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Logical normativity in communication ethics

The logical roots of sincerity and trust

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Overview

Section 1

Inspiration

Dynamic modal logic

Public Announcement Logic

[The PAL language] allows us to make typical assertions about knowledge change such as

$$[!P]\mathrm{K_i}\varphi$$

that states what an agent i will know after having received the hard information that P. This one formula of dynamified epistemic logic neatly highlights the combination of ideas from diverse fields that come together here. The study of speech acts $!P$ was initiated in linguistics and philosophy, that of knowledge assertions $\mathrm{K_i}\varphi$ in philosophical logic and economics. And the dynamic effect modality $[\ ]$ combining these actions and assertions into a new formal language comes from program logics in computer science.

Johan van Benthem.
Logical Dynamics of Information and Interaction.
Cambridge University Press, Cambridge, 2011.

- In this talk we will try to extend the language of the dynamic modal logic in order to describe and analyze the normativity in language use.
- The investigation presented here is at an early stage, conducted mainly in the conceptual way and aimed primarily at the development of formal description language.

Section 2

Description language for normativity in language use

Prototype $\mathcal{L}_{\text{effect}}$ dynamic modal language for communication theory

Definition (The prototype language $\mathcal{L}_{\text{effect}}$)

The prototype language $\mathcal{L}_{\text{effect}}$ is a formal language of communication theory.

$\mathcal{L}_{\text{world}}$	p is a sentence of propositional logic
$\mathcal{L}_{\text{reality}}$	$\varphi ::= p \mid \Diamond\varphi \mid \circledast_{\mathsf{i}}\varphi \mid \mathsf{i}\ \text{stit}\ \varphi \mid \odot_{\mathsf{i}}\varphi \mid \neg\varphi \mid (\varphi \wedge \varphi) \mid \chi$
$\mathcal{L}_{\text{utterance}}$	$\xi ::= !\mathsf{i}\ \text{stit}\ \varphi \mid \cdot\varphi \mid \cdot\varphi \rightarrow !\mathsf{i}\ \text{stit}\ \varphi$
$\mathcal{L}_{\text{locution}}$	$\chi ::= \mathsf{i}: \underline{\xi}$
$\mathcal{L}_{\text{effect}}$	$\epsilon ::= \varphi \mid [\chi]\epsilon \mid \neg\epsilon \mid (\epsilon \wedge \epsilon)$

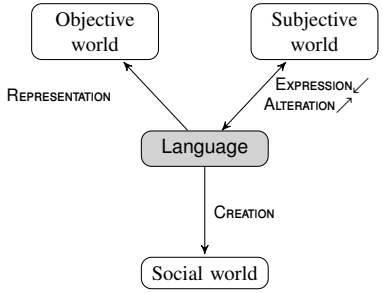
$\mathsf{i}, \mathsf{j}, \ldots$ stand for actors from a communication group; $p, q, \ldots$ for propositional letters; $\circledast_{\mathsf{i}} \in \{\mathbf{B}_{\mathsf{i}}, \mathbf{D}_{\mathsf{i}}\}$ for generic intentionality operator that stands in place of 'i believes that ...' and 'i desires that ...'; i stit for modal operator of action 'i sees to it that ...'; $\cdot$ and ! for indicative and imperative sentence mood; $\mathsf{i}:\underline{\ldots}$ for 'i says: "..."'; $\odot_{\mathsf{i}} \in \{\mathbf{P}_{\mathsf{i}}, \mathbf{F}_{\mathsf{i}}, \mathbf{O}_{\mathsf{i}}\}$ for generic deontic operator that stands in place of 'it is permitted for i that ...', 'it is forbidden for i that ...' and 'it is obligatory for i that ...'.

For the description of the normativity in language use we need: (1) a discriminative ontology suitable for (2) a comprehensive theory on relations between language and types of worlds together with (3) an expressively rich formal language adequate for the theory.

1. We adopt the "three worlds" ontological theory of Jürgen Habermas:

Objective world	Social world	Subjective world
physical facts	norms	mental facts
external world		*internal world*

2. We hypothesize four main types of language-world relations:



3. We claim the formal language of dynamic modal logic (van Benthem, Yamada, Liu and others) can be applied for the description of diversity of language-based relations.

