

# Belief and Assertion

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# Plan

- 1 Is belief weak or strong?
  - Belief is strong
  - Belief is weak
- 2 Mood-choice: the homogeneity view and the strength of belief
- 3 BELIEVE in Italian: new data and proposal
  - First steps: Fictional predicates
  - Futurity
  - Predicates of personal taste
  - Experimental study and results
- 4 Analysis
  - Semantics
  - Pragmatics
  - Mood (revisited)
- 5 Predictions: back to assertion
- 6 Work in progress and conclusion

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- Entitlement equality: "when you have sufficient evidence to entitle you to believe something, you have sufficient evidence to entitle you to assert something". (Hawthorne et al. 2016: 1394)

# Belief and assertion

Belief entails and is entailed by assertion (Bach & Harnish 1979, Lauer 2013). - And behaves on a par with certainty.-

- (1)
  - a. It rains, #but I do not believe/I am not certain that it rains
  - b. I believe/I am certain that it rains, #but it does not rain.

# Belief and assertion

Strong belief:

Conclusion 1: Belief is strong. It is as strong as certainty and assertion.

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# Belief vs. assertion

- (2)
- a. It is raining, #but I am not sure it is raining.
  - b. I believe that it is raining, but I am not sure that it is raining.

(Howthorne et al. 2015)

*Believe* is also asymmetrically entailed by *be certain* and *know*.

- (3)
- a. I am sure that it rains, #but I do not believe it.
  - b. I believe that it rains, but I am not certain.

(Howthorne et al. 2015)



# Belief is weak

Conclusion 2: Knowledge, certainty and assertion are stronger than belief.

# Questions

- Is belief weak or strong ?
- What is the relation between assertion and belief-statements?

The view from Italian and mood shift.

# Plan

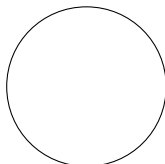
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## Common assumption

- Mood choice is the phenomenon whereby the verbal mood in an embedded clause is determined by a matrix predicate. Such predicates have a modal semantics.

Hintikka (1962) semantics

(4) ' $\alpha$  believe  $p$ ' is true in  $w$  iff  $\forall w' \in \text{Dox}_\alpha(w), p$  is true in  $w'$ .



$\text{Dox}_i$  only  $p$  worlds

# Homogeneity and indicative

Semantic approaches (Giannakidou, 1999; Farkas, 2003; Villalta, 2008; Anand and Hacquard, 2013):

- Absence of alternatives in the modal base (i.e. **homogeneity**) triggers **indicative**.
- Presence of alternatives ( $\{p, q\}, \{p, \neg p\}$ ) (i.e. **non-homogeneity**) triggers **subjunctive**.
- BELIEVE is an indicative selector
- BELIEVE = BE CERTAIN
- Parallel to DREAM, IMAGINE (with a fictional modal base)
- Ok for French, Greek, Romanian, ....

# Problems

Homogeneity-based theories stumble on the Italian facts:  
Mood shift with BELIEVE in Italian (*credere*):

- (5) Credo che Maria sia.SUBJ / é.IND incinta. –  
I believe that Mary is pregnant.

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I believe that Mary is pregnant.

And also: BE CERTAIN (*essere certo/sicuro*) and BE CONVINCED (*essere convinto*) license the **subjunctive** ! (Mari, 2016)

- (6) Sono sicura che Maria sia.SUBJ / é.IND incinta. –  
I am certain that Mary is pregnant.

- (7) Sono convinta che Maria sia.SUBJ / é.IND incinta. –  
I am convinced that Mary is pregnant.



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And also (previously unseen): IMAGINE (*immaginare*) ! (Mari, 2016)

- (8) Immagino che Maria sia.SUBJ / é.IND incinta. –  
I imagine that Mary is pregnant.

# Is Italian belief weak ?

- What is the difference between the indicative and the subjunctive versions ?
- Weak or strong belief ? In what respect ?

## A non-starter

Subjunctive-belief indicates 'uncertainty'.

Certainty scale: belief  $\ll$  certainty

- (9) Credo che sia **SUBJ** arrivato, ma non sono sicura.  
I believe he has arrived, but I am not sure.

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Problem: recall, certainty allows subjunctive !

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# Not knowing

I will propose a 'knowledge' scale:

**Knowledge** scale: belief-lack of knowledge << knowledge

Not-know presupposition is an implicated presupposition (Leahy, 2016).  
The presupposition associated with 'know' that  $p$  is true, does not hold for the weaker element 'believe'.

