

Epistemic particles and performativity*

Magdalena Kaufmann
University of Connecticut

Stefan Kaufmann
Northwestern University

Abstract The German discourse particles *ja* and *doch* both mark the information expressed by their host sentence as somehow given, obvious, or uncontroversial (McCready & Zimmermann 2011 call them ‘epistemic particles’). Two things are puzzling: (i) despite its ‘epistemic’ nature, *doch* can appear in imperatives and with performative modals; (ii) despite their similarity, *ja* is unacceptable in imperatives and forces a descriptive reading of modal verbs. We explain (i) by assuming that the performativity of modalized propositions depends on certain contextual constellations which may conflict with constraints imposed by the particles. To account for (ii), we offer an analysis for *ja* and *doch* that explains the inviolable ban against *ja* (but not *doch*) from performative modal contexts in terms of defeasible inferences about the context.

Keywords: particles, performativity, *ja*, *doch*

1 Introduction

The rich German inventory of discourse particles has attracted much attention in the linguistic literature. Nonetheless, many facets of their meaning and use are still not well-understood. This even concerns fundamental questions such as what kind of meaning they contribute and how to formalize their denotations and discourse effects. In part this is due to their functional diversity: Many particles are subject to constraints and/or interactions in dimensions other than that in which they make what we might call their “primary” semantic contribution. This paper examines one such interaction: Some German discourse particles, notably *ja* and *doch*, are generally used to comment on the discourse status of the information conveyed by their host sentences, but also exhibit intriguing differences in distribution.

These differences can be characterized either formally, in terms of the **clause types** of their host sentences, or functionally in terms of the **speech acts** performed by those host sentences on particular occasions of use. It is not surprising that there

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should be an interaction between these two domains: Following (Sadock & Zwicky 1985), it is often assumed that clause types are linked to particular speech act types that constitute their prototypical function, and the clause type of a particular sentence token plays a major role in determining the speech act type of the utterance. But this leaves open the question of how to explain the constraints on the distribution of the particles: Are they essentially structural (i.e., morpho-syntactic) in nature, or are they a consequence of the meaning contributed by the particles (i.e., semantic/pragmatic)?

The goal of this paper is not to settle these deeper questions conclusively, but to argue that an analysis of the latter kind, i.e., in terms of semantic/pragmatic interactions between the particles and their host sentences, is feasible. We show this for a contrast involving the distribution of *ja* and *doch* in **declarative** and **imperative** host sentences. We further argue that these observations fall out naturally from a certain combination of semantic/pragmatic analyses of particles and clause types.

The significance of this argument derives from our broader assumption that if an explanatory account of the distribution patterns can be derived from independently developed *semantic* analyses of the items involved, then this is a strong indication that the restrictions are ultimately semantic/pragmatic in nature. To be sure, this assumption cannot be fully defended in the space allotted or based on the relatively narrow range of examples under discussion here. We leave that part for future work.

2 *ja* and *doch*

2.1 Background

Broadly speaking, German discourse particles relate the content of their host sentence to the ongoing conversation. This general characterization can be made more precise in particular cases. Some particles, such as *ja* and *wohl*, add information about the epistemic status (e.g., old vs. new; commonly known vs. controversial) of the proposition expressed by their host. Others, such as *ruhig*, convey an assessment of possible actions available to the hearer. The full range of possible functions has not been fully explored and may well not be a closed class. What they all seem to have in common is that their meanings cannot be understood apart from concrete occasions of use and the interlocutors involved.

In this paper we deal with what we call **epistemic particles**, used by speakers to comment on the status of the information carried by their hosts. There is little agreement on what *kind of* meaning they contribute. It is generally considered not “at issue” (Potts 2005), but that designation is somewhat amorphous, thus there is room for concretization in several directions. It has been suggested that these particles contribute (special kinds of) presuppositions (Grosz t.a.; Kaufmann 2012c); conventional implicatures or expressive meaning (Kratzer 1999; Zimmermann 2011); or

speech act modification (Karagjosova 2004; Zeevat 2004). Moreover, McCready & Zimmermann (2011) argue that different epistemic particles may contribute different kinds of meaning, without however providing a worked-out proposal along these lines. In this paper, we assume that the particles we discuss contribute **presuppositions** in the sense of Stalnaker (2002): Their use commits the speaker to certain beliefs about the status of the content of the host sentence in the common ground.

Both *ja* and *doch* come in two variants, stressed and unstressed, illustrated in (1) and (2). The bold-faced font indicates that the main accent falls on the particle. In contrast, in the unstressed variants the particle is not prosodically prominent.

