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Form and function of evidentiality and modality in undergraduate lectures in Brazilian Portuguese

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Evidentiality is the name given in modern linguistics to the capacity that languages have to identify the knowledge sources of which speakers make use. As is well known, some languages –including Balkan languages, Tibeto-Burman ones and many of those spoken in the American continent– code such sources in a grammatical way (mainly by means of verbal suffixes), which has led researchers such as Aikhenvald to claim that evidentiality must always be a grammatical procedure. Other authors, however, believe that evidentiality is a semantic category which becomes conceptualized in a particular way, either using specialized morphemes or taking advantage of discursive markers or other lexical procedures (*evidentiality strategies*). This second case can be illustrated by Romance languages –and a large part of the European ones– where no morphological element is found that unmistakably points at the source of information.

Introduction

One of the main tenets of Rhetorical Structure Theory (henceforth RST) is that besides the propositional content conveyed by the clauses of a text, implicit propositions arise from the combining of the clauses or of text spans that belong together. RST is a theory proposed by Mann and Thompson (1988) aiming at investigating text coherence regarding relations held between parts of text, both in macro and microstructure.[1] RST has been used in Descriptive Linguistics and in Computational Linguistics, and implicit propositions have been labeled by various authors as coherence relations, discourse relations, rhetorical relations or relational propositions (Taboada 2009).

According to Antonio and Iruskieta (2013), RST is a framework for the analysis of texts. It is very useful for the description of the superstructure of diverse text genres, as pointed in researches in Brazilian Portuguese by Giering (2009), Decat (2010), Antonio (2004), Pardo and Seno (2005), Santos (2012) and in other languages, as pointed by Carlson, Marcu et al. (2002), Taboada and Renkema (2011), Stede (2004), da Cunha, Torres-Moreno et al. (2011), Iruskieta, Ilarraza et al. (2013). Moreover, RST is a prominent theory in Functional Linguistics that researches how clauses combine, and how relations between clauses are formed in the microstructure of a text (Matthiessen and Thompson 1988).

A relevant research point in RST is the investigation of the linguistic means used by speakers to signal relations. According to RST, these are meaning relations, not formal ones (Mann and Thompson 1988). This means that relations can be held and interpreted without being formally marked by connectives, for example. Thus, other linguistic means of signalling relations must be investigated in phonology (intonation in spoken language, for example), morphology, syntax, text genre etc. (Taboada 2006).

Most relations in Brazilian Portuguese, which are not signalled by discourse markers or connectives present some other kind of cue that guides the discourse addressee or analyst to the acknowledgement or recognition of the relation. Thus, the aim of this paper is to present some expressions of modality and evidentiality, which function as cues that signal rhetorical relations: dynamic and deontic modalities signal

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[1] *Spans* are discourse units that can vary in length from one clause or sentence to the combination of other spans (Taboada and Habel).

enablement relations; the epistemic modality signals an evaluation relation; and evidentiality signals an attribution relation. Thus, this study may be relevant to the description of means of signalling rhetorical relations in spoken discourse.

It is important to notice that the relation between epistemic modality and evidentiality is controversial. Some authors consider evidentiality a subtype of epistemic modality, while other researchers maintain that epistemic modality falls under the scope of evidentiality. The present paper will not discuss the merits of this theoretical controversy. It aims, instead, at investigating important and recurrent uses in academic discourse, as well as their grammatical encoding in undergraduate lectures in Brazilian Portuguese.

In order to achieve the goals presented previously, this paper is organized in three more sections. In section 1, we lay out the main tenets of the theory that underlies the paper and present the concepts of modality and evidentiality adopted in this study. The research corpus and the methodology used in the research are presented in Section 2. Section 3 focuses on the analysis of examples from the corpus. The final section lays out and discusses the conclusions of this study. It is also necessary to remark that this is not a quantitative study, and that the analysis aims at discussing the different ways in which rhetorical relations are signalled by modality and evidential markers in academic Brazilian Portuguese.

1 Theoretical background

1.1 RST

RST is a descriptive theory whose object of study is the organization of texts, characterizing the relations established among parts of texts (Mann and Thompson 1988). According to RST, besides explicit propositional content conveyed by the clauses of a text, there are implicit propositions (called relational propositions), which arise from the relations held between text spans (Mann and Thompson 1983). Matthiessen and Thompson (1988) state that relational propositions permeate the whole text, from relations established between text spans to relations established between two clauses. RST assumes that these relations are essential to the coherence of the text (Mann and Thompson 1988), as they confer unity to the text and enable the producer of the text to reach the intended aims of the text.

Relational propositions receive other labels such as "discourse relations", "coherence relations" or "rhetorical relations" (Taboada 2009). Regarding organization, relations can be of two types:

- nucleus-satellite (hypotactical), in which satellite is ancillary to the nucleus. This type of organization is represented in figure 1: an arch goes from satellite to nucleus.
- multinuclear (paratactical), in which a text span is not ancillary to the other. Each span is a distinct nucleus, as in figure 2.

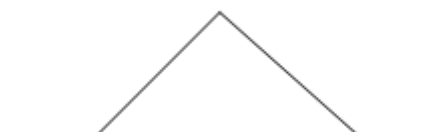**Figure 1.** Nucleus-satellite schema   **Figure 2.** Multinuclear schema

Rhetorical relations are defined by RST based on four criteria: a) constraints on the nucleus; b) constraints on the satellite; c) constraints on the nucleus-satellite combination; d) effect. According to Gómez-González and Taboada (2005), RST has a bias towards the text producer. Thus, the most important characteristic in relation definition is the effect that the discourse producer wants to achieve in his/her addressee. Let us take as example the definition of enablement (nucleus-satellite) relation in chart 1.

