

Illocutionary logic and normative pragmatics: a different approach

Berislav Žarnić

University of Split

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Russell on the purposes of language

Three actors on the stage:

- 1 the speaker (expresses himself),
- 2 the hearer (subject to alteration of his psychological state),
- 3 the world (inert).

It was one of the great discoveries of contemporary philosophy to notice that the world is not an inert element in the play.

Russell's dictum needs an Austinian amendment:

- 4 Language serves four purposes ... (4) to *change* the social world.

3+? purposes

Language serves three purposes: (1) to *indicate* facts, (2) to *express* the state of the speaker, (3) to *alter* the state of the hearer. These three purposes are not always all present.



Bertrand Russell.

An inquiry into meaning and truth.

Routledge, London, 1995.

The William James lectures for 1940 delivered at Harvard University. First published in 1950.

A social fact is conceived as a kind of collective intentionality that projected from normative source to individual minds. As it was famously put, social facts “consist of manners of acting, thinking and feeling external to the individual, which are invested with a coercive power by virtue of which they exercise control over him” (Durkheim). Let us try to extract the elements from this model: normative source Π_s (external “manners of acting, thinking and feeling”) requires of individual i to conform to it; what possibly gets realized (“control” success). Our translation for Durkheim’s definition:

Π_s requires conformation from i iff $\text{Requires}(\Pi_s, i, \varphi)$ iff $\varphi \in \Pi_s(i)$ and $i \in s$ iff $\odot_{\Pi_s} \varphi$, where $\Pi_s(i)$ is union of mental states and acts φ having a deontic value \odot (forbidden, obligatory, or permitted).

According to the definition a social fact can be described by the schema: ‘[deontic operator][intentionality or action operator][proposition]’ E.g.

$O i$ stit : φ represents social fact that i ’s action of seeing it that φ has deontic value of obligation; $P i$: “ φ ” for social fact that i ’s utterance of string “ φ ” is permitted; $F B_i \varphi$ for social fact that i ’s believing that φ is forbidden.

Words that can change the world

It may seem that that deontic states of affairs can be changed only by specific speech acts, namely those having *world to word* direction of fit. According to classification given by Searle and Vanderveken [1] there are five types of “illocutionary points”: assertive, commissive, directive, declarative, and expressive point. Three of these have world-to-word direction of fit:

- 1 “The *commissive* point is to commit the speaker to doing something.”
- 2 “The *directive* point is to try to get other people to do things. . . .”
- 3 “The *declarative* point is to change the world by saying so. . . .”

Example

- 1 (directive: request) Please do not do it!
- 2 (commissive: promise) I will come.
- 3 (directive: permissive) You may come.
- 4 (directive: suggestion) It might be good to go there.
- 5 (declarative for 1) I request that you do not do it .
- 6 (declarative for 2) I promise to come.

Do only \uparrow -speech acts change social reality?

Thesis

Any speech act can change some deontic state of affairs.

It is probably the type of action whose deontic status is being changed that makes us overlook this universal deontic power of speech acts. Indeed there are acts whose deontic status cannot be changed by speech acts having solely word-to-world direction of fit (assertives) or lacking any direction of fit (expressives): the deontic status of acts from non-speech category is not subjected to change by a speech act that does not have world-to-word direction of fit. On the other hand, the deontic status of any speech act can be altered by some speech act.

Sellars principle

What, then does it mean to say of one sentence, *B*, that it is derivable from another, *A*? Roughly, that it is permissible to assert *B*, given that one has asserted *A*, whereas it is not permissible to assert not-*B*, given that one has asserted *A*.



Wilfrid Sellars.

Inference and meaning.
Mind, 62(247):313–338,
1953.

An example

Let:

$$[i: \text{"}\varphi\text{"}] \odot \psi$$

stand for sentence
form:

After i utters

sentence φ , state ψ
acquires deontic

status

$$\odot \in \{O, P, F\}.$$

Letters O, P, F stand
for 'obligatory',
'permitted' and
'forbidden'.