- (1) Ich will { **JA** / ja } keine Beschwerden hören.
I want JA / JA no complaints hear
'I don't want to hear any complaints { [I'm telling you!] / [as you know] }'
- (2) Hans hat { **DOCH** / doch } den Termin verpasst.
Hans has DOCH / DOCH the deadline missed
'Hans missed the deadline { [after all] / [as you know] }'

The two variants differ both semantically (cf. the bracketed paraphrases) and in their distribution (e.g., '**JA**' does and 'ja' does not occur in imperatives). Although a unified analysis of these differences in terms of a single meaning for each particle plus stress would be desirable, it is unclear at this point whether one can be provided and what it would look like. In this paper we only consider the unstressed variants.

It is widely agreed that both *ja(p)* and *doch(p)* commit the speaker to the belief that *p* is in some sense **given**, **obvious**, or **uncontroversial**. Accounts vary in the way these notions are defined; see below for details. For now, this informal characterization suffices to state the two main puzzles that we will be addressing in the rest of the paper (see Section 2.4 for descriptive vs. performative modality).

Puzzle 1: Despite its essentially epistemic core meaning, *doch* can appear in imperatives and with performative modals.

Puzzle 2: Despite their semantic similarity, *ja* is unacceptable in imperatives and forces a descriptive reading on modal verbs.

2.2 Data and some theory

In this section we present a few typical environments for the use of *ja* and *doch*. The characterizations of the context are intended to reflect the speaker's assessment.

2.2.1 Environments for *ja* and *doch*

Highlighting old information. Examples like (3) and (4) illustrate the speaker's use of the particles to signal that the host sentence conveys information that is already shared. In such a situation, a speaker omitting either of the particles would run afoul of the requirement that an assertion convey hearer-new information.

- (3) Wir haben ja gesagt, dass wir hingehen, aber brauchen wir das Auto?
 we have JA said that we go.there, but need we the car
 '[As we've already established,] we'll go there, but do we need the car?'
- (4) Wir haben doch gesagt, dass wir hingehen; aber brauchen wir das Auto?
 we have DOCH said that we to.there; but need we the car
 '[As we've already established,] we'll go there (so let's not talk about this anymore); but do we need the car?'

In both cases, the clause containing *ja/doch* can be considered part of the common ground. The speaker uses it to set up the background for the following question, inserting the marker *aber* 'but' to signal that while the first clause is not being questioned, the part about the car is. In addition, in (4) the use of *doch* suggests that the hearer has failed to take into account (some obvious consequences of) the information in its host sentence. This latter meaning component is absent from (3).

Imparting obvious information. While (5) could still be used to merely highlight what is already in the common ground, (6) is used most naturally when the hearer is evidently not aware of the option of going to the doctor.

- (5) Du kannst ja zum Arzt gehen.
 you can JA to.the doctor go
 ≈ 'You can [obviously] go to the doctor.'
- (6) Du kannst doch zum Arzt gehen.
 you can DOCH to.the doctor go
 ≈ '[Why do you behave as if there was no obvious solution:] You can go to the doctor.'

Such examples suggest that in characterizing what the particles contribute, the notion of "shared" or "old" information should be broadened to include information that is readily available to anyone seeking it.

Realizing the obvious. A third set of examples concerns cases in which the speaker him- or herself just noticed that the host sentence is true. These cases,

too, seem to be at odds with the notion of “shared” or “old,” but may be amenable to an extension of that notion to include the mere absence of conflicting information (Zimmermann 2011; Grosz t.a. citing unpublished work by Kratzer and Matthewson). Certain differences in acceptability between *ja* and *doch* in such cases seem to be about information structure more than about controversiality of the host sentence.

- (7) Oh, da ist { ja / doch } der Peter!
 oh, there is JA / DOCH the Peter
 ‘[Oh, look,] there’s Peter!’

2.2.2 The meaning of *ja* and *doch*

We propose the following characterization of the contribution of the particles. The crucial work happens in the presuppositional component (notice that our formulation makes this part of the meaning a speaker presupposition in Stalnaker’s sense): *ja(p)* presupposes (9a) and (9b-i), whereas *doch(p)* presupposes (9a) and (9b-ii).

- (8) **Level of Assertion.** Both *ja(p)* and *doch(p)* are equivalent to *p*.
- (9) **Level of Presupposition.** In addition, the speaker is committed to the belief that the following is in the common ground:
- a. both *ja(p)* and *doch(p)*: normally in a situation like *c*, any rational agent whose goal is to find out whether *p*, does find out whether *p* (from information already available or in the immediate surroundings).
(uncontroversiality)
 - b. i. *ja(p)*: *c* is normal in the sense of (9a). (normality)
 - ii. *doch(p)*: *c* is not normal in the sense of (9a). (abnormality)

These statements are broadly in line with the literature, although one often sees the conditions distributed differently. For instance, Grosz (t.a.), citing unpublished work by Kratzer and Matthewson, assumes that both *ja(p)* and *doch(p)* presuppose that *p* is “firmly established” and therefore its negation can be discarded as an answer to the question whether *p*. In addition, *doch(p)* presupposes that there is a salient focus alternative *q* of *p* such that the common ground entails that *q* and *p* are inconsistent.