Chart 1. Definition of enablement relation (Mann and Taboada 2010)

Relation name	Constraints on either S (satellite) or N (nucleus) individually	Constraints on N + S	Intention of Speaker/Writer
Enablement	on N: presents an action by the addressee (including accepting an offer), unrealized with respect to the context of N.	Addressee comprehending S increases his/her potential ability to perform the action in N	Addressee's potential ability to perform the action in N increases

A list of 24 relations was initially suggested by Mann and Thompson (1988) after the analysis of hundreds of texts with RST. Afterwards an extended version of this list was provided on the RST website (http://www.sfu.ca/rst/01intro/definitions.html). However, this list is not a closed set, and other relations can be defined according to the investigated type or genre of text.

The rhetorical structure of a text, represented by a tree diagram, is defined by the network of relations established between successively larger portions of text. According to Mann and Thompson (1988), the rhetorical structure is functional, because it takes into account how the text produces an effect on the addressee. An example of RST analysis is presented in figure 3[2].
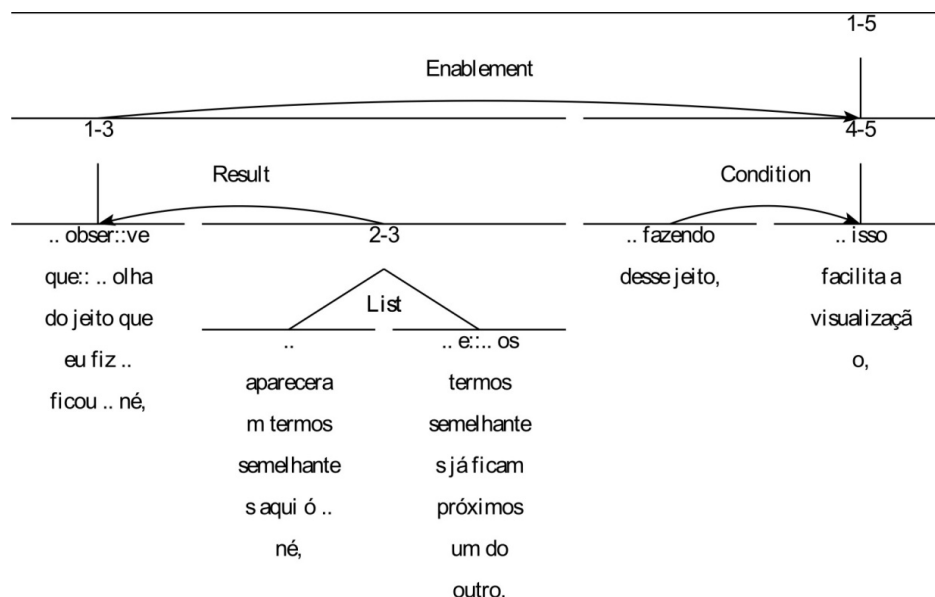
Figure 3. RST tree diagram

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[2] The numbers of the spans do not correspond to the actual sequential numbers in which the spans appear in the formal speeches of the *corpus*. The numbers in the diagrams only represent the sequential numbers of the spans in the example presented in the diagram.

1 .. obser::ve que:: .. olha do jeito que eu fiz .. ficou .. né,
2 .. apareceram termos semelhantes aqui ó .. né,
3 .. e::.. os termos semelhantes já ficam próximos um do outro,
4 .. fazendo desse jeito,
5 .. isso facilita a visualização
"1 .. observe that .. look .. the way I did .. it is .. eh,
2 .. similar terms appeared here .. look .. you know,
3 .. and .. similar terms are already close to one another,
4 .. doing it this way,
5 .. it makes visualization easier,"

In figure 3, an enablement relation is used by the professor to inform the students of the behaviour and attitude that they must have, so that they can perform the actions presented in the nucleus (units 4-5). In the satellite span (units 1-3), the Mathematics professor uses the verbs "observar" and "olhar" in the imperative mode, which suggests that the students must pay attention to how he solves the exercises. This will increase their ability to view the terms of the equation.

Rhetorical relations can also be classified according to whether they are subject matter or presentational. The intended effect of subject matter relations is that the addressee recognizes the relation, while the intended effect of presentational relations is to increase some inclination in the addressee, such as the desire to act or the degree of positive regard for, belief in, or acceptance of the nucleus. Two of the relations investigated in this paper are subject matter (attribution and evaluation) and one is presentational (enablement)[3].

The identification of the relations by the analyst is based on functional and semantic judgments, seeking to identify the function of each text span and to investigate how the text produces the desired effect on its possible addressee. The judgments are of plausibility, since the analyst has access to the text, is aware of the context in which the text was produced and of the cultural conventions of the text producer and its possible addressees, but has no direct access to the text producer or to its possible addressees. Hence, the analyst cannot say with certainty whether any one analysis is correct, but may only suggest a plausible analysis (Mann and Thompson 1988).

One mistake must be avoided by RST analysts: assuming that only discourse markers can signal relations. After investigating conversations and newspaper articles, Taboada (2006) concluded that a high number of rhetorical relations are not signaled explicitly. The same author (Taboada 2009) also presents some other mechanisms that can signal relations, such as verb tense, sentence mood, embedding, verb meaning and implicatures. Researching contrast relations in interaction, Ford (2000) remarked that the meaning of text spans can also be useful in identifying the relation they embody.

