

Epistemic attitudes consensus and truth

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I believe that in Italian: introducing the questions

Cross-linguistic variation, previous approaches, data and discussion

Previous accounts for belief + indicative

Some more data, Giorgi and Pianesi and further problems

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Correctness condition

Creder e

Essere sicuro

Epistemic attitudes and inquisitive uses

Conclusion: The subjunctive with epistemic attitudes

Mood choice with *credere* (*believe*)

Under all existing accounts, indicative is predicted with belief-verbs across languages (Farkas, 1992; Giannakidou 1998-2015; Villalta, 2008; Portner and Rubenstein, 2012).

- (1) (Fr.) Giacomo **croit** que Chicago **est**(IND) belle.
'Giacomo believes that Chicago is beautiful'.

Mood choice with *credere* (*believe*)

- ▶ Italian selects the subjunctive under *credere/pensare* (*believe, think*).
- (2) Giacomo *crede che* Chicago *sia*(SUBJ) *bella*.
'Giacomo believes that Chicago is beautiful'.

Mood choice with *credere* (*believe*)

Indicative also possible.

- (3) Giacomo **crede che** Chicago **é**(IND) bella.
'Giacomo believes that Chicago is beautiful'.

Shared view

Two shared assumptions

1. Subjunctive deeply tight to 'subjectivity', i.e. consideration of spaces of beliefs, preferences, doxastic, epistemic, bouletic, (Farkas, 1992; Giannakidou, 1994,1995,1997,1999,2015; Villalta, 2008; Smirnova, 2011)
2. Subjunctive reveals weakness of the belief, epistemic non-veridicality, weak commitment, preferences ...

Different view.

- ▶ Subjunctive does not track weakness of the belief.

Mood choice

- ▶ **Evaluation context**: each clause needs a semantic environment with respect to which its truth is assessed. The subjunctive/indicative distinction corresponds to different kinds of properties of such contexts. The matrix predicate determines the evaluation context (Giorgi and Pianesi, 1996).

Mood choice, modal bases and multiple spaces

Modals are associated with modal bases (everyone after Kratzer). Epistemic attitudes are also associated with modal bases, in analogy with modals (e.g. Anand and Hacquard, 2013). **Epistemic attitudes have a doxastic modal base.**

Proposal:

- ▶ Epistemic attitudes can appeal to **multiple sets of worlds** (lexical semantics), or multiple world-spaces can be appealed to by the context in which the epistemic attitude predicate is used.

Proposal

1. The spaces involved are doxastic, epistemic, context set.
2. The subjunctive is triggered when there is a partial overlap between spaces (i.e. one of these two is non-homogeneous).

There is a particular configuration that triggers the subjunctive.

Three uses of epistemic attitudes

Different spaces are appealed to depending on the use:

1. Epistemic attitudes can be used to express one's own state of mind, to make it known (one space only).
2. Epistemic attitudes used to target truth: doxastic and epistemic spaces.
3. Epistemic attitudes used to target consensus: doxastic space and context set.

2 to 3 from one to multiple epistemic agents.

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Assumption for *believe*

Hintikka (1969)

(4) ' α believes ϕ is true in w iff: $\forall w' \in \text{Dox}_\alpha(w) : \phi$ is true in w' .

$\text{Dox}_\alpha(w)$ contains all the worlds that are compatible with what α believes in the world w to be true.

→ Doxastic alternatives.

→ Homogeneous space, no ordering sources, and universal quantification over the space.

Arguably, we want a unified semantics for *belief* across languages.

Preferences

Villalta (2008).

(5) **Subjunctive** mood.

A proposition p that is the complement of the matrix predicate requires the subjunctive mood iff the matrix predicate introduces an **ordering relation between propositions** and compares p to its contextually available alternatives.

→ **Belief** triggers a **homogeneous** doxastic space. Hence **indicative is predicted**.

Subjective Nonveridicality

Giannakidou, 1998 - 2015.

(Non)veridicality can be conceived as a property of subjective spaces.

- (6) The indicative is the default indicator of objective veridicality, and is selected by expressions that are at least subjectively veridical.

