From discursive to argumentative relations: the role of evidential-modal verbs as Connective Predicates

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Research goals

Show that evidential modal verbs function as argumentative connectives giving instructions about the argumentation structure and imposing constraints on the type of reasonings linking the arguments to the standpoints

Place this analysis in a research program aimed at developing an «argumentative reconstruction» well-founded in the semantics and pragmatics of discourse. A view of discourse relations / speech acts informed by Congruity Theory (Rigotti & Rocci 2001, Rigotti 2005) can help.

Show that evidential modal verbs behave much like the anaphoric connectives (Webber et al. 2003) and that their functioning can be captured seeing them as predicates imposing presuppositional conditions on an argument place to be saturated anaphorically, cataphorically or contextually. The presentation of this analysis in terms of Congruity Theory highlights the closeness between these constructions and the discourse relations informing argumentative reconstruction.

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Evidential modal verbs…

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- **Evidentials** are items which show "the kind of justification for a factual claim which is available to the person making that claim" (Anderson 1986: 274)

- *Sembrare* and *dovere* work as inferential evidential strategies in m-performative constructions "which express the speaker's current attitude towards the state of affairs" (Nuyts 2001: 40). These are constructions in which the verbs work as propositional operators.

- In these constructions *sembrare* and *dovere* indicate that the proposition in their scope has been inferred as a conclusion from a set of premises (Mieczikowski & Musi in press, Rocci 2012, 2013)

- Morpho-syntactic conditions for evidential reading of the two verbs differ. E.g. past tense *dovere* can have m-performative evidential readings, past tense *sembrare* is semantically past and non performative.

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… as argumentative connectives

When the premises are textually expressed, the two verbs connect discourse units functioning as discourse connectives (cfr. Moeschler 2006, Mauri and van der Auwera 2012)

[*Non vedo più la sua macchina*]premise. *Deve* [*essersene andato*]conclusion
'I do not see his car anymore. He must have left'

[*Nei sondaggi Renzi è in testa*]premise *Sembra* [*che la sinistra vincerà*] conclusion
'In the polls Renzi is ahead. It seems that the left wing will win'

We claim that connective effect does not emerge indirectly (e.g. as an implicature of the weakening of the assertive force) but directly as a contextual saturation of the relational semantics of the constructions.

- Since Toulmin's seminal book on *The Uses of Argument* (1958), where a general "layout" of arguments was proposed as a scaffolding to argument analysis and evaluation, diagrams of argumentation structure have enjoyed continued success in argumentation studies (cf. Freeman 1991, 2011, Vorobej 2006).

- Argumentation structure diagrams actually pre-date Toulmin as they are already found in Richard Whately (1852) and others early XXth century scholars.

[Ultimate Conclusion.]
Z is X,
proved by

Y is X,
proved
by

Z is Y,
proved by

A is Y,
[suppose
admitted.]

Z is A,
proved by
&c.

the argument that

and by the
argument that

B is X,
&c.

Y is B,
&c.

C is X,
&c.

Y is C,
&c.

- As argued by Freeman (2011) reconstructing the relations of support in a natural language argument is a necessary prerequisite to argument criticism/ evaluation. An this is their use in endeavors that go from Informal Logic to Critical Discourse Analysis and Rhetoric.

- Argumentation structures are currently used as a convenient descriptive tool for qualitative and quantitative descriptive and experimental studies on argumentation in various arenas of the social sciences: from Psychology of Education, to Media Studies.

- In the recent wave of NLP, AI and Data Science research on argument mining and argument analytics systems, argumentation structures are the key data structures that are the target of the mining and the input of the analytics.

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Argumentation structure and discourse structure

- Argumentation structure can involve long-distance and crossing dependencies (in contrast with RST-style discourse structures)

- Depending on approaches and purposes of the analysis argumentation structure may include implicit premises and indication of the argument scheme licensing the inference (e.g. from cause to effect).

