

Dialogue in Peirce, Lotman, and Bakhtin: A comparative study

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Abstract. The notion of dialogue is foundational for both Juri Lotman and Mikhail Bakhtin. It is also central in Charles S. Peirce's semeiotics and logic. While there are several scholarly comparisons of Bakhtin's and Lotman's dialogisms, these have yet to be compared with Peirce's semeiotic dialogues. This article takes tentative steps toward a comparative study of dialogue in Peirce, Lotman, and Bakhtin. Peirce's understanding of dialogue is explicated, and compared with both Lotman's as well as Bakhtin's conceptions. Lotman saw dialogue as the basic meaning-making mechanism in the semiosphere. The benefits and shortcomings of reconceptualizing the semiosphere on the basis of Peircean and Bakhtinian dialogues are weighed. The aim is to explore methodological alternatives in semiotics, not to challenge Lotman's initial model. It is claimed that the semiosphere *qua* model operating with Bakhtinian dialogues is narrower in scope than Lotman's original conception, while the semiosphere *qua* model operating with Peircean dialogues appears to be broader in scope. It is concluded that the choice between alternative dialogical foundations must be informed by attentiveness to their differences, and should be motivated by the researcher's goals and theoretical commitments.

Keywords: dialogue; dialogism; games; logic; game theory; semiotics; semiosphere

Introduction

The notion of dialogue is foundational for both Juri Lotman and Mikhail Bakhtin. For Lotman, dialogue is an ontological characteristic of the semiosphere, and the ground for all meaning-making processes therein. For Bakhtin, dialogism is a pervasive feature of language, thought, and understanding – every sign exists in response to past signs as well as in anticipation of future replies. Semiotics has dual origins in Charles S. Peirce's

semeiotics, and Ferdinand de Saussure's *semiology*. While both Lotman and Bakhtin drew on Saussure, neither engaged deeply with Peirce. However, the notion of dialogue is also central in Peirce's semeiotics and logic. There are several scholarly comparisons of Bakhtin's and Lotman's dialogisms (Bonafin 1997; Danow 1986, 1991; Shukman 1989). My goal is to take tentative steps toward a comparative study of Peirce's semeiotic dialogues and those of Lotman and Bakhtin. First, Peirce's understanding of dialogue will be explicated. Second, his semeiotic dialogues are compared with Lotman's understanding of dialogue, and its place in the semiosphere. Third, Peirce's dialogues are compared with Bakhtin's dialogism. Finally, given the central place of dialogue in semiosphere, the benefits and shortcomings of reconceptualizing the semiosphere on the basis of Peircean and Bakhtinian dialogues are weighed. The aim is to explore methodological alternatives in semiotics, not to challenge Lotman's initial model.

Dialogue in Peirce's semeiotics

The importance of dialogue in Bakhtin's and Lotman's respective oeuvres is well known. Dialogical conceptions in Peirce's semeiotics, however, have only recently been explicitly recognized and studied. I will support my claims with a selection of dialogical notions from Peirce's writings on semeiotics, logic, and communication. The following material is largely drawn from Pietarinen 2006.

Throughout his career, Peirce proposed numerous definitions of signs. He offers the following dialogical definition in a letter addressed to Christine Ladd-Franklin:

A sign is an object made by a party we will call the utterer, and determined by his idea, which is the sense or depth of the sign, in order to create in the mind of the interpreter an interpretant idea of the same object. (MS L 237: 1)

In Peirce's logic (which, through its later developments at the hands of others, became known as first-order logic) quantifiers, connectives, and negation are understood as parts of a dialogue or interrogation game between two parties or functionaries – the Utterer and the Interpreter (Brock 1980; Hilpinen 1982, 2004; Pietarinen 2006: 77). For example, Peirce provides the following interpretation of the universal quantifier 'every':

Every belief is belief in a proposition. Now every proposition has its predicate which expresses *what* is believed, and its subjects which express of *what* it is believed.[...] A proposition, then, has one predicate and any number of subjects. The subjects are either names of objects well known to the utterer and to the

interpreter of the proposition (otherwise he could not interpret it) or they are virtually almost directions how to proceed to gain acquaintance with what is referred to. Thus, in the sentences “Every man dies”; “Every man” implies that the interpreter is at liberty to pick out a man and consider the proposition as applying to him. (CP 5.542)

We find a corresponding interpretation of the quantifier ‘any’:

“Any man will die,” allows the interpreter, after collateral observation has disclosed what single universe is meant, to take any individual of that universe as the Object of the proposition, giving, in the above example, the equivalent “If you take any individual you please of the universe of existent things, and if that individual is a man, it will die.” (EP 2: 408)

These interpretations foreshadowed 20th-century game-theoretical interpretations advanced by Jaakko Hintikka (1973) and others (see Saarinen 1979). Peirce’s motivation, like that of his successors, was to spell out the meaning of quantified statements through the dialogue partners’ activities in interpreting them (cf. Pietarinen 2006: 82).

Peirce’s theory of existential graphs was motivated by his tendency to interpret language visually, and his desire for a diagrammatic method for representing the logical movement of thought. The details are irrelevant at this point. What matters is his interpretation of the theory via a dialogue between two parties:

The utterer is to determine the meaning of one sign, the interpreter of the other. Whichever of the two has the last choice is supposed to know what the previous determinations were. Consequently, the utterer, who is essentially a defender of his own utterance has an advantage in choosing last; while the interpreter, as not being necessarily a defender of that which he interprets, but rather a critic, and quasi-opponent, is as such, at a relative disadvantage [...]. (MS 9: 2–3)

Elsewhere, he adds that “every logical evolution of thought should be dialogic” (CP 4.551).

Indeed, Peirce repeatedly affirms that all thought and deliberative reasoning is dialogical:

[...] all deliberative mediation, or thinking, takes the form of a dialogue. The person divides himself into two parties which endeavor to persuade each other. From this and sundry other strong reasons, it appears that all cognitive thought is of the nature of a sign or communication from an uttering mind to an interpreting mind. (MS 498)

He writes that “all genuine reasoning is carried on in the form of a dialogue, the self of one moment appealing to the self of the next moment. Now dialogue can only be carried on in signs” (MS 296: 11). The dialogical form of thought is in some ways akin to chess:

Thinking always proceeds in the form of a dialogue, – a dialogue between different phases of the ego, – so that, being dialogical, it is essentially composed of signs, as its Matter, in the sense in which a game of chess has the chessmen for its matter. (MS 298: 6)

This concludes my non-exhaustive list of samples intended to demonstrate the importance of dialogue in Peirce’s semeiotics.

Properties of Peirce’s semeiotic dialogues

I will characterize Peirce’s dialogues, as well as those of Lotman and Bakhtin, in game-theoretic terms.¹ Semeiotic dialogues seem to have the following properties:

- (1) *Participants are functional or logical roles.* Parties to Peirce’s dialogues are *functional or logical roles*, and not necessarily real persons.

