SDRT of *Kaette*

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Kaette "on the contrary, rather" is an adverb in Japanese which signals contrary expectation, and that the opposite is the normal consequence of what is previously mentioned in the discourse. Sawada (2010) analyzes the conventional implicature of *kaette*. This paper claims that *kaette* indicates the discourse relation CONTRAST in Segmented Discourse Representation Theory (SDRT) (Asher and Lascarides 2003).

1. *Kaette* and CONTRAST

Let us start from the example (1). The use of *kaette* implies that the result is contrary to expectation. The normal course of event would have been the contrary, namely, the market which requires doctors' prescription prospers.

(1)　この結果、かえって医師の処方を経ないで入手できる市場が生じている。

π₁ (omitted)

π₂ Kono kekka　**kaette** ishi-no
　　this result　kaette doctor-GEN
　　shoho-o　　　　he-nai-de
　　prescription-ACC　go.through-NEG-by　nyusyu-
　　dekiru shijo-ga　　shoji-teiru.
　　get-can　　　　market-NOM　appear-PROG
　　"As a result, there emerged a market（medicine　is) obtainable without doctors' prescription."
　　(SemEval ID 21128-28, Shinnou et al,　2015,358)

Even though the discourse in the actual world proceeded from π₁ to π₂, as given above, the expected world would have had the sequence of (π₁, π₃) where π₃=~π₂, which means that π₃ is opposite in meaning with π₂, informally. The lexical entry for *kaette* would be formalized as:

(2)　[|kaette|] = λp.p & exp ~p

where exp is the speaker expectation.

(3)　π₁ cause ~π₂ & π₁ cause π₃

holds. The meaning of π₁ and π₂ is dissimilar, which means that the relation CONTRAST holds between π₁ and π₂.

In SDRT, CONTRAST is one of the rhetorical or discourse relations between the meaning the utterances convey. Every single proposition should be connected with another with rhetorical relation and form a single connected structure: otherwise, the discourse is incoherent. The connective *but* signals CONTRAST relation in English.

(4)　π₁ Max bought a piano.
　　π₂ But he never played it.
　　CONTRAST(π₁,π₂) & NARRATION(π₁,π₂)

On the other hand, the phrase *and then* connects utterances with NARRATION:

(5)　π₁ Instinctively I turned away,
　　π₂ **and then** I realized I was walking in the opposite direction, then running, almost tripping over my own two flat feet.
　　　　　　　　　　(BNC A0F 1353)
　　NARRATION(π₁, π₂)

Syntax of SDRT:
A set Ψ of logical forms for atomic natural language clauses
Sentence labels π₁, π₂, π₃,...
A set of relation symbols for discourse relations: R, R₁, R₂,...
R can be Elaboration, Explanation, Result, Narration, Background, Consequence, Alternation and so forth.
1　Ψ ⊆ Φ
2 If R is an *n*-ary discourse relation symbol and π₁,...,πₙ are labels, then R(π₁,...,πₙ) ∈ Φ
3 For φ, φ' ∈ Φ, (φ ∧ φ'), ¬φ ∈ Φ, where ∧ is understood dynamically

The typical discourse would be as in (6) in which π₁ and π₂ are contrasted—although sufficient explanation would ease comprehension normally, the discourse proceeds the other way. As indicated by *kaette*, the speaker concludes that too much explanation would complicate the matter, rather than simplify it, so s/he would not avoid giving one.

(6)　Seishinkai-to　　kaunsera-no
　　psychiatrist-and counselor-GEN
　　chigai]ᵢ-wa　　senmontekini-naru-node
　　difference-TOP complicated-become-so
π₁　[amari jibun-ga　(soreᵢ-o) setsumeisuru-to]
　　much　self-NOM　it-ACC explain-then
π₂　[kaette (sore-ga)
　　kaette it-NOM
　　muzukashiku-naru]-node habuki-masu.
　　difficult-become-so　　　abbreviate-HON
　　"I will skip explaining the difference between psychiatrists and counselors because　　it would become too complicated."
　　CONTRAST (π1, π2) & exp ~π2

2. Corpus: BCCWJ-NT

The corpus search on *kaette* reveals that *kaette*, being and adverb, modifies the sentence contrastive to the

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preceding sentence which may or may not be conjoined with it. *Kaette* also contrasts predicates with its subject nouns. Out of 45 occurrences of the adverb *kaette*, 3 occurrences modify sentences and contrast with the previous sentence. Other 20 cases contrast with the coordinated preceding sentence. 19 instances contrast the subject with the predicate sentence-internally. *Kaette* in other two case are not adverb but in fact verbs. Therefore, 51% of *kaette* is contrastive with the previous sentence.

Type 1: Contrastive with its sentential conjunct
(7) π_1 katayotta shokuji-de ichijitekini
        unbalanced meal-by temporarily
        yase-temo nagatsuzukishi-masen-shi,
        lose.weight-though last-NEG-and
    π_2 kaette kenko-o
        kaette health-ACC
        sokonete-shimau-koto-mo ari-masu.
        damage-end.up-fact-also exist-HON
        "Unbalanced meals may lose your
        weight temporally but hard to continue,
        and may damage your health."
Type 2: Contrasted with subject
(8) π_1 Tekunoroji-ga ningen-o
        technology-NOM human-ACC
        shinshokushi-teiku-koto-ga
        corrode-PROG-fact-NOM
    π_2 kaette kakkoi-to iu.
        kaette cool-COMP say
        "They say that it is rather cool that technology
        goes eating up people."
Type 3: Contrast between two separate sentences.

	contrasted	token
1	sentence conjunct	20
2	subject	19
3	previous sentence	3
4	verb	2
5	other	1
	total	45

Table 1 contrastees of *kaette*, from BCCWJ-NT
Types 1 & 3: CONTRAST ($\pi1$ (sentence), $\pi2$ (sentence))
Type 2: CONTRAST ($\pi1$ (NP), $\pi2$ (VP))

3. Conclusion

Thus, the adverb *kaette* in Japanese indicates discourse relation CONTRAST between two utterances. Due to the adverbial nature, *kaette* may contrast non-sentential categories as does *and then* in English, which signals another discourse relation NARRATION. Even so, it is found useful to analyze discourse with rhetorical relations signaled by these elements.

References

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