

The Cooperative Work of Gaming: Orchestrating a Mobile SMS Game

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Abstract. This paper focuses on orchestration work in the first iteration of a mobile game called *Day Of The Figurines*, which explores the potential to exploit text messaging as a means of creating an engaging gaming experience. By focusing on orchestration we are especially concerned with the ‘cooperative work that makes the game work’. While the assemblage or family of orchestration practices uncovered by our ethnographic study are specific to the game – including the ways in which behind the scenes staff make sense of messages, craft appropriate responses, and manage and track the production of gameplay narratives as the game unfolds – orchestration work is of general significance to our understanding of new gaming experiences. The focus on orchestration work reveals that behind the scenes staff are *co-producers* of the game and that the playing of games is, therefore, inseparably intertwined with their orchestration. Furthermore, orchestration work is ‘ordinary’ work that relies upon the taken for granted skills and competences of behind the scenes staff; ‘operators’ and ‘authors’ in this case. While we remain focused on the specifics of this game, explication of the ordinary work of orchestration highlights challenges and opportunities for the continued development of gaming experiences more generally. Indeed, understanding the specificities of orchestration work might be said to be a key ingredient of future development.

Key words: cooperative work, ethnography, mobile games, orchestration, SMS text messages

1. Introduction

Interactive gaming has become a major focus of IT research – in distinction to commercial development – over the last decade, in large part because of the movement of computing research away from the desktop and the workplace into the broader context of everyday life. The emergence of ubiquitous computing has been a particularly prominent driver behind the development of new forms of interactive gaming, providing an engaging situation in which to *design, deploy and understand* the potential of future and emerging technologies. Emerging gaming environments move beyond digital environments that chain users to desktops and TV screens to situate gameplay online *and* on the streets. Location and mobility are key ingredients of new forms of interactive gaming and games are often designed by IT

researchers to explore the possibilities and constraints of mobile and location-based technologies (e.g. Björk et al., 2001; Flintham et al., 2003; Benford et al., 2004; Barkhuus et al., 2005).

A constituent feature of this *methodological* shift, where gaming becomes a resource for IT research, is the movement towards the exploration of 'ludic pursuits' (Gaver et al., 1999), where playfulness in its many and varied forms becomes a topic that profoundly challenges design (Gaver, 2001; Bell et al., 2003). Recent research into the collaborative nature of mobile and location-based games (e.g., Crabtree et al., 2004; Brown et al., 2005; Benford et al., 2006) suggests that the perceived inadequacies of approaches to understanding work are overstated however, and that CSCW approaches in particular have much to contribute to our understanding of playful activities and design for them. The basic premise that underlies this assertion is that games are *social* activities. While ludic pursuits may be essentially 'playful' in character they are, nevertheless, collaborative in nature and require cooperative work for their articulation (Crabtree et al., 2005).

In order to demonstrate this broad point this paper presents an ethnographic study of the first iteration of a new mobile game called *Day Of The Figurines*, which players participate in by sending and receiving SMS text messages on their mobile phones. Gameplay relies on the interventions of behind the scenes staff to orchestrate the experience and sustain player engagement. The topic of orchestration has been a key feature of gaming experiences in IT research (e.g., Flintham et al., 2003; Benford et al., 2004; Crabtree et al., 2004; Benford et al., 2006a, b) and recognizes the inseparability of gameplay and the socially organized circumstances of its production. Computer-based games are rarely the sole product of those who play them, but the *co-production* of players and behind the scenes staff who in heterogeneous ways orchestrate gameplay experiences. In focusing on the co-produced character of gameplay we suspend dichotomies between 'players' and 'behind the scenes staff', and seek to unpack what 'goes on' *between them*. From this perspective, players are a necessary feature of collaboration though this does not necessarily imply mutual cooperation, or direct collaboration, or symmetrical interaction, etc. Players are not ignored, then, but understood from the point of view of the practical inseparability of play and the orchestration of play or in terms of co-production (for players *reflections* on the experience, see iPerg Deliverable 12.4).

The purpose of the study is not only to show that ludic pursuits may be treated as topics of work but to unpack the 'coordinate' character of gameplay or the cooperative work that inhabits orchestration of *Day Of The Figurines* and makes it into the unique gaming experience that it is. While gaming may well have had extensive coverage over recent years, with attention being paid to the co-production of gaming environments and

narratives, game administration and the evolution of game dynamics, we wish to understand the distinctive ‘setting-specific’ character of this particular game and how such topics are produced within the unfolding flow of gameplay so that we might arrive at an appreciation of its unique character and challenges. *Day Of The Figurines* is an entirely different game from, for example, *Can You See Me Now?* (Crabtree et al., 2005). The latter is a location-based game, the former a SMS game and both consist of very different orchestration work and pose very different problems for design. Unpacking difference rather than trading in gross generalities is, we think, critical to the effective and ongoing design of distinct gaming experiences then.

While orchestration is professional work insofar as it is carried out by people who make their living from conducting such experiences – in this case the people in question are members of the arts group Blast Theory – it is perhaps best understood not in terms of paid labour but in an ethnomethodological sense as consisting of an assemblage of ‘ordinary’ or taken for granted practices. As Sacks (1992) puts it with reference to the ways in which the ordinariness of everyday life is achieved,

It’s not that somebody *is* ordinary ... it takes work ... some kind of effort, training, etc. ... Among the ways you go about doing ‘being an ordinary person’ is spending your time in usual ways ... so that all you have to do to be an ‘ordinary person’ in the evening, is turn on the TV set. It’s not that it *happens* that you’re doing what lots of ordinary people are doing, but that you know that the way to do ‘having a usual evening’ is to do that. It’s not just that you’re selecting, “Gee I’ll watch TV tonight”, but you’re making a job of, and finding an answer to, how to do ‘being ordinary tonight’.

Similarly we might ask of *Day Of The Figurines* (and digital games more generally) what is the ordinary ‘work’ that its co-production consists of, what kind of practical ‘effort’ must be put into orchestrating the game, and how in such detail is gaming ‘made into a job’ creating and sustaining player engagement? When we look at gaming in this way the first thing we find is that *we can*, because these are naturally occurring features of gameplay and they are amenable to ethnographic reportage.

2. A brief overview of day of the figurines

Before unpacking the ordinary work of orchestration a brief overview of *Day Of The Figurines* is first provided. *Day Of The Figurines* is designed by the arts group Blast Theory (www.blasttheory.co.uk). It is set in a fictional town that is littered, dark and underpinned with steady decay. The game unfolds over a total of 24 days, each day representing an hour in the life of the town that shifts from the mundane to the cataclysmic: the local vicar opens a

summer fete, Scandinavian metallists play a gig at the Locarno that goes horribly wrong and a gunship of Arabic troops appears on the High Street. How players respond to these 'dilemmas' and to each other creates and sustains the game. From the Gasometer to Product Barn, the Canal to the Rat Research Institute, up to 1000 players roam the streets, producing the game through their interactions.

The fiction is situated in two places – one a public space, such as a gallery, and the other the entirety of a mobile phone billing area, such as a country. In order to play the game, players must first visit the public space where the work is housed and where they find a 1:100 scale model of an imaginary city (Figure 1).

The model is constructed of card and divided into grid-like zones, onto which are printed roads, streetlights, traffic lights. The facades of buildings, such as the YMCA, the Big Chef, Video Zone, the XXX Cinema, are overlaid onto the model using photographic collages and computer graphics. Distinct places, such as a Cemetery, a Canal, a Railway Crossing and Underpass, are also marked out and lend the fictional city an identifiable character.

