

Semantics Below and Above Speech Acts

Manfred Krifka
Humboldt Universität, Berlin
Zentrum für Allgemeine Sprachwissenschaft (ZAS), Berlin

1. Semantics and Speech Acts

1.1 The Classical Picture

Frege (1879): The First Judgement

Frege (1879), *Begriffsschrift*, distinguishes between:

- the **content** of judgement of a sentence (“Gedanken”, **thoughts**), “ $\text{— } \Phi$ ”
- the **act** of judgement or **assertion** of a content (“Behauptung”), “ $\text{— } \Phi$ ”
(this is the origin of the turnstile symbol, later interpreted as **assertability**).

Thoughts can be complex, composed of other meanings. Judgements always contain thoughts, never other judgements. But laws of logic justify certain judgements if other judgements obtain. Example: Judgements (1.a) and (b) justify judgement (c).

- | | |
|--------------------------------------|----------------------------|
| (1) a. Assert: if Φ then Ψ | $\vdash \frac{\Psi}{\Phi}$ |
| b. Assert: Φ | $\vdash \Phi$ |
| c. Hence, Assert Ψ | $\vdash \Psi$ |

Frege’s distinction did not catch on (discussion Frege / Peano, Frege’s remarks on questions as differing from assertions in their content in Frege (1892) – see Dummett (1973)).

Wittgenstein (1922), *Tractatus logico-philosophicus*:

4.022: The proposition *shows* how things stand, *if* it is true. And it *says* that they do so stand.

That is, the content of a proposition corresponds to a possible state of affairs, and it asserts that it describes the real state of affairs.

Wittgenstein (1958), *Philosophical investigations*, mentions a multitude of language games beyond assertions (commands, questions, telling jokes, greetings, prayings...) and is generally sceptical whether contents can be separated from what we do with contents.

Stenius (1967), *Mood and language game* (also, Searle 1968)

Stenius distinguishes between two aspects of an uttered sentence: a **sentence radical** (a notion inspired by chemistry) signifying its descriptive content; and a **modal element**, which signifies its **mood**. He lists three moods, **indicative**, **imperative** and **interrogative**.

- | | |
|------------------------------------|--|
| (2) a. <i>You wash your hands.</i> | It is the case that [you wash your hands]. |
| b. <i>Do you wash your hands?</i> | Is it the case that [you wash your hands]? |
| c. <i>Wash your hands!</i> | Let it be the case that [you wash your hands]! |

The mood relates to particular rule-governed **language games**:

- | |
|---|
| (3) a. Report game: Produce a sentence in indicative only if its sentence radical is true. |
| b. Question game: Answer a question by ‘yes’ or ‘no’, according to whether its sentence-radical is true or false. |

- | |
|---|
| c. Command game: React to a sentence in imperative by making the sentence-radical true. |
|---|

Explanation of G.E. Moore’s paradox: *#It is raining, but I don’t believe it.* No paradox of content, but a paradox of action: It blatantly violates the rules of the Report Game.

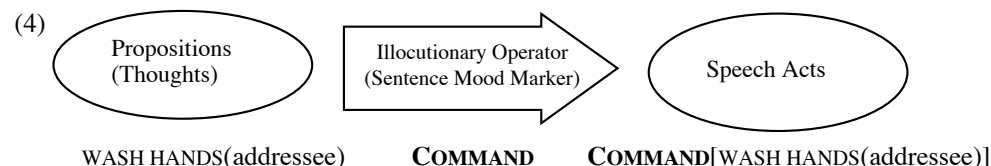
The two-world hypothesis of semantics and pragmatics

Frege, Wittgenstein of *Tractatus*, Stenius suggest that there are two distinct worlds:

- **World of Thoughts:** Thoughts can be true or false, given a state of affairs. Thoughts can be composed of other thoughts, using truth-functional operators like conjunction, negation, conditionals. The truth-conditions of a complex thought can be reduced to the truth-conditions of the constituent thoughts (compositionality). Basic notions: Worlds/Situations, truth values, reference (types s, t, e). This is the world of **Semantics**.

Notice: Contra Ginzburg & Sag (2001) it is not required to assume that the sentence radicals of all speech acts are the same; cf. referential radical in *Hurrah for Manchester United!* (Searle), set of propositions as radical for questions (Hamblin); what is important is that sentence radicals are regular semantic objects.

- **World of Acts:** In communication, speakers use thoughts to perform actions with social consequences. They claim that thoughts are true, they question others to find out whether thoughts are true, they order others to make thoughts true, they commit speakers to make thoughts true, they express amazement that thoughts are true, etc. They may be complex, e.g. telling a story, putting forward a complex argument. These are the speech acts of speech act theory, cf. Austin (1962), Searle (1969). They are investigated in **Pragmatics**.



The two worlds are layered:

- Thoughts may contain other thoughts; they never contain acts. (They may describe acts, e.g. the thought that Mary ordered John to wash his hands.)
- Acts use thoughts, and hence contain these thoughts.

1.2 The New Picture: From Thoughts to Acts, back to Thoughts, to Acts



2. A First Case Study: Disjunctions in Permission Sentences

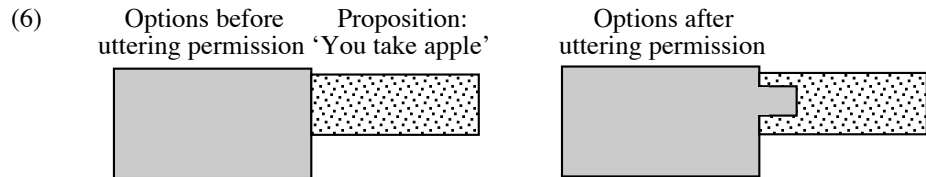
Kamp (1975), (1978) compares disjunctions in assertions and permissions:

- (5) a. *You took an apple.* $\implies / \not\Leftarrow$ *You took an apple or (took) a pear.*
 b. *You may take an apple.* $\not\implies / \Leftarrow$ *You may take an apple or (take) a pear.*

Observation:

- The proposition *you took an apple* is “stronger” than the proposition *you took an apple or took a pear*. This is reflected in the strength of the assertions of those propositions.
- However, it seems that the permission *You may take an apple* is “weaker” than the permission *You may take an apple or take a pear*. The second permission grants more.