Though these two functionaries [the utterer and the interpreter] may live in one brain, they are nevertheless two. (MS 500: 13)

Or consider another passage:

Whenever a person thinks over any question in his own mind, he carries on a sort of conversation. His mind of one minute appeals to his mind of the next minute to agree with it and say whether so-and-so is not reasonable; and then the mind of the next minute says [may say] either “Certainly by all means, and I wish all future minutes of my mind to take note that this is my decided opinion, after close examination” or else he may say “Well, that seems so, at first glance, but I don’t feel

¹ My reasons for employing game-theoretic vocabulary are threefold: (1) game theory provides a convenient overarching vocabulary for comparing conceptions of dialogue in otherwise different theoretical frameworks; (2) Peirce’s semeiotic dialogues have already been partly elucidated in game-theoretic terms; and (3) as will be shown below, there is a long tradition of analysing the inner workings of dialectic and dialogue as game-like structures in logic. By adopting game-theoretic notions I am neither claiming that dialogues *are* games nor trying to squeeze Lotman’s and Bakhtin’s arguably broader notions into the (possibly) Procrustean bed of game theory or logic.

quite so sure of it as that mind of the last minute wished me to be” or he may even think “Well, look you, my mind of the future, before whom my last minute mind and I, *this* minute’s mind are arguing (for we both submit to you as knowing more than either of us do) – it appears to me that that last minute’s mind was a goose and entirely failed to perceive the real state of the case”, etc. etc. (MS 514: 45–46)

The goal of participants in a semeiotic dialogue is to determine whether a particular (complex) sign is true or false in a given universe of discourse. While some passages might give one the impression that Peirce had a more “physical” conception of the dialogue participants in mind, personifying them was, in his own words, “a sop to Cerberus” for making his conception of signs and logic understood (EP 2: 478).

- (2) *Zero-sum strictly competitive dialogues.* Peirce’s dialogues seem to be *strictly competitive*² and *zero-sum*.³

The utterer is essentially a defender of his own proposition, and wishes to interpret it so that it will be defensible. The interpreter, not being so interested, is relatively in a hostile attitude, or looks for the interpretation least defensible. (MS 9: 3–4)

This does not mean that Peirce ruled out the very possibility of non-zero-sum dialogues, since in some passages he characterizes the parties’ interaction as collaborative (see CP 4.552). However, he seems to have mainly focused on zero-sum dialogues.

- (3) *Dialogues of perfect information.* Peirce seems to have assumed that the parties involved in his dialogues have *perfect information*.⁴

The utterer is to determine the meaning of one sign, the interpreter of the other. Whichever of the two has the last choice is supposed to know what the previous determinations were. Consequently, the utterer, who is essentially a defender of his own utterance has an advantage in choosing last; while the interpreter, as not being necessarily a defender of that which he interprets, but rather a critic, and quasi-opponent, is as such, at a relative disadvantage. [...] Whichever of the two makes his choice of the object he is to choose, after the other has made his choice, is supposed to know what that choice was. This is an advantage to the defense or attack, as the case may be. (MS 9: 2–3, 4)

² A dialogue or game is *competitive* when it has winners and losers.

³ A dialogue or game is *zero-sum* when one party’s gain comes at the other’s expense, that is, one party wins only if the other loses. Zero-sum dialogues or games are *strictly competitive*.

⁴ Two parties in a game or dialogue have *perfect information* if both know all of each other’s past choices up to the present point.

- (4) *Dialogues of complete information*. According to Peirce, the existence of *common knowledge* (or ground) is a necessary prerequisite for dialogue and communication. Any kind of sign mediation is possible only if the parties involved have shared views about representations, common basic assumptions about language, each other's rationality, and a shared universe of discourse from which they draw the referents or objects of their signs (Pietarinen 2006: 57–58, 67, 158). In other words, participants have *complete information*.⁵

No man can communicate the smallest item of information to his brother-man unless they have [...] common familiar knowledge; where the word 'familiar' refers less to how well the object is known than to the manner of the knowing. [...] Common familiar knowledge is such that each knower knows that every other familiarly knows it, and familiarly knows that every other one of the knowers has a familiar knowledge of all this. Of course, two endless series of knowings are involved; but knowing is not an action but a habit, which may remain passive for an indefinite time. (MS 614: 1–2)

Dialogues, games, and game theory

Peirce's comparison between dialogues and games like chess was not fortuitous. His dialogical ideas, and dialogues in general, can be modelled as games in the game-theoretic sense. In hindsight, Peirce seems to have anticipated both game-theoretic and dialogic developments in 20th-century logic and philosophy of language, such as game-theoretic semantics or dialogue logic. Yet his semeiotic dialogues are broader than the ones employed in these fields. I will briefly explicate the relevance of game theory to dialogues before providing an overview of how the notion of dialogue is understood and employed in logic and philosophy of language. The goal is both to elucidate Peirce's understanding of dialogue, to show its similarities with more contemporary notions, and to pave the way for its application to Lotman's notion of the semiosphere.

Game theory is the study of *situations of strategic interdependence* (Straffin 1993: 3), situations where the decisions and choices of two or more individuals or organizations are interdependently related (Carmichael 2005: 3, 4). Disregarding distinctions between normal-form, extensive-form, Bayesian, evolutionary, and other kinds of games, a *game* is any situation in which

⁵ Parties in a game or dialogue have *complete information* when they know the rules involved, the actions available to everyone involved at any given time, and their payoffs (i.e. the truth values of signs) in different outcomes of the dialogue.

- (i) There are at least two *players*. A player may be an individual, but it may also be a more general entity like a company, a nation, or even a biological species.
- (ii) Each player has a number of possible *strategies*, courses of action which he or she may choose to follow.
- (iii) The strategies chosen by each player determine the *outcome* of the game.
- (iv) Associated with each possible outcome of the game is a collection of numerical *payoffs*, one to each player. These payoffs represent the value of the outcome to the different players. (Straffin 1993: 3)

Games in the game-theoretic sense are partly defined by their payoff structure. Players have goals, i.e. preferred outcomes, and their strategies determine a sequence of actions, relative to other players' goals and strategies, for attaining those goals. Players prefer certain outcomes and payoffs to others.

Dialogues, too, have at least two participants, each with their own roles and concomitant goals; (rule-governed) ways for achieving those goals (i.e. strategies); outcomes, such as the proof, verification or falsification of a proposition, or the correct understanding of an utterance; and payoffs like the validity of a proof, truth or falsity of a proposition, or the utility of successfully coordinated mutual understanding.

Dialogue games, semantic games, and communication games

Peirce's dialogues fit into a longer tradition of ludic thinking in logic that, since the development of game theory in the 20th century, views dialogic and dialectic interactions as games. The goal is to elucidate logical properties, like truth or validity, through game-like interactive processes. These ideas have also spread to adjacent disciplines, such as philosophy of language and computer science.

Dialogical logic offers a third approach, next to model and proof theory, to the logical notions of validity and satisfiability. It stems from the introduction of game-theoretic concepts into the definitions of fundamental logical notions. A formula, φ , is associated with a *dialogue game*, $D(\varphi)$, a dialogue about φ , that starts from φ and "reaches a final position with either win or loss after a finite number of moves according to definite rules: the dialogue game is defined as a finitary open two-person zero-sum game" (Lorenz 2001: 258). Players take turns and can alternate in their roles as proponent or opponent of the formula. The game begins with the proponent asserting a formula, which the opponent seeks to disprove, and the game rules are designed in such a way that the formula is valid if the proponent has a winning strategy in the game,⁶ that is, if the dialogue counts as a proof of the formula.

⁶ A strategy is *winning* for a player if he can choose his moves in a way that leads to him winning the game regardless of what the opponent does.