Overview

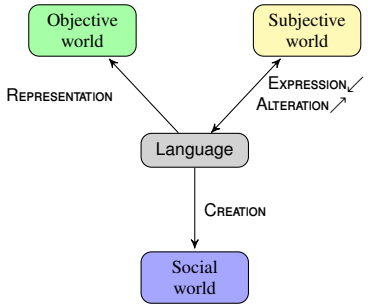
$\mathcal{L}_{\text{world}}$ p is a sentence of propositional logic

$\mathcal{L}_{\text{reality}}$ $\varphi ::= p \mid \Diamond\varphi \mid \circledast_{\mathsf{i}}\varphi \mid \mathsf{i}\ \text{stit}\ \varphi \mid \odot_{\mathsf{i}}\varphi \mid \neg\varphi \mid (\varphi \wedge \varphi) \mid \chi$

$\mathcal{L}_{\text{utterance}}$ $\xi ::= !\mathsf{i}\ \text{stit}\ \varphi \mid \cdot\varphi \mid \cdot\varphi \rightarrow !\mathsf{i}\ \text{stit}\ \varphi$

$\mathcal{L}_{\text{locution}}$ $\chi ::= \mathsf{i}: \underline{\xi}$

$\mathcal{L}_{\text{effect}}$ $\epsilon ::= \varphi \mid [\chi]\epsilon \mid \neg\epsilon \mid (\epsilon \wedge \epsilon)$



Example

Exemplar syntactic elements and *formulas*

- A discourse, a locution sequence: $\chi_1 \ \ldots \ \chi_n$
- *A regularity*: $[\chi]\epsilon$
- *A regular discourse understanding* as the state of the subjective world of an actor j: $[\chi_1] \ \ldots \ [\chi_n] \circledast_j \varphi$
- *A regular social reality shaping by language use* as the state of the normative world of an actor j: $[\chi_1] \ \ldots \ [\chi_n] \odot_j \varphi$.
  Special case. Discourse of an actor i creates linguistic commitments for him: $[i{:}\underline{\xi_1}] \ldots [i{:}\underline{\xi_n}] \odot_i (\chi \to i{:}\underline{\xi_{n+1}})$
- Translations for elements in van Eemeren and Grootendorst definition of argumentation:
  A sequence of locutions $i{:}\,\underline{\xi_1} \ldots i{:}\,\underline{\xi_n}$ *is an argumentation iff (i) there is a difference of opinions:* $B_i\varphi \wedge B_j\neg\varphi$, *(ii) the difference is desired to be resolved by convincing the listener:* $D_i\, B_j\varphi$, *(iii) the sequence of locutions addressed to the rational critic* rc *is believed to be a means to that end:* $B_i([i{:}\,\underline{\xi_1}] \ldots [i{:}\,\underline{\xi_n}]B_{rc}\varphi)$.

Synonyms

- Communication actors (agents, subjects) or language users:
  - sender (speaker), usually denoted by i,
  - receiver (hearer, listener), usually denoted by j.
- Locution or speech act: signed written message or spoken utterance.
- Utterance or message: mood designated sentence (imperative or indicative).

Linguistic commitments

Definition

An actor i is committed to ξ_n after i's (i.e. her own) monological discourse $\xi_0 \ldots \xi_{n-1}$ iff

- $[i{:}\underline{\xi_0}] \ldots [i{:}\underline{\xi_{n-1}}]\mathbf{P}_i\ i{:}\underline{\xi_n}$, and
- $[i{:}\underline{\xi_0}] \ldots [i{:}\underline{\xi_{n-1}}]\mathbf{F}_i\ i{:}\underline{\xi'}$ for all utterances ξ' such that ξ_n and ξ' are incompatible, and
- $[i{:}\underline{\xi_0}] \ldots [i{:}\underline{\xi_{n-1}}]\mathbf{O}_i(\chi \to i{:}\underline{\xi_n})$ for some locution χ.

