

Emotion Discourse as Design Heuristic: Creating Emotional Intelligence for Virtual Narrative Agents

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Abstract

A pressing task for researchers who seek to build systems capable of emulating intelligent narrative agents is to develop a basis for ascribing situationally appropriate (and thus believable) emotional states to participants in storyworlds. In this paper, we use a natural-language narrative to examine discourse processes by which storytellers in face-to-face communication construct themselves as emotionally involved agents in narrated events, arguing that closer study of these processes may afford heuristics for system design. Drawing on techniques for analyzing emotion discourse developed in the field of discursive psychology, we describe how narratives both recruit from and contribute to *emotionologies*, or systems of emotion terms and concepts deployed by participants in discourse to ascribe emotions to themselves as well as their cohorts. Studying how such terms and concepts figure in the discourse of expert storytellers can provide a basis for enhancing the emotional intelligence of virtual narrative agents, while suggesting how end-users' emotional states might also be factored into system design.

Introduction

This paper uses a story told in the context of face-to-face interaction to examine discourse processes by which storytellers construct themselves as emotionally involved agents in narrated events. Our analysis is part of an ongoing investigation of how narrative functions across media as a cognitive structure, type of text, and resource for communicative interaction (cf. Herman 2007). Here, drawing on techniques for analyzing emotion discourse developed in the field of discursive psychology (Edwards 1997; Harré and Gillett 1994; Stearns 1995), we argue that closer study of the processes by which emotions are ascribed to self and other in contexts of face-to-face communication may afford heuristics for the design of intelligent narrative technologies. The challenge is not only to remediate in digital narrative environments the rich emotion-expressing resources of face-to-face communication (cf. Fabri, Moore, and Hobbs 2004; Imbert and de Antonio 2005). The challenge is also to accomplish this remediation by means of robust computational techniques, which map emotional responses onto classes of

agent-situation pairings.

Previous researchers such as Picard (1997) and Adolphs (2005) have emphasized the importance of factoring emotions into the design of intelligent systems. Picard (1997: 85-111) notes that applications of “affective computing” range from text-to-speech translation, whereby a story could be performed with the appropriate emotional inflections, to methods of image retrieval that might allow searches by types of affective content, to tutoring systems that might help autistic people match appropriate emotional responses with social situations. Meanwhile, Adolphs (2005) stresses that designing systems for the sole purpose of producing believable emotional responses in robots or virtual agents leaves unanswered deep questions about the structure and content of emotions themselves. As Adolphs puts it, “postulating by fiat that behavioral equivalence guarantees internal state equivalence (or simply omitting all talk of the internal states), also guarantees that we cannot learn anything new about emotions and feelings” (2005: 11).

Key ideas from discursive-psychological research, we argue, can not only facilitate the construction of systems capable of generating believable, contextually appropriate emotional states, and thus lead to applications of the kind Picard describes, but also reveal deep interconnections between storytelling and emotion. Our work suggests that narratives both recruit from and contribute to what discursive psychologists call *emotionologies*, or systems of emotion terms and concepts deployed by participants in discourse to ascribe emotions to themselves as well as their cohorts. Studying how such terms and concepts figure in the discourse of expert storytellers can provide a basis for enhancing the believability of emotions in virtual narrative agents, while suggesting how end-users' emotional states might be factored into system design as well.¹ More than

¹ For arguments against principles of system design that treat emotion or affect as information, whereby “affect is coded as a set of data to be extracted from users, classified, sorted, and reported to others,” see Sengers, Boehner, Mateas, and Gay (forthcoming), who underscore the importance of the affective experiences that emerge from users' interactions with a system.

this, however, emotion discourse in natural-language narratives can be used as a basis for building storyworld agents with genuine emotional intelligence, the design of which promises to feed back into research on the nature and functions of emotion itself.

Emotion Discourse in Narrative: Discursive-psychological Approaches

As Stearns (1995) points out, there is a basic tension between naturalist and constructionist approaches to emotion. Naturalists argue for the existence of innate, biologically grounded emotions that are more or less uniform across cultures and subcultures (Hogan 2003). By contrast, constructionists argue that emotions are culturally specific—that “context and function determine emotional life and that these vary” (Stearns 1995: 41). As Adolphs (2005) notes, however, the naturalist and constructionist positions can be reconciled if emotions are viewed as (1) shaped by evolutionary processes and implemented in the brain, but also (2) situated in a complex network of stimuli, behavior, and other cognitive states. Because of (2), the shared stock of emotional responses are mediated by culturally specific learning processes.