1.2 Evidentiality and modality
It has already been stated previously in this paper that the relation between epistemic modality and evidentiality is controversial. According to Neves (2006), two positions can be found in literature regarding epistemic modality and evidentiality. Authors such as Palmer (1986), Hengeveld (1989) and Dik (1989) support that evidentials are a type of epistemic modals. On the other hand, authors such as De Haan (2001) and Nuyts (2001) state that evidential status determines epistemic value.

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[3] The definitions of attribution, evaluation and enablement relations will be presented in sections 3.1, 3.2 and 3.3 respectively.

As this paper does not aim at discussing the relation between the two, the definitions adopted in the paper do not conceive of the concepts as overlapping. Thus, this paper adopts the definitions of epistemic modality and evidentiality proposed by De Haan (2001): epistemic modality is conceived of as "the degree of confidence the speaker has in his or her statement" (p. 1), and evidentiality is characterized as "the marking of the source of the information of the statement" (p. 1).

Therefore, the following examples are considered evidential qualifications: pointing the source of information by means of *dicendi* verbs, as in example (1) and (2), by means of prepositions, as in example (3), or by means of sensory verbs, as in examples (4) and (5).

(1)   .. ou seja esses autores que *dizem* .. olha .. fiquem tranquilos .. percorram .. os mesmos caminhos ..
        ".. i.e. these authors that *say* .. look .. keep calm .. walk the same roads .."

(2)   ... o MST estava armado não estava?
        .. só que do outro lado os cara também estavam armados.
        .. só que a notícia não *fala*,
        "… MST were armed weren't they?
        .. but on the other side the guys were armed too.
        .. but it did not *say* that in the news,"

(3)   .. *segundo* Raul Prebisch,
        .. eram os países subdesenvolvidos né,
        ".. *according* to Raul Prebisch,
        .. they were underdeveloped countries,"

(4)   .. mas eu venho *percebendo* que:: que vem acontecendo o seguinte .. tá.
        .. éh:: *OUVI*:: isso,
        .. até *cheguei a ouvir* isso,
        .. ah eu COPIEI DO OUTRO.
        ".. but I have been *noticing* that something is happening right?
        .. eh:: I *HEARD* that,
        .. I *even heard* that,
        .. oh I COPIED FROM MY COLLEAGUE."

(5)   .. eu *vi* lá o Requião,
        .. ele exigiu .. exigiu .. que os produtos tivessem esse símbolo aqui
        ".. I *saw* Requião
        .. he ordered .. ordered that the products had this symbol here"

And the following examples are considered epistemic qualifications: expression of opinion, as in example (6), belief, as in example (7), and knowledge, as in example (8), by means of verbs; indication of the speaker's degree of certainty towards the state-of-affairs, propositional contents or speech acts s/he conveys, by means of: auxiliary modal verbs, as in example (9), adverbs, as in example (10), adjectives, as in example (11), nouns, as in example (12), verb tense, as in example (13). The degree of certainty varies on a scale that goes from a proposition that may be absolutely right to one that may be almost impossible to maintain (Neves 2006).

(6)   .. eu *acho* um absurdo,
        .. um aluno que vem .. pra fazer uma prova,
        .. em que ele nem se deu o trabalho de prestar atenção.
        ".. I *think* it's ridiculous,
        .. a student who comes .. to take an examination,
        .. to which he didn't even pay attention."

(7)   .. eu *acredito* em Deus,
        .. só pra gente comentar aqui .. tá?
        ".. I *believe* in God,
        .. just for us to make a remark here ok?"

(8)   .. pessoal .. *não sabemos* até agora .. até hoje .. as consequências dos transgênicos,
        .. por exemplo da soja transgênica para o solo,
        .. para o lençol freático.
        ".. people .. we *don't know* till now .. till today .. the consequences of the transgenics,
        .. for example of the transgenic soy to the soil,
        .. to the groundwater."

(9)   ... ele é.. altamente mutagênico,
        ... causa/o acúmulo dele tá causando mutações no DNA,
        ... e aí *pode* gerar .. câncer,
        "… it is .. highly mutagenic,
        ... causes/ its accumulation is causing DNA mutations,
        … and then it *can* cause cancer,"

(10)   .. é a teoria aceita digamos assim .. né?
        .. porque *realmente* ela contro::la .. o aparecimento .. dessas moléculas orgânicas ne::ssas condições da Terra primitiva.
        ".. it is the most accepted theory let's say so .. right?
        .. because it *really* controls .. the emergence .. of these organic molecules in these conditions in primitive Earth."

(11)   .. é *cla::ro* que um leito::r né:: dependendo da idade não vai pensar em todas essas coisas,
        ".. *of course* a reader you know depending on the age won't thing about all that stuff,"

(12)   .. se vocês começarem a plantar a soja .. transgênica,
        .. vocês podem ter *certeza* que plantar::,
        .. colhe::r,
        .. o CUS::to de vocês vai vir de mais ou menos .. seis reais.
        ".. if you start planting transgenic .. soy,
        .. you can *be sure* that planting,
        .. harvesting,
        .. your COST will be more or less .. six reais."

(13)   ... e aí os aminoácidos .. reagentes químicos .. se combinam,
          .. e formam moléculas mais comple::xas,
          .. que .. provavelmente *seriam* proteínas,
          "… and then the amino acids .. chemical reactants .. combine,
          .. and form more complex molecules,
          .. which .. *would* probably *be* proteins,"

The definition of deontic modality is less troublesome. According to Neves (2006), while epistemic modality is located on the axis of knowledge, deontic modality is located on the axis of behavior, as it is used to indicate obligation, which can be internal, moral, prescribed by one's consciousness, or external, material, prescribed by circumstances (Neves 2006). Deontic modality is conveyed mainly by means of auxiliary modal verbs, as in examples (14) – (19) and also by an adverb associated with an auxiliary modal verb, as in example (19).