Example

The affirmation of the conclusion of the modus ponens is a linguistic commitment of an actor who asserts its premises. This can be expressed as the prohibition of denial of conclusion:

$$[i{:}\cdot\underline{(\varphi \to \psi)}][i{:}\cdot\underline{\varphi}]\mathbf{F}_i i{:}\cdot\underline{\neg\psi}$$

Sincerity conditions

- Following Searle and Vanderveken we assume that each locution $i{:}\underline{\xi}$ has its sincerity conditions $\Psi(\ulcorner i{:}\underline{\xi}\urcorner)$.[1]
- We say that $\Psi(\ulcorner i{:}\underline{\xi}\urcorner)$ is expressed *by* $i{:}\underline{\xi}$ and that any $\ulcorner\varphi\urcorner \in \Psi(\ulcorner i{:}\underline{\xi}\urcorner)$ is expressed *in* $i{:}\underline{\xi}$.
- (Non-private character of language) Almost always there is coincidence in the sincerity conditions for different actors locutions of the same utterance: most commonly, $\ulcorner\circledast_i\varphi\urcorner \in \Psi(\ulcorner i{:}\underline{\xi}\urcorner)$ iff $\ulcorner\circledast_j\varphi\urcorner \in \Psi(\ulcorner j{:}\underline{\xi}\urcorner)$

Example (Some sincerity conditions of imperative locution)

$$\{\ulcorner D_i\ j\ \mathsf{stit}\ \varphi\urcorner, \ulcorner B_i\Diamond\varphi\urcorner\} \subseteq \Psi(\ulcorner i{:}\underline{!j\ \mathsf{stit}\ \varphi}\urcorner)$$

[1] *Foundations of Illocutionary Logic*, 1985.

Section 3

Rules of language game

Section overview

In this section Stenius seminal paper on rules of language game will be analysed and it will be shown that he has discovered two basic principles of communication ethics. A connection will be established between one of these principles and Grice maxim of quality. A critique of Stenius's principles and Grice's maxim will be given on the grounds of their insufficient generality and unacceptable restriction to only one communicative actor. A brief reconstruction of Lewis's approach will be presented taking into account two communicative actors, and it will be criticized for failing to recognize the logical basis of communication rules. Using Moore's paradoxical sentence as the key example and the description language of Broome's requirements theory, two parallelisms will be defined: the one between the sincerity principle and linguistic commitments of the sender, the other between the trust principle and linguistic commitments of the receiver. Following Habermas, a hypothesis will be put forward on the necessity of shift of communicative forms when the violation of communication principles gets revealed. The linguistic commitments counterparts for the principles of sincerity and trust can be subsumed under the principle of avoidance of communicative incoherence and therefore, against Lewis, they are not arbitrarily chosen but rooted in the logic of the language in use.

Modal rules of Erik Stenius (1967)

Moods as rules of the combined report/command-game

(R1) Write of the letters 'P' or 'Q' to the left of one of the letters 'a' 'b' or 'c', according to whether the object denoted by one of the latter letters has the property denoted by 'P' or 'Q'.
(R2) Give the object denoted by the 'a' 'b' or 'c' the property corresponding to 'P' or 'Q', according to whether a 'P' or 'Q' stands to the left of this letter!

(R3) Produce a sentence in the indicative mood only if its sentence-radical is true.
Our translation is (1).

(R4) React to a sentence in the imperative mood by making its sentence-radical true.
Our translation is (2).

Erik Stenius.
Mood and Language-Game.
Synthese 17 (1967): 254–274

$$\mathbf{P}_{\mathsf{i}}\ \mathsf{i}:\underline{\varphi} \rightarrow \varphi \qquad (1)$$

$$\mathsf{i}:!\ \mathsf{j}\ \mathsf{stit}\ \underline{\varphi} \rightarrow \mathbf{O}_{\mathsf{j}}\ \mathsf{j}\ \mathsf{stit}\ \varphi \qquad (2)$$

Figure : In the Stenius report game the gardener writes reports. In the Stenius command game he reads and follows instructions.

Analysis of Stenius language-game rules

Stenius minimal model of a combined, report–command game:

1. (R1) rule of report-game is a function from indicative utterances to states-of-affairs.
2. (R2) rule of command-game is a function from imperative utterances to addressee actions.
3. (R3) rule of report-game is a norm that an assertion-locution is permitted only if its indicative utterance is true.
4. (R4) rule of command-game is a norm that it is obligatory for addressee to make true an imperative utterance after a request-locution is performed.

Rules (R1) and (R2) are non-normative semantic rules for assignments among syntax elements and objective reality (of states-of-affairs and actions). Rules (R3) and (R4) are normative pragmatic rules assigning deontic values to language-user's acts: to sender's assertion-locution and to addressee's reaction to request-locution. The variants of (R3) have been much discussed in literature under different names: 'maxim of quality' (Grice), 'sincerity convention' (Lewis), 'honesty principle' (van Eemeren and Grootendorst).

Sincerity principle

Closely related to the truthfulness rule (R3) of Stenius is the sincerity principle.

