space.

[30] Kirkpatrick notes that while early British home computer games were diverse and ungendered, the industry and its games began to be aggressively coded as male from mid-1985. See Kirkpatrick, op. cit., 458-459.

[31] Darío Ruellan, response to first questionnaire (May 12, 2018).

[32] Rob Morton, response to first questionnaire (April 30, 2018).

[33] John Davies, response to first questionnaire (May 1, 2018).

[34] Dario Ruellan, response to first questionnaire (May 12, 2018).

[35] Jan Thorhauge Frederiksen, response to first questionnaire (May 29, 2018).

[36] David Kirkham, response to first questionnaire (May 20, 2018).

[37] See Marie-Laure Ryan, *Narrative as Virtual Reality: Immersion and Interactivity in Literature and Electronic Media*, Maryland: John Hopkins University Press (2001), 48-74, on VR immersion.

[38] Chris O'Regan, filmed interview (February 22, 2019).

[39] Mark Hibbert, filmed interview (May 3, 2019).

[40] James Leach and Robin Candy, '*The Lords of Midnight*' in Steve Jarratt (ed.) *Sinclair ZX Spectrum: A Visual Compendium*, Bath: Bitmap Books (2015), 60.

[41] Anon, '*Mercenary'*, *Crash* no.44 (September 1987), http://www.crashonline.org.uk/44/mercenary.htm (accessed October 30, 2018), n.p.

[42] Derek Brewster, '*Lords of Midnight'*, *Crash* no.7 (August 1984), http://www.crashonline.org.uk/07/midnight.htm (accessed March 17, 2020), n.p.

[43] Graeme Kirkpatrick argues that this sense of immersion and being 'in' the game began around 1986, as gameplay became more atmospheric: this evidence suggests that it was possible far earlier. See Graeme Kirkpatrick, *The Formation of Gaming Culture: UK Gaming Magazines, 1981-1995*, London: Palgrave (2015), 64.

[44] See for instance Gonzalo Frasca, 'Simulation Versus Narrative: Introduction to Ludology' in Mark J. P. Wolf and Bernard Perron (eds.) *The Video Game Theory Reader*, New York: Routledge (2003), 221-235, and Gordon Calleja, *In-Game: From Immersion to Incorporation*, Cambridge: MIT Press (2011), 113.

[45] Christian Pfeiffer Jensen, response to first questionnaire; José Laurindo Sobrinho, response to first questionnaire (May 2, 2018).

[46] Neil Beadle, response to second questionnaire (October 1, 2018).

[47] Becky, filmed interview (February 8, 2019). Another female respondent, Kate (filmed interview, March 10, 2020), gave a similar answer, raising the question as to whether gender may have played a part in this process.

[48] Anon, response to second questionnaire (October 3, 2018).

[49] Paul Dunn, response to second questionnaire (October 8, 2018).

[50] Of course, these games were unable to offer a 3D experience: the illusion of depth was conveyed through clever use of perspective, object size and shadow.

[51] Jan Thorhauge Frederiksen, response to first questionnaire.

[52] Matt Wilsher, 'Wheelie', in Jarratt, op. cit., 45.

[53] Dan Whitehead, *Speccy Nation*, Manchester: The Zebra Partnership (2012), 75

[54] Frank Rodolf, response to second questionnaire (September 29, 2018).

[55] Christian Pfeiffer Jensen, response to first questionnaire.

[56] Paul Dunn, response to second questionnaire.

[57] Jesper Juul, *Half Real: Video Games Between Real Rules and Fictional Worlds*, Cambridge: MIT Press (2011), 139-141. Note that Juul, on the same page, describes an 'incoherent' game environment – based more around gameplay than narrative immersion – as one in which we cannot 'fill in the gaps in the world'; the same term was used repeatedly by my correspondents below.

[58] ibid., 139. Gordon Calleja makes the similar point that 'not every assemblage of sign and code is likely to be an equally inspiring source of story generation for every player'; Calleja, op. cit., 127.

[59] Neil Beadle, response to first questionnaire.

[60] Mike Brooks, response to first questionnaire (1 May, 2018).

[61] Bjorn, response to second questionnaire.

[62] Matt J. Scott, response to second questionnaire.

[63] Frode Tennebo, response to first questionnaire.

[64] Marko Rukonic, response to first questionnaire (29 April, 2018).

[65] Ste Pickford, 'Foreword', in Jarratt, op. cit., 6.

[66] Egenfeldt-Nielsen, Smith and Tosca, op. cit., 142.

[67] Graeme Mason, 'The Making of: *Avalon and Dragontorc*'. See also Hewson, op. cit., 71.

