Speech Acts and Truth-Conditional Meaning

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1. Introduction and Overview

1.1 Illocutionary Force and Truth Conditions

Truth-conditional meaning and speech acts, classical view (cf. Stenius (1967), Searle (1969)):

(1) Illocutionary Force Indicator (Truth-Conditional Expression) = Speech Act

(2)
a. Al made pasta. ASSERT({w | Al made pasta in w})
b. Make pasta! COMM({w | Adressee makes pasta in w})
c. Did Al make pasta? QUEST({w | Al made pasta in w})
d. Who made pasta? QUEST({{w | x made pasta in w} | x is a person})
e. Did Al make pasta? QUEST({w | Al made pasta in w}, {w | Al didn't make pasta in w})

- The truth-conditional expression ("sentence radical") is a proposition or another truth-conditional or perhaps a referring expression (Searle: *Hurrah for Manchester United*).
- The Illocutionary Force Indicator ("sentence mood marker") specifies what is done with the truth-conditional expression in a communicative game.

Recursiveness of truth-conditional expressions

For truth-conditional expressions, compositional rules have been discovered that specify:

– how the truth and referential conditions of complex expressions can be computed recursively,
– based on the truth and referential conditions of the immediate syntactic parts,
– given the truth and referential conditions of basic expressions and
– given certain principles of type adjustment, raising, coercion, and world knowledge.

The underlying algebraic structure is **Boolean** (conjunction, disjunction, negation as basic operations, lifted from truth values to other domains – cf. Keenan & Faltz (1985)).

What about Speech Acts?

Illocutionary force indicators are devices that lead to (speech) acts.

Acts (not to be confused with act *descriptions*) are not based on truth values, hence they cannot take part in the Boolean recursion:

> Lewis (1970): (…) the entire apparatus of referential semantics pertains to sentence radicals and constituents thereof. The semantics of of mood is something entirely different. It consists of rules of language use such as (…): React to a sentence representing the mood *imperative* with an S-meaning *m* (…) by acting in such a way as to make *m* true (…)

If there is no other type of recursion, then illocutionary force indicators are always peripheral, and speech acts never occur embedded in other expressions.

1.2 Embedded Speech Acts

In the literature, a number of cases for embedded speech acts have been discussed.

Negated speech acts: Searle (1969: 32)

(3) a. I promise not to come. PROMISE(¬ {w | speaker comes in w})
b. I do not promise to come. ¬ PROMISE({w | speaker comes in w})

(a) is an act of promise – of the complement of the proposition {w | speaker comes in w}.

(b) is a refusal of an act of promise – of PROMISE({w | speaker comes in w}) It is not Boolean complement formation (Vanderveken (1990): acts of illocutionary denegation).

Conditional speech acts: Dummett (1978), Davison (1973):

(4) a. I bet you $5 that, if it rains, the football match will be postponed.
b. If it rains, I bet you $5 that the football match will be postponed.

(5) a. Since you're so smart, what's the capital of South Dakota?
b. In case you're hungry, there is a restaurant around the corner.

Adverbially modified speech acts: Davison (1973), Sadock (1974):

(6) a. Quite frankly, he is unable to do the job.
b. In conclusion, the world is not ready for peace.

Embedded performative speech acts Lee (1975):

(7) I regret that I have to inform you that you are hereby dismissed.

Conjunctions of speech acts: Vanderveken (1990):

"Conjunctions of illocutionary acts […] are of the form ($F_1(P_1)$ & $F_2(P_2)$) and […]perform two illocutionary acts, $F_1(P_1)$ and $F_2(P_2)$. [Example:] A **warning** that something is the case is is the conjunction of an **assertion** that something is the case and of a **suggestion** to the hearer to do something about it." (p. 24).

Disjunction of speech acts?

(8) Get out of here or I call the police.

Not a disjunction of a command and an assertion (or threat) of future behavior. Rather, a command that specifies the consequences for non-obedience.

