Preface: Computational Models of Narrative

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Narratives are ubiquitous in human experience. We use them to educate, communicate, convince, explain, and entertain. As far as we know, every society in the world has narratives, which suggests they are rooted in our psychology and serve an important cognitive function: that narratives do something for us.

It is clear that, to fully understand and explain the human intelligence, beliefs, and behaviors, we will have to understand why narrative is universal and explain (or explain away) the function it serves.

The coming decade promises exciting, fundamental advances in the computational modeling of narrative. Indeed, there has been a resurgence of interest in narrative in the artificial intelligence community. Despite this promise, and renewed interest, there is still great uncertainty regarding fundamental questions in the area. What does narrative do for us? What exactly is narrative? What representations are required to model it?

Our intention in organizing this symposium was to provide a forum to focus on fundamental problems of the computational definition and modeling of narrative, aiming at scientific understanding. Our interest was irrespective of technological applications, and we hoped to engage a broad audience that included not only AI researchers and technologists, but also psychologists, cognitive scientists, linguists, philosophers, narrative theorists, anthropologists, educators, story tellers, and neuroscientists. We proposed an illustrative selection of questions that we hoped could be addressed:

- What makes narrative different from a list of events or facts? What is special about the arrangement of the items in the discourse that makes something a narrative, rather than something else?
- What are the details of the relationship between narrative and common sense? Does understanding narrative first require we understand common sense reasoning?
- How are narratives indexed and retrieved? Is there a universal scheme for encoding episodes?
- What impact do the purpose, function, and genre of a narrative have on its form and content?
- Are there systematic differences in the formal properties of narratives from different cultures?
- What comprises the set of possible narrative arcs? Is there such a set? How many possible story lines are there? Is there a recipe (à la Joseph Campbell or Vladimir Propp) for generating narratives?
- What are the appropriate representations of narrative? What representations underlie the extraction of narrative schemas from the blooming, buzzing confusion of the world?
- How should we evaluate computational models of narrative?

Our focus on fundamental issues and scientific understanding is in contrast to this past decades resurgence of interest in narrative in the artificial intelligence community. There have been at least seven meetings in the past ten years on computational approaches to narrative, a full six of which focused specifically on different technological applications and motivations.

The Intelligent Narrative Technology series[1] and the 2008 Workshop on Integrating Technologies for Interactive Stories focused mainly on technology for enabling and supporting interactive narrative.

The ACM Workshops on Story Representation, Mechanism and Context[2] focused on narrative in the context of multimedia systems. The single exception was our exploratory workshop held in October 2009, the MIT Workshop on Computational Models of Narrative,[3] to which this symposium is the direct successor.

The papers included in this report represent the state of the art regarding how computational modeling can advance the scientific understanding of narrative. Their topics range broadly, as befits a subject as pervasive and varied as narrative. To illustrate the span of the approaches, there are papers on, to name just a few: mathematical proofs of constraints on computational models of narrative (Michael); what legal argumentation tells us about narrative structure

[1] Held as AAAI Symposiums in Fall 2007 and Spring 2009, and in Summer 2010 at the Conference on the Foundations of Digital Games.

[2] Held in the Fall of 2004 and 2009.

[3] Finlayson, M.A., Richards, W & Winston, P.H. (2010) Computational Models of Narrative: Review of a Workshop. *AI Magazine* 31(2), 97–100.

(Bex & Verheij); an experimental examination of the discourse structure of narrative and its cognitive effects (Sagi); and a theory of the cognitive underpinnings of narrative, couched in computational terms (Lakoff & Narayanan).

Researchers working in these areas, and many more, have much of importance to say to one another on the computational modeling of narrative. Discussion and collaboration today will promote progress and build collective momentum for tomorrow. Encouraged by the success of last years exploratory workshop, this symposium was organized with the express purpose of providing a forum for lively discussion and broadly-based collaboration among researchers from diverse disciplines. We expect that it will help forge a lasting community and significantly advance us toward finally understanding, from a computational point of view, the phenomenon of narrative.