Day of the Figurines: Supporting Episodic Storytelling on Mobile Phones

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Abstract. Day of the Figurines (DoF) is a pervasive game for mobile phones that uses text messaging. DoF is driven by a strong scripted narrative that is combined with various interactive elements to create a shared experience. It is also a slow game, unfolding over twenty four days of its players' lives, requiring them to send and receive only a few messages each day. Our experience of staging multiple performances of DoF to more than seven hundred players revealed key issues concerning the design and experience of time in such a pervasive game. Most players engaged episodically, raising issues of how to manage reengagement with the game and sustain social relationships. Our experience has led us to propose a framework for how to design time in shared interactive narratives in which five distinct layers of time – story time, plot time, schedule time, interaction time and perceived time – are mapped onto one another.

1 Pervasive Games and Episodic Storytelling

Pervasive games that use players' own mobile phones to deliver storytelling experiences raise new challenges for the design of time in relation to interactive narrative. Mobile phones enable players to interweave an unfolding story with the ongoing patterns of their daily lives in a fine grained way. Players can quickly dip into and out of a story, for example in the downtime between other activities. At the same time, the story can try to interrupt them as they go about these activities. The net result is a tendency towards highly episodic play, with players frequently disengaging and then re-engaging again sometime later on. We shall argue in this paper that this raises new challenges for how we design time in such experiences, specifically how we manage the pacing and synchronization of different players' experiences. We illustrate how these challenges play out in practice by drawing on our experience of designing, staging and studying a long-term text messaging game for mobile phones called Day of the Figurines, illuminating the nature of episodic participation and revealing the challenges involved in designing pervasive interactive narratives.

2 An Introduction to Day of the Figurines

Day of the Figurines is a narrative-driven text messaging game for mobile phones (a full description of the experience can be found in [4]). Players send and receive SMS

to control a 'character' – their figurine – as it lives through a day in the life of a fictional town, visiting destinations, observing events, using objects, responding to dilemmas, undertaking missions and chatting with others. DoF balances pre-scripted narrative with interactivity. The game is fundamentally narrative driven, following a pre-scripted storyline. Players are refugees who are dropped off in the town in the early morning. As the day unfolds they experience a sequence of scheduled events including a fete at the recreation ground, two dead lovers being found at the cemetery, a riotous gig at the Locarno nightclub, and an army sweeping into town. These scripted events are interspersed with interactive elements such as multiple-choice dilemmas and missions that require players to visit destinations, find and use objects, and maintain their health.

Players control their figurines by sending SMS text messages to the game server, receiving further messages in return that tell them what their figurine sees, hears and experiences. The game supports a small set of predefined commands and each SMS message that they send has to begin with a recognised command name:

- **GO <destination>** – move to the named destination

- **SAY <message>** – sends this message to nearby players

- **FIND <player>** – checks whether the named player is at the current destination and if they are moves this player to be within talking distance of them

- **PICK <object>** – picks up the named object

- **DROP** – drops the currently held object

- **USE** – uses the currently held object, triggering its particular effect

- **UPDATE** – tells the player which other players and objects they can currently see nearby and reminds them of their current health status

- **HELP** – returns a message directing players where to find online help and also logs a help request in the system for operators to deal with later on

- **LEAVE TOWN** – quits the game for this player

Players can visit fifty distinct destinations. Each time they arrive at a destination they receive its description. Depending on the current game time, destinations may be open, in which case players receive its 'inside the destination' description, or closed in which case they receive its 'outside the destination' description.

Each player has a health score that reflects their overall status in the game. Players change their health or the health of others by finding and using objects. For example, using food and drink objects will often increase their health whereas the pool cue is essentially a weapon. A player's health can deteriorate to the point where they become incapacitated, meaning that they cannot move or hold objects and can only talk to other nearby players. These players may help them by using various objects, most notably the defibrillator which restores incapacitated players. If a player's health diminishes further then they will die and their game is over. It is possible to kill other players by repeatedly using a weapon object on them.