(14)   .. você PRIMEIRO *tem que* usar a propriedade logaritmo,
          ".. FIRST you *have to* use the logarithm property,"

(15)   .. nós *temos que* FAcilitar a leitura desta tabela ou deste gráfico para o leitor,
          ".. we *have to* make the reading of this table or of this chart easier for the reader,"

(16)   .. você *precisa* ter um certo equilíbrio **..** no teu organismo **..** em relação à alimentação**,**
          ".. you *need* to have some balance .. in your organism .. regarding your feeding,"

(17)   .. então você *não pode* ficar comendo batata chips**,**
          .. você *não pode* ficar comendo a batata frita,
          .. ficar .. né/ esses alimentos industrializados que ficam no mercado,
          ".. so you *cannot* keep eating potato chips,
          .. you *cannot* keep eating fried potatos,
          .. keep .. eh/ that processed food from the supermarket,"

(18)   .. a escolha do agente molha::nte .. *deve* ser criteriosa e principalmente *deve* ser compatível com todos os componentes da formulação.
          ".. the choice of wetting agent *must* be careful and it *must* mainly be compatible with all the components of the formulation."

(19)   .. vocês *necessariamente deverão* apresentar aquela descrição,
          ".. you *must necessarily* present that description,"

According to Dall'Aglio-Hattnher (2008), dynamic modality, which is also referred to as facultative or inherent modality, expresses ability and capability. In Brazilian Portuguese it is conveyed by few lexical items, as in examples (20) – (23): the construction "ser capaz", in example (20); the verb "saber", in example (21); the verb "conseguir", in example (22), and the auxiliary modal verb "poder" in example (23).

(20)   .. eles não/eles não acreditavam que uma bactéria *era capaz* de se dividir,
          ".. they not/ they did not believe that a bacteria *was able to* divide itself,"

(21)   .. não *sabe* ler,
         .. não *sabe* escrever.
         ".. you don't *know* how to read,
         .. you don't *know* how to write."

(22)   .. então ele não *consegue* .. transformar aquelas moléculas orgânicas complexas
         em moléculas orgânicas que/ ... quebradas e degradadas no próprio ambiente.
         ".. so .. he *can* not turn those complex organic molecules into organic molecules
         that/ ... broken and degraded organic molecules in the environment itself."

(23)   .. tem umas moscas .. grandonas que *podem* levar a carne embora né,
         ".. there are some flies .. so big that they *can* take the meat away you know,"

2 Methodology

The research *corpus* used in this paper consists of seven university lectures in
Brazilian Portuguese of the following disciplines: Biology, Geography, Physical
Chemistry, Mathematics, Psychology, Brazilian Literature and Economy. Each lecture
is about 80 minutes long and the whole corpus contains 74676 words. Subjects are
university professors and the lectures present a formal register.

Other features that can be noticed on the lectures are speakers' roles and
conversational turns previously determined (Koch and Souza e Silva 1996). Thus, there
are few interaction signals, as the professor keeps the conversational turn most of the
time. There are few interruptions from the audience for querying. These lectures also
have a well-marked beginning with the presentation of the aims of the class, as well as a
closure in which the topics of the next class are anticipated, as in examples (24) and
(25).

(24)   ... entÃO HOje nós vamos/eu vou estar passando para vocês ... éh:: o relatório
         que vai ter que ser FEIto,
         ... é o trabalho que vocês vão ter que fazer agora com os dados que foram
         coletados .. tá?
         ".. so today I will be assigning to you .. eh .. the report that will have to be done,
         .. it's the paper that you will have to write now with the data that was collected ..
         ok?"

(25)   .. e pra isso .. é .. PRImordial nós estudarmos o comportame::nto bioló::gico ..
         da suspensão.
         .. a re::ologia da suspensão.
         ... o que é isso?
         .. nós vamos deixar pro próximo capítulo,
         .. pra próxima aula tá?
         .... ah:: gente eu tava esquecendo,
         .. óh:: .. presta atenção só um pouquinho.
         .. as suspensões .. eu mandei pra vocês por e-mail .. os slides.
         .. aqui tem .. o roteiro da aula o programa da aula,
         .. e tem xerox,
         .. são quatro cinco .. capítulos .. de livros modernos sobre suspensões.
         ".. and for this it is very important that we study the biological behaviour .. of
         suspensions,
         .. the rheology of suspensions.

.. what's that?
.. we'll leave for the next chapter,
.. for the next class .. ok?
…. ah people I was forgetting,
.. look pay attention a little.
.. the suspensions .. I sent to you via e-mail .. the slides.
.. here is .. the guide of the class .. the programme of the class,
.. and there are photocopies,
.. they are four .. five chapters of modern books about suspensions."

The lectures were transcribed alphabetically and segmented into intonation units, defined by Chafe (1988) as "brief spurts of vocalization" characterized by a single coherent intonation contour with a clause or sentence final intonation, usually separated by pauses and generally with a clause-like structure.