Example

P i says to j : "Open the window!"

Q_1 j opens the window.

Q_2 i prevents the window from being opened by
 j .

(i) change in the deontic status of non-linguistic acts

$$[P](O Q_1 \wedge F Q_2)$$

R_1 i says to j : "It is impossible to open the
window."

R_2 i says to j : "You are not allowed to open the
window."

(ii) change in the deontic status of linguistic acts

$$[P]F(R_1 \vee R_2)$$

Ad (i) It is assumed that j is subordinated to i 's authority and that no conflicting requirement is in force.


Ad (ii) It is assumed that i did not change his mind, i.e., no retractive act is performed by uttering R_1 and R_2 .


A possible objection


- An objection can be raised against the deontic power of speech acts. If the communication is not cooperative, the objection goes, then no commitments will arise either for the speaker or the hearer.
- The objection can be easily refuted. 'If something is obligatory, then it is the case' ($\not\vdash O\varphi \rightarrow \varphi$) is not an axiom of deontic logic. The language use is subjected to normative requirements but it need not conform to them.

Parallelism between normative and logical structure

- There is a remarkable feature of deontic changes accompanying language use: the structure of linguistic commitments (speech act commitments) is parallel to the logic of sentences being used. Probably, this great discovery can be attributed to Sellars.
- Robert Brandom (1994) has worked out a grandiose philosophical theory which takes the dynamics of deontic dimension of language use as the basic phenomenon. He has summarized the theory as “normative pragmatics” (using language means shaping social deontic reality) and “inferential semantics” (“discursive commitments are distinguished by their . . . inferential articulation”) .

 Robert B. Brandom.
Making It Explicit: Reasoning, Representing, and Discursive Commitment. 1994.

 J.R. Searle and
D. Vanderveken.
Foundations of Illocutionary Logic. 1985.

 Douglas N. Walton and
Erik C. Krabbe.
Commitment in Dialogue: Basic Concepts of Interpersonal Reasoning. 1995.

Psychological or social sources?

Normative structure of *communication*

Logical structure of *language*

Logical structure of *intentionality*

Searle-
Vanderveken

□□□

Brandom

□□□

Logical structuralism

□□□

A different approach

I will argue that there is a third theoretical possibility to understand the logical structure of speech act commitments and entitlements:

It is not identical to a normative discursive social reality (“constellations of commitments and entitlements on the part of various interlocutors”).

It is not a manifestation of (horizontal) rationality of the underlying psychological structure expressed in speech-acts.

Instead—the logical structure of language is the fundamental, irreducible structure.

Brandom's division of possible stances

The difference lies in whether the locus of authority and of commitment is viewed as internal and psychological or as constituted by public social practice.



Robert Brandom.
Asserting. *Noûs*,
17(4):637–650, 1983.

Illocutionary logic and its psychological base

- Searle and Vanderveken (1985) have developed an elaborated system for capturing the logic of speech acts.
 - Speech act can be decomposed into two components: illocutionary force F and propositional content P . Illocutionary force is determined by seven parameters: (i) illocutionary point Π (which can be assertive, commissive, directive, declarative, or expressive), (ii) degree of strength of the illocutionary point k , (iii) mode of achievement of the illocutionary point μ , (iv) propositional content conditions θ , (v) preparatory conditions Σ , (vi) sincerity conditions Ψ , (vii) degree of strength of the sincerity conditions η .
 - It is assumed that within a given illocutionary point each illocutionary force is constructible from the primitive force by modification of some of its components. E.g., the directive force is the primitive force within the directive point; modification of its mode of achievement to polite mode results with the request force; the force of asking yes no question results from modification of the propositional content conditions of the request force to those propositions whose truth conditions are that the hearer performs a specific speech act.

