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LOGICAL ROOT OF LINGUISTIC COMMITMENT

Introduction

Consider the following examples:

(1)   I blame you for fulfilling my request.

(2)   I claim what I believe to be untrue.

(3)   I refute every consequence of my own assertions.

In all the examples above we feel that something is incorrect. Why? Is sequencing of speech acts, such as from request to blame, subordinated to some normative requirement? If so, what is its source? In this paper, I will try to distinguish two theoretical positions on the issue and to delineate the third, conciliatory stance.

1   Language and social reality

Bertrand Russell gives the following division of the purposes for which language can be employed:

> 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. (Russell 1995, 204)

Let us use the metaphor of drama in the interpretation! The speaker is like an author composing scenarios with at most three players: the speaker, the hearer, the world. Simple difference between scenarios is given by the presence or the absence of a player (cf. the last sentence in the quote). More interesting difference arises when characters are assigned to players. Consider a pair of scenarios with the same number of players involved, which differ in character traits assigned to the speaker in all but one respect. In *Report* scenario, whatever the speaker says is some truth about the world; the speaker believes what he says and wants the hearer to believe it too. In *Deception* scenario, the speaker speaks about the world too, but sometimes what he says is not true and he knows it but wants the hearer to believe this falsity. In scenarios like these the role of the world is the role of an immutable object that the other two players speak about. It was one of the great discoveries of contemporary philosophy to find out that the world can and ought to play an active part in any realistic scenario: the world transforms with each scene. This is not to say that language use constantly creates facts of the physical world other than marks written or sounds made. It is not the physical world, but the social world that plays an active part.

Therefore, Russell's dictum needs revision and Austinian amendment:

Language serves four purposes.

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(4) to *change* the social world.

Although it seems obvious that social world consists of social facts, an accepted and exact definition of social fact is missing. The common elements in the classical Durkheim's definition and the modern one by Searle are notable: social fact is conceived as a kind of collective intentionality that is manifested in the form of projection from normative source to individual minds, and thereby possibly controlling their acts. 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 1982, 52). Let us extract the elements from the classical definition: normative source **s** ("external manners of acting, thinking and feeling") requires of individual i to conform to it ("coercive power"), and possibly that is realized ("control exercised"). For Searle, an object x has a social property F iff F is "created by collective intentionality" and that fact Fx transfers "deontic powers" to some mental states and acts dealing with x. We propose the following translation for Durkheim's definition (modified by allowing difference in "deontic powers"):

Definition 1.1. Let φ be an intentional state, an action or a locution of an actor i. Let $\odot_i^s \in \{P_i^s, F_i^s, O_i^s\}$ be a generic deontic operator that stands in place of 'It is permitted by **s** for i that . . . ', 'It is forbidden by **s** for i that . . . ', 'It is obligatory by **s** for i that . . . '.

φ is a social fact of a society **s** iff **s** requires conformation to φ from i, or, in short, $\odot_i^s \varphi$.

According to our translation of Durkheim's definition, the genus for the concept of social fact is the concept of deontically qualified intentional state, action or locution, describable by the schemata: '[deontic operator][intentionality or action operator][proposition]' or '[deontic operator][locution operator][utterance]'.

Example 1.1. $F_i B_i \varphi$ describes the social fact that i's believing that φ is forbidden for i.[1] O_i i stit: φ represents social fact that i's action of seeing to it that φ is i's obligation. P_i i:$\underline{\zeta}$ stands for the social fact that utterance ζ is permitted for i.[2]

Some social facts can be created by norm promulgation but those will not interest us here. What we are after are specific social facts arising from the logical structure of language used in their creation.

Example 1.2. Due to the logical structure of language by asserting premises of the modus ponens the speaker also creates the social fact, a bundle of linguistic com-

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[1]In this text it is assumed that the source superscript of the generic deontic operator is one and the same and is omitted for the ease of reading.

[2]In locution i:$\underline{\zeta}$ realizing utterance ζ is mentioned. Instead of quoting, underlining is used here. Shorthand notation for i's monologue discourse is i:$\underline{\zeta_1 \ldots \zeta_n}$.

mitments. The formula below describes a linguistic commitment, the prohibition of denial of conclusion of the modus ponens in any case where the speaker has asserted the premises:

$$[\text{i} \cdot \underline{\cdot (\varphi \rightarrow \psi)} \cdot \underline{\cdot \varphi}] \ \mathbf{F}_\text{i} \ \text{i} \cdot \underline{\cdot \neg \psi}$$

1.1 Creative power of language

At first sight it would appear that only a particular type of utterances can change or create social reality (can change deontic value of representations and acts), namely the type with *world-to-fit-the-word* direction of fit. According to the typology given by Searle and Vanderveken (1985) there are five types of "illocutionary points": assertive, commissive, directive, declarative, and expressive point. Three of these have world-to-word direction of fit: "the *commissive* point is to commit the speaker to doing something", "the *directive* point is to try to get other people to do things. . . ", "the *declarative* point is to change the world by saying so. . . " (Searle and Vanderveken 1985, 37). The world-to-word fit illocutionary points are defined by their normative effects: the first two by the direction of dispersion of deontic value to the speaker's or to the hearer's acts; the third creates a social property of an object or a person thus indirectly affecting the normative pattern for individual minds and their acts in relation to that object or person. The world-to-word utterances give a simple example of how language creates the social world: the speaker can change the deontic status of his own actions and of the hearer's actions either directly or indirectly. Nevertheless, it is a hasty conclusion that only commissives, directives and declaratives (performatives) have the power to change the deontic value, thus creating social facts. It will be argued here that the following thesis holds.

Thesis 1.1 (Deontic power of speech acts)**.** *Any locution can create some social fact.*[3]

It is probably the disregard for the type of action whose deontic status is being changed which makes us overlook the fact that the power of conferring deontic value to mental states and acts belongs to any speech act. Indeed, there are acts whose deontic status cannot directly be affected by speech acts of pure word-to-world direction of fit (assertives) or without any direction of fit (expressives). Therefore, the deontic status of non-speech acts is not directly prone to change by

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[3]According to the thesis, even a locution in a soliloquy creates a social fact. This consequence makes social fact seem less complex than it really is, as was remarked by Nenad Miščević in a communication. Nevertheless, even a solitary locution creates a bundle of linguistic commitments for the speaker, such as prohibition to deny or conditional obligation to assert the utterance that expresses the sincerity condition of the locution. If linguistic commitments had not been created, the locution would not have counted as a performance of a speech act. In line with the definition proposed here the emergence of deontic phenomenon, e.g. the emergence of linguistic commitments, is sufficient for a social fact to come into being.

a speech act that does not have world-to-word direction of fit.[4] On the other hand, any speech act can deontically affect some act from the speech-act category.