As well as chatting to one another, players interact with various kinds of pre-scripted content. **Events** are authored SMS messages that are associated with a set of destinations and that are sent to players at predetermined times, providing the game with a basic underlying narrative of action that unfolds over time. **Dilemmas** are events that demand a multiple choice response that in turn triggers a subsequent response message and also a change to the player's health level. Finally, **missions** combine multiple events, dilemmas, destinations and objects into more complex longer-running narrative structures.

The following example fragments of interaction (taken from the game of the figurine called 'Floss') show how DoF balances pre-scripted content with interactive game-play. We begin with her introduction to the game.

Received **03:02** GMT Wed 06 Dec	06:00am, welcome to Day Of The Figurines. FLOSS has been dropped by a truck at the edge of town. You are feeling OK. Where do you want to go?
Sent **09:49** GMT Wed 06 Dec	Go kaths
Received **09:54** GMT Wed 06 Dec	06:41am, a cloud passes; a chill runs through you; in the distance shouting. Do you A: Continue on to a street corner B: Rest a moment?
Received **10:29** GMT Wed 06 Dec	06:45am, you carry on; a group of men, pre-occupied with a figure on the ground, are shouting. They notice you. The shouting changes. You keep moving.
Received **10:38** GMT Wed 06 Dec	06:46am, you've arrived at Kath's Cafe, brickies demolish white food. There are many steaming hot mugs of TEA here. You are feeling OK.

Next we see her during the mission to free the dogs from the Rat Research Institute.

Received **09:01** GMT Sun 10 Dec	10:36am, the fence is high. A passing workman gazes up at that high fence: Gor blimey, guvnor, you ain't getting over that without a step ladder, so you isn't.
Sent **09:05** GMT Sun 10 Dec	Say hey everyone, i found a load of stepladders at the lock. Let's see if they get me in.
Sent **09:06** GMT Sun 10 Dec	Use stepladder
Received **09:08** GMT Sun 10 Dec	10:36am, You are feeling OK.
Received **09:11** GMT Sun 10 Dec	10:37am, you nip up the steps and jump down inside the yard. Fantastic work, liberator! Wait for a second to catch your breath.

Received **09:36** GMT Sun 10 Dec	10:39am, now do you A: Run across the car park in a crouch to reception B: Creep around the perimeter to a fire exit C: Smash a slot window at basement level?
Sent **10:01** GMT Sun 10 Dec	A
Received **10:06** GMT Sun 10 Dec	10:42am, you stumble on a patch of greasy substance, alerting a guard in reception. Task failed. You head for the exit and come across a SICK DOG. Pick it up.

Finally, we rejoin her at the end of her game as she is carried away from the town in helicopter.

Received **10:09** GMT Fri 29 Dec	05:45am, soldiers shove you onto a metal ramp and into the back of the helicopter. It's a crush: HALO, MIMIMOMO, SAMANTHA and PUPPET are here.
Sent **10:14** GMT Fri 29 Dec	Say Looks like this is the survivors party. At least i hope so
Received **10:18** GMT Fri 29 Dec	05:45am, SAMANTHA said: "i hope this is not a one way ticket to the concentration camp..."
Received **11:18** GMT Fri 29 Dec	05:52am, the metal door of the helicopter slams shut, plunging you into darkness apart from a tiny port hole. Through the scratched perspex you can see grass.
Received **12:07** GMT Fri 29 Dec	05:57am, with a roar the chopper sways and takes off. Below in the town you see scattered refugees stranded as you bank away into the grey dawn light.
Received **13:17** GMT Fri 29 Dec	06:04am, dawn rises over the town as refugees flood the streets. 75 people have died but some have survived. The day is over. Thank you for playing Day of the Figurines.

3   The Nature of Time in Day of the Figurines

In order to accommodate the distinctive nature of SMS (slow, costly and infrequent messages), DoF adopted a distinctive treatment of narrative and time:

- The twenty four hours of virtual game time are mapped onto twenty four days of real time. Unlike most computer games in which game time is accelerated relative to real-time, in DoF game time is slowed down so as to deliberately create a slow game that unfolds in the background of players' ongoing lives, perhaps only involving the exchange of a few text messages each day.
- DoF is delivered as an event-based touring artistic performance, being booked to run at hosting venues for fixed periods of time. Each performance runs for twenty four days, between set start and end dates, opening for ten hours a day (while the venue is open), with the game being suspended outside of these times.

