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Veridicality

(10,397 words)

Veridicality is a linguistic term used primarily within formal semantics. The approach to veridicality adopted here is crucially based on the concept of truth commitment: if an epistemic agent is committed to the truth of a given proposition, then the latter is veridical; if there is no such truth commitment, then the proposition is nonveridical. We show veridicality to be a useful explanatory concept that can account for a range of different phenomena across Slavic (even if it was not extensively studied within this language family in the previous literature). From a semantic point of view, veridicality is applied to areas such as modality, evidentiality, and clausal tense. From a syntactic perspective, we show that veridicality can be used to account for the interactions between different operators within main clauses as well as for mood or complementizer selection in embedded clauses, among other phenomena.

Truth in semantics

Veridicality is a linguistic term used in relation to truth. There have been various attempts at defining the notion of truth within the domain of philosophy, but what is relevant for our purposes is the representation of truth in natural language. The importance of the role that truth plays in natural language has been expressed most clearly by Davidson (2001: 176): “without a grasp of the concept of truth not only language, but thought itself is impossible.” The original

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grasp of the concept of truth not only language, but thought itself is impossible. The original concept of truth within language goes back to Aristotle, who defined linguistic truth as a matter of correspondence between linguistic expressions and the actual matter of fact. A similar perspective is rendered in Tarski's correspondence axiom (Tarski 1935), which also states that, in order to determine the truth or falsity of a linguistic expression, there must be a direct relation between its meaning and the actual state of affairs.

More up-to-date approaches within formal semantics view truth in relation to propositions. Following Stalnaker (1976), propositions have been defined as linguistic expressions associated with sets of possible worlds (which may or may not contain the actual world). From this point of view, the truth or falsity of a proposition is evaluated from the perspective of the speaker's beliefs and knowledge, rather than through direct correspondence to objective reality. Nothing intrinsic to the linguistic expression itself or to its lexical meaning can inform us whether it is true or not (Karttunen and Zaenen 2005). The only inference that can be made with regard to the truth value of a given expression is that whoever utters it (in a positive declarative form) must be committed to its truth. In truth semantics, it is standardly assumed that speakers should be seen as truthful. This is in accordance with the Gricean Maxim of Quality, which requires the speaker to make a true contribution, to not affirm what he/she believes to be false and to not say that for which he/she lacks adequate evidence (Grice 1989: 27). Truth in a linguistic sense is thus relativized to what speakers assert as true by using certain linguistic forms. This approach to truth is relevant in the context of veridicality as well.

Veridicality, truth entailment, and truth commitment

Various theoretical approaches have been proposed in the literature on the subject of veridicality. At face value, this notion has not yet been extensively studied in the context of Slavic languages. However, the phenomena discussed under this heading have been analyzed for quite some time in Slavic linguistics, although under different "labels." The main body of the present article consists of a survey of the young history of "veridicality" and its application to Slavic languages. The last section gives a brief overview of related (or practically identical) notions and of relevant phenomena in Slavic.

The concept of veridicality was introduced by Montague (1969), who defined it in terms of existence; it was limited to embedded complements to perception verbs (e.g., *see*, *hear*), which he saw as a prime example of truth-entailing contexts. Montague's approach was still relying on the idea that denotation stands in the way between objective or "factual" truth and its linguistic correlates. The more recent approaches to veridicality (e.g., Zwart 1995; Giannakidou 1998; 2009; Egré 2008) view veridicality purely in terms of truth entailment and/or truth inference.

Following Karttunen (1971), Egré (2008) views veridicality in terms of truth entailment: a verb is veridical if it entails (\models) the truth of its complement (p); if not, it is nonveridical.

(1) $Vp \models p$ - Veridicality (Egré 2008)

Thus, under this perspective, a verb such as Ru *znat'* 'know' would be considered veridical because it necessarily entails the truth of its complement.

(2) Ru *Ivan* *zna-et,* *čto* *Marij-a* *uš-l-a*
Ivan.M(.NOM) know-PRS.3SG COMP Marija.F-NOM leave-LPT-SG.F

'Ivan knows that Mary left' \models Mary left/ # Mary did not leave

The truth of the main clause in (2) (i.e., 'Ivan knows that p') entails the truth of the embedded complement as well and therefore the interpretation whereby the complement clause is false is infelicitous (marked by #). Under Egré's approach, veridical verbs thus largely overlap with factive verbs, under the standard definitions of factivity, because entailment relations exemplified in (2) usually involve presuppositional readings as well (i.e., the speaker assumes the same thing as the main-clause subject).

In contrast, a verb such as BCMS *misliti* 'think' is not considered veridical under this perspective, because it does not lead to truth entailment:

(3) BCMS *Ivan* *misli* *da* *je* *Marij-a* *otiš-l-a*
Ivan.M(.NOM) think(.PRS.3SG) COMP be.PRS.3SG Marija.F-NOM leave.PFV-LPT-SG.F

'Ivan thinks that Mary left'

In a sentence such as (3), Ivan *thinking* that Mary left is compatible both with the truth (p) and with the falsity (non-p) of the embedded proposition 'Mary left' from the point of view of the speaker. As a result, epistemic or propositional attitude verbs such as *think* or *believe* are considered nonveridical under this approach. The same applies to assertive verbs such as *say* or *claim*.

