MNEMONIC IMPERATIVES, AWARENESS, & MAXIMIZE PRESUPPOSITION*

Phil Crone, Stanford University

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1 INTRODUCTION

• Main issue involves a puzzle regarding imperatives using the verbs remember and forget.

• On certain theories of imperative meaning and theories of the meaning of these verbs, imperatives involving these verbs are predicted to be trivial.

• This puzzle is resolved by incorporating a notion of (un)awareness into pragmatic reasoning.

• This resolution generates a new puzzle, that is solved by appealing to the principle Maximize Presupposition.

2 MNEMONIC VERBS

I refer to the verbs remember and forget as MNEMONIC VERBS. They are a subset of implicative verbs (Karttunen 1971).

(1) a. Barbara remembered to make the hotel reservations.  
    ⇝ Barbara made the hotel reservations.
    ~˘ Barbara did not remember to make the hotel reservations.

b. Barbara did not remember to make the hotel reservations.
   ~˘ Barbara did not make the hotel reservations.

c. Richard forgot to make the dinner reservations.
   ~˘ Richard did not make the dinner reservations.

d. Richard did not forget to make the dinner reservations.
   ~˘ Richard made the dinner reservations.

2.1 Implicative Verbs & Causally Necessary Conditions

A sentence with an implicative verb whose external argument is $X$ and whose complement is $Y$ has the following components to its meaning (Karttunen 1971; Baglini and Francez 2015; Nadathur 2015):

(2) Implicative verb with external argument $X$ and complement $Y$

   a. Not-at-issue: Presupposition that some $Z$ is a causally necessary condition for $X$ to $Y$.

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1Most work on implicative verbs take the not-at-issue component of their meaning to be a presupposition, but some work treats this component as a conventional implicature (Karttunen and Peters 1979). See Baglini and Francez (2015) for discussion of evidence supporting both analyses.
b. **At-issue**: \(Z\) occurred/did not occur.

In the case of mnemonic verbs, I propose the following (cf. White (2014)):²

(4) Mnemonic verbs of the form \(X\) remembered to/forgot to \(Y\)

   a. **Not-at-issue**: Presupposition that \(X\)’s recollection that \(X\) had to_{priority} \(Y\) is a causally necessary condition for \(X\) to \(Y\).

   b. **At issue**: In the case of remember, \(X\) recalled that \(X\) had to_{priority} \(Y\). In the case of forget, \(X\) did not recall that \(X\) had to_{priority} \(Y\).

The subscript _priority_ indicates that _has to_ should be interpreted as a priority modal in the sense of Portner (2007). Deontic, bouletic, and teleological modals are all subtypes of of priority modals.

(5) a. Barbara remembered to make the hotel reservations.

   b. \( \rightsquigarrow_{presup} \) Barbara’s recollection that Barbara had to make the hotel reservations was a causally necessary condition for Barbara to make the hotel reservations.

   c. \( \rightsquigarrow_{asserts} \) Barbara recalled that Barbara had to make the hotel reservations.

2.2 **Projection in Imperatives**

As expected, the presuppositional content of mnemonic verbs is preserved in imperatives.

(6) a. Feed the dog!

   b. \( \rightsquigarrow_{presup} \) There is a unique, salient dog.

(7) a. Remember to feed the dog!

   b. \( \rightsquigarrow_{presup} \) The addressee’s recollection that the addressee has to feed the dog is a causally necessary condition for the addressee to feed the dog.

3 **A Puzzle about Mnemonic Imperatives**

3.1 **To-Do Lists**

For concreteness, I assume a To-Do List semantics for imperatives based on Portner (2004, 2007).³

(8) a. Let \(A\) be the set of agents in a discourse and let \(\mathcal{A}\) be a set of actions. Then \(T : \mathbb{A} \rightarrow \wp(\mathcal{A})\) is a To-Do List function mapping agents to the set of actions to which they are committed. For any \(\alpha \in \mathbb{A}\), we say that \(T(\alpha) \subseteq \wp(\mathcal{A})\) is \(\alpha\)’s To-Do List (TDL).

   b. For any \(\alpha \in \mathbb{A}\) and any \(a \in \mathcal{A}\), if \(a \in T(\alpha)\), then \(\alpha\) has to perform \(a\).

