A Computational Model for Gossip Initiation

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Abstract

We are interested in creating non-player characters (NPCs) in games that are capable of engaging in gossip conversations. Gossip could for instance be used to spread news, manipulate, and create tension between characters in the game, so it can have a functional as well as a social purpose. To accomplish this we need a computational model of gossip and such a model does not yet exist. As a first step in that direction we therefore present a model for initiating gossip that calculates whether it is appropriate for the NPC to start a gossip conversation based on the following factors: The (perceived) relationship between the NPC and the player character (PC); the relationship between each of the participants and the potential target; the news value of the gossip story; and how sensitive the story is.

1 Introduction

We are interested in creating non-player characters (NPCs) with the ability to engage in socially oriented interactions. In order for this to happen, the NPCs need (among other things) social awareness and the ability engage in casual conversations, that is, conversations that are motivated by "interpersonal needs" (Eggins and Slade, 1997). One such type of conversation is gossip, broadly defined as *evaluative talk about an absent third person*. Gossip could for instance be used to spread news, manipulate, and create tension between characters in the game, so it can have a functional as well as a social purpose. For this to be possible we need a computational model of gossip and such a model does not yet exist. As a first step to accomplish this, we here propose a model for initiating gossip using Harel statecharts (Harel, 1987). The model calculates whether it is appropriate for the NPC to start a gossip conversation based on the following factors: The (perceived) relationship between the NPC and the player character (PC); the relationship between each of the participants and the potential target; the news value of the gossip story; and how sensitive the story is.

We have combined the theory of politeness (Brown and Levinson, 1987) with research on gossip structure (e.g. Eder and Enke, 1991; Eggins and Slade, 1997) applied on gossip conversations occurring in screenplays. In addition, we have used insights gained from conducting two surveys concerning the identification of gossip.

2 Background

In every social interaction the participants put a great amount of effort in face management actions, i.e., actions that serve to protect one's own and the other participants' public self-image that they want to claim for themselves (Goffman, 1967; Brown and Levinson, 1987). Gossip has been described as containing "morally contaminated information…" which can damage the initiator's reputation (Bergmann, 1993). Because of this, the initiator must make sure that the recipient is willing to gossip (Bergmann, 1993) and that the relationship is sufficiently good to minimize the threat to face.

Brown and Levinson (1987) suggest that the threat to face a certain action has in a particular situation is dependent on three socially determined variables: the social distance (SD) between the speaker (S) and the hearer (H); the hearer's power over the speaker (P); and the extent to which the act is rated an imposition in that culture (i.e., the degree to which the act interferes with an agent's wants of self-determination or of approval) (I): *Threat = SD(S, H) + P(H, S) + I*. They furthermore propose that the value of SD and P, respectively, is an integer between 1 and n, "where n is some small number" (p. 76).

Their description of I is too general to be useful for our purposes and does not take into account the participants' relationship to the gossip target, for example; a factor that we mean is essential for determining whether it is appropriate to start gossiping at all. Therefore, we start by exploring the *preconditions* for S (the NPC) to even consider a gossip initiation by calculating

the interpersonal relationship (abbreviated to ρ) between *S* and *H*: $\rho = SD(S, H) + P(H, S)$, where *SD* and *P*, respectively, is an integer between 0 and 3 (thus slightly different from Brown and Levinson's suggestion). A low ρ value means that the relationship is sufficiently good for initiating a gossip conversation. In section 4 we will discuss the additional factors that need to be considered before introducing a specific gossip story.

Previous studies (e.g. Bergmann, 1993; Eder and Enke, 1991; Eggins and Slade, 1997; Hallett et al., 2009) have shown that gossip is built around two key elements: **An absent third person in focus** (henceforth referred to as *F*) and **An evaluation of *F*'s deviant behavior or of *F* as a person.** There are some reservations concerning *F*:

- *F must not be emotionally attached to S or H*, since that would make *F* "virtually" (Bergmann, 1993) or "symbolically" (Goodwin, 1980) present.

- *F is unambiguously the person in focus*. *F* must for example not play a sub-ordinate role as part of a confrontation, self-disclosure, or an insult.

In addition, explanations are commonly (or *always,* according to Eggins and Slade (1997)) used in gossip conversations to motivate the negative evaluations – they *substantiate* the gossip.

3 Harel Statecharts

The model is presented using statechart notation (Harel, 1987), which is a visual formalism for describing reactive behavior. Statecharts are really extended finite state machines that allow us to cluster and refine states by organizing them hierarchically. States can also run in parallel, independently of each other but capable of communicating through broadcast communication. It is also possible to return to a previous configuration by use of a history state. Within a statechart, data can be stored and updated using a datamodel (a.k.a. "extended state variables").

