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VISUALIZATION OF THE SYMPATHY INTERACTION
BETWEEN ARTICLES AND THE READER

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The author's peculiarity in Ekuni's short story *Duke* is visualized in the reader-story
fusion world by analyzing the conversation; the inner, direct and indirect speeches. Voices
and sounds as conversations and onomatopoeias play an interesting role in her story
world. Structures of expression in conversation in her two books are visualized by wavelet
multiresolution analysis. In this study, the visualization of *Duke* is compared with that
of *Rakka-suru Yugata*. As a result, the author's peculiarity and literary genre differences
are extracted.

Keywords: Visualization; wavelet multiresolution analysis; author's peculiarity;
structures of expression in conversation.

AMS Subject Classification: 68R99

1. Introduction

The peculiarity of Ekuni's long story *Rakka-suru Yugata* (Ekuni, 1996) have been extracted previously by wavelet multiresolution analysis (Morohoshi *et al.*). In this study, the author's peculiarity have been investigated by analyzing the conversation in Ekuni's short story *Duke* (Ekuni, 1989). Focusing on the usage of conversation, the peculiarity of storytelling has been clarified.

Kaori Ekuini is one of the most popular writers among young women in Japan. Her works are characterized with fantastic and mysterious atmospheres. This is caused by her own way of choosing words, and, expressing character's voices and sound as onomatopoeias. To understand her world, it is important to feel the characters' voice and sounds. These characteristic ways of expression, like conversation style and sounds, are set as keywords in this study. By applying wavelet multiresolution analysis, the structure of conversation style of her works are extracted and visualized.

In this paper, *Duke* and *Rakka-suru Yugata* are examined. These two stories suggest the first person's thoughts and emotions moved by the loss of an important partner. The plots of each story are similar, but the story length is quite different between that of *Duke* and *Rakka-suru Yugata*. Comparing the two stories, her peculiarity of structure produced by her conversation style are clearly visualized (Morohoshi *et al.*, 2002).

The study also compares the structures between the two kinds of literary works by the same author. If a similar structure is extracted in this study, then the similarity indicates the characteristic way of this author. On the other hand, if a different structure is extracted, then that is caused by the differences of the literary genre. We have succeeded in extracting three similar structures and one different one.

2. Method of Analysis

2.1. *Evaluation of text data*

In order to apply the discrete wavelet analysis, it is essential to set up the object vectors, which are composed of the numerical values. We count the frequency of evaluation points listed in Table 1 in each of the sentences. A part of the direct speech is counted as one sentence if it is concluded with any number of sentences.

Duke is a short story about the girl who lost her dog. The day when the dog died is the focus in this story. The lady Watashi (the first person pronoun in Japanese)

Table 1. Evaluation reference.

Evaluation	Standards for classification
1	Inner speech
2	Indirect speech
3	Direct speech
4	Description

has met a boy Shonen (this means "boy" in Japanese) in the morning when her dog died. Watashi spent all day long with Shonen walking around Tokyo. Then, Watashi knew Duke appeared as Shonen in the last part of the story. *Rakka-suru Yugata* is a novel with a first person narrative. The main character Rika has been living with her boyfriend Kengo for eight years. This story starts the day of Kengo's departure. Instead of Kengo, Hanako who was loved by Kengo has settled in Rika's studio. The main plot describes the story of Rika's broken heart, but this process became complicated by Hanako.