The RST diagrams were created with the aid of RSTTool (O'Donnel 2000), a software developed for designing RST trees. After the text to be diagramed is imported into RSTTool, it must be segmented into clauses using the Text interface, as in figure 4.
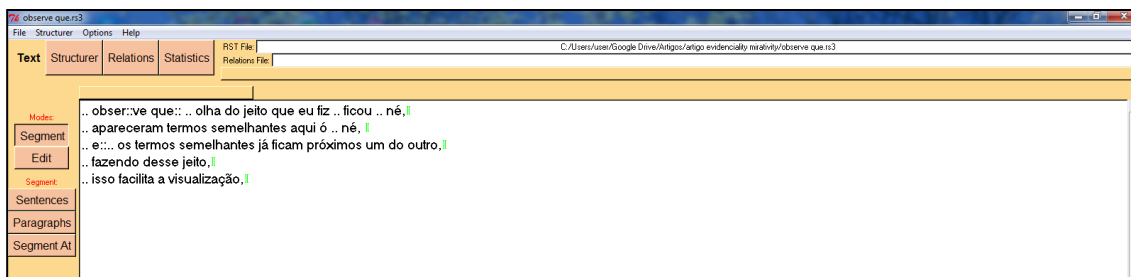

Figure 4. RSTTool's Text interface

According to Matthiessen and Thompson (1988), complement and restrictive clauses must not be segmented because they do not hold any kind of rhetorical relations. They function within the structure of the main clause.

The diagram itself is designed using the Structurer interface (see figure 5).The analyst links the text spans and assigns the label of the relation. It is important to notice that the software does not identify any relation, it is solely an interface to design the diagrams. The identification of the relations, of the nuclear and satellite spans is the analysts' job.
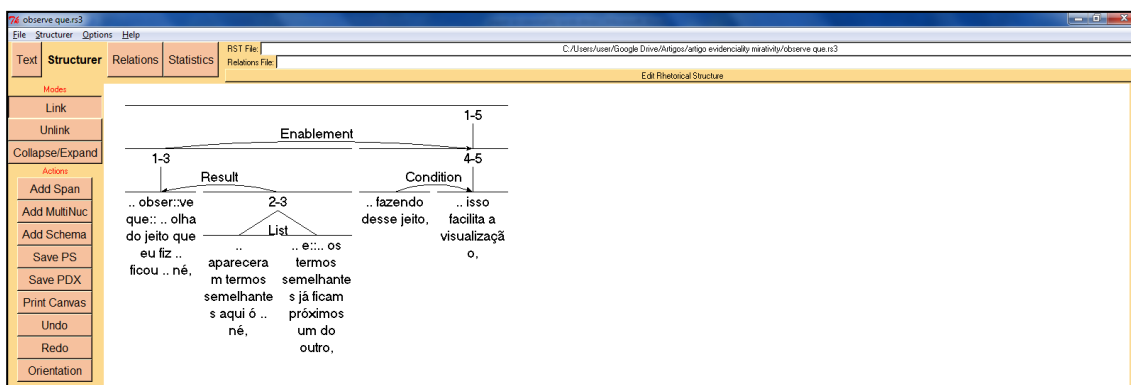

Figure 5. RSTTool's Structurer interface

3 Discussion

3.1 Evidentiality and attribution relation

The attribution relation is not part of the classic set or RST relations proposed by Mann and Thompson (1988), it was proposed later by Carlson and Marcu (2001) and defined by Pardo (2005). However, that is not a problem, as Mann and Thompson (1988) recognize that the classic set is not a closed list and that it is susceptible to extension and modification. The definition of an attribution relation is presented in chart 2.

Chart 2. Definition of attribution relation. Adapted from Carlson and Marcu (2001) and Pardo (2005)

Relation name	Constraints on either S (satellite) or N (nucleus) individually	Constraints on N + S	Intention of Speaker/Writer
Attribution	On N: N presents the content of the reported message. On S: S is the source of the attribution.	S and N point the source of the message and the message, respectively.	The addressee is informed about the message and about who produced the message.

According to Carlson and Marcu (2001), an attribution relation is used to mark reported speech and cognitive predicates, such as feelings, hopes, thoughts etc.

In the lectures of the *corpus*, an attribution relation is recurrent. Mehan (1985) states that classroom discourse is part of the family of speech events (Hymes 1974) and, therefore, it has routinized forms of behaviour, sequential organization and hierarchic structure in turn-taking. In the exchange of academic information, professors need to point out the authors that are the source of the focused information. Attribution relation, signalled by evidential qualification, is used with that purpose, as it can be noticed in figures 6 and 7.
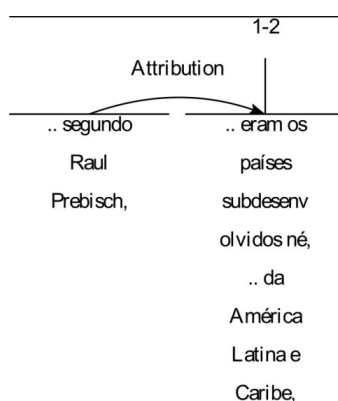
Figure 6. Attribution relation

1 .. segundo Raul Prebisch,
2 .. eram os países subdesenvolvidos né, .. da América Latina e Caribe,
"1 .. according to Raul Prebisch,
2 .. they were underdeveloped countries, .. from Latin America and the Caribbean,"

