

# Turbulence – A User Study of a Hypernarrative Interactive Movie

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**Abstract.** The goal of this study was to gain insight into the user experience of a recent hypernarrative interactive movie. Turbulence is a feature-length interactive narrative video and emphasising low frequency interaction, simultaneous optional plotlines and seemingly counter-agency moves. Eight participants took part in a phenomenological study of their experience, from which several directions for further study emerge.

**Key words:** User study, interactive hypernarrative, video

## 1. Introduction

Within the design space of interactive audio-visual storytelling, long interactive hypernarrative movies are not an overpopulated area. But they do have the longest history within the art form [1]. In 1967, long before the Holodeck, Radúz Činčera presented *Kinoautomat - A Man and His House* at the Montreal Expo. This unique experiment was not followed by a second one for some time, but alongside computer scientific experimentation, artists and film makers have also been coming up with their own interactive movies, such as *Tender Loving Care* [2], *Artificial Changelings* [3], *Late Fragment* [4], and others. This study attempts to gain insight into the user experience of *Turbulence* [5], a recent feature-length interactive hypernarrative video<sup>1</sup>, based on the director's theoretical model, presented in [6].

## 2. Turbulence

*Turbulence* tells the story of three friends who meet again more than 20 years after they were busted by Israeli police and made to sign incriminating confessions against one another. A love story between two of them is rekindled, disrupting their families.

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<sup>1</sup> We are indebted to Nitzan Ben-Shaul for his generosity and collaboration in studying this work. To order a copy of *Turbulence*, please contact [turbulenceltd@gmail.com](mailto:turbulenceltd@gmail.com)

Love or family – which will triumph? The user may try and influence the plot either way. For a full outline of the story and other materials related to this study see [7].

Turbulence's is presented on a PC with a touch screen. Players may press or drag objects within the storyworld, which are shown in close up and highlighted with a glow, while the soundtrack loops for a few seconds. If the user does not interact within a few seconds, action continues. In terms of subject positioning, the player of Turbulence and his/her action remain extra-diegetic, imperceptible to other characters.

There are 15 intervention points (hotspots), although each user during one viewing will typically encounter only some of them.

There are four types of intervention in relation to the story's temporal structure:

1. **User training:** the first 3 hotspots do not affect plot structure and are just a means to explore, learn to recognise the hotspots and feel a degree of local agency [8]
2. **Plot intervention:** at 3 hotspots the user can affect the plot at the story's present.
3. **Alternate plot:** at 4 points the user can branch away to explore alternate, "what if..." plotlines. This is a navigational device.
4. **Retrospective plot intervention:** within the alternate plot lines, the user can intervene to change the course of events, but this time with the knowledge that the story's present has in fact not taken this different course.

### 3. Previous Research

To the best of our knowledge, very little research has been done on user experiences of feature-length interactive hypertext narrative video. Nonetheless, some recent studies proved useful to our own work. Friess [9] presents a very controlled study of three versions of a short interactive video, created particularly for the study. The versions differ in rather small details of interface design that nevertheless yield significant changes in the experience, based on the responses of relatively a large pool of respondents (~40 per version) to a standard questionnaire. Milam et al.[10] conducted a phenomenological study of the user experience of 11 players of *Façade*. Their study was qualitative and gave rise to user generated descriptions, which the researchers then interpreted and organised to produce 16 themes.

### 4. Study Design

Turbulence was not created for this study, so a controlled experiment such as [9] was not possible. Considering the time it takes to play Turbulence through (65-85 mins.) we were concerned that a lengthy questionnaire to fill in would be very tedious. We were also concerned that such a questionnaire might frame the subjects' responses so that they fall in line with our preconceptions. In such an exploratory study of a new type of experience, we thought that semi-structured interviews were more appropriate. A template questionnaire (see [7]) ensured a common frame, but it was used by the researchers during the interviews as a script, allowing more in-depth exploration of emerging issues. This methodology was inspired by the phenomenological

methodology used in [10]. Similarly to that study, we did not set out to test strong hypotheses, but rather to identify potential hypotheses for further research.