- Argumentation structure abstracts from the linear flow of discourse: conclusions/claims are on top irrespectively of where they appeared in the argument.

- Argumentation structure can involve functional units that map onto diverse structural units (full sentences, clauses, and even phrases).

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Several discourses one argumentation structure

- She must be very brave, *because* she never complains.

- She *must* be very brave. She never complains.

- She is very brave. She never complains.

- She never complains. She *must* be very brave.

- She never complains. So, I conclude she is very brave.

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On Congruity Theory

- Congruity Theory (Rigotti & Rocci 2001, Rigotti 2005) takes the option of treating illocutionary forces and rhetorical relations with a single construct of pragmatic predicate.

- Pragmatic predicates impose presuppositional constraints on context and discourse units and license pragmatic effects updating the common ground.

- Contrary to structural theories of discourse, in Congruity Theory each successive discourse unit is dominated by its own pragmatic predicate.

Conclude (Spk, Hr, X, U_{-n}, U_0):

Presuppositions:

(a)　　p_1 ... p_n being the propositional contents of U_{-1} ...U_{-n} (and X_1...X_n), p_1 ... $p_n \in CG_{Spk,Hr}$ – that is belong to the common ground between Spk and Hr;

(b)　　q being the propositional content of U_0, q $\notin CG_{Spk,Hr}$; $\neg q$ $\notin CG_{Spk,Hr}$

(c) There is some ontological-semantic relation L ({p_1 ... p_n}, q) warranting {p_1 ... p_n} $\rightarrow$ q

Pragmatic effects:

With U_0, Spk presents q as *reasonably acceptable* by Hr thanks to the premises p_1 ... p_n presented in U_{-1} ...U_{-n} (and X_1...X_n).

U_1: 'She must be very brave'

- *Conclude_f* $_{U1}$ (Spk, Hr, U_1, U_X)

U_2: '[because] she never complains'

- *Argument*$_{U2}$ (Spk, Hr, U_2, U_1) $U_x = U_2$

- Note that the pragmatic predicates *Conclude_f* and *Argument* are conversive and they represent redundantly the same relation from the viewpoint of different stages of the discursive development.

U_1: 'She never complains'

- *Assert*$_{U1}$ (Spk, Hr, U_1)

U_2: 'She must be very brave'

- *Conclude_b*$_{U2}$ (Spk, Hr, U_2, U_1)

- This sequence feeds into the same invariant argumentation structure as the previous one but accounts for a different *dispositio* where an asserted content is retroactively recovered as a premise by an anaphoric version of *Conclude*.

Data: corpus of review, editorials and forum posts built up by the team of the project.

Levels of analysis:

- Identification of m-performative occurrences
- Textual presence and position of evidence:

  expressed/inexpressed; in the same clause/different clause; before/after the inferred conclusion; textual adjacency
- Co-occurrence with other connectives
- Types of inference schemes linking the premises to the standpoint

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Two types of discourse connectives (Cf. Webber *et alii* 1999, 2003)

Structural connectives

>Predicates relating two propositional arguments deriving from clausal interpretations (or larger discourse units) to form a larger discourse unit.

Anaphoric connectives

➢ Predicates relating one structural argument deriving structurally from the discourse unit they modify and one anaphoric argument.

The functioning of evidential verbs can be seen as analogous to that of anaphoric connectives. More specifically, *sembrare* and *dovere* are phoric connectives: they are structurally connected only to the proposition in the verbs' scope, being, instead, anaphorically or **cataphorically** linked to presupposed set of premises

- Premises in the same clause as the inferred conclusion

1. *Dunque Siamo grati dal profondo del cuore a Giovanni Paolo II per la determinazione con cui ha levato la voce (una voce anche fisicamente piu' alta e chiara, sembra che stia assai meglio ed e' questo un altro motivo di consolazione)*

