

1. Introduction

Among grammatical causative verbs, most languages distinguish *obligation* and *permission*. English, for example, uses *make* for obligation while *let* for permission. Japanese has this distinction too, although, unlike English, the distinction is defined by case-marking of a *causee* argument: Accusative case marker *o* for obligation and dative *ni* for permission (Shibatani, 1973). In the present study, I will demonstrate that this obligation/permission distinction is provided by their sublexical modal component: Obligation is attributed to necessity modal, while permission to possibility modal. Further, in order to ensure its *actuality* (originally observed in Bhatt, 1999 and analyzed further in Hacquard, 2006, 2009, 2010) in past, episodic reading, I will modify the denotation of perfective aspect.

This study is constructed as follows. In section 2, I will propose that the obligation/permission distinction is defined by sublexical modal component of grammatical causative verbs. In chapter 3, I will modify the denotation of perfective aspect so that the proposal made in section 2 will properly work out. Section 4 will be devoted to discuss some consequences of the proposal. Section 5 will concerns about some issues left unsolved in this study. Section 5 concludes this study.

2. Proposal

In the study of modality, necessity modals (e.g. *must*) and possibility modals (e.g. *may*) are distinguished by their quantificational forces: Necessity modals universally quantify possible worlds, while possibility modals existentially quantify them. Recently, Hacquard (2006, 2010) proposes that a set of accessible worlds that is quantified over is defined relative to an *event*, rather than an evaluation world. Her denotations for *must* and *may* are shown in (1). (I omit some component which is irrelevant to the discussion here.)

- (1) a. $[[\text{must}]] = \lambda e. \lambda P. \forall w' \in \cap f(e): P(w')=1$
 b. $[[\text{may}]] = \lambda e. \lambda P. \exists w' \in \cap f(e): P(w')=1$

My proposal is that obligation and permission causative verbs have these event-relative modal components. For example, *make* has as its sublexical part (1a), and *let* has (1b).

- (2) a. $[[\text{make}]] = \lambda e. \lambda P_{\langle \text{st} \rangle}. \lambda x. e(x) \ \& \ \forall w' \in \cap f(e): P(w')$
 b. $[[\text{let}]] = \lambda e. \lambda P_{\langle \text{st} \rangle}. \lambda x. e(x) \ \& \ \exists w' \in \cap f(e): P(w')$

Thus, the difference between obligation and permission causative verbs is parallel with the difference between necessity and possibility modals.

3. Actuality and Aspect

A possible drawback of the analysis presented in (2) is that we are no longer sure whether the caused event actually happens or not. Since what (2) tells us is that the caused event happens in all or some *possible* worlds, it is not sure that it happens in the *actual* world.

This is a real drawback, because in past, episodic reading actual occurrence of the caused event is presupposed. As shown in (3), negating this presupposition results in contradiction.

- (3) a. John made her work, #but she didn't work.
 b. John let her work, #but she didn't work.

I suppose here that his phenomenon is an instance of *actuality entailment*, which is observed in Bhatt (1999) and analyzed further in Hacquard (2006, 2009, 2010). Following Hacquard, I assume that actuality is entailed when a perfective aspect, which takes as an argument a predicate of event (i.e. VP) and returns a predicate of time, takes scope over a modal element. Her analysis is demonstrated below. (Note that she assumes event and world variables are represented in syntax. She also assumes that aspect moves from VP-internal position leaving an event-type trace, but I abstract away this part for simplicity.)

$$(4) \text{ [[PERFECTIVE]]} = \lambda w. \lambda Q_{\langle \text{VP} \rangle}. \lambda t. \exists e: e \text{ is in } w \text{ and } \tau(e) \subset t \ \& \ Q(e)=1$$