- (11) a. Pilar knows that the Earth is flat >> The Earth is flat  
b. Pilar knows that the Earth is flat ? The Earth is flat

My proposal:

**Not knowing (encoded in the semantics) – knowability (in the context):**  
why such an important role.

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# Key distinction

(meaning or use ? does not matter for now)

- 1 **Solipsistic-Fictional** Pure imagination, dream.
- 2 **Inquisitive-Fictional**: Conjecture about the truthiness of  $p$ . 'I do not know, but according to my imagination,  $p$ '

Solipsistic mental space;  
indicative.

- (12)
- a. Ha sognato che era.IND andato in Italia.  
He dreamt that he went to Italy.
  - b. Immaginava che andava.IND in Italia.  
He imagined that he was going to Italy.

# Subjunctive-fictional

Previously unseen :

'Imagine' as conjecture

- (13) Immagino che tu fossi.SUBJ in ritardo, visto il traffico.  
I imagine you were late, given the traffic jam.

Intuitively: 'I do not know' component; evidence.

## Hence ...

- ① IMAGINE uses a private space. Indicative.
- ② IMAGINE is used to convey conjecture. Subjunctive.

# BELIEF: same distinction

- Expressive-credere – Credence.
- Inquisitive-credere – Conjecture

# Sharpening the proposal for BELIEF

- **Expressive-credere** – **Credence**.

The indicative-credere does not require knowability (it requires non-knowability?), it is a pure expression of credence.

- **Inquisitive-credere** – **Conjecture**

The subjunctive-credere requires that  $p$  be **knowable**, i.e. can be assigned a truth value otherwise than 'subjectively', i.e. relatively to an individual anchor.

Methodology: Consider contexts where,  $p$  cannot be known, i.e. unless a shareable parameter is accommodated, there is no fact of the matter about  $p$ : futurity and predicates of personal taste.

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# Futurity and knowability

- Present and past are settled and *knowable*, and the future does not exist yet, hence it is *not knowable*. If the time of evaluation of  $p$  is future,  $p$  cannot be known at the utterance time (see for recent discussion Giannakidou and Mari, 2018).
- We can **accommodate** a plan or a decision, and  $p$  is settled and 'knowable' w.r.t this plan or decision.



Future orientation is possible with the subjunctive.

- (14) [We are organizing a party and John is invited. Usually John does not come to parties, however, he is very much in love with Mary and Mary is coming for sure.]

Credo che venga. **SUBJ** anche Gianni questa volta.

I believe that John is coming too this time.

see discussion in Mari, 2016

Future orientation with indicative:

- (15) [My son has a tendency to forget stuff at school. My husband wants to buy an expensive scarf and asks me whether it is a good idea, or whether I believe that he will lose it.]
- a. Credo che la perderà.**IND.FUT.**
  - b. #Credo che la perda.**SUBJ.**  
I believe that he will lose it.

## Subjunctive / Indicative, future orientation and knowledge

The subjunctive is possible only when there is a plan or information in the background of which  $p$  is settled.

$p$  is 'knowable'.

- (16)
- a. Credo che le Olimpiadi si svolgano.**SUBJ** a Tokyo.  
I believe that the Olympics will take place in Tokyo.
  - b. (#)Credo che la Francia perda.**SUBJ**, questa sera.  
I believe that France will loose, tonight.

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**Conclusion: if  $p$  is not knowable, the subjunctive cannot be used.**

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# Predicates of personal taste (PPT)

No matter what your theory is, there is no 'fact of the matter' with PPT (Lasersohn, 2005; Stephenson, 2006) - unlike with epistemic modals.

With PPT,  $p$  is not metaphysically or circumstantially settled,  $p$  is not 'knowable'.

(17) The soup is tasty.

E.g. the tastiness of the soup is not intrinsic to the soup, it is not a 'fact of the matter' of the soup.

As with futurity is it possible to accommodate some form of 'objectivity': a standard of tastiness (as in the case of wines). There is some 'fact of the matter' about  $p$ .

Given the standard  $p$  is either true or false and  $p$  can be 'known'.

# PPT - and insults

In the middle of an argument :

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

- (18-a) states a personal opinion about the stupidity of the addressee, based on a *subjective* evaluation (internal perception).
- (18-b) I am suggesting that  $p$  can be assigned a truth value by accommodating some shareable criterion of stupidity (it is felt as more insulting). I.e. I am raising the question of the stupidity of the addressee.

see discussion in Mari, 2016



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## Two contexts: Context 1 Intimate context

In intimate (subjective) contexts a belief statement addresses the nature of the personal commitments of the subject argument.

