# Games as Speculative Design: Allowing Players to Consider Alternate Presents and Plausible Futures

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**Abstract:** As games are inherently about exploring alternative worlds this paper proposes the utilisation of games as a medium for speculative design through which players can explore scenarios that represent plausible alternative presents and speculative futures The paper reviews futures orientated design practices such as Design Fiction, Speculative Design, and Critical Design alongside complimentary research areas in games studies such as Critical Play, Persuasive Games, and Procedural Rhetoric to create a frame for using games as speculative design practice. The aim of this design frame is to create debate and facilitate productive future practice through which designers can develop games that encourage user reflection by enabling players to reflect upon the complex challenges the world now faces.

**Keywords**: Game Design, Speculative Design, Rhetoric, Design Futures

## 1. Introduction

This research draws together future orientated design approaches such as Design Fiction, Critical Design (Dunne 2008), and Speculative Design with game design practices such as Critical Play(Flanagan 2009), Persuasive Games and Procedural Rhetoric (Bogost 2007) to create a design frame for the development of practice of designing games that allow players to rehearse alternative presents and speculative futures. This framing was derived through the reflective practice of 'research through design' (Frankel and Racine 2010, Frayling 1993) during the creation of the game Cold Sun. Cold Sun presents a plausible futuristic world impacted by climate change which has narrative based on scenarios developed from the International Panel for Climate Change report (2014) and with in-game events that are influenced by the current real world weather experienced by the player. This reflection upon the theories associated with the design of this game leads us to suggest that games have much to offer in relating complex concepts to players as they allow them to revert causality

and replay scenarios and as such the approach may prove both desirable and productive for future speculative design practice. However, in order to effectively illustrate this view it is important we first consider speculative design, critical design, and design fiction alongside techniques and approaches with game design, such as critical play, persuasive games and procedural Rhetoric that often espouse similar aims.

Whilst there is no commonly agreed definition of speculative design, critical design, or design fiction they arguably share certain similarities in that they: remove the commercial constraints that might normally limit the design process; use prototypes as the main method of enquiry; and use fiction to present alternative futures (Auger 2013). We would also suggest there is another similarity within theses approaches in that the resulting artefacts can often appear subversive and irreverent in nature. This suggest that games and play are highly relevant in the context of speculative design as they often create a playful subversive and irreverent space, often described the 'magic circle' (Salen and Zimmerman 2004), to encourage greater exploration by players. Thus, by using games in this way we can encourage players to consider a wide range of complex, and in some cases subversive, issues that can be explored fully within the safety of the elaborate worlds games can create. Further, it is envisaged that speculative game design would complement Gaver's proposition of Ludic Design (Gaver 2002). However, whereas Gaver's definition places ludic design at the playful (Paidia) end of Roger Calliois continuum, that spans games and play (Caillois and Barash 2002), games as speculative design would take their place at the gameful (Ludus) end.

In order to evaluate how games might be designed that explore issues through alternative presents and plausible futures we must first consider how speculative design, critical design, and design fiction address temporality – in terms of the past, present and future.

## 2. Temporality

Considering the future is generally seen as an integral part of all design activity as Elliot and Roy (1978) stated:

> "Visions of the future are particularly important for designers, because designers have to imagine both the future conditions that will exist when their designs actually come into use and how those conditions will be changed by the creation of their new design".

Whilst this focus on the future is often present within speculative design, critical design, and design fiction, in that it allows designers to question 'how things might be', they can also consider 'alternative presents' to enable them to question "why things are the way they are" (Auger 2013). These alternative presents often break existing timelines and technological evolutions by applying different ideologies and practices and are akin to historical practice of Counterfactual Histories in which we can ask 'what if' in relation to an historical event and imagine its effect on the present. As we all use the experiences and decisions we have made in the past when actioning our decisions in the present, consideration of the past should also

be considered within these techniques. In fact, some of these design approaches explicitly exploit our past experiences within a particular scenario to make it more believable. In the following sections we consider the characterisation of future present and past in these design practices in more detail.