How to read the statechart: The rounded boxes represent states, and states that contain another statechart represent hierarchical states (compound states). The directed arrows denote possible transitions between the states. Labels connected to transitions represent events and/or conditions that trigger the transition. A transition can also be "empty" (ε), such that it will be taken as soon as the state's possible on-entry and on-exit scripts have been executed. An arrow starting from a black dot points to the default start state.

4 Initiating Gossip

Bree: Tisha. Tisha. Oh, I can tell by that look on your face you've got something good. Now, come on, don't be selfish.
Tisha: Well, first off, you're not friends with Maisy Gibbons, are you?
Bree: No.
Tisha: Thank god, because this is too good. Maisy was arrested. While Harold was at work, she was having sex with men in her house for money. Can you imagine?
Bree: No, I can't.
Tisha: And that's not even the best part. Word is, she had a little black book with all her clients' names.
Rex: So, uh...you think that'll get out?
Tisha: Of course. These things always do. Nancy, wait up. I can't wait to tell you this. Wait, wait.

The dialogue above is retrieved from Desperate Housewives[1] and is an example of a typical gossip dialogue. It has a third person focus (Maisy), an evaluation ("this is too good"), and a story in which Maisy's deviant behavior is central (she has been arrested for having sex with men in her house for money while her husband was at work). Notice also that before Tisha initiates the gossip she makes sure that the social distance between the target and the recipients is sufficiently high ("you're not friends with…?").

In the model we propose it is always the NPC that initiates the gossip, assuming that the information may have a gameplay value for the player.

In order to qualify as gossip, the story must have a news value (see for example Bergmann, 1993), which in our model is stored as a parameter, `NewsVal`, with a value ranging between 0 ("common knowledge") and 2 ("recently gained information"). However, if it is indifferent for the subject that the information is revealed or if the behavior is generally acceptable within that culture (e.g. within the group, community, or society) it is unlikely that it will be regarded as gossip. In order to account for this, we have added a `sensitivity` value for the propositional content of the gossip story. `Sensitivity` is here specified to be an integer between 0 and 3, where 0 indicates a generally acceptable

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[1] Touchstone Television.

behavior. We assume that the value of `sensitivity` and `NewsVal` decreases over time.

We propose that the social distance (*SD*) can have one of the following values (with approximate correspondences): 0 for intimate relationships; 1 for friends; 2 for acquaintances; and 3 for strangers. The target is then selected on basis of the following factors assuming that there is an NPC (*S*) who is talking to the player character (PC) (*H*):

- *S* perceives that the risk of losing face (ρ) is low in the interaction with *H*, i.e., the social distance between *S* and *H* is (perceived to be) low and there is a (perceived) symmetric power relationship between them ($\rho < 3$).

- *S* has new, sensitive information about *F*.

- *S* knows *F* and believes that *H* knows, or is acquainted with, *F* too, i.e. *SD(S, F)*<3 and *SD(H, F)*<3.

- *S* does not have an intimate relationship with *F*, and believes that the same holds for *H*, i.e., *SD(S, F)* >0 and *SD(H, F)* > 0.

- *S* believes that *F* cannot hear the conversation.

The model (see figure 1) works as follows: *S* and *H* are engaged in a conversation. If $\rho < 3$, a transition to the state `InitiateGossip` is triggered (The source state is unspecified, but we can assume that the participants have greeted each other and perhaps small talked for a while before gossip is initiated).

S starts by searching for a potential gossip target (T) in the database (`Get(T,DB)`) according the specification presented previously, which is performed on entry of the state `SelectTarget`. The story must not be about *S* him/herself or about *H* (OP in the graph stands for Other Participants, in this case OP=*H*). If such a target exists in the database (DB), i.e., T≠`void` (and assuming that T=*F*), a transition from `SelectTarget` to `EstablishGossip` is activated. If there is no target that fulfills the initial criteria, the gossip is cancelled (never initiated).