In order to play the game a player must first select a figurine (a small, two centimetre high model of a person) from those displayed on shelves behind the model of the city. The player must then answer a series of questions, which define their figurine's characteristics: what is their gender, are they a lover or a fighter, what do they least like about other people, what is most striking about their appearance, how do they move, what do they most like about themselves, how do they feel today, and where did they sleep last night? The player writes the answers down on a postcard. They then give their figurine a name and write it down on the reverse of the postcard along

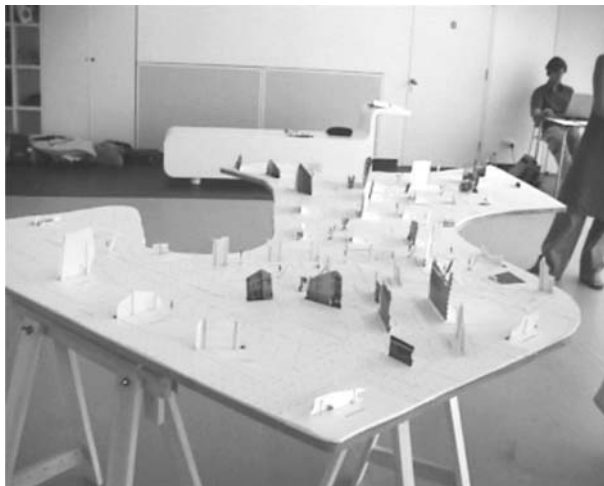


Figure 1. Model of the fictional city in which the game takes place.

with their email address, a secret word, and their mobile phone number. The completed card and figurine are then handed to a game operator. In return the player is given an instruction card, which explains the rules of the game on one side (Figure 2a) and provides a map of the fictional city, its buildings and locations on the other (Figure 2b), and he or she then leaves the gallery.

The game operator then assigns the player a number and attaches the figurine to a “flag”, a small piece of card with the player number written on one side and figurine name on the other. Player details as furnished by the postcard are entered into the system to create a profile and to generate a start position for the figurine, which is assigned randomly and automatically by the system. The operator places the figurine on the city model or “game board” at the assigned coordinates (Figure 3) and then sends a SMS message to the player to notify them that they have entered the game: e.g., “Welcome to Day Of The Figurines. It’s 9.30 am and the weather is fine. The day has begun for Alfred. Where should he go?”

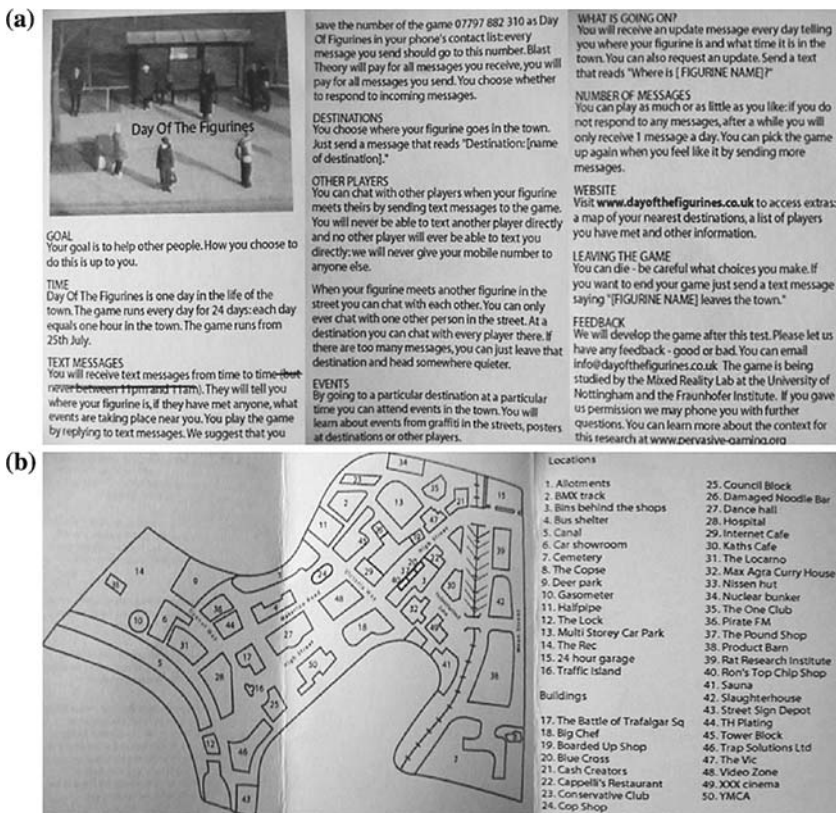


Figure 2. (a) Rules of the game. (b) Map given to players of the game zone.



Figure 3. Player's figurine on the game board.

Having set the figurine in motion, the player receives text messages from the game operator to alert them to the progress of their figurine. Progress is made by players sending text messages which request some action be taken and responses to the requests announce such things as a figurine's current location, or arrival at a destination, or changes in destination, or occurrences on the streets, or proximity to other players who they can communicate with. Messages between players are anonymous – players can only see each other's figurine names, not their real names or phone numbers.

The game takes place over the course of a fictional day in game time. In real time this equates to 24 days. Every hour a turn is taken: pubs open, shops close, the car park gets deserted and a series of special events unfold – an eclipse, an explosion, a couple are found dead at the cemetery, and a platoon of soldiers takes over the town. The system automatically generates new coordinates for players' figurines, moving them one centimetre at a time, and it is against the background of strange and unnerving events in the city that players interact and become co-producers of the fiction. Turns are executed by another operator. However, the physical movement of figurines on the game board is carried out by both operators, with the turn operator calling out a figurine's name and number and the coordinates it is to be moved to and the other making the moves. The division of labour between game operator and turn operator is not rigid and behind-the-scenes staff occupy either "job" as circumstances dictate. Staff also frequently collaborate on the same tasks, processing new players or handling messages together, and with the game's designers or "authors" as and when time allows and contingencies dictate, as we address in the following section.

The game was selected for study because it is part of EU FP6 Integrated Project on Pervasive Gaming *iPerg*, which seeks to explore and inform the development of novel pervasive gaming experiences. A key challenge in this

area is that of scaling up emerging pervasive gaming experiences. Specifically, *Day Of The Figurines* aims to scale up to involve 1000+ players and provides the opportunity to study the challenges involved in this achievement. This is the first iteration of the game – a second iteration was deployed at the Sonar Festival in Barcelona in June 2006, and a third iteration was deployed in Berlin in October 2006. *Day Of The Figurines* goes on tour in the UK in 2007. Involving a growing number of members of the public, each iteration of the game testifies in significant respects to its ongoing success.

The findings provided here are derived from two studies, one conducted at the beginning and one at the end of the experience. The only gameplay interface for the players was their mobile phone, although a website allowed players to view their nearest destination. Operators and authors did not use mobile phones as an orchestration interface. Players played at various times of day, for various durations and in various locations depending on their daily routines (see iPerg Deliverable 12.4 for details). Over 1500 messages were sent to the game by players and nearly 8000 sent to players by the game server. The first iteration of the game involved 85 players, all members of the public who took part out of their own interest in Blast Theory's work.