Theory of permissions as increasing option space of addressee:

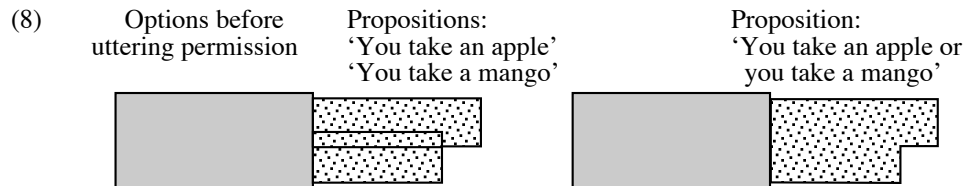


The option space is increased conservatively: Those worlds in which the addressee takes an apple are allowed that do not violate other rules (cf. also Lewis (1978)).

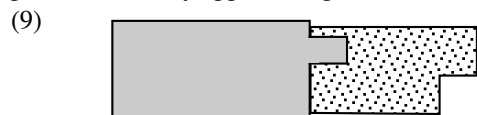
Analysis in terms of Sentence Mood / Sentence Radical:

- (7) **PERMISSION** [Φ]:
 Increases the option space of addressee such that those Φ -worlds are allowed that do not violate other rules.

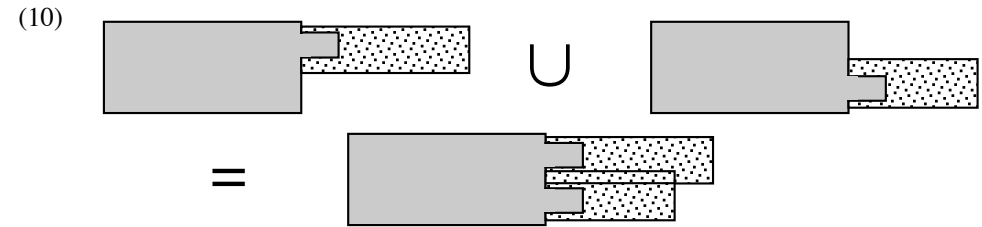
Analysis of disjunctive permissions, first try: Boolean disjunction of the proposition.



Assume that apples are cheap, mangos are expensive, and there is a general rule that cheap things are preferred over expensive things as far as permissions go. Then this rule incorrectly predicts that only apple-eating worlds are allowed:



We get the right solution if the option space is first updated with ‘You take an apple’, then with ‘You take a mango’, and then the union of both updates is formed.



We interpret the disjunction *or* at the level of speech acts, as union \cup of option spaces:

- (11) *You may take an apple or you may take a mango.*
PERMISSION [You take an apple] **OR** **PERMISSION** [You take a mango.]

In the resulting model, pragmatics is “sandwiched” between two semantics components:

- (12) SEMANTICS (disjunction of option space)
 PRAGMATICS (permission operator using propositions to modify option space)
 SEMANTICS (recursive semantics defining propositions)

Note that disjunction in (5.b) is not to be confused with a case in which the speaker does not know which permission he actually wants to utter (cf. Merin (1992) for discussion).

Do we have to follow this analysis? Perhaps not; there is an alternative. Notice that the update illustrated in (9) could also be excluded by Relevance: Increasing the option space only by apple-eating worlds could have been achieved by the simpler *You may eat an apple*.

3. Second Case Study: Quantifiers Scoping over Speech Acts

Krifka (2001): Quantification into question speech acts; here: a condensed analysis.

3.1 Quantification into Questions as Conjoined Questions

The Pair-List Reading of Quantifiers in Questions

- (13) *Which dish did every chef make?*
 a. *(Every chef made) pasta.* (narrow scope)
 b. *(Every chef made) his favorite pasta.* (functional)
 c. *Al (made) the pasta; Bill, the salad; and Carl, the pudding.* (pair-list)

Deaccenting (topicality) of *every chef* required pair-list reading, cf. Krifka (2001).

Lack of pair-list reading with non-universal quantifiers:

- (14) *Which dish did most/several/a few/no chefs make?*
 a. *Pasta.*
 b. *Their favorite pasta.*
 c. *#Al, the pasta, and Bill, the salad.*
- (15) *Which dish did nearly every chef make?*
 a. *Pasta.*
 b. *His favorite pasta.*
 c. *#Al, the pasta; Bill, the salad; ... and Willie, the pumpkin soup.*
- (16) *Here’s a list of 20 African countries.*
 a. *Select at least 11 of them. Specify which capital each of these countries has!*
 b. *#Which capital do most of these countries have?*

Pair-List Questions as Conjoined Questions

- (17) *Which dish did every chef make?*
 - (18) *Which dish did Al make, which dish did Bill make, and which dish did Carl make?*
- The pragmatic effect is the same. Hypothesis: The quantifier induces a conjoined question.

Are there Disjoined Questions?

- (19) *Which dish did Al make or which dish did Bill make?*
- Szabolcsi (1997) judges this ungrammatical, except in interpretation *or rather, ...*:
- (20) *Which dish did Al make? Or (rather), which dish did Bill make?*
- Belnap & Steel (1976):
- (21) *Have you ever been to Sweden or have you ever been to Germany?*
- Presumably interpreted as *Have you ever been to /Sweden or to /Germany?* A congruent answer is *yes* or *no*, answers like *I have been to Germany* are over-informative.

Restriction for Quantifiers in Questions Explained

Universal quantifiers are generalized conjunctions (cf. Keenan & Faltz (1985)):

- (22) a. *Every chef came.* \Leftrightarrow *Al came and Bill came and Carl came.*
- b. *A chef came.* \Leftrightarrow *Al came or Bill came or Carl came.*
- c. *Most chefs came.* \Leftrightarrow *Al came and Bill came, or Al came and Carl came, or Bill came and Carl came.*

Pair-list interpretations with universal quantifiers because they reduce to conjunction:

- (23) *Which dish did every chef make?*
 \Leftrightarrow *For every chef x: Which dish did x make?*
 \Leftrightarrow *Which dish did Al make, which dish did Bill make, and which dish did Carl make?*

For objections raised by Ginzburg & Sag (2001), see Appendix.

3.2 Conjunction of Speech Acts in a Dynamic Theory of Speech Acts

Speech Acts and social commitments, cf. Searle (1969)

- (24) If a speaker s performs **ASSERT** [Φ], s takes on the commitment to produce evidence or arguments for the truth of Φ , if required.