- (19) a. **Intimate (subjective) context**  
A friend of yours asks you your opinion about the street where you both are. You reply:
- b. Credo che sia. **SUB** brutta.  
believe.1sg that be.subj ugly.
- c. Credo che è. **IND** brutta.  
believe.1sg that be.indic ugly.

## Two contexts: Context 2 Inquisitive context

The truth value of  $p$  in the common ground is at issue and can ultimately be assigned a truth value 'objectively'.

(20) a. **Inquisitive (objective) context.**

A friend of yours asks you the name of the street where you both are. You reply:

b. Credo che sia **SUB** la via Boccaccio.  
believe.1sg that be.subj the Boccaccio street.

c. Credo che è **IND** la via Boccaccio.  
believe.1sg that be.indic the Boccaccio street.

## 4 classes of sentences

We study the distributions of acceptance of two classes of sentences (with embedded indicative / subjunctive) in two different contexts (subjective / objective):

- objective context, embedded indicative mood (hereafter, class 'OI');
- objective context, embedded subjunctive mood (class 'OS');

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16 target sentences; 16 fillers

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16 target sentences; 16 fillers

each speaker has rated 8 sentences randomly chosen

# Randomization and independence

In total we obtain a data set of 418 data points, i.e. 418 value judgments between 0 and 100, assigned to the various sentences among the 16 target sentences. They are divided into 4 data sub-sets:

- 123 data points corresponding to class *OI*-ratings;
- 80 data points of *SI*-ratings;
- 100 data points of *OS*-ratings;
- 115 data points of *SS*-ratings.



# Brute results

The main characteristics of these four data-subsets are given in Table 1 and their distributions are provided in Figures 1 and 2.

	<i>OI</i> -rating	<i>SI</i> -rating	<i>OS</i> -rating	<i>SS</i> -rating
<b>Sample size</b>	123	80	100	115
<b>Empirical mean</b>	32.9431	31.4750	82.3700	60.4783
<b>Unbiased standard deviation</b>	34.7705	38.0514	22.6821	35.593

Table: The data set

# Brute results: distributions for Indicative

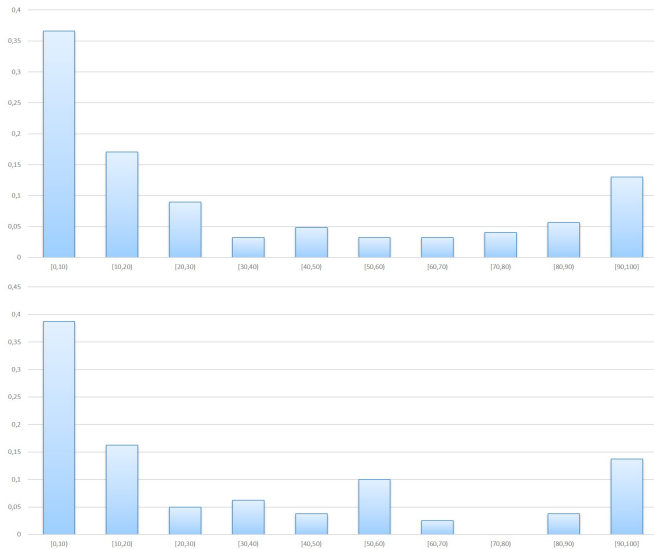


Figure: Distribution of OI-ratings (top) and SI-ratings (bottom)

# Brute results: distributions for Subjunctive

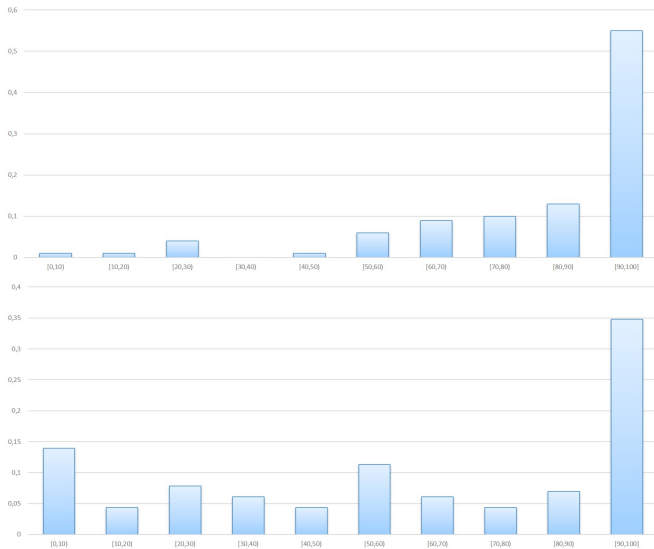


Figure: Distribution of OS-ratings (top) and SS-ratings (bottom).