Discursive-psychological approaches focus on the contributions of cultural contexts to humans’ emotional life, treating “[e]motion discourse [as] an integral feature of talk about events, mental states, mind and body, personal dispositions, and social relations” (Edwards 1997: 170). Hence the concept of “emotionology,” which was proposed by Stearns and Stearns (1985) as a way of referring to the collective emotional standards of a culture as opposed to the experience of emotion itself (cf. Harré and Gillett 1994; Edwards 1997). The term functions in parallel with recent usages of *ontology* to designate a model of the entities, together with their properties and relations, that exist within a particular domain. Every culture and subculture has an emotionology, which can be construed as a subdomain of folk psychology (Baker 1999). As already indicated, an emotionology is a framework for conceptualizing emotions, their causes, and how participants in talk are likely to display them. We define *emotional intelligence*, accordingly, as a high degree of familiarity with a given emotionology, coupled with a sensitivity to the different emotionologies that may regulate speech acts and other behaviors across different (sub)cultural situations.

Further, as discussed more fully in what follows, narratively organized discourse at once grounds itself in and helps build frameworks of this sort. Competence in an emotionology (part of what we are calling “emotional intelligence”) is needed to understand stories that anchor types of emotional responses in agent-situation linkages. Conversely, the process of telling stories can itself create new linkages among emotions, kinds of actors, and acting-

situations, as in the case of innovations within the system of literary genres or urban legends that create a new emotional profile for specific kinds of places or agents. Our next section focuses on a specific illustrative narrative to explore this symbiotic relation between narrative and emotionology, and to suggest how closer study of storytellers’ attributions of emotion to themselves and others can promote the development of emotionally intelligent agents—in applications that might range from computer games and dialogue systems to text parsers and story-generation systems.

The Sample Narrative

Emotion discourse is a prominent dimension of the story used here as a case study. The story was recorded on July 2, 2002, in Texana, North Carolina, near where the events recounted are purported to have occurred. The narrator is Monica, a pseudonym for a 41-year-old African American female, who tells the story to two white female fieldworkers in their mid-twenties. A full transcript of the story, along with details about the transcription conventions used in our analysis of it, can be found at <http://people.cohums.ohio-state.edu/herman145/UFO.html>.

The narrative concerns not only Monica’s and her friend’s encounter with what Monica characterizes as a supernatural apparition—a big, glowing orange ball that rises up in the air and pursues them menacingly—but also Monica’s and Renee’s subsequent encounter with Renee’s grandmother, who disputes whether the girls’ experience with the big ball really occurred. Throughout the narrative the storyteller draws on the vocabulary of emotion, reports behaviors conventionally associated with extreme fear, and makes skillful use of the evaluative device that Labov (1972) called “expressive phonology,” which encompasses a range of prosodic features, from changes in pitch, loudness, and rhythm, to emphatic lengthening of vowels or whole words, etc. Exploring how these emotion-expressing resources fit together within an emotionological system yields potential parameters for system design. Expert storytellers afford models for how dimensions of narrative structure—including prosody, lexical choices, and the larger pragmatic situation of narrative performances—can be used to map out relationships among types of storyworld agents, kinds of narrative situations, and fuzzy sets consisting of more or less expected or prototypical emotional responses in the context of a given emotionology. In turn, systems can be designed with the goal of helping users to master (or think critically about) these same mapping relationships, whether for therapeutic, educational, artistic, or other purposes.

Dimensions of Narrative Structure as Affordances for Emotional Intelligence

Prosodic Resources

Monica deploys heightened volume and pitch and also variations in the rate of speech at key junctures throughout her narrative, foregrounding aspects of the encounter that carry the strongest emotional weight. In other words, Monica exploits properties of the medium of spoken discourse not only to highlight events (and features of events) that were the most emotionally salient, but also to construct herself as an accountably frightened experiencer of those events. Thus, in her initial, emphatic mention of the big ball, in line 10, Monica uses slowed-down speech and heightened volume and pitch, as well as a prolonged production of the [I] vowel in *big*, to underscore the impact of her first glimpse of the apparition. Then, in line 17, it is a 2-second pause that enables Monica to emphasize the frightening quality of the ball's movement as well as the intensity of her own fearful response, which she enacts performatively in the here and now. Similarly, in lines 38 and 39, Monica again uses prosodic resources to indicate what makes the ball's manner of progress so frighteningly anomalous:

(37) It's just a-bouncin behind /us/

(38) it's no:t.. > touchin the ground, <

(39) it's bouncin in the air. ... {.5}

The elongated pronunciation of not, the rushed-through production of "touchin the ground," and the use of heightened volume and pitch for not, ground, and air all reinforce the contrast between the expected and the actual mode of movement; even the rapid rate of delivery in line 38 serves this purpose, helping to accentuate the semantic content of the subsequent line.

More generally, the sound properties of spoken discourse constitute a key emotionological resource in narrative contexts, allowing first-person narrators like Monica to index percepts as more or less emotionally charged and to account for their own actions by situating them within this array of emotional valences. More than this, prosody allows first-person narrators to animate in the present their previous emotional responses; storytellers can thus establish a performative link between different phases of the self whose coherence and continuity derive in part from this ongoing process of re-performance—a process that more traumatic experiences, by splitting off the past from the present, can disrupt. Further study of prosody as an element of emotion discourse might thus be used to help design text-to-speech programs or dialogue systems that appropriately accentuate emotionally salient events, creating more immersive environments for the general user as well as a means for enhancing the emotional intelligence

among e.g. autistic users, for whom events and emotional responses can remain uncoupled.

