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## **The science update in Brazilian television news: Social actions of a cultural product**

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### **Abstract**

This paper aims at analyzing the representation of science and of the scientist in Brazilian television news. It draws on theories from Functional Grammar, Critical Discourse Analysis, Media and Intercultural Studies. Results suggest that the popularization of scientific information identifies research activity with medical/health research and excludes social and human sciences from the process of social recognition of their status of scientificity by not legitimizing it. It is argued that the genre science update in Brazilian television news is a cultural artifact, product of problematic intercultural communication.

#### **Key words:**

science, culture, social practices, discourse.

## 1. Introduction

Critical Discourse Analysis has largely been used in the investigation of media genres, having in the news a fundamental source of insight. Power abuse in the representation of genre, immigration and race, for example, are frequent objects of study. However, researchers of CDA have not yet sufficiently turned their attention to how scientific discourse (re)produces identities and authority relations as researchers from Sociology, Philosophy of Science and Science of Information have. Nor have they approached the cultural, and therefore cognitive, dimension of science popularization. This paper aims at analyzing the social actions of the genre science update in Brazilian television news as a cultural artifact, product of problematic intercultural communication.

The premise of such a reflection is that textual properties are indicators of social and cultural processes of status and authority negotiation. A culture is here understood as a complex system of reference for text production and interpretation, informing its members with norms of values, beliefs and behaviour. The genre science update in Brazilian television news is here taken as a cultural artefact, product of problematic intercultural communication between the culture of the scientific community and the culture of journalists and news makers, which are responsible for the production and distribution practices related to the genre. The journalists and news makers' culture take into account the culture of the lay audience, with its informative and stylistic demands. The genre negotiates social cultural contradictions and differences among the three reference systems directly or indirectly involved in its production, distribution and interpretation processes.

The paper draws on theories from Systemic Functional Grammar, Critical Discourse Analysis, Media Studies and Intercultural Studies to analyse the thematic development of 33 news about science broadcast from June through August/2000 in 5 Brazilian television news. The texts that constitute the data are seen as structured social practice. On the one hand, they contribute to the maintenance of social cultural identities, the news as a reliable source of information and the scientist as a modern hero, and, on the other hand, silence the knowledge produced by human and social

sciences. As discursive events, such texts actualise social practices informed by cultural reference systems.

We share with Paty (1997: 10), researcher devoted to the Philosophy of Science, his perspective about the scientific labor. Paty sees science not simply as knowledge governed by reason, but as also connected to a cultural context and based on cultural values. The author admits that scientific discourse works through social actions and that this paradoxically changes society and science itself. In investigating how news genres represent scientific discourse we hope to contribute to the understanding of the social construction of the identity of the scientist and of the status of scientific authority.

## **2. The genre science update in Brazilian television news as the product of problematic intercultural communication**

It is part of every researchers' work to share their investigation results with their discourse community by attending conferences, teaching seminars and publishing articles (SWALES, 1993). However, sometimes their results generate interest beyond their discourse community, opening up space for scientific popularization in the mass media. There are basically three ways in which science may become of interest to the lay audience and, therefore, to journalists and news makers: science may be the source of some kind of conflict, it may be used by political or social groups to support their arguments or it may be expected to resolve conflicts "by providing an ultimate answer to the issue" (PETERS 1999: 253). Peters (1999) identifies sources of intercultural communication difficulties between scientists and journalists. The empirical research developed by the author confirms what readers familiar to both media and academic writing styles would expect, but moves further by associating such difficulties to discursive practices related to different cultural systems.

Some of the sources of intercultural communication difficulties between journalists and scientists would be the disagreement on the critical role of science popularization, on the entertaining function it may perform, on the more appropriate writing style to the scientific popularization and on the level of control each culture

should have on the final text. According to Peters, more often than scientists, journalists attribute to their own culture a critical role toward the scientific activity. They also accept more easily an entertaining function to scientific popularization and, therefore, are more ready to admit a less rigid and serious style of writing. On the other hand, scientists expect journalists to influence the audience to support their investigation goals more often than journalists are willing or prepared to do it. Scientists also would like to revise the final version of the popularization text more often than journalists will allow them to.