→ Hintikka Dox is a subjectively veridical space.

- (7) Subjunctive as an indicator of nonveridicality
- Condition 1. The subjunctive is an **indicator of the presence of a non-veridical modal space** (epistemic state of an individual, or a modal base).
 - Condition 2. Subjunctive sentences thus create **epistemic weakening**.

Nonveridicality

Giannakidou 2015. Epistemic weakening, weaker commitment.

- (8) Commitment weakening (see also Giannakidou 2014: (30))
Commitment weakening is the creation of a nonveridical epistemic space.

Subjunctive indicates nonveridicality and weaker commitment.

Commitment

Portner and Rubinstein (2012).

- (9) *Commitment* An individual α is committed to a modal background h in event e iff α is disposed/prepare in e to argue for $h(e)$ in a conversationally appropriate way in any relevant conversation c .

Immediate problem

Sono convinto (*I am convinced*), also selects the subjunctive !!

- (10) **Sono convinta** che il colpevole **sia** Mario.
I am convinced that the culprit is(SUBJ) Mario.

and even

Sono sicuro (*I am certain*) licences the subjunctive !

- (11) Il mio ragazzo mi ha tradito due mesi fa e **sono sicura che sia** da attribuire tutto alla mia obesità.
My boyfriend dumped me two months ago, and I am certain that this was(SUBJ) to be attributed to my obesity. <https://it.answers.yahoo.com/question/index?qid>

Scales

Homer 2007

It looks like there is a number of scales:

- < STRONG, WEAK >;
- < essere sicuro, credere > ,
- < essere certo, credere > ,
- < essere sicuro, supporre >...

Weak predicates have a large span, from medium to high degrees of credence, while strong predicates have a very narrow span around the maximal degree of belief.

The existence of scales

How can we ensure that such a scale exists? (12) is contradictory, because the first conjunct asymmetrically entails the negation of the second.

- (12) #Piero è sicuro che Maria è incinta, ma non lo crede.
#Piero is sure that Maria is pregnant, but he doesn't believe it.
- (13) Piero crede che Maria sia incinta, ma non è sicuro.
Piero believes that that Maria is pregnant, but he isn't sure about that.

'I am not sure' implicature

Credere is a weak scalar term which triggers the Scalar Implicature
'I am not sure *p*'.

Importantly, the indicative improves greatly under *credo* if we remove the implicature:

- (14) Credo con certezza che Maria ?*sia*/è incinta.
'I believe with certainty that Maria is(SUBJ/IND)
pregnant.' (Homer's acceptability)

Homer's final proposal

- (15) **subjunctive** is licensed for **weaker beliefs**. (see also Giannakidou, 2015)
- (16) **Indicative presupposes that the speaker assigns a maximal degree of belief to p .**

Homer's bottom line ...

... uncertainty in the doxastic space.

Problems:

- ▶ essere sicuro + subj / essere convinto + subj

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A different take on the problem: Giorgi and Pianesi (1997)

Explore the relations between modal bases and the common ground.

- (17) Epistemic/doxastic modal bases: the set of worlds compatible with what the speaker believes/wants ... in the actual world.
- (18) Common ground: the set of propositions that the speaker takes for granted.
- (19) Context set: the set of possible worlds which are compatible with every proposition in the common ground.
 $C(P) = \{w \mid w \in p, \text{ for every proposition } p \text{ in } P\}$

→ Investigate how the modal bases and the common ground intersect.

Giorgi and Pianesi, continued

Italian licenses the subjunctive when the **intersection between the modal base and the context set can be empty**.

Notion of **private space** (Giorgi and Pianesi, 1997; Anand and Hacquard, 2014).

The private space of credere

Hintikka's doxastic space is a 'private space'. It is the epistemic agent representation of the reality.

Hence *credere* selects the subjunctive in Italian (G&P)

Giorgi and Pianesi, problem (and solution ?)

Private space and the indicative.

Sognare (*dream*), takes the indicative.

- (20) Gianni sogna che Maria lo vuole(IND) sposare.
'Gianni dreams that Mary wants to marry him.'

Problems

Intersection between the MB and the CG is not empty with *verba dicendi* G&P.

