

Winky Dink and You: Determining Patterns of Narrative for Interactive Television Design

Ian Smith

Fiona Stewart

Phil Turner

School of Computing
Napier University
Edinburgh EH10 5SB UK
ia.smith@napier.ac.uk

School of Computing
Napier University
Edinburgh EH10 5SB UK
f.stewart@napier.ac.uk

School of Computing
Napier University
Edinburgh EH10 5SB UK
p.turner@napier.ac.uk

Abstract

We report on the identification, creation and use of narrative patterns to create an interactive cartoon. We have undertaken an analysis of an American 1950-60's interactive television cartoon - *Winky Dink and You*, which gave the illusion of interaction. *Winky Dink* offered an engaging and enjoyable experience of a type not currently available on interactive television. We identified a number of recurrent sequences in the cartoon that we describe as narrative patterns. These patterns have also been used to create a genuine interactive cartoon using a modern multimedia development tool. We believe that this work could contribute towards the design and development interactive media (i-media) suitable for interactive television (iTV)

Keywords

Narrative patterns, Interactive Television (iTV), Interactive Media (i-media)

Introduction

The development of interactive TV (iTV) applications remains problematic, the British Broadcasting Corporation (BBC) have committed themselves to a figure of at least 20% of the output having interactive content on their new digital channel BBC3 [BBC, 2002]. If they are to extend interactivity beyond the contemporary implementations of alternative camera angles and online quizzes then an innovative form of development is required. The study reported here is an analysis and re-implementation of the first and arguably best implementation of an interactive-cartoon (i-cartoon) - *Winky Dink and You*. The analysis focussed on identifying narrative (recurrent sequences in the cartoon) patterns and the implementation has acted as a proof of concept of the usefulness of these patterns. So what is *Winky Dink and You*?

Winky Dink & You

Winky Dink and You has been credited with being one of the first interactive television programmes. It revolved around the antics of Winky Dink and his Dog Woofer, who regularly required the help of child viewers to escape from perilous situations. It was originally broadcast from October 1953 to April 1957, and was revived in 1969. The sixties series is now available on video and DVD.

In the fifties *Winky Dink and You* featured a mixture of live action between the host Jack Barry and a studio audience, and animated sections where viewers at home were asked to join in. Interactivity was provided in the form of a sheet of clear plastic that fitted over the television screen and some 'magic crayons' (though it should be noted that they were not actually magic) that would allow the child to draw onto a plastic sheet attached to the television screen. When Winky found himself in trouble children could rescue him by drawing a bridge or rope, or by joining the dots to reveal secret messages. Although the interactivity provided by the kit was only an illusion, *Winky Dink and You* proved popular and is fondly remembered by many of its contemporary viewers [Gawlinski, 2003].



Figure 1: A frame from *Winky Dink and You*. The child is *Winky Dink*, the 'dog' is imaginatively named *Woofer*.

The sixties series of *Winky Dink and You* (Figure 1) is more relevant to this paper, due to the style of the broadcast. Each of these episodes is about five minutes long and concentrates solely on the cartoon. There is no human narrator; the interaction is strictly between the onscreen character and the viewer. The Winky Dink character often leads narration himself and directly to the viewer as though they were in the same room. Each cartoon between two and three interactive scenes, with explicit instructions being given to the viewer each time they are to take part. Common tasks include joining dots, or tracing a shape to trace that becomes part of the narrative. Instructions are also given on when the child should clear the screen with their 'magic duster' and these are backed up with animated content.

It is apparent that the success of *Winky Dink and You's* interactivity lay with the use of the fixed point on the screen. The animation is designed specifically so that the child's drawing remains in the same place, with the action continuing around it, enforcing the illusion that the drawing has contributed to the story. In episode 'Vacation Draw-in' the child is asked to draw around a whale, which then becomes a desert island for Woofy to have a holiday on. The 'cut-out' style of animation is simplistic; often just the characters' eyes or mouth are animated; but this is still an accepted style of animation and has successfully been adopted by series such as *South Park*. In many ways this form of animation helps to blur the boundary between the professional animator and the child's superimposed drawings.