- (5) a. Jane may run

$$b. \text{ [[PAST[PFV}(w_0)\text{]}\lambda e_1 \text{ [may}(e_1)\text{]}_{\text{VP}}[\lambda w \text{ [Jane run } e_1 \text{] } (w)\text{]]]]]$$

$$c. \text{ VP} = \text{run}(e_1, J, w)$$

$$d. \text{ [[may}(e_1)\text{]]}(\lambda w. \text{run}(e_1, J, w))$$

$$= \exists w' \in \cap f(e_1) : \text{run}(e_1, J, w')$$

- e. (binds two event arguments by PFV)

$$= \text{[[PFV]]}(w_0) (\lambda e_1. \exists w' \in \cap f(e_1) : \text{run}(e_1, J, w'))$$

$$= \lambda t. \exists e_1: e_1 \text{ is in } w_0 \ \& \ \tau(e) \subset t \ \& \ \exists w' \in \cap f(e_1) : \text{run}(e_1, J, w')$$

$$f. \text{ [[PAST]]} (\lambda t. \exists e_1: e_1 \text{ is in } w_0 \ \& \ \tau(e) \subset t \ \& \ \exists w' \in \cap f(e_1) : \text{run}(e_1, J, w'))$$

$$= \exists e_1: e_1 \text{ is in } w_0 \ \& \ \tau(e) \subset t \ \& \ \exists w' \in \cap f(e_1) : \text{run}(e_1, J, w')$$

The event e_1 in w_0 is defined by her *Preservation of Event Description (PED)*. Since e_1 happens in w_0 and w_1 , and e_1 is running event by Jane in w_1 , e_1 is running event in w_0 too.

- (6) PED: for all worlds w_1, w_2 , if e_1 occurs in w_1 and in w_2 , and e_1 is P-event in w_1 , then *ceteris paribus*, e_1 is a P-event in w_2 as well.

In order to apply Hacquard's analysis to causative constructions, we need some modification. Since causative construction is bivalent (i.e. it involves a causing event and a caused event), I modify

Hacquard's definition of perfective so that (i) it can existentially close arbitrary numbers of event arguments and (ii) the event variables with different indices are still distinct even after they are existentially closed.

- (7) $[[\text{PERF}]] = \lambda w. \lambda Q. \lambda t. \exists e^- [e^- \text{ is in } w \ \& \ \tau(e^-) \subset t \ \& \ Q(e^-) = 1]$
 (Q is of type $\langle v^-, t \rangle$, v^-/e^- means arbitrary number(s) of event type/argument)

With this modification, we can derive proper result. The whole computation is shown below.

- (8) a. John made Mary work.
 b. $[[\text{PAST}[\text{PFV}(w_0)[\text{John} [\text{make}(e_2)_{\text{VP}} \lambda w [\text{Mary work } e_1](w_1)]]]]]]$
 c. $\text{VP} = \text{work}(e_1, M, w)$
 d. $[[\text{make}]](e_2)(\lambda w. \text{work}(e_1, M, w))(\text{John})$
 $= e_2(\text{John}) \ \& \ \forall w' \in \cap f(e_2): \text{work}(e_1, J, w')$
 e. $[[\text{PFV}]](w_0)(\lambda \langle e_1, e_2 \rangle. e_2(\text{John}) \ \& \ \forall w' \in \cap f(e_2): \text{work}(e_1, M, w'))$
 $= \lambda t. \exists \langle e_1, e_2 \rangle: \langle e_1, e_2 \rangle \text{ is in } w_0 \ \& \ \tau(\langle e_1, e_2 \rangle) \subset t \{t \langle t^0 \rangle\} \ \& \ e_2(\text{John})$
 $\ \& \ \forall w' \subset \cap f(e_2): \text{work}(e_1, M, w')$
 f. $\exists \langle e_1, e_2 \rangle: \langle e_1, e_2 \rangle \text{ is in } w_0 \ \& \ \tau(\langle e_1, e_2 \rangle) \subset t \{t \langle t^0 \rangle\} \ \& \ e_2(\text{John}) \ \& \ \forall w' \subset \cap f(e_2): \text{work}(e_1, M, w')$
- (9) a. John let Mary work.
 b. $\exists \langle e_1, e_2 \rangle: \langle e_1, e_2 \rangle \text{ is in } w_0 \ \& \ \tau(\langle e_1, e_2 \rangle) \subset t \{t \langle t^0 \rangle\} \ \& \ e_2(\text{John}) \ \& \ \exists w' \subset \cap f(e_2): \text{work}(e_1, \text{Mary}, w')$