Non-private space and the subjunctive !

Verba dicendi (we do not need focus, pace Manzini, 1994).

New observation:

- (21) La gente **dice** che Maria **sia** incinta.
People say that Mary is(SUBJ) pregnant.

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Non-veridicality ?

Crede / *Essere sicuro p* do not entail *p*. They are nonveridical (Giannakidou, 1998; see also Egré and Spector, to appear).

(22) Credo che Gianni **sia** bello \nrightarrow Gianni é bello.
'I believe that John is good-looking.'

(23) Sono sicuro/convinto che **piove** \nrightarrow Piove. 'I am certain/convicted that it rains.' \nrightarrow Piove.

Both nonveridical but the defaults are not the same.

(plus general problems for the realis-irrealis distinction beyond epistemic attitudes)

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- ▶ Implicature: 'I do not know' and not 'I am not sure'.
- ▶ Doxastic - epistemic spaces.
- ▶ Same mechanism generalizes for multiple individuals (epistemic state can be collective)

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Disentangling metaphysical settledness from decidedness

Metaphysical settledness: metaphysical possibilities are closed (Condoravdi, 2002).

Decidedness: granted metaphysical settledness, the proposition is neither true nor false at t_u and adding information does not change the truth conditions.

nb: Farkas 2003 uses 'decidedness' for homogeneity in the epistemic space. Not here.

Spaces

- (24)
- a. Let S be a set of worlds, compatible with what the speaker believes in w . S is the subjective-doxastic space space (also now called the *origo* ground, after Garrett, 2001).
 - b. Let E be a set of worlds, compatible with what the speaker knows in w . S is the subjective-epistemic space.
 - c. Let C be the set of worlds compatible with what all the participants in the conversation believe to be true. I is the group of participants in the conversation.
 - d. Let M be the metaphysical/alethic modal base. That is to say all the worlds in which what is true/false in w is also true.

(Non) homogeneity

Each of these spaces can be homogeneous or non-homogeneous.

- (25)
- a. If S is partitioned between p and $\neg p$ worlds, then i is in a state of doxastic uncertainty.
 - b. If E is partitioned between p and $\neg p$ worlds, then i is in a state of epistemic uncertainty.
 - c. If C is partitioned between p and $\neg p$ worlds, then judges disagree
 - d. If M is partitioned between p and $\neg p$ worlds, then p is undecided in the actual world at the time of the utterance.

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Attitudes of acceptance

Stalnaker (1984): attitudes of acceptance are said to be correct if their complement is true.

- ▶ *Credere* does not impose a correctness condition.
- ▶ *Essere sicuro* manipulates the correctness condition.
- ▶ *Credere* the speaker does not know whether she is correct.
- ▶ *Essere sicuro* the speaker believes that she is correct (believes that she knows - strong belief Stalnaker, 2006).

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Belief

Disentangle doxastic certainty from epistemic uncertainty.

→ Belief: doxastic homogeneity and epistemic nonhomogeneity.

Epistemic nonhomogeneity: the speaker does not know whether she is correct, i.e. whether p is true.

Starting point

Let i , be the judge parameter, S the set of worlds compatible with i 's belief in w .

$$(26) \quad [[\text{believe } p]]^{w,S,i} = \forall w' \in S_i [p(w') = 1]$$

Hintikka's semantics (and his descendants ...). Belief is representational (Bolinger, 1968; Anand and Hacquard, 2013). An information state is provided.

Not knowing

- (27) a. Why are you preoccupied ?
b. Credo che la porta **sia**(SUBJ) rimasta aperta.
I believe that the door has remained open.

Out if I see the door opened.

BUT

Direct evidence

But

Looking at the person

(28) Credo che tu sia(SUBJ) bella.
I believe that you are beautiful.

→ Express state of mind ('privacy') ? (Giorgi and Pianesi, 1996)

Crede + indicative

Previously unseen

- (29) a. Credo che tu sei(IND) un cretino.
I believe that you are a stupid person.
- b. Credo che tu sia(SUBJ) un cretino.
I believe that you are a stupid person.