The example in figure 6 presents the most frequent evidential qualification in the lectures of the *corpus*, preposition "segundo" (according to). It is the easiest way for the professor to make direct reference to the author responsible for the focused information. Evidential markers are introduced in the satellite span, whereas the conveyed information is presented in the nucleus.
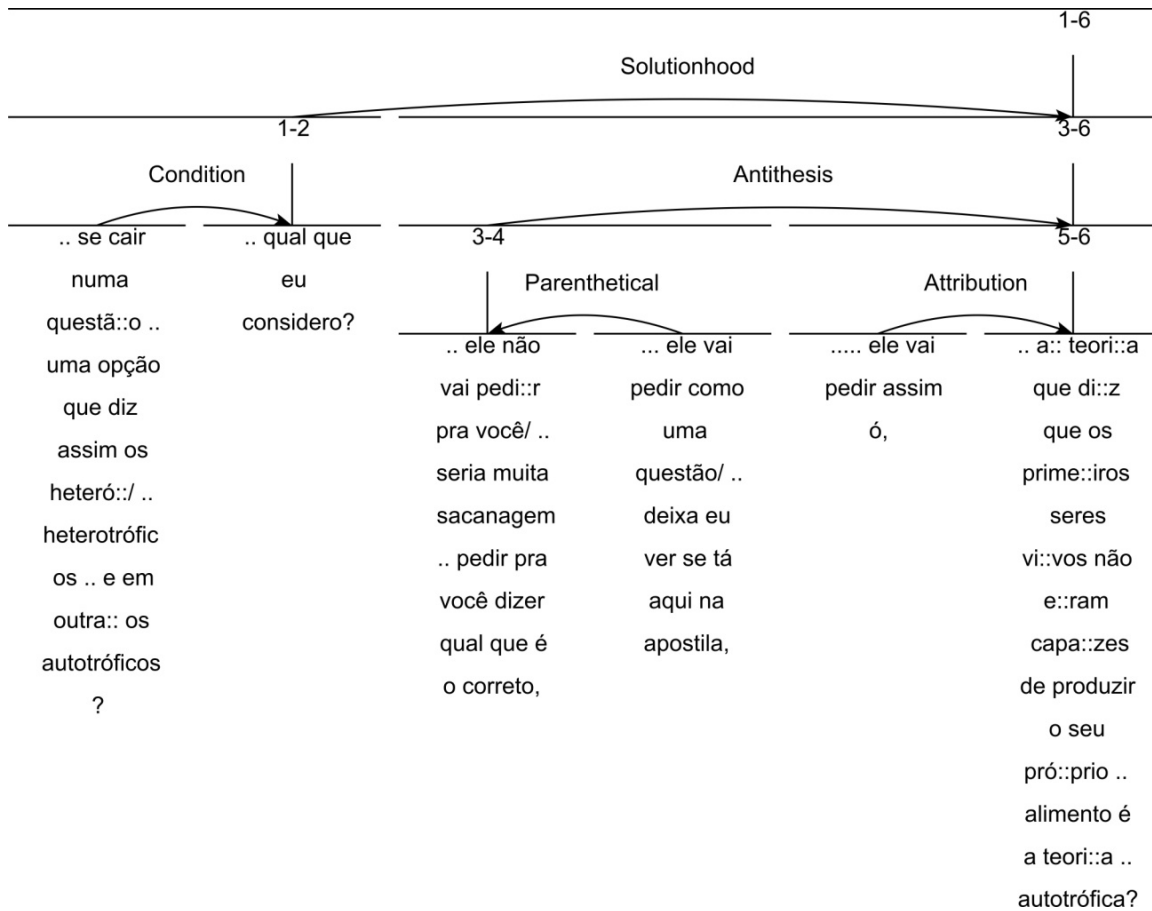

Figure 7. Attribution relation

1 Aluno: .. se cair numa questã::o .. uma opção que diz assim os heteró::/ .. heterotróficos .. e em outra:: os autotróficos?
2 .. qual que eu considero?
3 Professor: .. ele não vai pedi::r pra você/ .. seria muita sacanagem .. pedir pra você dizer qual que é o correto,
4 ... ele vai pedir como uma questão/ .. deixa eu ver se tá aqui na apostila,
5 ..... ele vai pedir assim ó,
6 .. a:: teori::a que di::z que os prime::iros seres vi::vos não e::ram capa::zes de produzir o seu pró::prio .. alimento é a teori::a .. autotrófica?
"1   Student: if   in   a   question::n   ..   there   is   an   option   that   says hetero::/heterotrophicals .. and in anothe::r autotrophicals?
2 ... which one should I consider?
3 Professor: .. he won't a::sk you to::/.. it would be a cheap trick .. to ask you to tell which one is correct,
4 .. he will ask you a question like/ let me see if it's in the book,
5 ..... he will ask like this,
6 .. the:: theory:: that sa::ys that the first li::ving creatures we::re not a::ble to produce their own .. foo::d is the autotrophic .. the::ory?"

In figure 7, the analysis presented by Antonio and Takahashi-Barbosa (2012) states that the satellite span is a question a student asks the professor (units 1-2). The satellite is a problem, to which the solution is presented by the information in the nucleus (units 3-6). In unit 5, the professor uses the *dicendi* verb "pedir" in order to point the source of the information in unit 6, i.e., the source of the information (the examiner) is presented in the satellite, and how the information will be evaluated in the test is the nucleus.

3.2 Epistemic modality and evaluation relation
The definition of evaluation relation is presented in chart 3.

Chart 3. Definition of evaluation relation (Mann and Taboada 2010)

Relation name	Constraints on either S (satellite) or N (nucleus) individually	Constraints on N + S	Intention of Speaker/Writer
Evaluation	None	On N + S: S relates N to degree of speaker/writer's positive regard toward N.	Addressee recognizes that S assesses N and recognizes the value it assigns.

