

Raising Awareness with Imperatives

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1. Introduction

Imperatives involving the verbs *remember* and *forget* (“mnemonic verbs”) are extremely common in natural language. Despite this, standard theories of imperative meaning, such as those proposed by Portner (2007), Condoravdi & Lauer (2012), and Kaufmann (2012), do not capture the essential effect of these “mnemonic imperatives.” To illustrate the challenges posed by mnemonic imperatives, I focus on the sequence of imperatives in (1):

- (1) a. Barbara: (*to Richard on Monday*) I’d like to take a look at your new paper. Send me a draft once it’s ready.
- b. Barbara: (*to Richard on Wednesday*) Remember/Don’t forget to send me a draft of your new paper once it’s ready.

Intuitively, the function of Barbara’s utterance in (1b) is to remind Richard of her initial request in (1a). However, this function is not captured by standard theories of imperatives. If we restrict our view to only the effects discussed by these standard theories, (1b) is predicted either to be redundant or to create a new commitment for Richard independent of the commitment created by the imperative in (1a). Ultimately, I argue that the effects of mnemonic imperatives are best captured not by abandoning standard theories of imperatives, but by augmenting them with a model of discourse participants’ states of awareness and attention.

Before further discussing the use of mnemonic verbs in imperatives, it is useful to note several general properties of mnemonic verbs. These verbs are traditionally classified as two-way implicatives (Karttunen 1971). According to the traditional classification, *X remembers/doesn’t forget to do Y* entails *X does Y*, while *X doesn’t remember/forgets to do Y* entails *X does not Y*:

- (2) a. Richard remembered/didn’t forget to send Barbara a draft of his paper.
- b. \rightsquigarrow Richard sent Barbara a draft of his paper.
- (3) a. Richard didn’t remember/forgot to send Barbara a draft of his paper.
- b. \rightsquigarrow Richard didn’t send Barbara a draft of his paper.

While it is usually unproblematic to conclude (2b) from (2a) and (3b) from (3a), it is possible to show that these implications fall short of full-blown entailments. Horn (1972) and van Leusen (2012) point out that the implication in (3) falls short of an entailment using examples such as the following:

- (4) Barbara didn’t remember/forgot to turn out the lights, but luckily she brushed against the switch.

It is less commonly noted that the implication in (2) also falls short of an entailment. Nonetheless, this can be shown by considering the following attested web examples found via Google:

- (5) I’ve tried the ballot for wimbledon (*sic*) once or twice but never got anywhere so this year I was glad I did. Though most years I only remembered to apply after the December deadline.
- (6) I didn’t forget to submit, but our eCensus broke when trying to submit.

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Still, in most circumstances, the implications in (2) and (3) will be valid. Most importantly for present purposes, (3) is valid in most normal circumstances, meaning that remembering or not forgetting to do Y is usually a necessary precondition for doing Y .

Consistent with their traditional classification as implicatives, mnemonic verbs are generally analyzed as having a presuppositional component to their meanings.¹ Karttunen (1971)'s initial proposal was that X *remembers/forgets to do* Y presupposes that X is obligated or committed to doing Y . More recently, White (2014) has put forward a similar proposal. According to White, a sentence of the form X *remembers/forgets to do* Y presupposes that X must/has to do Y , where *must/has to* is interpreted as a root (i.e. non-epistemic) modal.

2. Standard Theories of Imperative Meaning

In discussing theories of imperative meaning, I focus only on how these imperatives account for directive uses of imperatives, i.e. uses that are intended to get the addressee to act in some way. This contrasts with non-directive uses of imperatives, such as well-wishes, curses, disinterested advice, etc. I use $!$ to denote an imperative operator. Thus, if p is the proposition *Richard sends Barbara a draft of his paper*, then the corresponding imperative *Send me a draft of your paper*, directed towards Richard, is denoted by $p!$. Necessity modals are denoted by *Must*, so the proposition *Richard must send Barbara a draft of his paper* would be denoted $Must(p)$.² Modal statements are interpreted in a standard Kratzerian manner (Kratzer 1981, 1991), according to which $Must(\varphi)$ is interpreted relative to a world w , a modal base f , and ordering source g . We use g to induce a preorder $\leq_{g(w)}$ and then define the set of optimal worlds $O(f, g, w)$ as follows:

$$(7) \quad O(f, g, w) = \{v \in \cap f(w) \mid \forall z \in \cap f(w). z \leq_{g(w)} v \rightarrow v \leq_{g(w)} z\}$$

$Must(\varphi)$ denotes the set of worlds w such that $O(f, g, w) \subseteq \varphi$.