→ Two different interpretations !

Two other uses: Expressive and inquisitive belief-statements

Expressive belief

- (30) Credo che sei(IND) un cretino.
I believe that you are a stupid person.

I just express my opinion/evaluation/sentiment and I do not look for agreement. "Private space".

Not know, let's find out belief

- (31) Credo che tu sia(SUBJ) un cretino.
I believe that you are a stupid person.

I am committed to my belief too, but my epistemic state is partitioned, let's fix it ! The fact that the epistemic state is called into play is insulting. There is a truth out there, that we can know !

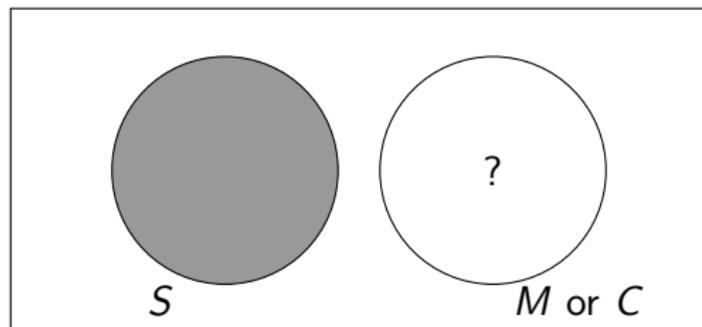
Expressive *credere*

Expressive *credere*:

$$(32) \quad [[\text{believe } p]]^{w,S,i} = 1 \text{ iff} \\ \forall w' \in S[p(w') = 1]$$

nb, not presentational, it contributes truth conditions (so 'expressive' might not be the best label ...).

Expressive *credere*



"The private state", i.e. no connection with knowledge.

I do not know but I believe so ...

Epistemic uncertainty is responsible for the subjunctive.

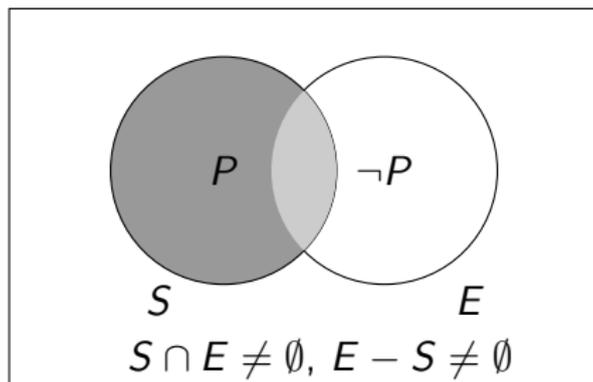
(33) $[[\text{believe } p]]^{w,S,i} = \forall w' \in S_i[p(w') = 1]$ (S is homogeneous).

Implicature : The speaker does not know whether $w_0 \in p$ (E is partitioned).

→ This is an implicature that can be cancelled.

(34) Credo che sia malato, anzi, lo so.
I believe he is sick, in fact I know it.

Crede + subjunctive



Note the doxastic homogeneity !

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Evaluative test

Creder and *essere sicuro* are not on a scale of 'certainty', test of evaluative predicates.

While looking at the person:

(35) *Sono sicuro che tu sei bello.
I am certain that you are awesome.

→ Evidential dimension of 'essere sicuro' plays a role.

Looking at the person

Some evaluative predicates are ok:

(36) Sono sicuro che sei un cretino.
I am certain that you are a stupid person.

Ok because the evidence is indirect.

Looking at the person

Essere sicuro (35) (to be awesome example): I have direct evidence.
Hence the presupposition of indirect evidence is not satisfied.

Stupid person

Essere sicuro is not equivalent to *credere + indicative* (pace Homer, 2007).

- (37) a. Credo che tu sei(IND) un cretino.
I believe that you are a stupid person.
- b. Sono sicuro che sei(IND) un cretino
I am certain that you are stupid person.

- a. Not really insulting.
- b. Insulting because I imply that p is true.

Putting together

Essere sicuro che p : I have indirect evidence that implies p .

Why *essere sicuro* targets the correctness condition?

→ *Essere sicuro* targets the correctness condition.