'Therefore we are deeply grateful to John Paul II for the determinacy with which he has raised his voice ([a voice also physically louder and clearer]ₚᵣₑₘᵢₛₑ, **it seems that he feels far better** and this makes us feel relieved)'. (editorial, *La Stampa*, April 2003)

2. *L'opera, attribuita al Tarizzo, di cui purtroppo si sa ben poco, deve avere avuto una certa popolarità in passato [a giudicare dal numero di edizioni e ristampe]*

'The work, attributed to Tarizzo, of which unfortunately very little is known, **must have had some popularity in the past [judging by the number of editions and reprints**' (review, *Italica*, summer 1974)

- Premises in a clause distinct from that of the inferred conclusion

3. *Non conoscevo questo ristorante ma vedendo i piatti mi vien davvero voglia di andarci. Sembrano superappetitosi.*

   'I did not know this restaurant, but [watching the dishes]ₚᵣₑₘᵢₛₑ, I am really willing to go. **They seems to be very appetizing'**.(forum post, *Passionegourmet*, June 2011).

4. *@Andrea, hai presente che la bibbia è spesso presente nelle camere d'albergo? Apri un cassetto e la trovi. In una camera d'albergo ti guardi attorno e tutto è funzionale al tuo alloggio e al tuo pernottamento, ma che ci fa quel libro in quel cassetto? Deve avere davvero qualcosa di speciale.*

   'Andrea, know that the Bible is often found in hotel rooms? You open a drawer and find it. [In a hotel room you look around and everything is functional to your accommodation and your overnight stay]ₚᵣₑₘᵢₛₑ, but there is that book in the drawer? **It must have something special**.'(forum post to *La Repubblica*'s editorial, Novembre 2010).

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- Premises positioned before the inferred conclusion and
  premises positioned after the inferred conclusion

5. *Mentre esce una nuova edizione del Provinciale, che vuole essere ben più di una autobiografia, anzi il suo libro con maggiori ambizioni di scrittura, Giorgio Bocca sembra volersi misurare con gli scrittori suoi conterranei, quelli di cui si onora il romanzo italiano del secondo Novecento. Esprime questo suo azzardo nell'intervista rilasciata per Tuttolibri a Bruno Quaranta. Arpino è così così, ha dato qualche buon romanzo. Pavese è un noioso scrittore di Canelli che si atteggiava a intellettuale* […]

   'While there is a new edition of the Provincial, who wants to be more than a mere autobiography, or rather his book with more writing ambitions, **Giorgio Bocca seems to want to measure with his fellow writers**, those that honors the Italian novel of the late twentieth century. [He expresses this hazard in his interview for Tuttolibri given to Bruno Quaranta. Arpino is so-so, gave some good novel. Pavese is a boring writer from Canelli who posed as an intellectual […]']premise (editorial, *La Stampa*, April 2007).

6. Ma secondo me lui parla di un sua donna narcisista. deve aver avuto un'esperienza niente male con una di queste. è uno che la sa troppo davvero lunga sulle Turandot in giro per il mondo

'But I think he speaks about one of his narcissistic women. **He must have had a pretty good experience with one of these**.[It is one who knows really too much about Turandot(s) around the world']_{premise}

(forum post to *La Repubblica* editorial, November 2010)

- Premises adjacent (1-2) and non adjacent to the inferred clause:

7. *Non c'è stato schock né per i serbi né per Milosevic. Questo ritmo ha effettivamente abituato i serbi all'idea di essere bombardati. […] I portavoce della NATO che mostravano i filmati aerei sembravano farlo con un evidente senso di déjàvu. Sembra improbabile che gli abitanti di Belgrado fossero molto più impressionati.*

    '[It has not been a shock nor for the Serbs nor for Milosevic. This rhythm has actually made the Serbs used to the idea of being bombarded.]premise [...] The NATO spokesman that showed the air movies seemed to do it with a clear sense of déjàvu. **It seems unlikely that the inhabitants of Belgrade were more impressed.'** (editorial, *La Stampa*, April 1999).