## *2.1 Future*

If we are to enable players to consider futures we must first consider what type of futures we wish to represent. The general approach has been to present futures as scenarios based on qualifiers, the most common qualifiers being probable, plausible, possible, represented in Figure 1. Whilst in some cases we might also add the preferable (Voros 2003), within any of the other qualifiers, this is potentially problematic for reasons we shall elaborate upon later. As these qualifications are subjective they are open to interpretation but could be considered as: possible – might happen, plausible – could happen, and probable – likely to happen. Note we have added the 'impossible' in Figure 1 to acknowledge that some concepts are currently outside current scientific knowledge and if used in games would likely be considered fantasy and therefore outside the scope of this discussion although potentially useful ways to consider the world (Gualeni 2015).
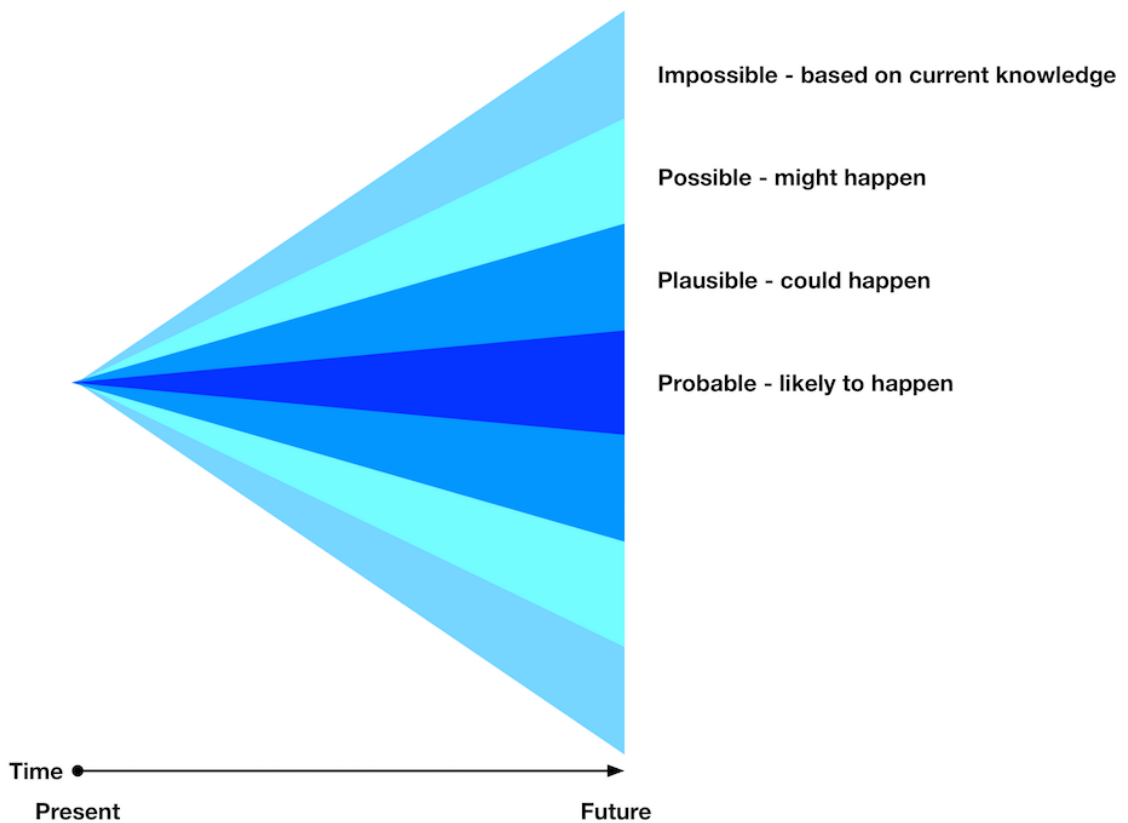


*Figure 1  Probable, Plausible,Possible, and Impossible Futures.*

Whilst 'possible' encompasses all potentials when addressing particular issues, it is plausible and probable which arguably have most to offer when attempting to raise awareness, or

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even persuade players, of a particular point of view that is relevant to their current experience.

As many subjects such as climate change can be classified as wicked problems (Buchanan 1992) they cannot be easily defined and therefore many of its aspects could be considered as either plausible or probable dependent on your particular point of view. Therefore, we would suggest that it could be beneficial to deliberately use plausible to encompass both qualifiers to prevent discussions over the perceived difference overshadowing the issues a particular game is trying to highlight.

The plausibility of particular futures may be addressed by considering design fiction in more detail. Although design fiction is still evolving as a method of enquiry, its general aim was most succinctly expressed by Science Fiction author Bruce Sterling in his NEXT 2013 keynote as the:

> "deliberate use of diegetic prototypes to suspend disbelief about change… It means you're thinking very seriously about potential objects and services and try to get people to concentrate on those – rather than entire worlds or geopolitical strategies. It's not a kind of fiction. It's a kind of design. It tells worlds rather than stories"

The plausibility of such fictions comes by achieving the right blend of factual reality from the present when creating diegetic visions of the future (Lindley and Coulton 2014). To successfully achieve this blending it is often useful to draw upon the familiar and mundane elements of everyday life as people have very little experience of what they may encounter in the future as their expectations are usually based upon what they understand today (Evans 2011).