Principle (Sincerity principle)

A locution is permitted only if the sincerity condition expressed in it occurs. Formally: If $\ulcorner \circledast_{\mathsf{i}} \varphi \urcorner \in \Psi(\ulcorner \mathsf{i}{:}\underline{\xi} \urcorner)$, *then* $\mathbf{P}_{\mathsf{i}}\mathsf{i}{:}\underline{\xi} \rightarrow \circledast_{\mathsf{i}}\varphi$, *i.e.* $\neg \circledast_{\mathsf{i}} \varphi \rightarrow \mathbf{F}_{\mathsf{i}}\mathsf{i}{:}\underline{\xi}$

Principle (Linguistic commitments parallel to the principle of sincerity)

For any sincerity condition $\ulcorner \circledast_{\mathsf{i}}\varphi \urcorner \in \Psi(\ulcorner \mathsf{i}{:}\underline{\xi} \urcorner)$*:*

$$[\mathsf{i}{:}\underline{\cdot \neg \circledast_{\mathsf{i}} \varphi}]\mathbf{F}_{\mathsf{i}}\mathsf{i}{:}\underline{\xi}$$

and

$$[\mathsf{i}{:}\underline{\xi}]\mathbf{F}_{\mathsf{i}}\mathsf{i}{:}\underline{\cdot \neg \circledast_{\mathsf{i}} \varphi}$$

Special case: deriving Gricean maxim of quality

Postulate

The speaker's belief that φ is a sincerity condition for her assertion that φ, i.e. $\ulcorner \mathrm{B}_{\mathsf{i}}\varphi \urcorner \in \Psi(\ulcorner \mathsf{i}{:}\underline{\cdot \varphi} \urcorner)$.

Definition

An actor i consistently believes that φ iff i believes that φ and does not believe that $\neg\varphi$.

Proposition (Gricean submaxim of quality 1)

Asserting φ *is forbidden for actor* i *who consistently believes that* $\neg\varphi$.

Proof.

1. Suppose $\mathrm{B}_{\mathsf{i}}\neg\varphi$. 2. $\neg\mathrm{B}_{\mathsf{i}}\varphi$ by the definition of consistent belief. 3. $\ulcorner \mathrm{B}_{\mathsf{i}}\varphi \urcorner \in \Psi(\ulcorner \mathsf{i}{:}\underline{\cdot \varphi} \urcorner)$ by the postulate. 4. $\neg\mathrm{B}_{\mathsf{i}}\varphi \rightarrow \mathbf{F}_{\mathsf{i}}\mathsf{i}{:}\underline{\cdot \varphi}$ from 3. and the sincerity principle. 5. $\mathbf{F}_{\mathsf{i}}\mathsf{i}{:}\underline{\cdot \varphi}$ from 2. and 4. □

Under the category of Quality falls a supermaxim—"Try to make your contribution one that is true" —and two more specific maxims:
1. Do not say what you believe to be false.
2. Do not say that for which you lack adequate evidence.

Paul Grice.
Logic and Conversation [1975], p. 27,
Studies in the Way of Words.
Harvard University Press, 1991.

Undergeneralization

- In Stenius and Grice the principles are "undergeneralized".
  - Grice commits "declarative fallacy" (Belnap's term). Maxims of quality are restricted to assertions and beliefs, disregarding requests and desires.
  - Stenius model of a "command-report language-game" is a one-actor reduced model of communication for the language of two scripts: indicative and imperative. If there are two scripts in use Stenius's lonely actor cannot both read and write in the same script. In the indicative-script the actor only writes messages but cannot read. In the imperative-script the actor only reads messages but cannot write.

Communication and the two scripts

$x\rightarrow$ stands for *x can write imperative script*, $x\leftarrow$ stands for *x can read imperative script*; the same for $\rightarrow$ and $\leftarrow$ in *indicative script*.

- Communication i – j is the Stenius combined report/command game: i is a receiver of imperatives and sender of indicatives while j sends imperatives and reads indicatives.
- Communication j – k represents the complete use of the indicative script.
- Communication k – l is the full two-script communication.

Rules for reciprocal report/command game

The Stenius report/**command** game rules

- Semantic rule for report: indicatives refer to states-of-affairs.
- Pragmatic rule for report sender: sending of an indicative is permitted provided that the referred state-of-affairs is the case.
- **Semantic rule for command**: imperatives refer to actions.
- **Pragmatic rule for command receiver**: after receiving an imperative the referred action becomes obligatory.