²These assumptions do not validate all the implication patterns seen in (1), but we can validate these patterns by assuming an additional presupposition that \(X\)’s recollection that \(X\) has to \(Y\) is a causally sufficient condition for \(X\) to \(Y\) (Nadathur 2015). However, it is not obvious that we want to ensure that all of the implications in (1) are logical entailments. In particular, those shown in (1a) and (1d) are questionable. Consider the following attested examples:

(3) a. I only remembered to take before photos after I’d already purged the entire wardrobe.

   b. I didn’t forget to submit, but our eCensus broke when trying to submit.

To only validate (1b) and (1c) as entailments, we assume that mnemonic imperatives only presuppose (4a).

³I believe the puzzle can be stated in any contemporary theory of imperative meaning, but I do not show this here.
3.2 Imperatives & To-Do List Updates

Imperatives denote actions. The effect of uttering an imperative to addressee $\alpha$ is to update $\alpha$’s TDL by adding to it the action denoted by this imperative.

(9) Suppose that speaker $S$ utters an imperative $\varphi$ to addressee $L$. $T$ is updated with $\varphi$ to yield $T'$ (i.e. $T + \varphi = T'$). We have $T'(L) = T(L) \cup \{[\varphi]\}$ and $T'(\alpha) = T(\alpha)$ for all $\alpha \in A$ such that $\alpha \neq L$.

Slogan: Successful imperatives create obligations.

3.3 Obligations & Causally Necessary Conditions

Assuming that have to is closed under entailment, we have the following:

(10) Suppose that $X$ has to perform some action $a$ and that performing $b$ is a causally necessary condition for performing $a$. Because performing $b$ is a causally necessary condition for performing $a$, $X$ performs $a$ entails $X$ performs $b$. It follows that $X$ has to perform $b$.

Suppose that (11a) and (11b) are true. It follows that (11c) is true.

(11) a. Barbara has to make dinner reservations.
   b. Barbara’s recollection that she has to make the dinner reservations is a causally necessary condition for Barbara to make the dinner reservations.
   c. Barbara has to recall that she has to make dinner reservations.

3.4 The Puzzle

Suppose that Lumbergh is Milton’s boss and that the two have the following interactions:

(12) a. Lumbergh: (to Milton at 9 A.M.) Email me the TPS report this afternoon.
   b. Lumbergh: (to Milton at 11 A.M.) Remember to email me the TPS report this afternoon.

- Let $T_1, T_2$ denote the TDL function immediately after Lumbergh’s utterance in (12a) and immediately after Lumbergh’s utterance in (12b), respectively.\(^4\)
- Let $email$ and $remember$ denote the action of emailing Lumbergh the TPS report and the action of recalling that Milton has to email Lumbergh the TPS report, respectively.
- Let $m$ denote Milton.

In this situation, we can state the puzzle as follows:

(i) As a result of Lumbergh’s utterance in (12a), $email \in T_1(m)$. Therefore, Milton has to perform $email$.

\(^4\)I assume that nothing affects the TDL between 9 A.M. and 11 A.M., so $T_1$ is both the TDL function immediately after Lumbergh’s utterance in (12a) and the TDL function immediately before Lumbergh’s utterance in (12b).
(ii) Lumbergh’s utterance in (12b) presupposes that remember is a causally necessary condition for Milton to perform email.

(iii) Since performing remember is a causally necessary condition for performing email and Milton has to perform email, Milton has to perform remember.

This follows on the presuppositions of Lumbergh’s utterance in (12b), so it must hold in the context before Lumbergh utters (12b).

(iv) But the point of Lumbergh’s utterance in (12b) is to ensure that remember $\in T_2(m)$, so that Milton has to preform remember.

Puzzle: Lumbergh’s utterance in (12b) presupposes that Milton has to perform remember. But the point of uttering (12b) is supposedly to ensure that Milton has to perform remember.

Mnemonic imperatives presuppose the context they are supposed to bring about.

4 AWARENESS

Due to inattentiveness or forgetfulness, agents may be unaware of propositions or actions that are available to them (de Jager 2009; Franke and de Jager 2011). Similar notions of (un)awareness have been employed in analyses of:

- Distinctions between implicit and explicit belief (de Jager 2009; Franke and de Jager 2011; Yalcin 2011)
- Epistemic must (von Fintel and Gillies 2010)
- Might (Ciardelli et al. 2011; Roelofsen 2013)
- Necessarily uninformative assertions (Crone Forthcoming)

4.1 UNACTIONABLES

Agents cannot perform any actions of which they are unaware, which I term UNACTIONABLES.

