EMBEDDED IMPERATIVES IN ENGLISH **ICQM 2, Berlin Oct 18 2008**

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ROADMAP

- Provide evidence that embedded imperatives exist in English
- Introduce Schwager's (2006)'s analysis of imperatives, which takes imperatives to be modal sentences
- Point out similarity between embedded imperatives and embedded modal sentences
- Introduce Stephenson (2007)'s analysis of embedded modals
- Combine Schwager (2006) and Stephenson (2007) to account for the facts about embedded imperatives
- Open issues

1. EMBEDDED IMPERATIVES EXIST

Imperatives can be sentential complements

(1) Common paradigm
  a. Mary claimed [that John called Mary]
  b. Mary knows [whether John called Mary]
  c. * John said [that call Mary]

(2) The right example
  John said [call Mary]

Embedded imperatives are not quotations

(3) Interpretation of pronouns
  a. John$_1$ said call his$_1$ mom
  b. # John$_1$ said: "Hey, call his$_1$ mom!"

(4) Interpretation of deitic elements
  a. John said buy that book (speaker pointing at a book nearby)
  b. # John said: "Hey, buy that book" (speaker pointing at a book nearby)

(5) Association with focus
  a. John only said give roses$_F$ to Mary
  b. # John only said: "Hey, give roses$_F$ to Mary!"
    (intended reading: ∀x[John said: "Hey, give x to Mary" → x = "roses"])

(6) Binding of pronouns
  a. ? Every professor said buy his$_1$ book
  b. # Every professor$_1$ said: "Buy his$_1$ book!"

(7) Wh-movement
  a. ? Who did John say call at three?
  b. # Who did John say: "Hey, call at three"?

(8) NPI-licensing
  a. Relax! No one said buy anything
  b. Relax! No one said: "Buy anything!"

Embedded imperatives are not eliptical to-infinitives

(9) 'To' cannot be elided
  a. * John said ~~to~~ have called Mary by tomorrow
  b. * My girlfriend said not ~~to~~ call her

(10) Negated form
  My girlfriend said don't call her

2. SIMILARITY BETWEEN MPERATIVES AND MODALS – SCHWAGER (2006, 2007)

Imperatives and performative modals behave similarly

(11) The speaker can't be wrong
  a. A: Call Mary right away! B: #That's not true
  b. A: You must call Mary right away! B: #That's not true

(12) The speaker must endorse (affirm) what he commands
  a. # Call Mary right away! But I don't think you should
  b. # You must call Mary right away! But I don't think you should

(13) The speaker must be uncertain about whether his request will be fulfilled
  a. # I know you're (not) going to call Mary, but call her right away!
  b. # I know you're (not) going to call Mary, but you must call her right away!

The imperative operator is a restricted universal modal

(14) $|| [\text{imp } R]\ \varphi ||^{c,w} = || [\text{must}_p\ R]\ \varphi ||^{c,w}$, if P_1, P_2 and P_3, undefined otherwise

(15) The restrictions
- $P_1 = \text{auth}(s_c, R(w))$, i.e. the speaker of c is an authority on R(w)
  = for each w' compatible with what s_c believes in w, R(w') = R(w)
- $P_2 = \text{affirm}(s_c, R(w))$, i.e. the speaker of c must affirm R(w)
  = for each w' such that R(w)(w'), s_c finds w' good in w
- $P_3 = \text{uncertain}(s_s, \varphi, c_{pre})$, i.e. in the context c_{pre} before he utters the imperative, the speaker of c must be uncertain whether what he commands will be true
  = for some w, w' compatible with what s_c believes in the world of c_{pre}, $\varphi(w)$ & $\neg\varphi(w')$

(16) must vs. imp
  a. $|| \text{must} ||^{c,w} = [\lambda R.[\lambda p.[\forall w' : R(w)(w').[p(w')]]]]$
  b. $|| \text{imp} ||^{c,w} = [\lambda R{:}\text{auth}(s_c, R(w)) \,\&\, \text{affirm}(s_c, R(w)).[\lambda p{:}\text{uncertain}(s_s, p, c_{pre}).[\forall w' : R(w)(w').[p(w')]]]]$