Portner (2007)'s proposal associates the utterance of $\varphi!$ with two discourse effects. First, a successful imperative $\varphi!$ updates the *CG* such that φ is added to a modal ordering source, with the particular ordering source that is updated depending on the illocutionary force of the modal. For example, orders update a deontic ordering source, whereas invitations or requests update a bouletic ordering source.³ The second effect that Portner associates with an utterance of $\varphi!$ is the addition of φ to the To-Do List (*TDL*) of the addressee.⁴ *TDLs* are a component of the discourse context, analogous to the *CG*, proposed by Portner to keep track of discourse participants' commitments. If $\varphi \in TDL(\alpha)$, then agent α is committed to acting in such a way to make φ true in the actual world.

Condoravdi & Lauer (2012) propose instead that the only effect of uttering an imperative $\varphi!$ is that the speaker publicly commits herself to having an effective preference for φ . An effective preference of an agent α is a preference possessed by α that determines α 's actions, and the set of α 's effective preferences is denoted by $EP(\alpha)$. A speaker's commitment to having an effective preference can have additional, downstream effects that vary depending on aspects of the context. In the case of directive imperatives, the speaker's public commitment to $\varphi \in EP(\mathbf{speaker})$ will cause the addressee to have an effective preference for φ (i.e. $\varphi \in EP(\mathbf{addressee})$). As a result, the addressee will be committed to bringing about φ .

¹ While most analyses of implicatives take these verbs to involve presuppositions, one notable exception is Karttunen & Peters (1979)'s analysis. According to Karttunen and Peters, the not-at-issue, projective meaning component of an implicative is a conventional implicature, rather than a presupposition. See Baglini & Francez (2015) for a recent discussion of whether implicative verbs are best understood as involving presuppositions or conventional implicatures.

² Following prior work on imperatives, I ignore distinctions between strong and weak necessity modals.

³ Condoravdi & Lauer (2012) note that the update Portner proposes is not sufficient to guarantee the intended effect of making $Must(\varphi)$ true after the utterance of $\varphi!$. They note that to achieve the effect that Portner desires, the *CG* must be directly updated with $Must(\varphi)$. I stick with Portner's original proposal, but the decision to do so does not have any larger consequences for the treatment of mnemonic imperatives.

⁴ Technically, $\varphi!$ adds a property related to φ to the addressee's *TDL*, rather than φ itself. I have simplified Portner's proposal here, but not in a way that has any serious consequences for the matters at hand.

Kaufmann (2012) offers yet another analysis of imperatives, which is based on the similarities between imperatives and performative uses of modals. On Kaufmann's account, a performative use of a modal $Must(\varphi)$ arises when a particular set of contextual conditions are met. Kaufmann takes $\varphi!$ to have the same at-issue content as $Must(\varphi)$, but to presuppose exactly those contextual conditions that ensure a performative use. Thus, imperatives can be seen as necessity modals that are necessarily used performatively. Note that these contextual conditions include the assumption that the ordering source of $Must(\varphi)$ is a good guideline for action in resolving some salient decision problem. In this way, Kaufmann intends to have performative modals and imperatives commit the addressee to bringing about φ .

2.1. Mnemonic Imperatives on Standard Theories of Imperatives

Let's now consider the effects that these theories of imperative meaning predict the sequence of imperatives in (1) to have. Refer to the proposition that Richard sends Barbara a draft of his paper as soon as it's ready as *Send* and the proposition that Richard remembers to send Barbara a draft of his paper as *Remember*. Then, the denotations of Barbara's utterances in (1a) and (1b) are *Send!* and *Remember!*, respectively. As discussed in §1, in normal circumstances in which the presupposition of *remember/forget to do Y* is satisfied, remembering/not forgetting to do *Y* is a necessary precondition for doing *Y*. For the moment, assume we are in such a normal context where we have $Send \subseteq Remember$, i.e. the set of worlds in which Richard sends a draft of his paper is a subset of the set of worlds in which he remembers to send a draft.

