

Imperatives, Modal Bases and Conditionals

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Semantics of Imperatives as the nuclear scope of the modal

- Assuming Kratzer's [1987] theory of modals as a quantification over possible worlds, the previous analyses maintain that the semantics of imperatives corresponds to the semantics of **the nuclear scope** of the quantification.
- (2)
- a. Study Swahili! \approx You must study Swahili.
 - b. For every world w compatible with the general laws, you study Swahili in w .

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Semantics of Imperatives and Modals

- Imperatives are often analyzed analogous to root deontic modals. [Portner, 2006, Schwager, 2005]
- (1)
- a. Study Swahili!
 - b. You must study Swahili.

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Asymmetry

- In this view, however, it is puzzling why the Japanese focus particle *sae* 'even' can appear in deontic modals, while it cannot in imperatives.
- (3)
- a. Suwahirigo-**sae** benkyoo sinakerebanaranai.
Swahili-even study must
'You must study even Swahili.'
(implicature: Swahili is the least likely subject to study.)
 - b. *Suwahirigo-**sae** benkyoo siro!
Swahili-even study do.IMP
'Study even Swahili!'

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Conditionals

Incidentally, *sae* 'even' can appear in the consequent of a conditional, but it cannot in the antecedent.

- (4) moshi Swahiligo-o benkyoo sur-eba, Toodai-ni-**sae** goukaku
 if Swahili-ACC study do-COMP Tokyo.Univ-DAT-**sae** pass
 suru
 do
 'If you study Swahili, you will pass even Tokyo University.'
 (implicature; Tokyo University is the least likely university to pass.)

Punchline of the Day

Punchline Imperatives contribute as a modal restriction of an implicit modal expression; hence the semantics of imperatives is analogous to that of *if*-clauses.

Conditionals

When *sae* appears within the antecedent of the conditional, it does not have the 'least-likely' meaning.

- (5) */✓moshi Swahiligo-**sae** benkyoo sur-eba, Toodai-ni goukaku
 if Swahili-even study do-COMP Tokyo.Univ-DAT pass
 suru
 do
 'If you even study Swahili, you will pass Tokyo University.'
 a. *If you study Swahili and Swahili is the least likely think you study, ...
 b. ✓If you study only Swahili, you will pass Tokyo University.
 (Studying Swahili is sufficient for passing Tokyo University.)

Proposal

Intuitively, issuing an imperative entails that there is some desire about the outcome brought by the instantiation of the action.

Proposal Imperatives contribute as the modal restriction (the modal base) X of the implicit future modal expression $F(X)(h)(w)$

Semantics of the imperative

The nuclear scope of the modal quantification corresponds to the implicit outcome h , which is brought by the compliance of the command.

- (6) $\mathbf{F}(X)(h)(w)(t) = \forall w' [w' \in R[w] \cap X [\exists t' \succ t [h(w')(t')]]]$ (adapted from Russell [To appear])

Assuming Kratzer's [1991] analysis of conditionals, therefore, the semantics of an imperative is analogous to the semantics of the antecedent of a conditional.

Illustration

- A simple imperative like (7-a) can be represented as in (7-b) and interpreted as (7-c):

- (7) a. Swahirigo-o benkyoo-siro! 'Study Swahili!'
 b. $\mathbf{F}(\text{study}(\text{addressee})(\text{swahili}))(h)(w)$
 for a contextually supplied outcome h
 c. $\forall w' \in R[w] \cap \{w' : \text{study}(\text{addressee})(\text{swahili})(w')\} : h(w')$

Russell 2007

- There is an independent motivation for our proposal from English coordination structures (discussed by Russell [To appear]).
 - Conditional Coordinations involve **imperatives** as their first conjuncts, and the **future modal tense** in their second conjuncts.
 - As a whole, these constructions are interpreted as conditionals:
- (8) Drink another can of beer and you'll win the game. [Russell, To appear]

Russell 2007

- The imperative in the coordinate construction can contribute as the modal restriction X of the future tense in the second conjunction via anaphoric reference and modal subordination.
- (9) $\mathbf{Future}_X(p)(w)(t) =_{def} \forall w' \in R[w] \cap X : [\exists t' \succ t [p(w')(t')]]$
 [Russell, To appear]

Russell 2007

- Russell's data also demonstrates that an imperative force is always associated with its desirable consequence.
- (8) Drink another can of beer and you'll win the game. [Russell, To appear]
- (10) Drink another can of beer and you'll puke. [Russell, To appear]
- The first conjunct of (10) is not an imperative, but a subject-less bare VP declarative, while that of (8) is ambiguous between an imperative and a bare VP.
 - The first conjunct of (10) does not carry an imperative force.

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Russell 2007

- Indeed, issuing a command when the outcome brought by the compliance of the command is not desirable results in an infelicitous utterance (11-b).
- (11) a. Drink another can of beer. If you do, you'll win the game.
b. #Drink another can of beer. If you do, you'll puke. [Russell, To appear]

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Japanese Imperatives and Desirability

- (12) a. Tobi-oriro! Tasukaru kara.
Jump-off.IMP survive because
'Jump off! Then, you will survive.'
- b. #Tobi-oriro! Sinu kara.
jump-off.IMP die because
'Jump off! Then, you will be dead.'
- c. Tobi-ori-temiro! Sinu kara
Jump-off-try die because
'Dare you jump off! Then, you will be dead.'

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Interim Summary

- (True) imperatives are felicitous only when the outcome which will be brought by the compliance of the command is desirable.
- Our treatment of imperatives above can be considered as a further extension of Russell's insight of the coordination construction.