It has been recognized in the philosophy of language that there is a regularity connecting speech act performance and alteration in deontic value of some other speech act. Because of that, it became tempting to redefine logical relations between sentences in terms of a corresponding relation between deontic values of speech acts performed by uttering those sentences. New definitions for logical consequence can be found in philosophical texts of the middle decades of the 20th century, e.g., Wilfrid Sellars gave an explicit deontic reformulation of consequence relation in 1953.

> 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*. (Sellars 1953, 330)

Problem 1. In a limit case, the speaker may assert an absurd proposition or a proposition that creates absurdity in the context opened up by previous assertions of the speaker.[5] After that, is the speaker permitted to assert anything at all?

Solution 1. We must turn to our intuition on permission transfer to find the answer. Is it possible to encounter a situation in which any indicative utterance has opposing deontic values at the same time? If so, this will be a deontic variant of explosion principle.[6] On the other hand, if universal clash of deontic values equals destruction of all deontic values, then the consequence relation is not explosive.[7] In the absence of the semantic intuitions on the possibility of deontic collapse or on explosiveness of consequence relation, the answer can only be given within a theory that makes a choice regarding these matters.

Sellars' deontic redefinition of consequence relation can be used to prove Thesis 1.1 on regular deontic effects of language use. Assuming that a parallelism holds between consequence relation and distribution of deontic values over locutions, one can reason as follows. Suppose that a necessary condition for any consequence relation Cn is the weak reflexivity, i.e., $\varphi \in Cn(\{\varphi\})$. Because of the parallelism, any speech act performed by uttering φ makes itself permissible. Therefore, any speech act can change some deontic state of affairs if the consequence relation is weakly reflexive.

Notation. Let i:$\underline{\zeta}$ stand for 'i utters (emits) $\underline{\zeta}$' and let $[\chi] \odot_i$ i:$\underline{\zeta}$ stand for 'always after locution χ is realized, locution i:$\underline{\zeta}$ has deontic value $\odot$ for i'.

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[4]In *Open the window if the door is closed. ...The door is closed.* the second utterance does not have world-to-word direction of fit. Nevertheless, in the context it indirectly changes the deontic status of the hearer's act of opening the window.

[5]Thanks to Kosta Došen for posing this problem in a discussion.

[6]In tradition of the assertoric logic the explosion principle is phrased as *ex falso quodlibet*.

[7]Consequence relation Cn over language $\mathcal{L}$ in the sense of Tarski (1956) is a relation between subsets of $\mathcal{L}$, i.e. $Cn \subseteq \wp\mathcal{L} \times \wp\mathcal{L}$. Consequence relation is not explosive iff for no $\Gamma \subset \mathcal{L}$, $Cn(\Gamma) = \mathcal{L}$.

According to Sellars' principle the following propositions hold:[8]

$$\text{If } \xi \vdash \zeta, \text{ then } [\text{i}:\underline{\xi}] \ \mathbf{P} \ \text{i}:\underline{\zeta}. \tag{1}$$

$$\text{If } \xi_1 \vdash \zeta_1, \text{ then } \perp \in Cn(\{\zeta_1, \xi_2\}) \text{ implies } [\text{i}:\underline{\xi_1}] \ \mathbf{F} \ \text{i}:\underline{\xi_2}. \tag{2}$$

Example 1.3. Let us assume that in (5) and (6) the relevant preconditions are met. In (5) j is subordinated to i's authority and no conflicting requirements of other authorities of j are in force. In (6) i does not undergo attitude change, i.e., (4-d) and (4-e) are not speech acts of withdrawing one's own words. Speech acts exert a deontic effect on non-speech acts of the hearer and of the speaker, (5) below. Any speech act has a deontic effect on the speaker's speech acts, (6) below.

(4) a. i says to j: "Open the window!"
     b. j opens the window.
     c. i prevents j from opening the window.
     d. i says to j: "It is impossible to open the window."
     e. i says to j: "You are not allowed to open the window."

(5) After (4-a) it is obligatory for j that (4-b) and it is forbidden for i that (4-c).

(6) After (4-a) it is forbidden for i that (4-d) or (4-e).

There is a common objection raised against the thesis on deontic power of speech acts. It is claimed that deontic effects will appear only within an appropriate social context. If communication is not cooperative or not based on sincerity and trust, the objection goes, then no commitments will arise, neither for the speaker nor the hearer. The objection makes no distinction between internal or individually experienced commitments and external or socially imposed commitments. An external obligation need not have a psychological impact. An individual use of language is subjected to normative requirements but it need not conform to them.

Remark. The conformation of individual minds to normative requirements would justify the implausible reflexive principle: $\mathbf{O}\varphi \to \varphi$. On the other hand, requirements are connected to individual mind in such a way that they require conformation. Therefore, it would be at least acceptable to have in deontic modal logic the theorem on secondary reflexivity: $\mathbf{O}(\mathbf{O}\varphi \to \varphi)$. The corresponding frame property for the theorem is $\forall x \forall y (R_{\mathbf{O}} xy \to R_{\mathbf{O}} yy)$, whence the term 'secondary reflexivity'.

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[8]The second proposition is stated in a generalized form covering opposition relation instead of specific form of contradiction because the category of imperative utterances has no classical negation.