Two types of commitment transmission

- There are relations of commitment transfer (preservation, inheritance) between speech acts.
- Searle and Vanderveken analyze two kinds of commitment preservations:
 - ① Illocutionary entailment or commitment preservation within the same illocutionary point Π over the same propositional content P :

$$F_1^{\Pi}(P) \triangleright F_2^{\Pi}(P).$$

- ② Commitment transfer from a speech act $F_1^{\Pi_k}(P)$ with illocutionary point Π over the content P to another illocutionary point Π^* over the content Q :

$$F_1^{\Pi_k}(P) \triangleright F_2^{\Pi^*}(Q).$$

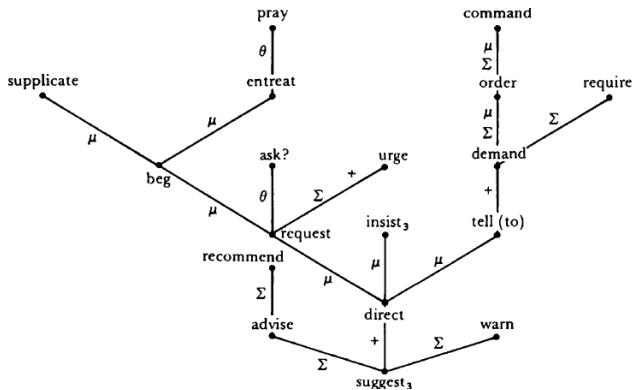
Commitment inheritance within illocutionary point

2.3 A completeness theorem.

An illocutionary force F_1 illocutionarily entails an illocutionary force F_2 with the same point iff it can be obtained from F_2 by applying the operations which consist in restricting the mode of achievement, increasing the degrees of strength, and adding new propositional content, preparatory or sincerity conditions.



J.R. Searle and D. Vanderveken. *Foundations of Illocutionary Logic*. Cambridge University Press, 1985.



Commitment entailment follows the downward path. Labels over line show the type of modification by which the higher illocutionary force has been obtained from the lower one. E.g., $\|request\|(P) \triangleright \|direct\|(P) \triangleright \|suggest\|(P)$.

A comparison with our approach:

The elements of illocutionary force are treated as elements of the syntax or as semantic effects obtaining under certain preconditions.

- E.g., instead of having $\|command\|\varphi$ and $\|request\|\varphi$ as separate forms, we take $i : "! \varphi"$ as the common form of request and command. In terms of its effects, request is a more general form.
- After i utters $![j \text{ stit} : \varphi]$ to j , j is obligated either to see to it that φ or to see to it that i knows that j will not see to it that φ :

$$[i : "! [j \text{ stit} : \varphi]"] \mathbf{O}_j ([j \text{ stit} : \varphi] \vee [j \text{ stit} : \mathbf{K}_i \neg [j \text{ stit} : \varphi]])$$

- Social hierarchy $<$ mediates the effects of an imperative utterance and possibly makes it a command:

$$(j < i \wedge \dots) \rightarrow [i : "[j \text{ stit} : \varphi]"] \mathbf{O}_j [j \text{ stit} : \varphi]$$

- We do not treat ability proposition as the preparatory condition of directives $\theta(\|directive\|) = \{\diamond [j \text{ stit} : \varphi]\}$, rather it follows from the utterance of an imperative:

For all ξ , if $[i : "! [j \text{ stit} : \varphi]"] \xi$, then
 $[i : "! [j \text{ stit} : \varphi]"] [i : "\cdot \diamond [j \text{ stit} : \varphi]"] \xi$.

Commitment across illocutionary points

The definition of illocutionary commitment, i.e., commitment to illocutionary point Π' on a proposition Q with a degree of strength k in a context i , calls upon an illocutionary point already achieved in that context over some proposition, in short $i\Pi^k P$, such that

- 1 P strictly implies Q : $\vdash P \rightarrow Q$,
- 2 Q is syntactically admissible (fulfils propositional content conditions) with respect to Π' whenever so does P with respect to Π ,
- 3 psychological states expressed by $\Pi^k(P)$ strongly commit the speaker to psychological states expressed by $\Pi'^k Q$.

