

German Particles, Modality, and the Semantics of Imperatives*

Patrick Grosz

Massachusetts Institute of Technology

1. Introduction

Some imperatives pattern with universal modality and some with existential modality. This paper addresses the question whether imperatives contain a covert modal operator. It concludes that the German particles¹ *ruhig*, *bloß* and *JA* provide evidence in favor of a covert modal operator and argues that their distribution can be modeled on a par with *modal concord* (cf. Geurts & Huitink 2006, Zeijlstra 2008), as an interaction between a modal operator and a modal element that does not contribute modality itself.

2. Background: A Controversy

Imperatives express different functions (cf. Donhauser 1986); some pattern with universal modal force (e.g. COMMAND), as in (1a), others with existential modal force (e.g. PERMISSION), as in (1b); see Schwager (2006:20-21) for a recent overview.

- (1) a. Parent: We're leaving! *Go to the bathroom!*
Otherwise you'll have to go in 15 minutes.
≈ You must / #can go to the bathroom.
- b. Train conductor: That's ok. *Go ahead and go to the bathroom!*
We're not leaving before 8PM.
≈ You can / #must go to the bathroom.

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¹ I will not gloss the discourse particles *JA*, *ruhig* and *bloß*, as their meanings are abstract and cannot be glossed easily. See Grosz (2008) for a discussion of different aspects of their meanings.

Such patterns raise the question whether imperatives contain a covert modal operator (as in Schwager 2005b, 2006, an analysis akin to *you should*-reduction, cf. Hamblin 1987) or whether their modal properties are epiphenomenal (as in Portner 2005, 2007, 2008, developing the idea that imperatives are properties, first proposed by Hausser 1980). Furthermore, if imperatives contain a modal operator, the question arises whether it is ambiguous between universal and existential modal force or whether it is unambiguously universal or existential. This paper discusses this question in the light of the German discourse particles *ruhig*, *bloß* and *JA*. Their distribution is outlined in section 3; the implications for semantic analyses of imperatives are discussed in sections 4 and 5.

3. German “Discourse Particles” and Modality

This section shows that the German particles *JA*, *bloß* and *ruhig* interact with modality². They require a modal type that makes reference to some authority (e.g. deontic, bouletic or teleological), and their distribution correlates with modal force: *ruhig* requires existential force, whereas *JA* and *bloß* require universal force. It follows that they can be used as diagnostics for the presence of the respective modal force and type, and, as I will argue in section 5, as diagnostics for the presence of a covert imperative modal operator.

3.1 Discourse Particles Interacting with Force

In declarative sentences with overt modals, the particle *ruhig* is restricted to possibility and the particles *bloß* / *JA* to necessity³.

- (2) a. Hörst du?⁴ Du sollst (**bloß** / **JA** / * **ruhig**) den Spinat essen!
 hear you you shall BLOß JA *RUHIG the spinach eat
 ‘Do you hear me? You shall [bloß / JA / *ruhig] eat the spinach!’
- b. Du kannst / darfst (***bloß** / ***JA** / **ruhig**) den Spinat essen.
 you can may *BLOß *JA RUHIG the spinach eat
 ‘You can / may [*bloß / *JA / ruhig] eat the spinach.’

In contrast, *ruhig* / *bloß* / *JA* cannot occur in declarative statements without modals, as shown in (3).

² German *JA*, *bloß* and *ruhig* are discourse particles / modal particles (cf. Weydt 1969, Thurmair 1989; see also Kratzer 1999 and Zimmermann 2004 for theoretical approaches to discourse particles). Their meaning is abstract and cannot be glossed. *JA* (with obligatory stress) is homophonous with *ja* ‘yes’ and the unstressed discourse particle *ja* discussed by Kratzer (1999); *bloß* is homophonous with *bloß* ‘only’ and *ruhig* with *ruhig* ‘quietly’. These alternative readings are irrelevant for the purpose of this paper.