2 Logical relations of linguistic commitments

Let us define $\lambda^{i:\underline{\xi_1\ldots\xi_n}} = \lambda_{\mathbf{P}}^{i:\underline{\xi_1\ldots\xi_n}} \cup \lambda_{\mathbf{F}}^{i:\underline{\xi_1\ldots\xi_n}} \cup \lambda_{\mathbf{O}}^{i:\underline{\xi_1\ldots\xi_n}}$ as the set of general linguistic commitments of i generated in any case where i performs discourse $\xi_1 \ldots \xi_n$. The set $\lambda^{i:\underline{\xi_1\ldots\xi_n}}$ of general linguistic commitments created by i's discourse $\xi_1 \ldots \xi_n$ is composed of sets of possible utterances of i that are deontically valued as permitted or forbidden. In addition, there are also conditional obligations where a permissible locution plays the role of *faciendum*—an utterance that i is obliged to execute if asked to.[9] Linguistic obligations are conditional and triggered only in communication. Since communication involves at least two actors, the notion of linguistic obligation has no pair among logical notions from one-mind or one-agent category.[10]

2.1 Social structure and logic

The Sellars parallelism principle states that linguistic permissions correspond to discourse entailments and that linguistic prohibitions correspond to oppositions of discourse entailments.[11] It is a fact that linguistic commitments are subject to be changed by some continuation of the discourse, and normally they change: $\lambda^{i:\underline{\xi_0\ldots\xi_{n-1}}} \neq \lambda^{i:\underline{\xi_0\ldots\xi_{n-1}}\,\underline{\xi_n}}$. Therefore, after the continuation the discourse faces a new set of linguistic commitments. Are they generated? The answer is negative according to the normative pragmatics theory of Robert Brandom (1994): the transformation structure of linguistic commitments is a sui generis phenomenon. A discourse and its continuation realize one of possible transformations. The general laws of linguistic commitments transformations are the logic of natural language.

Brandom further develops Lewis' (1979) metaphor of "deontic scorekeeping": "the significance of a speech act is how it changes what commitments and entitlements one attributes and acknowledges" (Brandom 2001, 81). In this paper we monitor only a part of deontic score, the deontic value of the speaker's possible utterances, and of which, in contrast to Brandom, the speaker need not be aware.

Example 2.1. Suppose that always after i's utterance ξ_1, the utterance ξ_2 becomes forbidden for i, $[i:\underline{\xi_1}]\,\mathbf{F}\,i:\underline{\xi_2}$. Then the discourse $\xi_1\xi_2$ violates the norm and this normative or social regularity is theoretically captured (made explicit) by recognition of the logical relation of incompatibility or opposition.

Example 2.2. Suppose that always after i's discourse $\xi_0 \ldots \xi_{n-1}$ ($n \geq 1$) the following normative facts obtain: the utterance ξ_n becomes permitted for i, it becomes

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[9] $\lambda_{\mathbf{O}}^{i:\underline{\xi_1\ldots\xi_n}} = \{\mathbf{O}_i i:\underline{\xi} \mid \mathbf{P}_i i:\underline{\xi} \in \lambda_{\mathbf{P}}^{i:\underline{\xi_1\ldots\xi_n}}$ and for some j and some ξ' $[i:\underline{\xi_0\ldots\xi_n}]\mathbf{O}_i(j:\underline{\xi'} \to i:\underline{\xi})\}$.

[10] Johan van Benthem (2006) has introduced the distinction between the categories of logical notions having either zero-agent (e.g. consistency), one-agent (e.g. derivation), or social character (e.g. question-answer relation).

[11] The second clause of the principle is generalized here; cf. quotation above. An example is given in (6).

obligatory for i to utter ξ_{n+1} if an interlocutor j utters ξ', and it becomes forbidden for i to utter ξ_{n+2}. Now a number of logical properties and relations can be distinguished: the entailment of ξ_n by $\xi_0 \ldots \xi_{n-1}$, the entailment relation between $\xi_0 \ldots \xi_{n-1}$ and ξ_{n+1} together with question–answer relation between ξ' and ξ_{n+1}, the opposition relation between ξ_{n+2} and some utterance ξ_{n+3} that is conditionally obligatory, i.e. $\mathbf{O}_i \xi_{n+3} \in \lambda_{\mathbf{O}}^{i:\underline{\xi_1 \ldots \xi_{n-1}}}$.

It seems indubitable that by using language the speaker interacts with the social reality of their linguistic commitments.[12] Since this reality is normative, the interaction comes in the form of confirmatory, refutative or contributory discourse continuation. The speaker's utterance possibly starts from a non-terminal point with commitments of the speaker's previous discourse; she continues the game on the deontic score achieved by her previous discourse. The result need not be different from the previous score, as happens in confirmatory continuation where the utterance follows logically from the discourse. In contributory continuation, the deontic score changes either in a progressive manner by narrowing the range of permissible or in a regressive manner by widening it. The limit for the progressive continuation would be a complete discourse after which no further progression is possible: any additional utterance not following from the discourse will either require discourse revision or will destroy its consistency. The destructive continuation of a monologue discourse creates inconsistent commitment set. We call inconsistent commitment sets those that have both a permission and a prohibition for the same locution and those that have no permitted locutions. The class of all inconsistent commitment sets will be denoted by $\mathcal{F}$. This definition can be compared to an analogous definition of consistency of (a set of) norms:

> A set of norms is consistent if, and only if, the conjunction of all states pronounced obligatory by the norms with any one of the states pronounced permitted is a doable state of affairs, i.e., something which can be achieved through human action. (von Wright 1999, 34)

Our definition of inconsistency resembles the one given by the father of deontic logic, but only to an extent since logical properties of commitment sets and utterability (linguistic doability) are not discussed here.

Suppose that a discourse $\xi_0 \ldots \xi_{n-1}$ is consistent.[13] Then the possible transformations of linguistic commitments are:

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[12] Anna Brożek and Jacek Jadacki in their remarks to this paper have pointed out that in describing social reality social relations ought to be taken into consideration. From the perspective adopted here, social relations between actors are to be defined in terms of an assignment of deontic values to their acts and mental states. E.g. if it is forbidden for an actor to bring it about those states of affairs that the other desires not to obtain, then such a distribution of deontic values defines a certain type of social relation, which can be further specialized by additional conditions such as symmetry or asymmetry, and the like.

[13] We take that $n \geq 1$ denotes the length of discourse. The discourse $\xi_0 \ldots \xi_{n-1}$ is empty for $n = 1$.

