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.

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 *sirto!  
     Swahili-even study do.IMP  
     ‘Study even Swahili!’

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! ≈ You must study Swahili.  
  b. For every world w compatible with the general laws, you study Swahili in w.
Incidentally, *sae* ‘even’ can appear in the consequent of a conditional, but it cannot in the antecedent.

(4) *moshi Swahiligo-o benkyo sur-eba, Toodai-ni sae goukaku suru do*  
‘If you study Swahili, you will pass even Tokyo University.’  
(implicature; Tokyo University is the least likely university to pass.)

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 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.)

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

**Proposal** Intuitively, issuing an imperative entails that there is some desire about the outcome brought by the instantiation of the action.
The nuclear scope of the modal quantification corresponds to the implicit outcome \( h \), which is brought by the compliance of the command.

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

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

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:

\[
\text{Drink another can of beer and you'll win the game. [Russell, To appear]}
\]

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.

\[
\text{Future}_X(p)(w)(t) \overset{\text{def}}{=} \forall w'[w' \in R[w] \cap X : [\exists t' \succ t[p(w')(t)]]} \quad \text{[Russell, To appear]}
\]
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.

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]

(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.'

(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.
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.

Implementation

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

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

(5) *moshi Swahili-*sae benkyoo sur-eba, Toodai-ni goukaku 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!’

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.

Floating Q and Non-restrictive Rel

(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.’

(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.’
Sae is not available in hypothetical/non-veridical contexts.

Sae is a sentential operator which takes an argument of type \( (s, t) \).

An imperative denote restrictions \( (\langle e, st \rangle) \) 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.

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.

Unlike English imperatives, Japanese imperatives license these minimizers.

\[(17)\]
\[
\begin{align*}
a. & \text{ sake-o it-teki-demo nome! attakaku naru kara} \\
& \text{ sake-Acc one-drop-DEMO drink.Imp warm become because} \\
& \text{ ‘Drink one drop of sake! You’ll be warm.’} \\
b. & \text{ yubi ip-pon-demo ugorase!} \\
& \text{ finger one-CLASS-DEMO move.Imp} \\
& \text{ ‘Lift a finger!’}
\end{align*}
\]

If you drink a drop of sake, you’ll be warm.”

‘If you say a word about my secret, I’ll break off with you.’
(20) dokuirī 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.’

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.