³ The asterisk * marks a construction as *semantically or grammatically ill-formed*; the hash mark # marks a construction as *contextually inappropriate*; these markings only apply to the intended discourse particle readings, not to the readings with their non-particle homophones.

⁴ The presence of *Hörst du?* ‘Do you hear me?’ facilitates the availability of statements that include performative *sollen* ‘shall’ and a second person subject, as such statements seem to presuppose that the addressee has already been ordered to do so in advance.

- (3) Der isst (***bloß** / ***JA** / ***ruhig**) den Spinat.
 he eats *BLOB *JA *RUHIG the spinach
 ‘He eats [*bloß / *JA / *ruhig] the spinach.’

The most crucial observation is that imperatives exhibit the same distribution: *ruhig* is restricted to possibility (e.g. PERMISSION, as in 4a) and *bloß* / *JA* to necessity (e.g. COMMAND, as in 4b).

- (4) a. Iss **#bloß** / **#JA** / **ruhig** den Spinat! Das stört mich nicht.
 eat #BLOB #JA RUHIG the spinach that disturbs me not
 ‘Eat [#bloß / #JA / ruhig] the spinach! That doesn’t disturb me.’
- b. Iss **bloß** / **JA** / **#ruhig** den Spinat! Sonst wirst du bestraft.
 eat BLOB JA #RUHIG the spinach or.else will.be you punished
 ‘Eat [bloß / JA / #ruhig] the spinach! Or else you’ll be punished.’

3.2 Discourse Particles Interacting with Modal Type

In addition to their interaction with modal force, these discourse particles can be shown to interact with the type of co-occurring modal expressions. More precisely, *ruhig*, *JA* and *bloß* only combine with modals that make reference to an authority (e.g. somebody’s commands, wishes, goals or ideals)⁵. When the particles combine with an ambiguous modal expression, they eliminate readings that do not satisfy this requirement. This interaction is illustrated for three different modal constructions in examples (5-10).

The first relevant construction (in (5-6)) involves *soll* ‘shall’. In combination with a past tense participle this modal auxiliary prefers a reportative reading, as illustrated in (5)⁶; non-reportative readings are possible, but very marked⁷.

- (5) Der Privatjet soll um 15 Uhr angekommen sein.
 the private.jet shall at 3PM arrived be
 ‘The private jet is supposed to have arrived at 3PM.’
- ✓ In view of what we know from hearsay evidence, it is necessary that the private jet arrived at 3PM. (reportative)
 - (✓) In view of what I want to be the case, it is necessary that the private jet arrived at 3PM. (bouletic)

⁵ More precisely, these particles require a circumstantial modal base and a non-dynamic, non-epistemic ordering source, in terms of Kratzer (1981, 1991); this corresponds to Portner’s (2007) *priority* type.

⁶ The symbol ✓ is used to mean ‘possible and natural’, whereas the symbol (✓) is used to mean ‘possible, but pragmatically dispreferred in an out-of-the-blue context.’

⁷ All of the examples from (5) to (10) use *bouletic* modality (‘In view of what I want...’) as examples of the marked reading that is compatible with *ruhig*, *JA* and *bloß*. The reason is that in these particular constructions, bouletic modality seems to be the most natural reading besides the unmarked reading that *ruhig*, *JA* and *bloß* eliminate. Note however, that *JA*, *ruhig* and *bloß* are compatible with all types of modals that make reference to an authority, e.g. with deontic and teleological modals. As evidence, consider for instance example (11), a modal construction that makes reference to an ideal of truthfulness.

However, (6) shows that the reportative reading disappears in the presence of the discourse particles *bloß* or *JA*; only the marked non-reportative reading remains.