1. the confirmatory continuation of discourse $\xi_0 \ldots \xi_{n-1}$ with ξ_n:
   $\lambda^{i:\underline{\xi_0\ldots\xi_{n-1}}} = \lambda^{i:\underline{\xi_0\ldots\xi_{n-1}}\,\underline{\xi_n}}$;

2. the rejective continuation of discourse $\xi_0 \ldots \xi_{n-1}$ with ξ_n:
   $\lambda^{i:\underline{\varphi_1\ldots\varphi_n}\,\underline{\xi_n}} \in \mathcal{F}$;

3. the constructive continuation of discourse $\xi_0 \ldots \xi_{n-1}$ with ξ_n:
   $\lambda^{i:\underline{\xi_0\ldots\xi_{n-1}}} \neq \lambda^{i:\underline{\xi_0\ldots\xi_{n-1}}\,\underline{\xi_n}}$ and $\lambda^{i:\underline{\xi_0\ldots\xi_{n-1}}\,\underline{\xi_n}} \notin \mathcal{F}$.

It is not, however, clear what is the origin of the parallelism between logical syntax and deontic score transformations of language use. In an early paper Brandom identified the two theoretical positions on the origin of deontic dimension of language use:

> 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. (Brandom 1983, 648)

The first position sees normative relations in language use as springing from (rational) relations between mental states. For the second position, which Brandom endorses, the normative structure of discursive practice is the basic structure upon which the logic of locutions rests. The twofold division of positions is not exhaustive.

The third stance sees logical syntax of language as independent.[14] It is neither a descendent of psychological nor of linguistic commitments. Neither of them need be the mother structure of the logical structure embedded in language. The similarity between the two normative structures—the rational structure of mentality and the normative structure of communication— is not the result of dominance of one over another but of the identity of their common source. Let this stance be termed 'logical structuralism' or 'logical projectivism' because it takes the logical syntax to be the ancestral structure projecting to the other two.[15]

Example 2.3. (Normative structure of individual mentality) In a situation w, i believes that $\Box(\varphi \leftrightarrow \psi)$ and i desires that φ. Relative to these mental states (prima facie or pro tanto), it is acceptable (rationally permissible, socially excusable, horizontally rational,...) for i that i desires that ψ and unacceptable that i desires that $\neg\psi$.[16] Nevertheless, it is metaphysically possible that i does not desire that ψ or that i desires that $\neg\psi$. The reasons for this can be both rational and non-rational. The absence of i's desire that ψ might reflect i's submission to the very demands of horizontal rationality, the one taking into account a larger set of i's mental states: e.g. in a simple case, i also desires $\neg\psi$, or, in a more complex case, i also believes

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[14]The term 'logical syntax' is used in the sense of Carnap (2001).

[15]I am indebted to Srećko Kovač for suggesting the term 'projectivism'.

[16]The terminological distinction between horizontal (from mental state to mental state) and vertical (from mental state to world) rationality has been drawn by Zangwill (2005).

that $\Box(\psi \to \theta)$ and desires that $\neg\theta$.[17] On the other hand, the presence of i's desire that $\neg\psi$ might show i's horizontal rationality failure, or i's vertical rationality failure if ψ is a historical necessity in w.

Example 2.4. (Normative structure of communication) See proposition (6) in Example 1.3 above.

2.2 Illocutionary logic and rationality

According to the expressive theory of language, the web of intentional (mental, psychological) states lies beneath the language surface. The complex and its transformations are subordinated to norms of maintaining rational coherence. The existence of norms of horizontal rationality over mental states gives rise to psychological commitments. The logic of locutions reproduces the pattern of the fundamental stratum of mentality, and so, commitments of a linguistic expression of a mental state are utterances expressing the psychological commitments of the mental state.

The discovery of the "strong parallelism between illocutionary commitment and propositional attitude commitment" has been made by Searle and Vanderveken in 1985.[18]

Example 2.5 (Directive illocutionary point and some of its forces). The propositional content condition of the primitive directive illocutionary point is that "the propositional content represents a future course of action of the hearer" (Searle and Vanderveken 1985, 61). Since primitive directive illocutionary point is typically expressed by an imperative utterance, the propositional content condition closely resembles the well-known imperative content thesis: "...the content of every imperative is agentive" (Belnap et al. 2001, 10). The directive illocutionary forces have a common preparatory condition Σ, which is the ability of the hearer to perform the requested act, (7) below, and common sincerity condition Ψ, which

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[17]It seems that logic of mentality is a paraconsistent one where inconsistency, such as the one given in the examples, does not lead to logical explosion but towards revision.

[18]Some aspects and results of their theory will be briefly summarized. The 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 hypothesized 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.

is the desire of the speaker that the hearer performs the desired act, (8) below. In our notation:[19]

(7) $\Sigma(i{:}! \underline{j\ \mathrm{stit}{:}\varphi}) = \{\mathrm{Can_j}\ j\ \mathrm{stit}{:}\varphi\}.$

(8) $\Psi(i{:}! \underline{j\ \mathrm{stit}{:}\varphi}) = \{\mathrm{D_i}\ j\ \mathrm{stit}{:}\varphi\}.$

According to Searle and Vanderveken, suggestion differs from directive only in its lesser degree of strength of the illocutionary point and of the sincerity conditions. According to the approach of (Žarnić 2012), practical suggestions differ from directives at the syntax level ('It might be good that j sees to it that φ' vs. 'j, see to it that φ!') as well as at the level of semantics.

According to Searle and Vanderveken there are relations of commitment transfer (-preservation, -inheritance) between speech acts. They have analysed the two types:

1. Illocutionary entailment or commitment preservation within the same illocutionary point Π over the same propositional content P: $F_1^\Pi(P) \rhd F_2^\Pi(P)$.

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: $F_1^{\Pi_k}(P) \rhd F_2^{\Pi_k^*}(Q)$.

As for the first type of commitment transfer they have proved the completeness theorem that shows that it can be syntactically captured "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" (Searle and Vanderveken 1985, 132).

Example 2.6. Consider these entailments within directive illocutionary point: (i) $||request||(P) \rhd ||direct||(P)$, (ii) $||direct||(P) \rhd ||suggest||(P)$ and (iii) $||request||(P) \rhd ||suggest||(P)$. The entailments are reversely constructed by syntactic operations: (i) by the restriction of μ mode of achievement $||direct||_{\mu=\mathrm{polite}}(P) = ||request||(P)$, (ii) by the increase in k degree of strength $||suggest||_{k+1}(P) = ||direct||(P)$, (iii) by the sequence 'k-increase; μ-restriction':

$$||suggest||_{k+1;\mu=\mathrm{polite}}(P) = ||request||(P).$$

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[19]Modal operator $\mathrm{Can_j}$ here stands for ability of j. Logic of ability has been developed by Brown (1992). The logic of actor's ability differs from the logic of alethic possibility. As noted by philosophical logicians, propositions (i) $j\ \mathrm{stit}{:}\varphi \to \mathrm{Can_j}\ j\ \mathrm{stit}{:}\varphi$ and (ii) $\mathrm{Can_j}\ j\ \mathrm{stit}{:}(\varphi \vee \psi) \to (\mathrm{Can_j}\ j\ \mathrm{stit}{:}\varphi \vee \mathrm{Can_j}\ j\ \mathrm{stit}{:}\psi)$ are obvious non-theorems in the logic of ability. The counterexample for (i) is an actor that picks the queen of hearts out of the deck but does not posses the ability to pick the queen of hearts out of the deck.