Both Portner and Kaufmann take *Send!* to ensure that $Must(Send)$ is added to the *CG*. On Kaufmann's theory, *Send!* does this directly, whereas on Portner's theory, *Send* is added to some relevant ordering source *g*. In both cases, we wish to ensure that all optimal worlds are *Send*-worlds, i.e. that $O(f, g, w) \subseteq Send$. In turn, *Remember!* should ensure that all optimal worlds are *Remember*-worlds, i.e. that $O(f, g, w) \subseteq Remember$. But by the transitivity of the subset relation and the assumption that $Send \subseteq Remember$, once we have $O(f, g, w) \subseteq Send$ we already have $O(f, g, w) \subseteq Remember$. In other words, (1b) already ensures that all optimal worlds are *Remember*-worlds; the modal effects that Portner and Kaufmann predict (1b) to have are already entailed by (1a).⁵

Next, consider how the theories of imperatives discussed above aim to ensure that the successful utterance of $\varphi!$ commits the addressee to acting to bring about φ . On Kaufmann's theory, the addressee's commitment to bring about φ is a consequence of $Must(\varphi)$ being true. Thus, if (1a) ensures that $Must(Remember)$ is true, as I have just argued, then (1a) should commit Richard to bringing about *Remember*. On Portner and Condoravdi and Lauer's theories, we have either $Send \in TDL(\mathbf{Richard})$ or $Send \in EP(\mathbf{Richard})$ after (1a). Neither *TDLs* nor effective preference sets are closed under entailment, so even on the assumption that $Send \subseteq Remember$, Barbara's utterance in (1a) does not guarantee that $Remember \in TDL(\mathbf{Richard})$ or that $Remember \in EP(\mathbf{Richard})$. Nonetheless, once *Send* is on Richard's *TDL* or is one of his effective preferences, he is committed to bringing about *Send*, i.e. to making the actual world a *Send*-world. If we have $Send \subseteq Remember$, then there is no way to do this without also making the actual world a *Remember*-world. Thus, once Richard is committed to bringing about *Send*, there is no reason to think that additionally adding *Remember* to Richard's *TDL* or his set of effective preferences will change his behavior.

If we only consider the effects on the discourse context discussed by standard theories of imperatives and we assume that $Send \subseteq Remember$, (1b) appears to be completely redundant after the utterance of (1a). To avoid reaching this conclusion, we might deny that $Send \subseteq Remember$, i.e. assume it is possible for Richard to send Barbara a draft of his paper without remembering to do so. This assumption is not completely unreasonable. For example, Richard could forget that Barbara wishes to see his draft, but accidentally include her on an email that includes the draft as an attachment. Alternatively, we might maintain the assumption that $Send \subseteq Remember$, but adopt an alternative theory of modality

⁵ $Must(Remember)$ could be added to the *CG* non-vacuously after $Must(Send)$ had been added to the *CG* if $Must(Remember)$ and $Must(Send)$ had either different modal bases or different ordering sources. I assume here that the modal bases and ordering sources associated with these modal propositions are the same.

according to which *Must* is not closed under entailment. We might also find a way to explain how Richard's behavior would change by committing him to bringing about *Remember* after committing him to bring about *Send*.

Any of these moves would make (1b) non-redundant. But they would achieve this by taking (1b) to establish a *new* commitment for Richard not already entailed by (1a). This contradicts the intuition mentioned above that the role of (1b) is to remind Richard of a pre-existing commitment, rather than create a new one. Note also that if (1b) were non-redundant in this way, it should be felicitous for Barbara to utter (1b) immediately after (1a). But, in fact, doing so is highly redundant:

- (8) Barbara: (*to Richard on Monday*) # I'd like to take a look at your new paper. Send me a draft once it's ready, and remember to send me a draft once it's ready.

In addition, if (1b)'s only function were to create a new commitment for Richard, then repeating (1b) should be redundant. But Barbara can felicitously repeat (1b) at a later time:

- (9) Barbara: (*to Richard on Friday*) Remember to send me a draft of your new paper once it's ready.

If we restrict ourselves to only considering the effects discussed by standard theories of imperatives while also maintaining that (1b) is non-redundant, we fail to account for felicity judgments about examples like (8) and (9).