- (6) Der Privatjet soll **bloß / JA** um 15 Uhr angekommen sein.
the private jet shall *bloß* *JA* at 3PM arrived be
'The private jet shall [*bloß* / *JA*] have arrived at 3PM.'
- * In view of what we know from hearsay evidence, it is necessary that the private jet arrived at 3PM. (reportative)
 - ✓ In view of what I want to be the case, it is necessary that the private jet arrived at 3PM. (bouletic)

The contrast between (5) and (6) illustrates that *JA* and *bloß* must combine with a modal of a specific type, namely with one that makes reference to some authority, such as *bouletic* modality. Examples (7-10) provide further evidence for this generalization.

The second construction that illustrates the interaction between modal type and the discourse particles under discussion is given in (7) and (8); in the absence of a discourse particle, *kann* 'can' in (7) prefers an epistemic reading.

- (7) Der Kastenjakl kann der Mörder sein.
the Kastenjakl can the murderer be
'Kastenjakl can be the murderer.' (Kratzer 1981)
- ✓ In view of what we know, it's possible that Kastenjakl is the murderer. (epistemic)
 - (✓) In view of what I want to be the case, it's possible that Kastenjakl is the murderer. (bouletic)

Again the unmarked epistemic reading disappears if the discourse particle *ruhig* is inserted, as in (8).

- (8) Der Kastenjakl kann **ruhig** der Mörder sein.
the Kastenjakl can *RUHIG* the murderer be
'Kastenjakl can [*ruhig*] be the murderer.'
- * In view of what we know, it's possible that Kastenjakl is the murderer. (epistemic)
 - ✓ In view of what I want to be the case, it's possible that Kastenjakl is the murderer. (bouletic) ≈ It doesn't bother me if he's the murderer.

Finally, the third construction in (9-10) shows that even so-called *dynamic* readings (e.g. 'in view of normal thresholds for pain') disappear in the presence of these discourse particles. The unmarked reading for (9) is the *dynamic* reading, as indicated.

- (9) Er kann die Schmerzen aushalten.
he can the pain bear
'He can bear the pain.'
✓ In view of standards concerning normal tolerance thresholds for pain, it is possible for him to bear the pain. (dynamic)
(✓) In view of what I want to be the case (with respect to what adults should be able to put up with), it's possible that he bear the pain. (bouletic)

Again, only the marked bouletic reading remains in the presence of *ruhig*, as shown in (10).

- (10) Er kann die Schmerzen **ruhig** aushalten.
he can the pain RUHIG bear
'He can [ruhig] bear the pain.' ('He shouldn't make such a fuss about it.')
- * In view of standards concerning normal tolerance thresholds for pain, it is possible for him to bear the pain.' (dynamic)
 - ✓ In view of what I want to be the case (with respect to what adults should be able to put up with), it's possible that he bear the pain. (bouletic)

The crucial observation is that the particles *ruhig*, *JA* and *bloß* merely seem to filter out the incompatible types of modality – there is no evidence that they contribute any type of modality themselves. In cases of modalized sentences that are already biased towards a reading of the required type (e.g. deontic, teleological or bouletic), the discourse particles do not change the modal type of the utterance.

- (11) Du kannst **ruhig** sagen, dass ich dir einmal schlecht geraten habe.
you can RUHIG say that I you once badly advised have
Das ist keine Lüge.
that is no lie
'You can [ruhig] say that I advised you badly once. That's no lie.'
✓ In view of an ideal of truthfulness, it's possible that you say that I advised you badly once. (based on Kratzer 1981)

4. German "Discourse Particles" and Imperatives

Having shown that the German particles *ruhig*, *bloß* and *JA* interact both with the modal force and the modal type of a construction they appear in, we will now compare two current proposals for the semantics of imperatives (Portner 2005, 2007, 2008 and Schwager 2005b, 2006) and evaluate them in the light of these particles. Crucially, in this section, we will use the particles as diagnostics for the presence of a specific modal force.

