

Logic, Concepts, and Communication

Concepts of Formal Pragmatics and Formal Pragmatics of Concepts

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Overview: current phase

The fourth part of the LogiCCom project aims to develop a framework of formal pragmatics suitable for the analysis of logical phenomena in the context of communication. The leading hypothesis is that logical concepts of “zero-agent logic” and “one-agent logic” have their “socio-logical” counterparts. In the first phase of the research logical concepts of formal pragmatics are being developed. The formal language suitable for the purpose has been introduced by connecting the ideas coming from the three influential theories in the philosophical logic: Searle-Vanderveken’s illocutionary logic, Brandom’s normative pragmatics and van Benthem’s dynamic logic. Currently the social counterpart of the logical concept of (theory, belief, ...) revision has been studied and it has been proved that a shift from trustful and hierarchical types of communication to argumentative type of communication is a condition of possibility of the revision of collective intentionality towards the restoration of communicative coherence. Thus the causal role of logical concepts, namely, of communicative incoherence as the social counterpart of the inconsistency of a theory or a set of intentional states, has been shown. Also the role of argumentative type of communication in the process of resolving communicative incoherence has been established.

Overview: further research

It has been discovered that the investigation of normative aspects of communication is an essential part of a logical theory of pragmatics. So, in the future work these aspects must be considered more fully in order to reveal the proper logical part within the “ethics of communication (types)”. Again the complex structure of argumentative communication type will provide the critical point for testing the framework of the formal pragmatics. Finally, taking into account the results achieved in all segments of the LogiCComproject, the problem of formal-pragmatical theory of concepts will be addressed. In a short formulation, the research proceeds from the explication of logical concepts of pragmatics towards the development of a formal pragmatics of concepts.

The members of LogiCCom project primarily engaged in the formal pragmatics segment of the research are: Berislav Žarnić (formalization of pragmatics, normativity in communication, pragmatic theory of concepts) and Gabriela Bašić, PhD student (argumentation, normativity in communication).

Logical pragmatics

- The central logical concepts, such as ‘consequence’ and ‘consistency’, can be explicated in semantic and in syntactic terms.
- The syntactic and semantic explications need not be coextensive in a logic. Therefore, for each logic the relation of between syntactic and semantic characterizations must be investigated. Questions like *is the syntax of a given logic strong enough for its semantics* arise. For example, if the question is affirmative, then the logic under investigation is called *complete* and in it holds that *if a sentence is the semantic consequence of a set of sentences, then it is also the syntactic consequence of the set.*

Semiotics

- There are three dimension of semiotics: the syntactical, the semantical, and the pragmatial dimension. Given the fact that logical concepts can be explicated using syntactic and semantic notions the question of their pragmatic explication arises.
- A significant number of theoretical approaches has been developed over the years, but an integrative approach is still missing. This segment of LogiCCom project relies on an integrative methodology.

An early example of the pragmatic explication of consequence relation

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 (1953).

Inference and meaning.

Mind, 62(247):313–338

The foundations of socio-logic

Expressive conception
of language
Illocutionary logic.

JOHN SEARLE and DANIEL VANDERVEKEN have revealed the structure of communicative action (speech-act) as an expression of individual psychological states.



Normative conception
of language
Normative pragmatics.

ROBERT BRANDOM has shown how use of language reshapes the distribution of normative values over communicative acts (linguistic commitments).



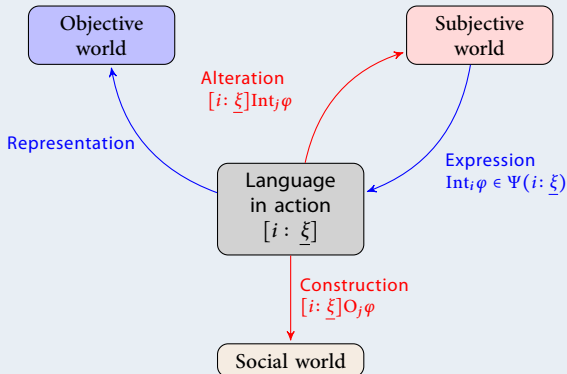
Logico-structural conception
of language
Dynamic logic.