This is the major point of disagreement between the view of veridicality put forward by Egré and the one put forward by Giannakidou (1998; and her subsequent work). Giannakidou views veridicality as the inference of truth according to the epistemic agent who evaluates the proposition (and who may or may not correspond to the speaker).

(4) $x \text{ Vp} \text{ à } p$ according to x – Veridicality (Giannakidou)

Giannakidou (1998; 2009) also uses the concept of truth entailment in her definition of veridicality, but she relativizes it to the *epistemic model* of some individual x . The only requirement for a verb to be considered veridical according to Giannakidou is that it allows to infer that a given proposition is true according to some individual x functioning as an epistemic agent. This could be the speaker (in simple clauses or in 1st-person utterances more generally) but not necessarily (in complex sentences involving 2nd- and 3rd-person utterances, the relevant epistemic agent, as a rule, is the matrix subject, who is distinct from the speaker).

Thus, in general, veridicality is crucially related to the evaluation of truth and, consequently, to commitment to truth. However, in Giannakidou's view, this evaluation is not bound to the speaker, but can switch to some other subject of epistemic judgment, namely the matrix (i.e., main clause) subject. From this perspective, epistemic verbs such as *think* and *believe*, as well as assertive verbs such as *say* and *affirm* (all of which are nonfactive), are considered veridical (*contra* Egré 2008):

(5) Bg *Ivan misli / kazva, če Marij-a e zamina-l-a*
Ivan.M think(.PRS.3SG) say(.PRS.3SG) COMP Marija-F be.PRS.3SG leave-LPT-F.SG

'Ivan thinks/says that Mary has left'

à Mary left, according to John.

In contrast, nonveridical verbs are those that do not lead to truth commitment in any individual's epistemic model (as will be discussed in more detail below). Giannakidou's approach to veridicality has greater explanatory power when it comes to accounting for Slavic data, as we will see.

Before we move on to discuss how different (non)veridical items are manifested in Slavic, we should define the notion of truth commitment, in the context of the epistemic model of the individual x that assesses the truth of the proposition. The concept of epistemic model is defined in (6):

(6) Epistemic model of the individual

A model $ME(x) \in M$ is a set of worlds associated with an individual i (*anchor*) representing worlds compatible with what i believes or knows. (Giannakidou 1999: 45)

The set of worlds associated with an individual's epistemic model can contain both worlds in which the proposition is true (p worlds) and worlds in which the proposition is not true (non-p worlds). This distinction underlies the (non)veridicality of a given expression (Giannakidou 1997; 1999; 2013). If the individual's epistemic model contains only p worlds, i.e., if it is homogeneous, then the veridical reading obtains. This is most typically the case of simple (unmodalized) assertions. If the set of worlds in question is nonhomogeneous (i.e., containing both p and non-p worlds), then the nonveridical reading obtains. This is typically the case when an expression contains items such as modals or evidentials, as will be discussed below.

Veridical and nonveridical operators in simple clauses

Even though (non)veridicality is primarily a semantic notion, it is also relevant in syntax, because there are various syntactic items that function as veridical or nonveridical operators, depending on whether they bring about truth inference in the sense of Giannakidou, namely that a given sentence is true or false according to the individual who makes the assessment. In Slavic, there are different groups of items (tense markers, modals, evidentials, etc.) that are relevant for (non)veridicality, first in simple clauses (where the only relevant epistemic agent is the speaker, unless there is some marking of reportive evidentiality; see below) and then in complex sentences (where the matrix subject becomes relevant as well).

Different temporal markers can bring about either veridical or nonveridical readings. Past- and present-tense markers are considered veridical, whereas future-tense markers are viewed as nonveridical (Giannakidou 2002; Giannakidou and Mari 2016). Note the Bulgarian examples in (7):

(7) a. Bg *Ivan be-še bol-en včera*
Ivan.M be-IMPF.3SG sick-SG.M yesterday

'Ivan was sick yesterday'

b. Bg *Ivan e bolen dnes*
Ivan.M be.PRS.3SG sick.SG.M today

‘Ivan is sick today’

c. Bg *Ivan šte baĎe bolen utre*
Ivan.M FUT be.PRS.3SG sick.SG.M tomorrow

‘Ivan will be sick tomorrow’

In contrast to past- (imperfect-, aorist-) and present-tense marking (examples 7a–b), the example in (7c) is nonveridical because it contains a future-tense marker that does not refer to any existing time. The future is unknown, so the value of p (true or false) cannot be established (Giannakidou 2002).

Declarative present- and past-tense assertions, as in (7a–b), involve a *certainty operator*, which is veridical and indicates full commitment on the part of the speaker as an epistemic agent: the speaker evaluates the proposition as true in all possible worlds. As a result, such assertions cannot be contradicted or put in doubt by the speaker, which is why the example in (8) is infelicitous.