An evaluation relation, by its nature, is coded by a verb that conveys opinion, attitude or belief (figure 8), by adjectives (figure 9) and by interjections (figure 10). In the *corpus*, it is used by professors to convey their attitude towards the subject or towards the students' attitude, as in figure 8; towards the lecture itself, as in figure 9; or towards some remark about some other topic rather than the topic of the lecture, as in figure 10. The satellite span introduces the evaluation the speaker makes about the content of the nucleus.
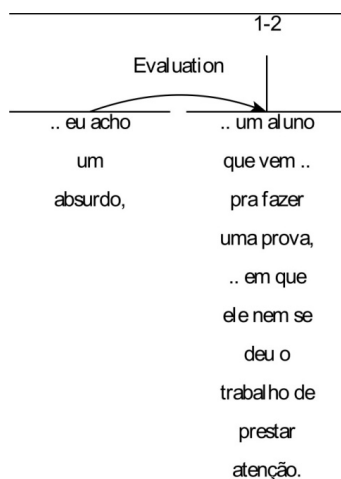
Figure 8. Evaluation relation

1 .. eu acho um absurdo,
2 .. um aluno que vem .. pra fazer uma prova, .. em que ele nem se deu o trabalho de prestar atenção.
"1 .. I think it's an absurd,
2 .. a student who comes .. to take an exam, .. to which he did not even bother to pay attention."

In figure 8, the professor conveys his opinion towards the students' attitude. He uses the verb "achar", which has been grammaticalized in order to convey opinion, belief, attitude etc.

Figure 9. Evaluation relation

1 [barulho e conversas fora da sala de aula]
2 .. hoje tá difícil hein
"1 [noise and loud talk outside the classroom]
2 .. it's difficult today right?"

In figure 9, the professor uses the adjective "difícil" to complain about the loud talks outside the classroom. He considers that it is difficult to lecture that day because of the noise.
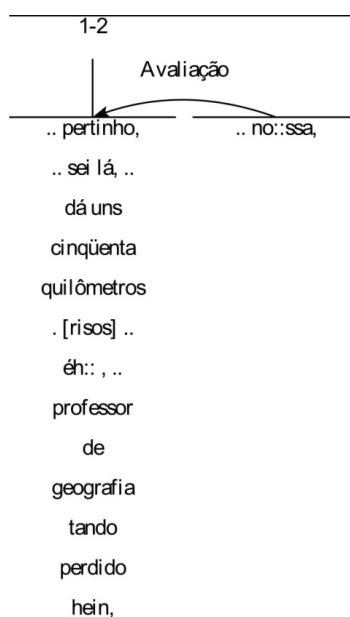
Figure 10. Evaluation relation

1 .. pertinho, .. sei lá, .. dá uns cinqüenta quilômetros. [risos] .. éh:: , .. professor de geografia tando perdido hein,
2 .. no::ssa,
"1 .. it's near, .. I don't know, .. it's about fifty kilometres. [laughter] .. eh:: , .. Geogray professor lost,
2 .. wow,"

In figure 10, the Geography professor uses the interjection "nossa" to convey a negative self-evaluation. At that point of the lecture, he talks about the ethanol industry, but he does not know exactly the distance from the industry to the town and he considers it is ridiculous for a geography professor (like himself) not to have a sense of location.

3.3 Deontic and dynamic modalities and enablement relation

Enablement is a presentational relation, i.e., the intended effect is to increase some inclination in the addressee (Mann and Thompson 1988). As it can be noticed in the definition of the relation (see chart 3), the intended effect is to increase the addressee's ability to perform the action in the nucleus. Deontic and dynamic modalities are used by the professors to suggest and/or prescribe the behaviours and attitudes they expect from the students.

Chart 4. Definition of enablement relation (Mann and Taboada 2010)

Relation name	Constraints on either S (satellite) or N (nucleus) individually	Constraints on N + S	Intention of Speaker/Writer
Enablement	on N: presents an action by the addressee (including accepting an offer), unrealized with respect to the context of N.	Addressee comprehending S increases his/her potential ability to perform the action in N	Addressee's potential ability to perform the action in N increases

In figure 11, the professor uses deontic auxiliary modal verb "ter que" to explain to the students the need to employ the usual way of writing in Mathematics (unit 1). That will enable the students to perform the action presented in the nucleus (units 2-11), namely to understand the mathematical language when they read a math book.

1 .. então a gente tem que .. preferencialmente .. escrever .. a maneira que é .. USUAL dentro da matemática,
2 .. por quê?
3 .. o dia que você né .. precisa::r fazer uma consulta .. num livro lá .. no meio/ no capítulo dez no livro,
4 .. você abre o livro lá e tal,
5 .. e tá cheio de símbolos aquelas coisas e tal.
6 .. aí você abre o livro,
7 .. você tando por dentro da linguagem matemática,
8 .. você:: .. pega o livro,
9 .. tá no capítulo dez,
10 .. mas você começa a ler,
11 .. e entende
"1 .. so we must .. preferably .. write .. the way it is .. USUAL in Mathematics,
2 .. why?
3 .. the day when you .. you know .. need to consult .. a book .. in the middle/ in chapter ten of the book,
4 .. you open the book,
5 .. it's full of symbols and stuff.
6 .. then you open the book,
7 .. if you understand Mathematics language,