Participants always have a set of such commitments (generally of the form to do something on behalf of someone, possibly if certain conditions are met). I will use c, c' etc. for sets of commitments, or **commitment states**. Speech acts change commitment states (of the speaker, the addressee, or society in general).

- (25) A: *Why are you late?*
 B: *The bus had an accident.*

By this act, Speaker B takes on the commitment to back up his claim by evidence if required. Can also be done by referring to one's personal integrity and past adherence to truth.

- (26) **ASSERT** [**HAD ACCIDENT**(THE BUS)], uttered at commitment state c:
 c + Speaker is committed to back up the proposition **HAD ACCIDENT**(THE BUS).

Act Types and Act Tokens

The speech act of B of uttering the assertion sentence *The bus had an accident* is a particular act of a certain type (a **speech act token**). It had a particular effect on the commitments of B in the particular situation in which it was uttered.

The assertion sentence type *The bus had an accident* is a **speech act type** that, when uttered in the appropriate circumstances, changes a commitment state c that satisfies certain requirements such that it will contain the speaker commitment that the speaker can produce evidence that the bus mentioned had an accident at the time mentioned, if required.

A Dynamic Theory of Speech Acts

Seen in this way, speech act types are **commitment change potentials**.

Cf. dynamic semantics, Stalnaker (1978), Heim (1982), Groenendijk & Stokhof (1987) for a similar notion of dynamic interpretation and the notion of context change potentials; Merin (1994) for an automata-theoretic approach to social acts.

Speech act types as functions on commitment states:

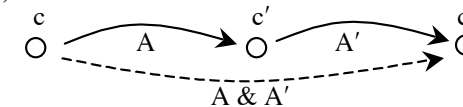
- (27) $A(c) = c'$, if A is appropriate for c; else A(c) is undefined
 (can sometimes be rescued by accomodation of a variant of c)



Conjunction of Speech Acts as Function Composition and Commitment Union

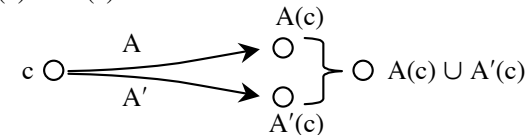
Conjunction as functional composition, cf. conjunction in dynamic semantics.

- (28) $[A \& A'](c) = A'(A(c))$



Commitment states can be modelled as sets of commitments, hence we can interpret conjunction of acts as union of the commitments:

- (29) $[A \& A'](c) = A(c) \cup A'(c)$



However, (29) only works if there is no anaphoric binding between A and A':

- (30) *A man sang. And a woman danced.*
 $[\mathbf{ASSERT}(\exists x_1[\mathbf{MAN}(x_1) \wedge \mathbf{SANG}(x_1)])] \& [\mathbf{ASSERT}(\exists x_2[\mathbf{WOMAN}(x_2) \wedge \mathbf{DANCED}(x_2)])](c)$
 $= [\mathbf{ASSERT}(\exists x_1[\mathbf{MAN}(x_1) \wedge \mathbf{SANG}(x_1)])(c) \cup \mathbf{ASSERT}(\exists x_2[\mathbf{WOMAN}(x_2) \wedge \mathbf{DANCED}(x_2)])](c)$
 $= [c + \text{speaker is committed to back up } \exists x_1[\mathbf{MAN}(x_1) \wedge \mathbf{SANG}(x_1)]]$
 $\quad \cup [c + \text{speaker is committed to back up } \exists x_2[\mathbf{WOMAN}(x_2) \wedge \mathbf{DANCED}(x_2)]]$
 $= [c + \text{speaker is committed to back up } \exists x_1[\mathbf{MAN}(x_1) \wedge \mathbf{SANG}(x_1)] \wedge \exists x_2[\mathbf{WOMAN}(x_2) \wedge \mathbf{DANCED}(x_2)]]$

- (31) *A man₁ sang. And he₁ danced.*
 Can only be dealt with using (28).

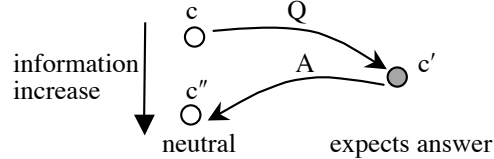
Often speech act conjunction amounts to the same as Boolean sentence radical conjunction. if boolean conjunction is defined for the sentence radicals, e.g. for assertions:

- (32) *A man sang and a woman danced.*
 $\text{ASSERT}(\exists x_1[\text{MAN}(x_1)\wedge\text{SANG}(x_1)] \wedge \exists x_2[\text{WOMAN}(x_2)\wedge\text{DANCED}(x_2)])$

Initiating and responding acts

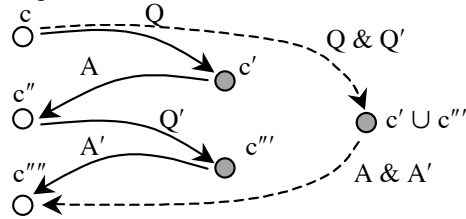
There are pairs of **initiating** and **responding** acts (question – answer, command – comply, greeting – return of greeting). Initiating acts lead to conversational states that expect a certain type of speech act:

- (33) $A(Q(c)) = A(c') = c''$,
 where Q is appropriate for c and A is appropriate for c'



Conjunction for initiating and responding acts:

- (34) If $A(Q(c))$ is an appropriate conversational move, and if $A'(Q'(c''))$ is an appropriate conversational move, where $c'' = A(Q(c))$, then $[A \& A'](\{Q \& Q'\}(c))$ is an appropriate conversational move; it is equivalent to $A'(Q'(c''))$, i.e. $A'(Q'(A(Q(c))))$.



- (35) a. A: *Which dish did Al make?* b. A: *Which dish did Al make?*
 B: *The pasta.* B: *And which dish did Bill make?*
 A: *Which dish did Bill make?* B: *Al (made) the pasta, and Bill the salad.*
 B: *The salad.*

Conjunction of acts is not quite as general as conjunction of propositions. It fails if the second question depends anaphorically on the answer to the first question:

- (36) A: *What did John buy?* B: *A crime novel.* A: *Who is the author?*
 A: *#What did John buy, and who is the author?*

3.3 Are there Disjoined Speech Acts?

Disjunction as intersection?

If conjunction of speech acts is union of commitment states up to anaphoric dependencies, cf.(29), disjunction may be intersection. But this doesn't make sense: a disjunctive assertion like (37.a) would have no effect at all on a set of commitment state, cf. (37.b).