(8) Bg *Ivan be-še / e bol-en*
Ivan.M be-IMPF.3SG / be.PRS.3SG sick-SG.M

no az ne zna-m dali tova
but I.NOM NEG know-PRS.1SG whether DEM.N

e vjarn-o, ili ne
be.PRS.3SG true-SG.N or NEG

‘Ivan was / is sick, # but I do not know whether this is true or not’

By contrast, future-tense assertions as in (7c) above involve an *uncertainty operator*: the speaker cannot be fully committed to the truth of the utterance in the same way that he/she is when the utterance is situated in the past or present tense. Future-tense markers can be used to express an epistemic function as well. For instance, many Slavic languages (Bulgarian, Polish, BCMS, etc.) employ the future tense of the verb *be* as an epistemic modal marker, expressing somewhat reduced (although still relatively strong) speaker commitment (Błaszczak et al. 2010; Jędrzejowski 2015; Rivero and Simeonova 2015, among others), as in (9):

(9) a. Po To *będzi-e* *Ew-a*
 DEM be.FUT-3SG Ewa.F-NOM

‘This will be (= must be) Ewa’ (Błaszczak et al. 2010)

b. Bg *Ivan šte* (*da*) *si* *e* *vkāšti* *sega*
 Ivan.M FUT (SUBJ) REFL.DAT be.PRS.3SG in_house now

‘Ivan will be (= must be) at home now’ (Rivero and Simeonova 2015)

c. BCMS *Bi-će* *da* *mu* *je* *to* *sin:*
 be-FUT.3SG COMP him.DAT be.PRS.3SG DEM son(.NOM.SG)

liči *na njega*
 look(.PRS.3SG) to him.ACC

‘He will be (= must be) his son: he looks like him’ (Hansen 2005: 226)

All the examples in (9) involve a degree of uncertainty (i.e., the epistemic model of the speaker contains a nonhomogeneous set of p and non-p worlds), with future-tense markers functioning as nonveridical operators, akin to epistemic modals.

Modals in general (auxiliaries such as *can* or *may*, adverbs such as *possibly*, *probably*, etc.) are seen as epistemic weakeners in the literature, in the sense that they imply reduced commitment to the truth of the proposition (Karttunen 1972; Kratzer 1977; 1991; Giannakidou 1997; 1998; 2013; Portner 2009; 2018; Taboada and Trnavac 2012; etc.). As a result, unlike unmodalized assertions, which

imply full speaker commitment and are thus veridical from the perspective of the speaker, sentences containing modal items imply absence of full commitment and are thus nonveridical (the only exception are expressions involving deontic modality and alethic modality, which denote necessary truth and which we do not discuss here).

In sum, modalized expressions imply a nonhomogeneous set of worlds within the epistemic model of the speaker (partial commitment), unlike nonmodalized assertions, which imply a homogeneous set of p worlds where the truth of the proposition obtains (full commitment). As a result, in the latter case, the truth of the proposition cannot be put in doubt by the speaker (10a; 11a), whereas in the former case, this remains possible (10b–c; 11b–c).

(10) a. Bg *Ivan id-va тази вечер*
 Ivan.M come-IPFV(.PRS.3SG) DEM.F.SG evening

(#*no ne sām siguren*)

‘Ivan is coming this evening (#but I am not sure)’

b. Bg *Ivan trjabva da si e*
 Ivan.M must(.PRS.3SG) SUBJ REFL.DAT be.PRS.3SG

u doma po tova vreme
 at home at DEM.N.SG time.N

(*no ne moga da bāda absolutno siguren*)

‘Ivan must be at home at this time (but I cannot be absolutely sure)’

c. Bg *Ivan može da pristigne dnes*
 Ivan.M may(.PRS.3SG) SUBJ arrive.PFV(.PRS.3SG) today

(*no može i da ne pristigne*)

'Ivan may arrive today (but he also may not)'

(11) a. BCMS *Ivan dolazi danas*
Ivan.M(.NOM) come.IPFV(.PRS.3SG) today

(#*ali nisam siguran*)

'Ivan is coming today (#but I am not sure)'

b. BCMS *Ivan vjerojatno dolazi danas*
Ivan.M(.NOM) probably come.IPFV(.PRS.3SG) today

(*ali nisam siguran*)

'Ivan is probably coming today (but I am not sure)'

c. BCMS *Ivan možda dolazi danas*
Ivan.M(.NOM) maybe come.IPFV(.PRS.3SG) today

(*ali možda ne dolazi*)

'Ivan is maybe coming today (but maybe he is not)'

This brings us to the notion of gradation on the scale of speaker commitment in the context of modality. Depending on the set of worlds contained in the individual's epistemic model, his/her commitment to the truth of the proposition will be stronger or weaker: the more non-p worlds are contained in the epistemic model, the weaker the epistemic commitment will be; the more p worlds are contained, the stronger the commitment. For instance, modal items expressing probability/likelihood (e.g., epistemic *must*, modal adverbs *probably*, *likely*) will involve stronger epistemic commitment than those expressing possibility (*may*, *possibly*, etc.). Nevertheless, all such modal items function as nonveridical operators because none of them involves full speaker commitment ("full [epistemic] support," as defined in Boyes 2012).