Lexical and Pragmatic Dimensions

Monica's narrative grounds itself in an emotionology not just through prosodic performances but also at the level of individual words and more complex speech-act sequences. At the lexical level, Monica's story mirrors the way, in everyday discourse more generally, people draw on a vocabulary of emotion as a resource for folk psychology, using emotionology to make sense of one another's minds *as* minds. Thus, Monica uses an explicit emotion term (*scared*) while also employing a number of locutions that imply a frightened emotional state. In line 14, Monica reports an attempt on her part to quell her own fears; line 18 involves another self-attribution, this time one involving both surprise and fright; and lines 30-33 report a speech act produced simultaneously by Monica and Renee in response to the fear-inducing apparition:

(30) We like-...{.2} /we were scared and-/.

(31) "AAAHHH" you know=

[...]

MW: (33) > =at the same time. <

What is more, Monica recounts actions that are, in the cultural, generic, and situational contexts in which her discourse is embedded, pragmatically (inferentially) rather than lexically linked with the emotion of fear. These actions include running away from a threatening agent or event as fast as possible (34); running non-stop while being pursued (42); crying and screaming and feeling unable to breathe (45-46); and making a permanent change in one's routine in order to avoid the same threat in the future (57-60). On the one hand, these behaviors are intelligible because of the emotionology in which Monica's story is grounded. That emotionology specifies that when an event X inducing an emotion Y occurs, an agent is likely to engage in Z sorts of behaviors, where Z constitutes a fuzzy set of more or less prototypical responses. For example, police detectives were recently led to conclude that a mother had played a role in her own children's death because of her atypically gleeful behavior at their gravesite. Likewise, a discourse such as Monica's acquires (supersentential) coherence by virtue of its relationship to a larger emotionological context. The behaviors reported in the narrative can be construed as more than an agglomeration of individual acts because of the assumption, licensed by the emotionology in which Monica and her interlocutors participate, that actions of that sort constitute a coherent *class* of behaviors—namely, a class of behaviors in which one is more or less likely to engage when motivated by fear, depending on circumstances. Again, then, emotion is not an optional element when it comes to the design of intelligent narrative

technologies; rather, improperly embedding events or event-sequences in a given emotionology will decrease the coherence of the storyworld and potentially disrupt users' engagement with the system.

On the other hand, although emotionology constitutes a major resource for both the production and the understanding of narrative, stories also have the power to (re)shape emotionology itself. Narrative therapy, for example, involves the construction of stories about the self in which the emotional charge habitually carried by particular actions or routines can be defused or redirected (Mills 2005). For its part, Monica's narrative suggests how stories provide a means for reassessing the emotion potential of whole sectors of experience; just as narrative therapy allows people to prise apart emotion-action linkages that have become inimical to their psychological well-being, other modes of storytelling bind emotional responses to regions of social or physical space hitherto uninvested with such emotions. From this perspective, narrative genres can be reconceived as relatively routinized pathways for emotional investment, keyed to dominant types of emotion-action linkages. Stories of the supernatural like Monica's can be compared with Gothic tales; both involve narrative explorations of scenarios (e.g., nocturnal journeys undertaken without a sizeable cohort) for which fear may be an appropriate response. Entities or forces cast as supernatural agents can be construed, in these terms, as vehicles for building or refining emotionological systems, and for gearing those systems onto the world.

How might virtual narrative agents be used to complement narrative therapy? For example, could engagement with an emotionally intelligent system help foster, in users, more productive action-emotion linkages? For that matter, how might virtual narrative agents be used to promote awareness of alternative emotionologies—of the fact that members of different cultures express grief or happiness, pride or shame, in different ways, and that different kinds (or ranges) of triggers can be involved in each case? We suggest that expert storytellers' emotion discourse can be used to address these questions, and thereby help build systems that both possess emotional intelligence and enhance users' emotional competencies.

Directions for Further Research

As we hope to have demonstrated in our preliminary discussion, the coexistence of multiple emotionologies, and the inextricable interconnection between storytelling and systems of emotion concepts, does not rule out the possibility of designing robust narrative technologies with genuine emotional intelligence. Indeed, we hypothesize that a discursive-psychological approach can allow for a more immersive and engaging experience of affective content in cases where users and agents originate from

different (sub)cultures. Likewise, the approach might lend itself to the emulation of different patterns of action-emotion linkages across different cultures. Students studying foreign languages and cultures, for example, could use a system to generate narrative scenarios allowing them to learn native strategies for configuring forms of behavior, elements of discourse, and types of emotion.

Acknowledgments

NSF Grant BCS-0236838 supported research on this project. Also, Christine Mallinson and Tyler Kendall generously assisted us with our analysis of the story.

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