- (37) a. *It is raining. Or it is snowing.*
 b. $\text{ASSERT}[\text{RAINING}](c) \cap \text{ASSERT}[\text{SNOWING}](c)$
 $= [c + \text{speaker is committed to back up RAINING}] \cap$
 $[c + \text{speaker is committed to back up SNOWING}] = c (!)$

Disjunction as alternative commitment states?

A disjunction of speech acts may offer addressee alternative commitment states, to be modelled as sets of commitment states, cf. (38). Then (37.a) would be (37.c):

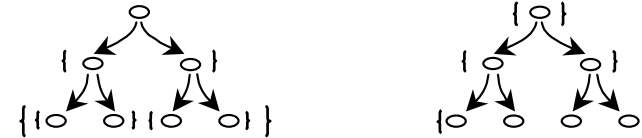
- (38) $[A \text{ OR } A'](c) = \{A(c), A'(c)\}$
 (37) c. $\{\text{ASSERT}[\text{RAINING}](c), \text{ASSERT}[\text{SNOWING}](c)\}$

Such disjunctions may model rather odd cases like *Take out the garbage, or clean your room, I don't know which.* They are also problematic because of increase of complexity

- (39) a. $[A \text{ OR } A'](c) = \{A(c), A'(c)\}, = C$
 b. $[A'' \text{ OR } A'''](C) = \{\{A''(A(c)), A'''(A(c))\}, \{\{A''(A'(c)), A'''(A'(c))\}\}, = \mathbb{C}$, etc.

Alternatively, we may lift commitment states c to sets $C = \{c, c', \dots\}$ in general, which also necessitates more complex rules, cf. speech act disjunction and conjunction (40.a,b):

- (40) a. $[A \text{ OR } A'](\{c, c', \dots\}) = \{A(c), A'(c), A(c'), A'(c'), \dots\}$
 b. $[A \& A'](\{c, c', \dots\}) = \{[A \& A'](c), [A \& A'](c'), \dots\}$
 (41) Update of commitment states according to rules (38) and (40.a), respectively.



This is different with conjunction and disjunction in standard dynamic interpretation, where information states s are sets of possible worlds for which union and intersection are defined.

- (42) a. $[\Phi \wedge \Phi'](s) = \Phi(s) \cap \Phi'(s)$
 b. $[\Phi \vee \Phi'](s) = \Phi(s) \cup \Phi'(s)$

Disjunction lifted from disjunction of propositions?

We would like that equivalence (43) holds, which suggests to use it to define a type-lifted disjunction for speech acts following strategies of Keenan & Faltz (1985) as in (45).

- (43) $\text{ASSERT}[\text{RAINING}] \text{ OR } \text{ASSERT}[\text{SNOWING}] = \text{ASSERT}[\text{RAINING} \vee \text{SNOWING}]$
 (44) $\text{IIOp}[\text{SentRad}] \text{ OR } \text{IIOp}[\text{SentRad}'] =_{\text{def}} \text{IIOp}[\text{SentRad} \vee \text{SentRad}']$

This is possible if the illocutionary operators are identical and \vee is defined for the sentence radicals. Can also be used for commands, permissions (pace Kamp) but is problematic for questions, as sentence radicals are sets of propositions, cf. Hamblin (1973), Karttunen (1976)

- (45) a. *Sing, or dance!*
 $\text{COMMAND}[\text{SING}(a)] \text{ OR } \text{COMMAND}[\text{DANCE}(a)] =_{\text{def}} \text{COMMAND}[\text{SING}(a) \vee \text{DANCE}(a)]$
 b. *Is it raining, or is it snowing?*
 $\text{QUEST}[\{\text{RAIN}, \neg\text{RAIN}\}] \text{ OR } \text{QUEST}[\{\text{SNOW}, \neg\text{SNOW}\}] = ?$

Speech act disjunction if resultant state is unique in context

- (46) *Does gold react with oxygen? Why, or why not?* (B. Partee)
'In case answer is yes, then the question is: Why; in case of no, question is: Why not.'

3.4 Function Composition of Speech Acts as Conjunction

The operation “&” is called **conjunction** because we express it by *and*. But why is this so?

Shared resources for execution and description of speech acts

When we **describe** conjoined speech acts, which yields truth-functional expressions, we use Boolean conjunction or universal quantifiers:

- (47) a. A, to B: *Which dish did Al make? And, which dish did Bill make?*
b. *A asked B which dish Al made, and A asked B which dish Bill made.*
- (48) a. A: *Which dish did every chef make?*
b. *For every chef x, A asked which dish x made.*

We can use *and* and *every* to conjoin the **execution** of speech acts because we can use *and* and *every* to **describe** the conjoined execution of such speech acts. Quite generally, expressions that relate to the type of speech act or to properties of its execution are the same as expressions that describe such acts. Cf. analysis of explicit performatives, Bierwisch (1980):

- (49) a. Priest: *I hereby baptize you John.*
b. Report: *The priest baptized him John.*

The Performative Hypothesis all over again?

Cf. Katz & Postal (1964), Ross (1970); for a semantic version Lewis (1970):

- (50) a. A, to B: *Is it raining?*
b. Deep Structure: *[A asked B [whether it is raining]].*

This is an indicative sentence that has a truth value. The intended point of a speech act comes about as a side effect only (cf. Lewis (1970)). This is particularly strange for assertions, which are, on one level, trivially true:

- (51) A, to B: *It is raining.*
Deep structure: *[A asserted to B [that it is raining]].*

Basic problem of performative hypothesis: It analyzes speech acts (i.e., Acts) by way of descriptions of speech acts (i.e., Thoughts). But we do not generally perform speech acts by describing what we are doing. Cf. the use of non-progressive forms for explicit performatives:

- (52) Priest: *#I am hereby baptizing you John.*

Examples like *All that I'm saying is that I like Mary better than John* appear to be counter-evidence, but they are rather summarizing reports of what has already been said.

One specific problem of the performative hypothesis: It cannot derive the restriction to universal quantifiers in quantification into questions. A deep structure / description like (53.a) should be transferable into a sentence like (53.b) with wide-scope interpretation.

- (53) a. *For most chefs x: A asked B which dish x made.*
b. A, to B: *Which dish did most chefs make?*

The current proposal is different: Speech acts are acts, not descriptions of acts. But the language resources can be shared.