2.2. Accommodation?

Let's consider once again the intuition that the role of (1b) is to remind Richard of his commitment to send Barbara a draft of his paper. Is there a way in which we could capture this type of effect while still hewing close to standard theories of imperatives? One approach along these lines would be to assume that the effects of (1a) no longer obtain by the time Barbara utters (1b). Because these two utterances take place several days apart, perhaps *Must(Send)* is no longer in the *CG* or Richard's commitment to bring about *Send* has somehow lapsed between Monday and Wednesday. However, this view is incompatible with the fact that mnemonic verbs have a presuppositional component to their meaning. Following White (2014), the presupposition of (1b) is (roughly) that given Barbara's preferences, Richard must send Barbara a draft of his paper. This presupposition is satisfied if we assume that the effects of (1a), which include the addition of *Must(Send)* to the *CG*, persist in the context in which (1b) is uttered. But if we take these effects to no longer obtain, then (1b) should suffer from a presupposition failure.

Of course, listeners regularly accommodate presuppositions (Lewis 1979), so perhaps the effects of (1a) do not obtain in the context in which (1b) is uttered. Rather, the effects of (1a) have lapsed between Monday and Friday and presupposition of (1b) is accommodated. Unfortunately, there are several reasons to think that the presupposition of (1b) does not need to be accommodated. First, note that in other contexts speakers can use mnemonic imperatives to achieve goals via accommodation of the mnemonic verb's presupposition. For example, suppose Barbara wants to ensure that Richard submits his grades by the deadline of Friday. She may be unsure whether Richard knows of the grading deadline, but she can nonetheless felicitously utter the following:

- (10) Barbara: (*to Richard*) Remember to submit your grades by Friday.

If Richard did not previously know that grades were due by Friday, he could easily accommodate the presupposition of (10), thereby learning about the grading deadline. If this occurs, he can respond in a way that makes it clear that (10) was informative:

- (11) Richard: (*to Barbara in response to (10)*) Thanks for the reminder. In fact, I didn't even know that grades were due on Friday!

In contrast, Richard cannot respond in a similar manner to (1b), assuming (1a) was successful:

- (12) Richard: (*to Barbara in response to (1b)*) # No problem. Actually, I didn't know you wanted to see a draft of my paper.

The infelicity of (12) suggests that the presupposition of (1b) is not accommodated by Richard.

Also note that if the effects of (1a) did not obtain in the context of (1b), we would expect Barbara to be able to simply repeat (1a) on Wednesday:

(13) Barbara: (*to Richard on Wednesday*) ?? Send me a draft of your new paper once it's ready.

While it may not be completely infelicitous for Barbara to utter (13) after uttering (1a) on Monday, it is certainly less natural than (1b). This is not predicted if the effects of (1a) had somehow lapsed by Wednesday, in which case we would expect (13) to be completely felicitous.

3. Mnemonic Imperatives & Awareness

Although the discussion in the previous section did not yield an account of the effects of mnemonic imperatives, it does provide lessons for developing such an account. First, in order to explain the function of (1b), something must change between its context of utterance and the context immediately after Barbara utters (1a). If nothing changed, (1b) would be redundant, as shown by the infelicity of (8). On the other hand, we also cannot simply assume that the effects of (1a) have completely lapsed by the time (1b) is uttered, as shown by the discussion in §2.2. In some way, we must allow the effects of (1a) to persist until the context in which (1b) is uttered without making (1b) redundant.

I propose the following solution. First, I maintain that Richard is committed to sending Barbara a draft after (1a) until the context in which (1b) is uttered. However, in the interval between Monday and Wednesday, Richard may become *unaware* of this commitment. While Richard is in a state of unawareness about his commitments, he cannot act on them. In turn, Barbara's utterance in (1b) raises Richard's awareness of his pre-existing commitment, thereby making it possible for him to actually fulfill this commitment by sending her a draft of his paper. This type analysis can be pursued by relying on technical mechanisms that are independently needed for understanding aspects of discourse. Recent work has shown that modeling agents' awareness states is independently necessary for understanding a number of phenomena, including the effects of uninformative questions on agents' behavior (Franke & de Jager 2011), "conversational backoff" (Rawlins 2010), properties of *might* (Ciardelli et al. 2011; Roelofsen 2013), and seemingly uninformative assertions of clarity (Crone 2016).

