

Game Vaporware as Design Fictions

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ABSTRACT

In this research we examine games, and games hardware, that can be classed as 'Vaporware'. More specifically software that was never written, or hardware that was never built, and consequently no one ever played. In particular we are considering such vaporware as examples of 'Design Fiction' as they once represented speculative visions of the future based on emerging technology. Vaporware is a term generally used to describe products that are announced to the general public but are never actually manufactured. Whereas design fiction is a term used to describe plausible 'diegetic prototypes' that are built, or suggested, to create an opportunity for discourse about possible technological futures. Whilst it could be argued vaporware games are simply failed products that were justifiably scrapped before joining the long lists of come-to-nothing games and consoles, by reviewing examples we offer an alternative view that they can serve as objects of discourse for exposing the potential futures of video games and thus could be considered in terms of design fiction. To add further weight to the argument that games can be useful as design fictions we then consider "Game of Drones", an example of a design fiction that pivots around a game element, to illustrate how the deliberate use of design fiction can stimulate discourse around game futures (in this case the growing promotion of 'gamified' services as means of engaging users). Whilst the notion of designing games that will never be built may seem paradoxical in relation to the Games industry's predominantly commercial aims, we believe that the deliberate adoption of design fiction as a practice within game design would facilitate the emergence of meaningful discussions around future gaming without the frustrations induced by vaporware.

CCS Concepts

Human-centered computing → **Interaction design theory, concepts and paradigms.**

Keywords

Design Fiction, Speculative Design, Games, Vaporware, Design Futures.

1. INTRODUCTION

Vaporware is a term commonly used to describe software and

hardware that is announced, sometimes marketed, but is never actually produced [1]. Although it pervades many areas of technology, the games industry is one that seems particularly prone to producing vaporware [2]. There are countless examples of games and game hardware that never make it out of the development cycle and into players' hands despite being the subject of significant publicity and marketing campaigns at events such as E3 (as well as often being the subject of considerable investment).

Whilst an element of unfulfilled promise exists for all vaporware, the intentionality behind its production can be varied. The majority of vaporware in games does not appear to be deliberately deceitful. However, it has been shown that vaporware is sometimes used by companies to drive up their share prices, to create extra publicity for their brand [3], or even deter competitors entering a market [4]. In most cases new products become vaporware due to difficulties during development that result in these products falling behind schedule and/or being surpassed by competitor products in the market. It is typical for the companies producing vaporware to promise more than their developers can possibly achieve in the given time frame.

In an industry where the big selling point of new game products has often been linked to incorporating the latest technological advancements, companies can easily end up in a recursive loop whereby current developments have to be scrapped to keep up with other new technological developments in the industry often intrinsically linked with notions such as Moore's Law [5]. Other games have fallen victim to egos and perfectionism whereby designers get fixated by grandiose visions; the desire to create something revolutionary and genre-breaking that ultimately is beyond their means. While game development is intrinsically intertwined with technological futures, speculation about what these potential futures might be principally comes through vaporware rather than through standalone visions. Vaporware differs from pure speculation though: vaporware is thought through, it is 'designed', which is also a quality of Design Fiction.

Games designers focus on their innovations on the trajectory of technologies that are very close to domestication. In the broader design movement there is a long tradition of engaging in the presentation of not just these 'near futures', but with more radical concepts that reach farther into the future (the contrast between approaches is illustrated in figure 1). For example, when General Motors sponsored designer Norman Bel Geddes to create Futurama for The New York World's Fair of 1939, it transported visitors over a huge diorama of a fictional section of the United States. Futurama is widely credited as introducing the American public to the concept of a network of expressways connecting the nation. It painted a picture of a plausible future, setting an agenda, and significantly influenced transportation and planning policy.

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By providing a glimpse of an unknown-yet-desirable future the exhibition influenced how a nation saw the product that ultimately came to define modern America: the automobile. Promoting this view also undoubtedly benefitted General Motors and therefore we use the term ‘Vaporworld’ to characterize such visions in that it presents a future world in which certain products would make sense rather than promoting specific future products as in the case of vaporware.

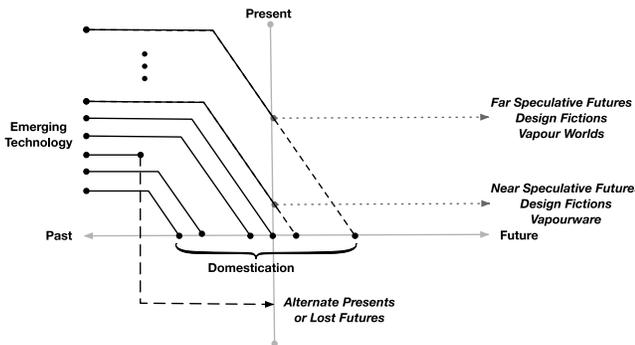


Figure 1: Design Futures

Applying their skills to producing designed speculations, in contrast to producing materialized designs, speculative design approaches are compelling. Dunne & Raby’s book *Speculative Everything* charts the spectrum of speculative design over the 20th and 21st centuries. The popularity of the book, and increasingly diverse citations, suggest that the interest is certainly still growing, not waning [6]. This is arguably a result of a general realization in creative communities that design does not have to focus only upon technological problem solving which to often leads to the ‘solutionism’ described by Morozov [7], and can address cultural issues through the construction of communicative artifacts. Thus, whilst design can undoubtedly aid technological innovation by evaluating usability, utility and desirability, by seeding narratives, myths, notions of value and other representations, design can also foster and incubate the creation of new cultural ground and understanding.