A further simplification

(17) a. $|| \text{imp} ||^{c,w} = [\lambda p.[\forall w' \in \text{COMMAND}(s_c)(w).[p(w')]]]$
  b. $\text{COMMAND}(\alpha)(w) = \{w' \mid w' \text{ is compatible with what } \alpha \text{ commands in } w\}$

3. SIMILARITY BETWEEN MBEDDED IMPERATIVES AND EMBEDDED EPISTEMIC MODALS

The reported speech situation must be one where an obligation is established by the subject of the embedding predicate

(18) John: "Luka has an obligation to call Mary"
  → #John said call Mary

(19) John: "I hereby order that Luka call Mary"
  → John said call Mary

When imperatives are embedded, the requirements on the speaker become requirements on the subject of the embedding predicate

(20) The subject cannot be wrong
  a. A: John said call Mary. B: That's not true.
  b. #John said call Mary, but I told him he was wrong.

(21) The subject must endorse the action required by the imperative
  a. John said call Mary, but I don't think you should
  b. #John said call Mary, but he didn't think you should
(22) The subject must be uncertain about whether his request will be fulfilled
  a. John said call Mary. He didn't know – as I did – that you planned to call her.
  b. #John said call Mary. He knew that you planned to call her.

Embedding modals involves shifting from speech participants to attitude holders
(23) a. It might rain ≈ the speaker's knowledge does not exclude the possibility of rain
  b. Mary believes it might rain = Mary's belief does not exclude the possibility of rain

What we want to capture is the following:
(24) For imperatives
  a. || Call Mary! || = I command that you call Mary
  b. || John said call Mary || = John commands that you call Mary
  c. || α said [imp φ] $||^{c,w}$ = 1 iff ∀w' ∈ compatible with what α commands in w.[φ(w')]
(25) For epistemic modals
  a. || It might rain || = My knowledge does not exclude the possibility of rain
  b. || Mary thinks it might rain || = Mary's belief does not exclude the possibility of rain
  c. || α believes [might φ] $||^{w}$ = ∃w' compatible with what α believes in w, φ(w')

4. Embedded epistemic modals – Stephenson (2007)

Expressions are evaluated with respect to a context, a world, and a judge
(26) Some expressions are judge-dependent, some not
  a. || the pizza is tasty $||^{c,w,j}$ = the pizza tastes good to the judge in w
  b. || tasty $||^{c,w,j}$ = [λx.[x tastes good to j in w]]
  c. || pizza $||^{c,w,j}$ = [λx.[x is a pizza in w]]

Modals quantify over centered worlds whose center is the judge
(27) || might φ $||^{c,w,j}$ = The judge's knowledge in w does not exclude that φ, i.e. $\exists\langle w',x'\rangle \in \text{EPIST}_{w,j}[\varphi(w')(x')]$
(28) Definitions
  a. $\text{EPIST}_{w,x}$ ≈ {⟨w',x'⟩ | x's knowledge in w does not exclude the possibility that w is w' and x is x'}
  b. || might φ $||^{c,w,j}$ = 1 iff $\exists\langle w',x'\rangle \in \text{EPIST}_{w,j}$.|| φ $||^{c,w',x'}$ = 1
(29) Derivation
  || might rain $||^{c,w,j}$ = 1 iff $\exists\langle w',x'\rangle \in \text{EPIST}_{w,j}$.|| rain $||^{c,w',x'}$

Attitude verbs quantify over centered worlds whose center is the attitude holder
(30) Definitions
  a. || believe φ $||^{c,w,j}$ = [λx.[∀⟨w',x'⟩ ∈ $\text{DOX}_{w,x}$.|| φ $||^{c,w',x'}$ = 1]]
  b. $\text{DOX}_{w,x}$ ≈ {⟨w',x'⟩ | x's belief in w does not exclude the possibility that w is w' and x is x'}