Eight participants took part in the study. The participants were a diverse group, ranging in age between 25-49, 2 women and 6 men. All of them had academic degrees, which ensured that they had a sufficient knowledge of English (the language of the film. The interviews were held in Hebrew). Four of the participants had some practical and/or theoretical background in cinema, and three of those were also gamers (but only one of them was more than a casual gamer). The others had no special background in film, and of those, only one was an occasional gamer.

Participants were invited individually to a computer lab where Turbulence was already installed. The study included four phases:

1. A face-to-face conversation. Participants were asked some questions about themselves, their background in cinema, gaming and interactive cinema (5 mins).
2. Introduction of Turbulence's genre and interaction model. The first 30 seconds of the screening, showing the interaction model, are also part of this stage (3 mins).
3. Turbulence was played. During this phase, one of the researchers observed the participant's actions, and noted whether they have or haven't interacted in the designated hotspots or outside them, and how they interacted (65-80 mins). Right after hotspot 9 a bug occurred, causing the movie to hang. The researcher had to manually skip to the next segment (full details are available on [7]).
4. Semi-structured interviews, immediately after the screening (20-30 mins).

## 5. Analysis and Key Findings

The interviews were videotaped and then transcribed and translated into English. This produced several hundred statements, which were then read several times and interpreted, following the methodology suggested in [10]. We organised the interpreted statements into 15 themes. These themes emerged as salient from the semi-structured interviews, and are grouped here according to the analytical categories that we used in preparing the questionnaire (actual statements often touched upon more than one theme):

**Expectations:** Genre expectations; Medium expectations (Cinema vs. video games and digital media); Cultural and personal values.

**Content:** Comprehension (story information, gaps, backstory, recollection); Plausibility and believability, Empathy and identification.

**Form:** Optionality, closure, replayability, and coherence; Interaction model and usability; Flow – pacing, frequency of interaction.

**Performance and Experience:** Player Motivations, strategy and goals; Local vs. Global agency, control; Agency, surprise and dramatic engagement.

**Meaning:** Subject positioning; Meta-narrative reflection/awareness; Authorial presence and trust

The scope of this presentation does not allow us to discuss in detail all the themes that emerged from the interviews. We will focus here on those factors that seemed to most affect the participants' experience and the meaning they attributed to it.

**Expectations.** Medium expectations were difficult to pin point given the small sample. While all participants were acquainted with digital media, most of them had not had significant gaming experience. One participant, however, was an experienced interactive fiction and adventure game player. Expectations he developed during that time led him, according to his own statements, to early frustration. The cultural background of our participants was uniform (they were all Hebrew speaking Israeli academics). Values played a role in forming an attitude towards the main conflict and its resolution, but, as will be shown later, that did not influence players' strategy.

**Content.** Participants had divergent perceptions of who the protagonists were and what their conflict was. Some participants mentioned not fully understanding what had happened, or "how one thing led to another". One participant's belief that the story had an open end can be attributable to the bug reported above (see 4). Four of the participants felt that aspects of the film were contrived. One felt that there was in fact no conflict for the character he identified as the main protagonist (Sol), while another said the exact opposite. Participants had very divergent levels of empathy towards the protagonists. One attributed her "moderate" level of empathy to moral indignation: "their case didn't sweep me off my feet...there's a story of infidelity there." This may correlate with the perception that Sol was not in any moral dilemma.

**Form: Optionality, Closure, Replayability.** The interaction model of Turbulence allows the player to explore plot alternatives without having to start a new session. Participants made varying use of these navigational opportunities. Three participants made no use of the "alternate plot" options. Of those, one – the experienced gamer - did so intentionally. Another participant who made no use of the alternate plot hotspots disengaged because the movie "didn't interest him all that much". The third participant was nonetheless curious to see alternate options, as did most of the other subjects who did exploit the alternate plot device. Of those, however, one stated that he was pleased with the version of the story he watched and didn't want to spoil it with an ending he didn't like. This strong sense of closure is probably not due to the particular plotline he followed. That was shared by another participant, who was morally opposed to its ending and was curious to "play through" the other options.