Other cases of shared resources

Speech act adverbials indicating reason and manner of act, Davison (1973), Sadock (1974):

- (54) A, to B: *Quite frankly, Bill is unable to do the job.*
Description: *A told B quite frankly that Bill is unable to do the job.*

Motivated speech acts, cf. Dummett (1973), Davison (1973).

- (55) A, to B: *Since you're so smart, what's the capital of South Dakota?*
Description: *Since A considers B smart, A asked B what is the capital of SD.*

Conditional speech acts (cf. anticipatory resolution, German *Vorratsbeschluss*).

- (56) A, to B: *In case you are hungry, there is a restaurant around the corner.*
Description: *In case that B is hungry, A told B that there is a restaurant...*

Speech acts that indicate their discourse function overtly:

- (57) A, to B: (...) *In conclusion, the world is not ready for peace.*
Description: *A asserted in conclusion (of a longer argument) that the world is not ready for peace.*

Non-sharing of resources / specialized expressions do occur

- (58) A, to B: *Alas, you lost all the money.*
Description: A expresses a **regret** to B that B lost all the money.
- (59) Description: A **insulted** B by saying that he never did anything right.
*A, to B: *I (hereby) insult you (by saying that) you never did anything right.*

Perhaps insults are no speech acts: they don't change commitment states. Different for ritualized duels of German fraternity students: *Beleidigung!* ('insult') sufficient to create addressee obligation to demand satisfaction.

4. Third Case Study: Imperatives in Conjunction and Disjunction

Cf. Culicover & Jackendoff (1997), Han (1998), Schwager (2004).

4.1 Imperatives conjoined with assertion

- (60) *Come home that late again and you're not allowed to go out anymore.*
Conditional interpretation: 'If you come home that late, you are not allowed...'
- (61) *Show up late and you're gonna lose your job.*
Generic interpretation: 'If one shows up late, one will lose one's job.'

Interpretation as a conditional sentence, not as an imperative:

- (62) a. *Be chronically ill, and life looks desperate.*
b. **Be chronically ill!*
- (63) *Show up early, {please / will you}, and you're gonna keep your job.*
No conditional interpretation.

Explanation: Imperative sentence radical

The imperative clause is not an imperative speech act but just an **imperative sentence radical**. Such radicals have a free variable restricted to animates that, in command uses, is interpreted as referring to the addressee.

- (64) a. Imperative sentence radical, *show up late*: $\lambda x:\text{anim}[\text{SHOW UP LATE}(x)]$
- b. Illocutionary operator: $\lambda F[\text{COMMAND}[F(\text{addressee})]]$
- c. Imperative sentence *Show up late!*: $\text{COMMAND}[\text{SHOW UP LATE}(\text{addressee})]$
 ‘Speaker orders addressee a to make $\text{SHOW UP LATE}(\text{addressee})$ true.’

The restriction to active verbs is due to the command operator; only such actions can be reasonably commanded that can be controlled by the addressee.

In conditional uses, the sentence radical is used to restrict a non-overt generic quantifier. The variable a can be anchored to humans / animates in general, as with generic *you*.

- (65) $\text{GEN}(x, i) [\text{SHOW UP LATE}(x:\text{anim}) \text{ in } i, \text{LOSE JOB}(a) \text{ in } i]$

Notice that imperative form (the imperative sentence radical) is required, which provides for the free variable required by the modal quantifier.

- (66) a. *Stay a bit longer and I'll make you a nice dinner.*
 Conditional interpretation: ‘If you stay a bit longer, I'll make you a nice dinner.’
- b. *You must stay a bit longer and I'll make you a nice dinner.*
 Conditional interpretation difficult or impossible.

Conditional interpretation of conjunction a more general phenomenon (notice deaccenting of first conjunct, a sign of mapping semantic material to the restrictor).

- (67) a. *You drink another bottle of beer and I am leaving.*
- b. *John comes home drunk again and I am leaving.*

4.2 Commands disjoined with threat

- (68) *Go away or I'll call the police.*

This is not either a command or a threat, but an imperative backed up by a threat. We find imperative-specific markers and restriction to active verbs, cf. (69). There is no restriction to imperative form, cf. (70).

- (69) a. *Go away, {please / will you} or I'll call the police.*
- b. **Be chronically ill or the health insurance won't pay you.*

- (70) *You must go away immediately, or I'll call the police.*

It appears that this a real speech act disjunction, offering alternative commitment states, as in (38). As the illocutionary operators are different (command and threat), the strategy to lift disjunction from sentence radicals as in (45) is excluded.

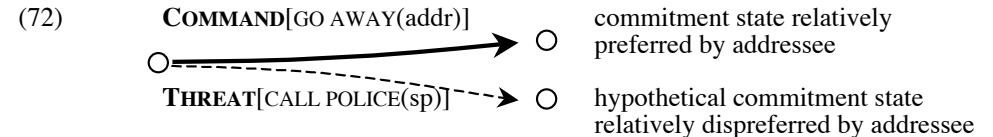
Command + Threat as speech act disjunction with relative preference

Assume analysis as speech act disjunction:

- (71) $c + \text{Go away or I call the police}$
 = $[\text{COMMAND}[\text{GO AWAY}(\text{addressee})] \text{ OR } \text{THREAT}[\text{CALL POLICE}(\text{speaker})]](c)$
 = $\{\text{COMMAND}[\text{GO AWAY}(\text{addressee})](c), \text{THREAT}[\text{CALL POLICE}(\text{speaker})](c)\}$

Why are alternative commitment states allowed here?

If the speaker assumes that the threat is strongly disfavored by the addressee, then this reduces to a single information state: $\text{COMMAND}[\text{GO AWAY}(\text{addressee})](c)$



Why no such reduction in the following case:

- (73) *#Go away or I give you one hundred dollars.*

Reason: Here the commitment state after *I give you one hundred dollars* is **absolutely** preferred. There is no need to specify a strongly dispreferred option here.

Similar disjunctions possible in case of commands:

- (74) *Pay me back my debt or I will sue you!*

Why is the order fixed, cf. (75)? Presumably because the speech act meant by the speaker is the command, so it should come first for reasons of prominence.

- (75) **I'll call the police or go away.*

But see Appendix for a different, more principled motivation.

What about disjoined permissions?

- (76) *You may take an apple or you may take one hundred dollars.*

In this case the initial preference structure is with the speaker (to give a way an apple is better than to give away one hundred dollars). By offering a choice of either commitment state speaker overrides this initial preference structure, and both resultant commitment states are equally valid for the addressee.