The interaction between child and character is a natural one with the child's drawing being placed directly on top of the cartoon, unlike most interactive systems where the action takes place via an input device and appears on a monitor. Drawing is a natural and effective way for children to contribute to the cartoon. The simple act of drawing encourages young children to save Winky from whichever peril he has encountered, this also blurred the interface between viewer and character. Although the cartoons can be watched without drawing, the narrative is not as effective unless the instructions are successfully followed. The power of *Winky Dink and You* is in the child's belief that they are actually part of the story and aiding Winky and Woofy in their adventures.

The structure of this paper

Having set the scene, we now turn to a discussion of our definition of patterns. From here we describe how we identified a set of narrative patterns in the Winky Dink cartoons and then used them to implement an interactive cartoon using a multimedia animation package. We conclude with a discussion of our findings and indications for further work.

Design Patterns

There are now a number of examples as to the usefulness of patterns in both software engineering and human-computer interaction [Bayle et al, 1998; Erickson, 2000; Finlay et al, 2002; Martin et al 2002] most of which can trace their parentage to the work of Alexander [1977, 1979]. While space precludes a comprehensive treatment of patterns, it is worth citing the work of Richard Griffiths of the University of Brighton's Usability group who noted that "It would appear that HCI design is much closer to the architectural roots of pattern language, as the feelings that users have about their computer systems are important to us, just as the feelings dwellers have about their houses are relevant to architects." [Griffiths, 1999].

Using patterns in interaction design.

Tidwell's *Common Ground* [1999] pattern language presents a set of patterns for interface design. It is divided into three primary patterns each of which comprises sets of patterns. Within the language the patterns are divided using questions as headings, making it easy for designers to pinpoint patterns that may be relevant simply by answering the questions. Although the language has been subdivided, there is no overriding hierarchical structure. Tidwell argues that this is difficult to achieve, as the same pattern can work at many different levels within an interface (e.g. a form could be the whole interface or a constituent part of an interface). Borchers [2001] makes an interesting point regarding the difficulty of organizing interaction patterns into a hierarchical structure. Alexandrian patterns can be organized simply by size, from the largest to the smallest according to detail, an appropriate method as architecture does not alter significantly over time. Borchers argues that "we design along a time dimension as well as along two (or three) spatial dimensions." [Borchers, 2001, p 64] this is illustrated in projects of the type developed for this paper. The patterns are presented in the majority of cases in a linear manner, which can also be considered as an issue in most interaction design projects. Borchers suggests

using time as a basis for a hierarchical structure, starting at the top with patterns that represent the complete task and moving down to shorter patterns representing the smallest steps required for the task. There is certainly value in this approach as most developers think of the cohesive whole before breaking it down into smaller steps for development, and any language which can support this, will allow patterns to be integrated with the minimum of disruption.

Part of the appeal of Tidwell's approach is the way in which the patterns are described. Although she acknowledges that the language is most likely to be of use to those who are designing fairly traditional interfaces, she does not rule out the importance of making the patterns applicable to more innovative interface design. She says that: "the pattern names and problem descriptions avoid the use of GUI-centric terms whenever possible (e.g. mice, menus, dialogs), so that you can more easily think about them being used outside the GUI world." [Tidwell, 1999]

Narrative patterns

Function analysis, which is a major strand of the study of narrative, has focussed on the recurrence of event sequences, and the archetypal actors associated with these. An early but classic example of this is Propp's identification of 31 functions in Russian folk tales [Propp, 1927]. In summary, Propp argued that events always unfold from an initial need or 'lack' (or an instance of villainy), via the hero setting out to remedy the situation, a struggle where the hero may be helped or hindered by other actors, and culminating in a denouement consisting of the satisfaction of the need, the defeat of the villain or some similar event. Not all the elements need be present, but their order of appearance is invariant. We take these story elements to be analogous with narrative patterns. Table 1 gives examples of these:

| | |
|-----|--|
| 8. | Villain causes harm/injury to victim; alternatively a victim lacks or desires something. |
| 9. | Misfortune or lack is made known; the hero hears call for help. |
| 10. | Hero agrees to, or decides upon, counter- action. |
| 18. | Villain is defeated. |
| 19. | Initial misfortune or lack is resolved. |