Comparing our (9) to Grosz’s analysis, two differences stick out: First, our version of uncontroversiality explicitly refers to what is normally the case. As we will see below, this makes the condition defeasible, which we take to be a prerequisite for any adequate account of *doch* (cf. Karagjosova’s (2001) notion of “denial of expectation”; see also Egg 2010 and references therein). Grosz (t.a.) realizes that this issue raises the question of what it means for *p* to be “firmly established,” witness his Fn. 1: “in the case of *doch* it must be compatible at least with the hearer having

a different opinion, which the speaker refutes as obviously wrong. It must also cover propositions that are not salient and potentially forgotten by the hearer.”¹ We believe that our formulation, or one much like it, provides for a more satisfactory representation.

The other noteworthy difference between our definition (similarly, Karagjosova 2001) and Grosz’s (similarly, Lindner 1991; Egg 2010, for instance) is that our (9b-ii) is far less specific about the way in which the conflict with *p* may come about: Where Grosz requires there to be a specific salient presupposition, which moreover has to be a focus alternative of *p*, we simply state that the context is an exception to (our version of) uncontroversiality of *p*. This is not to say that a salient focus alternative could not be responsible for the violation. But we allow for other reasons as well (for instance, inattentiveness on the part of the hearer). While we think that the more encompassing notion may be useful, the issue is not central to this paper. Our definitions could easily be adapted to require a more specific conflict.

2.3 Particles and clause types

As we have seen above, *ja* and *doch* combine with host sentences that convey information (i.e., denote propositions). In contrast, they are banned from polar interrogatives (cf. Thurmair 1989):

- (10) * Hat er { ja / doch } angerufen?
has he JA / DOCH called

This is unsurprising if the host sentence is to express what the speaker can take to consider an established fact or something whose truth or falsity is found out easily.² Also, we might expect *ja* and *doch* to be absent from imperatives, which are generally assumed to be “neither true nor false” (Han 2011), or be “action-related rather than information-related” (Portner 2007; and others). And indeed, *ja* is banned from imperatives (regardless of the speech act the imperative is used to perform):³

- (11) * Ruf ihn ja an!
call.IMP him JA VERBALPREFIX

In contrast, however *doch* is very natural in imperatives:

¹ Of course, Grosz’s paper is mainly concerned with topics to which these questions are only marginally relevant. The problem should be addressed as soon as Kratzer and Matthewson’s work becomes more widely available.

² Note that the distribution of *doch* is more controversial as it can occur in deliberative *wh*-interrogatives (Lindner 1991) and can help mark optative clauses, cf. Grosz (2011).

³ Recall that we are not dealing with stressed *ja* in this paper.

- (12) Ruf ihn doch an!
call.IMP him DOCH VERBALPREFIX
'Just call him./Why don't you just call him./...'

These data give rise to the two puzzles we listed in Section 2.1: (i) Why is the epistemic particle *doch* felicitous in imperatives? And (ii) Why, despite the semantic similarity between *ja* and *doch*, is the latter not disallowed in imperatives?

In the following, we introduce the account of imperatives (and performative modals) that we want to adopt, before turning to how they interact with the particles.

2.4 Descriptive and performative modality

It is well-known that deontic modals can be used in two distinct ways: On its **descriptive** use, a sentence like those in (13a) conveys information about the present state of affairs: The speaker informs the hearer of an already existing obligation or permission, which may or may not have come about in virtue of a prior speech act by the speaker or someone else.

- (13) a. You should call your mother. *[That's what she said]*
b. You may take an apple. *[That's what the guy in the uniform said]*

On their **performative** use, on the other hand, the obligation or permission in question need not already exist. Rather, it can be brought about by the speaker in the very act of uttering the sentence: In using a modal performatively, the speaker *issues* a command, permission or recommendation, rather than just *reporting* on it. Sentences like the ones in (14) have salient performative uses.

- (14) a. You must clean up your desk now!
b. Ok, you may take an apple.

Perhaps the most reliable diagnostic test to determine whether a particular usage is descriptive or performative is the felicity (or lack thereof) of a reply by the listener on its truth or falsehood. Specifically, responses like *(That's) true!* or *False!* are generally infelicitous with performative uses. (In cases of utterances that allow for both interpretations, such as (14b) above, such a response can retroactively disambiguate and "lock in" the descriptive interpretation.)

Notice that we draw the descriptive/performative distinction not between **sentences**, but between **uses** of sentences. Most typically, a sentence can be used both ways and contextual factors determine whether a particular use is descriptive or performative. The statements on the right in (13) are intended to help bring out the intended interpretation.