Design fiction is of particular interest in relation to technology related futures as it couples the unequivocal power of science fiction to influence the world [8] with design’s inherent world-shaping ability. Design fiction achieves this melding of science fiction and design by creating plausible future worlds that are inhabited by designed objects. By placing these designs in a plausible and fully textured world our relationship with these speculative objects goes beyond mere utility or usability and, to use the anthropologist Lucy Suchman’s term, are ‘situated’ [9]. Design fictions can be both a way of communicating visions [10] and also a way of building inspiring design concepts [11]. They create discursive spaces [12] which can address the complexity of emerging technology in future scenarios. The aggregate of all these properties means that design fictions can provide ‘cultural triggers’ for hardware, software and system developments.

The term design fiction was coined almost accidentally by the science fiction author Bruce Sterling when he was trying to articulate how design thinking impacted his literary output, “*Design fiction reads a great deal like science fiction; in fact it would never occur to a normal reader to separate the two*” [13]. More recently Sterling has refined his thinking on design fiction,

defining it as “*the deliberate use of diegetic prototypes to suspend disbelief about change*” [14]. The term ‘diegetic prototype’, where the ‘diegesis’ is the interior of any given story world, has its origins in David Kirby’s research into how science is represented and informs cinema, and conversely how cinema informs science [15]. Sterling’s definition underscores the importance creating believable fictional worlds whose coherence is intertwined with the designed prototypes. Julian Bleeker’s characterization of design fiction as a distinct practice [16] instigated a surge in interest from a range disciplines. That initial surge of interest has helped to produce a set of divergent perspectives on what can or cannot constitute design fiction, why you might practice it, and what you might aim to achieve by applying a design fiction ‘lens’ to practice or artifacts. This divergence of interpretations, ideologies and aims means that there “is a need to increase understanding of design fiction as a research method and approach” [17]. Thus the overall challenge for those researching design fiction is how to practically and usefully apply it. In this paper we are considering how design fiction could be put to use within the game industry as a way of opening up discourses about the future while reducing the problems (such as player expectations and frustrations) associated with the production of games vaporware.

2. GAME VAPORWARE

Before considering the role that design fiction could play within game design futures it is worth considering examples of vaporware. Note that this is not a comprehensive historical list but has been chosen to highlight specific aspects. The discussion of these vaporware examples evaluates the possible intentionality behind their development, likely causes of their failure to reach the market, and also to apply the lens of design fiction where possible.

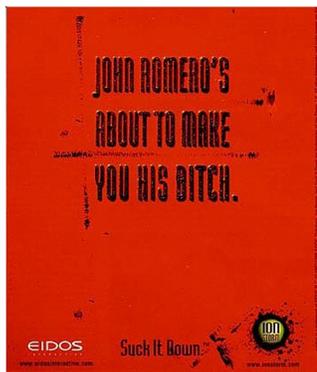
2.1 Vaporware Games

Probably the most well known vaporware game is Valve’s *Half Life 2: Episode 3* which has become so infamous the phrase ‘*Half-Life 3 confirmed*’ is now used as a running joke on many discussion sites and is often linked with spurious facts about Valve. The *Half-Life* franchise started in 1998 as the debut title for Valve Software. It was followed by an Expansion Pack (EP) *Half-Life: Opposing Force* in 1999, *Half-Life: Blue Shift* (EP) and *Half-Life: Decay* (EP) in 2001, *Half-Life 2* and *Half-Life 2: Deathmatch* (EP) in 2004, *Half-Life 2: Lost Coast* (EP) in 2005, *Half-Life 2: Episode One* in 2006, and finally *Half-Life 2: Episode Two* in 2007. The general expectation was that episode three would follow between six months and a year of *Episode Two*, as Valve director Gabe Newell had indicated in a 2006 Eurogamer interview [18]. In 2007 the marketing director of Valve stated *Episode Three* was in production, but it never appeared. Between 2007 and 2011 there were numerous announcements about an imminent release but the game never materialized, much to the dismay of fans of the franchise. The endless speculation over the game over those years led Newell to take the decision in 2011 to refuse to answer any more questions about its release. In the subsequent years we have seen petitions, protests, and speculations from thousands of fans and numerous spoof announcements about its release, Valve continue their silence. Given the passion of the *Half-Life* fandom, it seems inconceivable that the game would not be a success if it were released, but as yet the game remains simply much discussed vaporware. With software development in particular, the reasons behind these delays are rarely articulated clearly, although as

discussed below sometimes explanations are forthcoming in cases where vaporware does eventually appear.