The intercultural communication difficulties mentioned above arise from different cultures, that is, scientists and journalists, however temporally, participate in different cultural systems. Participating in a cultural system is here taken as the production of discursive practices based on, in terms of the discussion Golden (2004) presents, both an intertextuality and intersubjectivity characteristic of a given group. Members of the same cultural group participate in its intertextuality by attributing and constructing meaning in approximately the same way when dealing with semiotic manifestations. The concept of intersubjectivity, Golden (2004: 8) says, implies that there are many cultural references shared by members of a social cultural group and many subjective experiences that take place within commonly shared social cultural structures, though individual in every case. A culture is a reference system for meaning construction and attribution, that, on the one hand, presents its members with a rhetorical and ideological space of movement and at the same time delimits the capacity for interpreting the world its members will develop.

Journalists and scientists generate, evaluate and judge science popularization practices based on different cultural systems. It is possible to say the results presented by Peters (1999) are indicators of ethnocentric attitude. Such an attitude would be the tendency members of a given cultural group have to consider their own semiotic manifestations as normal and non-problematic. The semiotic manifestations produced by other cultural groups, which share a different system of meaning construction and attribution, are taken as abnormal, problematic and, frequently, inferior (LÉVI-STRAUSS, 2000). The genre science update in Brazilian television news is not therefore a socially ratified way of using language, as Fairclough (1995) regards genres,

but a *culturally* ratified way of using language. As a cultural artifact, such genre is a product of problematic intercultural communication between the culture of the scientific community and the culture of journalists and newsmakers.

Developing on the CDA's three-dimensional framework (text, discourse practice, social practice) (FAIRCLOUGH, 1992), a genre can be seen as a culturally ratified language use that actualizes discourse practices through texts. Such texts are, on the one hand, produced, distributed and consumed in approximately the same way, and, on the other hand, connected to certain social cultural practices. They negotiate contradictions and differences, allowing, sometimes problematic, social interaction as they present social actors with representations of the world (FAIRCLOUGH, 1995). A multifunctional view of the genre science update in Brazilian television news, taken from systemic linguistics (HALLIDAY, 1994) is essential to the understanding of how the structure of argumentation that characterizes the genre can be connected to broader social cultural practices.

### **3. Argumentation structure and social cultural practices of problematic intercultural communication**

It is a basic assumption of systemic linguistics that it is possible to map relations between language and social structures. In this sense, there is no innocent use of language. A language is seen as a system that presents language users with options. Every choice made in this system is meaningful, that is, constitutes a way of representing the world, a way of interacting with others and a way of structuring information (HALLIDAY, 1994). Thus, language is functional and should, therefore, be functionally approached.

Texts actualise a series of options in a language system ideationally, for texts represent the world, interpersonally, for they establish social interaction between participants in discourse, and textually, for texts structure information in terms of relevance, coherence and cohesion. The ideational, interpersonal and textual study of 33 news about science in 5 Brazilian television news programs allows the observation of

recurrent rhetorical strategies, part of the argumentation structure of the genre science update in Brazilian television news. Such rhetorical strategies, culturally informed as stated above, may be connected to specific social cultural practices. The names of news programs from which the broadcasts were recorded are *Jornal da Globo*, *Jornal Nacional*, *Jornal da Bandeirantes*, *Jornal da Noite* and *Jornal da Cultura*. The broadcasts were recorded between June and August of 2000.

Texts in their ideational functioning constitute systems of knowledge, representing experience and the world (FAIRCLOUGH, 1995: 6). Current scientific information in the news is associated with specific areas of research. In other words, there is a range of subjects that are represented as science. Such a selection operates a double representation: first, the status of scientificity and second, the identity of the scientist. The genre science update in Brazilian television news represents as scientific knowledge the investigation developed by the medical and health areas of research and thus connects the scientist's identity to the researchers of these areas. Almost all the broadcasts in the corpus belong to these areas, though there are a few about NASA and investigations in Mars. Researchers from other areas of knowledge, such as social and human sciences, for example, fall apart from the discursive representation of the scientist's identity and their research does not receive the ideational status of scientificity.

In their interpersonal functioning, texts constitute social subjects, establishing interactional relations between the language users. According to the functional grammar (HALLIDAY, 1994: 68), when a speaker asks a question, for example, he is assuming an interactional attitude by the attribution of a complementary role to the person with whom he speaks. The genre science update in Brazilian television news incorporates a dialogic attitude, theatricalizing a social interaction that tries to overcome the impersonality the television experience provokes. The following examples are taken from the corpus. The questions are translated between brackets:

- 1) A maçã com casca se mostrou mais eficiente ainda: bloqueou sessenta por cento das células cancerosas. Quantas maçãs uma pessoa precisaria comer para obter o mesmo efeito? Segundo a pesquisa, apenas uma. ('How many apples does someone have to eat to obtain the same effect?')