Blast Theory are a group of professional artists who develop and tour novel gaming experiences that are attended and actively engaged in by the public; over a thousand at each venue on a tour is not at all uncommon. The professional character of Blast Theory experiences blurs the distinction between 'art' and 'commerce' and in our view casts into serious doubt criticism to the effect that the game is highly specialized and exploits a very different set of resources and audience than other games. All games are specialized – there is no such thing as the generic game – and the concrete experiences developed through Blast Theory's expertise and public engagement "paves the way for more mainstream commercial applications" (iPerg Deliverable 12.4), hence their involvement in iPerg. It is not at all clear what the benefit would be, then, of studying what goes on behind the scenes of existing games (e.g., online role playing games) or that this would have been much more useful way of addressing the issue of developing a large-scale operation, given the fact the point of the study is to unpack core issues of scaling up. In other words, *Day Of The Figurines* strikes us a particularly salient setting to investigate as it must address the problem of scaling up and so the challenges of scaling up are made perspicuous as feature of the game's development rather than as a *fait accompli*.

3. The cooperative work of gaming

We offer a brief note on method before examining orchestration work in detail. The relationship between the ethnographer who conducted the study and the game's designers and administrators was and is practical; which is to

say that it involved all the things that one would expect of an ethnography: negotiating access, recruiting ‘informants’, talking shop, gathering data, etc. (Crabtree, 2003). Beyond the rudimentary methods of immersion in a setting, direct observation, and the use of video to document the lived work of a setting and make it available to subsequent analysis we have no methods to offer, however. Analytically, our approach is ethnomethodological in character, an approach that is well-established in CSCW and so well documented (and even contested) in the literature that it would be superfluous to reinvent the wheel. It is worth saying this, however: we have no methods to offer as ethnomethodology has no work for methods to do. The purpose of our studies is to explicate ‘members’, participants or users methods. The use of a host of *a priori* analytic methods is suspended in the first instance then (Lynch, 1993), as members’ methods are indexical to the settings they inhabit (Garfinkel, 1967) and made visible in the lived work of a setting (Garfinkel, 1996). The purpose of ethnomethodological study is to describe that lived work and tease out through description the methods *it* exhibits (Garfinkel, 2002).

Whether text messages are automatically generated machine responses instructing players of unfolding events in the fictional city or chat messages between players, a cursory glance at the work involved in handling messages reveals the primacy of what behind-the-scenes staff call “customisation” to the ongoing, moment by moment co-production and orchestration of gameplay. For a variety of reasons ranging from practical concerns with the legibility of text messages to the co-production of the gameplay fiction or “narrative”, behind-the-scenes staff are compelled to modify texts, changing and crafting them to delete such things as errors, clarify meanings, and articulate events (over 60% of chat messages, 70% of dilemma messages, and 80% of reminders were customised, for example). Messages are received and “customised” through a message handling interface located at both of the operators workstations, which enables operators to see incoming messages at-a-glance and select them for viewing and response.

Ethnographic study reveals that three interrelated aspects of customisation are ‘at work’ in *Day Of The Figurines* and are essential features of orchestration:

1. The ways in which messages are *made sense of* by behind-the-scenes staff such that appropriate next actions may be determined.
2. The ways in which responses are *crafted* by behind the scenes staff such that appropriate next actions may be conveyed to players.
3. *Managing and tracking* narrative production to ensure appropriate and timely responses are made.

It is through the accomplishment of customisation that the game comes to be orchestrated and that gameplay unfolds. In this setting then, and in other words, orchestration work is identical to the work involved in customisation.

It is towards unpacking the work involved in customisation, and in details of its situated accomplishment (Suchman, 1987), that we focus upon here, examining a series of vignettes that display the orchestrated work of the game. The names of staff in the following vignettes have been changed. Kate, Sally, Sarah, Gary, Tim and Jack are operators. Dave is one of the game's authors. Jane is the project manager. The contents of text messages and formulations of content by operators and authors are placed within "quotation marks".

3.1. MAKING SENSE OF TEXT MESSAGES

A first action in making sense of messages or responses from players, and thus of determining an appropriate reaction, is to categorize and assign them to one of four basic types: 'chat', 'status request', 'no reply/done', or 'custom'. Categorization of messages enables staff to determine an appropriate next action – whether to forward the message as chat, respond to a request, customise the message or make no response at all. Even though only four categories are at work, categorization is not always straightforward and essentially relies on *interpretation and judgement*, as the following vignette elaborates:

Vignette #1.

Kate: (looking at incoming messages as Sally works through them) "Joan leaves town after an argument with Miya." So ...

Sally: Where would we direct her?

Kate: I think she wants to leave the game. So – that's what it suggests to me.

Sally: Leaves completely?

Kate: Mmm.

Sally: Leaves the town?

Kate: I mean we could send her to the cemetery or something (laughs).

Sally: (Laughs).

Sally: Shall we leave that one for moment?

Kate: While we talk to Dave or someone.

Sally: Yeah.

Sally: Sometimes you have to decide what to do with these messages, so I'm going to let someone else look. This one, "Joan leaves town after an argument with Miya" – that may suggest that she wants to leave the game or might mean she just wants to leave the section she's in, so I'm not sure what to do with that one. Some of them aren't specific, whether they are chat messages or – normally I'll ask Dave or someone and they'll say what they think is best. It's up to the discretion of who kind of deals with them really.

Understanding the message “Joan leaves town after an argument with Miya” requires staff to work out what the message might be about (i.e., to make a judgement as to its intention), and working out what it might be about consists of (1) having some sense of a player’s history or biography, which is derived from viewing the previous messages a player has sent and received (in this case Joan has only recently started playing the game, hence Sally’s surprise at the request), and (2) of aligning the response with one of a range of potential and situationally relevant courses of action that are available from this point in the game. Thus, in this case, the message may be about ‘leaving the game’ or ‘leaving the section’ the player is in. As the player has only recently started playing the game, it is not at all clear just what her intention is as one interpretation of the message is that she wants to cease engagement altogether and the other is that she is requesting a change of destination. The efficacy of interpreting responses, and thus of assigning a message to an appropriate category and of determining an appropriate next action, ultimately relies on the detail furnished by a player in their response. As the operator puts it, “some of them aren’t specific”.

Ambiguity is real problem to be reckoned with when interpreting responses then and operators have developed strategies towards handling this. Not only may operators draw on their sense of the player’s biography – where they are in the game as it were – but, as we can see in the following vignette, they may also draw on their sense of other player’s biographies as well to interpret and make sense of ambiguous responses, as in the following vignette where responses between two players who are initiating a meeting are involved.

Vignette #2.

Sally returns to the inbox and sees that another player has sent a message: Atoine, “Hey Jenny good to meet you. Would you like to join me for coffee?” So that’s a chat message.

Kate: Uh-uh.

Sally: So ...

Kate: So that’s to Jenny

Sally: ... you can send that.

Kate: Yeah.

Shortly afterwards a message from Jenny arrives: “Ask politely what the white food is. Anything local?”

Sally: “Ask politely what the white food is. Anything local?” It doesn’t say who to. I think ... (Sally reads the messages sent by Antoine) “would you like to join me for coffee”. I’m not quite sure who it’s for. It could be Antoine who says “Hey Jenny good to meet you. Would you like to join me for coffee?” But I’m not sure, that to me doesn’t make much sense: “Ask politely what the white food is. Anything local?” I’m not sure.