In line with the observation that most modal sentences admit of both uses and context determines which one is at play, researchers agree that there is no significant **semantic** distinction between descriptive and performative modals (Kamp 1973; Schulz 2003; Schwager 2006; Kaufmann 2012b); the task then is to identify the relevant **contextual** factors and explain the resulting effect in terms of the interaction between those factors and the (invariant) denotation of the modal sentences (for a different view see van Rooy 2000; Ninan 2005; Portner 2009).

The descriptive/performative distinction is relevant here because imperative sentences behave in crucial ways just like performatively used declaratives with appropriate modals (Schwager 2006; Kaufmann 2012b; Portner 2007). Thus the intuitive meaning and discourse effect of (15a) is approximately the same as that of (15b), including the infelicity of responses like (15c).

- (15) a. Clean up your desk now!
 b. You must clean up your desk now!
 c. # True! / #False!

This observation suggests that imperatives may be susceptible to the same analysis as performatively used modalized sentences. But recall from the above discussion that the latter are generally given a uniform semantic analysis along with their descriptively used counterparts. From these two observations, M. Kaufmann concludes that there is no significant semantic difference between imperatives and (either descriptively or performatively used) modalized sentences (Schwager 2006/Kaufmann 2012b). The main difference is that imperatives cannot be used descriptively; however, this is not a consequence of a distinction at the level of logical form or denotation; rather, Kaufmann suggests, it is due to a set of **presuppositions** that are uniquely associated with imperatives *qua* **clause type**. Simply put, these presuppositions prevent imperatives from being used in contexts in which a corresponding modalized declarative would be used descriptively.

We introduce the relevant parts of the account in the next section (see Kaufmann 2012b for more details). In the overall argument of the present paper, the relevance of this discussion lies in the way in which the presuppositions associated with imperatives interact with those contributed by particles like *ja* and *doch*: They clash with the former but not with the latter. This is where we propose to look for an explanation of the patterns observed in the introduction.

3 Formal analysis

3.1 Modality

We adopt a standard Kratzer-style analysis for modals (Kratzer 1981, 2012). Modals are treated as sentential operators and interpreted by quantification over possible worlds. The **force** of the quantification is given by the **modal strength** (universal for necessity, existential for possibility), while its **domain** corresponds to the **modal flavor**. In English, the force of a modal expression is typically encoded in the lexicon, whereas the domain is lexically underspecified and subject to contextual variation. The basic schema of the truth conditions is given informally in (16).

- (16) “must/may [you go]” is true at a possible world w iff “you go” is true at all/some w' in a certain set of possible worlds.

In Kratzer’s account, these truth conditions are invariant across the wide range of readings that modal sentences may receive (e.g., epistemic, deontic, bouletic, teleological, and more; see Kratzer 2012: §2 for details). The variability is captured in terms of the set of worlds quantified over, or more precisely in terms of the factors which determine this set. In Kratzer’s account, the selection of the domain depends on two contextual parameters: a **modal base** f and an **ordering source** g .⁴ Formally, both are **conversational backgrounds** – that is, functions mapping possible worlds to sets of propositions. In our formalization, we would like to represent them within the standard type inventory of TY2, therefore we treat them as functions from possible worlds to *characteristic functions of propositions*, i.e., of type $\langle s, \langle \langle s, t \rangle, t \rangle \rangle$.

Intuitively, the modal base determines which possible worlds are to be considered, while the ordering source ranks them according to their goodness, desirability, stereotypicality, or some other criterion. This ranking can be represented as in (17): A world z is strictly “closer to $g(w)$ ” (the propositions picked out by the ordering source at w) than a world v whenever z verifies all of the propositions in $g(w)$ that v verifies, and more. For readability, we define the accessibility relation $[f]$ for a given modal base f and $[f, g]$ for modal base f and ordering source g as in (18).⁵ Modal operators like those in (19) are interpreted as expected.

- (17) a. $z \leq_P v$ iff $\forall p [(P(p) \wedge p(v)) \rightarrow p(z)]$

4 It has repeatedly been suggested in the literature that while a modal base and ordering source are generally involved, for some flavors, more parameters may be at play. For instance, the teleological modality underlying anankastic conditionals seems to require a **designated goal** (von Stechow & Iatridou 2005), and **deliberative** modality may be sensitive to the **decision problem** that the agent in question faces (Cariani, Kaufmann & Kaufmann 2012).

5 The definition in (18b) presupposes that for any f, g, w , there is a set of $<_{g(w)}$ -minimal worlds among those in $[f]_w$. This is known as the **Limit Assumption** (Lewis 1973). We adopt it for ease of exposition. We also assume throughout for simplicity that $[f, g]_w$ is non-empty.