Dummett (1973) on disjunction of commands:

> Just as we may draw up a truth-table for 'or', […], so we may draw up an 'obedience-table' for disjunctive commands. Thus we could say that the command 'Either shut the door or open the window' was said to have been obeyed just in case at least one of the commands 'Shut the door' and 'Open the window' was obeyed […]. But there is an oddity about saying this. If I say, 'Either shut the door or open the window', I have not given any command to shut the door nor have I given a command to open the window. […] What this is intended to bring out […] is that the imperatival force governs the sentence as a whole, and not its constituent clauses taken separately. [p. 303; context: Russell's assumption that the indicative mood of the verb marks assertion.]

Hamblin (1987), two readings of disjunction of commands:

(9) Take her to Knightsbridge or Bond Street.
a. but I haven't decided which. (alternative-offering)
b. you can decide which. (choice-offering).

Merin (1991) doubts reading (a). For permission sentences (b) cf. Kamp (1973, 1978); Merin (1992), including a proposal that involves a disjunction over permissions.

Conclusion:

- Embedded speech acts exist.
- The logic of embedded speech acts is unclear. It is certainly not fully Boolean.

1.3 Overview of Remainder of Talk

- A case study: Quantification and coordination in questions, cf. Krifka (to appear), available at http://amor.rz.hu-berlin.de/~h2816i3x/QuestActsNatLang.pdf
- Consequences for the logic of illocutionary acts.

2. A Case Study: Quantification and Coordination in Questions

2.1 Quantifiers in Questions

Three readings:

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

No pair-list reading with non-universal quantifiers:

(11) Which dish did most/several/a few/no guests make?
  a. Pasta.
  b. Their favorite dish.
  c. #Al, the pasta, and Bill, the salad.

(12) Which dish did nearly every guest make?
  a. Pasta.
  b. His favorite dish.
  c. #Al, the pasta; Bill, the salad; … and Xavier, the pumpkin soup.

Basic ideas:

- Quantification into questions is possible; it is quantification into **question acts**.
- Quantification into question acts results in **conjoined question acts**; this explains the restriction to universal quantifiers.

2.2 Approaches to Pair-List readings

2.2.1 Quantifiying into Questions

Natural paraphrase:

(13) *Which dish did every guest make?* on pair-list interpretation
  'For every guest x: Which dish did x make?'

Difficult to make sense of, cf. Karttunen (1977).

(14) * x[GUEST(y) → which dish did x make?] – Questions not of type *t*!

Suggestion: Make questions of type *t*, following the Performative Analysis of Ross (1970).

(15) a. For every guest x, I ask you which dish x made.
  b. y[GUEST(y) → I ask you which dish x made]

Problems:

- the well-known problems of the performative analysis, cf. e.g. Gazdar (1979).
- restriction to universal quantifiers not explained.

2.2.2 Special Interpretation of Quantifiers in Questions

Groenendijk & Stokhof (1984, 1989): questions are equivalence relations on possible worlds, which correspond to partitions of possible worlds.

(16) Which dish did Al make?
λjλi[λx[DISH(i)(x) MADE(i)(x)(BILL)] = λx[DISH(j)(x) MADE(j)(x)(AL)]]

No type conflict with universal quantification into questions, as this results in an equivalence relation.

(17) Which dish did every guest make?
λjλi y[GUEST(j)(y) → λx[DISH(i)(x) MADE(i)(x)(y)] = λx[DISH(j)(x) MADE(j)(x)(y)]]
type t

This does not hold for other quantifiers, which do not result in equivalence relations.

A welcome result? Groenendijk & Stokhof don't think so – **choice readings**:

(18) Which dish did two guests make?
'Pick out two guests, and tell me which dish did each of them made.'

G&S's Proposal:

- Move from question meanings to **sets** of question meanings.
- Assume that quantifiers in questions provide **witness sets** that restrict the domain of a question. (Universal quantifiers have unique witness sets.)

(19) Which dish did two guests / every guest make?
λQ W[W is a witness set of ⟦*two guests*⟧ / ⟦*every guest*⟧
Q = λjλi[λyλx[DISH(i)(x) W(y) MADE(i)(x)(y)]
= λyλx[DISH(j)(x) W(y) MADE(j)(x)(y)]]]

Prediction: Questions with downward-entailing quantifiers are out, as witness sets are empty.