To model agents' states of awareness, I adopt a modified version of the awareness model presented in Franke & de Jager (2011), which draws on previous work by Franke & de Jager (2007) and de Jager (2009). In its most basic form, unawareness involves an agent failing to recognize certain ways in which possible worlds may differ. Yalcin (2011) illustrates this form of unawareness with the example of an agent who is not considering the issue of whether it is raining in Topeka or not. Such an agent is unaware of the proposition *It is raining in Topeka now*, and cannot distinguish between possible worlds that differ only with respect to the truth-value of this proposition. A key feature of Franke and de Jager's model is that it recognizes that unawareness often goes beyond a simple failure to recognize ways the world might be. Rather, unawareness is often accompanied by what Franke and de Jager call implicit assumptions that have effects on agents' behavior. Consider an individual who has lost her keys and searches for them throughout her house. Her search eventually proves futile, and she gives up the search in frustration. This agent is unaware of the possibility that the keys are in her car. But in addition to failing to recognize this possibility, she acts as if she had already ruled out the possibility that her keys were in the car. In Franke and de Jager's terms, she is operating with an implicit assumption that her keys are not in the car.

Formally, let \mathcal{W} be a set of worlds, let $\mathcal{P} = \wp(\mathcal{W})$ be a set of propositions, and let \mathcal{A} be a set of actions. Agents' beliefs and preferences are represented by defining for each agent α a background probability distribution over propositions $P_\alpha : \mathcal{P} \rightarrow [0, 1]$ and a utility function $U_\alpha : \mathcal{W} \times \mathcal{A} \rightarrow \mathbb{R}$ that maps world-action pairs to real numbers. Awareness is modeled via an awareness state $\langle \mathfrak{U}_\alpha, \mathfrak{v}_\alpha \rangle$. $\mathfrak{U}_\alpha \subseteq \mathcal{P}$ is the set propositions of which α is unaware and is closed under complement. Implicit assumptions are modeled via $\mathfrak{v}_\alpha : \mathfrak{U}_\alpha \rightarrow \{\mathbf{T}, \mathbf{F}\}$, which is a partial valuation function from propositions in \mathfrak{U}_α to truth-values. We require that if $\mathfrak{v}_\alpha(\varphi)$ is defined, $\mathfrak{v}_\alpha(\varphi) = \neg \mathfrak{v}_\alpha(\mathcal{W} \setminus \varphi)$. We next use the agent α 's background probability distribution and awareness state to model α 's probability distribution under unawareness P'_α :

$$(14) \quad P'_\alpha = P_\alpha(\cdot \mid \{w \in \mathcal{W} \mid \mathfrak{v}_\alpha(\varphi) = \mathbf{T} \rightarrow w \in \varphi\})$$

That is, an agent’s probability distribution under unawareness is simply their background distribution conditioned on their implicit assumptions. An agent α acts by choosing the action with the highest expected utility (EU_α) given P'_α and U_α :

$$EU_\alpha(a) = \sum_{w \in \mathcal{W}} P'_\alpha(\{w\}) \times U_\alpha(w, a)$$

Awareness states can be manipulated by both linguistic and non-linguistic events, although here I focus only on how an agents’ awareness states are affected by other agents’ utterances. In principle, it would be desirable to give necessary and sufficient conditions for a particular utterance u to make an agent aware of a proposition φ .⁶ Unfortunately, it is unlikely that such necessary and sufficient conditions can be formulated. To illustrate the difficulty, suppose that after Barbara uttered (1a), Richard became unaware that Barbara wanted to see a draft of his paper. Barbara could utter the following with the intention of raising Richard’s awareness of her wishes:

(15) How’s that new paper of yours coming along?

It would not be surprising if (15) raised Richard’s awareness of Barbara’s desire to see a draft of his paper. But notice that although the literal content (15) is related to Richard’s paper, it is not directly about Barbara’s desire to see Richard’s paper. Rather, we understand it as potentially raising awareness of Barbara’s desire to see Richard’s paper because of Richard and Barbara’s shared conversational history. It is hard to see how we could derive (15)’s potential effect on Richard’s awareness state from its literal meaning alone. Examples like (15) show that an utterance’s ability to raise awareness of issues is highly context dependent. Because of this, when modeling scenarios involving changes to awareness states, we simply must stipulate the effects that particular utterances have on these states.