(13) a. Let $A$ be the set of agents in a discourse and let $\mathcal{A}$ be a set of actions. Then $\mathfrak{A} : A \to \wp(\mathcal{A})$ is an Unactionable function mapping agents to the set of actions of which they are unaware. For any $\alpha \in A$, we say that $\mathfrak{A}(\alpha) \subseteq \wp(\mathcal{A})$ is $\alpha$’s set of unactionables.

b. For any $\alpha \in A$ and any $a \in \mathcal{A}$, if $a \in \mathfrak{A}(\alpha)$, then $\alpha$ cannot perform $a$.

NB: We do not require that an agent $\alpha$ is aware of all actions on $\alpha$’s TDL. Thus, it is possible that $T(\alpha) \cap \mathfrak{A}(\alpha) \neq \emptyset$. 

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4.2 Awareness Updates

Agents can be made aware of actions by linguistic and non-linguistic events. Minimally, an utterance will make an addressee aware of any actions mentioned in that utterance.

(14) a. An utterance $\varphi$ mentions an action $a$ if $\varphi$ denotes $a$ or $\varphi$’s presuppositions involve $a$.
   b. Suppose that speaker $S$ utters $\varphi$, which mentions $a$. $A$ is updated with $\varphi$ to yield $A'$ (i.e. $A + \varphi = A'$). We have $A'(\alpha) = A(\alpha) \cap (A \setminus a)$ for all $\alpha \in A$.

We cannot state necessary and sufficient conditions for an utterance $\varphi$ to make an addressee aware of some action $a$, as awareness effects are highly dependent on contextual factors.

(15) Lumbergh: (to Milton at 11 A.M.) How’s that TPS report?

Lumbergh may utter (15) to remind Milton to email the TPS report, even though this utterance does not explicitly mention emailing the TPS report.

4.3 Resolving the Puzzle

Let $A_1$ and $A_2$ denote unactionable functions immediately after Lumbergh’s utterance in (12a) and immediately after Lumbergh’s utterance in (12b), respectively.

(i) From the discussion above, we know that Milton has to perform email and remember at 11 A.M. However, this does not ensure that $\{email, remember\} \cap A(m) \neq \emptyset$.

(ii) Suppose Lumbergh believes it to be likely that $email \in A_1(m)$ and that it is more likely that Milton will perform email if he is aware of email at 11 A.M. than if he is not aware of email at 11 A.M.

(iii) Lumbergh can make it more likely that Milton performs email by ensuring that $email \not\in A_2(m)$.

(iv) Lumbergh’s utterance in (12b) mentions email, since its presuppositions involve email.

(v) Since this utterance mentions email, $A_2(m) = A_1(m) \cap (A \setminus email)$, so $email \not\in A_2(m)$.

(vi) By uttering (12b), Lumbergh makes it more likely that Milton will perform email.

Conclusion: The purpose of Lumbergh’s utterance in (12b) is to ensure that Milton is aware of email at 11 A.M., thereby making it more likely that Milton will perform email.

In general, mnemonic imperatives have the function of reminding addressees of their obligations.

5 Maximize Presupposition

5.1 Why Not a Non-Mnemonic Imperative?

Lumbergh could make Milton aware of email in ways other than by uttering (12b), as shown by (15). One possibility is for Lumbergh to repeat the imperative from (12a) at 11 A.M.
(16) ? Lumbergh: *to Milton at 11 A.M.* Email me the TPS report this afternoon.

According to the model of awareness described in §4, (16) should have the same effect as (12b). Both mention email, so both should ensure that email \( \notin A_2(m) \).

However, (16) is pragmatically odd and is either extremely heavy-handed or suggests that Milton did not hear Lumbergh at 9 A.M.

5.2 MAXIMIZE PRESUPPOSITION

The oddity of (16) can be explained by appealing to the pragmatic principle MAXIMIZE PRESUPPOSITION (Heim 1991).

(17) If \( \varphi, \psi \) are contextually equivalent alternatives, and the presuppositions of \( \psi \) are stronger than those of \( \varphi \), and are met in the context of utterance \( c \), then one must use \( \psi \) (Singh 2010).

Lumbergh’s utterances in (12b) and (16) are contextually equivalent alternatives, as both have the discourse effect of ensuring that email \( \notin A_2(m) \).