8 .. you .. take the book,
9 .. it's in chapter 10,
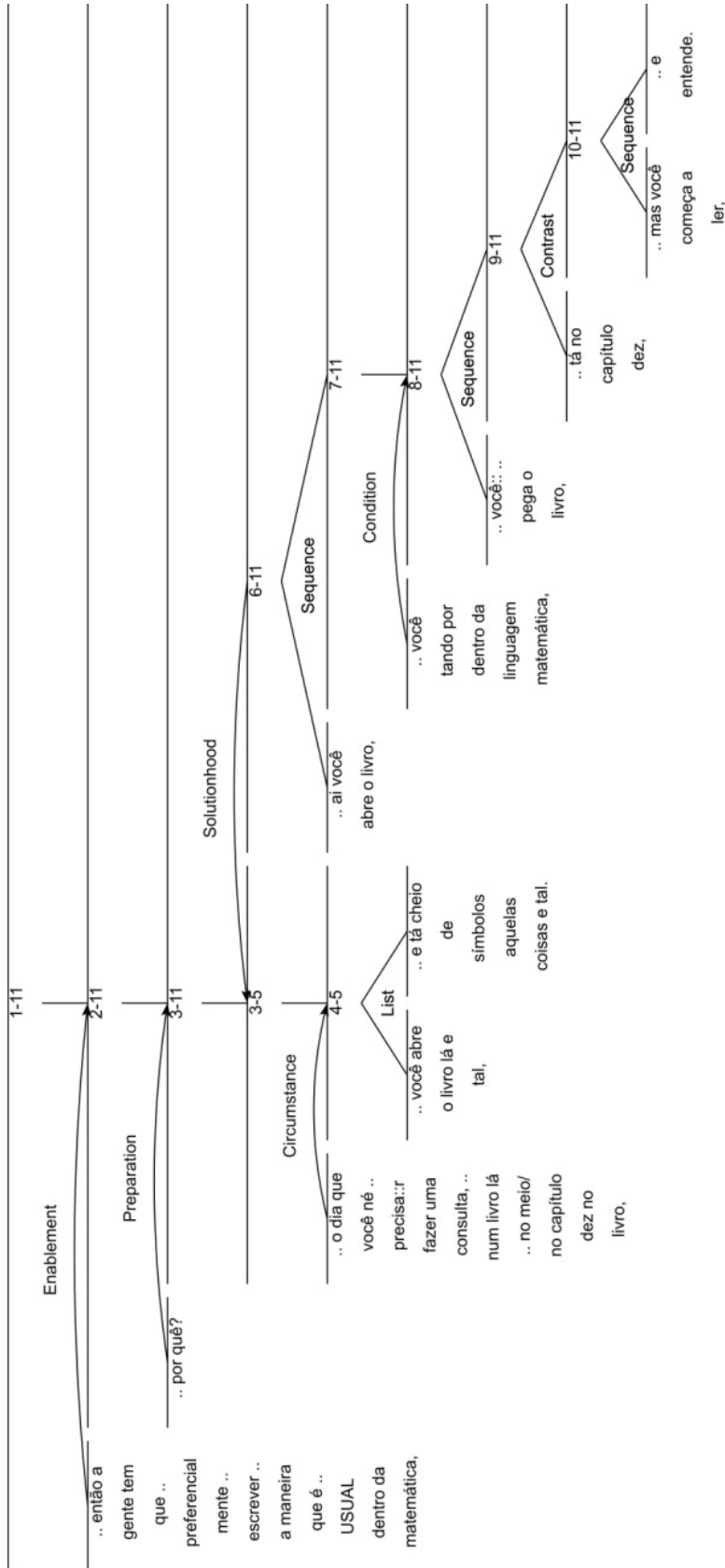10 .. but you start to read,
11 .. and you understand."

Figure 11. Enablement relation

In figure 12, the topic the professor talks about at that point of the lecture is the advantage of using medicine in the form of suspensions. He states that using suspension the doctor or the pharmacist can adjust the dosage of the medicine to the weight and to the age of the patient. The professor uses the dynamic auxiliary modal verb "conseguir" (unit 1) in the satellite span.

Figure 12. Enablement relation

1 ... mas a suspenSÃO .. eu consigo medir o volume, .. pra dose adequada,
2 .. enTÃO .. uma pessoa que pesa quarenta quilos, .. uma pessoa que pesa cem qui::los, .. a dose é diferente,
3 .. e eu consigo adaptar a dose,
4 .. consigo ainda adaptar a do::se pra cria::nça, .. que tem de zero a três a::nos,
5 .. que todo o metabolismo é diferente de uma criança de três a seis anos,
6 .. que é diferente de seis a do::ze,
7 .. eu consigo adaptar as doses,
"1 ... but the suspension .. I can measure the volume, .. for the suitable dosage,
2 .. so .. a person who weighs forty kilos, .. a person who weighs one hundred kilos, the dosage is different,
3 .. and I can adjust the dosage,
4 .. I can adjust the dosage for children from zero to three years old,
5 .. because the whole metabolism is different from a three to six years old child,
6 .. who is different from six to twelve,
7 .. I can adjust the dosage,"

Conclusions

This paper aimed at presenting some expressions of modality and evidentiality that function as cues that signal rhetorical relations.

Epistemic modality is conceived of in this paper as "the degree of confidence the speaker has in his or her statement" (De Haan 2001, 1), and evidentiality is characterized as "the marking of the source of the information of the statement" (De Haan 2001, 1).

In the exchange of academic information, professors need to point out the authors, who are source of the focused information. Thus, in the lectures of the *corpus*, attribution relation, signalled by evidential qualification, is recurrent.

The evaluation relation, by its nature, is coded by epistemic modal verbs, by verbs which convey opinion, belief and attitude, by adjectives and by interjections. In the *corpus*, it is used by professors to convey their attitude towards the subject or towards the students' attitude, towards the lecture itself or towards some remark about some other topic rather than the topic of the lecture.

Deontic and dynamic modalities are used by the professors to suggest and/or prescribe behaviours and attitudes they expect from the students. They signal enablement relation, whose intended effect is to increase some tendency already present in the addressee.

The discussion carried out is useful for the description of different means of signalling rhetorical relations, which is a relevant topic for RST. Moreover it shows that RST can also be used for the study of modality and evidentiality. As far as we know, this is the first paper to correlate such fields of investigation.

In terms of future work, it is the author's intention to investigate the same relations in written language. The results may be useful not only for linguistic description but also for the development of applications, which automatically perform complex linguistic tasks such as translating and evaluating texts or recognizing grammatical relations.

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