4.1 Portner (2005, 2007, 2008)

Portner (2005, 2007, 2008) assumes that imperatives do not contain a covert modal operator. He assumes that imperatives do not encode force at all, and both universal readings and existential readings of imperatives arise from pragmatic principles. Portner

proposes that discourse contexts universally provide three component sets. The *Common Ground* (Stalnaker 1974, 1978) is the set of propositions that all discourse participants believe to be true. The *Question Set* (Ginzburg 1995a, 1995b) is the set of questions that all discourse participants are trying to answer. Finally, the *To-Do Lists* are sets of properties that their owners should make properties of themselves⁸. In contrast to Common Ground and Question Set, which are shared, To-Do Lists are relativized to the discourse participants (i.e. each discourse participant has her/his own To-Do List).

In Portner’s framework, sentential force emerges from adding the expressed content to whichever set it can be added to. Imperatives are properties restricted to the hearer, cf. (12), from Portner (2005).

(12) || Leave! ||^{w*,c} = [$\lambda w . \lambda x : x = \text{addressee}(c) . x \text{ leaves in } w$]

To-Do Lists function as a type of ordering source (Kratzer 1981, 1991) that ranks possible worlds compatible with the Common Ground (as a type of modal base).

(13) *Partial ordering of worlds* \prec_i :
 For any $w_3, w_7 \in \cap \text{CG}$, for any participant i , and for any To-Do List $\text{TDL}(i)$,
 $w_7 \prec_i w_3$ iff $\{P : P \in \text{TDL}(i) \ \& \ P(w_3)(i) = 1\} \subset \{P : P \in \text{TDL}(i) \ \& \ P(w_7)(i) = 1\}$
 (cf. Portner 2007:358, my rendering)

In words, the To-Do List of an individual i , $\text{TDL}(i)$, ranks a world w_7 closer to the ideal established by $\text{TDL}(i)$ than a world w_3 iff all properties in $\text{TDL}(i)$ that hold of i in w_3 also hold of i in w_7 , but not vice versa. As we will see, Schwager assumes an analogous ordering of possible worlds.

To account for different functions of imperatives, Portner assumes that To-Do Lists are partitioned into sections that are subsets of corresponding ordering sources (e.g. a *bouletic*, *teleological* or *deontic* section). For instance, INVITATIONS add properties to the bouletic section of the addressee’s To-Do List, which represents the addressee’s desires (i.e. *what the addressee wants*). This is illustrated in example (14).

(14) *to Noah*: Have a piece of fruit! INVITATION
 \approx Noah should have a piece of fruit, given that it would make him happy.
 (Portner 2007:359)

Portner, in contrast to Schwager (2005b, 2006), does not assume the presence of a modal operator in imperatives; therefore the appearance of universal quantification over optimal worlds must be achieved in the pragmatics. Portner proposes a pragmatic principle of *Agent Commitment* which encodes “necessity” as follows. It can be paraphrased as “Make as many of the properties on your To-Do List true of yourself as possible”.

⁸ The notion of To-Do List is reminiscent of Lewis’s (1979) *sphere of permissibility* and Han’s (2000) *plan set*.

- (15) *Agent's commitment: (adapted from Portner 2007:358)*

For any participant i , the participants in the conversation mutually agree to deem i 's actions rational and cooperative to the extent that those actions in any world $w_3 \in \cap CG$ tend to make it more likely that there is no $w_7 \in \cap CG$ such that $w_7 <_i w_3$.

To account for the appearance of existential force in some imperatives, Portner (2007:fn.6) sketches the following idea. In contrast to the INVITATION in (14) above (which exhibits universal force), an "existential" PERMISSION can be treated as adding a property to the hearer's bouletic To-Do List in a situation where it is presupposed that the speaker has the authority to prohibit the relevant activity. This is illustrated in (16).

- (16) *presupposition*: The speaker has the authority to prohibit taking fruit.

to Noah: Have a piece of fruit!

PERMISSION

Portner (2008) slightly revises this idea and proposes a more explicit alternative analysis: He assumes that existential force emerges whenever adding the content of the imperative to the hearer's To-Do List results in the following context. Possible worlds where the hearer carries out the relevant action are ranked as highly as the worlds where the hearer doesn't do so. This is the case, for instance, if the negation of the expressed property is already on the To-Do List of the hearer or entailed by other entries on the To-Do List.