- (18) b. $z <_P v$ iff $z \leq_P v \wedge v \not\leq_P z$ $(P \in D_{\langle\langle s,t \rangle, t \rangle})$
 a. $w [\phi] v$ iff $\forall p [\phi(w)(p) \rightarrow p(v)]$
 b. $w [\phi, \gamma] v$ iff $w [\phi] v \wedge \neg \exists z [w [\phi] z \wedge z <_{\gamma(w)} v]$ $(\phi, \gamma \in D_{\langle s, \langle\langle s,t \rangle, t \rangle \rangle})$
- (19) a. $\Box^R p := \lambda w \forall v [w R v \rightarrow p(v)]$
 b. $\Diamond^R p := \lambda w \exists v [w R v \wedge p(v)]$ $(R \in D_{\langle s, \langle\langle s,t \rangle, t \rangle \rangle})$

Kratzer (2012) assumes that whenever a modal is used, the context uniquely determines the modal base and ordering source *for that modal*. Since multiple modals co-occurring in the same sentence, or even within each other’s scope, may be interpreted relative to different parameters, this means that the notion of “context” here is to be understood as very fine-grained: The context in which a sentence is used may not just specify a single modal base/ordering source pair, but rather (a possibly different) one for every token of a modal expression occurring in that sentence. In this paper we sidestep all open questions about the exact workings of this process, the constraints governing it, and what it implies about the syntax/semantics interface.⁶ Formally, we represent the relevant parameters as superscripts on the modals as in *must^{f,g}* or *may^{f,g}*. The modals are equivalent to the corresponding operators in the metalanguage, with f, g determining the operative accessibility relation. Thus for instance, we assume that a sentence like *you may go home*, after assignment of the parameters f and g , is interpreted as in (20).

$$(20) \quad \llbracket \text{you may}^{f,g} \text{ go home} \rrbracket^c = \Diamond^{[f,g]} \llbracket \text{you go home} \rrbracket^c \\ = \lambda w \exists v [w [f, g] v \wedge \text{go-home}(\text{hearer}_c)(v)]$$

We follow Kratzer in assuming that deontic modality typically involves a **circumstantial** modal base and a **deontic** ordering source.

3.1.1 Common ground and presupposition

Recall from above that the account we adopt from Kaufmann (2012b) is built on the observation that the contexts in which a descriptive sentence containing a modal is interpreted performatively coincide with the contexts in which an imperative sentence can be felicitous. Kaufmann argues that this coincidence is not accidental – the performative use of modals and the felicity of imperatives arise not only in the same contexts, but *for the same reasons*. The main task for the theoretician then is to identify the common contextual factors which account for each of these phenomena.

M. Kaufmann argues that these crucial contextual factors have to do with the **common ground**, in the sense of Stalnaker (1978, 2002), between the interlocutors. Formally, we model the common ground of speaker s and hearer h as in (22).

⁶ See Heim & von Stechow (2011) for a proposal regarding the latter.

- (21) **Belief:** For any agent α , let f^e_α be α 's epistemic conversational background. We write ' B_α ' as shorthand for $[f^e_\alpha]$.
 $\llbracket x \text{ believes } p \rrbracket^c := \Box^{B_{[x]^c}} \llbracket p \rrbracket^c$
- (22) **Common ground:** For any two agents α, β we write ' $CG_{\alpha, \beta}$ ' for the transitive closure of $B_\alpha \cup B_\beta$.
 $\llbracket p \text{ is common ground between } x, y \rrbracket^c := \Box^{CG_{[x]^c, [y]^c}} \llbracket p \rrbracket^c$
- (23) **Goals:** For any agent α , let g^t_α be α 's teleological conversational background. We write ' T_α ' as shorthand for $[f^e_\alpha, g^t_\alpha]$.⁷
 $\llbracket x \text{ aims to bring about } p \rrbracket^c := \Box^{T_{[x]^c}} \llbracket p \rrbracket^c$

We follow [Stalnaker \(2002\)](#)'s understanding of **presupposing** ϕ as the utterance speaker believing that when the hearer gets to update with the content of his or her utterance, ϕ is common ground.

3.2 Contextual constellations for performative use

Still following [Kaufmann \(2012b\)](#), we assume that a modal is used performatively in a context of utterance in which the relevant modal base and ordering source enjoy a particular status. In particular, both have to meet the authority condition (AC), the ordering source and the prejacent have to meet the ordering source condition (OSR), and the prejacent has to meet the epistemic uncertainty condition (EUC).

(AC) Authority Condition: s is an expert on f and g .⁸

$$\Box^{CG_{s,h}} \left(\forall p \left[\Box^{B_s} \Box^{[f,g]} p \leftrightarrow \Box^{[f,g]} p \right] \right)$$

(EUC) Epistemic Uncertainty Condition: s holds possible some future courses of events where p comes about and some where $\neg p$ does.

$$\Box^{CG_{s,h}} \left(\Diamond^{B_s} p \wedge \Diamond^{B_s} \neg p \right)$$

⁷ The semantics of teleological modality clearly involves a future orientation which we cannot entirely ignore, but which we do not represent in our formal representations. It should be kept in mind that in the statements of the form ' \Box^{T_α} ' we use below, the ' p ' in the scope of the modal operator is a non-atomic statement about the (more or less near) future.