As games are normally designed to be 'playable', this would differentiate them from much of the current design fiction, speculative design, and critical design where the majority of artefacts produced are unlike games in that they are not interactive, which means their purpose can often be misinterpreted through simply viewing (Auger 2013).

Kirby argues diegetic prototypes within design fictions (Kirby 2009) effectively present them as fully functional stating that they:

> "have a major rhetorical advantage even over true prototypes: in the fictional world – what film scholars refer to as diegesis – as these technologies exist as real objects that function properly and that people can actually use."

However, the majority of games are presented through mimesis, (imitation, representation, enactment) in that the player enacts the game through play, whilst diegesis (narrative, narration) is predominantly used in cut-scenes to provide an overall narrative for the game (Atkins 2003). Thus while games differ from the majority of design fictions this should not be seen as a disadvantage as mimesis in games makes the action closer to a lived experience and, coupled with a strong narrative, can produce powerful affects on the player. Effectively, diegesis and mimesis are properties of the design which can be varied by the designer as appropriate within the game.

At this point it is worth returning to the notion of preferable futures as previously highlighted. A preferable future could be described as what we - want to happen and thus could be applied within any of the three previously described qualifiers of probable, plausible, possible. This notion of preferable is very much associated with critical design as defined by Dunne and Raby and stems from their PPPP model (2013) in which the artefact embodies the designer/artists own perspective of what is a preferable future. Privilege within speculative and critical design has already received criticism and as Martins states, "speculative and critical design risks to incur the same mistakes as critical theory" (2014) by "promoting elitist views of a 'better world' that society should aspire towards" (Bowen 2010). Whilst Martins does not specifically highlight the notion of preferable within the PPPP model as problematic, we believe this could be a significant factor that effectively encourages critical designers to adopt a privileged position. At this point we would therefore wish to depart from Dunne and Raby's view of speculative design being part of a critical design practice (Dunne and Raby 2013) and propose that as most speculative design is intended to facilitate a discourse with a broad audience on future products, systems and services it should be considered a distinct practice . Therefore for us 'preferable' should be a question the designers ask of themselves within the design activity rather than an aim of the design. This emphasis on discourse we believe is best achieved by being inclusive within the overall design and would therefore suggest it should include the use of participatory or co-design approaches when creating speculative designs to democratise the process.

## 2.2 Present

Speculative design typically often extrapolates the trajectories of current technologies that have not yet reached domestication to create speculative presents or futures.  The other approach used is to present alternative presents (Auger 2013) which break the actual technology emergence timeline to speculate on the 'what if" as shown in Figure 2.

These alternative presents could be considered as the 'lost futures' from particular moments in the past and are often used to question the factors that help establish a particular dominant technology.

There are those that argue that speculative design is actually primarily all about the present in that it is the point in time in which humans can take action and the role of the speculative presents or futures, coupled with our view of the past, is what influences the actions taken or the discourse created (Gonzatto, van Amstel,  Merkle, and Hartmann 2013).
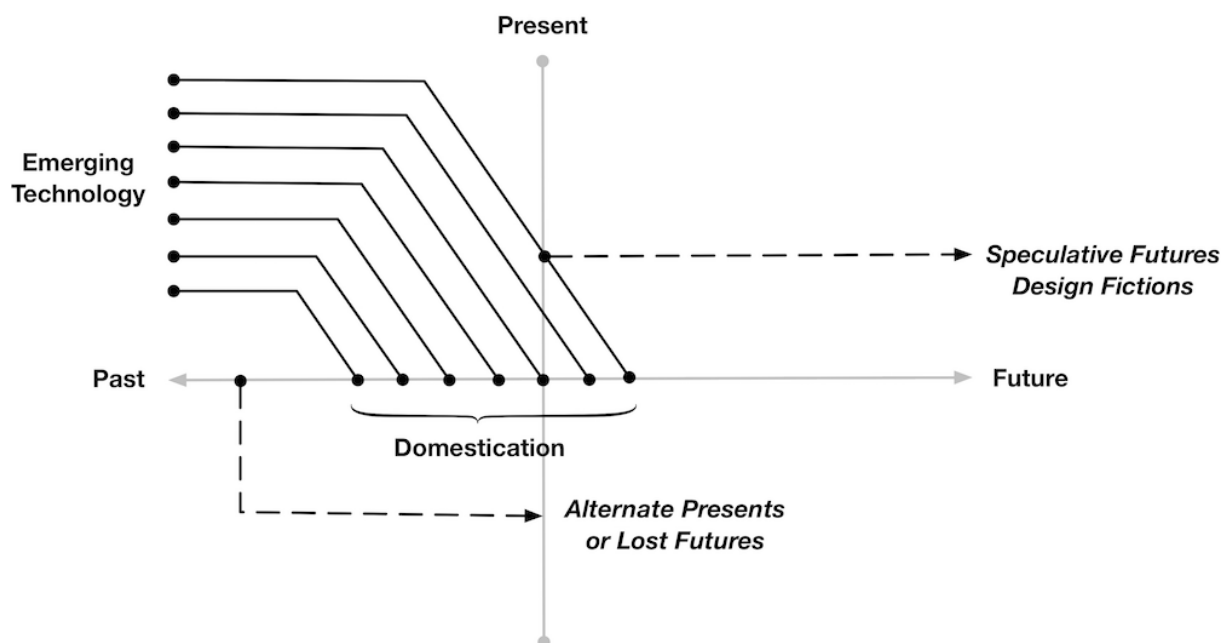
*Figure 2   Alternate Presents adapted from James Auger's original (Auger 2013).*