In this case, it is not at all clear just who Jenny's message is addressed to, which must be established before it can be assigned to an appropriate category. The operator attempts to resolve the ambiguity by appealing to the biographies of other players, one of which, Antoine, has just asked Jenny if she would like to join him for coffee? The appeal to another player's biography in this case trades on the operator's competence as a speaker of natural language and her recognition of an 'adjacency pairing' (Sacks et al., 1974) – question-answer, in this case. The appeal to biography is, then, one done to identify potential parties to a conversation, to see if the response from one player looks like it 'fits' with the prior responses of other players. Identification is contingently achieved and operators may rely on their knowledge of the game (of who is talking to who and who a likely candidate might therefore be) or they might consult player biographies, reading prior messages received by the sender in a retrospective-prospective fashion (Garfinkel, 1967) to work out what the meaning of a response is and who it is directed to. In either case, or both, operators exploit their familiarity with the workings or 'mechanics' of natural language (of knowing that questions are often paired with answers, for example).

Again, this is not as straightforward as it may seem as a response, for natural language speakers, must be hearable as an answer to a question for it to be treated as such (and thus, in this case, be assigned to a category of action). In other words, answers are 'conditionally relevant' (Coulter, 1991), and the interpretation of a response as an answer to a question relies on the operator exploiting his or her natural sensibilities and 'seeing' the conditional relevance of the response. In Jenny's case the conditional relevance of her response, "Ask politely what the white food is. Anything local?", is in question as it doesn't sound like a relevant response to the question "would (Jenny) like to join me for coffee?" As the operator puts it, "that to me doesn't make much sense."

Should ambiguity persist, as it does in this case, then messages are passed on to the authors:

Vignette #3.

Dave: Are there any other weird ones?

Sally: Yeah. "Ask politely what the white food is. Anything local?" I wasn't sure who that was to.

Dave: I reckon that's to someone who's working at the café (looks at previous messages). There's someone else there. You can just make it a chat message.

Sally: (looks at prior messages) Those two are to Antoine, I think (clicks OK to send chat message).

Here it can be seen that making sense of ambiguous messages exploits awareness of the virtual proximity of players, which is developed by consulting player biographies to establish where they are and who they may be talking to and which suggests that, in this case, as Antoine and Jenny are virtually co-located they probably are talking to one another and that the response is indeed an answer to Antoine's question and thus a 'chat' message to be forwarded.

In all cases, interpreting player responses trades upon the 'accountable' character of those responses (Garfinkel, 1967; Suchman, 1987). Not only do messages have to be compatible with one of a range of situationally relevant courses of action from a player's current point in the game and/or make sense in relation to the actions of other players where collaboration occurs in the game, they also have to be reasonable, where the reasonableness of a response turns upon its compatibility with the rules or spirit of the game:

Vignette #4.

Gary: I didn't kill off H285 (H285 is a player's name).

Sarah: Is he the one that doesn't want the messages anymore?

Gary: Yeah.

Sarah: Let's get rid of him.

Gary: If he whines again then let's throw him out I suppose.

Sarah: The problem is, all he'll remember of the game is that we pissed him off with text messages. It doesn't really work that way.

Tim: I think we just send him one more. If he's said he wants out of the game, just send him one more saying – only to clarify his request – 'cause ...

Sarah: We didn't yesterday, we just sent them out the game.

Tim: Well his request was "I don't want to receive any more of these messages", it wasn't an explicit "I want out of the game".

Sarah: "I don't want to receive any more of these messages" – yesterday the message we got is "Don't send me any more texts". To me they're both the same, one's just more direct.

Tim: Yeah. Has he left the game then?

Sarah: No, he should do.

Tim: He should, yeah.

Sarah: 'cause otherwise it is a matter of us keep going "Oh we don't want to send him any more texts, oh we can't send him any more texts" and then there's no point being in the game anyway if he's not going to receive any more texts, 'cause that's the whole point of the game.

Gary: Well some people just want to stay quiet, you know.

Sarah: They want to stay quiet but they receive their text messages.

Tim: He's saying he doesn't want the texts, that's the same as saying he doesn't want to be in the game.

Sarah: Yeah.

Gary: Well has he just got bombarded with like, you know, like six this morning?

Tim: No.

H285's response "I don't want to receive any more of these messages" is construed of as an unreasonable request. The player has not been "bombarded" with messages, which may be good grounds for making such a request. It is also recognized that players may choose to be "quiet", but in such cases they still receive their messages. The operators cannot see any good reason as to why the request not to receive messages should be complied with, as receiving messages is "the whole point of the game". The request is denied then and the player is "killed off" instead. Determining the accountable character of responses is not a straightforward matter. The game is dynamic, it evolves over the course of its playing. As one operator puts it, players usually "try to explore their environment" and they may do so in unusual and unexpected ways – on arriving at the garage several players wanted to go for a "joy ride" in a car, for example, a request that was complied with under the auspices of a 'destination change'. This course of action was not provided for in the rules of the game, however, which is why a distinction is drawn between the rules of the game and the spirit of the game. The rules of the game emerge to some large extent from the contingencies of gameplay, the reasonableness of which is determined by the operators and authors understanding of what the game is 'all about', what is and may be reasonable to do, and whether or not the request accords with the spirit of gameplay. It is against this *scheme of interpretation* (Garfinkel, 1967; Sharrock and Watson, 1988), which is generated by the activity of making actions accountable when the premise of action is called into question (Suchman, 1987), that responses are interpreted and assigned to distinct categories providing for appropriate next actions.

3.2. CRAFTING RESPONSES

The sense made of responses is intimately bound up with the ways in which responses are crafted by operators, indeed they are two sides of the same coin. Crafting a response consists of a different ensemble of practical actions and modes of reasoning, however. In the first instance, responses to players must be 'recipient designed' (Sacks and Schegloff, 1979) or crafted and shaped to fit to the individual player:

Vignette #5.

Sally: I don't know if there are any other ones (returns to inbox). "Joan leaves" – oh that's it – "Joan leaves town after an argument with Miya." So I don't know if that implied that she wanted to leave the game.

Dave: Yeah, she wants to leave the game. So, we haven't set up for people who want to leave the game yet. I think you should just send her a custom reply saying "Joan leaves town."

Sally: (selects custom message) "9.38 Joan leaves town." and that's it?

Dave: "Thanks for playing the Day of the Figurines."

Sally: continues typing: "9.38 Joan leaves town thanks for playing Day of the Figurines"

Dave: Capital O and capital T.

Sally: Oh, yeah (makes changes).

Dave: And may be just a comma or full stop after Joan leaves town.

Sally: Yeah (inserts a comma).

Dave: That looks good.

Sally sends the message.

Here we can see the ordinary work of writing that we might expect to see when people craft texts. Small details like repeated and redundant words, capitalization and grammar are attended to. While seemingly trivial these are important aspects of shaping content, they provide for the intelligibility of the text and they make it 'natural' – i.e., not just legible but meaningful in a human way that transcends the readability of automatically generated texts. Thus, and for example, "thank you for playing Day Of The Figurines" is added to the automatically generated response "Joan leaves town" and the message is, thereby, made into a personal response not only in that it is tailored to Joan but in that its tailoring consists of exercising the ordinary civilities and niceties that we exhibit in our mundane conversations together. The vignette shows that the crafting of content is provided for through the 'formulation' of appropriate responses (Garfinkel and Sacks, 1970) to make them intelligible and to respect the *moral order* that ordinarily inhabits talk and interaction then (Garfinkel, 1967).

Content is further shaped, and responses recipient designed, through other features of formulating responses that are designed to promote engagement in the game:

Vignette #6.

Sally: There was a message from Achim saying he wanted to follow the nearest person or something and we're trying to find a person that's near him and where they're going so he can follow.

Sally retrieves the message from Achim: "He should follow the next person that comes along."

