Chapter 3
Designing a Socially Open Narrative Generation System

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ABSTRACT

The authors propose the design of a Socially Open Narrative Generation System (SONGS) that co-creates a collection of diverse narratives from a narrative generation program and people. This is a challenge of the social application of narrative generation technology used for vitalizing the social activity of producing and sharing narratives. The key idea is to connect and unify individual narrative productions by many agents, including a computer program and many humans, via a collection of narratives produced and accumulated by these agents. At the same time, SONGS is the practice of a computational approach to narratology as a model for the social process of narrative production. This chapter describes the key concepts and mechanism design of SONGS with several experimental programs.

INTRODUCTION

Narrative is a universal form of human knowledge and memory, and a strong way for people to communicate knowledge and information in their society. The computational modeling for narrative generation and understanding is a key topic for the next information society. Such modeling will contribute to the creation of human-friendly information technology and culture development. The fundamental interest of this study is to explore the possibilities of the social application of narrative generation technologies.

This chapter proposes the design of a Socially Open Narrative Generation System (SONGS) that will run on the Web as a space for co-creating a collection of diverse narratives from a narrative generation program and many humans. The ultimate goal of this study is to vitalize the social activity of producing and sharing narratives. Its long-term vision includes, in particular, the creation of a new type of platform

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for expanding and supporting creative activity and a content industry with computational narrative creativity. At the same time, SONGS is the practice of a computational approach to narratology as a model for the social narrative production process.

The remaining part is organized as follows. First, the authors provide background information on intelligent information technologies for narrative. Second, the authors propose the basic design of SONGS. Third, in the subsequent two sections, the authors describe the two main components of the narrative generation and interface parts. Finally, the authors discuss future works and conclude the chapter.

BACKGROUND

This section takes two perspectives for providing background information. The first subsection reviews the history of the studies on narrative generation systems. For further information in this area, refer to the "Introduction" chapter of this book by Ogata or other surveys, such as Gervás (2009). The second subsection discusses the significance of narrative and narrativity for artificial intelligence (AI) and informatics.

Narrative Generation System

Narrative generation systems, or the computational modeling of narrative creativity, are a challenging AI topic. The fundamental objectives include the computer implementation of narrative creativity and elucidation of the human narrative ability or narrative nature. In the early stage, since approximately 1970s to 1990s, researchers attempted to apply AI methods to narrative generation models. These studies are broadly divided into three approaches. First, several researchers attempted to model the story generation process as the planning of character actions directed by goals, emotions, or other bases (Meehan, 1980; Okada & Endo, 1992; Riedl & Young, 2010). Second, the formulation of generative rules or schemes for narrative structures were addressed (Pemberton, 1989; Lang, 1999; Bringsjord & Ferrucci, 1999). These are mainly rooted in a cognitive model of the story scheme (Rumelhart, 1975). The third approach was derived from the framework of case-based reasoning (CBR) (Riesbeck & Schank, 1989). In this approach, narrative generation is formalized as the transformation or adaptation of a previous narrative or case to fit the current problem (Turner, 1994; Peinado & Gervás, 2005; Swanson & Gordon, 2012).

Since approximately 2000s, several researchers have introduced narratology—the theory of narrative mainly inspired by structuralism—to narrative generation studies. Ogata (2002, 2004a) proposed a research methodology called "expanded literary theory" that aims to create synergy between narrative generation technologies and narratology. Gervás, Lönneker-Rodman, Meister, and Peinado (2006) also discussed the importance of interdisciplinary approaches for both disciplines of AI and narratology. In this movement, the morphology of the folktale by Propp (1968) has been applied to several studies as a model or schematic knowledge of story composition (Ogata & Terano, 1991; Peinado & Gervás, 2005; Imabuchi & Ogata, 2012; Gervás, 2015). In addition, narratology provided a distinction between story—"[t]he [content] plane of [narrative]" (Prince, 2003, p. 93)—and discourse—"[t]he [expression] plane of [narrative]" (Prince, 2003, p. 21)—to narrative generation studies. Whereas most of the early systems focus primarily on the story aspect, several recent studies have applied the narrative discourse theory by Genette (1980) to the modeling of narrative discourse composition (Ogata, 2004b; Montfort, 2007; Bae, Cheong, & Young, 2011; Akimoto & Ogata, 2012, 2013).