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Relative modality and context dependence

- The functioning of modal verbs as evidentials fits neatly with a semantic analysis of the modals as context-dependent relational predicates such as the one proposed by the theory of Relative Modality (RM), initially proposed by Angelika Kratzer (1977, 1981, 2012).

- Modals are treated as relational predicates of the form M (B, p) selecting two arguments: the *prejacent* p and a set of propositions, called the *conversational background* (B). Modal expressions of necessity like *dovere* can be understood in terms of the *logical consequence* of the prejacent from the conversational background

- *Dovere* 'must' (B, p): p is a logical consequence of B (henceforth, symbolically: B $\square$ p)

Contextual and co-textual saturation of B

- Evidentiality in RM can be accounted for in terms of finer presuppositional restrictions on the type of propositions that make up an epistemic conversational background, by formulating restrictions that exclude direct evidence and reports.

- Furthermore, in a RM framework the anaphoric properties of the modals can be accounted for by their very context dependency. This can be represented explicitly by a procedural component of the meaning of the modal, instructing the addressee to recover the propositions making up the B from the discourse context (See Rocci 2005, 2008, in press).

- Premises textually expressed or entirely belonging to the *common ground*:

8. *A nessuno, neanche a chi ha applaudito l'atto di forza del governo Fujimori, e' piaciuto il mattatoio di Lima dove sembra evidente che alcuni guerriglieri siano stati assassinati quando avrebbero potuto essere catturati vivi.*

    No one, not even those who applauded the act of force carried out by the Fujimori government 'liked the shambles Lima where **it seems clear that some soldiers were killed when they could have been captured alive**.' (editorial, *La Stampa*, April 1997).

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Sembrare structural's constraints

Being vague as to to the cotextual position of the premises, *sembrare* and *dovere* frequently pattern with structural causal connectives which provide the reader with specific information as to where to recover the evidence:

[argumenti a precedere] *Ecco perché ci sembra che per certi aspetti le parole di Fini siano un poco di sinistra.*