As for the second or the complex type of illocutionary commitment transfer (from a point over proposition to a possibly different point over a possibly different proposition) there is no completeness theorem in illocutionary logic. Therefore, one can not rely on syntactical operations over illocutionary point or propositional content to determine the complex type of illocutionary entailment. In accordance with the expressive theory of language, Searle and Vanderveken ultimately base illocutionary commitments on psychological commitments.[20]

2.3 A comparison between illocutionary logic and the third stance

The elements of illocutionary force can be treated as elements of syntax or as semantic effects occurring under certain preconditions. E.g., instead of having two separate forms $||command||\varphi$ and $||request||\varphi$, we take i:!φ to be the common form of request and command. Regarding its effects, request is a more general form.

(9)   After i utters !j stit: φ to j, j is obliged either to see to it that φ or to see to it that i knows that j will not see to it that φ:

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

The facts of social hierarchy $<$ mediate the effects of an imperative utterance and possibly make it a command (Žarnić 2011b):

$$\text{Ceteris paribus, if } j < i, \text{ then } [\text{i:!}\underline{\text{j stit: } \varphi}] \; \mathbf{O}_j \; \text{j stit: } \varphi.$$

The sentence (9) gives only a rough description of deontic effects of imperative utterance with respect to the hearer. In our approach, the speech act is determined by the locution, i.e., the pair consisting in the speaker's identity and an utterance. In contrast to this view, for Yamada (2011) the types of linguistic acts are irreducible wholes and so it is only the request that generates disjunctive or choice obligations. The inclusion of the speaker's identity into syntax, following Ju and Liu (2011), accounts for different effectual semantics of the same utterance.

Problem 2. You have been given a disgusting present by the giver saying: "Keep it in your window!".[21] Now, consider these two possibilities of yours. In the first,

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[20]In the transcription of the original formulation look at the last condition of rational-psychological entailment: "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 $P \in \bigcap \theta_\Pi(i)$ then $Q \in \bigcap \theta_{\Pi'}(i)$ and, secondly, $\bigcup \Psi(i,P) \rhd \bigcup \Psi(i,Q)$" (Searle and Vanderveken 1985, 134).

[21]This is a modified and simplified variant of the problem posed by Timothy Williamson in the discussion at the Inter-University Centre Dubrovnik course "Mind, World and Action". In the original version the person in the example promises to do their best to keep the present in the window, keeps their promise, but fail to keep it in the window because their best is not good enough. Since the promise is kept there is no indeterminacy in this case (Timothy Williamson, personal communication, October 9 2012). This shows that abstraction level of (9) is too high for the disjunction to be exhaustive.

you say to the giver: "No," thereby satisfying the epistemic part of the disjunctive obligation in (9). In the second possibility, you promise to do it, thereby choosing the obligation-to-do in (9), but are prevented from doing so. Consequently, the chosen disjunct is not satisfied. Therefore, outright refusal is more polite than a promise that might ultimately go unfulfilled. On the other hand, semantic intuition favours promise over refusal.

Solution 2. The principle (9) is formulated in the language where temporal restrictions on the hearer's action are abstracted away. Here the obligation to do is represented using proposition-deontic notions as:

(10)   It ought to be the case that j sees to it that φ.

Krister Segerberg (2003) has revealed the logical form that explicates (10):

(11)   In any possible future an act of j resulting in φ is obligatory for j from now till the moment when it is done by j.[22]

Promise or self-imposed obligation to do remains unfulfilled until the promised deed is finished. This leaves first disjunct indeterminate. Since semantic intuition needs determinate values, it is empty here. Therefore, the semantic intuition that gives preference to promise over refusal of request is deceptive.[23]

Example 2.7. According to the non-expressive approach delineated here, the ability proposition need not be treated as preparatory condition of directives (7), rather it follows from the utterance of an imperative and, therefore, the imperative fails if the ability proposition does not hold:

For all ψ, if $[i:!j \text{ stit}: \varphi]\psi$, then $[i:!j \text{ stit}: \varphi][i:\text{Can}_j j \text{ stit}:\varphi]\psi$.

The crucial condition for the complex illocutionary entailment $\Pi_k P \rhd \Pi_k^* Q$, i.e. for 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 $\vdash_{ML} \varphi \to \psi$ where φ describes sincerity conditions of $\Pi_k P$ and ψ describes sincerity conditions for $\Pi_k^* Q$. Note that the theorem $\vdash_{ML} \varphi \to \psi$ 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).[24] The thesis on correspondence between illocutionary commit-

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[22]The original formulation is: $\mathbf{ob}_i\alpha \equiv [H](\mathbf{until} \ \mathbf{done}_i\alpha)[D]\langle F\rangle\mathbf{done}_i\alpha$ (Segerberg 2003, 76) where [H] stands for 'it is historically necessary that', [D] for 'it is deontically necessary that', $\langle F\rangle$ for 'it will sometimes be the case that', $\mathbf{done}_i$ for 'i has just done α', and singular term α denotes a generic action of i.

[23]The dismissal of infallibility of semantic intuitions does not stand in opposition to the methodological thesis of (Brożek and Jadacki 2011, 25) that "the empirical fundaments of any theory of natural language are semantic intuitions".

[24]The discussion of the relation between the logic of intentionality, rationality conceived as a normative source and rationality conceived as a normative property has been given in Žarnić (2010).

ments and rationality 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, the sameness of effects determines the entailment (Thesis 2.1 below).

2.4   Moore's paradox and a theorem in logic of locutions

In our approach, the commitment of the speaker i to an utterance ξ means that locution i:$\underline{\xi}$ has some deontic value for i.