Table 1: Some examples of Propp's 31 elements of the hero's journey (the numbering is Propp's)

Looking for narrative patterns in Winky Dink & You

Method

Identifying narrative patterns in *Winky Dink and You* was a two-step process. Two of the authors watched twenty-seven cartoons looking for the kinds of story elements described above, of which five candidates were identified. Moving from this qualitative approach, three cartoons were then transcribed, the transcription annotated with key events, dialogue, actions sequences and scene changes. An informal content analysis was conducted on these transcripts to quantify the detailed structure of these narrative patterns.

The example (figure 4) given in the draft patterns is usually one of the examples pinpointed during the analysis of *Winky Dink and You*. The relevant section of the script has been transcribed along with a screen shot which is used as the illustration. The principle behind the examples was identified to give the solution. In the case of the patterns based on observations from *Winky Dink and You*, several examples were examined to confirm that the solution was relevant for each.

Once the basic patterns and the principles underlying them were identified, the analysis of episodes of *Winky Dink and You* was used to understand how the patterns link together. This information was added to the relationships section of each draft pattern. Rankings were added to the patterns after user testing, based on the success of the patterns in developing the prototype.

Identified Narrative patterns

Initially five specific narrative patterns were identified:

Awareness: Before Winky sets a task he always gives prior notice e.g. "I think we'll need to ask the children at home to help us with this Woofers" allowing viewers to get their crayons ready.

Instructions: Winky explains exactly what the viewer will need to do to help him, often accompanied by graphics such as arrows or blinking lines.

Encouragement: Once Winky has set the viewer a task he encourages them to complete it. This may involve reiterating instructions, or

reminding them that he needs help and they have to hurry.

Narration: Winky often talks directly to the viewer to explain what is happening in the story. At other times he and Woofy talk to each other to explain the plot.

Praise: Viewers are always thanked for their help and told how well they have done after each interaction.

In addition there are user interactions, each of these can be regarded as a decision point where the viewer has a chance to influence the story. In the case of *Winky Dink and You* these consisted of either:

Join or Fill Actions: this action requires the viewer to either join the dots presented on screen or to fill in a missing section that is clearly indicated. These actions are simple and fast moving.

Draw around actions: the user must trace around a shape that becomes part of the story as the animation moves around it. Scale is played with a lot; the user may draw round a pencil that will then become a space rocket.

Clearing Actions: this normally involves the user wiping their drawing off with a 'magic cloth', and signals the end of the scene. Although objects created on computer could be cleared automatically, it might be useful to have a similar clearing action signal when each interaction finishes.

Over and above these initial observations, the actual interactivity available with modern technology had to be taken into account. Although *Winky Dink and You* gives the impression of being interactive, it is just an illusion, and consideration must be given to alternative possibilities that will occur if the

viewer is offered true interactivity [O'Modhrain & Oakley, 2003]. Some possibilities are:

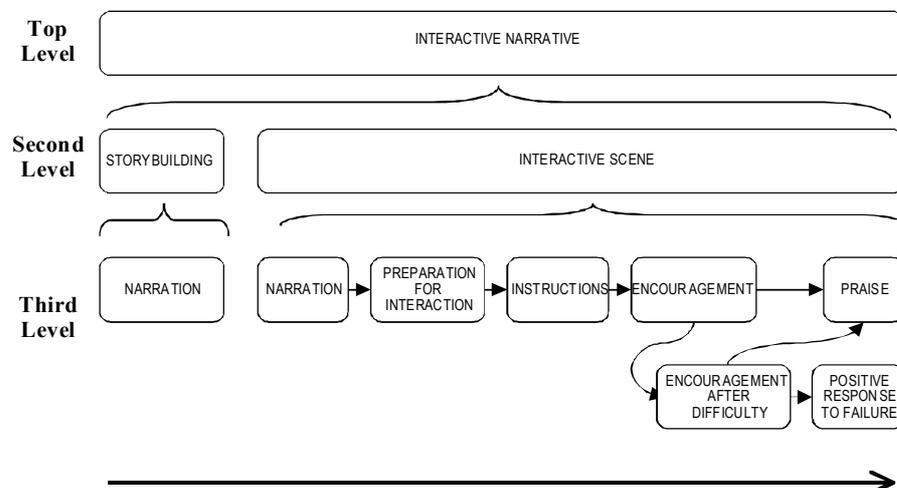
- The viewer is slow in completing an interaction, but is showing interest in participating.
- The viewer missed or misunderstood the instructions.
- The viewer will be unable to complete an interaction.
- The viewer may disengage e.g. they may be watching passively

To take account of these possibilities additional activities would be required to:

- Give the viewer more time.
- Reiterate the instructions.
- Allow the narrative to move forward, even if the viewer has not interacted.

Developing the Patterns of Narrative

The initial set of patterns developed did not allow for situations where the viewer was only partially successful, and these had to be developed using other media as inspiration. This is supported by the work of Bolter & Grusin [2000] who proposed the concept of remediation where new media is seen as refashioned and improved versions of other media. Using the list of possible alternatives developed previously, other media that required scenarios similar to those described was examined (e.g. computer games, Living Books and so forth). Once suitable examples had been identified the same process was followed as for the other patterns. On completing the initial patterns of narrative it became apparent that higher level patterns would be required to



successfully organise a script and therefore additional patterns were developed that allowed the entire project to be represented by the language. The patterns and their hierarchical and temporal relationships are shown in Figure 3. The top level, INTERACTIVE NARRATIVE representing the longest time period that is broken down into individual scenes, STORYBUILDING and INTERACTIVE SCENE in the second level, and component patterns in the third level.

It is assumed that INTERACTIVE SCENE begins with a portion of the story, NARRATION pattern, before building to a viewer interaction that will allow the narrative to move forward. In reality there would almost certainly be scenes that would be purely used to develop the plot and story without requiring any viewer input. These are represented by the STORYBUILDING pattern. Patterns of Interaction [Tidwell, 1999] are not shown on the diagram, as they are considered out with the scope of this paper. All of the patterns defined are intended to enhance the quality of the interaction rather than define the interaction itself.

Pattern Example

We have adopted Borchers [2001] pattern template to structure our narrative patterns. Several aspects of this approach are appealing; firstly he advocates the 'real patterns are prose' approach using natural flowing language, avoiding bullet points and jargon. This makes the patterns more readable, and also assists those without previous experience in the discipline. Borchers also believes that parts of a pattern should not be labelled so that the prose can flow logically from one section to the next. This is also an Alexandrian concept, and serves to make the patterns look less like a concrete list to be followed, and more like the aid to creativity that a good pattern should be. A populated Borchers pattern is shown in Figure 4.

From Patterns to Prototype

Characters

The characters developed for the prototype are loosely based on *Winky Dink & You*, but are common character types in many other cartoons and children's stories. It is common in cartoons that the heroes and villains are played by the same characters in each episode. This is true of Winky Dink and Harem Scarem, Roadrunner and Wylie Coyote and many others. In the case of Wylie Coyote we know before the episode begins that he will come up with an elaborate scheme to catch the Roadrunner and that will

ENCOURAGEMENT*



...you are aware that it is time for you to interact, but are not sure what is expected of you.

If a user does not react immediately to instructions, there is a possibility the momentum of the story and the purpose of the interactivity will be lost. The nature of an interactive television broadcast implies that if viewer does not react after a certain time, they are either unclear what is expected of them, apprehensive about using the system or are watching the programme in a passive way.

In Winky Dink and You episode 'U-boot in the Moat' a mixture of dialogue and visual clues are used to encourage the viewer. In this case Winky also reiterates the instructions he has already given so that viewers who missed them the first time can still remain involved.