Figure : The Stenius rules are rules of non-reciprocal game for Send/∅– report · –/Receive command type of actor i:

Missing rules

The rules for the other actor j must be added. Here is how it can be done following Stenius's line of thought:

- Pragmatic rule for report receiver: after receiving an indicative, it becomes obligatory to believe that the referred state-of-affairs is the case.
- **Pragmatic rule for command sender**: sending of an imperative is permitted only if the result of the referred action is possible.

Figure : In the reciprocal game actors i and j are of Send/Receive report · Send/Receive command type.

Lewis's two actors rules

Conventions of sincerity and trust

My proposal[2] is that the convention whereby a population P uses a language $\mathcal{L}$ is a convention of truthfulness and trust in $\mathcal{L}$. To be truthful in $\mathcal{L}$ is to act in a certain way: to try never to utter any sentences of $\mathcal{L}$ that are not true in $\mathcal{L}$. Thus it is to avoid uttering any sentence of $\mathcal{L}$ unless one believes it to be true in $\mathcal{L}$. To be trusting in $\mathcal{L}$ is to form beliefs in a certain way: to impute truthfulness in $\mathcal{L}$ to others, and thus to tend to respond to another's utterance of any sentence of $\mathcal{L}$ by coming to believe that the uttered sentence is true in $\mathcal{L}$.

[2] This proposal is adapted from the theory given in Erik Stenius, "Mood and Language-game", *Synthese*, 17(1967):254–274.

David Lewis (1983).
Languages and language [1975], p. 166.
In *Philosophical Papers Vol. I*, 163–188. Oxford University Press, 1983.

The regular effect of an indicative locution

Lewis's reconstruction of coming to believe by being told:

- $[\mathsf{i}:\underline{\cdot\varphi}]\mathrm{B}_\mathsf{j}\mathrm{B}_\mathsf{i}\varphi$ by the trust principle.
- $\mathrm{B}_\mathsf{j}(\mathrm{B}_\mathsf{i}\varphi \to \varphi)$ by imputing to i observance of the truthfulness principle.
- $[\mathsf{i}:\underline{\cdot\varphi}]\mathrm{B}_\mathsf{j}\varphi$ by deductive closure of beliefs.

Generalization and normative reading of the Stenius-Lewis principles

Rules for reciprocal language game

Table : A generalization of Stenius-Lewis rules.

Message	Permission necessary precondition Sender i	Obligation postcondition Receiver j
$\cdot\varphi$	$\mathrm{B}_\mathsf{i}\varphi$	$\mathrm{B}_\mathsf{j}\varphi$
!j stitφ	$\mathrm{B}_\mathsf{i}\Diamond\varphi$, D_ij stitφ	j stitφ
	Rules of sincerity	Rules of trust

Figure : Reciprocal language game.

Was Lewis right in claiming that rules of sincerity and trust are conventional, i.e., that they are not "the only possible regularity"?

Key example

Violation of sincerity principle for indicatives

An instance of the sincerity principle:

$$\mathbf{P}_\mathsf{i}\mathsf{i}:\underline{\cdot\varphi} \to \mathrm{B}_\mathsf{i}\varphi$$

Its violation is an insincere utterance:

$$\mathsf{i}:\underline{\cdot\varphi} \wedge \neg\mathrm{B}_\mathsf{i}\varphi$$

Moore's sentence paradoxically asserts its own insincerity:

$$\mathsf{i}:\underline{\cdot(\varphi \wedge \neg\mathrm{B}_\mathsf{i}\varphi)}$$

George Edward Moore (1873–1958) discovered the paradoxical character of the sentence "It is raining, but I do not believe it." The sentence is seemingly consistent if understood as a description of lack of true belief: $\varphi \wedge \neg\mathrm{B}_\mathsf{i}\varphi$. Moore's sentence is communicatively incoherent since it destroys the possibility of continuation of the sender's discourse.