# Analysis: Indicative

The distribution is the same in Objective and Intimate contexts.

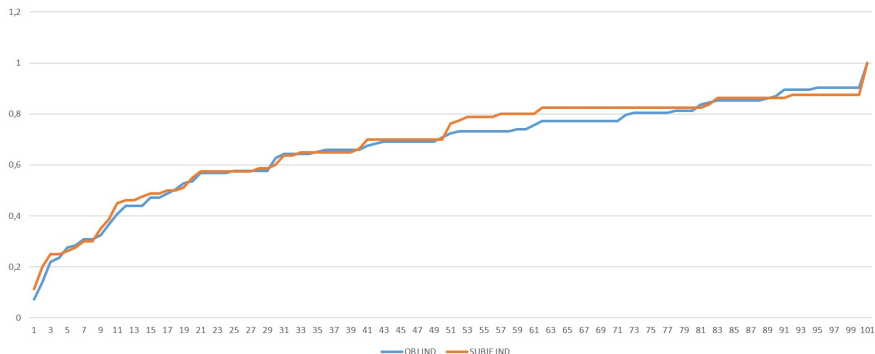


Figure: Cumulative distribution functions of the *OI*-ratings and *SI*-ratings

# Analysis: Subjunctive

There is a significant preference for the subjunctive in Objective contexts.

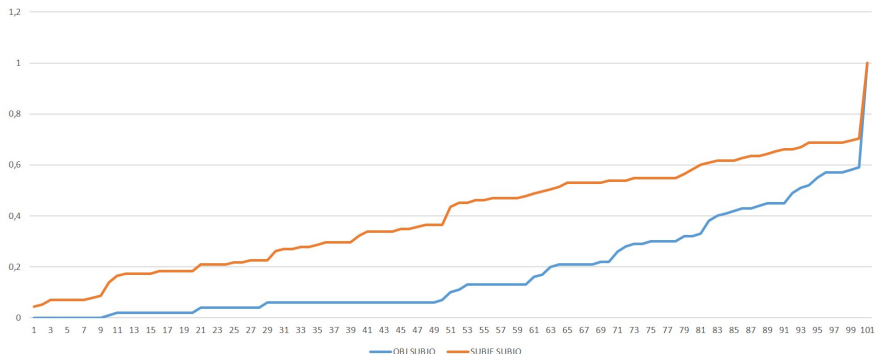


Figure: Cumulative distribution functions of the OS-ratings and SS-ratings

# Crede as a public attitudes

Recall what an objective context is:

- $p$  can be assigned a truth value 'objectively',  $p$  is 'knowable'
- The subjunctive tracks 'knowability'

Encode not-knowing in the semantics. But, as we shall see this is not enough.

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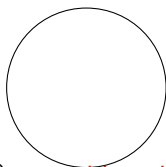


# Expressive credere

**'Bare' Hintikka semantics** (see Figure 1): **solipsistic mental state**.

Expressive: **credence**

- 1 Expressive: one layer of meaning; doxastic only **indicative**



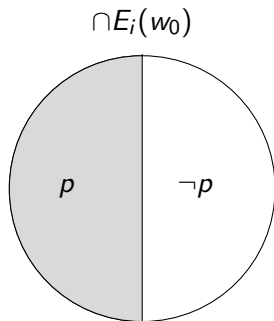
$\cap \mathcal{D}_i(w_0)$   **$p$ -worlds only**

$\forall w' \in \cap \mathcal{D}_i(w_0)(p(w'))$

# Inquisitive-credere

## Inquisitive-belief.

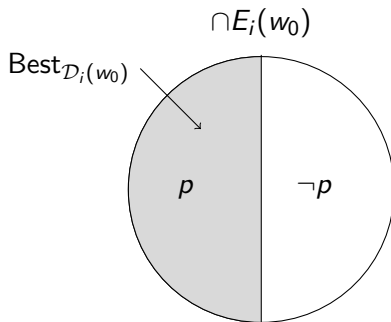
- Knowledge layer: part of the semantics.
- Let  $\cap(E_i(w_0))$  be an epistemic modal base, i.e. a set of worlds compatible with what the speaker 'knows'
- The modal base is partitioned.



# Inquisitive credere

$$(21) \quad \text{Best}_{\mathcal{D}_i(w_0)}: \{w' \in \cap(E_i(w_0)) : \forall q \in (\mathcal{D}_i(w_0))(w' \in q)\}$$

- Two-layers (doxastic + epistemic layer): doxastic certainty and epistemic uncertainty.