An axiom: To believe something is to believe that one knows it
(31) The epistemic alternatives of a person's doxastic alternatives are just that person's doxastic alternatives, i.e. for any ⟨w',x'⟩ ∈ $\text{DOX}_{w,x}$, $\text{EPIST}_{w',x'} = \text{DOX}_{w,x}$
  a. I am convinced that p = I am convinced that I know p
  b. I am not convinced that p = I am convinced that I don't know p

The right reading is predicted
(32) || Mary believes it might rain $||^{c,w,j}$ = 1 iff
  || believe [might rain] $||^{c,w,j}$ (|| Mary $||^{c,w,j}$) = 1, i.e. iff
  [λx.[∀⟨w',x'⟩ ∈ $\text{DOX}_{w,x}$.|| might rain $||^{c,w',x'}$ = 1]](Mary) = 1, i.e. iff
  ∀⟨w',x'⟩ ∈ $\text{DOX}_{w,\text{Mary}}$.|| might rain $||^{c,w',x'}$ = 1, i.e. iff
  ∀⟨w',x'⟩ ∈ $\text{DOX}_{w,\text{Mary}}$.[∃⟨w'',x''⟩∈$\text{EPIST}_{w',x'}$.|| rain $||^{c,w'',x''}$ = 1], i.e. iff
  ∃⟨w'',x''⟩ ∈ $\text{DOX}_{w,\text{Mary}}$.|| rain $||^{c,w'',x''}$ = 1, i.e. iff
  for some world w' compatible with what Mary believes in w, it rains in w'

5. Embedded imperatives

Adopting Stephenson (2007)
(33) Definitions
  a. || say φ $||^{c,w,j}$ = [λx.[∀⟨w',x'⟩∈$\text{SAY}_{w,x}$.|| φ $||^{c,w',x'}$ = 1]]
  b. || imp φ $||^{c,w,j}$ = 1 iff ∀⟨w',x'⟩∈$\text{COMMAND}_{w,j}$.|| φ $||^{c,w',x'}$ = 1]]

An axiom: to say that one commands p is to command p
(34) For any ⟨w',x'⟩ ∈ $\text{SAY}_{w,x}$, $\text{COMMAND}_{w',x'}$ = $\text{COMMAND}_{w,x}$

The right reading is predicted (?)
(35) || imp you call Mary $||^{c,w,j}$ = 1 iff ∀⟨w',x'⟩∈$\text{COMMAND}_{w,j}$.|| you call Mary $||^{c,w',x'}$ = 1]]
(36) || John say [imp you call Mary] $||^{c,w,j}$ = 1, i.e. iff
  || say [imp you call Mary] $||^{c,w,j}$ (|| John $||^{c,w,j}$) = 1, i.e. iff
  [λx.[∀⟨w',x'⟩ ∈ $\text{SAY}_{w,x}$.|| imp you call Mary $||^{c,w',x'}$ = 1]](John) = 1, i.e. iff
  ∀⟨w',x'⟩ ∈ $\text{SAY}_{w,\text{John}}$.|| imp you call Mary $||^{c,w',x'}$ = 1, i.e. iff
  ∀⟨w',x'⟩ ∈ $\text{SAY}_{w,\text{John}}$.[∀⟨w'',x''⟩∈$\text{COMMAND}_{w',x'}$.|| you call Mary $||^{c,w'',x''}$ = 1], i.e. iff
  ∀⟨w'',x''⟩ ∈ $\text{COMMAND}_{w,\text{John}}$.|| you call Mary $||^{c,w'',x''}$ = 1, i.e. iff
  for each world w' compatible with what John commands in w, you call Mary in w'

6. Open issues

Who is the subject of the embedded imperatives?
(37) a. John said call Mary, and I did
  b. John said call Mary, so you should
  c. John said call Mary, and Bill did
  d. John said call Mary, so we will

What are the embedding verbs?
(38) a. English: say
  b. Slovenian/Vietnamese: order, command, demand ...
(39) A possible story for English
  a. imperatives are CPs which cannot be headed by 'that'
  c. only say can take 'that'-less CPs as complement

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