4. Consequences

The analysis described above made three welcome consequences. In this section I discuss them one by one. Firstly, my analysis predicts that in non-perfective reading *actuality* is not presupposed. This is indeed the case, as shown in a present, habitual sentence below.

- (10) I let him work, but he doesn't work.

Secondly, the observation made in Ilić (2014) is naturally captured. She observes that a causative sentence (at least in Japanese) presupposes obligation/permission on a causee argument. Negating this presupposition leads to contradiction.

- (11) a. Tanaka wa hisyo o hayaku kaer-ase-ta ga,
 Tanaka TOP secretary ACC early go.home-make-PAST but,
 kanojo wa hayaku kaeru ??gimu / ??kyoka wa nakatta
 she TOP early go.home obligation/ permission TOP not-PAST
 'Tanaka made his secretary go home early, but she had no obligation/permission to do so'

- b. Tanaka wa hisyo ni hayaku kaer-ase-ta ga,
 Tanaka TOP secretary DAT early go.home-make-PAST but,
 kanojo wa hayaku kaeru gimu / ??kyoka wa nakatta
 she TOP early go.home obligation / permission TOP not-PAST
 ‘Tanaka let his secretary go home early, but she had no obligation/permission to do so’

In the present analysis, the caused events in (17a) and (17b) are described as ‘ $\forall w' \subset \cap f(e_2)$: go-home-early (e_1 , secretary, w')’ and ‘ $\exists w' \subset \cap f(e_2)$: go-home-early (e_1 , secretary, w')’, respectively. These are clearly modal obligation/permission components. Since these components are defined lexically in causative verbs, they cannot be negated.

Lastly, the meanings of negated counterparts of obligation and permission causatives are correctly predicted. Note that *John didn't make Mary run* implies there was no obligation on Mary, and *John didn't let Mary run* implies that there was a prohibition to run on Mary. Supposing that *didn't* is a sentential negation, these implications are what we predict.

- (12) a. $\sim \exists \langle e_1, e_2 \rangle$: $\langle e_1, e_2 \rangle$ is in w_0 & $\tau(\langle e_1, e_2 \rangle) \subset t\{t < t^0\}$ & $e_2(\text{John})$
 & $\forall w' \subset \cap f(e_2)$: work(e_1 , Mary, w')
 b. $\sim \exists \langle e_1, e_2 \rangle$: $\langle e_1, e_2 \rangle$ is in w_0 & $\tau(\langle e_1, e_2 \rangle) \subset t\{t < t^0\}$ & $e_2(\text{John})$
 & $\exists w' \subset \cap f(e_2)$: work(e_1 , Mary, w')

What (12a) tells us is that there was no sequence of events of $\langle e_1, e_2 \rangle$. That is, there was no pair e_1 and e_2 such that e_1 necessarily induces e_2 , hence non-obligation on Mary. On the other hand, (19b) tells us that there was no sequence of events of $\langle e_1, e_2 \rangle$. That is, there was no pair e_1 and e_2 such that e_1 potentially induces e_2 . Imagine that John was indifferent whether Mary worked or not, which allowed Mary to work. Since John's state of being indifference thus potentially induces Mary's work, the existence of such states is negated in (19b). Thus, (19b) denotes prohibition on Mary, which is intuitively correct.

5. Discussions

In this section, I hope to discuss some topics left for future research in this field. First and foremost, since this study has preliminary focused on English, more cross-linguistic examination is called for. (As for Japanese, I have found no contradiction data in it so far.)