2.2 Vaporware Games That Were Released

In this section we consider notable games that were once considered vaporware but eventually appeared after lengthy delays. At one time one of the most cited examples of vaporware was Duke Nukem Forever. The game was announced in April 1997 as a sequel to Duke Nukem 3D. It was to be released in 1998, but was eventually released some 15 years later, in June 2011. No real explanation has ever been provided for extensive delay, or, perhaps more interestingly, for the eventual decision to release the game. When it eventually shipped, Duke Nukem Forever was very unsatisfactory: unusably laggy multiplayer modes, frustrating long loading times, and massively outdated references to pop-culture of the late 1990s. The mythical status the game did ensure that the game sold enough to be deemed profitable by the developers.



IT'S A CAR, IT'S A PLANE, IT'S A BATTLE.

The Konix Multi-System is three 'simulator' games in one. The control unit becomes a car steering wheel, aircraft controls or bike handlebars.

Not only that, but you'll actually *feel* the vibration of the wheel or the handlebars.

Convert it into 'plane' mode, pull back on the control unit and you're gliding on a runway, actually feeling the plane's every response.

Then change the control controls into motorbike handlebars and you'll get all the nerve-racking sensation of screeching around a race track.

FEEL IT, SEE IT, HEAR IT.

Just as the Konix Multi-System responds to every movement of the control unit, so it does to the unique dual control foot pedal.

Put your foot down to accelerate away or brake hard as you approach a corner and the response is immediate.

For added realism, there's a gear shift mounted on the right hand side of the control unit for even better performance.

It won't just *feel* like you're really there with the Konix Multi-System either.

The graphics displayed on your monitor or TV achieve exceptional clarity.

That's thanks to a 32 bit co-processor that can actually generate over 4000 colours with amazing clarity for better than the 'flat' pictures you're probably used to with other systems.

Added to which, you'll get CD quality stereo sound through speakers or headphones!

A BETTER SYSTEM IN EVERY SENSE

As if all that's not enough, just see what else the Konix Multi-System has to offer.

For combat games, there are five buttons mounted on the control unit in just the right position. It also has ports where you can plug in joysticks for other computer games.

And there are a host of other accessories you can attach or plug in to make even more of the system.

In fact, whatever way you look at it, the Konix Multi-System is a superb choice of entertainment!

THE SOFTWARE

Your Konix Multi-System will come complete with game programmes. And, like the system itself, it's quite simply the best there is!

All the software for the Multi-System has been specially commissioned from the world's leading software houses, and we're building you more and more new ones a month to increase your enjoyment of the Konix Multi-System still further.

THE HARDWARE

Your Konix Multi-System consists of the console unit with handlebar/aircraft control and a steering wheel for car games. You also get the unique dual foot control.

THE SYSTEM

Figure 2: Daikatana Flyer (left) and Extract from Konix Multi-System Flyer (right).

In the 1990's any game where John Romero was involved was enough to inspire confidence after genre defining games such as Wolfenstein 3D, Doom and Quake. Daikatana was designed by Romero in 1997. There were plans for an elaborate Christmas 1997 launch, and impressively for that games of the time it boasted four 'time periods' (episodes), 24 levels, and large numbers of weapons and monsters. The main problem was that the game demoed at E3 in 1997 using the Quake engine, and it so happened the company Romero had co-founded 'id software' (and the developers of the Quake engine that Daikatana used) were also at E3 demonstrating their Quake II engine: this instantly made Daikatana look dated. Although the Daikatana's developers

immediately decided to port their content to the Quake II engine, abandoning the Christmas 1997 release, it was two years before their conversion was complete. Their demo at the 1999 E3 proved to be to be unplayable with a maximum frame rate of 12 FPS and it was finally released a year later after continued development and bug fixes, but ultimately never delivered on its initial promise. Both the game and John Romero received much derision over the failure to deliver, certainly exacerbated by an early advertisement for the game which boasted "John Romero's about to make you his bitch.... Suck it down" (see figure 2).

As a final example we consider the game Godus developed by 22 cans which was released in September 2013 but came with a much hyped promise from legendary designer Peter Molyneux. The promise was that the winner of his previous experimental game Curiosity – What's Inside the Cube? would have the ability to be the sole, all-powerful, digital god within Godus and to reap a small portion of the game's revenue [19]. As the winner Bryan Henderson has yet to receive either element of his prize it is arguably vaporware, albeit in a curious form that seems primarily to be a product of Molyneux's dramatic hype about the Curiosity game, as opposed to technical challenges around implementation.

2.3 Vaporware Consoles

The early history of video gaming is bound to the advent of arcade game machines that started to appear from 1971 onwards. While there are many examples of glorious failures within arcade games such as Cinematronics' 1979 game Sundance or Atari's 1983 game I, Robot there is little evidence of vaporware arcade machines from this period. This may be due to the industry being very new, there was a panoply of machines and manufacturers in the embryonic arcade machine market, all racing to get their machines into lucrative arcades. However, the emergence of microprocessor based second-generation games consoles for the home market is when vaporware became a noticeable phenomenon. The home console market started a hardware arms race which ultimately contributed to the so-called 'great video game crash of 1983'. An over saturated market resulted in gaming industry revenues falling 97% between 1983 and 1985. Many had been skeptical of the long term viability of the video games industry, so this crash was not completely unexpected as supported by this 1983 Otto Freidrich quote in time Magazine:

"This most visible aspect of the computer revolution, the video game, is its least significant. But even if the buzz and clang of the arcades is largely a teen-age fad, doomed to go the way of Rubik's Cube and the Hula Hoop, it is nonetheless a remarkable phenomenon" [20].