## 2.3 Past

One issue with both Figure 1 and our discussion up to this point is ensuring how we acknowledge the influences of the past.  Marshall McLuhan said in his book, The Medium is the Message, "We look at the present through a rear-view mirror. We march backwards into the future" (McLuhan and Fiore 1967). Although McLuhan meant this primarily as a criticism, it serves as a reminder of the significant influences of the past on our perception of both the present and the future. This is not to say we should completely ignore the past, as we may have lost potential futures through the decisions we made, but rather we should be aware of its influence. Further, we should acknowledge that there is no universally accepted view of the past, or indeed the present, as Figure 1 might also suggest, but rather these are individually constructed to create a particular reality (Law and Urry 2004). Therefore, when constructing an alternative present or plausible future it will undoubtedly contain the designers own current perspective of the present and their experiences of the past and this should therefore be acknowledged within the design process. This emphasises that speculative design should not be considered as a neutral act, as design theorist Richard Buchanan stated all design can be considered "as rhetoric" (Buchanan 1985), and supports our previous argument of adopting a more conversational perspective and participatory design approaches to lessen the arguments of promoting privilege compared with critical design.

This consideration of design as rhetoric leads us into the forthcoming considerations of design activities within the games studies community.

## 3. Game Design Approaches

In the following sections we will consider game design that goes beyond that of producing games purely for entertainment or education and, in particular, approaches that could be considered as emerging from the so-called Art Games movement as defined by Jason Roher (Bogost 2011). However, we would concur with Ian Bogost that art games is an insufficient term to consider many games, and it is currently "a stand-in for a yet unnamed set of movements or styles, akin to realism of futurism" (Bogost 2011).

### 3.1 Critical Games

Although Mary Flanagan introduced Critical Play (Flanagan 2009) in relation to games, it does not have the same focus on creating the possible/plausible futures as within critical design (Dunne 2008). Whilst Flanagan does not preclude such a focus for critical play, thus far the vast majority of the critical games created has primarily been either: to critique current events or practices within the games industry; or critique games themselves (Grace 2015). An example of the former is Mollieindustria's 2011 smart phone game 'Phone Story' [www.molleindustria.org] which critiques smart phone production by highlighting aspects such as the harvesting of precious metals and the production of electronic waste. While an example of the latter Mary Flanagan's own game, 'Giant Joystick", provides both a critique about lack of collaborative play, while its phallic nature also pokes fun at male dominated play and machismo within contemporary game design (Grace 2014). In this respect, Martins previously discussed critique of privilege within speculative and critical design (2014), cannot be so easily levelled at critical games, as the work of designers, such as Anna Anthropy, directly address subjects such as race, gender, and sexuality (Anthropy 2012). Further, we would argue that the following discussion relating game design to rhetoric allows the privilege to be considered formally within the design process.

### 3.2 Persuasive Games and Procedural Rhetoric

When discussing Persuasive Games (Bogost 2007) it is important to distinguish these from approaches described as Persuasive Technology (Fogg 2002). Persuasive technology generally seeks to directly encourage or discourage a particular behaviour. This direct approach takes its influence from experimental psychology and aims to reduce a problem so that it can be addressed through the promotion of minor behavioural change for easily understood and uncontroversial goals (Knowles, Coulton, Lochrie, and Whittle 2014).

Persuasive games as defined by Ian Bogost provide an alternative approach, one grounded in utilising rhetoric to reveal to the player the underlying processes or concepts that drive a system or activity through playing the game (Bogost 2007).