(20) *Which dish did no guest guests make?

Problem: Quantifiers in questions are interpreted in a special way (witness sets).

Why not explain the restriction to universal quantifiers with the original theory of G&S?

- Similar restrictions in other types of speech acts (see below, 2.5),
- Problems with questions determining the focus in answers, cf. Krifka (2001), available at http://amor.rz.hu-berlin.de/~h2816i3x/StructuredQuestions.pdf

2.2.3 Pair-List Questions as Functional Questions

Engdahl (1985): pair-list interpretations as functional readings:

(21) Which dish did every guest make?
λp f[range(f) = DISH p = ^ y[GUEST(y) → MADE(f(y))(y)]]
'Which f (a function to dishes) is such that every guest y made f(y)?'

(22) a. His favorite dish.
f = λx[THE FAVORITE DISH OF x]
b. Al the pasta, Bill the salad, and Carl the pudding.
f = { AL, PASTA , BILL, SALAD , C, PUDDISHNG }

Chierchia (1993): This explains (23) as Weak Crossover Violation.

(23) Which guest made every dish?
*'For which f (a function to guests): for every dish x, f(x) made x.'

(24) *Which guest$_i$ does his$_i$ mother love?
'For which guest x: mother(x) loves x?'

(25) *His$_1$ mother loves every guest$_i$.
'For every guest x, mother(x) loves x.'

Problems (cf. also Beghelli 1997):

Different behavior of *each.*

(26) Q: Which guest made each dish?
A: The pasta was made by Al, the salad by Bill, and the pudding by Carl.

(27) *His$_i$ mother loves each person$_i$.

Different quantifier restrictions for pair-list readings and functional readings (cf. Liu (1990)).

(28) Q: Which dish did most guests make?
A: Their favorite dish.

(29) Q: Which dish did no guest make?
A: His least favorite dish.

2.3 A New Approach: Conjoined Question Acts

2.3.1 Pair-List Questions as Conjoined Questions

(30) Which dish did every guest make?

(31) Which dish did Al make, which dish did Bill make, and which dish did Carl make?

The pragmatic effect of (30) is the same as (31). The quantifier induces a conjoined question.

Criticism of this view: Ginzburg & Sag (1999).

(32) A: I've got a question to ask you.
B: Shoot.
A: Who is responsible for the fiasco and what will be their fate?
B: That's two questions, not one.

(33) A: There is quite a big intake of graduate students this year. About ten, I think.
I do have a question about them: Who did each student meet this afternoon?
B: #That's ten questions, not one.

But this only shows that the syntactic form of a question is relevant when counting questions.

2.3.2 Disjoined questions?

Disjoined question acts are problematic, just like other disjoined speech acts.

(34) Which dish did Al make or which dish did Bill make?

Szabolcsi (1997) judges this ungrammatical, or of a different interpretation (*or rather, …*):

(35) Which dish did Al make? Or, which dish did Bill make?

Belnap & Steel (1976): Questions can be disjoined.

(36) Have you ever been to Sweden or have you ever been to Germany?

But this is interpreted as *Have you ever been to Sweden or to Germany*; congruent answer: *yes* or *no*, answers like *I have been to Germany* are over-informative answers.

Groenendijk & Stokhof (1984): choice readings:

(37) Which dish did two guests make?

Two independent acts: (i) Pick out two guests, (ii) answer for every one of these guests.

Ginzburg & Sag (1999):

(38) 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 (B) does not have to be spelled out as *Which journal have most people submitted a paper to* – rather, the first sentence makes available a discourse referent for the people that have submitted a paper to a journal. (B) spells out as: *Which journal have these people submitted a paper to?*

Disjoined questions as a minor type, e.g. in exams, that is not grammaticalized?

(39) a. Here is a list of 20 African countries. (…).
Choose at least 11 of them and write down their capitals.
b. Here is a list of 20 African countries. (…) *Which capital do most of them have?