# Analysis (semantics)

(22) Mari (2016). Inquisitive-*credere*.

- a.  $\llbracket i \text{ credere}_{\mathcal{I}} p \rrbracket^{E,i,\mathcal{D}}$  is defined iff it  $p$  is objectively settled at the time at which the attitude is held and  
 $(\exists w'' \in \cap E_i(w_0)(\neg p(w''))) \wedge (\exists w''' \in \cap E_i(w_0)(p(w''')))$   
(The epistemic modal base contains  $p$  and  $\neg p$  worlds.)
- b. If defined  $\llbracket i \text{ credere}_{\mathcal{I}} p \rrbracket^{E,i,\mathcal{D}} = 1$  iff  
 $\forall w' [w' \in \text{Best}_{\mathcal{D}_i(w_0)}(p(w'))]$   
All worlds of the epistemic modal base  
that comply with  
 $i$ 's beliefs are  $p$  worlds.

- (23) **Expressive and inquisitive-credere. To be revised.** Adapting from Mari 2016.
- a. **Expressive/solipsistic-‘believe’.**  
All doxastic worlds are  $p$  worlds.

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- a. **Expressive/solipsistic-‘believe’.**  
All doxastic worlds are  $p$  worlds.
  - b. **Inquisitive/conjectural-credere.**  
Presupposes that  $p$  is knowable.  
The attitude holder does not know whether  $p$  is true.  
All doxastic worlds are  $p$  worlds.

# Diasemy

- Diasemy, two BELIEVES: credence vs. conjecture.
- Common core: Credence is also part of the conjecture: doxastic certainty and epistemic uncertainty.
- Languages that have preferences set in such a way that subjunctive is preferred to the indicative allows us see the two meanings (see e.g. Gärtner and Eythórsson, 2017)
- Advantages: explain polysemy cross-classes (fictional, asking, ....)

This semantic analysis has become the core of the book 'Veridicality in grammar and thought' co-authored with Anastasia Giannakidou.

# Diasemy and mood choice

Mood is selected

BELIEF TYPE	RELEVANT BASE	MODAL MAKEUP	MOOD CHOICE
Expressive <i>credere</i>	doxa	homogeneity	indicative
Inquisitive <i>credere</i>	knowledge	non-homogeneity	subjunctive

Table: Mood licensing: semantics



What have we done ?

We have encoded 'not knowing' layer in the semantics. But we have not yet explained why 'knowing' is important.

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# What is 'knowability'

Inquisitive-*credere*, i.e. subjunctive-*credere* conveys that

- Truth can be assessed.
- Not necessarily a metaphysical truth, but at least truth with respect to a restricted set of worlds (returned by plans, or standards - which we can *share*).
- We can *collectively* narrow down the set of worlds to what we consider to be the actual one.

# The relation to the common ground

Why is 'knowability' that important ?

Looking at BELIEF from the standpoint of communication and informativity:

- Belief as Credence: does not aim at solving a question.
- Belief as Conjecture: aims at solving a question.

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Looking at BELIEF from the standpoint of communication and informativity:

- Belief as Credence: does not aim at solving a question.
- Belief as Conjecture: aims at solving a question.
  
- Belief as Credence: does not add information to the common space
- Belief as Conjecture: adds information.

# Public and Private Attitudes

## A new distinction

- Public attitudes are such that if  $p$  is true,  $p$  becomes necessarily common ground and is believed by all participants. As for belief, if subsequent to the utterance 'I believe that John is arriving', John arrives, the prejacent  $p =$  'John arrives' becomes common ground and is believed by all the participants in the conversation.
- Instead, for private attitudes even if  $p$  becomes true, it is not necessarily endorsed by all participants. If one utters 'I want an ice-cream' and then buys himself an ice-cream, it does not follow that the other participants are in a state of wanting an ice-cream.

# Public and Private Attitudes

Prior to the verification of the truth of the prejacent, we claim that, with public attitudes,  $p$  is presented for uptake. With private attitudes, it is not.

- (24) Private and Public attitudes.
- a. PRIVATE attitudes:  $p$  is not for uptake (e.g. *want*)
  - b. PUBLIC attitudes:  $p$  is for uptake (e.g. *believe*)

# Public and Private Belief

One given attitude type, e.g. belief-predicates, can have different realizations both as private and as public. Italian *credere* is one such attitude. We claim that *credere* has a private and a public interpretation.