In addition to modals, another class of items that affect the (non)veridical status of a sentence is evidentials, more precisely indirect evidentials. Like modals, indirect evidentials often bring about weakening of epistemic support (e.g., by virtue of generalized conversational implicatures). They do not signal falsity, but simply indicate that the speaker presents the proposition on the basis of a source different from his/her immediate perception or firmly acquired knowledge, as the information can only be inferred or conveyed from hearsay (or some other means). This usually implies that the speaker cannot be certain as to the truth value of the proposition conveying that information. This results in nonveridicality, as far as the speaker is concerned, so that, as with modal expressions in (10–11), the truth of expressions containing evidentials can be put into doubt by the speaker. This applies, in particular, to the Balkan Slavic grammatical system, in which the perfect-tense paradigms have undergone an extension into indirect evidentiality. See the following Bulgarian examples (Friedman 1986; 1999; 2004; Guentchéva 1993; 1996).

(12) a. Bg *Ivan bi-l bolen,*
 Ivan.M be-LPT(.SG.M) sick.SG.M

no az ne vjarvjam / ne znam dali e taka

‘Reportedly, Ivan is sick, but I don’t believe it / don’t know whether this is true’

b. Bg *Ivan e / be-še bolen,*
 Ivan.M be.PRS.3SG / be-IMPF.3SG sick.SG.M

#no az ne vjarvjam / ne znam dali e taka

‘Ivan is / was sick, #but I do not believe it /
 do not know whether this is true’

In (12a), the evidential predicate (the anteriority participle Bg *bil* without copula) also functions like a nonveridical operator, unlike present- or past-tense markers (as in 12b), which involve full commitment.

In sum, both epistemic modals and evidentials can generally be defined as nonveridical operators, since, operating on propositions (cf. Chafe and Nichols 1986; Palmer 1986; 2001; De Haan 2001; 2005; Faller 2002; Aikhenvald 2003; 2004; Boye 2012, among many others), they function as epistemic weakeners and thereby reduce truth commitment (for the relation between evidentiality and epistemic

modality, see Wiemer 2018).

In addition to modals or evidentials, other items in the clause can function as nonveridical operators as well: conditional markers, question operators, and negation. According to Giannakidou (1998), the latter is defined as an anti-veridical operator, i.e., as an operator that entails falsity (non-p); however, in embedded environments, negation can also bring about nonveridical/uncertainty readings (see next section). When appearing in the same sentence, these operators interact in different ways. For example, epistemic modals outscope negation (13b) and can never appear under the scope of negation (13a):

(13) a. Bg **Ivan ne trjabva da e zamina-l*
Ivan.M NEG must(.PRS.3SG) SBJV be.PRS.3SG leave.PFV-LPT(.SG.M)

b. Bg *Ivan trjabva da ne e zamina-l*
Ivan.M must(.PRS.3SG) SBJV NEG be.PRS.3SG leave.PFV-LPT(.SG.M)

‘Ivan must not have left’ (= ‘It is not possible/likely that Ivan has left’)

From the point of view of syntactic theory, the grammaticality contrasts above can be explained via different syntactic positions occupied by the operators in question: an epistemic modal operator is positioned higher up in the structure than a negation operator, and therefore it cannot appear under its scope (Cinque 1999; 2006; see also De Haan 1997; Boye 2012).

Other nonveridical items are banned from appearing in the same clause altogether. For instance, epistemic adverbs cannot appear in questions or conditionals, as shown in (14).

(14) a. BCMS **Je li vjerojatno otiša-o?*
be-PRS.3SG Q probably leave.PFV-LPT(.SG.M)

‘Did he probably leave?’ (intended meaning)

b. BCMS **Ako je vjerojatno otiša-o*
if be.PRS.3SG probably leave.PFV-LPT-(SG.M)

'If he probably left...' (intended meaning)

The examples in (14) are not just semantically odd, but downright ungrammatical (as marked by *): the syntactic configurations we have there are judged as unacceptable by native speakers, independently of their meaning.

Veridicality and nonveridicality in embedded contexts: mood/complementizer selection

Embedded contexts present a more complex picture in relation to (non)veridicality because, apart from the speaker, one should also consider the notion of epistemic commitment with regard to the matrix subject. Depending on the semantics of the matrix predicate, the speaker and the subject can be in agreement or in disagreement when it comes to their epistemic judgment: with predicates of knowledge (e.g., *know*, *understand*), both the speaker and the subject are fully committed to the truth of the embedded proposition, whereas with predicates of belief (e.g., *believe*, *consider*) one can infer that the proposition is true for the subject, though not necessarily for the speaker. Nevertheless, all such predicates are considered veridical under Giannakidou's approach to veridicality, since the latter requires truth commitment from only one epistemic agent (see further last section).

Various labels were used by authors to distinguish between these different types of veridical readings: *strong* or *objective veridicality* in cases where both the subject and the speaker are committed to the truth of the embedded proposition; *weak*, *relative*, or *subjective veridicality* in cases where only one epistemic agent is committed to it (Giannakidou 1998; Baunaz 2016; Giannakidou and Mari 2016). The contrast in question is illustrated by the following examples, which show that complements embedded under predicates of belief (weak/relative veridicals), but not those under predicates of knowledge (strong veridicals), can have their truth value canceled by the speaker:

(15) a. BCMS *Marij-a misli / vjeruje*
Marija-F.NOM think.IPFV(.PRS.3SG) / believe.IPFV(.PRS.3SG)

da je Ivan oženjen
COMP be.PRS.3SG Ivan.M(.NOM) married(.SG.M)

(*ali to nije istina*)