- (38) The attitude holder has a body of evidence K_i (a set of propositions), s.t. K_i entails p .

Be certain

Different evidence can entail $\neg p$. But given the evidence that I have, I believe that p is true.

(39) Essere sicuro:

- a. I have evidence that entails p .
- b. I believe that p is true.

The correctness implicature is mediated by the presupposition.

Evidence and facts

- (40) Sono sicura che la porta é rimasta aperta (p). Non ho le chiavi con me, sono in casa.
I am certain that the door is open. (K_i) I do not have the keys with me, they are in the house.

→ Of course, I might have lost the keys between the time at which I closed the door and the time of the utterance, but *given the evidence that I have*, p is entailed.

→ According to my evidence, p is true.

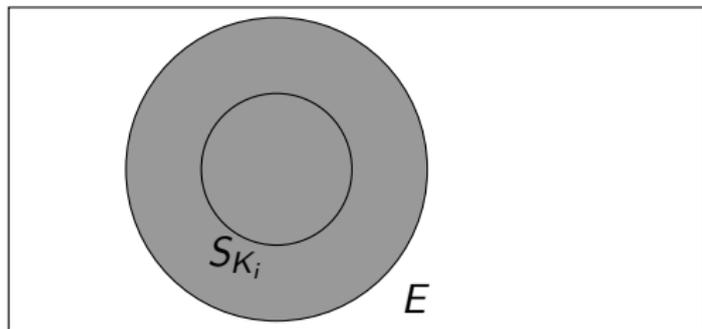
Essere sicuro

(41) S_{K_i} is the set of worlds compatible with the evidence that the attitude holder has.

Private evidence

- (42) a. $[[\text{sono sicuro } p]]^{K,i}$ is defined iff K_i does not directly decides p but entails that p is true in E (E is homogeneous). If defined,
- b. $[[\text{sono sicuro } p]]^{S,K,i} = 1$ iff $\forall w' \in S_{K_i} p(w')$

Sicuro and metaphysical decidedness



Essere sicuro / essere convinto

I know Maria.

- (43) a. **Sono convinto** che Maria sia/è bella.
I am convinced that Mary is(SUBJ/IND) beautiful.
- b. ***Sono sicuro** che Maria sia/è bella.
I am certain that Maria is(SUBJ/IND) beautiful.

Essere convinto, same distributions as *credere*.

Summing up

- ▶ With *essere sicuro*, the speaker has evidence that entails p , while with *credere* he does not.
- ▶ *Essere sicuro* is stronger.

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Inquisitive *credere*

- ▶ There is not subjective 'uncertainty': S is homogeneous.
- ▶ There is 'collective' disagreement.

Inquisitive belief-statements with indicative

Homer (2007) Congruence agreement - agreement with the speaker, indicative.

- (44) So che noi due non siamo d'accordo. Io sono sicuro che Maria é incinta, mentre tu non lo credi. Anche Gianni crede che Maria **é/??sia** incinta.
I know that we do not agree. I am certain that Maria is pregnant, while you do not believe it. Also Gianni believes that she is(IND/??SUBJ) pregnant.

Disagreement with the speaker – Subjunctive.

- (45) So che noi due non siamo d'accordo. Io non credo che Maria é incinta, mentre tu lo credi. Anche Gianni crede che Maria **??é/sia** incinta.
I know that we do not agree. I don't believe that Maria is pregnant, while you do believe it. Also Gianni believes that she is(IND/??SUBJ) pregnant.

Inquisitive belief-statements with indicative

Speaker oriented. If Gianni does not share my opinion, then subjunctive. (Homer, 2007).

- (46) Gianni condivide l'opinione generale che Maria **sia** incinta.
Gianni shares the general opinion that Mary is(SUBJ)
pregnant.

Inquisitive belief-statements and disagreement

General mechanism. Disagreement: subjunctive.