[arguments precede] 'That's why we think that in some respects the words of Fini are a little left' (editorial, *La Repubblica*, November 2010)
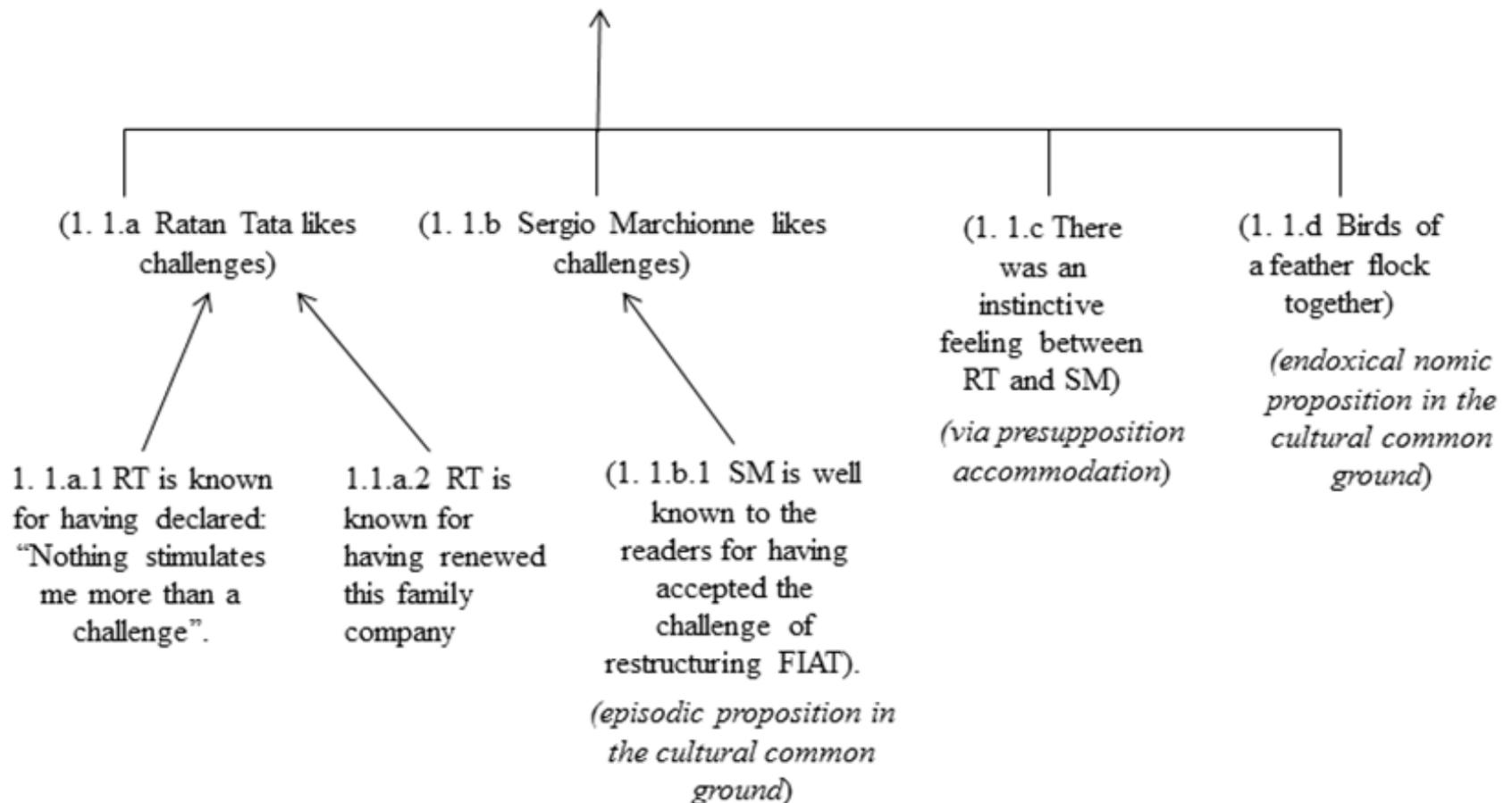
- Ratan Tata, presidente del gruppo indiano Tata dal 1991, è noto per aver svecchiato l'impresa di famiglia e per l'affermazione 'Niente mi stimola di più di una sfida'. **Deve** essere stato questo che ha fatto scattare un feeling istintivo tra lo stesso Tata e Sergio Marchionne, a.d. del gruppo torinese, durante le trattative che hanno portato ad un accordo commerciale tra i due gruppi in India. (*Il Sole 24 Ore*, April 19, 2006)

- 'Ratan Tata, chairman of the Indian group Tata since 1991 is known for having renewed this family company and for having declared: "Nothing stimulates me more than a challenge". It **must** have been this that triggered an instinctive feeling between Tata and Sergio Marchionne, CEO of the Turin based group, during the negotiations that lead to a commercial agreement between the two groups in India'.

This is a complicated abductive inference resting on a number of unstated premises, which notably include:

- the belief that Mr. Marchionne likes challenges, which can be recovered as an inference from his record as a manager and, in particular, for the fact that he accepted the challenge of restructuring FIAT, which is highly salient in the the common ground of the Italian readers of *Il Sole 24 Ore* and made more accessible by the remark on Tata restructuring his family company;

- some major premise supporting the inference from similarity to getting together well, which, in Aristotelian terms, is an *endoxon* in the cultural common ground: *Chi si somiglia si piglia* 'Birds of a feather flock together'.