In this early period the relatively low barriers to entry for new console developers meant new consoles were appearing regularly, meanwhile game developers were learning their craft for the ever expanding range of new hardware available, were not encumbered by worries about interoperability. This period resulted in number of examples of console vaporware with one of the most notable being the Atari 2700 which was intended to replace there popular Atari 2600 [21] and featured wireless controllers, it was originally set for release in 1981. The wireless controllers were reportedly the principle reason for cancellation. This is, perhaps, unsurprising given they were being developed before standardized wireless protocols such as 802.11 and Bluetooth were established (in fact the developers were adapting 'Radio Frequency' technology from garage door opening systems). Although Atari CX-42 joysticks appeared a couple of years later it was a niche peripheral and it was not until the Infra Red (IR) controllers

appeared as part of the Satellite system produced for the Nintendo Entertainment System (NES) in 1989 that wireless controllers started to gain popularity. In some respects, we could argue that the original marketing of the 2700 controllers, and indeed their eventual release to a niche audience, represented a speculative future in which gamers were introduced to the concept of wireless controllers.

Another notable vaporware console is the legendary Konix Multisystem [<https://youtu.be/hKke1tgdu1Q>] originally announced 1989 and eventually scrapped in 1990 when Konix went bankrupt. Originally conceived as an advanced peripheral Konix responded to the emerging home PC market. They expanded their ambitions though and refocused the system around their own proprietary 16-bit computer. The main innovation was in terms of interaction: rather than a single joystick the controller design called 'Slipstream' could be modified by the user with simple and quick twisting actions to form a steering wheel, motorbike handlebars, and a flight yoke for an airplane. Additional add-ons were announced including a home version of a hydraulic chair (popular at the time in the arcades for games like *Outrun* and *Afterburner*) which was touted as creating a similar effect but for a fraction of the cost. There was also a light gun that had a recoil feature and controllers with tactile feedback. The Konix Multisystem generated considerably publicity driven by the company's charismatic founder Wyn Holloway but ultimately the melting pot of ideas was too difficult to develop into a viable product. Many of the ideas within the Konix Multisystem appeared on other consoles, suggesting that this example of vaporware can be seen in terms of design fiction's view of future trajectories and technology domestication.

Given the recent re-emergence of interest around Virtual Reality (VR) within the game industry, most notably through the Oculus Rift, it seems fitting to consider a famous example of VR vaporware, the Sega VR headset [<https://youtu.be/yd98RGxad0U>] originally announced in 1991. The headset design was reportedly inspired by the robot in the original 1951 version of the science fiction *The Day the Earth Stood Still*, when it demoed at the 1993 Consumer Electronics Show similarities to the hardware featured in 1987 film *Robocop* were also identified [22]. Despite being based on technology Sega had deployed in its arcade machines, and the development of four games using 16 MB cartridges that were to be bundled with the headset, the headset was never released. While reports from journalists at time claimed that the system demonstrator was unresponsive, Sega officially claimed "*that the sense of immersion was so realistic, it could potentially cause injury to children who played it*" [23]. There were also a number of reports from the few that tried the demonstrator of it inducing motion sickness, a problem which still exists with VR systems today [24]. What is interesting about considering the Sega VR as design fiction is that the device itself is remarkably similar to the VR headsets currently appearing in the market (e.g. Oculus Rift, Samsung Gear VR, HTC Vive, PlayStation VR). Many of the discussions around comfort of use over prolonged periods are still on going, and as such it too seems relevant to consider the Sega VR as another example of design fiction being relevant to futures for gaming hardware and software.

Almost from the day it was announced in January 2003, the Phantom was met with heavy skepticism. In part this is because it came from an unknown start-up, Infinium Labs, not to mention the fact that the name 'Phantom' itself, evoked a feeling that it might never actually appear. The console presented the concept of a subscription based platform in which all the games would be

downloadable, and the hardware, for less than \$399, would be capable of playing any PC game. Given the company was ultimately accused of operating a stock inflation scheme the skepticism was perhaps entirely understandable, but it undoubtedly presented players with a compelling vision of a potential future of game distribution which ultimately came to pass as exemplified by how most games are distributed today via platforms such as Steam, Origin, Xbox Live Marketplace, Wii Shop Channel, and the Sony PlayStation store.