Dave: Can you send him to the council block?

Sally: The council block?

Dave: He's going to go past Kojak, past the council block, so maybe – that's at least two people, but Hans and Kojak aren't moving but it

might prompt them to join the game a bit – Hans hasn't sent any messages to say where he wants to go yet and Kojak hasn't sent any messages at all.

Dave and Sally are looking at the personal histories of players in Achim's vicinity, Kojak and Hans.

Sally: So he's going to follow Hans or not?

Dave: He needs find the next person that comes along. Well, if we just send him to the council block (inaudible).

Sally: The council block (changes Achim's destination). Do you just put OK or do you have to put a custom first.

Dave: No, click OK then just edit it (the automatic response) a bit.

Sally: Oh right, OK. "Achim begins walking towards the council block." You can put "following" ...

Dave: "where he sees Kojak" ...

Sally: Yeah.

Dave: Oh, actually that might imply that they are going to see them there.

Sally: "Where he follows Kojak"?

Dave: Or may be "Where he can see Kojak in the distance" just to make it clear that they can't talk.

Sally: Yep (types in message).

Dave: OK.

Sally: Shall I send it?

Dave: Uh-huh.

This vignette shows the operators and authors concern not only to craft an appropriate response to a player, but also to foster participation in the game in doing so. They draw on multiple biographies to formulate a response to Achim's request "He should follow the next person that comes along". The 'draw' consists of exploiting their sense of where Achim is in relation to other players (Kojak and Hans) and of consulting their biographies to see what they are doing. As none of the players are engaged in conversation, the operator and author formulate a response that provides Achim with *instructions* as to what to do next in order to achieve the intention expressed in his message and to foster both his own and Kojak's involvement in the game. Thus, Achim is told "Achim begins walking towards the council block where he can see Kojak in the distance."

Formulating instructions is essential to the orchestration of gameplay and an essential mode of reasoning that underpins their formulation:

Vignette #7.

Sally: One there to do (selects message from inbox). "I look at the door to see when it opens."

Sally reads previous messages sent to and by the player.

Sally: Shall we custom it saying “The door is open” or something? Or is it a chat?

Dave: He’s already had a message saying it was closed. Send him a custom message saying that it opens at 10 o’clock or something.

Sally: OK. “The door opens at 10 am.”

Dave: It’s kind of – if you imagine that you were there ...

Sally: Yeah.

Dave: ... and you were describing what someone could see.

Sally: Um.

Dave: So there wouldn’t be something that just said that the door opens at 10. It would be ...

Sally: The sign says ...

Dave: The sign on the door says ...

Sally: Yeah.

Dave: ... the shop opens at 10 am.

Sally types the message and sends it.

Formulating instructions relies on “imagining” a player’s context and what it makes sense to say from that point of view. It is a matter of putting yourself in the player’s shoes and exploiting a reciprocity of perspectives (Schutz, 1962) in order to “see” responses from the recipient’s position. This is an essential feature of talk, it inhabits conversation everywhere though we rarely have occasion to reflect upon it, except on occasions when we misunderstand one another and it becomes a remarkable topic, for example. Nevertheless, exploiting a reciprocity of perspectives is indispensable to conversation in general and to the formulation of instructions in particular, providing for their intentionality, pointedness, and direction, though not necessarily for their realization (Garfinkel, 2002).

Instructions are not always clear, the meaning of what they prescribe not only vague but not even recognized. The following vignette provides just such an example:

Vignette #8.

Kate is looking at a message from Bella: “Can Bella please say hi to Georgina and ask her if she saw anything strange at Capelli’s last night?”

Kate: This one I don’t know quite what to do with. I’m going to have to talk to Dave about that at some point because she wants to talk to Georgina but Georgina isn’t anywhere near her so she can’t. I think I’ll just text back to her, “No one is nearby” but I’ll have to get the exact wording from someone.

Kate looks at Bella’s prior messages: Yeah, see, she’s had a parting message.

Jane approaches Kate: Tell us where you’re at?

Kate: I've just got a message from Bella that says "Can Bella please say hi to Georgina and ask her ... ", but she's not there – she's been given a parting message so I just need to basically either resend that or say no one's nearby.

Caitlin: Yeah, I think so. It needs to be "Bella is alone outside blah, blah, blah. Georgina has left." Just to double confirm that we hear the request.

Kate goes to the game board to find out Bella's current position and then returns to the computer, types and sends the message.

Despite having received a parting message instructing her that her conversational partner, Georgina, has left, Bella fails to recognize the instruction. In cases like these the operators and authors must formulate a response that *repairs* the instruction. Thus a response is formulated that instructs Bella that she "is alone outside the Product Barn" and that "Georgina has left", which provides Bella with an intelligible reason as to why she cannot talk to Georgina. Formulating repairs to instructions demands that accountability be designed into the response to clarify, explain, and other ways make intelligible what the player's circumstances are. In turn, this enables players to establish where in the game they are now and what might be done next. The work involved in designing responses for recipients – shaping content by personalizing responses in accordance with natural conventions of talk, by promoting engagement through consulting player biographies, by formulating instructions through adopting a reciprocity of perspectives, and by repairing instructions through formulating an account of the player's current situation – shapes player involvement in the game and the co-production of engaging gameplay narratives.

3.3. MANAGING AND TRACKING NARRATIVE PRODUCTION

Responses are not one off events but part and parcel of unfolding narratives that players are invited to participate in and which operators, authors and players collaboratively produce as an essential feature of the game's orchestration. Responses are part of an ongoing flow of messages then, and the following vignettes elaborate the work involved in managing that flow.

Vignette #9.

Sally and Kate have just 'done the turn' – i.e., generated new coordinates for the players figurines and moved them accordingly. After the figurines have been moved, messages are sent out to the players.

Kate: There are different messages for different reasons. So there's ones when you're passing through somewhere, like Achim, but we won't send

those ones because if we did we'd be barraging people. If they're on a long journey then you might send them the odd one just so that they know they're still in the game.

Kate: These are parting messages. So we'll keep those because they've been talking to each other or have been in the vicinity so they could talk to each other. So now we've got to send them messages to say you're out of the area.

Kate: We send most of them but just check for any strange things that happen, which "Bruce approaches Leon" – I guess that would be "in Ron's Top chip shop" (rather than Bruce approaches Leon Ron's Top chip shop; Kate edits the text).

Kate: Petra is on her way somewhere so she doesn't need to know on every turn exactly where she is, 'cause if she did she'd be getting a text message every hour saying "your still on ..." – but there's two of those because she's on a crossroads so she would have had two today telling her she's in two different places (Kate deletes one of the messages).

Kate: We don't send people messages every hour unless they write to us. If they don't write to us we only text them 3 or 4 times a day – not even that – so the less someone texts you the less they get sent back.

Location, destination, meeting and parting messages are automatically generated according to a player's new position 'on the turn', but operators do not send all of them. Instead operators review all messages before they are sent and often review previously sent messages and responses from the players as well in order to establish what is appropriate to send and sensible to say. While it is important to update players when they move into or out of proximity with others, for example, operators do not want to "barrage" players with messages. Consequently, the operators try to develop a sensitivity to a player's circumstances and control the flow of messages to *match those circumstances*, discarding those responses deemed irrelevant such as repetitive messages that simply tell a player they are moving through the city or messages that may be confusing given a player's current location at a crossroads, for example.

As the game evolves and more players join in, developing and maintaining a sensitivity to players circumstances becomes more difficult and operators have had to develop alternate methods of support that go beyond what they can remember in-their-heads. As one operator puts it,

Vignette #10.