The history of dialogical logic goes back to Plato's dialectic in which parties engage in an orderly exchange of arguments in dialogue to prove or disprove a thesis. Aristotle identified different types of dialogue in dialectical argumentation, thus furthering the connections between the two concepts (Walton 2006: 4). Vestiges of these ideas survived in the *ars obligatoria* of medieval logic where dialectic was seen as a rule-governed zero-sum disputation game between a Disputant, who must prove his thesis, and an Expositor who seeks to lead the Disputant into contradiction (Pietarinen 2006: 320; Walton 2006: 65–66). Contemporary formal dialogical logic was developed by Paul Lorenzen (1958), Kuno Lorenz, and the Erlangen School (Stegmüller 1964; Lorenzen, Lorenz 1978). A parallel strand, focusing on concrete dialogues in natural languages, developed in the works of Perelman and Olbrechts-Tyteca (1969), Toulmin (1958), Barth and Krabbe (1982), and Woods (Woods *et al.* 2000). Dialogic logic has been applied in various fields: in logic for providing semantics for intuitionistic and classical logics, and studying non-classical logics; in computer science for providing semantics for programming languages (known as game semantics) (see Abramsky 2002; Blass 1992; Japaridze 2003, 2009), and modelling communication between intelligent agents in multi-agent systems; and in argumentation theory as a framework for studying ordinary language argumentation (Prakken 2005). Peirce's semeiotic dialogues have a few features in common with dialogue games: both treat dialogue as goal-driven logical exchanges between two parties, and see the parties themselves as logical roles rather than flesh-and-blood persons.

Game-theoretic semantics combines game-theoretic notions with Wittgensteinian ideas about language-games into a dynamic system for studying the semantics of logic and natural language. It is generally believed that Wittgenstein abandoned his referential (picture) theory of meaning when he adopted the notion of language-games, along with the view that the meaning of an expression is given by its use in language. But this is not necessarily the case. Representational and referential relations between language and reality can be seen as created and sustained by language-games that function as mediators between language and the world (Hintikka 1979[1976]). This idea is one of the cornerstones of Jaakko Hintikka's game-theoretic semantics where *semantic games*, i.e. interactive game-theoretic structures, link language with reality.

In game-theoretic semantics, the truth-conditions of a formula or sentence, φ , are given by a zero-sum two-player normal or extensive-form semantic game with perfect information defined on it, $G(\varphi)$, where one player, the Verifier (or Myself), tries to verify the sentence, while the other player, the Falsifier (or Nature), seeks to falsify it. As with dialogue games, rules are defined relative to logically and semantically active elements (connectives, quantifiers, etc.), and the game ends when either the Verifier has found a referent in the universe of discourse that makes the sentence true, or the Falsifier has shown that there is no suitable referent, thereby falsifying the sentence.

Here truth, not validity, is defined as a winning strategy for the Verifier. Semantic games can be thought of as games of seeking and finding: the Verifier looks for an object in the universe of discourse that would make the sentence or sign true, and the Falsifier looks to make sure that there is no such object.

Besides Wittgenstein's ideas about language-games, another motivation for game-theoretic semantics was giving a perspicacious account of the semantics of quantification in first-order logic and natural language. Leon Henkin suggested in 1961 that infinite quantifier strings could be conceived of as games (Pietarinen 2006: 223). He was preceded in this by Peirce who provided an essentially game-theoretic treatment of quantification. To see the similarities, compare his treatment of the quantifier "any" with its standard interpretation in game-theoretic semantics:

If the game has reached the sentence

$X - \text{any } Y \text{ who } Z - W,$

then Nature may choose an individual and give it a proper name (if it did not have one already), say ' b '. The game is continued with respect to

$X - b - W, b \text{ is a(n) } Y, \text{ and (if) } b Z.$ (Pietarinen 2006: 98)

Game-theoretic semantics has been applied to the semantics of formal and natural languages. Peirce's semeiotic dialogues are in many ways the precursors of semantic games, because both treat truth as the outcome of a strategic interaction between two parties who are logical functions rather than embodied persons.

Finally, Peirce's semeiotic dialogues have connections with *game-theoretic pragmatics* which, as the name implies, studies the pragmatic aspects of communication and meaning between real persons from a game-theoretic perspective (Pietarinen 2006: 51, 371–440). Game-theoretic pragmatics is a relatively recent interdisciplinary field of study. While economists have been interested in the strategic aspects of communication for some time (see Spence 1973; Rabin 1990), and biologists have used evolutionary game theory to study the evolution of language and communication (see Nowak 2006), David Lewis' (1969) pioneering work was until quite recently one of the few studies concerned with the strategic properties of natural language. Game-theoretic pragmatics has become a lively area of research in the last couple of decades (Jäger 2008: 406, 407; see Parikh 2001; Benz *et al.* 2005).

Both dialogue and semantic games assume a language-as-a-debate model of communication, but Lewis introduced a model of language as a collaborative endeavour where communication is seen as an attempt by the sender to influence the receiver's future decisions by sending certain signals rather than others. This is only possible if the game is not zero-sum, because otherwise players are not encouraged

to share private information. *Signalling games*, introduced by Lewis, are the simplest models for such communicative interactions. There are two players, a sender and a receiver. Nature chooses a state of the world at random, and the sender, who observes the state chosen, sends a signal or message about that state to the receiver who cannot directly observe the state but does observe the signal. The choice of the signal depends on the sender's private information about the observed state that the receiver lacks. The latter then chooses an act, possibly dependent on the message, the outcome of which affects them both, with the payoff depending on the state. Both have a preference ordering over possible meaning-signal and act-state combinations as well as a common interest – they get the same payoff in a correct meaning-signal and act-state combination, and nothing otherwise (Jäger 2011: 469; Skryms 2010: 7). However, this is just one possible model of communication among many. Game-theoretic pragmatics, unlike dialogue logic or game-theoretic semantics, does not yet have a standard approach for modelling dialogic communication and conversations. Instead there is a plethora of models, each constructed for particular purposes and focused on small parts of conversation (Miyoshi 2007: 120). The Iterated Best-Response Model (employing signalling and interpretation games) (Jäger 2011, 2012), the Strategic Discourse Model (employing games of partial information) (Parikh 1991, 2000, 2001), cooperative games, and coordination games have all been employed to study pragmatic phenomena like implicature, ambiguity, and vagueness. However, amid this embarrassment of riches the first steps toward a general game-theoretic model of dialogue and conversation have also already been taken (see Miyoshi 2007). What is common to all these models is that while semantic games focus on truth and reference, pragmatic games tend to emphasize the transmission of messages and information flow between sender and receiver. Thus pragmatic games focus on preferences and utilities rather than on truth and validity.

Dialogue and the semiosphere in Lotman

Juri Lotman first introduced the concept of the *semiosphere* in the context of cultural semiotics in 1984. He was influenced by Prigogine's theory of self-organizing systems (Prigogine, Stengers 1984). The term was coined by analogy with Vladimir Vernadsky's concept of the biosphere – a self-organizing system comprised of both living organisms, and their environment to the extent that it is involved in their life processes (Kotov, Kull 2011: 181).

Lotman (1990: 123, 125) defines the *semiosphere* as the semiotic space necessary for the existence and functioning of semiotic systems, not the sum total of different semiotic systems immersed in it that can only function by interaction with that space.

It is the condition of possibility for semiosis since the action of signs is impossible outside the semiosphere (Lotman 1999[1984]: 11–12), which functionally precedes individual sign systems, and is the precondition for their existence. The semiosphere is the elementary unit of semiosis in Lotman's holistic theory of culture (Lotman 1990: 125; Kotov, Kull 2011: 182). The concept designates both a semiotic model, and an object of study (Kotov, Kull 2011: 191). The latter can be thought of as a self-organizing system undergoing constant renewal due to its internal dynamic processes (Kotov, Kull 2011: 184).