Before considering this rhetorical approach further, it is worthwhile considering how the term rhetoric is being applied, as in some modern contexts, such as politics, it can be associated with insincerity, whilst here it is used in the historical sense relating to the art of persuasive speaking (Rapp 2010). In terms of applying rhetoric within a specific design

context, it can be considered in relation to the three modes of persuasion: Logos, Pathos, and Ethos identified by Aristotle (Rapp 2010). Within these three modes various devices can be used to appeal to the player, for example:

- Logos might utilize facts, statistics, analogies, and logical reasoning;

- Pathos might appeal to our emotions and draw upon feelings of fairness, love, pity, or even greed, lust, or revenge;

- Ethos would draw upon credibility, reliability, trustworthiness and fairness.

Further to this, rhetoric has already been considered beyond simply speech; with visual rhetoric associated with image (Kim, and DiSalvo 2010) through to Richard Buchanan's argument that all design can be considered "as rhetoric" (Buchanan 1985) as illustrated in Figure 3.
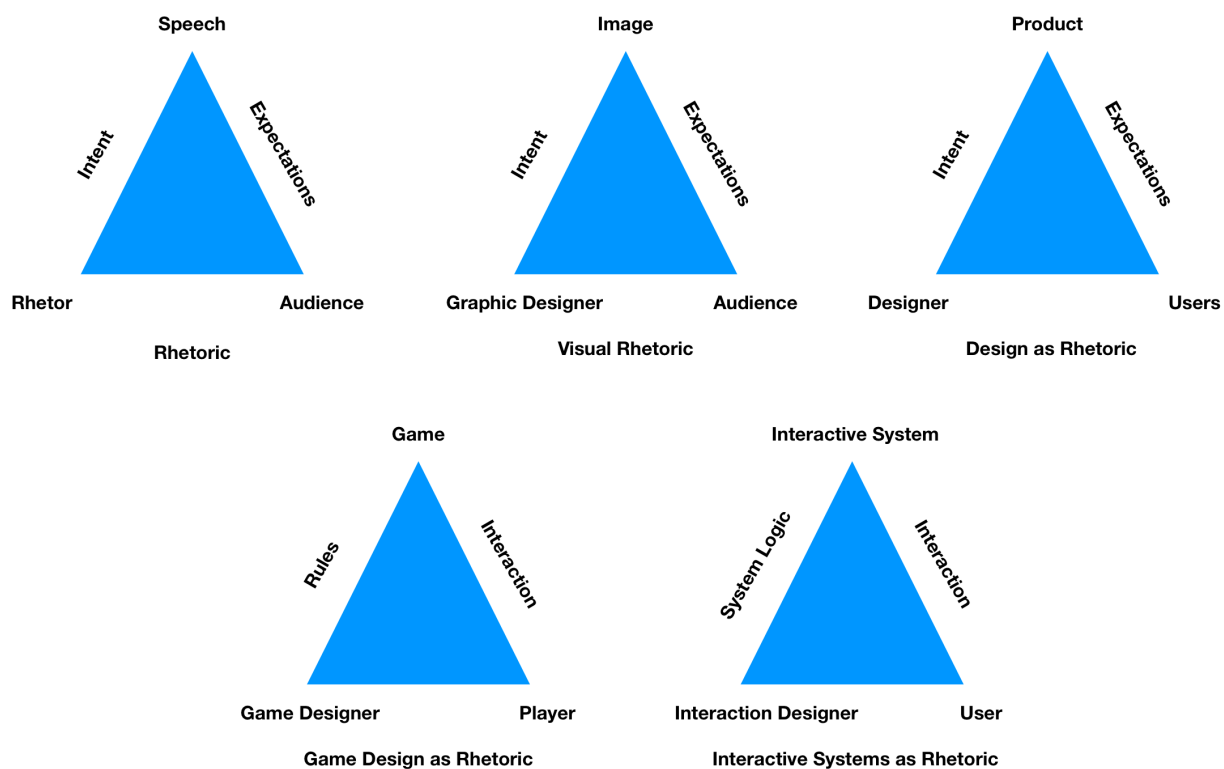


*Figure 3  Rhetorical Mediums.*

In relation to games, Bogost argues that the basic representational mode of videogames is "procedurality", (Bogost 2007) enacted through rule-based representations and interactions and, when used to reveal processes or concepts of another system, presents the player with a procedural rhetoric. Thus, procedural rhetoric is the practice of using interactive processes persuasively (Bogost 2007). Whilst we acknowledge that procedural rhetoric is being challenged by some game scholars (Sicart 2011) this criticism is always focussed on procedurality and this then is overshadowing the consideration of rhetoric which is arguably the more important aspect. It is worth noting Bogost's definition differs from Buchanan's

argument whereby all games would be considered as rhetoric. Although Bogost is essentially only promoting the conscious use of rhetoric, his definition would not necessarily preclude its unconscious use, and therefore, as Coulton argues procedural rhetoric could be applied to the design of all computer mediated interactive systems if we substitute system logic for rules (2015) as shown in Figure 3. Perhaps one of the principle differences between speculative design and persuasive games is in relation to commercial constraints as many of the game cited by Bogost in his book are produced by large commercial entities. In relation to this research we would argue the consideration of all design is rhetoric as the most useful way of unifying design theory with game design theory.