Each sentence reflects on the layer in the story directly. Figures 1 and 2 show the data evaluation results through the entire story. By considering the results in Figs. 1 and 2, numbers of interactions inside the reader's mind can be observed while reading the book. Usually the reader is on the description (evaluated level 4) which consists of the real world in the story. In addition, there are many parts of direct speech (evaluated level 3) in this book. These two layers are forming the real world in the story. Any reader who reads these parts easily accepts the real world in this book. On the other hand, while reading the heroin's inner speech (evaluated level 1), the reader does not exist in the real world in the story. The reader identified
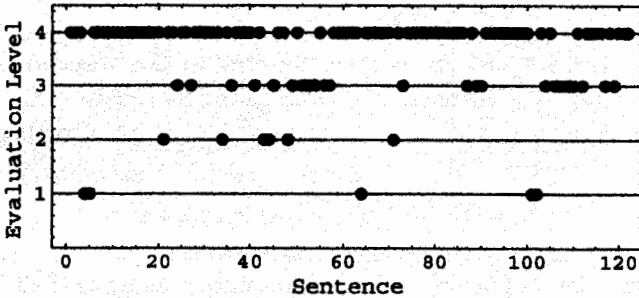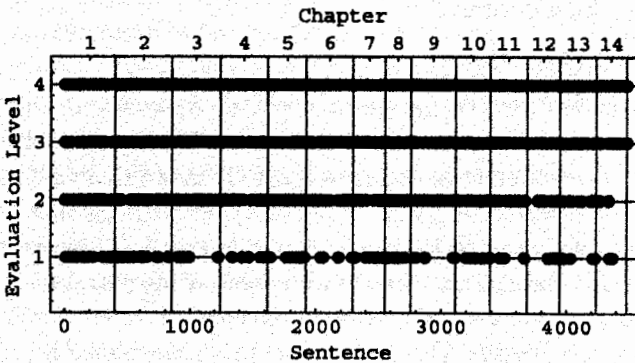

Fig. 1.   Layers in *Duke*.

Fig. 2.   Layers in *Rakka-suru Yugata*.

with the heroin thereby; her inward thought is not concerned with the real world in the story. Furthermore, when reading the second level sentence, the reader has already mixed up the real and that of the heroin's inner world, because indirect speech contains I's expectation.

2.1.1. *Wavelet analysis*

To extract the peculiarity of this story, the wavelet multiresolution analysis is applied to the evaluated data vectors, S_i, $i = 1, 2, 3, 4$, shown in Figs. 1 and 2, because the multiresolution analysis classifies the evaluated data into the low to high levels variations.

The vectors, S_i, $i = 1, 2, 3, 4$, are composed of binary (0 or 1) elements. If an evaluation reference applied to a sentence, then the element is 1. Otherwise, it becomes 0. In the present analysis, the evaluation references are assumed to be independent of each other. This means that the wavelet transform can be applied to S_i, $i = 1, 2, 3, 4$, independently. When we carry out the wavelet analysis, the number of elements in vector S_i, has to be composed of the power of 2 elements. So that, after adding zero elements to S_i, $i = 1, 2, 3, 4$, the wavelet transform is carried out, as given by

$$S_i' = WS_i, \quad i = 1, 2, 3, 4, \tag{1}$$

where S_i', $i = 1, 2, 3, 4$ are the wavelet spectra to the respective evaluations. Moreover, W in Eq. (2.1) denotes a wavelet transform matrix. S_i, $i = 1, 2, 3, 4$ can be divided into several levels according to the nature of orthogonal wavelet transform viz,

$$S_i = W^T \sum_j [S_i']_j, \quad i = 1, 2, 3, 4, \tag{2}$$

where j refers to a level of the wavelet multiresolution analysis (Saito, 1998).

The level of the wavelet multiresolution analysis makes it possible to visualize the transition states of the reader's mind from average to local viewpoints.