Tim: There are a few things you need to get your head round. For example, the garage situation is one because we've got two separate groups of people there that we try and keep separate simply from convenience point of view. The same thing's happening at the cemetery, that's why they're visually laid out separately over there. The two people in yellow and red are the people



Figure 4. Managing the flow of messages: displaying conversational groupings.

who have just got there (Figure 4). We have to make a note of the fact that they (the two groups at the cemetery) are best kept separate, because it means that people only get half the text messages.

This vignettes shows that a particularly expedient and economic way to “make a note” is to arrange players’ figurines so as to *display* the conversational groups to which they belong on the game board itself. This enables operators and authors to see at-a-glance who is talking to who and to manage the flow of messages accordingly (Hughes et al., 1992).

The flow of messages is embedded in and articulates distinct gameplay narratives – that Bruce is meeting Leon in Ron’s Top chip shop or that other groupings of players are in the cemetery (where certain events are afoot), etc. The co-production of gameplay narratives relies on behind-the-scenes staff orchestrating narrative production *over the lifetime* of particular meetings and events. The rationale at work here is summed by Tim:

Vignette #11.

Tim: The conversation here is that they’ve arrived at the garage and found some cars abandon on the forecourt. In this case, because they’ve gone as group trying to find a TV or radio to find out what’s happening in town because they’ve been receiving all these strange messages telling them that people are passing army trucks and things like that, so here we have characters saying “Turn on the radios on one of the abandoned cars.” We’ve replied “The cars are locked, their engines off.” And their reply is “Pick up a brick from the forecourt and smash the car window and then turn on the radio.” So you can see, they are pushing us as far as they can to

try to get their own way. Again, my reply to that is “Jasmine finds a brick and breaks the car window. Without a key the engine won’t start. Hot-wiring is out of the question.” So we’re trying to make it lively for them without it necessarily seeming like we’re sort of denying them what they want to do.

Orchestrating narrative production is here a matter of formulating appropriate responses, where the ‘appropriateness’ of the matter is determined by a request’s accountable relationship to the rules or spirit of the game. As noted above, that is an evolving relationship and what counts as reasonable or unreasonable is a matter of negotiation done as an essential, unfolding, ongoing feature of playing the game. In other words, the collaborative production of narratives is a *negotiated production*, where players “push” the boundaries of the game and operators “push” to maintain those boundaries. Furthermore, as operator’s work in shifts over the day narrative production must, therefore, be coordinated between different sets of operators:

Vignette #12.

Tim: Yesterday at some point we had 3 people moving to the cemetery and one of them didn’t want the other people to know that he was going and he wanted to surprise them when they arrived. So I’ve been, I’ve been sort of working out the logistics of that – because the other two have just arrived, they’ve got arrival messages ready to go but they need to be customised to incorporate the surprise. And the third character needs now to know that the others have arrived and that he’s surprised them. We dealt with it yesterday but because of the time scale of the game it’s taken them up to now to get there. Jack left a note about it (picks note up off desk), he’d obviously seen it today and registered it, as something that needed monitoring.

Coordinating narrative production is a matter of *tracking* narrative production, which the operators accomplish through word of mouth as they change shifts (debriefing each other as to who is talking to who, what events are afoot, what’s outstanding, etc.) and by writing what events are to be tracked down on paper, either on lists or notes. Paper is, as we all know, an extremely flexible resource (Sellen and Harper, 2003) but the point to appreciate here is that notes are exploited in similar way as the figurines on the game board when they are arranged to display groups, indeed the use of paper is tied to this use of the game board, and that is as a *physical marker* of events to handle. Leaving notes on desks acts to display events that need to be handled, serves to maintain awareness of the ongoing co-production of narratives, and enables staff to “register and monitor” the actions that need to be performed by operators to ensure that narrative production continues and is accomplished in a timely way.

4. Customisation and the situated nature of orchestration work

The ethnomethodological account we have offered may make it appear that gameplay is collaboratively organized and orchestrated through extremely mundane forms of interaction: recognizing relevant responses, exploiting schemes of interpretation to accomplish interpretive work, attending to the moral order that inhabits talk in the recipient design of responses, formulating instructions and exploiting a reciprocity of perspectives to do so, repairing formulations, negotiating gameplay, and so on. Such things are the ‘bread and butter’ of ethnomethodological studies and they speak of great generalities. To read the account in this way would be a mistake, however. It is also a stricture of ethnomethodological study to address the ‘unique adequacy’ of members’ methods (Garfinkel and Wieder, 1992). The problem, as it were, is not that the game exhibits its work in terms of mundane forms of interaction, but to understand how mundane forms of interaction are methodically organized in ‘just this’ setting (Garfinkel, 1996). In other words, what we want is to tease out the setting-specific character of mundane forms of interaction and uncover how such great generalities are exercised *in situ*. When we ask this of the studies we find that the mundane interactions in and through which the game is orchestrated and co-produced consists of the following setting-specific features. At a high level, orchestration may be said to consist of three distinct but interrelated ‘jobs of work’ – categorization, recipient design, and managing and tracking narrative production. Each of these jobs consists of a distinct ‘assemblage of work-practices’ (Garfinkel and Sack, 1970), which provide for the orchestration of gameplay.

4.1. CATEGORIZATION

Categorization is essential to orchestration. It enables operators and authors to establish an appropriate response to a player’s message and determine the next move in the game. Categorization relies on interpretation and the judgement of operators and authors to work out what a message might be about. This interpretive work consists of exploiting a player’s history or biography to determine their current situation and of subsequently aligning the message with one of a range of potential, and situationally relevant, courses of action that are available from this point in the game. Interpretation essentially relies on the detail contained in a response, as a lack of ‘specifics’ leads to ambiguity. Ambiguity is also handled by exploiting a player’s biography to determine their current situation and to interpret what the response might be about given that situation. Where potential ‘chat’ messages are concerned, operators and authors exploit the biographies of other players to see if the response looks like it ‘fits’ with the prior responses

of other players. This aspect of interpretive work trades on and exploits operators and authors competences as speakers of a natural language, particularly their ability to recognize conditionally relevant responses where responses might be determined to be appropriate parts of a pair of utterances in a sequential order of talk (such as question-and-answer). Interpretation also relies upon awareness of the virtual proximity of players, where being close to each other supports the recognition of conditional responses and the assignation of responses to appropriate categories of action. The interpretation of responses furthermore relies upon their accountable character or on the 'reasonableness' of a response, which turns upon interpreting the compatibility of messages with the rules or spirit of the game. Interpreting the reasonableness of a response cannot simply be read off the rules, however, as the game is dynamic and the scheme of interpretation that provides for judgements of reasonableness evolves as contingencies arise and the spirit of the game is brought into question and resolved.