'Mary thinks/believes that Ivan is married (but it is not true)'

MARY THINKS/BELIEVES THAT IVAN IS MARRIED (BUT IT IS NOT TRUE)

b. BCMS *Marij-a zna / shvaća*
Marija.F-NOM know.IPFV(.PRS.3SG) / understand.IPFV(.PRS.3SG)

da je Ivan oženjen
COMP be.PRS.3SG Ivan.M(.NOM) married(.SG.M)

(#*ali to nije točno*)

‘Mary knows/relizes that Ivan is married (#but this is incorrect)’

Reportive marking introduces an additional perspective, so that the actual speaker need not be in full agreement with the evaluation by the matrix subject. Thus, as expected, an evidential construction such as with Bg *bil* in (16) can be embedded under a verb of belief (expressing some degree of speaker’s doubt), but not under a verb of knowledge (due to full speaker commitment, cf. the ungrammaticality of [16b]).

(16) a. Bg *Toj misli, če tja bi-l-a bezrobotn-a*
he think.IPFV(.PRS.3SG) COMP she be-LPT-SG.F unemployed-SG.F

‘He thinks that she was unemployed’

b. Bg **Toj znae, če tja bi-l-a bezrobotn-a*
he know.IPFV(.PRS.3SG) COMP she be-LPT-SG.F unemployed-SG.F

intended: ‘He knows that [they say] she is unemployed’

Furthermore, one of the main linguistic areas in which Giannakidou’s approach to (non)veridicality has been applied involves embedded mood selection, specifically the selection of indicative vs. subjunctive complements. Accounting for the semantic properties and the distribution of these mood categories has been a notoriously challenging issue, because it appears difficult to come up with a general property that can fully account for the distribution of subjunctive vs. indicative mood (Farkas 1992; Giannakidou 1998; Giorgi 2009; Mauri and Sansò 2015; Sočanac 2017). Nevertheless, Giannakidou’s approach to veridicality seems to be more successful when it comes to accounting for mood distribution in Slavic. Her basic generalization with regards to mood selection (e.g.,

Giannakidou 1998; 2009) is that indicative complements are selected by veridical predicates, whereas subjunctives are selected by nonveridical predicates. While this generalization runs into hurdles in Romance languages, primarily due to a group of factive-emotive predicates such as *regret*, *be glad*, etc. (see Factivity), which select the subjunctive despite being veridical, it seems to largely hold in Slavic.

It is worth noting that, unlike many other language groups, Slavic does not distinguish between indicative and subjunctive on the level of verbal morphology but through separate syntactic items, corresponding to complementizers or similar connectives, e.g., indicative Bg *če*, Ru *čto*, or Po *že* vs. “subjunctive” Bg *da*, Ru *čtoby*, or Po *žeby* (cf. Krapova 2001; Antonenko 2008; Dobrushina 2012; Tomaszewicz 2012; Sočanac 2017). For this reason, much (if not most) of what applies to so-called analytical subjunctive (vs. indicative) in the literature can be subsumed under complementizer selection (contrasts; see Complementizers, Mood). Indicative mood markers are selected by verbs viewed as veridical under Giannakidou’s approach (e.g., *know*, *think*, *say*), as shown in (17):

(17) a. Ru *On zna-et, čto Ivan ljub-it Maš-u*
 he.NOM know.IPFV-PRS.3SG COMP Ivan.M.NOM love.IPFV-PRS.3SG Maša.F-ACC

‘He knows that Ivan loves Mary’

b. Po *Sqdz-e, že to zrobi-t-eś*
 think.IPFV-PRS.1SG COMP DEM.ACC do.PFV-PST-2SG.M

‘I think that you did it’

c. Bg *Ivan kaz-va če Marija e zamina-l-a*
 Ivan.M say-IPFV(.PRS.3SG) COMP Marija.F be.PRS.3SG leave.PFV-LPT-SG.F

‘Ivan says that Mary has left’

Nonveridical verbs, in contrast, can select the subjunctive (or an associated complementizer). They appear to do so most consistently in Balkan Slavic, while in North Slavic, this choice seems to be more restricted. In any case, the most obvious factor of “mood” choice for both South and North Slavic is the distinction between volition-oriented verbs (including directives) and verbs of knowledge or belief (verbs of epistemic/cognitive attitude). Only the latter can have veridical complements, since they imply propositions, while

volition-oriented verbs do not (and they typically occur in control constructions), which *eo ipso* makes them nonveridical in all kinds of uses. Thus, in Balkan Slavic, subjunctive complements are the only choice with volitional (e.g., *want, prefer*) and directive verbs (e.g., *order, demand*); see example (18a). Complements marked as subjunctive (by an appropriate complementizer) are encountered also in North Slavic (see [18b]), but here and, to a lesser extent, in Slovene and BCMS, infinitival complements are possible as well (see Complementation; see [18c]).