Definition

A speaker is committed to an illocutionary point Π' on a proposition Q with a degree of strength k (for short: $i\hat{\Pi}'^k Q$) iff for some point Π , $i\Pi^k P$, $P \hookrightarrow Q(w) = 1$, and, first, if $P \in \cap \theta_{\Pi}(i)$ then $Q \in \cap \theta_{\Pi'}(i)$ and, secondly, $\cup \Psi(i, P) \triangleright \cup \Psi(i, Q)$.



J.R. Searle and D. Vanderveken.

Foundations of Illocutionary Logic. Cambridge University Press, 1985.

The logic of intentionality at the base

- The last condition for the complex illocutionary entailment $i\Pi^k P \triangleright \Pi^k Q$, i.e. the inheritance of illocutionary commitments, is the existence of inheritance of psychological commitments.
- This can be rephrased in modal logic terms: there is some modal logic ML of intentionality having correspondent theorem $\vdash_{ML} \varphi \rightarrow \psi$ where φ describes sincerity conditions of $\Pi^k P$ and ψ describes sincerity conditions for $\Pi^k Q$. Note that theorem $\vdash_{ML} \varphi \rightarrow \psi$ is to be read not empirically but normatively (e.g. it is a *requirement of rationality* that anyone in mental state φ shall be in mental state ψ).
- This foundation of illocutionary commitments on the logic of intentionality is termed by Searle and Vanderveken as ‘strong parallelism between illocutionary commitment and propositional attitude commitment’.
- In our approach, the illocutionary logic is not based on the logic of intentionality. Rather, it is the sameness of the effects that determines entailment:

The utterance of φ commits i to utterance of ψ iff for all ξ , if $[i : \text{“}\varphi\text{”}]\xi$, then $[i : \text{“}\varphi\text{”}][i : \text{“}\psi\text{”}]\xi$.

Moore's paradox and Sellars principle

]

- An interesting instance of the Sellars principle can be proved within Searle-Vanderveken theory:
Any speech act changes the deontic state of affairs of the expressive speech act that expresses the very sincerity conditions of the former.
- Let m be some modality of intentionality. Tautologies $m(P) \rightarrow m(P)$ are theorems in any normal modal logic. Therefore, there is “propositional attitude commitment” between members of sincerity conditions (Ψ) of the corresponding speech acts: $m(P) \in \Psi(\Pi, P)$ and $m(P) \in \Psi(\Pi_{\text{expressive}}, m(P))$. And, finally $\Pi(P)$ commits to $\Pi_{\text{expressive}}(m(P))$.
- In our approach the speaker's commitment to i : “ φ ” can be defined as the permission $\mathbf{P}i$: “ φ ” together with a minimal conjunction of prohibitions for opposite speech acts $\mathbf{F}i$: “ ψ_1 ” $\wedge \dots \wedge \mathbf{F}i$: “ ψ_n ” (where $\{\psi_1, \dots, \psi_n\}$ is the smallest set s.t. if $[i : \varphi][\xi] \perp$, then $\xi \in \text{Cn}\{\psi_1, \dots, \psi_n\}$).

Proposition

$$m(P) \in \Psi(\Pi, P) \rightarrow (\Pi(P) \rightarrow \mathbf{F}(\Pi_{\text{expressive}}(\neg m(P))))$$

Generalized Moore's paradox: some examples

Proposition

$$m(P) \in \Psi(\Pi, P) \rightarrow (\Pi(P) \rightarrow \mathbf{F}(\Pi_{\text{expressive}}(\neg m(P))))$$

“Moore's paradox” is a violation of this proposition.