4.2. RECIPIENT DESIGN

An essential job of orchestration revolves around tailoring and crafting or 'shaping' responses to fit to individual players and make them personal. The crafting consists of exercising the ordinary civilities and niceties that we exhibit in our mundane conversations together, which is done through the formulation of the correct wording and punctuation where 'correctness' is a matter of making responses intelligible and bringing them into accord with the moral order that ordinarily inhabits talk and interaction. It is through the exercise of these natural linguistic competences that engagement with the game is articulated and expressed and, in this respect, productive interaction relies upon them. Responses are also formulated to promote active participation in the game. This is done by relating a player's circumstances and intentions as expressed in his or her responses to those of other players in the virtual vicinity. Thus, the biographies of other players are drawn upon to identify potential collaborators and to provide instructions that will promote collaboration between players. The formulation of instructions is essential to gameplay and relies on the operators and authors' ability to adopt and exploit a reciprocity of perspectives – to stand in the shoes of the player as it were and see the response from his or her point of view. This involves 'imagining' the player's context and 'seeing' what he or she would see given the wording of a response and leads to the formulation and reformulation of responses until they adequately convey appropriate instructions as to what a player should do next. Instructions are not infallible, however, and so it is necessary on occasion for operators and authors to formulate responses that repair them. The repair consists of formulating a response that

accounts for prior instructions and which clarify, explain and in other ways make intelligible what the player's circumstances are now such that what might be done next might be inferred by the player.

4.3. MANAGING AND TRACKING NARRATIVE PRODUCTION

Responses are part and parcel of evolving narratives produced by operators, authors, and players in collaboration. The collaboration consists of the continuous negotiation of what it is and is not reasonable to do in the game. The negotiation is done through the practical management of narratives, which seeks to keep narratives within the spirit if not the rules of the game. The practical management of narratives consists, on the one hand, of controlling the flow of responses to players to make sure that they are not 'bombed' with messages and that the right players receive the right messages given their circumstances. This consists of developing a sensitivity, a knowledge, of what player circumstances are: that they are travelling through the city alone, that they are at a crossroads, that they are in a group amongst other players at a location, and so on. Where groups of players are concerned, operators manage the flow of messages by exploiting the game board, arranging figurines into groups to enable them to see at-a-glance and so maintain awareness of who is talking to who, which in turn enables them to determine the flow of messages to groups of players. On the other hand, and as a complement to this, operators manage narrative production by tracking it as it unfolds. This is done through word of mouth as operators hand over between shifts and by writing what events are to be tracked down on paper. Like physical arrangement of figurines to manage the flow of responses, notes are used as physical markers of events to handle and serve to coordinate the management of narrative production across the division of labour. Writing lists of things-to-do and leaving notes on desks displays events that need to be handled and serves to maintain awareness of the ongoing production of narratives. Through the production and arrangement of physical markers (figurines and notes), operators "register and monitor" the actions that need to be performed to ensure that narrative production continues and is accomplished in a timely way.

4.4. AWARENESS AND COORDINATION

Day Of The Figurines may be a novel interactive game but it nevertheless relies on essential features of cooperative work for its production and realization, particularly awareness and coordination. As Schmidt (2002) puts it,

The term ‘awareness’ is ... used to denote those practices through which actors tacitly and seamlessly align and integrate their distributed and yet interdependent activities.

Awareness, in other words, provides for coordination and does not refer to “some special category of mental state” (ibid.) but to the enacted practices whereby people develop or produce and maintain awareness. Thus, operators and authors develop awareness of players virtual proximity by consulting their biographies to see where they are, where they have been, where they are going to, and who else is around them. This, in turn, enables operators and authors to coordinate or orchestrate gameplay and foster collaboration between players. Similarly, operators exploit the physical game board to produce and maintain awareness of conversational groupings and arrange figurines to coordinate the flow of messages to those groups. The use of the game board to engender awareness is also tied to the use of physical markers in the workspace – notes and lists – which are exploited to monitor and coordinate narrative production and the timely occurrence of gameplay events. Awareness is essential to gameplay then and is provided for through the manipulation of discrete objects in the workspace – player biographies, the game board and figurines, notes and lists.

4.5. MUNDANE WORK AND THE UNIQUE ADEQUACY OF ORCHESTRATION

When we examine each distinct job of work implicated in the orchestrated co-production of *Day Of The Figurines* it becomes apparent that the mundane work of the setting consists of distinct material practices and attendant forms of reasoning. Categorization work, for example, relies on the situated use of *player biographies*:

- To determine a player’s current situation and to interpret what the response might be about given that situation.
- To determine a player’s current situation and align the message with a situationally relevant next action.
- To establish the virtual proximity of other players and determine if a player response looks like it ‘fits’ with the prior responses of other players.

At the same time and at all times, responses are accountable to the scheme of interpretation that underpins gameplay. That scheme of interpretation, whereby actions in the game are reasoned about and made reasonable, is not generic but setting-specific. It emerges from and evolves through the contingent co-production of the game.

Unique setting-specific practices also inhabit the mundane work of recipient design and include:

- The use of player biographies to identify players in the same vicinity who may be potential collaborators.
- The formulation of responses not only with respect to the moral order but in terms of the game itself; its grammar, vocabulary and sense of aesthetics.
- The formulation of instructions based on the operators and authors ability to read instructions from the point of view of a player's orientation to the game situation.
- The repair of instructions in such a way as to make their meaning perspicuous and the game situation accountable to players.

While embedded in mundane forms of interaction, recipient design is accomplished through a distinct set of practices which provide for the ongoing co-production of gameplay.

The mundane forms of interaction implicated in the management and tracking of narrative production are, perhaps, the most distinctive and rely not only on developing knowledge of the particular circumstances of players, but also on the following:

- Exploiting the 'turn' taking interface to managing the flow of responses to ensure that players are not 'bombarded' with messages and that the right players receive the right messages given their circumstances.
- Managing the flow of messages to groups of players by physically arranging their figurines on the game board to enable operators and authors to see at-a-glance and maintain awareness of who is talking to who.
- Managing narrative production by tracking it as it unfolds, not only by word of mouth but by displaying notes in physical environment to "register and monitor" the actions that need to be performed to ensure the timely production of gameplay narrative.

The emphasis we have placed on teasing out the setting-specific character of orchestration work in *Day Of The Figurines* negates criticism to the effect that such studies do not address gaming *per se*. While the mundane forms of interaction that cooperative work consists of may be found in other settings, the methodical ways in which they are exploited, the jobs of work they are made to do, and the material objects they exploit, make the situated co-production of gaming visible and available to reflection in design. Furthermore, the distinct assemblages of 'work practices' that populate the game, and the situated use of material objects that inhabit those practices, raises distinct challenges and possibilities for design (Button and Harper, 1996).

4.6. IMPLICATIONS FOR DESIGN

The situated and orchestrated character of "customisation" has profound implications for further iterations of *Day Of The Figurines* and similar mobile

experiences, which seek to exploit text messaging across large groups of participants. *Without increasing the size of behind-the-scenes staff*, scaling such games up to make them more accessible and available to the wider public will necessarily entail some degree of automation. As the burden of behind-the-scenes work is dedicated to customisation, this will involve automating message handling to some degree. However, the cooperative work involved in customisation introduces particular challenges to automation. As Schmidt and Bannon (1992) put it,

by entering into cooperative work relations, the participants must engage in activities that are, in a sense, extraneous to the activities that contribute directly to fashioning the product or service and meeting requirements. That is, compared with individual work, cooperative work implies an overhead cost in terms of labor, resources, time, etc. The obvious justification for incurring this overhead cost and thus the reason for the emergence of cooperative work formations is, of course, that workers could not accomplish the task in question if they were to do it individually

While customisation might be seen as an overhead it cannot be easily dispensed with as the work cannot be carried out by an individual and neither, for that matter, can it be solely carried out by a machine.