Message	Permission necessary precondition
$\mathsf{i}:\underline{\cdot\varphi}$	$\mathrm{B}_\mathsf{i}\varphi$
$\mathsf{i}:\underline{\cdot\neg\mathrm{B}_\mathsf{i}\varphi}$	$\neg\mathrm{B}_\mathsf{i}\varphi$

Since $\mathrm{B}_\mathsf{i}\varphi \wedge \neg\mathrm{B}_\mathsf{i}\varphi$ is a contradiction, there is no locution permitted by the sincerity principle to express it:

$$(\mathbf{P}_\mathsf{i}\mathsf{i}:\underline{\chi} \to \bot) \leftrightarrow \mathbf{F}_\mathsf{i}\mathsf{i}:\underline{\chi}$$

Proposition

$$[\mathsf{i}:\underline{\cdot\varphi}][\mathsf{i}:\underline{\cdot\neg\mathrm{B}_\mathsf{i}\varphi}]\bot$$

Logical requirement in language use

- The effect of Moore-type of locutions:

$$[\mathsf{i}:\underline{\xi}][\mathsf{i}:\underline{\cdot\neg\circledast_\mathsf{i}\varphi}]\bot \qquad \text{for all } \ulcorner\circledast_\mathsf{i}\varphi\urcorner \in \Psi(\ulcorner\mathsf{i}:\underline{\xi}\urcorner)$$

- The effect of Moore-type sentences has been discovered by Searle and Vandereveken and termed 'the principle of non-deniability of the sincerity conditions':[2] *A speaker cannot simultaneously express a psychological state and deny that he has that state*.
- The normative reading of the principle of non-deniability of the sincerity conditions, as expressed in the language of dynamic modal logic (3) below, shows that the prohibition of performing some locutions is a regular, logical effect of a locution performance. The norm can be understood as an instance of the principle of avoidance of communicative incoherence.

$$\text{If } \circledast_\mathsf{i}\varphi \text{ is a sincerity condition of } \mathsf{i}:\underline{\xi}, \text{ then } [\mathsf{i}:\underline{\xi}]\mathbf{F}_\mathsf{i}\mathsf{i}:\underline{\cdot\neg\circledast_\mathsf{i}\varphi}. \tag{3}$$

- Sincerity requirement and linguistic commitments are parallel: for any intentional state required by the sincerity principle there is a corresponding linguistic commitment—the prohibition for negation of direct expressive for that state.

[2] In *Foundations of Illocutionary Logic*, p. 91, 1985.

Broome's code function and sincerity

Broome's theory formalized

- Code is ternary function:

$$\mathrm{k}_{\boxed{1}}\left(\boxed{2},\boxed{3}\right) = \boxed{4}$$

- Input:
  1. A normative source
  2. An agent
  3. A world
- Output:
  4. A set of sentences.

The basic idea: $\mathbf{O}\varphi$ is $\ulcorner\varphi\urcorner \in \mathrm{k}$, $\mathbf{F}\varphi$ is $\ulcorner\neg\varphi\urcorner \in \mathrm{k}$, $\mathbf{P}\varphi$ is $\ulcorner\neg\varphi\urcorner \notin \mathrm{k}$.

Parallelism

Let $\ulcorner\circledast_{\mathrm{i}}\varphi\urcorner \in \Psi(\ulcorner \mathrm{i}{:}\underline{\xi}\urcorner)$!

$$\ulcorner \mathrm{i}{:}\underline{\xi}\urcorner \in w \rightarrow \ulcorner\circledast_{\mathrm{i}}\varphi\urcorner \in \mathrm{k}_{\mathcal{L}}(\mathrm{i}, w) \qquad (4)$$

$$\ulcorner \mathrm{i}{:}\underline{\xi}\urcorner \in w \rightarrow \ulcorner\neg\mathrm{i}{:}\underline{\cdot\neg\circledast_{\mathrm{i}}\varphi}\urcorner \in \mathrm{k}_{\mathcal{L}}(\mathrm{i}, w) \qquad (5)$$

- If the language $\mathcal{L}$ is understood as a normative source, then the sincerity principle (4) is a generic requirement of its code $\mathrm{k}_{\mathcal{L}}$. This type of requirements connects locutions with intentional states of the speaker. *Mean what you say!*
- On the other hand, the principle of non-deniability of sincerity conditions is the requirement type connecting locutions among themselves(5).