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Back to *sae* and imperatives

- (3-b) *Suwahirigo-*sae* benkyoo siro!
 Swahili-even study do.IMP
 'Study even Swahili!'
- (5) *moshi Swahiligo-*sae* benkyoo sur-eba, Toodai-ni goukaku
 if Swahili-even study do-COMP Tokyo.Univ-DAT pass
 suru
 do
 'If you even study Swahili, you will pass Tokyo University.'

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Assumption about *sae*

Assumption *sae* 'even' is a sentential operator that takes a prejacent proposition as its argument and generates a conventional likelihood implicature.

- (13) $sae(\phi)(KS(w))$ implicates that according to the knowledge space KS accessible from w , ϕ is less likely than any other relevant alternatives.

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Informal Approximation

- *Sae* 'even' induces likelihood implicature (' p is least likely among alternatives.')
- We understand likelihood as a probability calculated based on the speaker's knowledge space.
- In other words, *sae* denotes a relation between the speaker's knowledge and a particular instantiated event/situation (rather than a property of events/individuals).
- Now, imperatives and antecedents of conditionals denote hypothetical/non-veridical situations.
- *Sae* cannot occur in hypothetical/non-veridical contexts.

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Implementation

- As its argument, *sae* takes a proposition of type $\langle s, t \rangle$ rather than an event predicate $\langle \epsilon, st \rangle$ or a property of individuals $\langle e, st \rangle$.
- Now, the antecedent of a conditional is of type $\langle \epsilon, st \rangle$ since it is the restriction of quantification.

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Type Mismatch

Therefore, having *sae* within the antecedent of the conditional results in a type mismatch (5).

- (5) *moshi Swahiligo-**sae** benkyoo sur-eba, Toodai-ni goukaku
 if Swahili-even study do-COMP Tokyo.Univ-DAT pass
 suru
 do
 'If you even study Swahili, you will pass Tokyo University.'

According to our current proposal, imperatives also denote modal restrictions, hence *sae* is not available within imperatives (3-b).

- (3-b) *Suwahirigo-**sae** benkyoo siro!
 Swahili-even study do.IMP
 'Study even Swahili!'

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Universal Quantifier

- *sae* is not available under a relative clause when it serves as the restriction of universal quantification.
- A relative clause needs to be of type $\langle e, st \rangle$ (set of individuals), while *sae* takes a proposition as its argument; hence it causes a type mismatch.

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Universal Quantifier

- (14) *Suwahirigo-*sae* benkyoushita **dono** seito-**mo** daigaku-ni
 Swahili-even studied which student-INDET university-DAT
 goukakushita.
 passed
 'Everyone who studied even Swahili passed the university.'

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Floating Q and Non-restrictive Rel

- (15) a. Suwahirigo-*sae* benkyoushita seito-ga **min'na**
 Swahili-even studied student-NOM all
 daigaku-ni goukakushita.
 university-DAT passed
 'The students who studied even Swahili all passed the university.'
- b. Suwahirigo-*sae* benkyoushita **watashi**-no seito-ga
 Swahili-even studied my student-NOM
 daigaku-ni goukakushita.
 university-DAT passed
 'My students, who studied even Swahili, passed the university.'

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Interim Summary

- *Sae* is not available in hypothetical/non-veridical contexts.
- *Sae* is a sentential operator which takes an argument of type $\langle s, t \rangle$.
- An imperative denote restrictions ($\langle \epsilon, st \rangle$) just like an antecedent of conditional and a restriction of universal quantification ($\langle e, st \rangle$).
- Hence, *sae* is not available under imperatives, since it would cause a type mismatch.

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Imperative

- Unlike English imperatives, Japanese imperatives license these minimizers.

- (17) a. sake-o it-teki-demo nome! attakaku naru kara
sake-Acc one-drop-DEMO drink.Imp warm become because
'Drink one drop of sake! You'll be warm.'
- b. yubi ip-pon-demo ugokase!
finger one-CLASS-DEMO move.Imp
'Lift a finger!'

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Japanese non-veridical minimizers

- Another similarity between imperatives and antecedents of conditionals.
- Japanese minimizers formed with the particle *demo* are not licensed in veridical nor in anti-veridical contexts.

- (16) a. *John-wa sake-o it-teki-demo nonda.
John-Top sake-Acc one-drop-DEMO drank
'John drank a drop of sake.'
- b. *John-wa sake-o it-teki-demo noma-nakat-ta.
John-Top sake-Acc one-drop-DEMO drink-Neg-Past
'John didn't drink a drop of sake.'

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Conditional

- (18) sake-o it-teki-demo nome-ba, anata-wa attakaku naru.
sake-Acc one-drop-DEMO drink-Comp, you-Top warm become
'If you drink a drop of sake, you'll be warm.'
- (19) ore-no himitsu nitsuite hito-koto-demo ie-ba, en-o
my secret about one-word-DEMO say-Comp relation-Acc
kuru zo.
cut Part
'If you say a word about my secret, I'll break off with you.'

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Restrictions of Universal Q

- (20) dokuri karee-o hito-kuchi-demo tabeta zen'in-ga
 poisoned curry-acc one-bite-DEMO ate everyone-nom
 nyuuin-sita
 hospitalized-did
 'Everyone who ate one bite of the poisoned curry is
 hospitalized.'

Summary

	Japanese		English	
	sae	Minimizer	even	Minimizer
affirmative	✓	*	✓	*
negative	✓	*	✓	✓
imperative	*	✓	✓	*
antecedent of conditionals	* ('only')	✓	✓	✓
modals	✓	✓	✓	*

Conclusion

- We have presented evidence in favor of the claim that the semantics of imperatives is analogous to that of the antecedent of a conditional.
- In other words, an imperative denotes a modal restriction of an implicit modal expression, rather than the nuclear scope of the deontic necessity modal.

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