While automation might better support categorization by standardizing responses, it is not all clear how the machine would or could cope with the interpretive work that is implicated in categorization and which is particularly prominent where ambiguities arise, and arise they inevitably will. Thus, and *in the absence of competence in natural language*, we might ask how the machine might recognize whether or not a response 'fits' with that of another player? On what basis would the machine recognize the conditional relevance of a response and so come to 'see' that it is part of a conversational pairing of utterances? Appealing to the proximity of players is not sufficient, proximity is only a partial resource for making decisions and one that may become problematic in circumstances where many players are virtually co-located. Furthermore, how is the machine to recognize the reasonableness of a response? While machines are very good at exploiting rules, how are they to respond when responses go beyond the rules? How is the machine to determine whether or not a response is in accord with the spirit of the game? It cannot appeal to some predefined scheme of interpretation without compromising gameplay, as that scheme is not concretely predefined. Rather, it emerges as and when contingencies emerge to challenge it and call it into account, and through being called into account, the scheme of interpretation evolves (Suchman, 1987) and so too does the game.

Similarly, we might ask how the machine will design responses for recipients? While it is conceivable that the machine could promote gameplay by pairing players based on their virtual vicinities and proximity to one another,

how is it to adopt the reciprocity of perspectives that is essential to formulating instructions and how is it to repair such formulations and formulate an account that clarifies, explains and in other ways makes the player's situation intelligible? Certainly a broad range of responses may be crafted and programmed in advance, but the negotiated character of gameplay means that the *human touch* cannot be readily dispensed with. Furthermore, as responses are not one off events but part and parcel of unfolding narratives, how is the machine to manage the co-production of these narratives, ensure the smooth flow of messages to players, and track narrative production to ensure that responses are delivered to the right players at the right times?

No doubt a host of other questions could be asked of the machine as well. The list appears innumerable and suggests that while there may be some significant purchase to planning models that deliver pre-scripted responses, customisation cannot be fully automated without incurring some cost to the quality of the gameplay experience. This suggests that there may be a need to augment customisation to some extent then and two distinct possibilities exist in this respect. On the one hand we might seek to exploit computing capabilities to support the overhead of cooperative work, especially in the practical management and tracking of narrative production. This is an essential feature of the game's orchestrated co-production. It is the point at which operators, authors and players meet and the boundaries of the game are pushed. As the game scales up, we might reasonably expect that this is going to become a much more intense, laborious and time-consuming feature of behind the scenes work. The ways in which operators and authors currently orchestrate narrative production suggest some possibilities for augmenting the work and developing computer support, however.

In the first instance we have the way in which operators manage the flow of responses by exploiting the game board. Here they arrange figurines to display their relationships and mark out distinct groups of players, a job of work that is bound to become much more difficult to manage as participation increases. In this respect computer support might be directed at augmenting the operators' physical environment or ecology with computer-generated representations, which enable such displays and map the movement of players across turns. Representations such as this might also display conversational pairings or groupings between players, moving beyond individual biographies to convey at-a-glance who is talking to who in the fictional city. The arrangement of figurines is also connected to the production of lists and notes that are tied to what is happening on the game board, providing another set of physical markers in the ecology that mark out things to do. Right now the two sets of physical markers that operators and authors exploit to manage narrative production are physically separate – figurines are located on the game board, notes and lists at operator's terminals. The development of computer support might reconcile the two such that figurines

and pending actions ‘sit together’ and are displayed in such ways that what is to be done can be inscribed onto the representation at appropriate locations (e.g., around a particular group of players) and be made visible at-a-glance across the division of labour, thus supporting awareness and coordination.

More generally, the suggestion is that support for orchestrating mobile SMS-based gaming experiences will include:

- Representing the movements of players in the game.
- Representing the interactional relationships between players in the game.
- Representing tasks associated with particular players or groups of players.
- Tying movement, relational, and task representations together to manage the flow of messages and track narrative production.

In turn, such augmentations may provide invaluable support for the production and maintenance of awareness and coordination, which is essential to the orchestrated co-production of such experiences.

On the other hand, further possibilities for design might be explored front-of-stage. Specifically, we might seek to exploit computing capabilities to support player customisation of the game. As a feature of orchestrating narrative production, operators must be sensitive to the flow of messages and this requires that they know something of the player’s circumstances in order to match the flow of messages to them. However, a player’s circumstances are not just those ‘on the board’ (i.e., whether they are meeting or parting or moving through city alone or at a crossroads where multiple messages may be generated, etc.) but are intimately bound up with the physical environments they inhabit and the rhythms of their everyday lives. Thus, some players want more or less messages than others and at different times of the day, and on different days even, and in this respect the possibility exists to shift some of the burden of customisation onto the players. There is no reason in principle why players should not be able to specify via a web browser at what times of day they receive messages and how many they wish to receive, nor that they should be able to tailor this as their circumstances dictate, such that they receive less during the week and more at weekends, for example. Similarly, a version of the digital representation of the game board could be made available online so that players could develop a better understanding of the virtual landscape, see things that are happening there and the players who inhabit it, which in turn might promote a richer sense of engagement.

5. Conclusion

Gaming is a major area of contemporary IT research, providing an engaging arena in which to develop future and emerging technologies in cooperation

with the public. In many respects gaming embodies a methodological shift in IT research as the focus of computing research moves away from the desktop and the workplace to explore more playful aspects of everyday life. This shift is seen to present significant challenges to our understanding and to require the development of new approaches to support design. The contention of this paper is that while different, gaming is not as unavailable to existing approaches of inquiry as it has been suggested and that CSCW is particularly relevant to understanding games. The basis of the contention is that games are *social* in nature and therefore exhibit essential characteristics of cooperative work.

We have sought to demonstrate the point through ethnographic study, an approach that is closely allied with the study of work in CSCW. Ethnography's orientation to work is not one that is restricted to paid labour however, but is much farther reaching and addresses the practical effort that is involved in the accomplishment of heterogeneous activities. This enables us to move beyond recognition of professional involvement in the design of games to consider the ways in which work permeates gameplay and is a constitutive part of it. Our study of *Day Of The Figurines*, for example, elaborates the ordinary work implicated in a novel mobile game that exploits SMS text messaging. The study reveals that the game relies on the orchestration of messaging by behind the scenes staff to create an engaging experience and unpacks the mundane forms of interaction that are involved in this.

Orchestrating messaging in large part revolves around the customisation of messages. This involves categorising messages so that appropriate next actions can be taken, which relies on interpretive work to make sense of messages and to resolve ambiguities; crafting responses to engage players in the game, which relies on situated practices of recipient design; and the management and tracking of narrative production, which relies on distinct awareness and coordination practices. The work-practices implicated in handling messages raise significant challenges for the continued development games that exploit SMS text messaging as a primary means of interaction. On the one hand natural language competences, which categorization and recipient design rely upon, present real challenges to automation. On the other, essential practices of cooperative work, which provide for awareness and coordination, open up further possibilities for managing the co-production of engaging gameplay narratives between players, operators and authors as games scale up and become available to a wider audience.

Games are social through and through and while exhibiting different organizing features than paid labour they are, nevertheless, available to CSCW both methodologically through ethnographies of ordinary work *and* conceptually, in terms of awareness and coordination, for example. More importantly, the availability of the cooperative work of gaming is, we would suggest, of great value to the developers of new forms of interactive

experience. As in the design of workplace technologies before it, the development of new technologies to support more playful aspects of our lives may be usefully informed by a far-reaching understanding of the cooperative work that gaming relies upon. Again, as in the workplace, this will no doubt take many years to achieve and be an ongoing concern. Nevertheless, and as our study of orchestration work in *Day Of The Figurines* makes perspicuous, gaming evidently relies on cooperative work and is an essential part of it.

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