Broome's code function and trust

Parallelism

Formula (6) shows the trust requirement as the connection between sender's locution and receiver's intentional state: the receiver ought to have those intentional states that the sender has expressed by her locution. An instance of this is (7), which has already been analysed here in the quotation from Lewis. Formula (8) shows the requirement of "receiver's non-deniability of sharing sincerity conditions of interlocutor's locutions" as the connection between sender's locution and receiver's locution. (6) and (8) are parallel: to each intentional state required by (6) there is corresponding prohibition (8) for the locution that expresses not having that state.
Let $\ulcorner\circledast_{\mathrm{i}}\varphi\urcorner \in \Psi(\ulcorner \mathrm{i}{:}\underline{\xi}\urcorner)$ and $\ulcorner\circledast_{\mathrm{j}}\varphi\urcorner \in \Psi(\ulcorner \mathrm{j}{:}\underline{\xi}\urcorner)$!

$$\ulcorner \mathrm{i}{:}\underline{\xi}\urcorner \in w \rightarrow \ulcorner\circledast_{\mathrm{j}}\varphi\urcorner \in \mathrm{k}_{\mathcal{L}}(\mathrm{j}, w) \qquad (6)$$

$$\ulcorner \mathrm{i}{:}\underline{\cdot\varphi}\urcorner \in w \rightarrow \ulcorner \mathrm{B}_{\mathrm{j}}\varphi\urcorner \in \mathrm{k}_{\mathcal{L}}(\mathrm{j}, w) \qquad (7)$$

$$\ulcorner \mathrm{i}{:}\underline{\xi}\urcorner \in w \rightarrow \ulcorner\neg\mathrm{j}{:}\underline{\cdot\neg\circledast_{\mathrm{j}}\varphi}\urcorner \in \mathrm{k}_{\mathcal{L}}(\mathrm{j}, w) \qquad (8)$$

A conjecture on communicative coherence

Conjecture

If $\ulcorner\circledast_{\mathrm{x}}\varphi\urcorner \in \Psi(\ulcorner \mathrm{x}{:}\underline{\xi}\urcorner)$, *then* $[\mathrm{i}{:}\underline{\xi}][\mathrm{j}{:}\underline{\cdot\neg\circledast_{\mathrm{j}}\varphi}]\bot$.

The conjecture states that an explicit announcement on the receiver's part that her intentional state is not the one required by the principle of trust —that consensus has not been reached— leads to communicative incoherence. The situation of communicative incoherence shows that a switch from one type of communication to another is needed: a switch from strategic communication to argumentation ought to be made.

Communicative form switch

As soon as [validity claims][a] are problematized and made the object of a justified controversy, interlocutors switch . . . from communicative action to another form of communication, namely, a practice of argumentation, willing to convince one another of their views as well as to learn from one another.

Jürgen Habermas (2003).
Truth and Justification, p. 77, MIT Press.

[a] According to Habermas, each communicative action raises three criticizable validity claims: a claim to truth, to normative rightness, and to sincerity.

Section 4

On the origin of regularities in language use

Expressive approach

What is logical regularity with respect to speech acts (here—locutions)?

- In Searle and Vanderveken ILLOCUTIONARY LOGIC (logic of speech acts) is based on rational relation between sincerity conditions of speech acts.

A sequence $\mathsf{i}{:}\underline{\chi_1}, \ldots, \mathsf{i}{:}\underline{\chi_n}$ of locutions	*entails*	locution $\mathsf{i}{:}\underline{\chi_{n+1}}$
	IFF	
intentional states expressed by the sequence	*are reasons for*	intentional states expressed by the entailed locution.

- Objection to the expressive approach: logical regularities in language use are wider than the sender's linguistic commitments and, therefore, cannot be explained as rational connection between sender's intentional states.

Example

An imperative generates an obligation (9) on *the receiver's side* and *the non-linguistic prohibition* (10) for preventing the requested change from happening on the sender's side.

$$[\mathsf{i}{:}!\underline{\mathsf{j}\ \mathsf{stit}\ \varphi}]\mathbf{O}_\mathsf{j}(\mathsf{j}\ \mathsf{stit}\ \varphi \vee \mathsf{j}{:}\cdot\neg\underline{\mathsf{j}\ \mathsf{stit}\ \varphi}) \quad (9)$$

$$[\mathsf{i}{:}!\underline{\mathsf{j}\ \mathsf{stit}\ \varphi}]\mathbf{F}_\mathsf{i}\mathsf{i}{:}\ \mathsf{stit}\ \neg\varphi \quad (10)$$

Normative pragmatic approach

What is logical regularity with respect to speech acts (here—locutions)?

- In Brandom NORMATIVE PRAGMATICS it is inclusion relation between linguistic commitments of speech acts.