(18) a. Bg *Toj iska da dojde-š utre*
 he want.IPFV(.PRS.3SG) SBJV come.PFV-PRS.2SG tomorrow

‘He wants you to come tomorrow’

b. Ru *On vele-l, čto.by Ivan priše-l*
 he.NOM order.(I)PFV-PST(.SG.M) COMP.SBJV Ivan.M.NOM come.PFV-PST(.SG.M)

c. Ru *On prosi-l Ivan-a prij-ti*
 he.NOM request.IPFV-PST(.SG.M) Ivan.M-ACC come.PFV-INF

‘He asked Ivan to come’

With verbs of epistemic attitude (*belief* predicates), the situation is more complex. Their complements code embedded propositions, but these do not always imply truth commitment, for instance when the matrix predicate is negated (e.g., *not think/not believe*). As shown in (19), such predicates often select the subjunctive (or a corresponding complementizer); see (19a) for Polish and (19b) for Bulgarian.

(19) a. Po *Nie sądz-ę, że.by to zrobi-t*
 NEG think.IPFV-PRS.1SG COMP.SBJV DEM.ACC do.PFV-PST(.SG.M)

‘I do not think that he did that’

b. Bg *Az ne vjarvja-m Marija da e bremenn-a*
 I NEG believe.IPFV-PRS.1SG Marija.F SBJV be.PRS.3SG pregnant-SG.F

‘I do not believe **that** Marija is pregnant’

The indicative–subjunctive distinction (or complementizer contrast) can thus be seen as an additional way of coding the semantic difference between a veridical and a nonveridical linguistic expression on a morphosyntactic level.

There are, however, certain instances of embedded indicative vs. subjunctive use in Slavic that may appear to pose problems for the (non)veridicality approach. In particular, there are many so-called dual-mood choice verbs, which can select both the indicative and the subjunctive in the embedded clause, not only with, for example, *hope*, *doubt*, but also with negated verbs of epistemic attitude (e.g., *Po sǎdzić* ‘think’ in 19a above). It is not immediately clear how such cases of embedded-mood use can be accounted for under the present theory, but a closer look at the nuance differences that can be observed between the indicative and the subjunctive variants in such cases nonetheless allows us to incorporate them under the (non)veridicality approach. Consider, for instance, a verb such as *hope*, whose Bulgarian equivalent can select either the indicative or the subjunctive:

(20) a. Bg *Ivan se nadjava, če šte spečeli sǎstezanie-to*
Ivan.M REFL hope.IPFV(.PRS.3SG) COMP FUT win.PFV(.PRS.3SG) competition-DEF.SG.N

b. Bg *Ivan se nadjava da spečeli sǎstezanie-to*
Ivan.M REFL hope.IPFV(.PRS.3SG) SBJV win.PFV(.PRS.3SG) competition-DEF.SG.N

‘Ivan hopes **that** he will win the competition’

Some authors (e.g., Anand and Hacquard 2013) have argued for a multicomponent analysis of predicates such as *hope*, claiming that they contain a doxastic component, which triggers indicative selection, and a preference/bouletic component, which triggers subjunctive selection. The indicative example in (20a) is thus interpreted in a more doxastic sense (i.e., in the epistemic model of the subject, there is a world compatible with Ivan’s beliefs in which he wins), whereas the subjunctive example in (20b) is interpreted in a more bouletic sense, referring to the subject’s preference (i.e., in the epistemic model of the subject, there is one world, call it the ideal world, in which Ivan wins and which is more desirable to him than the worlds in which he does not win). Hence (20a) involves truth commitment/veridicality, whereas (20b) is nonveridical, so the mood selection data in (20) are actually expected under the current theory. Note, however, that equivalents of Bg *nadjavam se* ‘hope’, particularly in North Slavic languages, practically never take a subjunctive complement (see Dobrushina 2012: 127 for Ru *nadejat'sja*). A similar point can be made for the commissive verb Bg

obeštavam ‘promise’ and its equivalents.

In general, dual-mood choice verbs, which are difficult to account for under Giannakidou’s approach to veridicality, are those that imply reduced commitment to truth, e.g., Ru *somnevajus* ‘to doubt’ in (21) or Bg *ne vjarvja* ‘not believe’ in (22).

(21) a. Ru *Ja somnevaj-u-s’ čto Boris prid-et*
I.NOM doubt.IPFV-PRS.1SG-REFL COMP Boris.M(.NOM) come.PFV-FUT.3SG

(= believe that not p)

b. Ru *Ja somnevaj-u-s’ čto.by Boris priše-l*
I.NOM doubt.IPFV-PRS.1SG-REFL COMP.SBJV Boris.M(.NOM) come.PFV-PST(.SG.M)

(= not believe that p) (cited after Noonan 2007: 107)

‘I doubt **that** Boris will come’

(22) a. Bg *Ivan ne vjarva, če Ana e bremenn-a*
Ivan.M NEG believe.IPFV(.PRS.3SG) COMP Ana.F be.PRS.3SG pregnant-SG.F

(= believe that not p)

b. Bg *Ivan ne vjarva Ana da e bremenn-a (= 19b)*
Ivan.M NEG believe.IPFV(.PRS.3SG) Ana.F SBJV be.PRS.3SG pregnant-SG.F

(= not believe that p)

‘Ivan does not believe **that** Ana is pregnant’

None of the predicates in (21–22) implies commitment to the truth of the embedded proposition. Hence, under Giannakidou’s approach, they are considered nonveridical and would thus be expected to select the subjunctive, contrary to the facts observed in (21a, 22a). In general, the entire gamut of verbs of epistemic attitude requires a thorough item-by-item check with respect to their

varying preferences for mood (or complementizer) choice. A representative empirical investigation of Russian complement-taking verbs (including also volition-oriented ones) is by Dobrushina (2012). We are, however, lacking an equally representative inner-Slavic comparison, so that empirical substantiation of variation in mood/complementizer choice is an issue for future research.