Since (12b) has a presuppositional component to its meaning that (16) lacks, it is presuppositionally stronger. By (17), (12b) is therefore preferred to (16).

Of course, if the presuppositions of (12b) are not satisfied in the context, it would be infelicitous for Lumbergh to utter it. This could arise if, for example, Milton had not heard Lumbergh utter (12a) at 9 A.M.

6 WRAPPING UP

- On particular theories of implicative and imperative meaning, mnemonic imperatives are predicted to be trivial.
- We can resolve this puzzle by incorporating notions of awareness into our models of pragmatic reasoning.
- This solution creates a new problem, which can be solved by appealing to the principle of Maximize Presupposition.
- Does this puzzle arise on alternative theories of imperative or implicative meaning?
- Is there more to be explained in the contrast between (12b) and (16)?

APPENDIX

A: DO MNEMONIC VERBS PRESUPPOSE THAT RECOLLECTION IS A CAUSALLY NECESSARY CONDITION?

The proposal in (4) is repeated in (18):
(18) Mnemonic verbs of the form $X$ remembered to/forgot to $Y$

a. **Not-at-issue**: Presupposition that $X$’s recollection that $X$ had to$_{\text{priority}}$ $Y$ is a causally necessary condition for $X$ to $Y$.

b. **At issue**: In the case of *remember*, $X$ recalled that $X$ had to$_{\text{priority}}$ $Y$. In the case of *forget*, $X$ did not recall that $X$ had to$_{\text{priority}}$ $Y$.

We may question whether the presupposition in (18a) is correct on the basis of scenarios such as the following:

(19) a. Barbara is planning a trip to San Francisco. Richard tells her to visit City Lights Bookstore. However, once she arrives in San Francisco, Barbara forgets Richard’s advice. During her visit, Barbara’s friend takes her to a bookstore, which just happens to be City Lights. However, Barbara does not pay attention to the identity of the bookstore, and by the time she returns from her trip does not realize that she ever visited City Lights.

b. ? Barbara forgot to/did not remember to visit City Lights Bookstore.

If (19b) is felicitous, then we may felicitously use mnemonic verbs even when the condition in (18a) is not met.

However, in order for this to be the case, the agent must perform the action in question unintentionally or inadvertently. We can add to (18a) that the recollection in question is a causally necessary condition for $X$ to $Y$ intentionally.

Assuming that imperatives create obligations to perform actions intentionally, the puzzle reemerges.

Assuming otherwise, we still cannot resolve the puzzle, because (20a) and (20b) are predicted to be equivalent.

(20) a. Remember to feed the dog.

b. Do not feed the dog unintentionally.

**B: Is It Just Presupposition Accommodation?**

Consider (12b), repeated below as (21).

(21) Lumbergh: *(to Milton at 11 A.M.)* Remember to email me the TPS report this afternoon.

Suppose we explained (21) as follows:

(i) We cannot be sure of whether Milton’s TDL contains the action email at 11 A.M., since this utterance takes place in a different context than Lumbergh’s utterance at 9 A.M. (12a).

(ii) It is possible that Milton’s TDL at 11 A.M. does not contain email, in which case Milton does not have to email Lumbergh the TPS report.

(iii) Lumbergh’s utterance in (21) adds email to Milton’s TDL via standard presupposition accommodation, since the presupposition of (21) entails that Milton has to email Lumbergh the TPS report.
(iv) This explains the puzzle of mnemonic imperatives without using any additional theoretical machinery.

Unfortunately, this answer will not work, for at least three reasons.

- It is true at 11 A.M. that Milton has to email Lumbergh the TPS report. This became true in virtue of email being added to Milton’s TDL at 9 A.M. Thus, if we say that email is not on Milton’s TDL at 11 A.M., we must explain why it is still true that Milton has to email Lumbergh the TPS report despite the change in Milton’s TDL.

- Mnemonic imperatives can be used to create new obligations via presupposition accommodation, but these have a passive aggressive quality. Lumbergh’s utterance in (21) does not have this quality.

- If Lumbergh’s utterance in (21) were being used to add an action to Milton’s TDL that was not already present, then we could not explain why (21) differs in quality from (16). We cannot appeal to Maximize Presupposition since, by assumption, the presupposition of (21) is not met at 11 A.M.

REFERENCES