⁸ [Kaufmann \(2012b\)](#) offers a stronger definition for this condition, requiring not only that the speaker be an expert on the necessities under f, g , but on the exact propositions in these conversational backgrounds at each world in the common ground. We use the weaker notion mostly for the sake of simplicity, but we should point out that Kaufmann herself has recently argued that this may be too strong in view of certain data having to do with disjunctions and the absence of free choice effects ([Kaufmann 2012a](#)). We will not enter this discussion here.

(OSR) Ordering Source Restriction: p answers a salient decision problem for h in c , $\Delta_c \subseteq Pow(W)$ s.t. the ordering source g provides the relevant criteria in for solving it.⁹

$$\Box^{CG_{s,h}}(\text{rel-crit}(\Delta_c)(g)) \wedge p \in \Delta_c^{10}$$

Providing a fully satisfactory formal rendering of what it means to count as the relevant criteria to solve a decision problem is particularly hard (see also [Portner 2007](#); [Condoravdi & Lauer 2012](#) for relevant discussion). For the moment, we contend ourselves with spelling out at least two – as we think – uncontroversial characteristics, and state that they are entailed by our otherwise unanalyzed predicate ‘rel-crit’, viz. (24) and (25). To relate criteria and action, we rely on the notion of the teleological background for an agent α , see (23) above.

(24) **Curious George:** A rational hearer facing a decision problem Δ_c will try to find out whether $\Box^{f,g} p$ for all $p \in \Delta_c$.

$$\Box \left(\text{rel-crit}(\Delta_c)(g) \rightarrow \forall p \in \Delta_c \left[\Box^{T_h} \left[\Box^{B_h} \Box^{[f,g]} p \leftrightarrow \Box^{[f,g]} p \right] \right] \right)$$

(25) **Rational choice:** A rational hearer who believes of some $p \in \Delta_c$ that it is the solution under the relevant criteria f, g will aim to bring about p .

$$\Box \left(\text{rel-crit}(\Delta_c)(g) \rightarrow \forall p \in \Delta_c \left[\Box^{B_h} \Box^{[f,g]} p \rightarrow \Box^{T_h} p \right] \right)$$

We take it to be a defining characteristics of decision problems that they contain only propositions the agent is able to bring about:

(26) **Ability to act:** A rational hearer facing a decision problem Δ_c whose goal is to bring about some $p \in \Delta_c$ will bring about p .

$$\Box^{CG_{s,h}} \left(\forall p \in \Delta_c \left[\Box^{T_h} p \rightarrow p \right] \right)$$

Jointly, these assumptions have a number consequences for a context in which the hearer faces the decision problem Δ_c and g counts as providing the relevant criteria for solving it. Notice that the outermost operator in **Curious George** and **Rational choice** expresses strict logical necessity, i.e., truth at all worlds independently of the common ground. Jointly with **OSR**, this means that their respective right-hand sides are true at all worlds in the common ground, cf. (27a) and (27b).

(27) a. h wants to be a $[f, g]$ -expert as far as Δ_c is concerned:

⁹ [Kaufmann \(2012b\)](#) suggests that, in the absence of a decision problem for the hearer, i.e. a question of the form ‘What will I do (regarding this issue)?’, g is set to the wishes of the speaker. In this paper, we abstract away from such cases.

¹⁰ We abstract away from over- and underinformative answers. While their respective acceptability raises interesting questions, these issues are orthogonal to the goals of this paper.

$$\Box^{CG_{s,h}} \forall p \in \Delta_c \left[\Box^{T_h} \left[\Box^{B_h} \Box^{[f,g]} p \leftrightarrow \Box^{[f,g]} p \right] \right] \quad (\text{OSR}, 24)$$

b. If h believes an element of Δ_c to be $[f, g]$ -necessary, it is necessary in view of h 's goals:

$$\Box^{CG_{s,h}} \forall p \in \Delta_c \left[\Box^{B_h} \Box^{[f,g]} p \rightarrow \Box^{T_h} p \right] \quad (\text{OSR}, 25)$$

c. If an element of Δ_c is necessary in view of h 's goals, it gets realized:¹¹

$$\Box^{CG_{s,h}} \forall p \in \Delta_c \left[\Box^{B_h} \Box^{[f,g]} p \rightarrow p \right] \quad (27b, 26)$$

While modal verbs may occur in contexts in which their parameters meet these requirements (thus giving rise to a performative use), they can also occur in other contexts (descriptively). In contrast, imperative clauses contain a silent operator OP_{Imp} that expresses necessity w.r.t. contextually given f and g (just like *must*, see section 3.1) as its at-issue meaning, but also triggers the presupposition that the conditions (AC), (EUC), and (OSR) are met.¹² It follows that any context in which an imperative occurs felicitously is one in which it is used performatively.

