Story Units of the Types of Japanese Folktales and the Combination with a Noun Conceptual Dictionary

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Abstract

Story units in this study are the units described in Common Lisp based on the types of folktales Seki et al. analyzed. In particular, we have been developing story units to use in our narrative generation system, an integrated narrative generation system (INGS), as a type of narrative technique that generates a narrative structure based on the synthesis, transformation, expansion, etc., of a narrative structure. Story units function in INGS in combination with conceptual dictionaries. We attempted to combine story units with the verb conceptual dictionary. The objective of this study is combination with the noun conceptual dictionary. As the main constitutional elements of each story unit are verb and noun concepts, combining them with the noun conceptual dictionary enables the substantial function of story units based on the types of Japanese folktales as a group of narrative techniques in the INGS.

Keywords: Japanese Folktales, Narrative Generation, Noun Conceptual Dictionary, Story Generation.

1. Introduction

We have developed an integrated narrative generation system (INGS) [1, 2] that organically combines event generation using a conceptual dictionary [3] with narratology-based generation via a system [4, 5] based on Propp's theory [6] and Genette's narrative discourse [7].

For story generation using narrative structure, we targeted Japanese folktales. Ito organized folktales according to the Seki, Nomura, and Oshima's structure [8] and created folktale programs from the structure [9, 10] that we termed story units (Note: Volumes 1 to 10 contain the folktales Seki collected, and Volume 12 is a collection of contributed papers on folktales). Ito combined verb concepts with verbs in the created story units [11]. Ito analyzed nouns in noun phrases across the types of folktales. According to the results of the morphological analyzer MeCab [12], he classified noun phrases into 18 items and tried to combine nouns with noun concepts in the story units [13]. The goal of this study is to summarize Ito's results [13] and approach these issues and unresolved areas.

2. Our Study of Japanese Folktales and Story Units

A story unit is the knowledge used to generate a story,

and it is a record of the story's structure. Fig 1 shows an example of the story unit. We created story units based on Seki, Nomura, and Ōshima's types of folktales [9, 10]. To make the story units available for story generation, we connected verbs and verb concepts in the created story units [11]. This made it possible to generate the structure of the events in the story. However, the story units did not bind to nouns.

```
(motif0669 (鬼の面[demon-mask]
  (被る 1[put-on] 見る 1[look] 逃げる 1[run-away]
  (or (取る 1[take] 帰る 1[go-home]) なる 1[become])))
        ((1 (event 被る 1[put-on] (agent (&sc 女[woman]))
        (object (&sc 鬼の面[demon-mask]))
        (location (&sc 山[mountain])))))
          (2 (event 見る 1[look]
        (agent (&sc 化け物[monster]))
        (counter-agent (&sc 女[woman])))))
          (3 (event 逃げる 1[run-away]
        (agent (&sc 化け物[monster])))))
          (or
          (4a
           (event 取る 1[take]
        (agent (&sc 女[woman]))
        (object (&sc 宝物[treasure])))
           (event 帰る 1[go-home]
         (agent (&sc 女[woman])))))
          (4b (event なる 1[become]
        (agent (&sc 女[woman]))
        (to (&sc 化け物屋敷の主人
           [host-of-monster-house])))))))
```

Fig. 1. Example of a story unit.

3. Content and Structure of the Noun Conceptual Dictionary

3.1. *Conceptual dictionaries*

The INGS has a conceptual dictionary [3]. Conceptual dictionaries are mainly referenced to generate events that comprise a story. There are noun, verb, and modifier conceptual dictionaries (adjective, adjective verb, welfare). This section explains the noun conceptual dictionary.

The noun conceptual dictionary has 5,809 intermediate concepts and 115,769 terminal concepts. The intermediate concepts indicate the classification of noun concepts, and the terminal concepts indicate the nouns that appear in the story. The hierarchical structure of intermediate concepts has 13 levels.

3.2. *Details about the noun conceptual dictionary*

Next, we provide a detailed description of the noun conceptual dictionary. The subordinate noun concepts that an individual intermediate noun concept can have are (1) intermediate noun concepts only, (2) terminal noun concepts only, and (3) both intermediate and terminal noun concepts. Thus, a hierarchical structure is formed. In addition, general nouns and proper nouns have different hierarchical structures. However, the description format is the same.

In addition to the symbol shown in Fig. 2, the noun concept corresponding to "terminal" is associated with the story unit nouns.

"Depth" indicates the position in the noun concept dictionary's hierarchical structure, which can contain values from 1 to 13.

"Hype" indicates an intermediate concept of parent.

"Hypo" refers to intermediate concepts of children.

"Terminal" shows intermediate concepts of children.

"Frame" does not currently have a meaning.

```
([Noun]
    (hierarchy
     (depth [Number])
     (hype [Intermediate noun concept])
     (hypo [Intermediate noun concept])
     (terminal [Terminal noun concepts]))
    (frame nil))
```

Fig. 2. The structure of an intermediate noun concept.

4. Combining Story Units and the Noun Conceptual Dictionary

Ito [13] attempted to combine nouns in the story unit with a noun conceptual dictionary. As a result, 3,695 nouns were combined with noun concepts.

The following is an explanation of the challenges of combining the types of folktales and noun concepts. There were 3,695 noun phrases across types of folktales. Of these, 2,641 noun phrases were mapped to the noun concepts. The rest are noun phrases that indicate the content of the characters' speech, such as "My horse is big," and here, the content of the speech is recorded in the story unit.

There are two types of noun phrases: single nouns, such as “snake” and “bull,” and nouns with modifying words, such as “good food.” The former can be examined directly in conjunction with the noun concept. In the latter case, we omit the elements that modify the word and examine noun concept binding. In any case, if the corresponding noun concept does not exist in the noun conceptual dictionary, we consider adding a new noun concept.

- In addition, it is important to consider the following. Use of language notation dictionaries: In Japanese, sentences are written using multiple types of characters. The Japanese language uses several kinds of characters to write sentences, so there are several ways to write a word. In Ito’s work [13], noun concepts were not checked using a language notation dictionary for multiple notation methods.
- In this paper, we would like to introduce the “noun concept” and the “proper noun concept.”

5. Conclusion

In this paper, we summarized the issues that arise when combining story units created from different types of folktales with noun conceptual dictionaries. In the future, we will address the story unit nouns that have not yet been combined with the noun conceptual dictionary.

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Authors’ Introduction

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