## 4. Design of Game: Cold Sun

The initial objectives for the design of the game, Cold Sun, were (Coulton, Jacobs, Burnett, Gradinar, Watkins, and Howarth 2014):

- To build a compelling narrative of a futuristic world impacted by climate change and influenced by the weather at the players' real world location;

- To engage players, through casual game play, to temporal and situated experiences of climate and weather;

- To encourage players to make connections between the real world weather and the fictional futuristic game world defined by climate change forecasts.

Whilst weather was chosen as a means of providing a personal experience of climate change, this could not simply be incorporated using a direct causal relationship. The design needed to adequately represent the complex relationship between weather and climate, in particular the global nature of climate change versus the players' own localised and situated experiences of weather.

A participatory design approach was adopted using a number of workshops involving game designers, climate change scientists, and design academics. This process highlighted the importance of locality and temporality when working with live weather data, particularly, the differences in perceptions of weather in different regions of the world. For example, what constitutes hot weather in the northern hemisphere and cold weather in the southern hemisphere, and the difference between weather and climate and our ability to understand these different states on a localised and global scale. There were also questions about how time might affect the game play, frequency of play, how the current weather is presented to the player, and how long the game should be active in order for players to build a meaningful understanding of the relationship between their real-world weather and weather and climate depicted in the game.

The workshops also established other clear design directions:

- To develop tasks that have consequences that could be replayed - so that the players can learn from their actions; to reflect the two states of weather and

climate; to provide opportunities to explore both the positive and negative impacts of climate change;

- To consider issues of resources, health and environment as possible point scoring devices as well as elements of the narrative;

- To find ways to represent uncertainty and risk for the player within the overall narrative;

- In the first instance the game would be designed to represent futures that would be plausible to players in the UK rather trying to encompass the whole world.

## 4.1 Game Operation

The resulting game is a hybrid, dual-mode adventure game where players must survive over a set period of time in a strange future landscape, affected by real-time weather, in order to traverse the extreme climates of a dream world by night.

The two game modes, Existence Mode and Dream Mode, respond to real world weather data in different ways:

- The Existence Mode represents a first person fictionalised reality of a character, found in a specific location, which is controlled by real world weather during the daytime.

- Dream Mode takes place at night and involves an abstracted world of 'planetary' like spheres, where the connection between the weather data and the actions within the game are more complex.

The game uses the player's current location to obtain the corresponding real weather forecast for that location which is then used to trigger extreme weather events in the game world.  The game also uses this data to fix the game's day/night cycle to the real world location of the player. The aim is to allow the player to develop a 'logic' that connects real weather events with in-game actions and the resulting impacts within the fictionalised game world.

The Existence Mode of the game is revealed as a first person adventure which in the current prototype works as a diegetic text adventure as shown in Figure 4.  However, this mode could eventually be rendered as a 3D environment and it would be interesting to observe whether the switch to mimesis changed the players' empathy. This mode is experienced as a set of tasks that combine to become levels. The player must carry out these tasks and puzzles in order to make decisions and develop skills that are bound to the real weather data through a complex system of causality.

You look down on the table top. The outline of your head is marked by thick motes of dust. You see your arms crossed under you. They wont move.

YOUR MORTAL COIL

WEATHER >

0  YOUR STUFF >

0  HINTS

TRY TO MOVE THEM    SHOUT FOR HELP

*Figure 4 Cold Sun: Existence Mode*

The character has a certain amount of life force, represented by their mortal coil and is required to replay each level in order to survive and move on to the next level. If a player's mortal coil reaches zero they will die and the game is reset to the last transition from dream to existence.

The weather within the game world is an amplified version of the real world weather, where a rain shower becomes acid rain, a strong wind becomes a hurricane, a grey day becomes a blanket of cloud blocking the sun's rays and killing crops. The weather can change player's environment for both good and bad.

When day turns to night in the real world the game enters the Dream Mode, which is a 2D platform game, an abstracted world where the character is a small and distant figure that must navigate spherical planet like objects to emphasise the shift in scale required between climate and weather as shown in Figure 5. The character of each planet i.e. its terrain, gravity, etc relates to the accumulated real world weather the player has experienced while playing the game. The player must navigate this strange abstract world to find clues to the next level in the Existence World. In the Dream Mode the game is simple, you can win or lose which creates several outcomes:

- re-awaken in the Existence Mode;
- start again from the beginning of the dream mode;
- reach the staging point that reveals a clue to enable you to return to the Existence Mode and move further through the narrative.