To date, DoF has been performed in Berlin, Singapore and three times in the UK, being experienced by over 750 players. Overall, the game has been well received; over 70% of the 100 players who responded to our post-game questionnaire said that they would pay to play again and were generally positive about the idea of a slow narrative-driven game played using text messaging. However, the experience of playing the game did reveal some interesting issues with regard to its temporal structure.

- The majority of players played episodically, dipping in and out of the game, sometimes not actively engaging for several days before becoming active again. Over half of our questionnaire respondents reported that they played 'occasionally' as opposed to 'regularly' or 'seldomly'.
- Messages could be delayed for hours before being delivered to players due to network congestion, lack of coverage, or phones being switched off. Some players were irritated by the sudden flood of messages that could arrive as they switched their phone back on after a long break.
- Players reported being frustrated by talking to others and receiving no reply (perhaps because these others were no longer engaged) and it could be difficult to maintain long term social relationships.
- Some players reported frustration with playing across time zones as this led to a mismatch between the game's scheduled opening hours and their own waking hours. For example, UK players in the Singapore game would tend miss the first half of each day's play and consequently suddenly become very active towards the end.

This combination of delays, episodic engagement and multiple time-zones made it difficult for players to engage in conversation and maintain social relationships and a common complaint was that of being ignored by other players.

In short, while the idea of a slow narrative-driven pervasive game is appealing to players, it also raises some new challenges with regard to how to manage their episodic interaction, especially with how to manage disengagement and re-engagement and also how to maintain social relationships between players who frequently disappear and then reappear sometime later.

4 Designing for Five Layers of Time

We propose that this challenge of managing episodic engagement with an ongoing pervasive experience requires a new holistic approach to the design of time in interactive narrative. A great deal has been written about the nature of time and narrative by scholars of literature, drama, film, television and interactive media and so we now turn to this existing body of work in order to develop such an approach. We introduce an overarching framework for describing time in shared interactive narratives that comprises five layers, each of which addresses a different aspect of temporal structure, ranging from the nature of time in the fictional universe of the author's imagination through to the way in which time is ultimately constructed in a player's imagination. Between, lie three intermediate layers that address the temporal aspects of narration, scheduling and interaction.

Time as perceived by the player

		Over many experiences each layer influences the ones below
Perceived time *(player)*	The timing of events as perceived by the player	
Interaction time *(player)*	The times at which a player chooses or is able to interact	
Schedule time *(scheduler)*	The times at which the narration is made available	
Plot time *(director)*	The temporal structure of the narration of the story	
Story time *(author)*	Temporal structure of the underlying story world	Each layer maps to & constrained by the one above

Time as conceived by the author of the story

Fig. 1. Five layers of time in interactive narrative

Story time is determined by the author of a story and describes the structure of time in the underlying imaginary universe in which the story is set, much of which may be implied rather than ever being explicitly specified. Aspects of story time discussed in literary and drama theory including the historical epoch in which the story is set, the fictional span of the story, and whether time is cyclic or linear (see [8] for further discussion). In turn, games involve their own distinct temporal structures, including the distinction between 'result time' (games played until someone wins) versus 'set time' (games played for a fixed period of time when a winner is declared) [9]. For example, DoF's story time is set in modern times, is defined as a linear sequence of twenty four hours in the life of a virtual town and operates to a 'set time'.

Adopting the terminology of [8], **Plot time** (which might also be called discourse or narration time) describes the temporal structure of the narration of the story, i.e., the timing and ordering of events as they are presented by the narrator. This need not be the same as their timing and order in story time. For example, many plays adopt so-called 'open' structures which compress story time into a shorter plot time so as to omit unnecessary details, although some others assume 'closed' structures in which the span of plot time matches the underlying story time. It is also common for film and television narration to compress time ('ellipsis') and to alter the ordering of events as they are narrated (e.g., 'flashbacks') [1]. In turn, interactive media have introduced their own distinctive structures in the form of multi-threaded hypertext plots [5,7] and the looping structures of computer games [6] which may be combined with more traditional filmic elements. Adopting film terminology, the structure of plot time is determined by the director (who may be the same person as the author). DoF is

a rare example of where plot time expands story time, mapping 24 hours of the former onto 24 days of the latter.