4 The interaction: Particles and performativity

With the foregoing in place, we can begin to make our analysis of the co-occurrence constraints on particles in clause types more precise. We start by making the presuppositions we attributed to $ja(p)$ and $doch(p)$ in (9) above formally more explicit. To be sure, there are important details that our renderings still gloss over, but the basic ideas can be captured as follows.

We invoke a **circumstantial** modal base f^c and an ordering source g^n that encodes **normalcy**. Intuitively, $f^c(w)$ identifies the “relevant circumstances” of the situation at world w . The use of $ja(p)$ and $doch(p)$ commits the speaker to the following beliefs:

(28) **p -uncontroversiality:**

$$\Box^{CG_{s,h}} \Box^{[f^c, g^n]} \forall \alpha \left[\Box^{T_\alpha} \left[\Box^{B_\alpha} p \leftrightarrow p \right] \rightarrow \left[\Box^{B_\alpha} p \leftrightarrow p \right] \right]$$

(29) **h/p -normality:**

$$\Box^{CG_{s,h}} \left[\Box^{[f^c, g^n]} \varphi \rightarrow \varphi \right] \quad \text{where } \varphi = \forall \alpha \left[\Box^{T_\alpha} \left[\Box^{B_\alpha} p \leftrightarrow p \right] \rightarrow \left[\Box^{B_\alpha} p \leftrightarrow p \right] \right] \\ \therefore \Box^{T_h} \left[\Box^{B_h} p \leftrightarrow p \right] \rightarrow \left[\Box^{B_h} p \leftrightarrow p \right] \quad (28, 29)$$

¹¹ See footnote 7 on the temporal complication ignored here.

¹² Kaufmann (2012b) claims that the modal base of any imperative is realistic in that it contains at least what is mutual joint belief, i.e. for an imperative uttered by s to h in w , $[f]_w \subseteq CG_{s,h} w$.

(30) *h/p*-**abnormality**:

$$\begin{aligned} & \diamond^{CG_{s,h}} \left[\Box^{[f^c, g^n]} \varphi \wedge \neg \varphi \right] \quad \text{where } \varphi = \forall \alpha \left[\Box^{T\alpha} \left[\Box^{B\alpha} p \leftrightarrow p \right] \rightarrow \left[\Box^{B\alpha} p \leftrightarrow p \right] \right] \\ & \therefore \diamond^{CG_{s,h}} \left[\Box^{T_h} \left[\Box^{B_h} p \leftrightarrow p \right] \wedge \neg \left[\Box^{B_h} p \leftrightarrow p \right] \right] \end{aligned} \quad (28, 30)$$

It is notoriously difficult to pin down what exactly counts as a relevant circumstance, and we are not able to devote more space to this matter. Our intention here is to get a handle on quantification over “situations like c ” in (9) above. The ordering source g^n filters these “situations like c ” to single out those in which nothing interferes with the normal course of events. Now, we assume that a circumstantial modal base is **realistic** in Kratzer’s sense, i.e., that $[f^c]$ is reflexive. Thus without the addition of g^c , the inference from $\Box^{[f^c]} p$ to p would be valid for any p . But with g^n this inference is no longer valid: The world of evaluation is not guaranteed to be a normal one. On the other hand, it *may well be* normal, and assumptions of normalcy of a more or less general nature can be added via separate rules. One simplistic way to do so would be to add the schema $\forall p \left[\Box^{[f^c, g^n]} p \rightarrow p \right]$. But this would be too strong: The speaker may well believe that the hearer behaves normally while the rest of the world is in disarray. Therefore we refrain from adding the general schema, instead requiring that the world is normal only with regard to the hearer’s ability to find out whether p if that is her goal. Similarly, in (30), we state in what respect the world may deviate from the normal course of events: The hearer tries to find out whether p but does not.

As before, we assume that $ja(p)$ presupposes p -uncontroversiality and *h/p*-normality, whereas $doch(p)$ presupposes p -uncontroversiality and *h/p*-abnormality. With this in place, we can now derive the following predictions: Imperatives with ja can never be used felicitously because the presuppositions triggered by ja clash with those carried by the imperative. On the other hand, such a clash does not necessarily occur with the presuppositions of $doch$, therefore $doch$ can be used with imperatives.

4.1 Why *ja*-imperatives don’t work

The derivation in 31 shows in detail how our assumptions about the presuppositions contributed by the imperative and by ja cannot both be satisfied simultaneously: Both sets of presuppositions jointly imply that p will come about independently of the speaker’s use of the imperative.