Avoidance of ambiguous states presumably leads to reinterpretation of disjunction as disjunction on the level of sentence radicals (pace Kamp).

5. Fourth Case Study: Embedded Speech Acts

There is evidence that speech acts can occur as embedded sentences; cf. conditional speech acts, (56): *In case you are hungry, there is a restaurant around the corner.*

Lee (1975) points out embedded explicit performatives:

- (77) *I regret that I have to inform you that [you are hereby dismissed].*

Problem: How can an act become part of recursive semantics? General suggestion: Shared resources, see discussion of (47ff.). But there are other cases.

5.1 Sentence level vs. discourse level embedding

Speech act adverbials in nonrestrictive (appositive) relative clauses

occur in non-restrictive relative clauses because they are separate speech acts, not in restrictive relative clauses.

- (78) a. *John, who I, frankly, don't like at all, will be promoted.*
 ≈ *John will be promoted. Frankly, I don't like him at all.*
- b. **Every software engineer that I, frankly, don't like at all, will be promoted.*

Speech act adverbials in reason clauses, Mittwoch (1977):

- (79) a. *Doris admitted that she, frankly, doesn't like Bill.
b. Doris voted for John because she, frankly, doesn't like Bill.

Presumably (b) is fine because it consists of two speech acts connected by a **rhetorical relation** of Reason, in the sense of Mann & Thompson (1988).

Rhetorical relations as relations between speech acts

Proposal: Rhetorical relations like Reason, Causation, Elaboration, Narration are motivational relations between speech acts. Reason relationships can be expressed within a sentence radical, (80.a), and between speech acts, (b).

- (80) a. ASSERT[REASON('Doris voted for John', 'she doesn't like Bill')]
b. ASSERT['Doris voted for John'] ←REASON— ASSERT['she doesn't like Bill']

Evidence for realization within sentence radical vs. between speech acts: Root vs. dependent clause structure in German:

- (81) a. Doris stimmte für John weil sie Bill nicht mag.
b. Doris stimmte für John {denn / % weil} sie mag Bill nicht.

Certain semantic operations, like contrastive negation, restricted to sentence radicals:

- (82) Doris didn't vote for John because she (*frankly) doesn't like him,
but because she thought he is the best candidate.

5.2 Epistemic modals and indicators of strength of speech acts

- (83) a. Es wird wahrscheinlich regnen. c. Es wird sicher regnen.
b. Es wird wohl regnen. d. Es wird sicherlich regnen.
'It will probably rain.' 'It will certainly regnen.'

Apparently similar semantics, but distinct embedability:

- (84) a. Wenn es wahrscheinlich / [?]wohl regnen wird, sollten wir Schirme mitnehmen.
b. Wenn es sicher / [?]sicherlich regnen wird, sollten wir Schirme mitnehmen.
'If it will probably / certainly rain we should take umbrellas with us.'

Explanation: Epistemic modals can be interpreted within the level of the sentence radical, cf. (85). Downtoners or "uptoners" of assertions are interpreted on the level of the speech act (cf. Vanderveken 1990, dimension of strength), cf. (86).

- (85) PROBABLY Φ : $\lambda i \forall i [i \text{ is easily epistemically accessible from } i \text{ and } \Phi(i)]$

- (86) WOHL-ASSERT[Φ](c)
= c + speaker commits to the truth of Φ , but to a lesser than usual degree

Apparent semantic similarity: To assert an epistemically weakened proposition is conversationally equivalent to performing a downtoned assertion.

But things are still unclear:

- (87) a. He did better than, frankly, I had expected.
b. What, frankly, he mismanaged is the farm he inherited from his aunt.
(88) Doris stimmte für John weil sie offengestanden Bill nicht mag.
'Doris voted for John because she frankly doesn't like Bill' (dependent clause syntax)

Perhaps a case of zeugma consisting of two sentences:

- (89) Frankly, I had expected that he did only so well. He did better than that.

5.3 Types of embedded questions

Basic observations

Different types of question-embedding verbs, cf. Karttunen (1977):

- (90) a. Doris knows / found out / remembered which dish Al made.
b. Doris knows / found out / remembered that Al made pasta.
(91) a. Doris wondered / asked / investigated / is interested in which dish Al made.
b. *Doris wondered / asked / investigated / is interested in that Al made pasta.

Quite often, the nature of the embedding predicate changes in context, cf. Doris wants to find out which dish Al made vs. #Doris wants to find out that Al made pasta.

Quantification into embedded questions, universal and other quantifiers (cf. Szabolcsi (1997)):

- (92) a. Doris found out which dish every chef made.
'For every chef x, Doris found out which dish x made.'
b. Doris found out which dish most (of the) chefs made.
'For most chefs x, Doris found out which dish x made.'
(93) a. Doris wondered which dish every chef made.
'For every chef x, Doris wondered which dish x made.'
b. Doris wondered which dish most (of the) chefs made.
*For most chefs x, Doris wondered which dish x made.'

Wonder-type verbs embed speech acts:

Krifka (2001): "Intensional" question-embedding verbs embed question acts.

- (94) Doris wondered which dish Al made.
WONDERED(QUEST($\lambda p \exists x$ [DISH(x) \wedge p = ^MADE(x)(AL)]))(DORIS)
'Doris is interested in the true answers if the speech act Which dish did Al make were uttered in a relevant commitment state.'

Apparent wide-scope quantification into this assertion (cf. (93.a)) is just quantification into the embedded speech act:

- (95) Doris wondered which dish every chef made.
WONDERED(EVERY CHEF(y)(QUEST($\lambda p \exists x$ [DISH(x) \wedge p = ^MADE(x)(y)]))(DORIS)

This explains why non-universal quantifiers are barred (cf. (93.b)): They are not defined for the embedded speech act and cannot scope out of it either.

Know-Type Verbs embed question radicals

Questions embedded by know-type verbs aren't speech acts, but sentence radicals, cf. Krifka (1999). Pure sentence radicals do not show root clause behavior.

- (96) Doris knows which dish Al made.
KNOW($\lambda p \exists x$ [DISH(x) \wedge p = ^MADE(x)(AL)])

This explains why wide-scope interpretation of non-universal quantifiers is possible: There is no speech act level that blocks wide scope taking of quantifier.