3. Results and Discussion

3.1. *Elements of this story*

Applying the wavelet multiresolution analysis, these works are divided into the storyline and the author's characterizing techniques. Figures 3 and 4 show the result of level 0 of the wavelet multiresolution analysis. It shows that the main element of these stories is the description (evaluated level 4). This means that the description has an important role in her works. In addition, there are many parts of direct speech (evaluated level 3). Evaluations 3 and 4 are based on the character's everyday life. Thereby, balances in conversation and narration constructs her worlds, especially in *Duke* and *Rakka-suru Yugata*. On the other hand, indirect speech (evaluation level 2) and the heroin's inner speech (evaluated level 1) are minor elements in these stories. These are her characterizing techniques to describe voices and sounds.
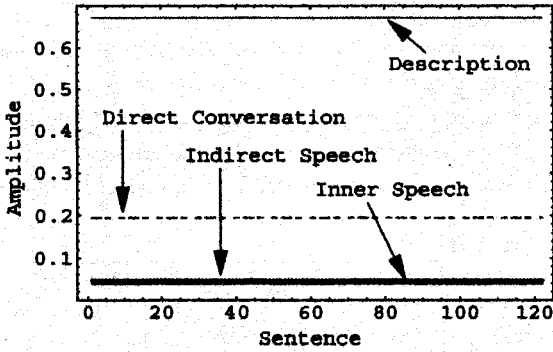
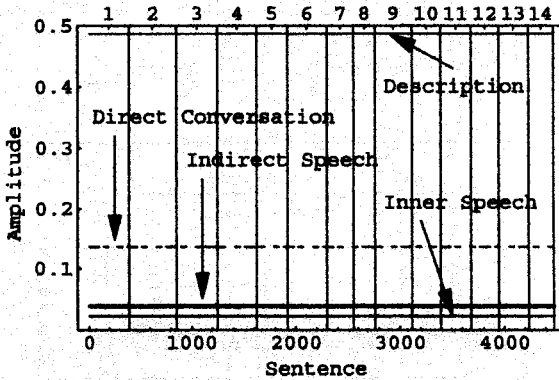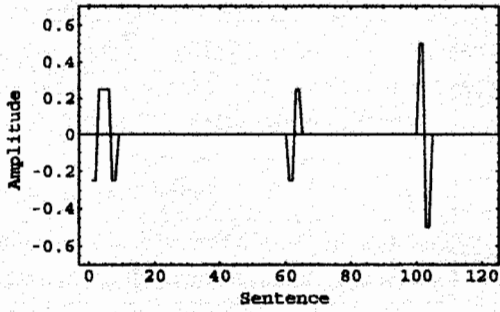Fig. 3.   Level 0 of the wavelet multiresolution analysis: *Duke.*

Fig. 4.   Level 0 of the wavelet multiresolution analysis: *Rakka-suru Yugata.*

3.2. *The structure of the story*

Figure 5 shows the results of level 6 *Duke* of the wavelet multiresolution analysis, and, Fig. 6 shows the result of level 9 *Rakka-suru Yugata.* At the beginning of *Duke*, there are some inner speech sentences. Then, the description starts to explain the background about this story. *Duke* is an I-novel, which means that this story starts from the first person's point of view. It shows the same tendency in Fig. 6. That is the peculiarity of the author ushering the readers to her story world.

In the case of *Duke*, the first half of the story is constructed by description and direct speech. Furthermore, there are same indirect speech sentences at intervals. Indirect speech belongs to the first person because it includes the first person narrative. Thus, this regular structure creates a rhythm that allow the readers to enjoy the story and help them to establish her story world.
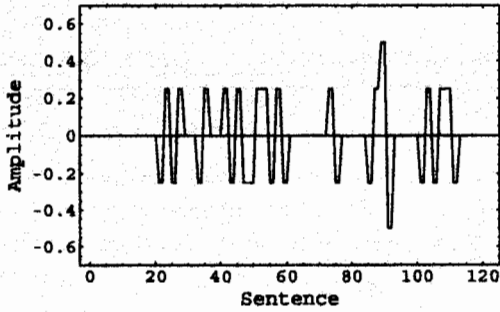
There is a second peak of inner speech in the middle of the story in Figs. 5(a) and 6(a). Reading inner speech sentences help readers identify the first person's
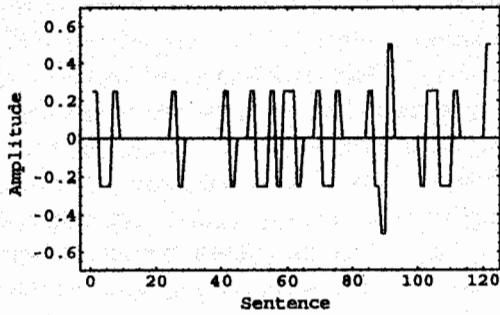
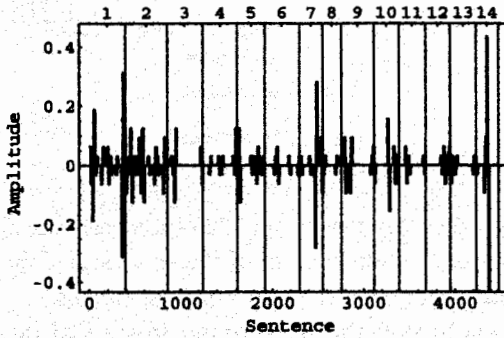(a) Inner speech.
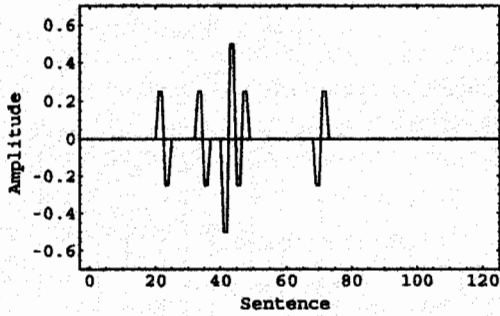
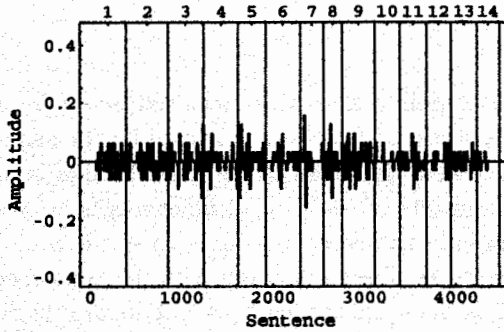(b) Indirect speech.