Definition 2.1. i is committed to ξ_n after i's discourse $\xi_0 \ldots \xi_{n-1}$ iff

- $[i:\underline{\xi_0 \ldots \xi_{n-1}}]\mathbf{P}_i \ i:\underline{\xi_n}$, and

- $[i:\underline{\xi_0 \ldots \xi_{n-1}}]\mathbf{F}_i \ i:\underline{\xi'}$ for all utterances ξ' such that $\bot \in Cn(\{\xi_n, \xi'\})$, and

- $[i:\underline{\xi_0 \ldots \xi_{n-1}}]\mathbf{O}_i(\chi \to i:\underline{\xi_n})$ for some locution χ.

Thesis 2.1. *The sequence of locutions* i:$\underline{\xi_0 \ldots \xi_{n-1}}$ *commits* i *to utterance* ξ_n *iff*   *for all* φ, $[i:\underline{\xi_0 \ldots \xi_{n-1}}]\varphi \leftrightarrow [i:\underline{\xi_0 \ldots \xi_{n-1}\xi_n}]\varphi$.

If we return to Sellars principle within the framework of Searle-Vanderveken theory, then the principle can be restated in a stronger form. It is not only the case that any locution can change its own deontic value, $[i:\underline{\xi}] \ \mathbf{P}_i \ i:\underline{\xi}$ but it can also change the deontic value of a locution that expresses its sincerity conditions.

Theorem 2.1. *Let* $\circledast_i$ *be a generic intentionality operator that stands in place of '*i *believes that . . . ', '*i *desires that . . . ', "*i *intends that . . . '. If* ξ *is an expressive for* i*'s intentional state* $\circledast_i$ *with content* φ *(i.e.* $\circledast_i\varphi$ *is a sincerity condition of locution* i:$\underline{\xi}$*), then utterance* ξ *commits* i *to utterance* $\cdot \circledast_i \varphi$.

Proof. Assume that $\circledast_i\varphi \in \Psi(i:\underline{\xi})$. In a normal modal logic $\circledast_i\varphi \to \circledast_i\varphi$ holds. Because of that, according to Searle and Vanderveken, there is "propositional attitude commitment inheritance" from sincerity condition of ξ to sincerity condition of $\cdot \circledast_i \varphi$. According to thesis on strong parallelism between illocutionary and propositional attitude commitments, there is also linguistic commitment transfer from locution i:$\underline{\xi}$ to locution i:$\underline{\cdot \circledast_i \varphi}$. Therefore, utterance ξ commits i to utterance $\cdot \circledast_i \varphi$. □

Proposition 2.2. *Any locution changes the deontic value of some locution expressing sincerity conditions of the former.*

Proof. Assume that i:$\underline{\xi}$. According to Searle-Vanderveken, any locution has some sincerity conditions. Let $\cdot \circledast_i \varphi$ be a sincerity condition for i:$\underline{\xi}$. Then, by Theorem 2.1, i is committed to $\cdot \circledast_i \varphi$. Finally, by Definition 2.1, $[i:\underline{\xi}]\mathbf{P}_i \ i:\underline{\cdot \circledast_i \varphi}$. □

Linguistic commitments are more clearly visible in the form of prohibitions then in the form of permissions or obligations. If utterance ξ commits i to an expressive $\cdot \circledast_i \varphi$, then it is forbidden for i to perform an expressive with negated sincerity condition.

Proposition 2.3. *If* $\circledast_i \varphi \in \Psi(i{:}\underline{\xi})$, *then* $[i{:}\underline{\xi}]\ \mathbf{F}_i\ i{:}{\cdot}\neg \circledast_i \varphi$.

Proof. We use Definition 2.1 and Theorem 2.1. □

Example 2.8. The generalized "Moore's paradox" arises from violation of the Proposition 2.3. E.g.,

(12)   It is raining but I don't believe it.

(13)   I advise you to open the window but I don't think it is good for you.

(14)   I promise but I do not intend to come.

(15)   Please make me some tea because I don't want any.

3   The third stance

The following propositions are closely related:

(T) $\xi_0 \ldots \xi_{n-1} \vdash_L \xi_n$.

(DS) $[i{:}\underline{\xi_0 \ldots \xi_{n-1}}]\ \varphi \leftrightarrow [i{:}\underline{\xi_0 \ldots \xi_{n-1}\ \xi_n}]\ \varphi$ for all linguistic commitments φ of i.

(NP) $\lambda^{i:\ \underline{\xi_n}} \subseteq \lambda^{i:\underline{\xi_0 \ldots \xi_{n-1}}}$.

(IL) $\Psi(i{:}\underline{\xi_0}) \cup \cdots \cup \Psi(i{:}\underline{\xi_{n-1}}) \vdash_{ML} \varphi$ for all $\varphi \in \Psi(i{:}\underline{\xi_n})$.

Proposition (T) states that there is consequence relation (of the logic L) from utterance sequence $\xi_1 \ldots \xi_{n-1}$ to utterance ξ_n. Proposition (DS) states that the discourse $\xi_0 \ldots \xi_{n-1}$ and its continuation by ξ_n generate exactly the same general linguistic commitments for the speaker. Proposition (NP) states that the speaker's linguistic commitments of the discourse $\xi_0 \ldots \xi_{n-1}$ include the linguistic commitments of the utterance ξ_n.[25] Proposition (IL) states that the descriptions of the psychological states expressed by $\{i{:}\underline{\xi_0}, \ldots, i{:}\underline{\xi_{n-1}}\}$ implies (in some modal logic ML of

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[25] Proposition (NP) gives a conceptualization of natural language consequence relation from a discourse to its continuation in terms of linguistic commitments. In a series of papers Lance and Kremer (1994, 1996, 2001) have developed formal logical systems for Brandomian commitment based approach where to "say that A entails B, we are making explicit a relation which was previously implicit in linguistic practice" (Lance and Kremer 1994, 373). They consider primarily assertive utterances and the consequence relation between singletons: "...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

intentionality) each description from the set of states expressed in i :$\underline{\overline{c}}_n$. According to Brandom's normative pragmatics, (T) holds in virtue of (NP) and similar facts about other interlocutors commitments. For Searle's and Vanderveken's illocutionary logic, (DS) holds because of (IL). In contrast to both, the position taken in this paper is that (T) explains (DS), (NP) and (IL).