JOHAN VAN BENTHEM has given the syntax and semantics of the formal language appropriate for the analysis of how language creates social world.



Locution as expression and action

Habermas ontology and formal pragmatics



The three theories (illocutionary logic, normative pragmatics, dynamic logic) can be connected within the framework of Habermas' ontology.

- The connection with Searle's and Vanderveken's illocutionary logic is the thesis that *locutions express intentional states*. The connection with Brandom's normative pragmatics is the thesis on *parallelism between the logical structure of language and the structure of linguistic commitments*. The connection with van Benthem's dynamic epistemic logic is in the thesis that *language in use shapes collective intentional states* and in the methodological approach.
- The aims are to connect the theses and to determine the normative contexts that enable the formation of collective intentional states in communication (=language mediated social interaction).

Communication types

- Formal pragmatics deals inter alia with the effects of language use. The effects occur in communication. There are different types of communication. So, in order to investigate the effects of language use formal pragmatics must determine the types of communication.
- The formula “always after the speech-act performed by emitting sentence ξ it is the case that φ ”, $[\xi]\varphi$, as the basic sentence of dynamic logic abstracts away from specific communication types.
- The hypotheses of our approach are:
 - communication types influence the effects of language use,
 - the effects of language use depend on the identity of the sender,
 - communication is a norm governed activity.
- According to hypotheses, the basic formula is “within the communication type C after the actor s emits sentence ξ it is the case that an intentional state or act of the actor r acquires deontic value Δ for r ”, if C , then $[s : \underline{\xi}]\Delta_r\varphi(r)$.

Principal– or α –norm of communication

A norm of language-use that enables sharing of attitudes (formation of collective intentionality).

Notice how three approaches are connected: the expression of an attitude from [IL] illocutionary logic, the deontic value of language use effects from [NP] normative pragmatics, and the alteration of an intentional state from [DL] dynamic logic.

[IL] *Linguistically expressed attitudes of one actor* [NP] *ought to be*
[DL] *shared by every actor in the communication group.*

Definition

Let G be a communication group.

If $\text{Int}_i \varphi \in \Psi(i: \underline{\xi})$, then $[i: \underline{\xi}] \text{O}_j \text{Int}_j \varphi$ for any $i, j \in G$. (α -norm)

Example

Suppose that the sender's belief that she went to the pictures yesterday is expressed by the act of her saying that she went to the pictures yesterday: $B_s \varphi \in \Psi(s: \underline{\varphi})$. After the communicative act $s: \underline{\varphi}$ the receiver is obliged by α -norm to share the attitude, i.e., to believe that the sender went to the pictures yesterday: $\text{O}_r B_s \varphi$.

Some important norms

For the purpose of defining main communication types the following norms are needed:

- the α -norm has been discussed on the previous page, its special cases are: Linguistic responsibility norm where $s = r$, and Strong trust norm where $s \neq r$;
- Linguistic responsibility norm the sender is obliged to have an intentional state expressed by her/his locution;
- Permissive communication norm the receiver is permitted not to share any intentional state expressed by the sender's locution.

If $\text{Int}_i \varphi \in \Psi(i : \underline{\xi})$, then $[i : \underline{\xi}] \text{O}_j \text{Int}_j \varphi$. (α -norm)

If $\text{Int}_s \varphi \in \Psi(s : \underline{\xi})$, then $[s : \underline{\xi}] \text{O}_s \text{Int}_s \varphi$. (Linguistic responsibility norm)

If $\text{Int}_s \varphi \in \Psi(s : \underline{\xi})$ and $s \neq r$, then $[s : \underline{\xi}] \text{O}_r \text{Int}_r \varphi$. (Strong trust norm)

If $\text{Int}_s \varphi \in \Psi(s : \underline{\xi})$ and $s \neq r$, then $[s : \underline{\xi}] \text{P}_r \neg \text{Int}_r \varphi$.
(Permissive communication norm)

Communication types

The norm of responsibility has a special status: being a regulatory rule, it can be violated, but the violation cannot be linguistically expressed in a sensible way, since the consistency norm is a constitutive rule. So, the expectation of observance of the norm of linguistic responsibility seems to characterize the main types of communication.