Long shot - Winky and Woofer, the castle and the moat.

Winky: O.K. Kids, use your magic crayon and draw some more steps just like these.

Half finished steps appear as he speaks.

Sound Effect: Ping

Winky jumps up half finished steps.

Winky: Draw the steps so they reach all the way to the top window of the castle - make them good and strong, Woofer and I will have to climb them.

Dotted line appears for child to trace.

Winky: got them- good, lets go Woofer

Winky and Woofer run up the 'steps'

Sound effect: whoosh.

Therefore: Build encouragement in as part of the story to help viewers who are unsure about interacting or who may be having difficulty. Take the opportunity of reiterating instructions in a friendly way as part of the narrative, so that those who missed or didn't grasp instructions can remain involved. Encouragement can also help keep the up the pace of the narrative- viewers can be gently reminded of activities which may be time critical.

ENCOURAGEMENT will always follow pattern INSTRUCTIONS. Depending on the outcome it may be followed by PRAISE, ENCOURAGEMENT IN RESPONSE TO DIFFICULTY or POSITIVE RESPONSE TO FAILURE.

Figure 4: An example of narrative pattern.

ultimately fail, yet will continue to scheme. The interest lies in the ingenuity of the latest crazy scheme he will develop to try to achieve his end allowing a strong basis for character development. Serialisation allows viewers a chance to become familiar with the same characters over time, a particularly important aspect in interactive narrative, as the viewer is genuinely involved in the programme, and should feel as though it is important that they foil the villain and help the hero. Several of the patterns developed during this research rely on establishing a relationship between the viewer and the characters in order to deliver their message effectively, making strong characterisation very important. The main characters used in the prototype are Colin (a young boy loosely modelled on Winky Dink), Trouble (the sidekick, loosely modelled on Woofer) and Dr. Despicable (the villain, modelled on Harem Scarem.)

Narrative

A story based around the characters was developed before interaction was even considered. As the primary purpose of interactive television is that of narrative, it was essential to verify that the story would stand-alone before developing it further. The original *Winky Dink and You* provided inspiration for the story. The premise being that Harem Scarem will commit a bizarre crime, which will be thwarted by Winky and Woofer. Similarly, in the story for the prototype Dr. Despicable has kidnapped the sun and taken her to his castle in a bid to avoid paying electricity bills. Colin and Trouble must rescue her.

Interaction

The original *Winky Dink and You* episodes each contained three or four interactions. The prototype was initially developed with extra interactive sequences, to allow user testing on several different types of interaction. The prototype was subsequently edited to be approximately the same length as a *Winky Dink and You* cartoon and to contain the same number of interactive scenes. The rough story outline was broken down into acts where an interaction would be appropriate, with each of these sections becoming a scene. *Colin and Trouble in Space* is designed as a nodal narrative [Favre, 2002], a linear story with interest added through interaction rather than an algorithmic narrative [Favre, 2002] where viewer interaction determines the outcome. The eventual outcome

of an episode of *Colin and Trouble in Space* will always be the same, but the character reactions and the outcome to individual scenes will differ depending on viewer input.

At this point we should note the difference between the prototype and a computer game. Essentially the prototype is a cartoon that offers superior engagement over a non-interactive broadcast. This means that the narrative should be as strong as a traditional cartoon, with additional elements enhancing the story, making the viewer feel truly involved. A balance has to be achieved between the narrative and the interactive elements, as there is a danger that if the interactive elements become dominant, the broadcast will become a kind of adventure game, rather than a narrative.

Although the prototype developed for this research is the equivalent of a short cartoon, there is potential to develop further episodes. Cartoons are traditionally repeated and the ideal balance would be if viewers enjoyed watching the cartoon more than once as well as tuning in for the next episode in order to assist the characters they have come to know in their next adventure.