*Figure 5 Cold Sun: Dream Mode*

## 5. Reflections on design process

As Frayling notes the intent of research through design is to create new design knowledge by reflecting upon the process that led to the creation of the artefact rather than the artefact itself (Frayling 1993). In this section we attempt to clarify the previous theoretical discussion developed from the design and development of Cold Sun (Coulton et.al 2014) to build a framing that can underpin the consideration of games as a specific approach to speculative design. It is important to note that this is an approach that aims to produce interactive, rather than fictional or exhibition, artefacts.

### 5.1 Framing of Games as Speculative Design
*5.1.1 Speculative Game Design should embrace the plurality of realities of both designers and players.*

Given that critical design, speculative design, and design fiction have their roots in critical thinking, this opens them to accusations relating to the confirmation of privileged views. Schwind and Buger argue that opinions regarding socio-cultural issues are formed informally during deep personal reflection, stressing that if people do not have reflection time to evaluate the merits of opposing positions, they will "tend to select information that confirms their prior perspectives" (Schwind and Buder 2012).

Figure 1 is very typical of many visualisations that present the future, in that, it presents futures as if they can be viewed from one specific point in the present which is a shared by all. However, as discussed previously our perception of the future is linked to our experience

of the past and present and these will vary from individual to individual as illustrated in Figure 6.

Thus if the aim speculative game design is to enable reflection and discussion to merge through play the developed games should allow different world views to be enacted within the game.
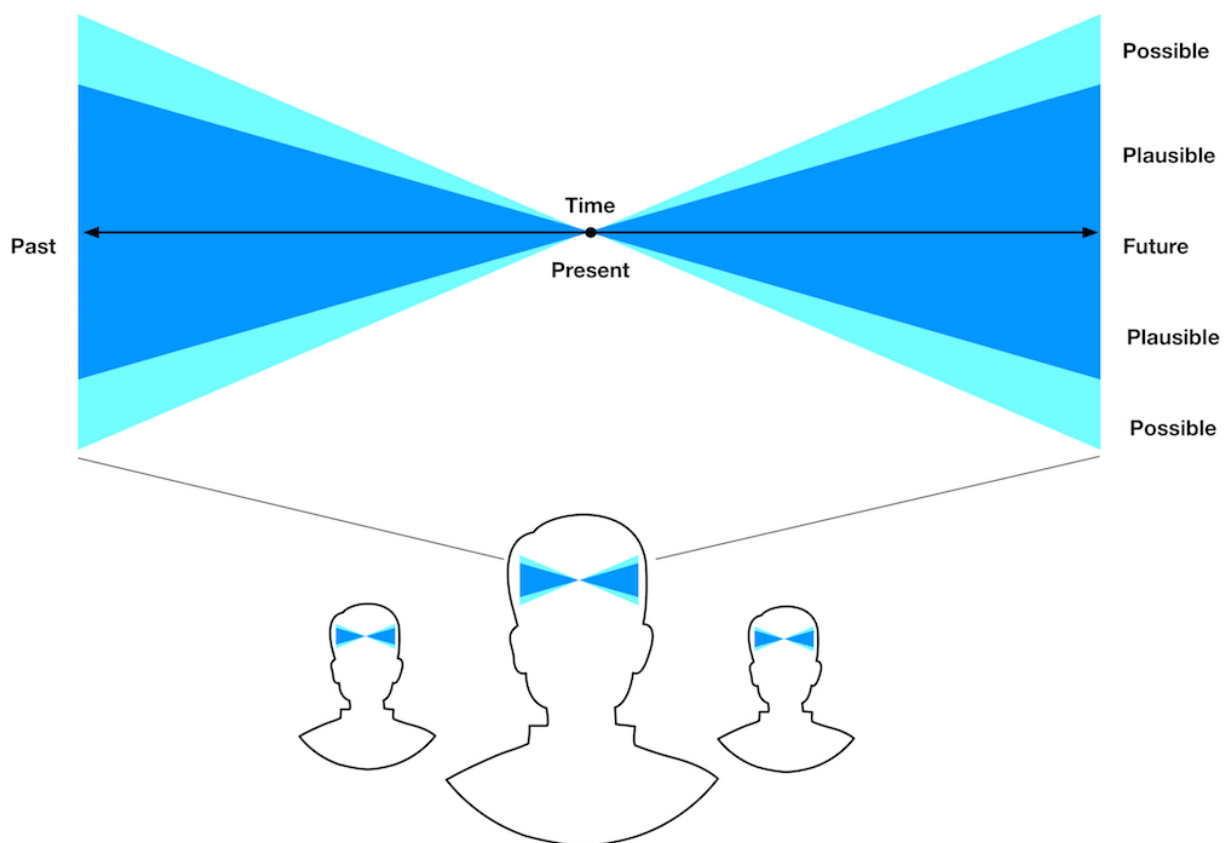