# Proposal

- Attitudes feature **update instructions** change the commitments of the participants in the conversation (see notion of speech acts in Szabolsci, 1982; Krifka, 2014,2015)
- Public spaces (sets of worlds): negotiation spaces  $\mathcal{N}$  and common ground  $\mathcal{C}$  (Farkas and Bruce (2010:88)); negotiation spaces are supersets of common grounds.
  - Assertions add  $p$  to  $\mathcal{N}$  and project a future  $\mathcal{C}$  that includes the asserted proposition
  - Questions add at least two alternatives to  $\mathcal{N}$  and projects a set of  $\mathcal{C}$ s, each containing only one of the possible answers to the question.
- Private space (sets of worlds):  $s$ .

Private Space $s$	Negotiation Space $\mathcal{N}$	CommonGround $\mathcal{C}$
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Table: Private and Public Spaces

# Proposal

I will **not** subscribe to

$\mathcal{N}$  and  $\mathcal{C}$  are subsets of the doxastic space  $s$  of  $\alpha$ .

On this view one cannot account for the fact that a belief is consistently held privately, without being held publicly. I will argue that this type of beliefs exist and they even come in different sorts.

# Implementation

BELIEF-statements and update instructions.

- Assertion 'A believes  $p$ ': the proposition BELIEVE- $p$  is added to  $\mathcal{N}$
- What about  $p$  ?
- $p$  is introduced by the update instruction contributed by the attitude.

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- What about  $p$  ?
- $p$  is introduced by the update instruction contributed by the attitude.

(25) Proposal for BELIEF:  
Mary believes that  $p$   
ASSERT Mary believes-PRESENT that  $p$

# The meaning of BELIEF - and the speech acts

## (26) **Expressive and Inquisitive-BELIEVE. Final.**

### a. **Expressive-BELIEVE**

All worlds in the doxastic space  $s$  of the attitude holder are  $p$  worlds (= Hintikka belief)

# The meaning of BELIEF - and the speech acts

## (26) **Expressive and Inquisitive-BELIEVE. Final.**

### a. **Expressive-BELIEVE**

All worlds in the doxastic space  $s$  of the attitude holder are  $p$  worlds (= Hintikka belief)

### b. **Inquisitive-BELIEVE.**

All worlds in the doxastic space  $s$  of the attitude holder are  $p$  worlds (= Hintikka belief) & the attitude holder does not know whether  $p$  is true

UPDATE INSTRUCTION: PRESENT  $p$ , where PRESENT is as in (27).

## (27) PRESENT: update the negotiation space $\mathcal{N}$ .

# Plan

- 1 Is belief weak or strong?
  - Belief is strong
  - Belief is weak
- 2 Mood-choice: the homogeneity view and the strength of belief
- 3 BELIEVE in Italian: new data and proposal
  - First steps: Fictional predicates
  - Futurity
  - Predicates of personal taste
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- 4 **Analysis**
  - Semantics
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  - **Mood (revisited)**
- 5 Predictions: back to assertion
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# Revisiting the subjunctive-indicative distinction

- (28) Mood choice - a different criterion.  
The subjunctive-indicative distinction with epistemic predicates signals different relations between private spaces and public spaces (common ground or others).

see Giorgi and Pianesi 1996.

Claim here:

Mood is triggered, but at the same time, it brings in its own update instruction.



# Assertive and Non-Assertive Update

- (29)
- a. **Assertive update** For any modal space  $W$   $p$  is added assertively to  $W$  if  $W$  becomes homogeneous with respect to  $p$ .
  - b. **Non-Assertive update** For any modal space  $W$   $p$  is added non-assertively to  $W$  if  $W$  does not become homogeneous with respect to  $p$ .
    - (i) Preferential update:  $p > \neg p$  (the preference for  $p$  over  $\neg p$  is added)
    - (ii) Non-preferential update : both  $p$  and  $\neg p$  are alive options after the update (test, nothing happens).

# Update Instructions of Mood

## (30) UPDATE INSTRUCTIONS OF MOOD.

### a. Subjunctive.

Add  $p$  non assertively ( $p > \neg p$ ) to a private or public space according to the instruction of the attitude.

### b. Indicative.

Add  $p$  assertively (add  $p$ ) to a private or public space according to the instruction of the attitude.

Mood instructs on **how** to update (assertively or non-assertively), but needs instructions as to **where** the update must take place. If the attitude is private the update will happen in  $s$ . If the attitude is public, the update will take place in  $\mathcal{N}$ .