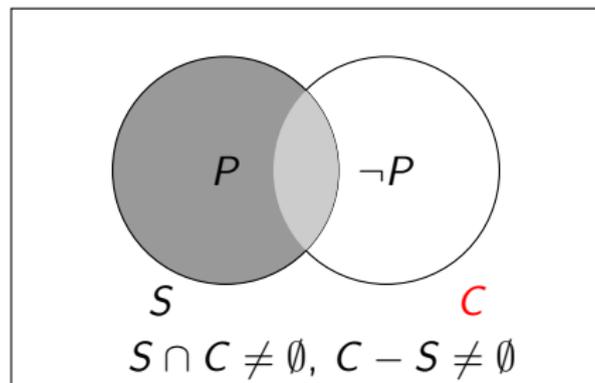
- (47) La gente crede che Berlusconi sia un bravo primo ministro.
lo **credo proprio** che ?**é/sia stato** il peggiore di tutti.
People think that Berlusconi is(SUBJ) a good prime
minister. I believe that he has(IND/SUBJ) been the worse
of all.

Inquisitive *credere*

Inquisitive *credere*:

- (48) $[[\text{believe } p]]^{w,S,i} = 1$ iff
- $\forall w' \in S [p(w') = 1]$
 - $C \cap S \neq \emptyset \ \& \ S \setminus C \neq \emptyset$

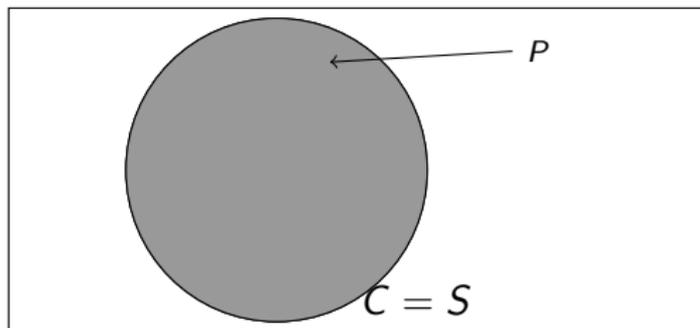
Inquisitive *credere*



Inquisitive belief-statements with indicative

What matter is (lack of) consensus.

When there is consensus, both spaces are p spaces, and there is no complement $\neg p$ set.

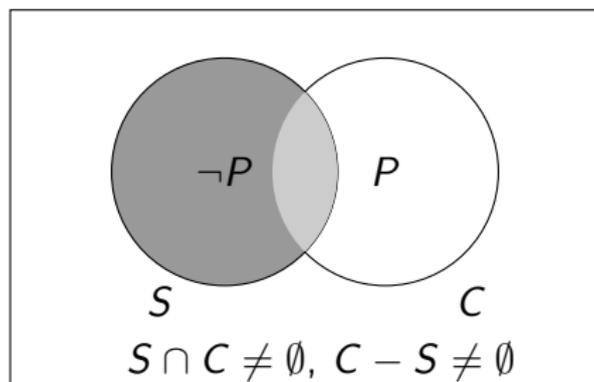


A more general mechanism

Recall, *verba dicendi*:

- (49) La gente dice che Maria sia(SUBJ) incinta.
People say that Mary is(SUBJ) pregnant.

→ Here mismatch between the CG (what people say) and my private space.

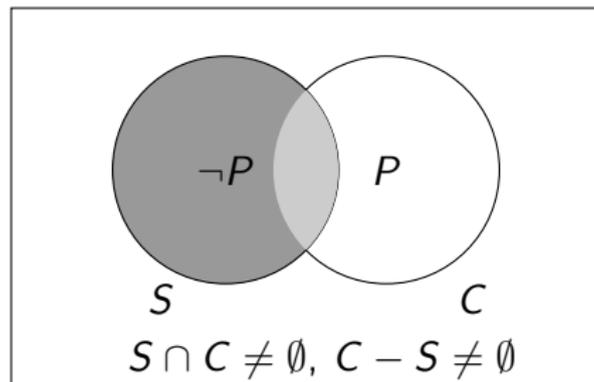


Inquisitive sicuro

(50) La gente crede che Maria sia grassa. Io **sono sicura** che **sia** incinta.

People believe that Mary is fat. I am certain that she is pregnant.

Disagreement in the CG, subjunctive even with first person, just as above.