[68] Wolf is discussing the similarly blocky aesthetic in Atari 2600 games: see Mark J. P. Wolf, 'Abstraction in the Video Game', in Wolf and Perron, op. cit., 47-65.

[69] See C. S. Peirce, *Writings of Charles S. Peirce: A Chronological Edition, Volume 2*, Indiana: Indiana University Press (1984), 56.

[70] Ryan, op. cit.*,* 2.

[71] ibid, 3.

[72] See Peirce, op. cit. Wolf calls these 'representational' graphics: op. cit., 48.

[73] Ryan, op. cit., 3.

[74] They also pointed out that the in-game caption 'Wispwood Forest' provided an important contextual clue.

[75] Anon, response to second questionnaire.

[76] Frank Rodolf, response to second questionnaire.

[77] Bjorn, response to second questionnaire (September 29, 2018).

[78] Sean Fenty, 'Why Old School is "Cool": A Brief Analysis of Classic Video Game Nostalgia' in *Playing the Past: History and Nostalgia in Video Games*, edited by Zach Whalen and Laurie N. Taylor, Nashville: Vanderbilt University Press (2008), 27.

[79] Mark Wolf provides an interesting parallel of 'five different styles of race car icons' in Atari games: op. cit., 51.

[80] With the proviso that specific programmers had their own distinct visual style, and that every game by Costa Panayi, for instance, used the same 'tree' as *Highway Encounter*.

[81] Rob Morton, response to first questionnaire.

[82] James Closs, response to first questionnaire (May 10, 2018).

[83] Mark, filmed interview (September 3, 2019).

[84] Gordon King, filmed interview (October 17, 2019).

[85] ibid.

[86] Peter Davidson, response to second questionnaire.

[87] Paul Dunn, response to second questionnaire.

[88] John Davies, response to first questionnaire.

[89] James Closs, response to first questionnaire.

[90] Matt J. Scott, response to second questionnaire (October 3, 2018).

[91] José Laurindo Sobrinho, response to first questionnaire.

[92] Rob Morton, response to second questionnaire (September 28, 2018).

[93] Fenty, op. cit., 27.

[94] ibid., 25.

[95] James Closs, response to first questionnaire.

[96] Mark J. P. Wolf, *Building Imaginary Worlds: The Theory and History of Subcreation*, Oxford: Routledge (2012), 51. Italics mine.

[97] ibid.

[98] Dudley Andrews, *Concepts in Film Theory*, New York: Oxford University Press (1984), 25.

[99] ibid., 26.

[100] Neil Beadle, response to second questionnaire.

[101] ibid.

[102] Andrews, op. cit.*,* 30.

[103] ibid., 25.

[104] ibid., 30.

[105] Bjorn, response to second questionnaire.

[106] Andrews, op. cit., 31.

[107] Laurie Taylor, 'Networking Power: Videogame Structure from Concept Art', in *Videogames and Art*, ed. Grethe Mitchell and Andy Clarke, Bristol: Intellect Books (2007), 381

[108] See Tim Nicholls, *Artcade: The Book of Classic Arcade Game Artwork*, Bath: Bitmap Books (2016).

[109] Wolf (2003), op. cit. 58.

[110] Oliver Frey, quoted in Wiltshire, op. cit., 253.

[111] Lucio Quintal, response to first questionnaire (May 2, 2018).

[112] Jason Weber, response to first questionnaire (May 10, 2018).

[113] Frank Rodolf, response to second questionnaire.

[114] Matt J. Scott, response to second questionnaire.

[115] Stig Bull, response to second questionnaire.

[116] Genette, op. cit., 28.

[117] ibid., 31.

[118] Marko Rukonic, response to first questionnaire.

[119] Dario Ruellan, response to first questionnaire.

[120] John Davies, response to first questionnaire.

[121] David S., response to first questionnaire.

[122] Peter Davidson, response to second questionnaire.

[123] James Closs, response to first questionnaire.

[124] Egenfeldt-Nielsen, Smith and Tosca, op. cit., 217.

[125] Wolfgang Iser, *The Implied Reader*, Baltimore: The John Hopkins University Press (1974), 274.

[126] Brendan Keogh, *A Play of Bodies: How We Perceive Videogames*, Cambridge, MA: MIT Press (2018), 22.

[127] ibid., 38. Italics in original.

[128] Sean Fenty, op. cit., 24, italics mine.

[129] ibid., 28, italics mine.

[130] ibid.

[131] ibid., 23.

[132] ibid.