The default start state in `EstablishGossip` is `GetGossipStory`, in which a search for a story about T=*F* is conducted. The search has two possible outcomes: there is a story about *F* that fulfills the criteria (`NewsVal=2` and `Sensitivity > 0`), or it fails to find such a story. If a story is found, the next step is to establish *H* and *F*'s relationship. If *S* is uncertain of their relationship, a transition is taken to the state `EstablishId`, in which *S* requests a clarification that will help to establish the social distance between *H* and *F*, for instance as a question: "Do you know *F*?" or "Have you heard about *F*". If *H* responds with a request for clarification of who *F* is, then *S* can provide more information about *F*, which is handled in `ExpandId`. If *S* believes that *SD(H, F)*=0, i.e., that they are intimately related, *S* will choose to back away from the gos-
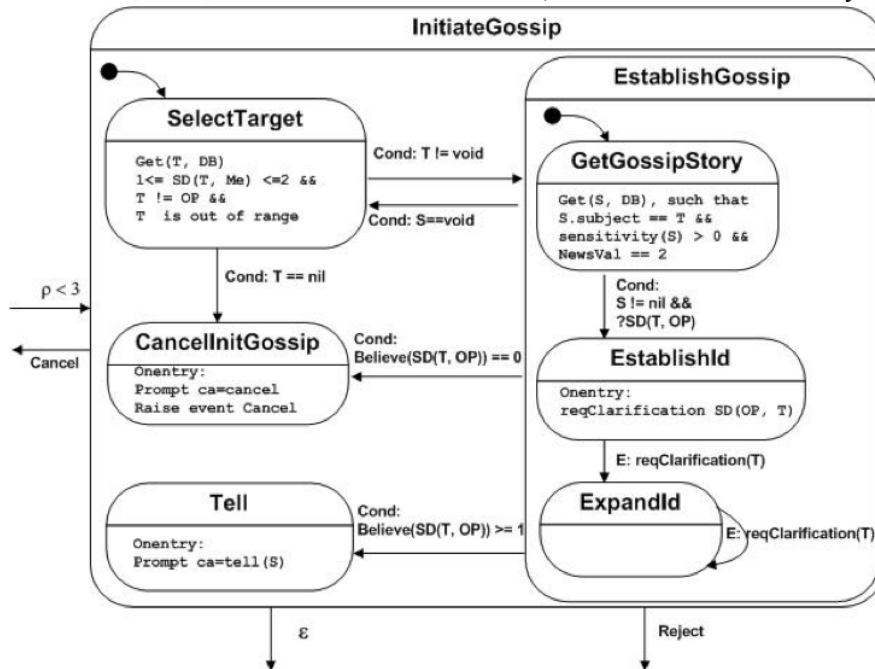

Figure 1. Model for initiating a gossip conversation.

sip and the gossip is cancelled (which corresponds to a transition to `CancelInitGossip`). Otherwise, *S* will spread the gossip (which is performed in the state `Tell`). If no story exists that fulfills the criteria, *S* will attempt to find a new target.

5 Discussion

One of the most important factors of gossip initiation is the status of the relationship between the gossipers and between them and the target. We therefore suggest that the following factors determine whether the NPC can introduce gossip at all: The (perceived) relationship between the NPC and the PC; the relationship between each of the participants and the potential target; the news value of the gossip story; and how sensitive the story is (culturally and personally). More specifically this means that the target must not be intimately related to any of the participants and that the participants must be friends or acquaintances. We have no restrictions concerning gossip between closely related participants, even if it is unclear whether it should to be considered gossip (see e.g. Bergmann, 1993). Such a restriction would be unnecessary since it just means that the risk of losing face is very low.

There are many different forms of gossip (see for example Gilmore (1978)) and many forms in which gossip can be initiated. In the model we propose here we have delimited the gossip to be sensitive news about an absent game character. The target is selected first (either by being mentioned in the previous discourse or by searching the database on entry of `SelectTarget`), but it could equally well be the story that is chosen first. There are a number of reasons why we chose the former alternative: First, even if it is the behavior that is being evaluated, it is always a person that (at least) implicitly is being judged and thereby can be damaged by the gossip. Second, the target may already be in focus or mentioned (for instance in a pre-sequence, see Bergmann (1993)), as in the following example, where the actual gossip is initiated when Jerry[2] expresses his opinion in line 3 (we have removed a sequence in which the participants try to establish the identity of the target):

1. **Jerry:** Hey, by the way, did you ever call that guy from the health club?
2. **Elaine:** Oh yeah! Jimmy.
   [...]

3. **Jerry:** Can't believe your going out with him...
4. **Elaine:** Why?
5. **Jerry:** I dunno. He's so strange.
   [...]

Third, if the initiator misinterprets the target's relation to the addressee(s), it is the initiator that is considered to behave inappropriately. Hence, by making a mistake in the selection of the target the initiator face the risk that the gossip gets back at him or her.

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[2] From Seinfeld, Castle Rock Entertainment.