The dual-mood choice in such cases can be accounted for under the reinterpretation of the (non)veridicality approach proposed by Smirnova (2012), where the relevant criterion for mood selection is no longer commitment to the truth of the proposition but rather the strength of the epistemic commitment itself, i.e., commitment either to the truth (p) or to the falsity (non-p) of the proposition. Negative values on verbs of epistemic attitude (*not believe, not think, doubt*) indicate weak epistemic support if the subjunctive is chosen (i.e., the embedded proposition in such cases contains a nonhomogeneous set of worlds, both p and non-p), whereas the selection of the indicative with the same verbs implies full commitment to falsity (i.e., homogeneous sets of worlds: all worlds are non-p in such a case). As shown in the glosses beneath the examples in (21–22), there is a slight difference in the interpretation of the sentence depending on whether the epistemic verb selects the indicative or the subjunctive: in the latter case (21b, 22b), the interpretation is reduced epistemic commitment, i.e., the epistemic agent simply does not believe in the truth of the proposition, but not (necessarily) in its falsity either; in the former case (21a, 22a), the epistemic commitment is strong, but to the falsity of the proposition, i.e., the epistemic agent strongly believes that p is not true. This insight can also account for the fact that verbs that always cancel the truth of the proposition (e.g., *lie, deny*) systematically select the indicative across languages, which is not predicted under Giannakidou’s model of (non)veridicality. Such verbs, similarly to verbs of epistemic attitude in (21–22) that select the indicative, involve full commitment to the falsity of the proposition (i.e., a homogeneous non-p set of worlds), explaining why they select the indicative.

Before concluding, we can propose a syntactic account of the mood-selection data in (21–22) that goes hand in hand with the semantic analysis that we just outlined. Besides the semantic differences in epistemic commitment between the dual-mood choice verbs in these examples, one can also note a syntactic contrast between them (however, Dobrushina 2012: 127, 151 notes that subjunctive marking with this verb is extremely rare):

(23) a. Ru *Ja somnevaj-u-s'* (v t-om) čto
 I.NOM doubt.IPFV-PRS.1SG-REFL in DEM-LOC.SG.N COMP

Boris prid-et
 Boris.M(.NOM) come.PFV-FUT.3SG

b. Ru *Ja somnevaj-u-s' (*v t-om), čto.by*
 I.NOM doubt.IPFV-PRS.1SG-REFL in DEM-LOC.SG.N COMP.SBJV

Boris priše-l
 Boris.M(.NOM) come.PFV-PST(.SG.M)

'I doubt **that** Boris will come'

(24) a. Bg *Ivan ne vjarva (v tova), če*
 Ivan.M NEG believe.IPFV(.PRS.3SG) in DEM COMP

Ana e bremenn-a
 Ana.F be.PRS.3SG pregnant-SG.F

b. Bg *Ivan ne vjarva (*v tova) Ana da e bremenn-a*
 Ivan.M NEG believe.IPFV(.PRS.3SG) in DEM Ana.F SBJV be.PRS.3SG pregnant-SG.F

'Ivan does not believe **that** Ana is pregnant'

As we see, the indicative (but not the subjunctive) complement embedded under Ru *somnevajus'* 'doubt' or Bg *ne vjarva* 'not believe' can optionally be headed by a pronominal item. This can be accounted for by proposing that we do not have the same type of syntactic selection of the embedded complement in these two cases: the indicative-selecting variants embed a (pro)nominal (DP) complement headed by a pronoun (which can be either lexically realized or empty); the subjunctive variants involve a clausal (CP) complement, which cannot be headed by such a pronoun. Therefore, the differences in the semantic interpretation between the indicative and the subjunctive variants that we described above can be interpreted as corresponding to two different syntactic derivations. This further demonstrates that (non)veridicality is relevant both in semantics and in syntax in Slavic.

Equivalent insights on relevant phenomena from other approaches

The notion of veridicality has been more widely applied to South Slavic, in particular Balkan Slavic, whereas equivalent approaches have been employed predominantly with respect to North Slavic languages. A possible reason might be that, for a large part, Giannakidou developed her theory on Greek, whose structures, especially in clausal complementation, are similar to structures in Balkan Slavic. Thus, a “transfer” of Giannakidou’s insights to these languages, in particular to the role played by the da connective in clause connection and complex predicates, was quite obvious (cf. also Todorović 2015: 50–54). However, practically all the phenomena discussed under the heading of (non)veridicality have been pointed out and analyzed in other, mostly nongenerative, frameworks in a couple of Slavic languages. Thus, Padučeva (2015) remarks that “nonveridicality” is practically a synonym of “assertion-suspending device” (after Weinreich 1963/1980, Ru *snjataja utverditel'nost'*), and she applies this notion to the study of the behavior of different indefinite pronouns used as negative-polarity items in embedded clauses in Russian (cf. also Padučeva 2005; 2010). Apart from this kind of phenomena, the relation of nonveridicality to all contexts in which factuality (i.e., an epistemic agent’s support for a proposition) is weakened is obvious; here belong complex predicates with modal auxiliaries, the epistemic and/or evidential modification by particles or sentence adverbs, and the function of mood operators and complementizers (see Modality, Modal Particles, Evidentiality, Mood, Complementizers, Complementation). Thus, we will conclude by adding a few observations on two related phenomena.