We will now evaluate Portner's proposal in the light of the German discourse particles *ruhig*, *JA* and *bloß*. As discussed, this proposal makes use of the following parameters: an ordering, induced by the To-Do List; other entries on the hearer's To-Do List; a partitioning of To-Do Lists into different sections; and different background assumptions on speaker's authority. Crucially, Portner does not encode modal force, as he does not assume modal operators in imperatives. This predicts that no variation in force should occur if the relevant To-Do List section and background assumptions are contextually fixed, as these are the only parameters that may be used to derive force differences. This prediction is problematic in view of (18), which assumes the world knowledge in (17).

- (17) *Background for (18)*:

In country X, it is **obligatory** to use the headlights during daytime. (2009 Austria)

In country Y, it is **forbidden** to do so, as it might distract other drivers.

In country Z, it is **allowed** to do so, but not obligatory. (1989 Austria)

In the context in (18), the ordering source (i.e. To-Do List section) and relevant background assumptions are contextually determined and kept constant. The ordering source is *deontic* (i.e. *what the law prescribes*) and the discourse participant Sepp is assumed to be knowledgeable as to what the law prescribes. This example shows clearly that we can have different force (existential vs universal) without any change in To-Do List section and presuppositions on the speaker's authority. In the same vein, Sepp's choice between (18a) and (18b) is based solely on the nature of the law, as outlined in (17), and not on the initial To-Do List of the hearer (John). In 1989 Sepp would utter

(18a), whereas in 2009 he would respond with (18b). In contrast, Portner (2008) seems to predict that only (18a) should be possible if John's To-Do List entails *do not turn on the light*, whereas only (18b) should be possible if it doesn't. Portner does not predict that the choice between (18a) and (18b) is independent from the hearer's initial To-Do List.

(18) Context: John is aware of the three different legal systems in (17) and asks Sepp what the situation is in Austria. Sepp is a citizen and thus an authority of sorts.

John (*driving*): Darf ich das Licht aufdrehen? Gibt es eine Regelung?
may I the light turn.on give it a regulation
'May I turn on the light? Is there a regulation?'

- a. Sepp: Ja, dreh das (**ruhig**/ #JA) auf! Das ist hier kein Problem.
yes turn that RUHIG #JA on that is here no problem
'Yes, turn it [RUHIG / #JA] on! That's not a problem here.'
≈ In view of what the law prescribes, it's possible that you turn it on.
- b. Sepp: Ja, dreh das (**JA**/ #ruhig) auf! Das ist hier sogar Vorschrift!
yes turn that JA #RUHIG on that is here even requirement
'Yes, turn it [JA / #RUHIG] on! That's even required here!'
≈ In view of what the law prescribes, it's necessary that you turn it on.

We can conclude from (18) that modal force in imperatives does not derive from the parameters that Portner provides to derive "existentiality": To-Do List sections, presuppositions on the speaker's authority, and the hearer's initial To-Do List. In contrast, the data suggest that imperatives do encode modal force, favoring an approach where modal force is expressed in imperatives by means of a modal operator. We will now review Schwager (2005b, 2006) as an example of such an approach.

4.2 Schwager (2005b, 2006)

Schwager (2005b, 2006) introduces the position that imperatives uniformly contain a covert universal modal and existential readings are derived in the pragmatics⁹. Under such an approach, imperatives like (19a), repeated from (1), have the same underlying semantics as modal sentences like (19b) under their *performative* reading.

- (19) a. Go to the bathroom!
b. You must go to the bathroom!

