Toward a Computational Model of Focalization in Narrative

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ABSTRACT
Focalization is essential to narrative discourse. Perspective takes functions as a vehicle to restrict narrative information to the eye of a character, allowing the audience limited perception for a particular effect. This paper briefly describes the work in narrative theories on focalization and our computational model of focalization in narrative generation using an Artificial Intelligence planning-based approach. Keys to the story generation with focalization are the use of distinctive knowledge (i.e., distinctive plan libraries) and the concept of focalizing factors for each focal character in the story.

Categories and Subject Descriptors
J.5 [**Arts and Humanities**]: Literature.

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Algorithms, Theory.

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1. INTRODUCTION
A storyworld (or a *fabula* in our terminology) underlying a particular narrative contains every event that happens in the story. Hence, it is nearly impossible to convey the whole storyworld to the reader. Instead, the story author delivers parts of the story with emphasis on specific events, and the information filtering is a function of *focalization* [5]. Furthermore telling from a particular perspective serves as a window through which the reader/audience can view or perceive the storyworld events [8]. As a result, the reader's perception of what happened in the story can be limited and focused through focalization.

The concept of 'focalization' is an important narrative tool and has been used and developed by many narrative theorists [2][5][6][7][13][14]. Toolan [14] defines focalization as "a limited perspective in narrative, a viewpoint from which things are implicitly seen, felt, understood, and assessed." Through focalization the reader can have better and detailed knowledge about story events, including what particular characters think and view the story events. Focalization also needs to be differentiated from narration, which means "the voice" of narrative. Rather, as Genette agreed in his book [5], focalization is more like "focus of narration", which we will use as a working definition of focalization in this paper.

Distinctions on focalization can be made depending on whether the *focalizer* — the agent whose view orients the narrative text — is located in the story or outside the story [5][14]. The former is referred to as *internal focalization* and the latter as *external focalization*. Internal focalization, furthermore, can be refined into three types as suggested by Genette [5]: (1) *fixed* in which everything is told from the point of view of a particular character in the story, (2) *variable* in which story events are told from the point of view of variable characters in the story from character to character consecutively, and (3) *multiple* in which story is presented from the different viewpoints of multiple characters in the story respectively. Since one single story is told repeatedly with different character perspectives in *multiple internal focalization*, the reader can obtain more narrative information (experience) incrementally as the story unfolds from new vantage points [5]. In addition, *multiple internal focalization* can create disparity in their knowledge among the characters and the reader which in turn may invoke the reader's cognitive emotions such as suspense (when the reader knows more than the story character) or surprise (when the reader knows less than the story character) [1][4]. It will also contribute to the generation and resolution of conflicts stemming from different perspectives. While internally focalized narrative can present the focalizer's thought and feelings, only those story events and facts accessible through observation can be described in external focalized narrative.

Our work focuses on a computational model of internal focalization (especially multiple internal focalization). To this end we model the internal character's focalization process using a planning-based approach.

2. RELATED WORK
Focalization has been extensively researched by narratologists [2][5][6][7][13][14]. In particular, Genette [5] distinguishes focalization from narration through the distinction between "who sees?" and "who speaks?" The use of focalization as an effective device to enhance story is often found in literary works and films, portraying specific events through the eyes of a particular character in the story. In Jonh Fowles's 1963 book *The Collector*, for example, the story is narrated in turn by two main characters, Clegg and Miranda, with their own perspectives. As a result, the reader can experience the two opposite situations sequentially – one with the mind of the murderer and the other with that of the victim. In films, such as Rashomon (1950, directed by Akira Kurosawa), multiple internal focalization is used as a powerful

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narrative tool to represent how a story can be multiply viewed and constructed depending on the focus of narration.