Normally, locutions produce effects on the hearer's intentional states. Sometimes locutions change the normative pattern to which the hearer's actions are subjected. Almost always they change the normative pattern to which the speaker's speech acts are subjected. Locution act is executed by use of "structural element", i.e., an utterance that has fixed or logical relations from and to other utterance. Because of its logical relations, to use an utterance means to use a language. Utterance logical structure gets projected to its psychological and deontic effects. This theoretical view follows "public announcement logic" and related projects of dynamic logic.[26]

Under the dynamic approach, it is not necessary to identify the logic of utterances with a logic of any of its effects. The effects could be diverse as the case of imperative sentences shows (Table 1). Therefore, we are faced with an open question of discerning relations holding between the logics of utterances and their effects.

The diversity of effects that an utterance may have (Table 1) shows that narrowing the focus on some specific effects of it (either rational-psychological or normative-social) will place some other in the background. As concerns imperative utterance, the specific effects of it can be described in a language having a logical syntax for desire expressions or motivation descriptions or normative status reports. Which is the best match for imperative logic: logic of desire, logic of motivation or logic of obligation? The choice will be non-arbitrary only if one can prove that one of them can represent the others. And that opens a new question on how the connection between logics is to be established?

Besides these, other questions arise as for particular theories such as the representational theory of language. Assuming that any sentence has a part that bears a pictorial relation to an external reality it becomes puzzling how an imperative sen-

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moves to which the members of the linguistic community are committed. . . " (Lance and Kremer 1996, 425).

[26]Talking about *PAL* theory, Johan van Benthem gave an enlightening description of integrative role of the language of logic within differentiated scientific languages: "[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 high-lights 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 (van Benthem 2011, 51).

UTTERANCE'S	EFFECTS	
$[i:!\,j\text{ stit}:\varphi]$	$B_j(\Diamond\varphi \wedge \Diamond\neg\varphi)$	j's belief
	$D_j\varphi$	j's desire
	$\mathbf{O}_j\,j\text{ stit}:\varphi$	j's obligation to do
	$\mathbf{F}_i\,\neg D_j j\text{ stit}:\varphi$	i's sincerity obligation
	$\mathbf{F}_i\,i\text{ stit}:\neg\varphi$	i's obligation not to do
	$\mathbf{F}_i\,i:\cdot(\Box\varphi \vee \Box\neg\varphi)$	i's linguistic commitment
	. . .	. . .

Table 1: Examples of diverse effects of the same utterance. 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; …).

tence !j stit:φ being about addressee's action relates to sentences different in the content by being about the speaker's desire or about the hearer's required motivation or about normative status of actions of the interlocutors. Difficult questions abound, and we look for an alternative: the logic of utterances is not founded in some of its effect logics. In the alternative view the logic of utterances or natural language logic is the root of logics of its effects. That means that imperative logic must be in harmony with all the logics of its effects.[27]

Example 3.1. Is there a common representational element in i's directive addressed to j to see to it that φ, i's desire that j sees to it that φ, j's belief that it is within his ability to see to it that φ, prohibition for i to see to it that $\neg\varphi$, or permission for i to say that he does not desire that j sees to it that φ? Although φ seems to be a common characteristics, it is at best a part, appearing within all representational contents that nevertheless retain their differences (provided that in someone's theory the term 'representational content' appears in the vocabulary).

If locution is taken to be the basic unit of analysis, then it is not possible to abstract out the identity of the speaker. This would erase the first place in two-place locution form 'who? said *what*?'. Furthermore, the *what*? or the utterance part of locution is another complex entity, which can be constructed by joining modal and descriptive part and by composing the complexes thusly constructed. Is descriptive part suitable for the role of representational content? No. Counterexamples

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[27]In (Žarnić 2011a) the relation between the root logic and its effects logic has been explicated by superlogic-sublogic relation. Sublogic is structurally similar to its superlogic: the consequence relation of the former is contained within the consequence relation of the latter. The two logics need not have a common vocabulary and still the "logical geography" of a sublogic can be embedded into "logical geography" of its superlogic. It has been proved that Cross' (1997) modal logic of desire is a sublogic of imperative logic that identifies the imperative content with agentives conceived in Von Wright's (1966) sense.

easily come to mind: intending to do is not the same as being obliged to do, believing that φ is not the same as being forbidden not to desire that the hearer sees to it that φ, ... The connection between imperative logic and logics of its effects is more subtle than the representational element would permit.

3.1 The descriptive language for locution effects

In this paper several interconnected languages have been considered and used to describe the reality of actors $i \in$ Actor by way of a construction that begins with propositional letters $p \in$ Atom:

$$\mathcal{L}_{\text{reality}} \qquad \varphi ::= p \mid \perp \mid \circledast_i \varphi \mid i \, \text{stit} \colon \varphi \mid \odot_i \varphi \mid \neg \varphi \mid (\varphi \wedge \varphi) \mid \chi \mid$$

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

$$\mathcal{L}_{\text{locution}} \qquad \chi ::= i \colon \underline{\xi} \mid \chi\chi \mid$$

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

The sentential form $[\chi]\varphi$ of $\mathcal{L}_{\text{effect}}$ describes the general or regular effect of locution χ of $\mathcal{L}_{\text{locution}}$ in terms of description φ of $\mathcal{L}_{\text{reality}}$.

The description of a locution effects can be restricted to some part of the descriptive language $\mathcal{L}_{\text{reality}}$. In deontic approach, the effects will be described in the language $\mathcal{L}_{\text{deontic}} \subset \mathcal{L}_{\text{reality}}$ having only those sentences whose main operator is deontic. Even stricter limitations can be imposed. E.g. the formula type $[i \colon \underline{\xi}_0 \ldots \underline{\xi}_{n-1}] \odot_i (\varphi \rightarrow i \colon \underline{\xi}_n)$ restricts description to locutions of i and their deontic effects on i's utterances, thus revealing linguistic commitments of i created by his own utterances.