Using the patterns

Once a draft story had been created it was then broken into scenes onto which patterns were mapped. The biggest benefit in beginning to develop the script in this way was the ability to highlight where alternative paths would be required based on viewer input. This is easily an area overlooked when designing in a purely linear fashion, but is extremely important if the programme is going to be 'viewer friendly'. There can be a tendency to believe that users will be able to complete a task without any problems, and for alternatives to be an afterthought, but using the patterns forces the scriptwriter to think about alternative paths within the narrative. Figure 5, incorporating an INTERACTION pattern to provide clarity demonstrates how the patterns were used in developing the script for an interactive scene. The complete script for '*Colin and Trouble in Space*' (<http://i-media.soc.napier.ac.uk/casestudy1/script.htm>) was developed from the brief descriptions that were made as a consequence of using the patterns. Figure 6, an excerpt from the script demonstrates how the patterns used were annotated to provide reference points when storyboarding and developing the prototype.

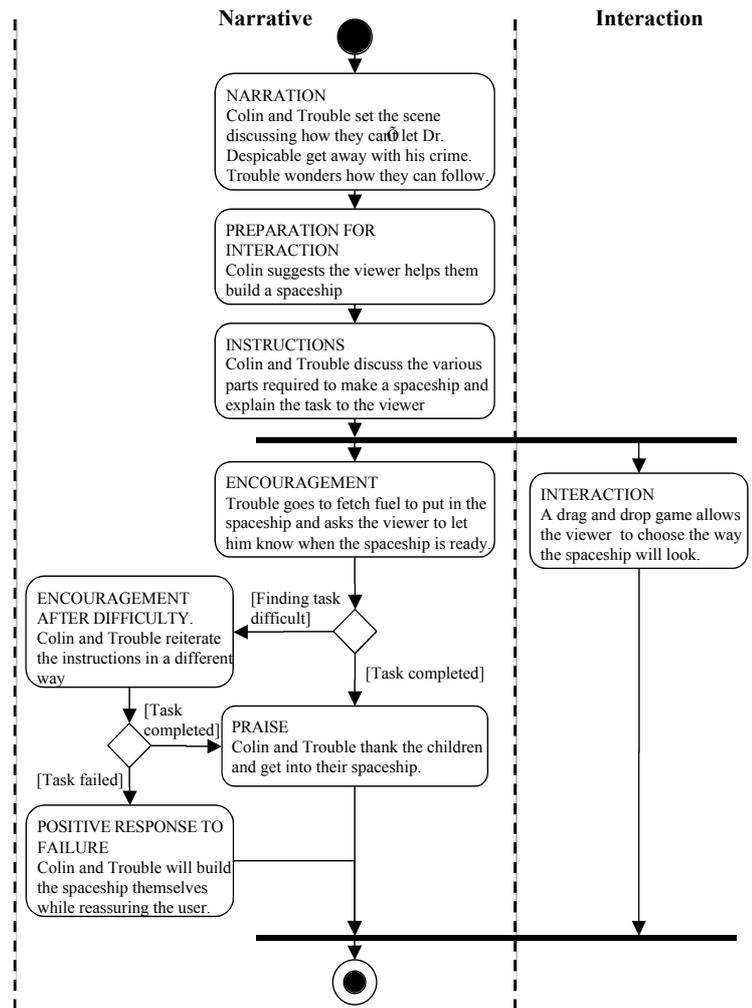


Figure 5: Applying the patterns

Discussion

We have shown that what we have described as *narrative patterns* offer a practical and meaningful approach to creating i-cartoons suitable for iTV applications. Beginning with examples from *Winky Dink* a set of patterns was developed based on Borchers' model. The patterns linked to each other naturally and developed into a small pattern language. The links between the patterns provided a strong

structure that was closely followed whilst developing the script. This structure allowed the narrative to develop naturally whilst ensuring that important elements that support interactivity were not overlooked. The patterns as presented here are very much a work in progress. They have been useful in the development of the prototype, but need to be applied to other projects to test them more fully.

NARRATION.

Close shot on Colin and Trouble's faces as they discuss situation.