- 2) Depois de dez anos de pesquisa, cientistas de seis países conseguiram mapear noventa e sete por cento do código genético. É o esboço mais completo do que é o ser humano. O resultado vai mudar radicalmente o tratamento e a prevenção de doenças. Mas como? Por que? O código genético está lacrado dentro de nossas células... ('But how? Why?')
- 3) A doutora Cathy Verbas utilizou o mesmo princípio da vacina contra a pólio: uma forma concentrada do vírus para destruir o próprio vírus. Mas isso já havia sido tentado antes contra a AIDS. Por que funcionou desta vez? ('Why has it worked this time?')

Obviously enough, when the journalist asks questions he does not really expect an answer from the audience. He himself answers the questions he asks. Such questions are, thus, rhetorical. They theatricalize a dialogic situation. The times and contexts of production and consumption of the broadcasts are different. Assuming a dialogic attitude by asking questions that theatricalize a real interaction, the genre attributes to the audience a complementary active role. Such a rhetoric strategy stimulates a sensation of intimacy between the journalist and the audience, making the news more attractive and competitive with other sites of engagement that may be available at the same time. Scollon (1998: 249) defines sites of engagement as "(...) those windows constructed of social practice through which the texts become available for appropriation". Magazines, the radio, the TV, billboards, may be understood as different sites of engagement, which would constantly compete for the attention of subjects.

Textually, texts have to organize information in coherent and cohesive ways, but also in terms of what the speaker considers more relevant or new information to his reader or listener. In the Functional Grammar, a 'theme' is not related to 'what the text is about'. The concept of 'theme' makes reference to a system of information distribution related to the relevance the speaker attributes to each part of his discourse production. In English, Portuguese, and in many other languages, the theme occupies initial position in the sentence and what follows it is called rheme (HALLIDAY, 1994: 37). When the theme is also the grammatical subject of the sentence, that is, a more conventional choice of information, it is 'not marked'. When, on the other hand, the theme is not the grammatical subject of the sentence, a less conventional choice, therefore more creative and likely to operate rhetorical effects, the theme is said to be 'marked'. Martin (1997: 26) broadens the concept of the theme, extending it to larger

units of discourse. The thematic principle than can be observed beyond the sentence, as following a method of development throughout the text.

The analysis of the thematic development of the genre science update in Brazilian television news presents a recurrent content: scientific discoveries. The criteria used to separate themes from rhemes were:

- i) The end of the journalist's first turn of speech with consequent change of speaker;
- ii) The end of the announcement of the scientific discovery and beginning of further explanations and interviews;
- iii) Changes in the visual semiotic system, delimiting an initial stage and a complementary one.

The thematic method of development of the genre science update in Brazilian television news may be considered a marked one. The genre rewrites information from scientific contexts, in which reference to the field of research and explanation on the methodology used to analyze data precede the announcement of the research results. The news thematizes discoveries by placing the announcement of researchers' results in initial position in the broadcasts. The following are examples taken from the corpus studied. A version in English of each example is given between brackets:

- 4) Boa Noite. O homem entrou hoje num lugar que só Deus conhecia. A frase é de Francis Collins, o representante do governo americano na comissão encarregada de decifrar o mapa genético dos seres humanos. O resultado desse trabalho foi anunciado hoje nos Estados Unidos e na Europa e é um sucesso. ('Good evening. Today mankind has been to a place only God new about. The statement is Francis Collins', the American government leader of the team in charge of the human being genetic map unraveling. The results of this research have been announced today in the United States and in Europe, and are a success.')
- 5) Cientistas americanos que pesquisaram a relação entre os alimentos e a saúde da pele descobriram que uma dieta pobre em açúcar e rica em proteínas é bastante eficaz contra as rugas. 'American scientists who research the relationship between food and health have discovered that a diet poor in sugar and rich in proteins is very efficient against the wrinkles.'
- 6) Pesquisadores comprovaram que depois de 40, depois dos quarenta, os homens que não cuidaram da alimentação na juventude aumentam as chances de ter um ataque cardíaco. ('Researches have confirmed that after the 40's

men who haven't taken care of their diet in their youth have higher chances to have a heart attack.')