Organizing principles of the semiosphere

The semiosphere's internal dynamic processes are driven by its organizing principles.

- (1) *Unity*. The semiosphere evinces a certain degree of *unity*. Its multiple sign systems support each other since they cannot function in isolation (Ivanov *et al.* 1998[1973]: 33), and relate to each other on a spectrum ranging from mutual translatability to complete untranslatability (Lotman 1990: 125; Kotov, Kull 2011: 183).
- (2) *Boundaries as bilingual translation mechanisms*. The semiosphere is a closed system. Its *external boundaries* establish its structural identity by separating it from its environment, and its *internal boundaries* separate different semiotic systems from each other within the semiosphere (Kotov, Kull 2011: 182; Lotman 1999[1984]: 12, 17). A *boundary* both unites and separates two spheres of semiosis (Lotman 1999[1984]: 16). Any boundary is a *bilingual translation filter* that translates external texts and messages into the semiosphere's internal language, and through which the semiosphere comes into contact with non-semiotic or other semiotic spaces. Semiotic processes are faster and more active at the boundaries (Lotman 1999[1984]: 12–13, 14–15, 16).
- (3) *Binarism of external and internal spaces*. Boundaries *qua* translation mechanisms presuppose the existence of at least two semiotically different parties. Thus there is a binary opposition between the semiosphere and its environment (Kotov, Kull 2011: 183).
- (4) *The heterogeneity of semiotic space*. Whether a particular semiotic space is external or internal, non-semiotic or semiotic, as determined by the boundaries, is relative to the observer, and their position within the semiosphere. The semiotic space itself is heterogeneous, since different subsystems, texts, and languages form hierarchies. Yet hierarchical levels also mingle and collide. For instance, texts can be surrounded by unsuitable languages or there may be no codes for deciphering them (Lotman 1999[1984]: 21; Kotov, Kull 2011:

- 183). Each subsystem is a holistic, closed, and independent structure that is simultaneously a part of the whole, and its analogue (Lotman 1999[1984]: 18).
- (5) *The asymmetry of internal structures*. The semiosphere is intersected into subsystems by its internal boundaries. These internal structures are asymmetrical, since, in the majority of cases, the different languages of the semiosphere do not have mutual semantic correspondences (Lotman 1990: 127).
- (6) *Centre and periphery*. As a result of heterogeneity and asymmetry, the semiosphere's subsystems are organized into distinct central and amorphous peripheral structures. The centre is comprised of dominant semiotic systems, while the more flexible peripheral structures are "alien" relative to the centre, and thus catalyze the creation of new meanings within the semiosphere. This is due to the accelerated translational activity occurring at the borders of peripheral structures. The centre, on the other hand, tends toward homogeneity through autocommunication (Kotov, Kull 2011: 183). Central structures can become peripheral and *vice versa* as a result of changes in the semiosphere's internal organization (Lotman 1999[1984]: 19–20).
- (7) *The development of a metalanguage*. Finally, the semiosphere develops a metalanguage for describing itself as a unity when one of its central dominant structures reaches a self-descriptive stage of development, and creates a metalanguage for describing itself, the periphery, and the entire semiotic space as an ideal unity (Lotman 1999[1984]: 18).

I have lingered at some length on these well-known organizational principles since they are relevant when envisioning the semiosphere as based on alternatively understood dialogical mechanisms.

Dialogue as an ontological feature of the semiosphere

According to Lotman, dialogue is an ontological feature of the semiosphere (Torop 2009: xxxi–xxxiii). He writes:

Meaning without communication is not possible. In this way, we might say, that dialogue precedes language and gives birth to it. [...] Since all levels of the semiosphere - from human personality to the individual text to the global semiotic unity - are a seemingly inter-connected group of semiospheres, each of them is simultaneously both participant in the dialogue (as part of the semiosphere) and the the space of dialogue (the semiosphere as a whole). (Lotman 2005[1984]: 218, 225.)

The *dialogic situation* itself must be understood before dialogue since “the need for dialogue, *the dialogic situation*, precedes both real dialogue and even the existence of a language in which to conduct it” (Lotman 1990: 143–144). The minimal meaning-generating unit – indeed, the ground of all meaning-making processes (Lotman 1999[1984]: 33) – is the partial intersection of two languages in dialogue (cf. Lotman 2009: 6). Thus dialogue is inseparable from dynamics, since a dialogical system involves the dynamic interweaving of structures (Lotman 1999[1993]: 167).

A dialogue, according to Lotman, has the following properties:

- (1) *The existence of two similar yet different parties* (Lotman 1999[1984]: 22). All normal human communication starts with the assumption that the speaker and hearer are non-identical (Lotman 2009: 5).
- (2) *Discrete information transmission, viz.* a dialogue is the mutual exchange of information where the parties take turns in transmitting their messages (Lotman 1999[1984]: 22).
- (3) *The inclusion of elements from an alien language in the text to be translated*, since this text, along with its rejoinder, has to form a unified text from some third point of view. Otherwise any dialogue is impossible. (Lotman 1999[1984]: 24)

The possibility of dialogue rests on a number of prerequisites:

- (1) The simultaneous homogeneity and heterogeneity of elements (Lotman 1999[1984]: 26).
- (2) Two contrary tendencies in dialogical communication:
 - (a) The tendency to increase similarity between the two different participants to facilitate understanding.
 - (b) The tendency to maximize difference between the two different participants to amplify the value of communicated information (Lotman 2009: 5).

The tension between these two tendencies is a condition of possibility for dialogue, since if the homogenizing tendency wins, dialogue and communication collapse into triviality, while if the differentiating tendency wins, dialogue and communication become impossible due to a lack of common ground (Lotman 2009: 5–6).

A comparison of Peirce's and Lotman's dialogues

There are a number of similarities between Peirce's and Lotman's dialogues:

- (1) *Participants are logical roles.* Lotman does not provide us a clear account of the dialogue participants, but it seems to me that his conception is rather abstract. The parties need not be actual persons, since texts function like individuals in dialogic communication, both with readers and with other texts in the semiosphere. For Lotman, participants are logical roles in an abstract communication schema (drawn from Shannon and Jakobson) (cf. Lotman 1977: 8; Lotman 2009: 4ff), and these roles can be occupied by different kinds of entities. Peirce, too, treated dialogue participants as logical functions rather than actual persons.
- (2) *Formal nature of dialogues.* Lotman's dialogues are formal communication schemata. A dialogue is not just a certain form of speech communication between actual people, it is a dynamic communication type that can be realized between people, texts, signs, and potentially other kinds of entities in the semiosphere so long as they are capable of semiosis.
- (3) *Common knowledge as a prerequisite of dialogue.* Both Peirce and Lotman acknowledge the importance of common knowledge for dialogue. Lotman insists that no dialogue is possible without at least a minimal degree of overlap between the sender's and the receiver's languages, knowledge, etc. Peirce also insists on the participants' common knowledge of language, each other's rationality, and the universe of discourse as the condition of possibility for dialogue.

However, there are also notable differences:

- (1) *Lotman's dialogues are neither zero-sum nor strictly competitive.* Lotman's dialogues are neither necessarily zero-sum, although he does not deny the possibility, like Bakhtin does, nor strictly competitive. As far as I can tell, there are no winners and losers in Lotman's dialogues, and the parties must collaborate to some extent to increase their mutual similarity in order to facilitate understanding. Yet the dialogues are not purely cooperative either, since the parties involved simultaneously seek to amplify their mutual differences to increase the information value of their messages. While Peirce did not rule out the possibility of cooperation, his focus seems to have been on competitive dialogues.
- (2) *Parties in Lotman's dialogues do not have perfect information.* Parties in Lotman's dialogues do not have perfect information because they do not

necessarily know all of each other's past moves. Again, Lotman does not rule out the possibility of perfect information, but neither does he turn it into a requirement.