Colin: We can't let Dr. Despicable get away with this the people on earth won't be able to survive without sunlight.

Trouble: But how are we going to follow him?

Colin: We'll have to get the kids to help us build a space ship.

Trouble: Come on then I think I know where we can get some things to make it.

Colin: Ah, the garage, good idea Trouble.

PREPARATION FOR INTERACTION

Opening shot in the garage. Various items on shelves.

Colin: There's bound to be some things in here to use to make a spaceship.

Trouble: Yeah, I haven't seen some of this stuff for years.

Colin: What do you think, kids? If we use this old oil drum as the body we can attach the rest of the piece to it.

Trouble: Good Idea. Kids- touch your pointer on to the thing you would like on your spaceship. Then you can drag it across to the oil drum.

Colin: We need one set of wings, and one piece for the top.

INSTRUCTION.

Trouble: And we'll need windows so we can see where we are going.

Colin: Trouble, you go and fetch some fuel so we can get this thing started.

Trouble: Okey Dokey

Trouble goes off screen and comes back

Trouble: Here we go kids; when you are happy with your spaceship, use your pointer to touch the fuel and I'll know when to put it in.

PRAISE.

If successful:

Colin: Wow, what a good job!!

Trouble: Come on we'd better hurry if we want to catch up with Dr. Despicable.

They get into spaceship.

ENCOURAGEMENT AFTER DIFFICULTY.

If the viewer is too slow:

Colin: Come on kids, we need your help, just drag and drop the pieces you would like to use on to the spaceship. O.K?

Trouble: Then press your pointer down on the petrol

ENCOURAGEMENT AFTER DIFFICULTY.

If not enough pieces are attached:

Colin: Whoops, I can't put the petrol in yet, there's not enough pieces attached- try again.

POSITIVE RESPONSE TO FAILURE.

If the user can't manage the task:

Colin and Trouble will build the spaceship.

Colin: I think we should use this.

Trouble: and this.

Colin: and then this...

Trouble: That looks good- lets go!

Figure 6: An excerpt from the 'Colin and Trouble in Space' script.

These patterns have been designed with one type of interactive program in mind, but there are many different types of television programme that may benefit from these and other patterns. Ideally the draft set of patterns would be developed into a language that would encompass other genres of interactive television. For some types of programme there may be a cross over with some of the interaction patterns already written for more traditional interface design, but many will require some patterns of their own. It is possible that focusing on narrative as a basis for patterns will allow them to be applied to other projects. Most television shows and many computer applications rely on narrative as a natural and comfortable way for people to communicate, either with each other or with an interface.

Although the i-cartoon developed is only suitable for delivery on the Internet (<http://i-media.soc.napier.ac.uk/casestudy1/index.htm>) at present, the project will be developed in the future with a view to broadcasting. The technical considerations regarding designing for television were addressed early on during development, and were easy to integrate without affecting the prototype significantly. The input device chosen would not be suitable for use with television at present, but it is ideal for use with tablets (e.g. the new MS Tablet PC), media centres and smart displays, which it is hoped will be adopted as the demand for interactive content increases. Until this occurs it is likely to be difficult to transfer the prototype successfully to broadcast iTV. Altering the software to allow input from a remote control is easily achievable, but would detract from the principle of drawing, a form of interaction naturally and enthusiastically adopted by children.

The draft pattern language requires extensive use, modification and testing to establish the validity of the patterns and applying them to different projects is an essential starting point. It is likely that there are flaws in the patterns that would only become apparent with more use. In particular it would be interesting to pass the draft patterns to developers currently working on interactive narrative and assess whether they found them as useful for their project as they have proved for the development of the prototype.

We are now currently extending our investigation of interactive media (i-media) patterns to DVD and the concept of genre. Favre [2002] proposed seven categories of interactive

narrative that we are developing as top-level narrative patterns.

Acknowledgments

This work was supported by the VOTER project whose assistance is gratefully acknowledged. Thanks also to Susan Turner for her help with the narratology section and to Iain McGregor for image capture and technical contributions.

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