2.4 Reflections

Across all of these examples, both hardware and software, vaporware has been shown to generate considerable interest and discussion in potential audiences. In some cases, this may be the main purpose of the vaporware, in that it promotes interest in a brand [3] and thus drives the potential for future sales. For the first generation of gaming companies, games software and hardware vaporware frequently coevolved, but as the console market matured a separation inevitably occurred, as a small number of consoles dominated the market. This caused the amount of hardware vaporware to decline dramatically for a time. The maturing console market also slowed the manufacturers' update cycle between models, which was important for the games developers as it allowed for longer design cycles, allowing developers to write software that could maximize the potential of the hardware. Whilst there was some early innovation around game controllers, most of the concerns for consoles revolved around processing power, graphic resolution, and adapting to new formats for distributing the game software. Arguably hardware vaporware has seen a resurgence with the advent of crowdfunding via services such as Kickstarter and Indiegogo. There is a strong argument to be made that all the products and services on crowdfunding platforms are 'fictional' until they are made tangible, first through reaching their funding goals, but more importantly through subsequent research, development, and production programs that must take place after funding is achieved. The most notable piece of game related hardware that has tried to complete the journey from vapor to material via a crowdfunding platform is the Oculus Rift VR headset, which raised \$2.4 million on Kickstarter, and in doing so has done much to revive the lost VR dream of the Sega VR headset. As a side note it is worth mentioning the Oculus Rift has highlighted a point of contention around rewards for funders who 'donate' to products that may or may not become vaporware on crowdfunding services. After successfully being funded, Oculus Rift was subsequently bought by Facebook for \$2 billion, although drastically improving the chance that the Rift would make it to production, the acquisition prompted those who had backed the original project on Kickstarter to ask 'Will I get a slice of that \$2 billion?'. So far the answer appears to be a resounding no.

Early examples of games vaporware often used early footage of prototypes as promotional material but the increasing importance of graphics and spectacle has seen the rise of bespoke trailers created specifically to market concepts. The disclaimer 'Not Actual Game Footage' appearing as a caption on these trailers is almost a given. Thus, promotional materials have arguably become increasingly fictional in that they represent possible future gaming experiences, rather than the ones that will actually be delivered by the game. We can consider these promotional materials as a modern-day example of how the games industry uses fiction to set agendas and influence its future.

By considering the range of examples of games-related vaporware over a 30-year period and concluding with examples of how the vaporware landscape has become quite different today than it used to be, we aim to highlight how viewing vaporware as design fiction provides the industry with an opportunity to create discourses across a wider range of potential futures. In the remaining sections we consider how such a practice might evolve by considering the crafting of a game design fiction world to illustrate the design process involved.

3. GAME DESIGN FICTION

As previously discussed design fictions are aimed at creating discursive spaces pertaining to near futures which reference technologies that either recently have, or are on the cusp of becoming viable and relevant. Design fictions explore these nascent technologies along plausible trajectories [25]. Game of Drones, was published as a ‘Work in Progress’ paper at the ACM’s 2015 Annual Symposium on Computer-Human Interaction and Play (CHI Play) and explores one such future trajectory: the use of unmanned aerial vehicles (now commonly referred to as ‘drones’) as part of a ‘gamified civic enforcement system’. The paper describes a change in European legislation that would allow the use of drones in the United Kingdom for commercial or civic tasks. The drones must only be piloted by individuals who are in possession of a ‘Drone Pilot Proficiency Certificate’. The ‘Drone Enforcement System’ detailed in the paper is ‘gamified’ by combining the enforcement tasks with a simple game mechanic that is controlled via a consumer console controller. Players earn points for completing the enforcement tasks via a game-like interface. The civic enforcement tasks in question relate to issuing penalty fines to dog owners who allow their pets to defecate in public without cleaning up the feces, and also parking enforcement (patrolling and issuing tickets to car owners where they are due). The paper details various aspects of the system and the user trial including [26]:

- Changes in legislation necessary to make the operation of drones in this way legal and regulated.
- The statutory and safety requirements that must be met under the new legislation.
- Technical specifications of the hardware used in the trial.
- Elements of system infrastructure such as designs for the ‘Drone Docking Station’ (for charging and storage of the drones) and signage used to inform the public of ‘Drone Enforcement Zones’.
- The control system (Xbox controller to facilitate piloting of the drones by citizen users from their homes).
- Details of the users involved in the trial (ex-military and ex-police personnel).
- Description of the type of data gathered as part of the trial.
- Preliminary notes on the findings of the trial.
- A YouTube video that depicts the live system ‘in the wild’ [https://youtu.be/6b_30d7yW2s].

In the conclusions at the end of the Game of Drones paper, two principal aims of the research are highlighted. First to examine the practical and moral challenges related to using drones in a gamified enforcement system, “*not only to highlight potential usability or utility issues such systems might present but to also create a discursive space in which researchers can consider the wider societal and ethical issues of technological futures in which*

drones might be widely adopted” [27]. Second, Game of Drones also contributes to discussions around “*design fiction more generally as a method for exploring issues related to introduction of technologies*” (ibid). Thus, the authors of Game of Drones, are suggesting that this design fiction can help researchers to ask not only about how they might utilize a particular technology, but also to address questions around what the wider implication might be from its use.