- (3) *Parties in Lotman's dialogues do not have complete information.* Although both Peirce and Lotman recognized the importance of common knowledge, such knowledge is only partial in Lotman, because a complete overlap of the participants' informational spaces, their identity, would collapse the dialogue into triviality. Dialogue for Lotman is only possible under conditions of partial knowledge where one party does not know everything the other knows, and *vice versa*.

There is, *prima facie*, another difference between Peirce's and Lotman's dialogues. Peirce's dialogues are grounded in logic, and employ semantic notions like truth. Their goal is to arrive at the truth value of a sign. Lotman's dialogues, on the other hand, are grounded in information theory. Their goal is the exchange and creation of new information. By treating dialogues as the basic meaning-making mechanisms in the semiosphere, Lotman introduced a pragmatic dimension to his previously largely Saussurean take on meaning, according to which a sign's semantic content is determined by its paradigmatic and syntagmatic differences from other signs in a language, irrespective of how speakers actually use said language. Since Peirce's semeiotic dialogues are closely related to logic – the meanings of complex signs are given by rules for logical connectives and quantifiers – Lotman's dialogues seem to be broader in scope, because they allow for the transmission of logically contradictory messages debarred in logic.⁷ I have two reasons for thinking that which of the two conceptions is actually broader or more basic is an open question at this stage of the inquiry. First, the logic operative in a dialogue depends on how one defines its rules. For example, one set of rules results in dialogue games for intuitionistic logic, another yields dialogue games for classical logic (see Marion 2009). A suitable selection of rules could yield dialogues for dialethic or paraconsistent logics, both of which tolerate contradictions. Second, Peirce's dialogues can be treated as pragmatic games where conveying contradictory messages is not a problem, at least in principle. However, extant models in game-theoretic pragmatics explore the connections between Grice's (1989[1975]) pragmatic maxims, and game-theoretic notions of rationality. The tacit assumption in these models is that players are rational, and seek to maximize mutual understanding. Lotman, on the other hand, makes no rationality assumptions about the participants in his dialogues. He would likely consider successfully concluded signalling games as degenerating into triviality because they end when both parties have the same information. Yet it is unclear to which extent this applies to Peirce's

⁷ I would like to thank Kalevi Kull for pointing this out to me.

dialogues *qua* communication games since Peirce's notion of rationality seems to be broader than the narrowly instrumental understanding employed in game theory (Ransdell 1977: 166–167). Thus determining which of the two conceptions of dialogue, Lotman's or Peirce's, is broader would require additional study that, unfortunately, would go beyond the scope of the present article.

Bakhtin's dialogism

Dialogism, as espoused by Mikhail Bakhtin, is an epistemological mode of a world dominated by heteroglossia where everything has a meaning, and is understood as a part of a greater whole as a result of constant interactions between meanings that can potentially condition other meanings (Holquist 1981b: 426). Bakhtin extended his dialogism to a number of phenomena. For example, consciousness is dialogic because it is open to outside influences from others, and filled with the struggle between one's own voice and the voices of others (Bakhtin 1984: 32). Ideas are dialogic, inter-individual, and intrasubjective since they exist in dialogic communion between minds. An idea is a live event played out at the point of dialogic meeting between two or more minds (Bakhtin 1984: 88). For instance, Raskolnikov's idea in Dostoevsky's *Crime and Punishment* appears as an inter-individual zone of struggle among several individual minds, and is linked with the dialogue participants' ultimate positions on life (Bakhtin 1984: 88–89). The very being of man is dialogical since to be is to communicate, to be for another, and through the other, for oneself: "A person has no internal sovereign territory, he is wholly and always on the boundary; looking inside himself, he looks into the eyes of another or with the eyes of another" (Bakhtin 1984: 287). The world is dialogical since every thought and every life merges in an open-ended dialogue (Bakhtin 1984: 293). And finally, life itself is dialogical:

Life by its very nature is dialogic. To live means to participate in dialogue: to ask questions, to heed, to respond, to agree, and so forth. In this dialogue a person participates wholly and throughout his whole life: with his eyes, lips, hands, soul, spirit, with his whole body and deeds. He invests his entire self in discourse, and this discourse enters into the dialogic fabric of human life, into the world symposium. (Bakhtin 1984: 293)

The genuine life of the personality is made possible only through its dialogic penetration by other personalities, since only then does it reciprocally and freely reveal itself (Bakhtin 1984: 59).

Dialogism is both an epistemic mode, and a normative requirement for communication and understanding. It includes the following normative injunctions:

- (a) *Take the other seriously.* Taking another person's discourse and point of view seriously requires adopting a dialogic and participatory orientation, because only then can one's discourse come into intimate contact with someone else's discourse.
- (b) *Respect the other's autonomy.* While enabling intimate contact with another's point of view, a dialogic orientation also retains the participants' autonomy by requiring that neither discourse swallow up or subjugate the other, thereby allowing each to retain their independence (Bakhtin 1984: 64).

Dialogue

Dialogue, the central notion in Bakhtin's theory, may be defined as a word, discourse, language or culture that has been relativized, de-privileged, and has become aware of competing definitions for the same things (Holquist 1981b: 426–427). Bakhtin's *basic model of dialogue* involves two people, each understood as a consciousness defining itself at a specific point in history, talking to the other by employing linguistic resources to send messages that minimize the interference from preexisting meanings of those resources, and the other person's intentions, to convey approximately their own intentions to the other (Holquist 1981a: xx). He further distinguishes *external dialogues* between two different people from *internal dialogues* between an earlier and a later self. These correspond to Lotman's distinction between spatial and temporal communication, respectively (Bakhtin 1981: 427).

In light of Bakhtin's conception of dialogue, everyday speech, too, is dialogical, since it is full of other people's words and voices, some completely merged with our own, others taken as authoritative, and yet others populated with our intentions, alien to their original utterers.

Dialogic relations

Dialogue rests on *dialogic relations*, that is, semantic relations between complete utterances behind which stand real or potentially real subjects, the authors of those utterances (Bakhtin 1986: 117–118, 124). They are broader than relations between rejoinders in real dialogues. Two spatiotemporally separated utterances can be dialogically related if there is any kind of semantic convergence between them, such as a partially shared time, point of view, etc. (Bakhtin 1986: 124). Any two utterances juxtaposed on a semantic plane end up in a dialogic relationship (Bakhtin 1986: 117), which is established when two discourses about the same referential object come together in the same context (Bakhtin 1984: 188–189). In short, dialogic relations are broader than dialogic speech (Bakhtin 1986: 125).