**Form: Usability, pacing and frequency of interaction.** Several usability issues arose. Participants had trouble recognising where there was or wasn't a hotspot. This was especially apparent with the "training" hotspots, which most participants missed. Although one of those concluded that there were "just enough" opportunities to intervene, most participants thought there were too few hotspots. Observation showed that during the first half hour of the film most participants did indeed attempt to intervene often, also where no hotspots existed. Curiously, one participant, a film editor, was so immersed in the audio-visual flow that he regretted his early attempts to interact. He did, however, interact as much as the others did.

**Performance and Experience.** We asked our participants several questions designed to understand what motivated their behaviours and choices and whether they had formulated goals and strategies to pursue them. We expected that they would be somewhat immersed in the drama and act upon that. This was usually not the case.

We asked participants whether they had a preferred resolution to the dramatic conflict they had identified. Five did. Those who had no clear preference had no plot-related goals. One was motivated by medium exploration, perhaps with a ludic focus, because he didn't find the drama engaging. But even most of those who did formulate

a preference, still didn't act upon it. One participant said he was engaged in the dramatic conflict, but still wanted to see what happened "if things didn't go my way". One completely lost interest because he felt a lack of agency. Another said that her exploratory, ludic and drama enhancement motivations were due to the drama not being gripping enough, and more determining than her moral indignation. In one case, a subject intentionally refrained from action to maintain and relish the level of action, although the plot proceeded against her dramatic resolution preference.

Local agency – the feeling created by immediate feedback [8] - was of paramount importance to most participants. Only one identified the first "user training" hotspot, remarking: "I felt [it] would have happened anyway... this interfered with my feeling of control". Another remarked "I felt some control at the moment of interaction, but not over the entire plot" – an indication that he felt no global agency.

But lack of global agency in itself was not always a problem. We examined in detail our participants' behaviours and responses to a plot intervention hotspot in which the plot outcome was designed to go against the players' intentions. None of them seemed to mind: "it wasn't what I expected but it was like Borges, you accept that there are different options", and "I began feeling an active part of the plot, implicated. And the story felt tighter." Ultimately, participants were split as to whether interaction increased or decreased their engagement. One undecided participant said: "it forced me to think practically...I'd like to just watch, without the responsibility... but I also enjoyed the control I got ... you can act out your frustration and see 'what if', and I experienced the power and fun of changing things".

**Meaning.** Several participants mentioned their self-implication in the events of the story. One participant even reported, when asked what she would have done if faced with a similar conflict: "I did think about it. I did experience the conflict I was in myself, and I was thinking about my own situation in comparison".

Participants sometimes reported a feeling of being very much aware and critical of authorial choices while they were watching them. One participant said: "Interactivity implies the ability to direct the film, but I know it's a film, so it's interesting to compare my reflections...and those the director chose". Some of our subjects described a feeling that the film had betrayed them (or not). One subject had both in the same viewing. When events in the story's present turned against her expectations, dramatic curiosity motivated her, against her personal moral values, to accept the plot twist as a legitimate and welcome complication. Conversely, she experienced a *retrospective* plot intervention as "cheating". This may stem from a "tense confusion" (as discussed in [11], and often repeated by ludologists), resulting in a breakdown of trust, a feeling that she was being conned by being offered an opportunity to intervene that would make no difference to the story's present.

## 6. Conclusion and Future Work

What is it that drives, guides or impedes participants' interaction with an interactive hyper-narrative movie? Subjects mentioned several motivators for their behaviour:

1. Ludic, interface-driven (responding mechanically to cues, for instance).
2. Exploration of the medium

3. Exploration of the story space
4. Maintaining story flow
5. Dramatic enhancement (encouraging situations with dramatic potential)
6. Discursive (wanting to explore or challenge the author's choices)
7. Dramatic-narrative engagement

Some of these motivations are common also to linear films. Adding interactivity introduces the possibly competing schemata associated with digital artefacts such as software applications and specifically video games. To understand the effect of the high-frequency agency culture of games referred to in [12] requires further, more controlled studies with larger samples of both gamers and non-gamers, as well as heavy and light users of other digital media.

Drama enhancement was the most prevalent motivation mentioned by the participants, sometimes but not always because they evaluated the drama as not so engaging. It would be interesting to compare the level of engagement reported by a larger sample of players and viewers of linear versions of *Turbulence*. Such a study may also serve as a benchmark to answer questions about the effect of interactivity on comprehension, empathy, self-implication and other dimensions.

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