Schwager assumes a modal semantics based on Kratzer (1981, 1991), where modal operators quantify over *optimal* possible worlds. Optimal possible worlds are those that are contained in a modal base $f(w)$ and for which there is no world that is closer to an

⁹ But see Schwager (2005a) for an alternative approach that assumes an existential imperative operator, combining with an exhaustivity operator to yield the appearance of "universal force". I will come back to this at the end of section 4.2.

ideal represented by an ordering source $g(w)$. Closeness to an ideal is defined in terms of an ordering of worlds $\leq_{g(w)}$.

(20) *Ordering of worlds* $\leq_{g(w)}$:

For any $w_3, w_7 \in W$, and for any ordering source $g(w)$,

$w_7 \leq_{g(w)} w_3$ iff $\{p: p \in g(w) \text{ and } w_3 \in p\} \subseteq \{p: p \in g(w) \text{ and } w_7 \in p\}$

In words, an ordering source $g(w)$ ranks a world w_7 at least as close to the ideal that $g(w)$ represents as a world w_3 iff all propositions of $g(w)$ that are true in w_3 are also true in w_7 . The imperative modal OP_{Imp} is treated as a necessity modal that takes the Common Ground in a context c as its modal base, defined as a function mapping worlds to the set of propositions that the discourse participants in c mutually believe in. OP_{Imp} expresses that its complement proposition p is a necessity which is true in *every* optimal world.

To derive the appearance of “existential force” in imperatives, Schwager (2005b) assumes a pragmatic account. She suggests that existential force typically arises when the hearer already wanted to carry out the action but thought it was forbidden to do so¹⁰. Imperatives with the function PERMISSION or CONCESSIVE are taken as typical examples for such existential imperatives, cf. (21), from Schwager (2006:169), who quotes (21a) from Hamblin (1987).

- (21) a. (It starts at eight, but) come earlier if you like! PERMISSION
 b. All right, don't come then! (If you think you are so clever.) CONCESSIVE

The pragmatic derivation can be sketched as follows (adapted from Schwager 2006:171, but see also Han 2000 for an informal earlier discussion of the idea).

- (22) For an imperative to be a PERMISSION or CONCESSIVE, it has to be presupposed that
- (i) the addressee wants to do ϕ , and
 - (ii) the addressee wants to please the speaker, and
 - (iii) the addressee is not allowed to do ϕ by the speaker (consequently, doing ϕ would upset the speaker).

When the speaker utters the imperative $\phi!$ the addressee either cancels (ii), resulting in a CONCESSIVE reading, or (iii), resulting in a PERMISSION reading.

As shown in (22), Schwager's (2006:171) pragmatic derivation of PERMISSION and CONCESSIVE readings crucially assumes that the addressee already wants to do ϕ ; this is the presupposition that is maintained in both PERMISSIONS and CONCESSIVES. However, this analysis faces the following problem. It can be shown that not all “existential” imperatives are PERMISSIONS or CONCESSIVES, and, crucially, assumption (22i) does not always hold. All of the examples in (23) illustrate situations where the hearer clearly does

¹⁰ Schwager's proposal follows an insight already present in Wilson & Sperber (1988) and Han (2000:169).

not want to carry out the expressed activity; yet these imperatives have an existential reading which is compatible with the use of *ruhig*.

- (23) a. Context: Mother knows that her son is afraid of frogs and that he doesn't want to touch them, but she wants him to overcome his fear, and encourages him:

Komm schon! Greif den Frosch **ruhig** an! Der tut dir nichts!
come already touch the frog RUHIG PRT it does you nothing
'Come on! Touch [ruhig] the frog! It won't do you any harm!'¹¹
≈ In view of what you have to do to achieve your goals of not coming to any harm, it is possible that you touch the frog.

- b. Context: The hearer really doesn't make an effort and doesn't want to make an effort.

Streng dich **ruhig** mehr an!
push you RUHIG more PRT
'(It wouldn't harm you to) push yourself a bit more!' (*ironic*)
≈ In view of what you have to do to achieve your goals of not coming to any harm, it is possible that you push yourself a bit more.

- c. Context: The addressee has betrayed the speaker in the most treacherous way, and after a long conversation, in which the addressee didn't admit to anything, he heads for the door and states: "I'm leaving now".