Let’s now consider how this model of awareness will help us understand the sequence of imperatives in (1). In particular, we will focus on Richard’s background beliefs, preferences, and awareness state immediately before Barbara utters (1b). We have two worlds in \mathcal{W} , w_1 and w_2 , that differ only with respect to the truth-value of $Must(Send)$: $Must(Send) = \{w_1\}$ and $\neg Must(Send) = \{w_2\}$. The set of possible actions that Richard may perform includes sending Barbara a draft or doing nothing: $\mathcal{A} = \{\text{send-draft}, \text{do-nothing}\}$.

On Wednesday, Richard’s background model assigns a high, but non-maximal, probability to $Must(Send)$. Even though Barbara’s utterance in (1a) ensures that $Must(Send)$ enters the CG on Monday, there is a small possibility that things could have changed by Wednesday. For example, Barbara may have decided that Richard is a hack, and no longer wants to read any of his work. We’ll assume that $P_{\mathbf{R}}(Must(Send)) = 0.95$.⁷ We’ll also assume that Richard is generally accommodating to Barbara’s wishes, so that if she would like him to send a draft, sending the draft has a high utility. On the other hand, it is socially costly for Richard to not send a draft to Barbara if she would like him to. If she does not want to see the draft, sending it will incur a small cost, whereas doing nothing will be neutral. This gives us the following utility function for Richard:

$$U_{\mathbf{R}}(w, a) = \begin{cases} 1 & \text{if } (w, a) = (w_1, \text{send-draft}) \\ -1 & \text{if } (w, a) = (w_1, \text{do-nothing}) \\ -0.25 & \text{if } (w, a) = (w_2, \text{send-draft}) \\ 0 & \text{if } (w, a) = (w_2, \text{do-nothing}) \end{cases}$$

Under full awareness, we have $EU_{\mathbf{R}}(\text{send-draft}) = 1 \times 0.95 + -0.25 \times 0.05 = 0.9375$ and $EU_{\mathbf{R}}(\text{do-nothing}) = -1 \times 0.95 + 0 \times 0.05 = -0.95$. Clearly, sending the draft is the right call. But there is a chance that Richard will forget about $Must(Send)$, and if he does, he may behave as if Barbara

⁶ Formalizations of “attentive content” within the framework of Inquisitive Semantics (Ciardelli et al. 2011; Roelofsen 2013) seem to have this goal in mind.

⁷ There is also a technical reason for taking $P_{\mathbf{R}}(Must(Send))$ to be non-maximal. Eventually, we condition on $Must(Send)$ being false, which is problematic if $P_{\mathbf{R}}(Must(Send)) = 1$.

did not wish to see his paper. That is, he may operate with an implicit assumption that $Must(Send)$ is false. This is a plausible assumption for him to make, since his default belief had (1a) never been uttered would be that he had no commitment to send Barbara a draft. To model this situation, we simply have $\mathcal{U}_R = \{Must(Send), \neg Must(Send)\}$ and $v_R(Must(Send)) = F$. Now, when we look at Richard's probability distribution under unawareness, we have $P'_R(Must(Send)) = 0$. As a consequence, the expected utilities of each action change to the following: $EU_R(\text{send-draft}) = 0 \times 1 + 1 \times -0.25 = -0.25$ and $EU_R(\text{do-nothing}) = 0 \times -1 + 1 \times 0 = 0$. If Richard assumes that Barbara does not want to see a draft of his paper, doing nothing is now the preferred action.

We are now in a position to explain Barbara's utterance in (1b). Assume that on Wednesday Barbara believes Richard is unaware of $Must(Send)$ and is making an implicit assumption that $Must(Send)$ is false. Further assume that Barbara's utterance in (1b) overturns any potential unawareness of $Must(Send)$. Finally, assume that Richard is more likely to be aware of $Must(Send)$ at some time t_1 if he is aware of $Must(Send)$ at t_0 where t_0 precedes t_1 . Then, Barbara's utterance in (1b) will overturn Richard's unawareness of $Must(Send)$ on Wednesday. This, in turn, makes it more likely that he will be aware of $Must(Send)$ at the time he finally finishes the draft of his paper. And, as we saw, if he is aware of $Must(Send)$ at this time, he will send the draft to Barbara. Thus, by uttering (1b), Barbara increases the likelihood that Richard will eventually send her a draft of his paper.