- (31) If $ja\left(\Box^{[f,g]} p\right)$ is uttered felicitously in c , it becomes mutual joint belief in c that s holds the following beliefs:
- a. $\Box^{[f,g]} p$. (asserted content)

- i. Normally, if someone tries to find out whether $\Box^{[f,g]}p$, they will. (uncontroversiality)
 - ii. Things are normal in the sense of (31a-ii). (normality)
 - b. If h tries to find out whether $\Box^{[f,g]}p$, she will. (31a-i, 31a-ii)
 - i. g provides the criteria for solving h 's decision problem. (OSR)
 - ii. For all q in h 's decision problem, h tries to find out whether $\Box^{[f,g]}q$. (Curious George)
 - c. h tries to find out whether $\Box^{[f,g]}p$. (31b-i, 31b-ii)
 - d. h will find out whether $\Box^{[f,g]}p$. (31b, 31c)
 - e. h will find out that $\Box^{[f,g]}p$. (31a, 31d)
 - f. h will aim to bring about p . (Rational choice)
 - g. h will bring about p . (31f, Ability to act)
 - h. p may or may not come about. (EUC)
- ⇒ **Contradiction.**

4.2 Why *doch*-imperatives work

With *doch*, in contrast, the analogous inference is blocked. The speaker cannot infer from (32c) that the hearer will find out whether p is a necessity relative to f, g . This blocks the analog of the inference we obtained with *ja* in (31) above.

- (32) If *doch*($\Box^{[f,g]}p$) is uttered felicitously in c , the following becomes mutual joint belief in c :
- a. $\Box^{[f,g]}p$. (asserted content)
 - i. Normally, if someone tries to find out whether $\Box^{[f,g]}p$, they will. (uncontroversiality)
 - ii. Things are **not** normal in the sense of (32a-i). (abnormality)
 - b. h may try to find out whether $\Box^{[f,g]}p$ and fail. (32a-i, 32a-ii)
 - i. g provides the criteria for solving h 's decision problem. (OSR)
 - ii. For all q in h 's decision problem, h tries to find out whether $\Box^{[f,g]}q$. (Curious George)
 - c. h tries to find out whether $\Box^{[f,g]}p$. (32b-i, 32b-ii)

5 Conclusions and further research

In this paper we have spelled out an analysis of the German discourse particles *ja* and *doch* that aims to capture their similarity, while accounting for the fact that *doch*, but not *ja* can occur in imperative clauses and with performative modals. For this we rely on a Stalnakerian presupposition that content modified by the particle can normally be found out, with *ja* adding that the context is normal in the relevant respect, while *doch* adds that it is not. Combining this with an independently motivated analysis of imperatives and performative modals as occurring only under particular constellations (Kaufmann 2012b) derives the ban on *ja* while allowing for *doch*.

We think that our analysis also offers a natural starting point for further pragmatic effects associated with these particles. For instance, both can sound derogatory or reassuring, depending on contextual constellations that have yet to be explored in detail (similar effects arise for *This is easy*). Moreover, *doch* favors the use of an imperative as an invitation or a piece of advice rather than a command. We would like to relate this to the idea that commands, but not invitations and advice change the modal state of affairs expressed by the imperative: Roughly, if an utterance of *p* is self-verifying, the hearer could not have found out *p* independently.

Finally, the idea that *ja* and *doch* share a significant part of their meaning is similar to Grosz (t.a.)'s proposal. For him, the presuppositional component of *ja* is strictly weaker than that of *doch*. This allows him to explain the infelicity of *ja* but not *doch* in declarative sentences in particular contexts in terms of Heim (1991)'s Maximize Presupposition. It would be interesting to investigate whether this type of approach could be extended to the ban on *ja* from imperatives. A full evaluation of Grosz's particular implementation and its possible extension to imperatives requires a better understanding of the notions from Kratzer and Matthewson that he builds on (for instance, the nature of expressive presuppositions and in how far they are subject to Maximize Presupposition). For the moment, we take it as an advantage of our approach that we offer a transparent rendering for the notion of old, shared, or uncontroversial, which moreover interacts naturally with an independently motivated analysis for imperatives/performative modals. Also, the clash produced by the meaning of *ja* together with that of the imperative strikes us as a slightly more reliable way to account for the exceptionless ungrammaticality than an approach in terms of Maximize Presupposition. But surely, these comparisons have – *ja* – to await further research.

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Magdalena Kaufmann
Department of Linguistics
University of Connecticut
365 Fairfield Way, Unit 1145
Storrs, CT 06269
magdalena.kaufmann@uconn.edu

Stefan Kaufmann
Department of Linguistics
Northwestern University
2016 Sheridan Rd.
Evanston, IL 60208
kaufmann@northwestern.edu