First, examples such as (22a–b) above, i.e., with a negated nonfactive verb of epistemic attitude, have been treated as paradigm cases of negation-raising (after Horn 1975; 1978; 1985, originally dubbed “negative transportation” in Fillmore 1963; cf. Modrzejewska 1981 on Polish) and raising. The connection with veridicality is twofold. First, the complementizer, or mood, contrast (Bg *da* vs. *če*, Ru *čto* vs. *čtoby*, Po *že* vs. *žeby/aby/by*, etc.), correlates with strong (indicative) vs. weak (subjunctive) epistemic support by the judging subject (here the speaker); this is what examples (22a–b) above show. Second, the negation can also be placed within the complement (marked as indicative), as, for example, in (22c):

(22c) Bg *Ivan vjarva, če Ana ne e bremenn-a*
 Ivan.M believe.IPFV(.PRS.3SG) COMP Ana.F NEG be.PRS.3SG pregnant-SG.F

‘Ivan believes that Ana is not pregnant’

In this case, the speaker implies that the matrix subject lends full epistemic support to their statement, the sentence is thus veridical to the same extent as is (22a), namely, the matrix clause subject is said to assume non-*p* (*p* = ‘Ana is pregnant’) to be true. Thus (22a) and (22c) are assumed to be equivalent. Alternatively, it might be argued that semantically the (a), (b), and (c) realizations arrange along a

scale on which the (c) sentence is epistemically stronger than the (a) sentence. It is however difficult to test this in a methodologically impeccable way.

Furthermore, it is worth remembering that in Giannakidou's theory, for a proposition to be considered veridical, it suffices that there is just some epistemic agent who judges *p* as being true, and this agent can be different from the actual speaker (see [4]). This tenet remains unaltered also in Smirnova's reinterpretation of (non)veridicality as depending on the epistemic agent's strength of commitment to *p*. It would thus be interesting to see how this theory handles situations in which a conflict might arise between the speaker's and somebody else's point of view inferred from the verbal context. This problem arises in the description of (certain uses of) predicates denoting epistemic attitudes or related speech acts and in studies on narrative perspectives in connection with *de re* vs. *de dicto* readings.

For instance, the reportive function of the evidential extension of Balkan Slavic perfect forms (see [16a]) is a manifestation of a change of perspective, or of authorship, assigned to the propositional content (epistemic, i.e., knowledge- or belief-related stances) conveyed by somebody else's utterance(s) (see Sonnenhauser 2011: 143–148 for a critical survey and the connection to the *de re* vs. *de dicto* distinction in various kinds of speech reports). That is, the assignment of authorship to a given proposition, and whether and how the actual (i.e., reporting) speaker expresses his/her commitment to the propositional content originally uttered by a different speaker (e.g., the matrix clause subject), is directly connected to veridicality. Issues of perspective taking (who judges on the propositions implied by declarative speech acts) have been part and parcel not only in studies on narrativity (e.g., Zaitseva 1995; Padučeva 1996; Kurt 1999; Socka 2004) but also in studies on the semantics and functions of predicates of epistemic attitudes (e.g., Danielewiczowa 2002 for Polish). In particular, the *de re* vs. *de dicto* distinction has been employed as a functional motivation behind the complementizer choice in clausal complements, e.g., in Polish (see preceding section). Thus, Jaszczolt (1993; 1997) analyzes the contrast between (25a) and (25b) as follows: the “subjunctive” marking (25a) indicates that the reporting speaker “locates” the epistemic judgment with the (*origo* of the) matrix subject (*Ralf*), so that the reference is made *de dicto* (the speaker probably does not, and need not, know who Ortcutt is); the “indicative” marking (25b) is rather neutral in this respect, but it makes a *de re* reading more likely (cf. Danielewiczowa 2002: 64 for a similar observation):

(25) a. Po *Ralf* *nie wierz-y,* *że.by* *Ortcutt*
Ralf.M(.NOM) NEG believe.IPFV-PRS.3SG COMP.SBJV Ortcutt.M(.NOM)

by-t *szpieg-iem*
be-PST(.SG.M) spy-INS.SG.M

b. Po *Ralf* *nie wierz-y,* *że* *Ortcutt* *jest* *szpieg-iem*
Ralf.M(.NOM) NEG believe.IPFV-PRS.3SG COMP Ortcutt.M(.NOM) be.PRS.3SG spy-INS.SG.M

‘Ralf doesn’t believe **that** Ortcutt is a spy’ (Jaszczolt 1993: 52)

Inasmuch as *de re* is considered the default reading (Jaszczolt 1997), “subjunctive” counts as marked choice, and this corresponds to greater epistemic distance on the side of the reporting speaker; the same applies in 1st-person statements about one’s own knowledge state (compare Po *Nie wierzę, że / żeby p* ‘I do not think that p’).

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