I find that

Find that:

- (51) a. Historians have found that Napoleon was very short.
b. Flavio finds that the tomato sauce is disgusting.

- (52) a. Gli storici hanno trovato che Napoleone era basso.
b. Flavio trova che il sugo sia disgustoso.
Flavio finds that the tomato sauce is(SUBJ)
disgusting.

→ **Experiential** 'find that' (Ducrot, 1975; McNally and Stojanovic, 2015).

Mood choice with *trovare che* (*find that*)

By default: experiential finding + **subjunctive**.

- (53) Giacomo trova che Chicago **sia** bella.
Giacomo finds that Chicago is(SUBJ) beautiful.

Indicative also possible.

- (54) Giacomo trova che Chicago **é** bella.
Giacomo finds that Chicago is(IND) beautiful.

Italian / French (and all the others) - find

- (55) a. Giacomo trova che Chicago **sia**(SUBJ) bella.
b. Giacomo trova che Chicago **é**(IND) bella.
- (56) Giacomo trouve que Chicago **est**(IND) belle.

'Giacomo finds that that Chicago is beautiful'.

Trovo che and experience

Ducrot (1975) – on French (same in Italian and English). See also McNally and Stojanovic, 2015.

Je trouve que as an attitude-based-on experience verb.

(57) Somebody has told me that the vacuums of the BB brand are solid, but I never tried one.

 #I find that these vacuums are solid.

(same in Italian and French)

Trovo che is only present-past oriented

(58) Trovo che sia stato un bel matrimonio.
I find that it has been a nice wedding.

(59) #Trovo che sarà/sia un bel matrimonio.
I find that it will be a nice wedding.

→ Requires experience and we cannot have an experience of something that does not exist yet.

Trovo che and commitment

Only compatible with **strong adverbs**.

- (60) a. Trovo davvero che sia buona.
'I really find it good.'
- b. #Trovo poco che sia buona.
'#I find it little good.'

Subjective, experiential (Ducrot, 1975; McNally and Stojanovic, 2015).

We **cannot be uncertain about our experience**.

→ Still ... the subjunctive.

Trovo che

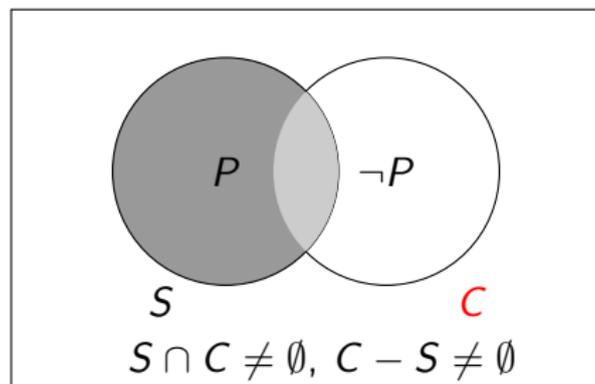
Extending Hintikka's semantics for belief to trovo che, we obtain:

- (61) 'α finds φ is true in w iff: $\forall w' \in \text{Exp}_\alpha(w) : \phi$ is true in w' .
Exp_α(w) contains all the worlds that are compatible with α's experiences in w.

Trovare che

- (62) $[[\text{find } p]]^{w,S,i} = 1$ iff
- $\forall w' \in S[p(w') = 1]$
 - $S \cap C \neq \emptyset \ \& \ C \setminus S \neq \emptyset$

Trovare che



Plan

I believe that in Italian: introducing the questions

Cross-linguistic variation, previous approaches, data and discussion

Previous accounts for belief + indicative

Some more data, Giorgi and Pianesi and further problems

A last temptation

Proposal in a nutshell

Tools

Tools

Epistemic attitudes and truth

Correctness condition

Creder e

Essere sicuro

Epistemic attitudes and inquisitive uses

Conclusion: The subjunctive with epistemic attitudes

The subjunctive with epistemic attitudes

- ▶ Epistemic attitudes trigger multiple spaces.
- ▶ The doxastic space is homogeneous.
- ▶ Subjunctive: not doxastic uncertainty but tension between my belief and its correctness.

Thank you !

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