[133] Umberto Eco, *Postscript to The Name of the Rose*, Florida: Harcourt Brace Jovanovich (1983),41.

[134] ibid.

[135] Terry Eagleton, *Literary Theory: An Introduction: Anniversary Edition*, Oxford: Blackwell (2008), 66, italics mine.

[136] Fenty, op. cit., 23.

[137] Daniel Vella, 'No Mastery Without Mystery: *Dark Souls and the Ludic Sublime', Game Studies* vol.15, no.1 (July 2015), http://gamestudies.org/1501/articles/vella (accessed March 1, 2020), n.p.

[138] Wolfgang Iser, *The Act of Reading: A Theory of Aesthetic Response*, Baltimore: The John Hopkins University Press (1978), 22.

[139] Vella, op. cit. We could also link the process of filling in the gaps to the 'concretization' described by Roman Ingarden, which firms up the objective artwork into a reader's subjective interpretation.

See Ingarden, *The Cognition of the Literary Work of Art*, Evanston: Northwestern University Press (1973), 50.

[140] Dominic Arsenault and Bernard Perron, 'In the Frame of the Magic Cycle,' in Bernard Perron and Mark J. P. Wolf (eds.) *The Video Game Theory Reader 2*, New York: Routledge (2009), 109.

[141] Calleja, op. cit., 127.

[142] In Aarseth's description of cybertext: 'you may never know the exact results of your choices; that is, exactly what you missed.' Espen J. Aarseth, *Cybertext: Perspectives on Ergodic Literature*, Baltimore: The John Hopkins University Press (1997), 3.

[143] Espen Aarseth, '"Define Real, Moron!": Some Remarks on Game Ontologies', in Espen Aarseth, Lev Manovich, Frans Mäyrä, Katie Salen, and Mark J. P. Wolf (eds.) *DIGAREC Keynote-Lectures 2009/10*, Potsdam: Universität Potsdam (2011), 65

[144] Iser (1978), op. cit., 16.

[145] ibid., 115. Calleja deploys the term with specific reference to later and more elaborate, scripted games; hence my use of 'adapt, not 'adopt', above.

[146] Rob Morton, response to second questionnaire.

[147] Peter Davidson, response to second questionnaire.

[148] David Kirkham, response to first questionnaire.

[149] James Closs, response to first questionnaire.

[150] Peter Davidson, response to second questionnaire.

[151] Paul Dunn, response to second questionnaire.

[152] ibid.

[153] Keogh, op. cit. 22.

[154] Peter Davidson, personal email (November 5, 2018).

[155] Gordon King, personal email (November 6, 2018).

[156] Anon, response to second questionnaire.

[157] Fenty, op. cit., 24

[158] ibid., 30.

[159] ibid. Fenty uses Walter Benjamin's term for the unique quality of an original work of art, as opposed to a copy; see Walter Benjamin, *The Work of Art In The Age Of Its Technological Reproducibility And Other Writings On Media*, Cambridge: Harvard University Press (2008), 22.

[160] Graeme Nattress, response to second questionnaire (October 11, 2018).

[161] Stig Bull, response to second questionnaire.

[162] Lucio Quintal, response to second questionnaire (October 11, 2018).

[163] Vasileios Vlachos, response to second questionnaire (September 30, 2018).

[164] Peter Davidson, response to second questionnaire.

[165] Bjorn, response to second questionnaire.

[166] See Lean, op. cit., 116.

[167] Ian Bogost and Dan Klainbaum, 'Experiencing Place in Los Santos and Vice City' in Nate Garrelts (ed.) *The Meaning and Culture of Grand Theft Auto: Critical Essays*, North Carolina: McFarland & Company (2006), 172.

[168] Zach Whalen, 'Cruising in *San Andreas*: Ludic Space and Urban Aesthetics in *Grand Theft Auto*' in Garrelts, ibid., 157.

[169] José Laurindo Sobrinho, response to second questionnaire, October 8, 2018. 'Spectrum of ZX' is his own phrase, which I have retained here.

[170] Marko Rukonic, response to first questionnaire.

[171] Such an enquiry would intersect with the work of Jaroslav Švelch, cited above.

[172] Fenty, op. cit., 20.

[173] ibid., 21-22.

[174] ibid., 27.

[175] ibid.

[176] See for instance Victor Turner, *The Ritual Process: Structure and Anti-Structure*, New York: Aldine De Gruyter (1969), 94, and Arnold Van Gennep, *The Rites of Passage*, Chicago: University of Chicago Press (1969), 21.

[177] Frank Rodolf, response to second questionnaire.

[178] Matt J. Scott, response to second questionnaire.

[179] ibid.