Schedule time describes the times at which the narration is made available to players, be they readers, viewers or players. All media involve a schedule time (books are published and plays and films are shown at set times), but it is in television that schedule time, through its relationship to channels and advertising sponsorship, takes on a particular significance to the point where it strongly influences the form of the underlying story and plot, as seen by the rise of TV series and serials [1]. Schedule time is controlled by the scheduler (or publisher). As an example, DoF is scheduled to be performed for ten hours a day beginning on set 'opening days', although this can vary due to local circumstances such as a venue being closed.

Interaction time describes the times at which players engage with the story once it has been made available, either as a matter of choice (playing at times that suit them) or as a result of technical constraints (such as network availability and delay). Interaction time is primarily controlled by the player. HCI research has produced various accounts of interaction time in narrative experiences including studies of how players' engagement with long-term mobile games adapts to the ongoing patterns of their daily lives, for example their commuting [2]. More generally, HCI has produced many studies and discussions of the temporal aspects of interaction in more general applications as we shall consider later on. Interaction time in DoF is characterized by largely episodic patterns of play, with players frequently disengaging and reengaging.

Perceived time refers to the way in which the timing of events is perceived by individual players. For example, players may experience the passage of time differently when they enter a 'flow state' during the playing of a game or similar intense pleasurable experience [3]. In a similar vein, inspired by Husserl's phenomenology, Francisco Varela talks about experienced time as having a three-part structure based on now, retention and protention [10]. Retention is described as belonging to the past even though it is happening now, whereas protention is 'the expectation or the construction of the future'. Whereas 'flow' indicates a perception of time experienced as duration, the 'now, retention and protention' structure point to the possibility of an experience based on tenses or trajectories.

The complexities of designing and managing time in DoF can then be understood in terms of this framework. In Dof, the author establishes a strong and distinctive sense of story time and a mapping of this onto plot time – twenty four hours of story time are mapped onto twenty four days of plot time. However, individual performances of DoF are then scheduled to take place on set days and at set times, which gives rise to potential problems with playing across time zones as noted previously. Next, players try to fit this particular schedule time with their own interaction times, which in the case of a mobile phone based pervasive game are highly variable and episodic, which gives rise to problems with floods of messages on reengagement and maintaining social relationships. Finally, players then have to reassemble their interactions (sent and received text messages) into a coherent story in their own imaginations.

We therefore propose that designing a complete treatment of time in an interactive narrative experience requires giving appropriate structures to plot, schedule, and interaction time so as to establish a coherent and effective mapping between story time and perceived time. Put another way, a powerful interactive narrative experience

requires an understanding of how story time can be related through plot time, which in turn is affected by a schedule, and then by patterns of interaction, and finally by the ways in which players perceive time.

Finally, we suggest that there is longer-term 'back-pressure' between the layers in the sense that our emerging understandings of higher layers ultimately shape the nature of the lower ones. We have already seen how television theorists attribute the rise of new story and plot forms (series and serials) to the impact of TV schedules [1]. In the longer term, we predict that a growing understanding of interaction and perception time will lead to new schedule, plot and even story time structures. For example, DoF was deliberately designed to accommodate episodic play through small 'bite sized' scripted events and dilemmas which were responsively allocated to players whenever they chose to engage.

5   Conclusion

In summary, pervasive storytelling experiences such as DoF raise significant new challenges for how we structure time in shared interactive narratives. DoF shows how players engage with such experiences episodically, fitting the scheduled times of the experience with their own personal availability as they move from setting to setting. As a result, we have proposed that the complex temporal structure of shared interactive narratives needs to be designed with an understanding of five distinct layers of time – story time, plot time, schedule time, interaction time and perceived time – and how these map onto one another.

Acknowledgements

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