Game of Drones occupies a liminal and tense space: it is both a work of fiction and yet is published as, and alongside other, peer-reviewed research articles. In other examples of design fiction being used in research, authors tend to introduce the fictional element ‘up front’, usually explaining the background to design fiction before describing why and how it has been used. It is also usually the case that the design fiction is reflected upon, or annotated in some way, such that some elements of the authors’ insights and perspectives are articulated to the reader. In the case of Game of Drones both of these design fiction motifs are omitted. The research paper also omits a discussion of related work in areas of gamification, civic enforcement systems, and design fiction. These parts were intentionally left out in order to highlight that the form a design fiction artifact takes, and whether it overtly calls itself design fiction, have a direct relationship to how adept specific examples of design fictions are at engendering the ‘suspension of disbelief’ that Sterling says is the key outcome that design fiction aims for [26]. Game of Drones raises some challenging questions about design fiction as a research method. For example, it is not yet clear how to ascertain the value of such fictions. It also appears the initial reviewers of the paper did not realize it was a fictional paper, raising the question of whether design fiction is inherently deceitful [26]. However, in this paper we are principally concerned with the wider discourse design fictions facilitate and how crafting of fictional worlds and narratives can support those discourses. Therefore, in the following section and in the manner of ‘research through design’ [28] we provide an annotation of Game of Drones to allow designers to understand the process [29] involved in crafting the fiction that enabled Games of Drones to appear as a plausible near future.

3.1 Crafting the Design Fiction

The structure of Game of Drones is not unusual and in fact could be regarded as fairly typical of many human computer interaction (HCI) research papers. This is deliberate, not just to emphasize the role of format in shaping plausibility [26], but it also represents a ‘future mundane’ [30]; the format is well understood by its intended audience and as such can ‘hide in plain sight’, helping to suspend disbelief. Further we see the format of a research paper is part of the HCI discipline’s ‘method assemblage’ that goes towards constructing that community’s reality [31]. Said differently, it is almost always the case that in the case of a research community papers often adopt and reflect cultural conventions associated with that particular discipline’s conventions. We tried to adopt and reflect those conventions, from the HCI discipline, in Game of Drones. In order to create a design fiction world in a games context, it follows that constructing a reality fit for, and familiar to, that audience would be a pragmatic approach. The examples of vaporware above conform to those expectations for games, and as such provide clues as to how to go about constructing a design fiction specifically for the games industry and the games community.

Although ‘design fiction’ is shown on the first page of the Game of Drones paper as an ‘author keyword’, there is no mention of design fiction in the body of the text itself until the concluding paragraph where the authors state “*The research in this paper and the associated artifacts are part of a design fiction*” [27]. The first section of the paper is given over to discussing the change in legislation that would be necessary to make the system described a legal possibility. The infrastructure of the system is described in some detail, including diagrams of the ‘drone docking station’, control system, and public signage used to indicate ‘drone enforcement zones’ around the trial city. The primary purposes of these fictional elements (shown in figure 3) help enclose the reader in the Game of Drones world. Details of the fictional infrastructure, hardware, players and enforcement tasks, are all included to make the boundary between the inside and outside of the magic circle blurry, and to enhance the paper’s ability to suspend disbelief.

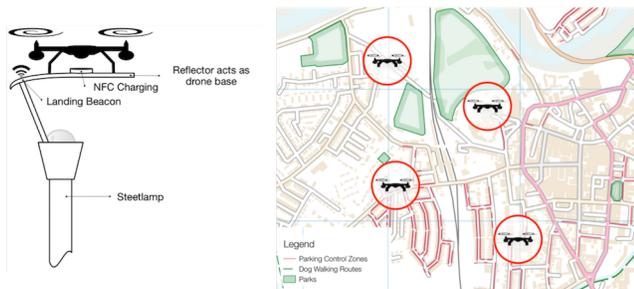


Figure 3: Drone Docking Station (left) and locations of Drone Docking Stations for system trial (right).

A common point of confusion in design fiction discourse is the precise relevance of the word ‘fiction’. This is because the prototypes inside the design fiction are, by definition, ‘not real’ and they are therefore fictional. However, that is not what the word fiction, in ‘design fiction’, is referring to. Design fiction is named such because the designs are diegetic prototypes, or prototypes that only exist or make sense from the inside of a story world. So the use of the word ‘fiction’ is actually referring to the prototyping medium, not the prototypes themselves. Emphasizing this nuance goes some way to address concerns that by writing and publishing Game of Drones the authors acting in a deceitful way. We would rather suggest that their approach is focused on building a rich and fully textured story world, and as such we were ‘being true’ to design fiction’s ideology. Across the spectrum of design fiction practice there are many different ways that fiction-as-a-prototyping-medium is employed. Design fictions sometimes invoke their story worlds directly, showing their audience the detail of the world via, for example, video or film. Other others invoke story worlds indirectly, for example, the TBD Catalogue [32] creates its story world by showcasing multiple diegetic prototypes in a design fiction product ‘catalogue’. In examples like this, it is up to the reader to imagine the kind of world that the products would exist within, and the design fiction artifact’s role is to act as the stimulus to achieve this. The story worlds, the prototypes within them, and social situations that occur in that world, make up complete ‘diegetic landscapes’. Such landscapes should be crafted as simply or elaborately as necessary to make it seem plausible for the intended audience.