# Bringing together the Attitudes and Mood

ATTITUDE TYPE	Internal makeup of the Attitude	Contribution of Mood
Semantics	$p > \neg p$	Subjunctive is triggered
Semantics	$p$	Indicative is triggered
Pragmatic	Attitude type: Private/Public	Update the relevant space with an ordering or with $p$

Table: Architecture of the Attitude - Mood interaction

# Bringing together the Attitudes and Mood: WANT

WANT	Attitude	Mood
Semantics	$p > \neg p$	Triggers subjunctive
Pragmatic	Attitude type: Private	<b>Adds <math>p &gt; \neg p</math> to <math>s</math></b>

Table: WANT: Attitude - Mood interaction

# Bringing together the Attitudes and Mood: CREDECE

## Expressive-Belief

EXPRESSIVE BELIEF	Attitude	Mood
Semantics	$p$	Triggers indicative
Pragmatic	Attitude type: Private	<b>Adds <math>p</math> to <math>s</math></b>

Table: EXPRESSIVE BELIEF: Attitude - Mood Interaction

## Bringing together the Attitudes and Mood: CREDECE

Expressions of credence in the indicative are typically used in prayers. This is explained by the textual genre: prayers express a personal credence, and their content is not there for an uptake.

- (31)    lo credo                      che esiste Dio  
         I believe.IND.1SG that exists God  
         I believe that God exists.  
         <https://www.chiesavaldesetrapani.com/>

# Bringing together the Attitudes and Mood: CONJECTURE

## Inquisitive Belief

INQUISITIVE BELIEF	Attitude	Mood
Semantics	Layer 1: $p$ Layer 2: $p > \neg p$	Triggers subjunctive
Pragmatic	Attitude type: Public	<b>Adds <math>p &gt; \neg p</math> to <math>\mathcal{N}</math></b>

Table: INQUISITIVE BELIEF: Attitude - Mood Interaction

# Private and Public Commitments of the Attitudes

attitude	private space $s$	negotiation space $\mathcal{N}$	common ground $\mathcal{C}$
want	$p > \neg p$		
belief (private)	$p$		
belief (public)	$p$	$p > \neg p$	

Table: Public and private dimensions of the attitudes



# Bringing together the Attitudes and Mood: Solipsistic-Imagine

- (32) Expressive-IMAGINE.
1. All worlds in the imagination space are worlds in which the prejacent is true.  
There is **no update instruction**, requesting to update the negotiation space.

EXPRESSIVE IMAGINE	Attitude	Mood
Semantics	$p$	Triggers indicative
Pragmatic	Attitude type: Private	<b>Adds <math>p</math> to <math>s</math></b>

Figure: EXPRESSIVE IMAGINE

# Bringing together the Attitudes and Mood: Solipsistic-Imagine

(33) Inquisitive-IMAGINE.

1. All worlds in the imagination space are worlds in which the prejacent is true.
2. The speaker does not know whether  $p$  is true in the actual situation.

Inquisitive-imagine features an **update instruction** requesting to update the negotiation space.

INQUISITIVE IMAGINE	Attitude	Mood
Semantics	Layer 1: $p$ Layer 2: $p > \neg p$	Triggers subjunctive
Pragmatic	Attitude type: Public	<b>Adds <math>p &gt; \neg p</math> to <math>\mathcal{N}</math></b>

Table: INQUISITIVE IMAGINE: Attitude - Mood Interaction



# Plan

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- (34) **Informativity scale.** When added to  $\mathcal{N}$ :  
 $p \gg [p > \neg p] \gg [p \wedge \neg p]^1$ .
- (35) **Informativity.** An utterance  $\sigma$  is informative iff it adds at least a preference for  $p$  in the negotiation space  $\mathcal{N}$ .

Inquisitive-belief is informative, Expressive-belief is not.

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<sup>1</sup>This tautology is for instance added by a yes/no question to the negotiation space.  

## Back to the initial puzzles

attitude	$s$	$\mathcal{N}$	$\mathcal{C}$
expressive belief	$p$		

## Back to the initial puzzles

attitude	$s$	$\mathcal{N}$	$\mathcal{C}$
expressive belief	$p$		
inquisitive belief	$p$	$p > \neg p$	

## Back to the initial puzzles

attitude	$s$	$\mathcal{N}$	$\mathcal{C}$
expressive belief	$p$		
inquisitive belief	$p$	$p > \neg p$	
bare assertion	$p$	$p$	

## Back to the initial puzzles

attitude	$s$	$\mathcal{N}$	$\mathcal{C}$
expressive belief	$p$		
inquisitive belief	$p$	$p > \neg p$	
bare assertion	$p$	$p$	
lie	$\neg p$	$p$	



## Back to the initial puzzles

attitude	$s$	$\mathcal{N}$	$\mathcal{C}$
expressive belief	$p$		
inquisitive belief	$p$	$p > \neg p$	
bare assertion	$p$	$p$	
lie	$\neg p$	$p$	
biased questions	$p > \neg p$	$p > \neg p$	

Table: Comparison between bare assertion and belief statements

## Back to the initial puzzles: belief is strong

The fact that there is no difference between belief statements and assertions in the **private dimension** explains why belief statements and assertions seem to be mutually entailing.