Secondly, infinitive constructions show that they may have distinct aspectual property from the causative verbs discussed so far. As shown in (13) for English and Japanese, the caused event becomes defeasible when it is described by an infinitive clause. I have no analysis on this matter so far, but the most promising path is to assume that an infinitive clause has its own aspectual property.

- (13) a. I allowed him to work but he didn't work.
 b. I asked him to work but he didn't work.

c. Watashi wa John ni hataraku you-ni itta kedo,
 I TOP JOHN DAT work.inf say-PAST but,
 John wa hatarak-anak-atta
 John TOP work-NEG-PAST
 'I told John to work, but he didn't work'.

Last but not least, an interesting gap is observed between the grammatical causative verbs I have focused on this study and so-called *defeasible causative verbs* discussed in detail by Martin (2015) and Martin and Schäfer (2017). They argue with convincing evidences that defeasible causative verbs in English and some Romance languages, say *teach*, *offer*, among others, mark their completion of caused events (that is, actuality) not by perfective aspect, but by agency of subject. I have no idea about what property defines a group of defeasible causative verbs and where the difference between the obligation/permission causative verbs and the defeasible causative verbs comes from. However, let me make a comment on this issue.

Tsujimura (2003), based on observations in Smith (1990), notes that *cancellable verbs*, which I understand is synonym of defeasible verbs, show cross-linguistic divergence in how to mark their completion (i.e. indefeasibility). For example, Hindi and Tamil use serial verbs while Japanese uses an additional verbal morphology. Of interest here is a strategy employed in Russian, which adopts perfective/imperfective aspects to mark (in)completion on cancellable verbs, as do the obligation/permission causatives verbs discussed so far. From these facts, I suspect that cancellability/defeasibility are marked different strategies depending not only on languages, but also on grammatical or lexical category. In Japanese, for example, lexical causative verbs like *akeru* 'open' *moyasu* 'burn' denote their completion by additional verbal morphologies, while the grammatical causatives verb (*s*)*ase* employs aspect. Investigation on this possibility is left for future work.

6. Conclusion

In this study, I assume that the obligation/permission causative verbs have modal component in their sublexical levels. With this assumption, their semantic difference can be regarded as a difference of their modal force. I also showed that his assumption has some welcome consequences. In the discussion section, a possible future work is implied.

References

- Bhatt, R. (1999). *Covert modality in non-finite contexts*. Ph.D. Thesis, University of Pennsylvania.
- Hacquard, V. (2006). *Aspects of Modality*. Ph.D. Thesis, M.I.T.
- Hacquard, V. (2009). On the interaction of aspect and modal auxiliaries. *Linguistics and Philosophy*, 32, 279-315.
- Hacquard, V. (2010). On the event relativity of modal auxiliaries. *Natural Language Semantics*, 18, 79-114.
- Ilić, T. (n.d.). Modality and causation: Two sides of the same coin. In B. Copley, & F. Martin (Eds.),

Causation in Grammatical Structures. Oxford University Press.

- Martin, F. (2005). Explaining the link between agentivity and non-culminating causation. In S. D'Antonio, M. Moroney, & C. R. Little (Eds.), *Proceedings of SALT, 25* (pp. 246-266). CLC Publications.
- Martin, F., & Schäfer, F. (2017). Sublexical modality in defeasible causativ verbs. In A. Arregui, M. L. Rivero, & S. Andrés (Eds.), *Modality Across Syntactic Categories* (pp. 87-108). Oxford University Press.
- Shibatani, M. (1973). Semantics of Japanese Causativization. *Foundations of Languages, Vol. 9*, 327-373.
- Smith, C. S. (1991). *The Parameter of Aspect*. Dordrecht: Kluwer.
- Tsujimura, N. (2003). Event Cancellation and Telicity. *Japanese/Korean Linguistics, 12*, 388-399.