A sequence $\mathsf{i}{:}\underline{\chi_1}, \ldots, \mathsf{i}{:}\underline{\chi_n}$ of locutions	*entails*	locution $\mathsf{i}{:}\underline{\chi_{n+1}}$
	IFF	
linguistic commitments of the sequence	*include*	linguistic commitments of the entailed locution.

- Objection to the normative pragmatics approach is the same as the one for the expressive approach: some regular (logical) locution effects are not linguistic commitments.

Example

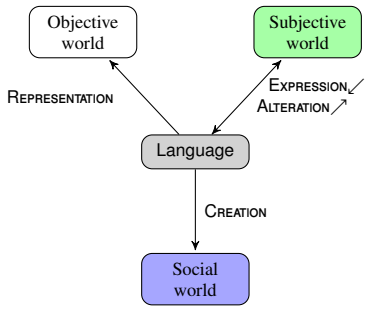
If $[\chi]\varphi$ is a regularity but φ is not a speech act, then this regularity cannot be explained by the normative pragmatics approach.

The third way

Dynamic logic is the third stance. It supports the view that the logical structure of language is the root logic, the logic that manifests itself in the effects of language use. The effects are diverse, they include linguistic commitments and rational psychological commitments, but the logical structure of language is not reducible to the structure of any category of its effects.

LOCUTION	EFFECTS	
$[\mathsf{i}{:}!\underline{\mathsf{j}\ \mathsf{stit}\ \varphi}]$	$\mathrm{B}_\mathsf{j}(\Diamond\varphi \wedge \Diamond\neg\varphi)$	j's belief
	$\mathrm{D}_\mathsf{j}\varphi$	j's desire
	$\mathbf{O}_\mathsf{j}\ \mathsf{j}\ \mathsf{stit}\ \varphi$	j's obligation to do
	$\mathbf{F}_\mathsf{i}\ \mathsf{i}\ \mathsf{stit}\ \neg\varphi$	i's obligation not to do
	$\mathbf{F}_\mathsf{i}\ \mathsf{i}{:}\underline{\neg\mathrm{D}_\mathsf{i}\mathsf{j}\ \mathsf{stit}\ \varphi}$	i's linguistic commitment
	$\mathbf{F}_\mathsf{i}\ \mathsf{i}{:}\underline{\cdot(\Box\varphi \vee \Box\neg\varphi)}$	i's linguistic commitment
	...	...

Table : Examples of diverse effects of the same locution. It is assumed that relevant preconditions are met (e.g. i and j are competent speakers; i is sincere, j trusts in i; i has the relevant authority over j, no conflicting directives are in force; ...). The direct influence of locutions on receiver's intentional states can and has been disputed. Leaving the discussion aside, the effects on states of subjective world can be replaced by an assignment of deontic statuses to these, and relegating the problem of psychological effects to the theory on obligations effects.



Logical projectivism

- The illocutionary logic hypothesis states that the logic of linguistic commitments runs parallel to the logic of intentionality.
- The normative pragmatics hypothesis states that the logic of utterances runs parallel to the logic of linguistic commitments.
- According to the third stance or the logic projection hypothesis, the logic of utterances is the source of effect-logics, i.e. logics of locutionary effects regularly occurring in subjective and social world.
- Consequently, e.g. the imperative logic as logic of utterances constitutes an independent but not self-sufficient research topic. The logic of utterances manifests itself in its meaning effects such as deontic, bouletic and doxastic ones. It can be studied only in relation to other logics: in relation to deontic logics of hearer's thetic (i.e. language generated) obligations and of speaker's linguistic and non-linguistic commitments, and in relation to intentionality logics of speaker's expression and hearer's impression. Therefore, research *in logic* of imperative and other utterances must include investigation of relations *between logics*.

Conclusion

- There is the phenomenon of communicative incoherence:

$$[\chi_1] \dots [\chi_n] \bot$$

- Communicative incoherence gives rise to the principles of avoidance of incoherence (principles of consistency maintenance):

$$[\chi_1] \dots [\chi_{n-1}] \mathbf{F} \chi_n$$

- The principle of avoidance of communicative incoherence is a requirement of the code of language use. It is the logical foundation of the principles of sincerity and trust. If the principle of avoidance of communicative incoherence is violated, then either language-mediated interaction ceases to be possible or shift of communicative forms becomes necessary.
- Language user has no option but to satisfy her/his linguistic commitments. We either comply with the logical requirements of communication ethics or we fail in our attempt to use the language.