As a research paper Game of Drones does not have a formal story structure and thus is similar to the TBD Catalogue approach. The

fictional world is implied rather than directly illustrated. In the following we examine the content of Game of Drones more closely, suggesting how different parts of the paper contribute to crafting its diegetic landscape. Considering both historical examples of vaporware, alongside the techniques employed to create the Game of Drones landscape, may provide insights as to how to create design fictions for games.

3.1.1 Changes to Legislation

In order for the Game of Drones world to make sense, the law around the use of unmanned aerial vehicles in the UK (where the fiction is situated) would have to change. Opening the paper with this discussion sets the scene and leads the reader into a believable world. The discussion of legislation also means that should the reader happen to be aware of the historically accurate legislation, the remainder of paper remains plausible, and disbelief can be suspended. As well as helping to craft the story world the changes to legislation are also a diegetic ‘prototype’ in their own right and unpack the feasibility of these statutory alterations (e.g. this part of the diegesis prototypes legislation, as opposed to hardware, software or a service). Prototyping the law in this way is timely, given the massive uptake in consumer and commercial drones, current legislation is in obvious need of updating (the recent requirement in the USA for all drones to be registered is an example of realizing and acting upon this need). Game of Drones offers a possible concretization of such an update to UK legislation, and the reader is left to consider whether they approve of it or not.

Safety is a prime consideration in the existing law covering drone usage in the UK and presumably would be at the fore of any new law pertaining to drone usage. Thus safety considerations are integral to the Game of Drones world and are consistent with the safety requirements of the prototypical legislation that is described in the paper. In addition, any ‘real’ trial of drones used in this way would have to address safety considerations, therefore the fictional paper must provide sufficient information about safety in order to maintain believability and plausibility. The safety considerations also contribute to the wider discussion that the design fiction aimed to promote regarding the practicality of the system (i.e. consider the challenge of implementing the hardware, software, legislation, and the game element). To give one example of such implementation challenges, in Game of Drones it is stated that that the minimum height for the drones to fly is 4.5 meters in order to avoid collisions with lampposts. This kind of detail is a feature of design fiction approaches and helps add texture to the diegesis, at the same time by omitting collision avoidance strategies suitable to avoid things higher than 4.5 meters (trees, bridges, tall buildings, birds, etc) a considerable space for discussion is created, simply by including this straightforward design consideration.



Figure 4: Drone Enforcement Signage.

3.1.2 System Infrastructure and Hardware

Some technical details about hardware are included in Game of Drones most notably a contemporarily available consumer model of drone and camera are cited as being used in the trial, as well as a sketch of the docking station design (figure 3), photographs of signage (figure 4), and a diagram of the control device (an Xbox controller). In terms of the consumer hardware that is mentioned, specifying models mainly plays a supporting role in the design fiction. A reader with in depth knowledge of drone technology might possibly question why that particular model of drone was selected, however for a HCI trial it is not unlikely that consumer-grade hardware would be used. The sketch of the lamppost with integrated ‘drone docking station’ is based on a real type of lamppost (shown in the supporting video) and also draws upon existing (and therefore highly plausible) technologies for charging. As well as contributing to the believability of the story world, the depiction of ‘Drone Enforcement Zone’ signage in photographs may also provoke thought around social and ethical questions around using this technology for civic enforcement.

3.1.3 User Trial

The results of the user trial are entirely absent from Game of Drones and instead the authors provide an extremely brief summary that is meant to be reminiscent of how conclusions are presented in HCI ‘Work in Progress’ papers. There is however some detail around how the trial was set up:

- A real map, of a real location, shows the fictitious trial locations.
- The personal background of the trial users is mentioned (ex-military and police personnel were used in this trial, because of the enforcement focus).
- The system needed a programmatically enforced no fly zone near the railway tracks for safety reasons.
- How a range of system-generated metrics were collected to assess the “effectiveness, impact, and feasibility” of the system.
- Legal aspects of the data collection and storage are acknowledged.

The detail around the user trial, once again, appears included in order to make the account of the fictional research (and thus the system itself) appear practically viable, and deliberately starts to touch upon social and ethical issues. Overall ‘thinking through’ these details enables designers to add adding texture to the design fiction world. Other detail elements directly serve to populate the discursive space that Game of Drones strives to create. For instance, “the drone pilots are also encouraged to record any activity they consider ‘unusual’ to ascertain of the use of drones has potential for crime prevention beyond enforcement activities” [27] might suggest to some visions of a ‘big brother’ style dystopia, while to others could be reminiscent of ‘neighborhood watch’ schemes, or even private security in gated communities. These details were included with the aim of encouraging discussion about the desirability of such systems and their effect on society.