This analysis also allows us to explain the felicity judgments of several examples considered above. First, recall that it is infelicitous to utter (1a) and (1b) in immediate succession, as shown by (8). If we assume that the essential function of the mnemonic imperative in (1b) is to overturn unawareness of a pre-existing obligation, this infelicity is to be expected. It is highly implausible that Richard would immediately become unaware of $Must(Send)$ after hearing Barbara utter (1a), thereby making (1b) superfluous. We can also explain the felicity of repeating mnemonic imperatives, as in (9), since it is possible that Richard will again become unaware of $Must(Send)$ between Wednesday and Friday. If Barbara believes this is the case, she may utter (9) to again overturn Richard's unawareness and make it more likely that he eventually sends her a draft.

4. Why Mnemonic Imperatives?

It was noted above that it is odd for Barbara to repeat (1a) on Wednesday, as shown by (13). It is not clear why this would be the case on the awareness-based proposal put forward above. After all, (13) should accomplish Barbara's goal of overturning Richard's unawareness of $Must(Send)$. Moreover, since (13) is less prolix than (1b), we might expect (13) to be the preferred way to overturn this unawareness and remind Richard of a pre-existing commitment.

In light of these considerations, what explains the preference for the mnemonic imperative in (1b) as opposed to repeating the original, non-mnemonic imperative? I propose that a mnemonic imperative such as (1b) is more informative than a non-mnemonic imperative such as (13) in so far as the mnemonic imperative communicates that the speaker believes that the presupposition of the mnemonic imperative is satisfied in the discourse context. In the case of (1b), Barbara communicates that she believes that $Must(Send)$ can be presupposed. In other words, she communicates that she believes that Richard already knows, at least implicitly, that she wants him to send her a draft. In contrast, no such belief on Barbara's part is communicated by (13). The additional informativity of the mnemonic imperative provides a straightforward reason that it would be preferred to the non-mnemonic imperative.

If we assume that mnemonic and non-mnemonic imperatives are in pragmatic competition, then we may also expect the use of the less informative, non-mnemonic imperative to generate a conversational implicature. Indeed, this is what we find. Suppose that Barbara did utter (13) instead of (1b). We may conclude that Barbara chose to use a non-mnemonic imperative because she was not in a position to use the more informative mnemonic imperative. For example, Barbara may have thought that Richard had completely forgotten her utterance in (1a) in such a way that he would not recognize the presupposition of (1b) to be satisfied even if he were reminded of it. It would be reasonable to conclude that Barbara held such a belief about Richard upon hearing (13). Such a conclusion could be quite face-threatening

towards Richard, making the use of the non-mnemonic imperative impolite (Brown & Levinson 1987).⁸ Of course, Barbara can forestall Richard from reaching this conclusion by using the more informative imperative in (1b).

This type of pragmatic reasoning regarding awareness-raising utterances does not appear to be restricted to the case of mnemonic imperatives. For example, elsewhere I have discussed cases in which a speaker attempts to raise awareness of a proposition φ while simultaneously acknowledging that φ is already known to the addressee (Crone 2016). In these cases, a speaker chooses an expression that is more informative than an alternative expression that would raise awareness of φ , such as an outright assertion of φ . In doing so, the speaker prevents the addressee from concluding that the speaker takes the addressee to be uninformed. Rather, the speaker signals that the addressee is knowledgeable about the relevant issue, but is perhaps in a state of unawareness.

5. Conclusion

We have seen that the effects of imperatives discussed by standard theories of imperatives do not account for the function of mnemonic imperatives. In order to account for these imperatives, I argue that we must consider the awareness states of discourse participants and how utterances may affect these states. When we take such a view, we see that mnemonic imperatives play the role of raising awareness of pre-existing commitments that addressees may be unaware of due to inattention or forgetfulness. Raising awareness in this way can, in turn, have important consequences for agents' actions.

We also saw that considerations of awareness alone do not explain the contrast between mnemonic imperatives like (1b) and repeated, non-mnemonic imperatives such as (13). I have argued that we can explain this contrast via informativity-based pragmatic reasoning and that the use of a repeated non-mnemonic imperative may lead the addressee to draw undesirable, perhaps impolite, consequences. This type of reasoning appears to be involved in awareness-raising expressions more generally.

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⁸ We might also draw other, less face-threatening conclusions from Barbara's use of (13) instead of (1b). Perhaps Barbara had completely forgotten about her request in (1a) or perhaps she thought that Richard had simply not heard her on Monday.

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