*Figure 6 Plurality of perception of past, present, and future.*

### 5.1.2 Speculative Game Design should be plausible.

The plausibility of the scenarios presented within speculative games will be dependent to the designers ability to draw upon players knowledge of the present within these visions of the future. To achieve this designers can utilise the rhetorical modes of Ethos (credibility), by utilising authoritative data sources about the future, and Logos (logic), by linking these with familiar and mundane elements of everyday life. This is effectively illustrated in Cold Sun which deliberately links the player's real world weather with future climate change scenarios (Coulton et.al 2014). Further there is a strong argument that these games should be co-designed with experts  (as was the case with Cold Sun which involved climate change scientists) not only to ensure both plausibility but  also that the design itself incorporates a plurality of views.

### 5.1.3 Speculative Game Design allows designers to utilise both mimesis and diegesis.

As previously highlighted, design fiction promotes the use of diegesis to help create a world within which a prototype from the future can plausibly exist. This, arguably, can help to overcome some of the misinterpretation by audiences associated with current critical and speculative designs in that their meaning often requires a separate explanation by the designer. The fact that games are designed to be interactive means that by combining player enacted mimesis, often associated with empathy, with narrative diegesis means that designers can produce powerful explorations of highly complex topics such as climate change.

*5.1.4 Speculative Game Design should be iterative.*

Whilst iteration is commonly used within game design it is important that iteration includes all the participants within the design process and sufficient time is included to reflect. This also highlights not only the need for iteration within gameplay during prototyping but also the rhetoric expressed within the game at each iteration and that it should not be considered as a separate design requirement.

*5.1.5 Speculative Game Design should not resort to reductionism.*

As discussed, one of the reasons for proposing using games as speculative design is that many of the complex problems society faces, both now and in the future, cannot simply be reduced so that they can be addressed through the promotion of minor behavioural change with easily understood and uncontroversial goals. Complex problems are best addressed revealing the complexity of the system to the player through playing the game. Whilst speculative design using games has obvious parallels to the procedural rhetoric and persuasive games we would argue that rhetoric is present within all game design and that the intent may be simply to encourage reflection rather than to overtly persuade players of a particular course of action.

## 5.2 Reflections on Framing Games as Speculative Design

As with many design strategies this framing could lead to a wide variety of possible games. However, the highlighted attributes proposed in this paper are not intended to be used to rank games in relation to some perceived quality about what may or may not make a 'good' speculative design, but are to help designers reflect on their responsibilities when designing using games in this way.

In terms of evaluating these games, traditional usability measures are also inappropriate as these games are designed to reveal their purpose to the player through play, and, in some cases, such Darfur is Dying (Coulton 2015), limiting the playability of the game might be a desired quality of the game. These games must, therefore, be evaluated phenomenologically so that players' interpretations can be understood and considered in relation to meaning embedded within them by the designers. This means that appropriate methods of evaluation will emerge through the process of creating these games.

By promoting such approaches we are aware that, for some researchers it presents the same issues as research through design, in that it does lend itself to the goal of generalisability. However, as Gaver's argues, in relation to research through design, "convergence may not be the only or best model" (Gaver 2012). Creating games that embody discursiveness and elaboration will not only allow designers to build upon each others' results but also challenge them, which is at the heart of many of design approaches we have considered in this research.

# 6. Conclusions

In this paper we have considered design approaches, such as speculative design, critical design, and design fiction, in relation to similar approaches with games design such as critical play, persuasive games, and procedural rhetoric. Whilst drawing from design futures approaches, that have their roots in critical theory, we highlighted some of their limitations that prove problematic when attempting to create open conversations with an audience. In particular, we suggested that explorative worlds produced by games has much to offer over the traditional mediums of speculative design due to their inherent interactivity through which players can explore the complexity of the wicked problems society faces through play. To this end we have embodied our reflections on design theory and the design of the game Cold Sun within a framing for the utilisation of games as medium for speculative design. However, these considerations are not intended as a fixed set for rules or a recipe to follow, but are intended to open up a discursive space upon which researchers and designers can build and criticise whilst developing the future design techniques and evaluation methods required for speculative design. Overall, we believe this research will further extend and promote the use of games as speculative design beyond simply trying to make complex ideas 'a bit more fun' by considering the game as a very powerful medium to present complex issues that allow players to consider the societal impacts of alternative presents and plausible futures.

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