2.3.3 Restriction for Quantifiers in Questions Explained

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

(40)

Every P Q	Some P Q	No P Q	Most P Q
Q(x)	Q(x)	¬ Q(x)	Q(x)
x P	x P	x P	P′ P, x P′
			#P′ > 1/2#P

(41) a. Every guest came. ⇔ Al came **and** Bill came **and** Carl came.
b. A guest came. ⇔ Al came **or** Bill came **or** Carl came.
c. No guest came. ⇔ **Not**: Al came **or** Bill came **or** Carl came.
d. Most guests came. ⇔ Al came and Bill came, **or**
Al came and Carl came, **or**
Bill came and Carl came.

We find robust pair-list interpretations only with universal quantifiers.

(42) Which dish did every guest make?
⇔ For every guest x: Which dish did x make?
⇔ Which dish did Al make, which dish did Bill make, and which dish did Carl make?

(43) #Which dish did most guests make?
⇔ For most guests x: Which dish did x make?
⇔ Which dish did Al make and which dish did Bill make, **or**
which dish did Al make and which dish did Carl make, **or**
which dish did Bill make and which dish did Carl make?

2.4 Quantification into Other Speech Acts?

Not discussed so far, but we find essentially the same situation:

(44) a. Confiscate every bottle of alcohol you can find!
b. #Confiscate most bottles of alcohol you can find!

(45) a. I hereby baptize everyone of you John. (quick mass baptism)
b. #I hereby baptize most of you John.

(46) a. Everyone of you should go to hell!
b. #Most of you should go to hell!

2.5 An Implementation of Speech Act Quantifiers

(47) a. Basic types: *e* entities, *t* truth values, *p* (=*st*) propositions, *a* speech acts.
b. Derived types: If τ, σ are types, then (σ)τ is a type (the type of functions from elements of type σ to elements of type τ). If σ is basic, I write στ.

Sentence radicals: Type *p* or *pt* (whith Hamblin's theory of questions).

(48) a. It is raining.
ASSERT(RAINING)
pa *p*
a

b. Get up!
COMMAND (GETUP(YOU))
pa *p*
a

(49) Which dish did Al make?
QUEST (λp x[DISH(x) p = MADE(x)(AL)])
(pt)a *pt*
a

Speech act coordination is of type *aaa*. I write τ^+ for types (τ)(τ)τ.

(50) Which dish did Al make and which dish did Bill make?
a a^+ *a*
a

Type lifting of Boolean conjunction:

(51) Al and Bill came.
e p^+ *e* *ep* basic type assignment
(ep)p *(ep)p* $^+$ *(ep)p* type lifting
(ep)p functional application
p

Type lifting of Speech Act conjunction:

(52) [Al and Bill]$_1$ λt$_1$ [*Quest* (which dish did t$_1$ make)]
e a^+ *e* *e* *a*
ea basic type assignment
(ea)a *(ea)a* $^+$ *(ea)a* type lifting
(ea)a functional application
a

(53) [Al and Bill]$_1$ λt$_1$[*QUEST* (which dish did t$_1$ make)]
AL λaλa′[a & a′] BILL
λP[P(AL)] λAλA′λP[A(P) & A′(P)] λP[P(AL)]
λP[P(AL) & P(BILL)] λy[QUEST(λp x[DISH(x) p= MADE(x)(y)])]
QUEST(λp x[DISH(x) p= MADE(x)(AL)]) & QUEST(λp x[DISH(x) p= MADE(x)(BILL)])

Type-lifted universal quantifiers (**&A**: The conjunction of the elements of a speech act set **A**):

(54) [every guest]$_1$ λt_1[*Quest* (which dish did t_1 make)]
λP[**&**{P(y) | GUEST(y)}] λy[QUEST(λp x[DISH(x) p= MADE(x)(y)])]
&{QUEST(λp x[DISH(x) p= MADE(x)(y)]) | GUEST(x)}

2.6 Wide-Scope Speech Act Quantifiers as Topics

2.6.1 Evidence for Topichood

Stressed quantifiers do not lead to pair-list reading:

(55) a. Q: Which dish did EVERYONE make?
b. A: Everyone made pasta.
c. A: Everyone made his favorite dish.
a. A: #Al the pasta, Bill the salad, and Carl the pudding.