- 7) Cientistas da NASA encontraram pela primeira vez evidências de que existe água em estado líquido na superfície de Marte. (NASA scientists have found, for the first time, evidences of the existence of water in the liquid state in the surface of Mars.')

It is interesting to broaden up the analysis above by looking at what Halliday calls given and new information distribution (HALLIDAY, 1994: 299). He explains there is a strong semantic relationship between the theme-rheme system and the given-new information distribution. The theme is what the speaker or writer chooses to make more evident by placing it in first place; the information considered given is what he believes his reader or listener already knows or may use in the interpretation of the message. A conventional non-marked option would place given information in initial position so that the reader or listener could use it as a context of reference for accessing the rest of the message. The genre science update in Brazilian television news selects a rhetorically relevant strategy of information distribution. It matches marked themes with new information in initial position. The rhetorical effect is a semantic manipulation, that is, the generally called research results in the academic discourse community are celebrated as discoveries in the media context.

The ideational, interpersonal and textual argumentation structure of the genre science update in Brazilian television news is functional in relation to the objectives, values and rules of meaning construction and interpretation of the journalists and news makes' culture. Journalists and news makes take into account the demands of information and style of the audience's culture. Scientists, whose reference system for meaning construction and interpretation operates in different ways, do not always understand or are ready to accept such market pressures. As the result of intercultural problematic communication and being ideationally, interpersonally and textually coded as discussed above, the genre science update in Brazilian television news enacts discourse practices that actualise social cultural practices.

Firstly, the genre helps to maintain the status of news as a reliable source of information. The news simultaneously celebrates scientific discoveries and its own

readiness to cover them. Secondly, the genre makes news a more competitive site of engagement by adopting a dialogic and relaxed style. Current scientific information is good news – discoveries of new medicine, vaccines, health treatment- and/or curios and/or entertaining. Thirdly, the genre science update in Brazilian television news contributes to the discursive construction of the scientist as a medical/health researcher and attributes the status of scientificity to the knowledge produced in these areas of research. Last but not least, it excludes researchers from other areas of knowledge, such as social and human sciences, from the discursive construction of the scientist's identity. The knowledge produced by them is silenced.

#### **4. Conclusion**

The popularization of scientific information in Brazilian news is one of the news' discursive survival strategies, both keeping its status as a reliable source of information and making it more competitive with other sites of engagement. As a product of problematic intercultural communication, the genre science update in Brazilian television news is a cultural artifact. It brings the language of the news closer to the discourse of entertainment, maps the identity of the scientist onto the researchers of the medical/health areas, and, as a consequence, the status of scientificity onto the knowledge produced in these areas. A possible conclusion is that the type of knowledge produced by human and social science researchers, for example, is not functional to at least one of the objectives of journalists and newsmakers' culture: the maintenance of the competitiveness and reliability of its own genres. Genres are then culturally ratified discourse practices that actualize social cultural practices.

Finally, uncomfortable as it is, it is necessary to recognize the weakness of the present work. It is limited to the negative critic, as defined by Fairclough (2003). Positive critic, in which alternative ways of construing discourse are identified, still has to be developed. We expect, however, to have contributed to the understanding of science popularization as a problematic intercultural phenomenon with social cultural implications.

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## Science update in Brazilian television news: social actions of a cultural product

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Scientists' Culture

Journalists and news  
makers' culture

Lay audience culture

A **culture** informs its members with a complex reference system of values, beliefs, norms of behavior and of meaning construction and interpretation.

A **genre** is the outcome of comparable rhetorical action: texts with shared communicative purposes, audience, structure and style.

The analysis of the thematic development of 33 news about science broadcast from June through August/2000 in 5 Brazilian television news shows that **the genre thematizes discoveries** and that most news came from medicine/health science. None of them came from social or human sciences.

### **Genre science update in Brazilian television news**

#### Genre's Social Actions:

- Keeps news status as a reliable source of information (news simultaneously celebrate discoveries and its readiness to cover them);
- Makes news a more competitive site of engagement (current scientific news is good news);
- Contributes to the discursive construction of the scientist as the medicine/ health researcher and attributes the status of scientificity to the knowledge produced in these areas of research.
- Excludes researches from other areas of knowledge, such as social and human sciences, as well as the knowledge produced by them from the social discursive process of construction of the identity of the scientist and of scientific knowledge.

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