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1. It **must** have been this [= Ratan Tata's love of challenges] that triggered an instinctive feeling between Tata and Sergio Marchionne

(1. 1.a Ratan Tata likes challenges)

(1. 1.b Sergio Marchionne likes challenges)

(1. 1.c There was an instinctive feeling between RT and SM)

(via presupposition accommodation)

(1. 1.d Birds of a feather flock together)

(endoxical nomic proposition in the cultural common ground)

1. 1.a.1 RT is known for having declared: "Nothing stimulates me more than a challenge".

1.1.a.2 RT is known for having renewed this family company

(1. 1.b.1 SM is well known to the readers for having accepted the challenge of restructuring FIAT).

(episodic proposition in the cultural common ground)

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A typology of inference schemes

Two broad classes of inference schemes (cfr. Rigotti 2006)

-syntagmatic (relations *in praesentia*):

presence of an ontological relation between the SoAs functioning as premises and the SoAs functioning as conclusions (e.g. concomitance, definition, parts/whole, causes, correlates)

-paradigmatic (relations *in absentia*):

premises and conclusions encode different SoAs linked by relations of similarity/opposition (e.g. analogy, alternatives, from all the more and all the less…)

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Sembrare's inferential constraints

Sembrare is compatible only with syntagmatic argument schemes. Instances of this class of inference schemes frequently attested in our corpus are:

- from the parts to the whole, like in 1 and 3, where from the fact that a property applies to the parts of a whole it is inferred it characterizes also the whole

- from causes, especially from someone's behavior (effect) to his intention (cause), like in example 5

Dovere's inferential constraints

Dovere, like *sembrare* is compatible with syntagmatic argument schemes:

- from the parts to the whole/definition:

[guardando un animale da lontano]: Ha il pelo nero e una lunga coda. Deve essere una pantera

'[looking at an animal far away]: He has black fur and a tail. He must be a panther.'

- From causes

Marco sta urlando da un'ora. Deve essere arrabbiatissimo.

'Marco is screaming since one hour. He has to be very angry'

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Dovere's inferential contraints

Differently from *sembrare*, *dovere* is compatible also with paradigmatic argument schemes such as:

- Analogical argument schemes:

*Quando a Berkeley c'è stato il terremoto, il governo americano ha elargito delle sovvenzioni alla popolazione. Ad Assisi c'è stato il terremoto. Il governo italiano **deve\sembra?** aver aiutato economicamente la popolazione.*

'When at Berkeley there was the earthquake, the American governement has provided subsidies to the population. At Assisi there has been an earthquake. The Italian governement **must/seem** economically helped the population'

*Il professore non ha risolto l'equazione. Non **devono**/ **??sembrano** esserci riusciti nemmeno gli studenti.*

'The professor has not solved the equation. The students **must/??seem** have not solved it either'

→ *Dovere* is less specific than *sembrare* in the selection of the argument schemes

Dovere$_E$ (e, s, B, p):

Presuppositions:

a) e is a speech event

b) s is the speaker of e

c) p denotes an eventuality e_p such that $e_p \leq e$

d) B = $B_E \cup B_{Dox}$

e) B_E is a set of propositions corresponding to factual evidence available to s at the moment of e

f) B_{Dox} is a set of propositions corresponding to assumptions of s at the moment of e

Semantic entailment: B $\Box$ p

Sembrare$_E$ (e, s, B, p)

Presuppositions:

a) e is a speech event

b) s is the speaker of e

c) p denotes an eventuality ep

d) B = BE $\cup$ BDox

e) B_E is a set of propositions corresponding to factual evidence available to s at the moment of e

f) B_{Dox} is a set of propositions stating that the eventuality e_{BE} is ontologically linked to the eventuality e_p

Semantic entailment: B $\Box$ p

Evidential inferential verbs

- function as anaphoric discourse connectives instructing the reader as to the presence of a premise-conclusion relation which has to be contextually and co-textually saturated

- impose different constraints on the reasonings linking the premises to the standpoint on the basis of their lexical semantics, providing an interesting point of view for the study of the interrelations between procedural and conceptual meanings

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