Subject/object asymmetries (cf. (21) vs. (23)): Subjects are natural topics.

Beghelli (1997): indirect objects (animate, more likely topics).

(56) Q: Which painting did you show to every guest?
A: To Al, the Picasso, to Bill, the Klee, and to Carl, the Mondrian.

Kim & Larson (1989) objects of psych verbs (animate, more likely topics).

(57) Q: Which painting impressed every guest most?
A: Al, the Picasso, Bill, the Klee, and Carl, the Hundertwasser.

Each as a topical quantifier (restriction set must be D-linked):

(58) A: Who made each of these dishes?
B: The pasta, Al made; the salad, Bill; and the pudding, Carl.

2.6.2 Topics and Speech Acts

Only a speech act can scope out of a speech act; topic selection is a speech act (cf. Jacobs (1984)):

(59) a. As for Al, which dishes did he make?
b. The hamburger, please hand it to me.
c. This guy, he should go to hell!

(60) a. As for Al, which dish did he make?
b. *Topic*[Al] λt_1[*Quest*[which dish$_2$ did he$_1$ make t_2]]

But free topics are not possible with quantifiers. Reason: Quantifiers move on LF anyway?

(61) a. *As for every guest, which dish did he make?
b. *Each guest, which dish did he make?

2.7 Embedded Questions

Szabolcsi (1993): No quantifier restriction for questions embedded by extensional verbs:

(62) a. Doris knows which dish most guests made.
[She knows that Al made the pasta and Bill the salad.]
b. Doris found out which dish three guests made.
c. Doris told Elizabeth which dish several guests made.

(63) a. #Doris wondered which dish most guests made.
[not: She wondered which dish Al made and which dish Bill made.]
b. #Doris asked which dish three guests made.
c. #Doris wants to find out which dish several guests made.

One possible analysis:

· Extensional verbs embed propositions:

(64) most guests λt_1 [Doris knows [which dish t_1 made]]

· Intensional verbs embed a question act:

(65) a. Doris wondered [*Quest* [which dish Bill made]].
b. Doris wondered [every guest λt_1[*Quest* [which dish t_1 made]]]
c. *Doris wondered [most guests λt_1[*Quest* [which dish t_1 made]]]

See Krifka (to appear) for a more detailed analysis along these lines.

3. Consequences for a Logic of Illocutionary Acts

3.1 Why do speech acts conjoin?

The hypothesis that speech acts can easily be conjoined, but not (easily) disjoined can explain a variety of facts. But why should it be true?

Speech acts: moves in **conversational games**, cf. Wittgenstein (1958). They lead from one set of **social commitments** to another set of social commitments (e.g., commitments may be added, as with questions and commands, or removed, as when a question is answered or a command is carried out). They are **commitment change potentials** (cf. "context change potentials" in dynamic semantics, Heim (1982)).

One promising formal theory for a small subset of illocutionary acts: Merin (1994): automata-theoretic reconstruction of claims, concessions, denials, retractions.

Let s be a state that characterizes social commitments, let A stand for acts. Then:

(66) A(s) = s′, if A is appropriate for s; else A(s) is undefined.

Conjunction of speech acts:

(67) [A & A′](s) = A′(A(s))

Cf. treatment of conjunction in dynamic semantics, e.g. Heim (1982):

(68) c + [p p′] = [c + p] + p′, that is, [p p′](c) = p′(p(c)).

Interpretation: If A changes the commitments of a discourse state and A′ changes the commitments of a discourse state, then [A & A′] is the combination of the changes of the commitments induced by A and by A′.

Sometimes we have **initiating** and **responding** acts (e.g., question-answer, command-act that carries out the command). Initiating acts lead to non-neutral conversational states that expect a certain type of speech act:

(69) A(Q(s)) = Q(s′) = s″,
where Q is appropriate for s, and A is appropriate for s′.