Fahr du **ruhig** zur Hölle! Ich will dich nie wieder sehen.
go you RUHIG to hell I want you never again see
'Go [ruhig] to hell! I never want to see you again!'
≈ In view of what I want to be the case, it is possible that you go to hell.

It is not evident how the schema of Schwager's pragmatic derivation of permissive readings can be used to derive the examples in (23). To account for the full distribution of *ruhig*, and of existential readings for imperatives, we either have to assume that the covert imperative modal operator is ambiguous between an existential and a universal reading, or that there are additional ways of pragmatic reasoning that can derive existential readings. Schwager (2005a) proposes a third alternative, suggesting that the imperative modal might be always existential; in this approach, necessity arises due to the fact that the modal always combines with an exhaustivity operator, whereas possibility results from de-exhaustification. In this paper, I pursue the option that the imperative modal operator is ambiguous between existential and universal force. Section 5 provides a theoretical argument for this option, and against the two alternatives, unifying the distribution of *ruhig*, *JA* and *bloß* with the phenomenon of so-called "modal concord".

¹¹ This example is an edited version of an example constructed by Irene Heim, based on an example constructed by Sabine Iatridou, during MIT's seminar on imperatives (24.956 "Topics in Syntax" in Spring 2008).

5. Modal Concord, Modal Polarity and an Explanation of the Facts

As we have seen, *ruhig*, *JA* and *bloß* cannot occur in non-modalized declarative statements and only occur in modalized declaratives if the modal operator has a specific force and type. To account for these occurrence restrictions, we can assume that the particles are lexically specified for modal force and type, and must combine with a modal operator matching their specifications (I will henceforth use the descriptive term *modal matching* to refer to this phenomenon). To account for *modal matching*, we might coin a notion of modal polarity. A *modal polarity item* (MPI) would be defined as an element that only occurs in the scope of a modal operator whose modal force and type are specified in the lexical entry of the MPI; under such an approach, *ruhig*, *bloß* and *JA* would be modal polarity items. Alternatively, one might propose to unite constructions involving *ruhig*, *bloß* and *JA* with so-called *modal concord* constructions.

Modal concord (MC) is described as a phenomenon where a sentence with two modal expressions behaves as though it contained only one modal operator (Geurts & Huitink 2006, Zeijlstra 2008). Previous approaches observe that the two expressions must match in modal force and modal type. Therefore, (24) exhibits MC, whereas (25) doesn't.

- (24) Visitors **must mandatorily** sign this form.
= Visitors **must** sign this form. / It is **mandatory** that visitors sign this form.
- (25) Visitors **may mandatorily** sign this form. (*Modal Concord)

Geurts & Huitink (2006) propose a semantic approach under which one of the modal elements has a purely 'functional' meaning under which it 'checks' the type of the other modal element without contributing modality itself. In contrast, Zeijlstra (2008) treats modal concord as syntactic agreement between an item with an interpretable modal feature (iMOD) and one with a matching uninterpretable modal feature (uMOD). To account for the matching requirement in modal force, Zeijlstra assumes two sets of modal features: $[i\exists\text{-MOD}] / [u\exists\text{-MOD}]$ and $[i\forall\text{-MOD}] / [u\forall\text{-MOD}]$. Both approaches assume that modal concord arises when two modal elements combine which by themselves can contribute modality and which match in modal force and type. This notion of modal concord seems to undergenerate, as we find constructions with a modal concord-like "single modal" reading where a universal modal combines with a negated existential modal, as illustrated in (26).

- (26) You **mandatorily may not** cross the yellow line without a special permit issued by the facility head quarters.
= You **may not** cross the line. / It is **mandatory** that you do **not** cross the line.