Assuming general belief in the observance of the responsibility norm, a further subdivision of communication types can be introduced using the expectations within a communication group as the criterium divisionis:

- the general belief that the norm of strong trust is being observed defines *trustful communication*;
- the general belief that the permissive norm is being complied with defines *argumentative communication*;
- the general belief that the trust obligations and distrust permissions are unevenly distributed defines *hierarchical communication*.

The essential alteration formula $[\underline{\xi}]\varphi$ is valid in the trustful communication type. The possibility of “making it the case by believing it to be the case” is a peculiar phenomenon of the ontology of the social world. A good example is a phenomenon occurring in the trustful communication: the strong trust norm is being observed thanks to the general belief that it is observed.

Proposition (True by belief)

If everyone in a communication group is rational and believes that the strong trust norm is being observed by everybody, then it is in fact observed.

If for all $a \in G$ it holds that $B_a \bigwedge_{i,j \in G} ([i: \underline{\xi}]O_j \text{Int}_j \varphi \rightarrow [i: \underline{\xi}] \text{Int}_j \varphi)$, then $[i: \underline{\xi}] \text{Int}_j \varphi$.

Proof.

Let $[i: \underline{\xi}]O_j \text{Int}_j \varphi$. Suppose that j is rational but violates the norm so that after the locution $i: \underline{\xi}$ has been performed the actor j does not have the required intentional state $\neg \text{Int}_j \varphi$. Assuming the postulate on the introspective accessibility of intentional states, the actor j is aware of her own intentional state that violates the norm, $B_j \neg \text{Int}_j \varphi$. On the other hand, the actor has the strong trust norm observance belief and, therefore, j believes that she has the required state, $B_j \text{Int}_j \varphi$. Since j is rational she does not have inconsistent beliefs. Therefore, the strong trust communication norm generally believed to be observed is in fact observed. \square

Revision as a socio-logical phenomenon

A logical phenomenon similar to attitude inconsistency at individual level can also be found at the collective level. Let it be called *communicative incoherence* since it points to the fact that there is a disagreement within the group, which has been revealed in communication. The trustful communication type cannot deal with the communicative incoherence since incoherent discourse destroys the rationality of actors, while the formation of collective intentionality fails.¹ The perplexing situation of communicative incoherence shows that a switch from one type of communication to another is needed: from the trustful communication (defined by the general belief in the observance of the strong trust norm) to the argumentative communication (defined by the general belief in the validity of permissive communication norm), which allows distrust. The argumentative type of communication can also be thought of as the one having the empty relation of communicative authority.

¹For example, in the context of the trustful communication type, an incoherent discourse, such as $s_1 : \underline{\xi} \quad s_2 : \underline{\xi}'$ expressing contradictory states $\text{Int}_{s_1} \varphi \in \Psi(s_1 : \underline{\xi})$ and $\text{Int}_{s_2} \neg\varphi \in \Psi(s_2 : \underline{\xi}')$, will lead to attitude inconsistency on the side of the receiver r who will become (obliged to have) inconsistent intentional states.

Communication types as configurations of authority distribution

- The fact of non-resolvability of communicative incoherence within the social context of the trustful communication type shows that a social change, namely, the change of normative context is necessarily included in the revision of collective intentionality.
- The emptiness of communicative authority relation does not imply the absence of the deontic effects of language use, which now typically occur in the form of the sender's linguistic commitments.
- The types of communication in which the relation of communicative authority is universal, i.e., where rule (Strong trust norm) holds, or empty, i.e., where rule (Permissive communication norm) holds, are borderline cases, while in between there lies the third, more realistic type covering a wide family of configurations with non-equal distribution of communicative authority.

Social dynamics as a condition of possibility of logical dynamics

- Only in some instances of the third type of communication it is the case that communicative incoherence can be resolved in a conservative manner by retaining the existing communicative authority configuration and assigning the obligation to revise their own intentional states to individual actors along asymmetric relations.
- On the other hand, the non-conservative form of resolution of communicative incoherence includes the change in communicative authority relations and it consists in iterative interchanges of the trustful and argumentative communication types.
- Conservative form is non-effective when there is a clash or circularity in communicative authority relations.
- Thus, social dynamics is a condition of possibility of logical dynamics in reconstruction of collective intentionality.