3.1.4 Supporting Video

Screenshots taken from the video (figure 5) are included towards the end of Game of Drones in support of the claim that “the data generated has been considerable”[27]. The video itself is five minutes in length and shows footage recorded from drone flights

in various locations around the trial city. A game-like interface has been added to the footage in post-production and features the current player’s name, location on a map, and point scores being awarded for certain activities (such as logging car registrations and identifying dogs). The footage looks believable and by envisioning what such a game would look like helps contribute to the suspension of disbelief.

4. DISCUSSION

Games companies have provided us with numerous examples of both hardware and software that has ultimately become vaporware. Whilst their production was driven principally by commercial motivations, many of these have undoubtedly provided compelling visions of potential games futures. Further, the proliferation of forums in which these visions have been and in some cases continue to be discussed, highlights that they have a value far beyond the potential to drive future sales. Design fiction is developing as a design method, both academically and commercially, for exploring the broader implications of emerging technologies by concretizing the potential of these technologies in fictional worlds that are crafted so as to be plausible in the eyes of their intended audience. The examples of vaporware in the first half of the paper, particularly the hardware examples, demonstrate that whilst the technologies proved impossible to implement at their time of conception, the vaporware created in their image has proved remarkably relevant if considered as design fiction. These examples of vaporware, as with all examples of design fiction, are adept at highlighting and exploring the challenges of likely technological trajectories. As discussed in this paper, although vaporware and design fictions are produced with differing intentions, there are many parallels between them.

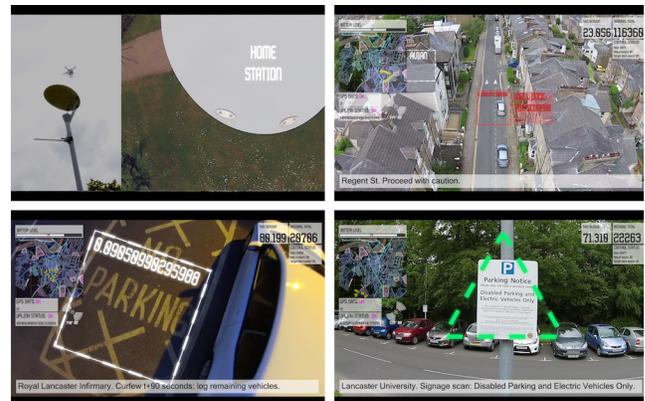


Figure 5: Screenshots from Game of Drones Video.

Whilst both software and hardware variants of vaporware were intrinsically linked in the early years of games development the dominance of a small number of console manufacturers reduced amount of hardware vaporware considerably. Much of the software vaporware was also effected by console development, there are examples where certain games become trapped in recursive loops where current builds of games end up being scrapped to keep up with other technologies developing around them. The emergence of crowdfunding sites such as KickStarter has brought an interesting dimension to vaporware in that it could be said that all the products and services on KickStarter are design fictions until they are made tangible through a successful funding campaign. There are numerous examples of game related software

and hardware on Kickstarter, which adds to the case that given their incredibly broad reach the potential futures of games are not adequately addressed by the mainstream commercial market. Further, the rise in the use of specially scored and edited CGI trailers for new games means that they have arguably become increasingly fictional in that they represent ‘possible future gaming experiences’ rather than the presenting experiences that might actually be delivered by the game (e.g. the ubiquity of ‘Not actual game footage’). All this leads us to consider whether a more deliberate use of design fiction would offer designers with the opportunity to consider a wider range of potential future directions for games. With this outlook in mind we described crafting the fictional world in which a gamified drone enforcement system is implemented: can the lessons we learned as part of the ‘world crafting’ exercise that was necessary to create the Game of Drones world be applied to the future of games-related hardware, software, distribution mechanisms, legislation, or societal impact?

To illustrate how this new technique would work in practice we consider the creation of the world in which Game of Drones plausibly exist. In reflecting upon this process we recognize that such an arts based approach will not necessarily fit well practitioners from disciplines which draw their methodologies from the sciences, such as HCI, which regard such reflections as inherently subjective [33]. While our annotation and commentary on the design of the Game of Drones world is carefully considered, and, where possible, references to other work demonstrates precedent it is true that, unavoidably, there are subjective factors in our discussion. However, in current the pre-paradigmatic phase of design fiction such reflections are important in developing the method.

One interesting aspect we noted when conducting this research was that while there are many games related papers presenting technological prototypes that include discussions of their potentiality in future game design and development, unlike design more generally, discussions of methods directly associated with imagining futures seems missing in relation to games. Whilst game studies research has made significant advances, there is still much that can be learned from theories and practices from the more generalist design tradition that have the potential to advance games studies further.

While vaporware is generally perceived negatively, this is perhaps is due to expectation that they ‘will’ rather than ‘might’ be produced and as such are unfulfilled promises (at least in the eyes of consumers). This negativity is not associated with design fictions, which are judged in terms of the potential they portray, and the discussion they can stimulate, rather than in terms of product delivery. The paper presents the possibility for games researchers, and the games industry, to create vaporware as design fiction. In doing so we can capitalize on the demonstrable ability of vaporware to create believable, relevant and plausible futures, without intrinsically breaking a promise to the gamers.

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