Meanwhile computer-based story generation has paid little attention to focalization. As an attempt to use focalization in interactive storytelling, MacIntyre and Bolter [8] present a system that shows different aspects of a single plot, viewed from characters that the user selects. The results suggest that stories narrated from different orders of perspectives would yield different experiences to the viewers. Montfort [10] presents Curveship, a text-based interactive fiction system which contains a story simulator, world models, and a narrator component. As the player, an adventurer, interacts with the system through textual input, the system updates the world models with the changes in the underlying simulated world. Each world model is associated with a potential focalizer and only those events that can be perceived by the focalizer are recorded in model. For instance, the sentence "The pirate waved. Meanwhile, you went to an unknown location." recounted from the adventurer's perspective can be told as "You waved. Meanwhile, the adventurer walked to the building's interior." when focalized by the pirate. The discrepancy between the adventurer's and the pirate's world models (e.g., knowledge, perception) allows the description of the location as unknown to the adventurer, and as known to the pirate respectively.

As a planning-based approach Porteous et al. [11] present a meta-level narrative representation to generate stories from different perspectives in multi-agent interactive storytelling environments. In their model, a baseline plot is represented as a network of nodes, where each node contains point of views (PoVs) and constraints. When a specific PoV is selected, the story generator traverses the network and selects a series of constraints associated with the chosen PoV. Those constraints serve as story goals which are further decomposed into primitive actions to constitute a story, being told from a specific point of view. The use of PoV in their work serves as a high-level authorial goal to build a consistent story by maintaining the balance between characters. Their model, therefore, does not particularly aim at evoking particular effects (e.g., surprise, suspense) through focalization.

3. OVERVIEW AND DISCUSSION

3.1 Overview

In the planning-based story generation [11][12][15], a story is represented as a plan that describes the actions of the story's characters. In our approach a plan is composed of a series of plan steps and their temporal and causal relationships where each plan step corresponds to an event. To represent the knowledge of an agent in a given domain, a set of operators is defined as a plan library. Each operator in a plan library has its unique name, a set of preconditions and effects, and a set of variables that shall be instantiated during the planning process. When a planning problem (i.e., the initial state and goal state of the story) and plan operators are provided as input to a planning system, the planner searches for a sequence of actions (i.e., a plan) that satisfies the goal state starting from the initial state. Then, the resulting story plan can be transformed into various narrative media forms (e.g., text, film, 3D animation) through surface realization process.

Most planning-based story generation systems implicitly employ either zero focalization or external focalization [5][13]. In zero focalization system, a story is narrated from the omniscient perspective of the system which can access any objects and events over narrative time. In external focalization system, the system focuses on the behavioral events and happenings occurred in the story from the perspective of external focalizer, neglecting to portray the characters' inner mental states. In the story generation systems using either zero or external focalization, plan libraries are often shared among characters and the system, which can make it difficult to tell a story from a character's point of view distinct from other characters' perspectives.

We propose a computational approach to the narrative generation with focalization (particularly multiple internal focalization) by using the differences of plan libraries of the story characters. We classify focalization from the discrepancy in multiple characters' plan libraries into three categories as follows:

- Case 1 : Multiple characters' use of different *operators*
- Case 2 : Multiple characters' use of different *preconditions* for the same operator
- Case 3: Multiple characters' use of different *effects* for the same operator

In Case 1, multiple characters can apply different operators in the same situations (i.e., the same preconditions and effects) due to various reasons (e.g., differences of beliefs, preferences, knowledge, skills, emotional status at the moment, etc.). For instance, suppose Character A is a rational adult and Character B is a lonely girl with vivid imagination. While Character A applies practical operators to achieve the given goals, Character B may apply non-practical operators to solve (or figure out) the same problem. In Case 2, multiple characters can apply different preconditions for the same operator. For example, in the plan library of Character C, say, a devout old lady, an operator *HaveMeal* has a precondition of saying-grace-before-meal. On the other hand, in the plan library of Character D, an atheist, the same operator *HaveMeal* does not have the precondition of saying-grace-before-meal. In Case 3, multiple characters can apply different effects for the same operator. For instance, if Character E has arachnophobia and Character F does not, the same operator *SeeSpider* would have different effect in their plan library.