(97) *Doris knows which dish most chefs made.*

MOST(CHEFS) x: KNOW($\lambda p \exists y$ [DISH(y) \wedge 'MADE(y)(x)]])

Difference of scope taking in contrast with *that* clauses, cf. Moltmann & Szabolcsi (1994).

(98) a. *Some food critic or other found out which dish most chefs made.*

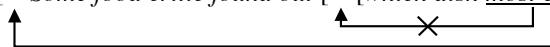
'For most chefs x there is a food critic y such that y found out which dish x made.'

b. *Some food critic or other found out that most chefs made pasta.*

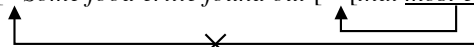
Not: 'For most chefs x there is a food critic y that found out that x made pasta.'

Possible reason for this difference (but see Moltmann & Szabolcsi and Krifka (2001) for other accounts: (105.a): The quantifier cannot directly scope over the question because it is of the wrong type (set of propositions). (105.b): It can scope over the embedded *that*-clause because it is of the right type, and as it prefers shortest scope it cannot scope farther.

(99) a. [*Some food critic found out* [[*which dish most chefs made*]]



b. [*Some food critic found out* [[*that most chefs made pasta*]]



Another possible reason: *most chefs* in (b) fills Spec-CP position and cannot be moved from there anymore.

Root and embedded clause types in embedded sentences

The idea that *wonder*-type verbs embed speech acts is supported by the fact that we find certain root clause phenomena with the embedded questions.

German: Distribution of particle *denn*.

(100) a. *Welches Gericht hat Al denn gemacht?*

'Which dish did Al DENN make?'

b. *Al hat *denn Pasta gemacht.* (o.k. in another reading of *denn*)

(101) *Doris fragt sich / *fand heraus, welches Gericht Al denn gemacht hat.*

'Doris asks herself / *found out which dish Al DENN made.'

English: Distribution of *the hell*:

(102) a. *Who the hell is responsible for this mess?*

b. *John wondered / *found out who the hell is responsible for this mess.*

English: V2 in embedded questions (cf. McCloskey (1999)):

(103) a. *What should we do?*

b. **What we should do?*

(104) a. *I wonder what should we do. / I wonder what we should do.*

b. **I found out what should we do. / I found out what we should do.*

German: V2 in embedded questions.

(105) a. *Welches Gericht hat Al gemacht?*

which dish has Al made

b. **Welches Gericht Al gemacht hat?*

which dish Al made has

(106) a. *Ich frage mich, welches Gericht hat Al gemacht / welches Gericht Al gemacht hat.*

I ask myself

b. *Ich weiß, *welches Gericht hat Al gemacht / welches Gericht Al gemacht hat.*

I know

Spanish: Complementizer *que*, cf. Suñer (1993):

(107) a. *Sue preguntó / se preguntó que cuántas charlas planeaban los estudiantes.*

'Sue asked / wondered how many talks the students were planning.'

b. *Sue sabía / nos dijo / explicó cuántas charlas planeaban los estudiantes.*

'Sue knew / told us / explained how many talks the students were planning.'

Verbs of communication like *decir* 'say', *repetir* 'repeat' and manner of speech like *susurrar* 'whisper' allow for *que* as an option. Generalization (Plann (1982)): Only those verbs that allow for the introduction of direct speech (\approx quoted speech acts) allow for *que*.

(108) *Sue preguntó / dijo / tartamudeó / *explicó / *sabía: "¿Quién vá al partido?"*

Sue asked / said / stuttered / *explained / *knew: "Who is coming to the game?"

Direct speech are root clauses, hence *que* marks embedded root clauses. That *que* is obligatory with *preguntó / se preguntó* can be seen as evidence that it embeds a root question, hence presumably a question act.

Conclusion: Root clause phenomena indicate separate speech act with *wonder*-type verbs.

6. Conclusion

A semantics above speech acts is possible, and necessary, but a lot of work has to be done.

7. Appendix

7.1 Negation, Disjunction and De Morgan

A proposal: De Morgan's law on the level of speech acts

(109) De Morgan: A OR A' \approx \neg [\neg A & \neg A']; \neg : speech act negation

(110) I do not perform the speech act: [Don't go away and I don't call the police.]
 \approx Go away or I call the police.

Speech act negation: Refusals to perform speech act

Example Searle (1969), p. 32; Vanderveken (1990): "illocutionary denegation".

(111) a. *I promise not to come.*

Promise that speaker will come.

b. *I do not promise to come.*

Refusal to promise that speaker will come.

The communicative effect of the refusal is: At the current point, the addressee might have believed that the effects of the speech act (here: promise that speaker will come) are already operative. By explicitly refusing the speech act, speaker indicates that this is not the case.

(112) . [\neg A](c) = c', where c' = the commitment state that satisfies A(c') = c but is maximally different from c.



Application of speech act negation to permissions, cf. Dummett (1973): permissions as negated or retracted commands; see. also Cornides (1969), Lewis (1978). Similar analysis with promises and threats.

(113) *You may stay here.*
'I don't order you (anymore) to go away.'

(114) *I will not call the police.*
'I don't threaten to call the police.'

Negation of conjoined speech acts

If a conjoined speech act is negated, that is, if speaker refuses to make a conjoined speech act, then at least one of the conjuncts is negated.

(115) a. $\neg[A \ \& \ A'](c)$: Speaker indicates that the effects of $[A \ \& \ A']$ are not operative in c .
b. $\approx \neg A \ \text{OR} \ \neg A'$.

The speaker indicates that either the effects of A or the effects of A' are not operative in c , cf. (115.b). In particular, if the addressee acts as if the effects of the A were still operative in c , then the effects of A' are not operative.

Detailed analysis of imperatives with threats

(116) *Go away or I call the police.*

(117) Speaker refuses to carry out the following conjoined speech act:
Speaker permits addressee to stay here and
Speaker promises addressee not to call the police.

Speech-act theoretic equivalences:

(118) a. $\neg[\text{PERMIT}[\text{STAY}(\text{addressee})] \ \& \ \text{PROMISE}[\neg\text{CALL POLICE}(\text{speaker})]]$
b. $\approx \neg\text{PERMIT}[\text{STAY}(\text{addressee})] \ \text{OR} \ \neg\text{PROMISE}[\neg\text{CALL POLICE}(\text{speaker})]$
c. $\approx \text{COMMAND}[\neg\text{STAY}(\text{addressee})] \ \text{OR} \ \text{THREAT}[\neg\neg\text{CALL POLICE}(\text{speaker})]$
d. $= \text{COMMAND}[\text{GO AWAY}(\text{addressee})] \ \text{OR} \ \text{THREAT}[\text{CALL POLICE}(\text{speaker})]$

(a-b) by De Morgan, (b-c) by partial interdefinability of permissions/commands and promises/threats, (c-d) by semantic equivalences.