An explanatory theory of modal concord-like phenomena should unify examples like (24) with examples like (26); as (26) clearly involves matching in modality (though at a more global level) we will henceforth call it a theory of *modal matching*. Any such theory needs to assume that such constructions involve one genuine modal operator and one modal element that ends up not contributing modal force to the asserted content; let

us tentatively assume that the non-operator element modifies the actual operator and call it a *modal modifier*¹². The idea of *modal matching* subsumes the facts covered by Geurts & Huitink's and Zeijlstra's approaches to modal concord which involve one genuine modal operator and an element that must match the operator in force and type.

To account for statements that have both a modal matching reading and a double modal reading, like (27), it must be assumed that some elements are ambiguous between a *modal operator* reading and a *modal modifier* reading.

- (27) Visitors **must mandatorily** sign this form.
 ⇒ *double modal reading*: both elements are operators
 ⇒ *modal matching reading*: one of the elements is a modifier

We can now extend our theory of modal matching to account for the distribution of *JA*, *bloß* and *ruhig* in a uniform manner; in order to do so, I propose that these elements are always *modal modifiers* and do not have a *modal operator* reading¹³. They interact with modality, but cannot express it. As *modal modifiers* they must combine with a genuine modal operator in order to occur in an utterance. In modalized declaratives like (28), the modal auxiliary can be assumed to act as a genuine modal operator.

- (28) a. Der Hans **darf ruhig** den Kühlschrank ausräumen.
 the H. may RUHIG the fridge empty
 ‘Hans may [ruhig] empty the fridge.’
 b. Der Hans **soll bloß / JA** aufessen.
 the H. shall BLOß JA eat.up
 ‘Hans shall [bloß / JA] eat up.’

By analogy, the ill-formedness of the discourse particles *ruhig* / *JA* / *bloß* in non-modalized declarative statements (as in (29)) is due to the absence of a modal operator:

- (29) a. *Der Hans räumt **ruhig** den Kühlschrank aus.
 the H. empties RUHIG the fridge PRT
 ‘Hans empties [ruhig] the fridge.’
 b. *Der Hans isst **bloß / JA** auf.
 the H. eats BLOß JA up
 ‘Hans eats [bloß / JA] up.’

Two consequences follow from this proposal. First, the fact that *ruhig*, *JA* and *bloß* are licensed in imperatives, but not in non-modalized declarative statements, indicates there

¹² Note that this departs from Geurts & Huitink's (2006) and from Zeijlstra's (2008) analysis which treat the non-operator element as semantically vacuous.

¹³ This is where constructions involving *JA*, *bloß* and *ruhig* differ from actual “modal concord” configurations. However, Geurts & Huitink (2006) make an analogous proposal for Dutch *wel eens*, and Zeijlstra (2008) assumes that modal auxiliaries in general are semantically vacuous.

must be a modal operator in imperatives (against Portner). Second, we have seen that *modal matching* is only possible between two existential modals, two universal modals, or two modals of the opposite type when one of them is negated; this entails that *ruhig* in the absence of negation requires the presence of an existential modal operator and *JA* / *bloß* in the absence of negation require the presence of a universal modal operator. This indicates the need for an imperative modal operator that is ambiguous between existential force and universal force (against Schwager), as illustrated in (30).

- (30) a. \exists -OP_{Mod} Räum **ruhig** den Kühlschrank aus!
 CAN empty RUHIG the fridge PRT
 ‘Empty [ruhig] the fridge!’
- b. \forall -OP_{Mod} Iss **bloß / JA** auf!
 SHALL eat BLOß JA up
 ‘Eat [bloß / JA] up!’

6. Conclusion

We have seen that the distribution of *ruhig*, *JA* and *bloß* seems to require a covert modal operator in imperatives which is ambiguous between existential and universal modal force. The way in which the discourse particles combine with this modal operator can be modeled in terms of a “modal matching” relationship between the particles (as *modal modifiers*) and the co-occurring modal operator.

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Department of Linguistics and Philosophy
Massachusetts Institute of Technology
77 Massachusetts Avenue, 32-D808
Cambridge, MA 02139

grosz@mit.edu