Conjunction for initiating and responding acts:

(70) If A(Q(s)) is a valid conversational move,
and if A′(Q′(s′)) is a valid conversational move, where s′ = A(Q(s)),
then [A & A′]([Q & Q′](s)) is a valid conversational move;
it is equivalent to A′(Q′(s′)), i.e. A′(Q′(A(Q(s)))).

(71) a. A: Which dish did Al make?
B: The pasta.
A: Which dish did Bill make?
B: The salad.

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

(72) a. A: Pick up the ball!
B: [Picks up ball.]
A: Throw it to me!
B: [Throws ball to A.]

b. A: Pick up the ball! And, throw it to me!
B: [Picks up the ball and throws ball to A.]

3.2 Why don't speech acts disjoin?

Commitment states: Slate of commitments of the participants of a conversation, interpreted conjunctively (as a set).

(73) [A&A′](s) = A(s) A(s′)

Speech act disjunction would lead to disjunctive sets of commitments (sets of sets of sets…):

(74) a. [A A′](s) = {A(s), A′(s)}, = S
b. [A″ A‴](S) = {{A″(A(s)), A‴(A(s))}, {{A″(A′(s)), A‴(A′(s))}}, = 𝕊, etc.

Lack of disjunction: Acts do not form a Boolean algebra. (There is no negation either).

3.3 Why Conjunction?

Why do we call the speech act conjunction "&" a **conjunction**? Because we can express it by *and*. But why?

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

(75) 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.

(76) a. A, to B: Pick up the ball. And, throw it to me.
b. A told B to pick up the ball, and A told B to throw it to A.

The same holds true for the use of universal quantifiers.

(77) a. A: Which dish did every guest make?
b. For every guest x, A asked which dish x made.

Hypothesis: We can use *and* and *every* N to conjoin the **execution** of speech acts because we can use *and* and *every* to **describe** the conjoined execution of such speech acts.

In general, expressions that relate to the type of speech act or to properties of its execution are the same as expressions that describe such speech acts:

· Performative speech acts (Bierwisch (1980):

(78) a. A: I baptize you *John.*
b: A baptized him *John.*

· Speech act adverbials:

(79) a. A, to B: Quite frankly, John is unable to do the job.
b. A told B quite frankly that John is unable to do the job.

The Performative Hypothesis all over again?

Performative hypothesis, cf. Katz & Postal (1964), Ross (1970), Lewis (1970):

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

Problems:

- Every speech act is reduced to a declarative that is true by default. The intended point of a speech act comes about as a side effect only (cf. Lewis (1970)).
- No explanation why disjunction and quantifiers involving disjunction are out.

Current proposal:

- Speech acts cannot be reduced to propositions; they are acts in the world, not descriptions of acts in the world.
- But the language resources can be shared: We may use similar expressions for the description and the execution.

This is why *and* occurs both as Boolean conjunction and as act conjunction.

Other examples or re-use of expressions: *and* as sum-formation:

(81) a. Mary and Sue carried the piano together.
b. Mary and Sue came. ⇔ Mary came and Sue came.

But not every expression can have such shared uses:

(82) a. John insulted Mary.
b. *I hereby insult you.
c. Alas, I have to leave.
*He mentioned that alas, he had to leave.

3.4 Remarks on other Cases of Embedded Speech Acts

Conditional speech acts

(83) If you are hungry, there's a restaurant around the corner.

Conditional acts: Acts that become effective only after a specified condition is met.

Negated speech acts

(84) a. I do not promise to come.
b. If you would ask me to promise you to come, I would not do so.

Negated speech acts as a kind of conditional act: Denial to comply to a request.

Embedded speech acts

(85) a. I regret to inform you that you are hereby dismissed.
b. John wonders if it is raining.

Speech act types as commitment change potentials are part of the recursive semantics of natural language. (Cf. the use of embedded context-change potentials in Heim (1992) to explain the projection behavior of presuppositions in the complement of propositional attitude verbs).

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