- ① It is raining but I don't believe it.
- ② I advise you to open the window. I don't think it is good for you.
- ③ I promise but do not intend to come.
- ④ Open the door! I don't want you to open it.
- ⑤ Please make me a tea. I don't want it.

Psychological basis of illocutionary logic

- The “transmission of commitments” is the logic of speech acts. The inheritance of deontic statuses from one “successfully performed illocutionary act” to other, not as yet performed speech acts, is how this logic manifests itself.

What are the logical relations between the various types of illocutions? In particular, under which conditions does the successful performance of one illocutionary act commit the speaker to another illocutionary act?

—Searle and Vanderveken. *Foundations of Illocutionary Logic*.

- The normative structure of discursive practice is the logic of discursive practice.
- There is a “psychological basis” in both kinds of relations of illocutionary logic. In case of $F_1^\pi(P) \triangleright F_2^\pi(P)$ the sincerity conditions are fixed or reduced; in case of $F_1^\pi(P) \triangleright F_2^{\pi^*}(Q)$ there is a commitment transmission between sincerity conditions. Therefore, Searle-Vanderveken theory of illocutionary logic is ultimately based on logic of intentionality. Thus, in the background we find an expressive conception of language: it is the logic of the intentional states that becomes visible in the speech acts’ commitment inheritance.

Priority of normative pragmatics

A different perspective is given by Robert Brandom: the normative dimension of discursive practice comes first. It is irreducible phenomenon that only later can be made explicit in a logical theory. In a series of papers Lance and Kremer (*Journal of Philosophical Logic* 1994, 1996, 2001) have tried to develop formal logical systems for Brandomian commitment based approach where “[by saying] that A entails B , we are making explicit a relation which was previously implicit in linguistic practice”.

Inferential relations among propositional contents are a matter of normative relations among deontic statuses. . .



Robert B. Brandom.

Making It Explicit: Reasoning, Representing, and Discursive Commitment. Harvard University Press, 1994.

This theory emphasizes the importance of *asserting* as a linguistic act: when a person makes an assertion, she undertakes certain commitments—to justify the assertion, and its consequences—and if these commitments are appropriately discharged, she secures *prima facie* entitlement to the assertion. This motivates consideration of an entailment-like connective “ \rightarrow ”, where “ $A \rightarrow B$ ” is to be read as “commitment to A is, in part, commitment to B ”. Given such a connective, to say (correctly) “ $A \rightarrow B$ ” is, in part, to make explicit the inferential moves to which the members of the linguistic community are committed, and thereby to shed light on the meaning or significance of the terms occurring in A and B .



Mark Lance.

The logical structure of linguistic commitment III Brandomian scorekeeping and incompatibility.
Journal of Philosophical Logic, 30:439-464, 2001.

Dilemma or trilemma?

- It seems that we are faced with the following dilemma in understanding logical structure of language use that is manifested in the transformations of deontic statuses of speech acts: either to base it on the logic of expressed psychological states like Searle and Vanderveken or to base it on preexisting linguistic practice as Brandom did.
- Nevertheless, the dilemma could be avoided by introducing the third conjecture: it is the logical structure of language that is fundamental and irreducible structure.
- The theoretical perspective of dynamic logic can give us tools to develop the conjecture.

The third way

- Successful speech act produces effects on intentional states of the hearer, sometimes it also changes the normative pattern to which the hearer's actions are subjected, and it always changes the normative pattern to which the speaker's speech acts are subjected.
- Given the fact that a speech act is performed by using a “structural element”, i.e., a sentence that bears logical relations to the other sentences, the logical structure of language is partially (locally) projected to its psychological and deontic effects.
- This theoretical view is an extension of “public announcement logic” and similar approaches.

[The] language [of *Public Announcement Logic*] allows us to make typical assertions about knowledge change like

$$[!P]K_i\varphi$$

which 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 $K_i\varphi$ 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.