In the narrative with *multiple internal focalization*, the same events are repeated through the eyes of different focal characters. As a result, some events are shared mutually by the focal characters; some are not. The same events that occurred to all focal characters can be explained by the use of some common plan libraries which belong to all the focal characters. Likewise, the non-shared events can be explained by the use of some distinct plan libraries that are not shared by every focal character. The common events help the reader recognize that the iterated stories are actually based on the same events; the distinct parts give the reader new information despite the iteration. Accordingly, manipulation of the portion between the shared events and the non-shared events will be important in multiple internal focalization. Each focal character, given a partial story plan consisting of the shared events, will try to build a complete plan by filling up a missing part on the basis of the distinct plan libraries.

Rimmon-Kenan [12] characterizes focalization in terms of three different facets – perception, psychology, and ideology. First, the perceptual facet involves the focalizer's perception such as seeing, hearing, and smelling. The perceptual facets can be computationally controlled by determining the events and happenings occurred to the focalizing agent. The externally focalized system would narrate the perceptual facets that the focal characters are experiencing in the story. Second, the psychological

facets need privileged access to the cognitive and emotive status of the focalized. The internally focalized system can tune the psychological facet of focalization depending on how much cognitive and emotive information is considered when encoding preconditions and effects of plan operators. Last, the ideological facets deal with a character's conceptual views of the world. The ideological facets can be explained as a kind of personal traits which are inherent or developed over time, influencing the focalizing characters' action selection in the story. In order to explain the notion of the three facets of focalization which enables the focal characters' different plan libraries, we are developing the concept of *focalizing factor* which can be set from the input by the author.

The focalizing factor reflects what the focal character is focused on or what has in his or her mind absolutely during narrative time. It can represent the character's belief, desire, hidden intent, or the character's inner state of mind at the moment, which critically affects on the selection of action operators to achieve the given goals. While the implementation details of focalizing factors are determined by the system designer and the author, the focalizing factors shall be responsible for building consistent stories by the focal characters. We have performed an analysis of Kurosawa's film Rashomon (1950) using this model and found it effective at capturing our notions of focalization. Unfortunately, space limitations prevent us from describing the example in detail.

3.2 Discussion

With our approach to the use of different plan libraries for each focal character, the whole narrative consisting of the stories generated from each focal character may be inconsistent (i.e., the summation of each focal character's story may not make sense as a whole when it has some conflicts or contradiction). This inconsistency among the repeated stories with different focalization arises especially when the focalizer is an unreliable narrator – that is, the focalizing character does not tell or see the truth (purposely or accidentally) for various reasons (e.g., Akira Kurosawa's film Rashomon). Although the use of unreliable narrator potentially makes the reader puzzled or annoyed, the appropriate use of unreliable narrating character will be beneficial for creating a plot with suspense and/or surprise. For example, in his film *The Usual Suspects* (1995), Bryan Singer employs an unreliable narrating character along with a multitude of different focal characters, resulting in a brilliantly suspenseful movie with a surprising ending.

While multiple internal focalization can give detailed and various explanation about a complicated event by iterating the same story with different perspectives, it can also make the reader bored or annoyed due to the iteration. To make the reader keep paying attention to the story, various approaches can be made. For example, a variety of different camera shots/techniques can give variation to the iterated stories. The use of different background music will also keep the reader/audience from perceiving the same experience.

In summary, this paper briefly presents a computational model of focalization using a planning-based approach where plan libraries can represent the knowledge disparity among the story characters. We also introduce the notion of focalizing factors which potentially control the story generation according to the focal characters. As future work, we plan to build a discourse system that can generate multiple stories dynamically with different focalization, which we believe would be beneficial for the interactive storytelling and games.

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