- (36)
- a. I believe that it rains, #but it does not rain.
  - b. It rains, #but I do not believe that it rains.

## Back to the initial puzzles: belief is weaker than assertion

**Weakness** of belief with respect to the assertion is explained via consideration of the **public** dimension.

- (37)
- a. It is raining, #but I am not certain that it is raining.
  - b. I believe that it is raining, but I am not certain that it is raining.

## Belief vs. Assertion: No entitlement equality

Recall: Entitlement equality: If you are committed in the private space then you are ready to be committed in the public space.  
Credence entails commitment in the public space.

# Belief vs. Assertion: No entitlement equality

Recall: Entitlement equality: If you are committed in the private space then you are ready to be committed in the public space.

Credence entails commitment in the public space.

Rejection of the entitlement equality.

- Credere+indicative: 'privately committed' (= credence) but neutral publicly ( $p$  can be true or false or none).
- Credere+subjunctive: 'privately' committed (= credence) and publicly partially committed.
- Lies: commitment in the public, but not in the private space.

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# Proposal

- This is the reflex of how believes are formed and on the basis of what evidence. We consider public commitment (the addition of  $p$  to  $\mathcal{N}$ ) as requiring higher evidential standards (the case of lies set aside) than private commitment (the addition of  $p$  to  $s$ ), which can be based on preferences and non rational evidence.

# BELIEF and BE CERTAIN: the evidential signal

Be certain (I believe it, but I am not certain)

- BE CERTAIN is an indirect evidential - inference.

(38) Looking at a car.

#I am certain that it is nice.

(39) The ball is either in A, B or C.

It is neither in A nor in B.

I am certain that it is in C.

- Update Instruction: CONDITIONAL (granted inferential evidence entailing  $p$ ) ASSERTION: eliminate  $\neg p$  worlds.
- NB we can have *be certain* with subjunctive as well ! Which make emerge non-homogeneity in the private space.



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Be certain (I believe it, but I am not certain)

- BE CERTAIN is an indirect evidential - inference.

(40) Looking at a car.  
#I am certain that it is nice.

(41) The ball is either in A, B or C.  
It is neither in A nor in B.  
I am certain that it is in C.

- Update Instruction: CONDITIONAL (granted inferential evidence entailing  $p_e$ ) ASSERTION: eliminate  $\neg p$  worlds.
- NB we can have *be certain* with subjunctive as well ! The update can be non-assertive.

# BE CERTAIN

BE CERTAIN	Attitude	Mood
Semantics	Layer 1: $p$ Layer 2: $p > \neg p$	Triggers subjunctive Triggers subjunctive
Pragmatic	Attitude type: Public	<b>Adds <math>p_e</math> to <math>\mathcal{N}</math></b>

Table: BE CERTAIN: Attitude - Mood Interaction

# Be certain in the picture

attitude	$s$	$\mathcal{N}$	$\mathcal{C}$
expressive belief	$p$		
inquisitive belief	$p$	$p > \neg p$	
bare assertion	$p$	$p$	
lie	$\neg p$	$p$	
biased questions	$p > \neg p$	$p > \neg p$	
be certain	$p$	$p_e$	

Table: Comparison between bare assertion and belief statements

# Conclusion

Why is the subjunctive overwhelmingly used with non-factives epistemics (and I find that)

- Subjunctive indicates that there is an operation on the public space and truthfulness of  $p$  is investigated.
- Indicative is relegated to a solipsistic space in a solipsistic talk.

# Conclusion

Why is the subjunctive overwhelmingly used with non-factives epistemics (and I find that)

- Subjunctive indicates that there is an operation on the public space and truthfulness of  $p$  is investigated.
- Indicative is relegated to a solipsistic space in a solipsistic talk.

In common conversations:

Subjunctive overwhelmingly used because we rarely engage in solipsistic talks!

By looking at mood from the standpoint of communication, and given what the contribution of mood is, we can better understand why subjunctive is overwhelmingly used with non-factive epistemics.

Thank you !