For Bertrand Russell, one of the purposes of the language is alteration of the state of the hearer. The intentional state of the hearer is usually described from the two standpoints: bouletic view exposes the hearer's desire, doxastic view displays the hearer's belief. Imperative locutions $i \colon !j \, \text{stit} \colon \varphi$ can alter, inter alia, the bouletic state of the hearer. The language $\mathcal{L}_{\text{effect}}$ describes the general aspects of this with the formula $[i \colon !j \, \text{stit} \colon \varphi] D_j \psi$. Looking at other alterations some of these can be described in doxastic terms, some in deontic terms. At close distance one can distinguish, as has been done here, within deontically valued acts those that make up the speaker's linguistic commitments created by their own utterances, described by locution effects formulas such as $[i \colon !j \, \text{stit} \colon \varphi] \odot_i (\psi \rightarrow i \colon \underline{\xi})$, showing a part of social reality altered by the speaker's own utterances. It has been the thesis of this paper that unlike other effects of a monologue discourse, linguistic commitments stand in a direct correspondence to the logic of utterances (see Thesis 2.1 above).

Conclusion The theoretical description of locution effects on reality can be formulated within the language $\mathcal{L}_{\text{effect}}$ that relates the languages containing a number of logical elements: sentence mood '·' or '!', intentionality '$\circledast_i$', action 'i stit:', locution 'i: $\underline{\quad}$ ', deontic '$\odot_i$', and locution effects '$[\chi]$' operators. Two parallelism hypotheses have been adopted and the third one on their relationship has been put forward. 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 origin of all other logics used in describing psychological and social realities. Consequently, the imperative logic or 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 and bouletic ones. It can be studied only in relation to deontic logics of the hearer's obligation and the speaker's linguistic commitments and in relation to logics of intentionality of the speaker's expression and the hearer's impression. Therefore, research *in logic* of imperative and other utterances must include investigation of relations *between logics*.

References

Belnap, N. D., M. Perloff, and M. Xu (2001). *Facing the Future: Agents and Choices in Our Indeterminist World*. Oxford University Press, USA.

van Benthem, J. (2006). Introduction: Alternative logics and classical concerns. In J. van Benthem, G. Heinzmann, M. Rebuschi, and H. Visser (Eds.), *The Age of Alternative Logics*, pp. 1–7. Dordrecht: Springer.

van Benthem, J. (2011). *Logical Dynamics of Information and Interaction*. Cambridge: Cambridge University Press.

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

Brandom, R. (2001). *Articulating Reasons: An Introduction to Inferentialism*. Harvard University Press.

Brandom, R. B. (1994). *Making It Explicit: Reasoning, Representing, and Discursive Commitment*. Harvard University Press.

Brown, M. A. (1992). Normal bimodal logics of ability and action. *Studia Logica: An International Journal for Symbolic Logic 51*(3/4), 519–532.

Brożek, A. and J. Jadacki (2011). Dilemmas in the theory of imperatives. In A. Brożek, J. Jadacki, and B. Žarnić (Eds.), *Theory of Imperatives from Different Points of View*, Logic, Methodology & Philosophy of Science at Warsaw University 6, pp. 25–43. Warsaw: Wydawnictwo Naukowe Semper.

Carnap, R. (2001). *The Logical Syntax of Language*. London: Routledge. First published in 1937.

Cross, C. B. (1997). The modal logic of discrepancy. *Journal of Philosophical Logic 26*, 143–168.

Durkheim, E. (1982). In S. Lukes (Ed.), *The Rules of Sociological Method*. New York: The Free Press. (*Les Règles de la Méthode Sociologique*, 1895).

Ju, F. and F. Liu (2011). Prioritized imperatives and normative conflicts. *European Journal of Analytic Philosophy 7*(2), 35–58.

Lance, M. (2001). The logical structure of linguistic commitment III: Brandomian scorekeeping and incompatibility. *Journal of Philosophical Logic 30*, 439–464.

Lance, M. and P. Kremer (1994). The logical structure of linguistic commitment I: Four systems of non-relevant commitment entailment. *Journal of Philosophical Logic 23*(4), 369–400.

Lance, M. and P. Kremer (1996). The logical structure of linguistic commitment II: Systems of relevant commitment entailment. *Journal of Philosophical Logic 25*, 425–449.

Lewis, D. (1979). Scorekeeping in a language game. *Journal of Philosophical Logic 8*(1), 339–359.

Russell, B. (1995). *An inquiry into meaning and truth*. London: Routledge. The William James lectures for 1940 delivered at Harvard University. First published in 1950.

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

Segerberg, K. (2003). Some Meinong/Chisholm theses. In K. Segerberg and R. Sliwinski (Eds.), *Logic, Law, Morality (Thirtheen essays in practical philosophy in honour of Lennart Åqvist)*, Volume 51 of *Uppsala Philosophical Studies*. Uppsala: Uppsala University, Department of Philosophy.

Sellars, W. (1953). Inference and meaning. *Mind 62*(247), 313–338.

Tarski, A. (1956). On some fundamental concepts of metamathematics. In *Logic, semantics, metamathematics : papers from 1923 to 1938*, pp. 30–37. Oxford: Clarendon Press. First published in 1930. in *Comptes Rendus des séances de la Société des Sciences et des Lettres de Varsovie* vol. 23.

von Wright, G. H. (1966). The logic of action : a sketch. In N. Rescher (Ed.), *The Logic of Decision and Action*, pp. 121–136. Oxford: University of Pittsburgh Press.

von Wright, G. H. (1999). Deontic logic: a personal view. *Ratio Juris 12*, 26–38.

Yamada, T. (2011). Acts of requesting in dynamic logic of knowledge and obligation. *European Journal of Analytic Philosophy 7*(2), 59–82.

Zangwill, N. (2005). The normativity of the mental. *Philosophical Explorations 8*, 1–19.

Žarnić, B. (2010). A logical typology of normative systems. *Journal of Applied Ethics and Philosophy 2*(1), 30–40.

Žarnić, B. (2011a). Dynamic models in imperative logic. In A. Brożek, J. Jadacki, and B. Žarnić (Eds.), *Theory of Imperatives from Different Points of View*, Logic, Methodology & Philosophy of Science at Warsaw University 6, pp. 60–119. Warsaw: Wydawnictwo Naukowe Semper.

Žarnić, B. (2011b). Prelude to a socio-logic of imperatives. *European Journal of Analytic Philosophy 7*(2), 6–16.

Žarnić, B. (2012). Is unsaying polite? In M. Trobok, N. Miščević, and B. Žarnić (Eds.), *Between Logic and Reality: Modeling Inference, Action and Understanding*, pp. 197–219. Dordrecht: Springer.