Behind the effects

Under the dynamic approach it is not necessary to identify the logic of locutions (utterances, addressed mood-designated sentences) with the logic of its effects. The effects could be diverse, as the case of imperative sentences shows (as will be shown in the table on the next page). Rather an important theoretical question arises: *Which relation holds between the logic of locutions and the logic of effects achieved by speech acts performed by uttering them?*

The variety of linguistic effects

UTTERANCE'S	EFFECTS	
$[i : \text{"!}[j \text{ stit} : \varphi]]$	$B_j(\diamond\varphi \wedge \diamond\neg\varphi)$	j 's belief
$[i : \text{"!}[j \text{ stit} : \varphi]]$	$D_j\varphi$	j 's desire
$[i : \text{"!}[j \text{ stit} : \varphi]]$	$O_j[j \text{ stit} : \varphi]$	j 's obligation to do
$[i : \text{"!}[j \text{ stit} : \varphi]]$	$F\neg D_i[j \text{ stit} : \varphi]$	i 's sincerity obligation
$[i : \text{"!}[j \text{ stit} : \varphi]]$	$F_i[i \text{ stit} : \neg\varphi]$	i 's obligation not to do
$[i : \text{"!}[j \text{ stit} : \varphi]]$	$F_i(i : \text{"} \cdot \neg\diamond\varphi\text{"})$	i 's linguistic commitment

Examples of diverse effects of the same utterance given that appropriate preconditions are met (e.g. i and j are competent speakers, i has the authority over j , no conflicting directives are in force, j is trustful, ...).

The puzzle of imperative logic

- Prima facie it seems convincing that reduction to the logic of effects is not possible.
- In particular case of imperatives it is puzzling how can a sentence that is “about action” be identified in its meaning with its potential of changing beliefs and desires or of modifying “deontic score”?

Imperative content thesis

Regardless of its force on an occasion of use, the content of every imperative is agentive.



Nuel D. Belnap,
Michael Perloff, and
Ming Xu.

*Facing the Future:
Agents and Choices
in Our Indeterminist
World.*

Oxford University
Press, USA, 2001.

Imperative logic and other logics

Although imperative logic can be successfully studied as a logic of the will of command issuing authority (Segerberg, 1990) or as a kind of deontic logic (Chellas, 1971), its scope seems to be wider than the scope of logic of its preconditions and effects.

Thesis

There is an irreducible logic of imperatives and it is structurally similar to bouletic, doxastic and deontic logics.

Let us call the thesis on irreducible and autonomous logical structure of locutions—the thesis of logical structuralism.

The thesis will be partially justified if it can be proved that imperative logic as a source logic is rich enough to embed its target projections on the structures of intentionality and on the deontic structure.

The closest match is to be found between the imperative logic (as the logic of locutions) and the deontic logic of linguistic commitments.

The logic of language and the logics of its effects

- The thesis on structural similarities between the source logic of the locutions (higher logic) and the target logics of the effects of language use (lower logics) will be justified if we prove that target logics are sublogics of the source logic.
- A lower logic is a sublogic of a higher logic iff the lower logical structure (*sequitur* and *non sequitur* relations) is contained within the higher logical structure.
- The two logics need not have a common vocabulary and still the “logical geography” of the lower logic can be embedded into “logical geography” of the higher.
- It has been proved (Žarnić, 2007, 2011) that Cross’ modal logic of desire (*JPL*, 1997) is a sublogic of imperative logic that identifies the imperative content with agentives conceived in Von Wright’s sense.

Sublogic relation

- 1 Define logics semantically as the triple consisting of a set Φ of formulas, a set Σ of interpretations, and a satisfaction relation \models .
- 2 Define a parsimonious projection as function in the range of which there is at least one satisfying interpretation σ_2 for any satisfiable set of formulas Γ_1 of the lower logic L_1 .