Dialogic relations have a number of properties that set constraints on the kinds of entities that can stand in these relations:

- (1) *Irreducible to logical, referential or linguistic relations.* Dialogic relations are irreducible to logical, referential or linguistic (i.e. compositional and syntactic) relations. The latter must become embodied in order to become dialogical, for dialogical relations arise only between utterances as positions of subjects in discourse (Bakhtin 1984: 183–184; Bakhtin 1986: 117).
- (2) *Irreducible to disagreement.* Dialogic relations cannot be reduced to conflict, polemics or disagreement (Bakhtin 1986: 125).
- (3) *Possible at the word level.* Dialogic relationships can permeate inside an utterance: an individual word is dialogic if it is perceived as a sign of someone else's utterance (Bakhtin 1984: 184).
- (4) *Possible between languages.* Dialogic relations are possible between language styles, social dialects, etc., insofar as these are seen as worldviews of subjects (Bakhtin 1984: 184).
- (5) *Possible toward one's own utterance, words or language style.* One can have a dialogic relation toward one's own utterance, word or language style if one takes a certain distance toward these (Bakhtin 1984: 184).
- (6) *Possible between different semiotic phenomena.* Dialogic relations are not limited to different kinds of intellectual phenomena; they are also possible between different semiotic phenomena, such as images belonging to different art forms (Bakhtin 1984: 184–185).
- (7) *Impossible between objects, logical quantities or elements of a language.* Dialogic relations are impossible between objects, logical quantities – such as concepts or judgments – or elements of a language, since they hold between utterances, and an utterance is a unit of speech communication, not a unit of language (Bakhtin 1986: 117, 125).

Dialogical relations result from the personification of logical, semantic, and referential relations, that is, from treating them as relations among subjects (Bakhtin 1986: 138–139).

A comparison of Peirce's and Bakhtin's dialogues

Bakhtin's and Peirce's dialogues are similar in that both presuppose common knowledge. Bakhtin's dialogic relations hold between two different utterances that share a common referent, and all participants in Peirce's dialogues know that they all

known that their dialogue game is played on the same universe of discourse, i.e. over the same referents.

This, however, is where the similarities end. Bakhtin's and Peirce's dialogues differ in the following respects:

- (1) *Bakhtin's dialogues are neither zero-sum nor strictly competitive.* Peirce's dialogues can have winners and losers. Bakhtin's dialogues, while agonistic, do not have winners and losers. Even though parties quarrel and argue, the Bakhtinian dialogue is a "happy war" since no one loses in the end. Indeed, zero-sum dialogic situations, where the price of one party's victory is the other's defeat, are not genuinely dialogic since a dialogue depends on and preserves the differences between parties (Emerson 1984: xxxii–xxxiii, xxxvii–xxxviii). Annihilating one's opponent is victory in rhetoric but destroys the dialogic sphere in discourse (Emerson 1984: xxxvii).
- (2) *The embodiment of participants in Bakhtinian dialogues.* Parties in Peirce's dialogues are logical functions or roles that can be occupied by quasi-minds. This is because Peirce belongs to a long tradition that equates dialogue with dialectic, and treats both as kinds of logical games. A participant in Bakhtin's dialogues, on the other hand, must be an embodied individual consciousness. Bakhtin insists that dialogue and dialectic cannot be equated, since dialectic is the result of abstracting away all speech communicative aspects from dialogue; dialectic results from relocating things like voices, intonations, and the introduction of abstract concepts and judgments into an individual abstract consciousness (Bakhtin 1986: 147).
- (3) *Participants in Bakhtinian dialogues do not have perfect information.* Participants in Bakhtin's dialogues do not know everything about each other, since in a human being there is always something that only he himself can reveal in a free act of self-consciousness and dialogue. A living person is never finalized, never coincides with himself (i.e. does not satisfy the formula " $A \equiv A$ ") (Bakhtin 1984: 58, 59). Participants in Peirce's dialogues, on the other hand, have perfect information in the game-theoretic sense – at each point in the dialogue (or game), participants know everything that has happened up to that point, including each other's strategies or plans of action. The utterer and interpreter know everything there is to know about each other; they are, in Bakhtin's terminology, finalized, since each coincides with himself.
- (4) *Peirce's dialogical relations hold between logical, referential, and linguistic elements.* Peirce's dialogues are played out on the level of logical, referential, and linguistic elements the meanings of which are common knowledge to the participants since they share the same language. The only thing they disagree

on is whether a particular sign is true or not. However, such an exchange is not a dialogue in the Bakhtinian sense since dialogical relations are only possible between utterances that can potentially be traced back to embodied utterers. A dialogic relation relates worldviews, not linguistic units.

Reconceptualizing the semiosphere

Lotman's dialogues are the basic meaning-making mechanisms in the semiosphere. The resulting model, due to its level of abstraction, can be fruitfully applied to both biosemiosis between living systems, and cultural semiosis between texts as well as other kinds of semiotic entities. However, it might be interesting to think how the semiosphere, as a model for studying semiosis in complex systems, would function when resting on different kinds of dialogical foundations. I will briefly sketch some of the possible methodological benefits and shortcomings of resting the semiosphere on Bakhtin's or Peirce's dialogues instead of Lotman's.

If the semiosphere is reconceptualized as resting on Bakhtinian dialogic foundations, then the resulting model will be narrower in scope than Lotman's original conception. Dialogical communication between certain kinds of semiotic and logical entities is excluded to the extent that they cannot be personalized, *viz.* to the extent that they cannot be treated as expressions of individual worldviews. This seems to rule out dialogical communication between human and non-human entities, such as natural phenomena, since Bakhtin (1986: 113) claims that "[n]o natural phenomena have 'meaning,' only signs (including words) have meaning". Some aspects of human-machine semiosis, too, would be difficult to account for, because machines, such as computers, could only enter into dialogic relations with humans if the machine in question is seen as a medium through which persons communicate with each other. Yet this ignores the fact that machines in distributed networks, where human and non-human participants communicate with each other, can generate messages that neither their creators nor users could either author or foresee. It seems to me that computers and other information and communication technologies must be granted a degree of (quasi-)semiotic autonomy in order to do justice to the emergent semiotic features of human-machine semiosis in distributed networks.

Resting the semiosphere on Peircean dialogic foundations, on the other hand, would broaden the model's scope in a number of ways. First, Peirce's notion of dialogue is coupled with his general sign theory which can account for semiosis in humans, animals, plants, and machines, all of which could dialogically communicate with each other on some level. Second, Peirce's sign theory, unlike the Saussurean approach adopted by Lotman, is referential – each sign refers to its object which

can be an extra-linguistic entity. Saussure's semiology treats languages and other sign systems as autonomous and closed systems because it neglects reference as an important dimension of a sign's meaning. Peirce's semeiotics, on the other hand, includes reference as an important dimension of the sign's meaning, and thereby opens the sign system to outside influences, since an object causes a sign-vehicle to represent it in a certain way.⁸ A semiosphere based on Peircean dialogues would thus be an open system that exchanges information with its environment and co-evolves with it. This has implications for both the semiosphere's binarism – its opposition with the environment is no longer clear-cut; as well as the nature of its boundaries – instead of being rigid translation mechanisms they might be graded, vague, and susceptible to temporal change. This last point is suggested by Peirce's views on inquiry and semiosis as a gradual progression toward a complete understanding (final interpretant) of the (dynamic) object referred to by the sign, and its assimilation into the semiotic system (see Ransdell 1977: 157–178). Finally, due to their close affinity with logic and game theory, Peircean dialogues could open the door to game-theoretically and logically informed approaches to studying the semiosphere. This would provide additional conceptual tools for analysing complex semiotic phenomena.

Conclusion

Although the importance of dialogue in Lotman's and Bakhtin's oeuvre is well-known, its significance in Peirce's semeiotics and logic has not been equally appreciated. The semiosphere is a holistic space that functions as a condition of possibility for semiosis. Both internal relations between its subsystems, and external relations between it and its environment are dialogic. Thus dialogue is a fundamental ontological feature of the semiosphere. I have compared Peirce's, Lotman's, and Bakhtin's accounts of dialogue, and assessed what a semiosphere based on these three different kinds of dialogical foundations might be like. Employing different accounts of dialogue yield different conceptions of the semiosphere, each with its own benefits and shortcomings. These three views on dialogue cannot be conflated with one another. The choice between them must therefore be informed by attentiveness to their differences, and should be motivated by the researcher's goals and theoretical commitments.⁹

⁸ I am reading Peirce as being a realist, not an idealist.