(c) Direct speech.

(d) Description.

Fig. 5.   Level 6 of the wavelet multiresolution analysis: *Duke.*

inner world. This means that inner speech sets near the readers' inner world. This is also the characterizing way of this author to stress her story worlds.
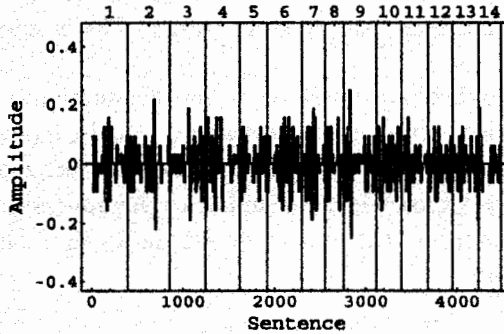
The latter half of *Duke* is carried out also by description and direct speech. In the case of *Rakka-suru Yugata*, indirect and direct speech appear constantly throughout the whole story. This difference causes the style of these books. *Rakka-suru Yugata* describes the one-year drama using 4,482 sentences. Comparing with this, *Duke*
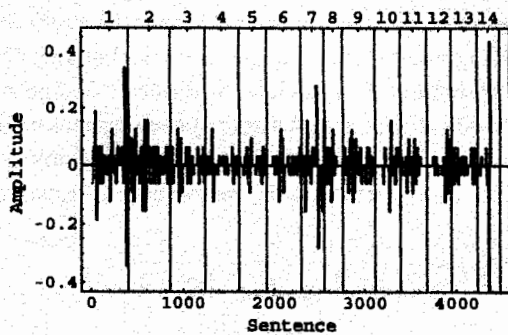

(a) Inner speech.

(b) Indirect speech.

(c) Direct speech.

Fig. 6. Level 9 of the wavelet multiresolution analysis: *Rakka-suru Yugata*.

(d) Description.

Fig. 6.   (*Continued*)

describes the one-day's development using 122 sentences. It is able to describe by a lot of words in a long story; while in cases of the short story, the important point is to set up a background using the effective words as poems in description. A short story uses symbolic expression the background instead of describing with many words. Namely, this difference of expression depends on the literary style.

4. Conclusion

There are characteristic points that have been extracted from a study of *Duke*, following the previous study of *Rakka-suru Yugata* by the same author. The same three structures which were described in the introduction is as follows: The first point is the ratio of elements of the story. The elements of description and direct speech are major, and indirect speech and inner speech minor. The second point is at the beginning of the story. The story starts with the inner speech, then, describes the background. This is the same tendency as *Rakka-suru Yugata*. The third point is the usage of inner speech. There are three peaks in the stories; first, it is observed at the beginning and second, at the middle, third, at the end. These form rhythms to lead readers into and establish the story worlds. This is the characteristic way of the author.

And one difference that was described in the introduction is a different usage of indirect speech was also extracted. In *Rakka-suru Yugata*, indirect speech works to impart the story. This works the like the same role as direct speech. In *Duke*, however, the role of indirect speech is more similar to the inner speech. This difference is caused by the difference of the literary genre; *Rakka-suru Yugata* is a novel and *Duke* just a short story.

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