Why must the second conjunct be a threat?

(119) *#Go away or I give you one hundred dollars*

Presumably because threats can be interpreted generally as retracted promises (not to do something bad), but promises cannot in general be interpreted as retracted threats.

(120) $\neg[\text{PERMIT}[\text{STAY}(\text{addressee})] \ \& \ \text{THREAT}[\neg\text{GIVE}\$100(\text{speaker}, \text{addressee})]]$
 $= [\neg\text{PERMIT}[\text{STAY}(\text{addressee})] \ \text{OR} \ \neg\text{THREAT}[\neg\text{GIVE}\$100(\text{speaker}, \text{addressee})]]$
 $\neq \text{PROMISE}[\text{GIVE}\$100(\text{speaker}, \text{addressee})]$

Reason: There is a general rule of **Civility**: a default promise not to do harm; a threat is a retraction of this promise. There is no general rule of **Benevolence** (pace Jesus Christ, or ethics of boy scouts): No default promise to do good things.

Why must the first conjunct be a command?

(121) *#You may take these one hundred dollars or I call the police.*

The proposition expressed by the sentence radical of a command is essentially in the interest of the hearer, and against the interest of the speaker. As the second act is a threat, it forces addressee to heed the first act. This is plausible with commands, not with permissions.

Why must the command be the first conjunct?

(122) **I'll call the police or you go away.*

Follows from sequentiality of interpretation of conjoined speech acts.

What does the retraction of a conjoined speech act mean?

(123) $\neg[A \ \& \ A'](c)$
a. $= \neg[[A \ \& \ A'](c)]$
b. $= \neg[A'(A(c))]$
'the resulting commitment state $A'(A(c))$ is not granted'

One way of interpreting this is that already $c' = A(c)$ is not granted: $\neg A(c)$. But if addressee reacts as if $A(c)$ were granted, then definitely the further modification by A' cannot be granted: $\neg A'(c')$.

Application of this to our example:

(124) *Go away or I call the police.*
 $\neg[\text{PERMIT}[\text{STAY}(\text{addressee})] \ \& \ \text{PROMISE}[\neg\text{CALL POLICE}(\text{speaker})]](c)$
a. $= \neg[[\text{PERMIT}[\text{STAY}(\text{addressee})] \ \& \ \text{PROMISE}[\neg\text{CALL POLICE}(\text{speaker})]](c)]$
b. $= \neg[\text{PROMISE}[\neg\text{CALL POLICE}(\text{speaker})]](\text{PERMIT}[\text{STAY}(\text{addressee})](c))]$

Already $c' = \text{PERMIT}[\text{STAY}(\text{addressee})](c)$ is not granted. But if addressee behaves as if it were, then $\text{PROMISE}[\neg\text{CALL POLICE}(\text{speaker})](c')$ is not granted.

(125) **I call the police or go away.* (In the relevant interpretation)
 $\neg[\text{PROMISE}[\neg\text{CALL POLICE}(\text{speaker})] \ \& \ \text{PERMIT}[\text{STAY}(\text{addressee})]](c)$
a. $= \neg[\text{PROMISE}[\neg\text{CALL POLICE}(\text{speaker})] \ \& \ [\text{PERMIT}[\text{STAY}(\text{addressee})]](c)]$
b. $= \neg[\text{PERMIT}[\text{STAY}(\text{addressee})]](\text{PROMISE}[\neg\text{CALL POLICE}(\text{speaker})](c))]$

Strange interpretation: Already $c' = \text{PROMISE}[\neg\text{CALL POLICE}(\text{speaker})](c)$ is not granted, that is, speaker calls the police in any case.

7.2 Objections against the Speech Act Conjunction Analysis

Ginzburg & Sag (2001) find problems with the analysis of quantification into speech acts as leading to conjoined questions. Here are the objections that I find most critical.

Every vs. all

(126) a. *Which dish did every chef make?* (Pair-list interpretation)
b. *Which dish did all chefs make?* (No pair-list interpretation)

Reason: *all chefs* is not a quantifier, but refers to a sum individual just like *the chefs*. Notice that collective interpretations are available, as in *All chefs gathered in the kitchen*. Distributive interpretations are due to non-overt distributive operator, as in *(All) the chefs got a pay raise*. *All* indicates lack of exceptions for subtailments, cf. Dowty (1986). Notice that definite plurals can have a pair-list interpretation through distributive (= universal) operator, as noticed in Krifka (2001), cf. (126.c).

(126) c. *Which dish did the chefs make?* (Pair-list interpretation possible).
'For all x : x an atomic part of $\sigma y[\text{CHEFS}(y)]$: Which dish did x make?'

Lack of this reading for *all chefs* presumably because the notion of entailment crucial for Dowty's explanation does not make sense on the speech act level.

Conjunctions

Ginzburg & Sag claim that conjoined NPs cannot trigger pair-list interpretations. This is not the case, cf. Krifka (2001) and example (127). It is crucial that the conjoined NP is deaccented, which is implausible with their example (128). Notice also that the regular interpretation of conjoined individual-type NPs is a sum individual, so the pair-list interpretation comes about by the non-overt distributive quantifier interpreted at the speech act level.

(127) *Which dish did Al and Bill make? – Al made the pasta, and Bill the salad.*

(128) *Which book did John Searle and Jacques Derrida and Gertrude Himmelfarb write?*

Counting Questions

(129) A: *You can ask me one question.*

B: *Which dish did Al make, which dish did Bill make, and which dish did Carl make?*

A: *That's three questions, not one.*

(130) A: *You can ask me one question.*

B: *Which dish did every chef make?*

A: *#That's three questions, not one.*

This just shows that the syntactic form (= number of clauses) counts.

Pair-list interpretation with non-universal quantifiers in dialogue

(131) A: *Most people here have submitted a paper to a journal.*

B: *Which journal?*

A: *Alexis to Psychic Review, Pat to Post-Modern Letters, ...*

But here clearly (B) is short for something like: *Which journal did the people that have submitted a paper submit their paper to*, which is a universal question.

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