⁹ I would like to thank the participants of the 8th Annual Juri Lotman Days conference for their insightful comments as well as the editors of *Sign Systems Studies* for their patience and great help in improving the quality of this paper.

References

- Abramsky, Samson 2002. Algorithmic game semantics: A tutorial introduction. In: Schwichtenberg, Helmut; Steinbrüggen, Ralf (eds.), *Proof and System-Reliability*. Dordrecht: Kluwer Academic Publishers, 21–47.
- Bakhtin, Mikhail M. 1981. *The Dialogic Imagination: Four Essays*. (Holquist, Michael, ed.; Emerson, Caryl; Holquist, Michael, trans.) Austin: University of Texas Press.
- 1984. *Problems of Dostoyevsky's Poetics*. (Emerson, Caryl, trans., ed.). Minneapolis: University of Minnesota Press.
- 1986. *Speech Genres and Other Late Essays*. (Emerson, Caryl; Holquist, Michael, trans., ed.) Austin: University of Texas Press.
- Barth, Else M.; Krabbe, Erik C. 1982. *From Axiom to Dialogue: A Philosophical Study of Logics and Argumentation*. Berlin: Walter de Gruyter.
- Benz, Anton; Jäger, Gerhard; van Rooij, Robert (eds.) 2005. *Game Theory and Pragmatics*. Basingstoke: Palgrave MacMillan.
- Blass, Andreas 1992. A game semantics for linear logic. *Annals of Pure and Applied Logic* 56: 183–220.
- Bonafin, Massimo 1997. Typology of culture and carnival: Note on the models of Bakhtin and Lotman. *Russian Literature* 41: 255–268.
- Brock, Jarret 1980. Peirce's anticipation of game-theoretic logic and semantics. In: Herzfeld, Michael; Lenhart, Margot D. (eds.), *Semiotics 1980: Proceedings of 5th Annual Meeting of the Semiotics Society of America*. New York: Plenum, 55–64.
- Carmichael, Fiona. 2005. *A Guide to Game Theory*. Harlow: Financial Times Prentice Hall.
- CP = Peirce, Charles Sanders 1931–1958. *Collected Papers of Charles Sanders Peirce*. (Hartshorne, Charles; Weiss, Paul, eds., 1931–1935; vols. 7–8, Burks, Arthur W., ed.) Cambridge: Harvard University Press. [In-text references are to CP, followed by volume and paragraph numbers.]
- Danow, David K. 1986. Dialogic perspectives: The East European view (Bakhtin, Mukarovsky, Lotman). *Russian Literature* 20: 119–142.
- 1991. *The Thought of Mikhail Bakhtin: From Word to Culture*. New York: St. Martin's Press.
- Emerson, Caryl 1984. Editor's preface. In: Bakhtin, Mikhail M. 1984. *Problems of Dostoyevsky's Poetics*. (Emerson, Caryl, trans., ed.) Minneapolis: University of Minnesota Press, xxix–xl.ii.
- EP = Peirce, Charles Sanders 1992–1998. *The Essential Peirce: Selected Philosophical Writings. Vol. 2*. (Houser, Nathan; Kloesel, Christian J. W., eds., 1992; The Peirce Edition Project, ed., 1998.) Bloomington: Indiana University Press. [In-text references are to EP followed by volume and page numbers.]
- Grice, Paul 1989[1975]. Logic and conversation. In: Grice, Paul, *Studies in the Ways of Words*. Cambridge: Harvard University Press, 22–40.
- Hilpinen, Risto 1982. On C. S. Peirce's theory of the proposition: Peirce as a precursor of game-theoretical semantics. *The Monist* 65: 182–188.
- 2004. Peirce's logic. In: Gabbay, Dov M.; Woods, John (eds.), *Handbook of the History and Philosophy of Logic. Vol. 3: The Rise of Modern Logic From Leibniz to Frege*. Amsterdam: Elsevier, 623–670.
- Hintikka, Jaakko 1973. *Logic, Language-Games and Information: Kantian Themes in the Philosophy of Logic*. Oxford: Clarendon.

- 1979[1976]. Language-games. In: Saarinen, Esa (ed.), *Game-Theoretical Semantics: Essays on Semantics by Hintikka, Carlson, Peacocke, Rantala, and Saarinen*. Dordrecht: D. Reidel Publishing Company, 1–26.
- Holquist, Michael 1981a. Introduction. In: Bakhtin, Mikhail M. *The Dialogic Imagination: Four Essays*. (Holquist, Michael, ed.; Emerson, Caryl; Holquist, Michael, trans.) Austin: University of Texas Press, xv–xxxiv.
- 1981b. Glossary. In: Bakhtin, Mikhail M. *The Dialogic Imagination: Four Essays*. (Holquist, Michael, ed.; Emerson, Caryl; Holquist, Michael, trans.) Austin: University of Texas Press, 423–434.
- Ivanov, Vjaceslav V.; Lotman, Juri M.; Pjatigorski, Aleksandr M.; Toporov, Vladimir N.; Uspenski, Boris A. 1998[1973]. *Theses on the Semiotic Study of Cultures*. (Tartu Semiotics Library 1.) Tartu: Tartu University Press.
- Jäger, Gerhard 2008. Applications of game theory in linguistics. *Language and Linguistics Compass* 2: 406–421.
- 2011. Game-theoretical pragmatics. In: van Benthem, Johan; ter Meulen, Alice (eds.), *Handbook of Logic and Language*. (2nd ed.) Amsterdam: Elsevier, 467–492.
- 2012. Game theory in semantics and pragmatics. In: Maienborn, Claudia; von Heusinger, Klaus; Portner, Paul (eds.), *Semantics: An International Handbook of Natural Language Meaning*. Vol. 3. Berlin: De Gruyter Mouton, 2487–2516.
- Japaridze, Giorgi 2003. Introduction to computability logic. *Annals of Pure and Applied Logic* 123: 1–99.
- 2009. In the beginning was game semantics. In: Majer, Ondrej; Pietarinen, Ahti-Veikko; Tulenheimo, Tero (eds.), *Games: Unifying Logic, Language and Philosophy*. Berlin: Springer Verlag, 249–350.
- Kotov, Kaie; Kull, Kalevi 2011. Semiosphere is the relational biosphere. In: Emmeche, Claus; Kull, Kalevi (eds.), *Towards a Semiotic Biology: Life is the Action of Signs*. London: Imperial College Press, 179–194.
- Lewis, David 1969. *Convention*. Cambridge: Harvard University Press.
- Lorenz, Kuno 2001. Basic objectives of dialogue logic in historical perspective. *Synthese* 127: 255–263.
- Lorenzen, Paul 1958. Logic und Agon. *Acta del XII Congresso Internazionale de Filosofia*. Venezia, 187–194.
- Lorenzen, Paul; Lorenz, Kuno 1978. *Dialogische Logik*. Darmstadt: Wissenschaftliche Buchgesellschaft.
- Lotman, Juri 1977. *The Structure of the Artistic Text*. (Lenhoff, Gail; Vroon, Ronald, trans.) Ann Arbor: The University of Michigan.
- 1990. *Universe of the Mind. A Semiotic Theory of Culture*. Bloomington: Indiana University Press.
- 1999[1984]. Semiosfäärist. In: Lotman, Juri, *Semiosfäärist*. (Pruul, Kajar, trans.) Tallinn: Vagabund, 7–36.
- 1999[1993]. Kunsti osa kultuuri dünaamikas. In: Lotman, Juri, *Semiosfäärist*. (Pruul, Kajar, trans.) Tallinn: Vagabund, 167–186.
- 2005[1984]. On the semiosphere. (Clark, Wilma, trans.) *Sign Systems Studies* 33(1): 205–226.
- 2009. *Culture and Explosion*. (Grishakova, Marina, ed.; Clark, Wilma, trans.) Berlin: Mouton de Gruyter.