Definition

For logics $L_1 = \langle \Phi_1, \Sigma_1, \models_1 \rangle$ and $L_2 = \langle \Phi_2, \Sigma_2, \models_2 \rangle$ a parsimonious projection π^* is a projection $\pi^* : \Sigma_2 \rightarrow \Sigma_1$ such that for any $\Gamma_1 \subseteq \Phi_1$ it holds that

$$\text{Mod}(\Gamma_1, \Sigma_1) \neq \emptyset \rightarrow \exists \sigma_2 [\sigma_2 \in \Sigma_2 \wedge \pi(\sigma_2) \in \text{Mod}(\Gamma_1, \Sigma_1)]$$

Sublogic

The necessary and sufficient condition for the possibility to embed the image of the lower consequence relation into the higher is the existence of the pair of a translation function from formulas of the lower logic L_1 to formulas of the higher logic L_2 and a parsimonious projection function from the subset of those interpretations of the higher logic that satisfy translational constant $\kappa \in \Sigma_2$ to set of interpretations of the lower logic.

Theorem (B.Ž.)

Let logic $L_1 = \langle \Phi_1, \Sigma_1, \models_1 \rangle$ be a logic with strong negation. Then for any logic $L_2 = \langle \Phi_2, \Sigma_2, \models_2 \rangle$ it holds that if there are: a sentence $\kappa \in \Phi_2$, a parsimonious function $\pi^* : \text{Mod}(\{\kappa\}, \Sigma_2) \rightarrow \Sigma_1$, and a function $\tau : \Phi_1 \rightarrow \Phi_2$ such that

$$\pi^*(\sigma_2) \models_1 \varphi_1 \text{ iff } \sigma_2 \models_2 \tau(\varphi_1)$$

for any $\varphi_1 \in \Phi_1$ and $\sigma_2 \in \text{Mod}(\{\kappa\}, \Sigma_2)$, then τ is a semantic relations preserving translation, i. e.

$$\Gamma_1 \models_1 \varphi_1 \Leftrightarrow \tau(\Gamma_1) \models_2^* \tau(\varphi_1)$$

where $\models_2^* \subseteq \text{Mod}(\{\kappa\}, \Sigma_2) \times \Phi_2$ and $\tau(\Gamma_1) = \{\tau(\varphi_1) \mid \varphi_1 \in \Gamma_1\}$.

Logical structuralism

- The strongest parallelism, the one stronger than sublogic relation, is to be expected to hold between imperative logic, on one side, and deontic logic of its projection to the structure of linguistic commitments, on the other side.
 - The parallelism is not straightforward in the “single-agent” setting. E.g., if φ entails ψ in imperative logic, it does not mean that the one who utters φ is obliged to utter ψ , rather it means that it is forbidden to him to utter a sentence that is incompatible with ψ . On the other hand, in communication, if requested, one ought to assent to entailments of his previous utterances or otherwise to withdraw some of these.

Representational content and logical structure

- The puzzling difference between representational contents of essentially connected parts of language prompts us to be receptive towards “inferentialist semantics” rooted in the proposal made by Carnap in 1930ies, e.g. *The Logical Syntax of Language*, where the “logical content” of a sentence is identified with the set of its consequences. The similarities between logical geography (their logical and not their representational content) of different logics justify the claim on the existence of an essential connection between them.
- The use of language is subjected to norms of logic because using a sentence means using an element of a logical structure and this structure is projected to the linguistic commitments of the speaker.
 - ▶ To use an analogy from the philosophy of mathematics: one cannot use or know the number 3 in isolation from other numbers—either we use the numerical structure or fail to use numbers.

A methodological conclusion

- Imperative logic cannot be studied in isolation from the deontic logic and the logic of intentionality.
- The research in imperative logic must include the investigation of the relations between logics. It is at the same time investigation *in logic* and investigation *of logics*.
- The critical element of the research is not given only by our “intuitions” and “counterintuitions” but rather by the harmony to be established between the logic of imperatives and logic of its diverse communicative effects.