- Marion, Mathieu 2009. Why play logical games? In: Majer, Ondrej; Pietarinen, Ahti-Veikko; Tulenheimo, Tero (eds.), *Games: Unifying Logic, Language, and Philosophy*. Dordrecht: Springer, 3–26.
- Miyoshi, Jun 2007. Building game-theoretic models of conversations. In: Pietarinen, Ahti-Veikko (ed.), *Game Theory and Linguistic Meaning*. Amsterdam: Elsevier, 119–133.
- MS = Peirce, Charles Sanders. Unpublished manuscripts. Copies from Peirce Edition Project of Indiana University – Purdue University, Indianapolis. [In-text references are to MS, followed by manuscript number and page numbers.]
- Nowak, Martin A. 2006. *Evolutionary Dynamics: Exploring the Equations of Life*. Cambridge: Harvard University Press.
- Parikh, Prashant 1991. Communication and strategic inference. *Linguistics and Philosophy* 14: 473–514.
- 2000. Communication, meaning, and interpretation. *Linguistics and Philosophy* 23: 185–212.
 - 2001. *The Use of Language*. Stanford: CSLI Publications.
- Perelman, Chaim; Olbrechts-Tyteca, Luce 1969. *The New Rhetoric: A Treatise on Argumentation*. (Wilkinson, John; Weaver, Purcell, trans.) Notre Dame: University of Notre Dame Press.
- Pietarinen, Ahti-Veikko 2006. *Signs of Logic: Peircean Themes on the Philosophy of Language, Games, and Communication*. Dordrecht: Springer.
- 2007. An invitation to language and games. In: Pietarinen, Ahti-Veikko (ed.), *Game Theory and Linguistic Meaning*. Amsterdam: Elsevier, 1–16.
- Prakken, Henry 2005. Coherence and flexibility in dialogue games for argumentation. *Journal of Logic and Computation* 15: 1009–1040.
- Prigogine, Ilya; Stengers, Isabelle 1984[1979]. *Order out of Chaos*. Toronto: Bantam Books.
- Rabin, Matthew 1990. Communication between rational agents. *Journal of Economic Theory* 51: 144–170.
- Ransdell, Joseph 1977. Some leading ideas of Peirce's semiotic. *Semiotica* 19: 157–178.
- Saarinen, Esa (ed.) 1979. *Game-Theoretic Semantics: Essays on Semantics by Hintikka, Carlson, Peacocke, Rantala, and Saarinen*. Dordrecht: D. Reidel.
- Shukman, Ann 1989. Semiotics of culture and the influence of M. M. Bakhtin. In: Eimermacher, Karl; Grzybek, Peter; Witte, Georg (eds.), *Issues in Slavic Literary and Cultural Theory*. Bochum: Universitätsverlag Dr. N. Brockmeyer, 193–207.
- Skryms, Brian 2010. *Signals: Evolution, Learning, and Information*. Oxford: Oxford University Press.
- Spence, Michael 1973. Job market signaling. *The Quarterly Journal of Economics* 87: 355–374.
- Stegmüller, Wolfgang 1964. Remarks on the completeness of logical systems relative to the validity-concepts of P. Lorenzen and K. Lorenz. *Notre Dame Journal of Formal Logic* 5: 81–112.
- Straffin, Philip D. 1993. *Game Theory and Strategy*. Washington: The Mathematical Association of America.
- Torop, Peeter 2009. Foreword: Lotmanian explosion. In: Lotman, Juri, *Culture and Explosion*. (Grishakova, Marina, ed.; Clark, Wilma, trans.). Berlin: Mouton de Gruyter, xxvii–xxxix.
- Toulmin, Stephen E. 1958. *The Uses of Argument*. Cambridge: Cambridge University Press.
- Walton, Douglas 2006. *Dialog Theory for Critical Argumentation*. Amsterdam: John Benjamins Publishing Company.
- Woods, John; Irvine, Andrew; Walton, Douglas 2000. *Argument: Critical Thinking, Logic, and the Fallacies*. Toronto: Pearson/Prentice-Hall.

Диалог у Пирса, Лотмана и Бахтина. Сравнительное исследование

Понятие диалога – основополагающее как для Юрия Лотмана, так и для Михаила Бахтина. Это также центральное понятие в семиотике и логике Чарльза С. Пирса. Имеются несколько академических работ, где сравнивается диалогизм у Лотмана и Бахтина, но до сих пор не проводилось сравнение их с семиотическими диалогами Пирса. Настоящая статья делает предварительные шаги к сравнительному исследованию диалогичности у Пирса, Лотмана и Бахтина. Лотман рассматривал диалог как основной смыслопорождающий механизм семиосферы. В статье утверждается, что семиосфера в качестве модели, работающей с диалогами Бахтина, является более узкой по объему, чем в оригинальной концепции Лотмана, в то время как модель семиосферы, работающая с диалогами Пирса, шире, чем у Лотмана. Нашей целью является исследование методологических альтернатив в семиотике, а не оспаривание первоначальной модели Лотмана. Главный вывод – выбор между альтернативными диалогическими основами должен направить внимание на их различия и должен быть мотивирован целями и теоретическими положениями исследователя.

Dialoog Peirce'il, Lotmanil ja Bahtinil: kõrvutav uurimus

Dialoogi mõiste on alustrajava tähtsusega nii Juri Lotmani kui ka Mihhail Bahtini puhul, samuti on see kesksel kohal Charles S. Peirce'i semiootikas ja loogikas. Ehkki Bahtini ja Lotmani dialogismi on mitmel korral teaduslikult võrreldud, on need ikka veel kõrvutamata Peirce'i semiootiliste dialoogidega. Käesolevas artiklis astutakse samm Peirce'i, Lotmani ja Bahtini dialoogilisuse võrdleva uurimise suunas. Selgitatakse, kuidas Peirce mõistis dialoogi, ning kõrvutatakse seda nii Lotmani kui ka Bahtini arusaamadega. Lotman pidas dialoogi peamiseks tähendusloome mehhanismiks semiosfääris. Kaalutakse eeliseid ja puudusi, mis on semiosfääri rekontseptualiseerimisel Peirce'i ja Bahtini dialoogidest lähtudes. Väidetakse, et bahtinlike dialoogidega töötava mudelina on semiosfäär vähem ulatusliku haardega kui Lotmani algne kontseptsioon, samas kui Peirce'i dialoogidega töötava mudelina on semiosfääri ulatus avaram. Eemärgiks on uurida metodoloogilisi alternative semiootikas, mitte vastanduda Lotmani esialgsele mudelile. Järeldatakse, et valikut alternatiivsete dialoogiliste aluste vahel peab suunama tähelepanelikkus nende erinevuste suhtes ning seda peaksid motiveerima uurija eesmärgid ning teoreetilised seisukohad.