

## **Intertextuality in Scientific Texts**

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### **Abstract**

Any text is indebted to other texts, and there is nothing new in the space of intertextual meaning. Every text is inherently intertextual: it incorporates elements of other texts for a specific purpose. Intertextuality considers the text as a fabric or a network, a field where texts that come from very different discourses are crossed and ordered. On the surface of the scientific text the intertextuality has a set of markers that are also analyzed in the article that follows. The subject of the research is analysis of Spanish scientific articles and dissertations defended at the Faculty of Natural Sciences of the Autonomous University of Madrid (Spain).

The methodological base of the research is leading to modern linguistics, discursive and communicative approaches. The topic of the investigation gets in line with trends in the development of modern linguistics in the context of a new scientific paradigm. The results demonstrate that in the academic discourse intertextuality is the universal principle to create a scientific text at the level of content since any text is retrospectively and prospectively linked to other research.

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**Keywords:** Intertextuality, Spanish scientific text

### **Introduction**

The history and background of the theories of intertextuality come from the following theoretical approaches:

1. Semiotics and the semiotic theory of culture based on the ideas about culture as a system of signs as well as about culture and text (Barthes 1970; Bakhtin 1979; Derrida 1972; Fairclough 1970).

2. The theory of semiosphere dedicated to the philosophical conceptions of dialogism against monologism (Buber 1950; Lotman 1973).

3. The theories of the French literary theorists and philosophers who formed the transition to post-structuralism and studied the text as an open text system produced in intertextuality (Barthes 1970; Derrida 1972; Fairclough 1970; Genette 1970; Kristeva 1967).

4. The investigations of the Russian formalists (Shklovsky 1930; Tinianov 1930; Tomashevsky 1920) and the structuralists of different national schools (Jacobson 1930; Riffaterre 1970). The contribution of their literary scholarship lies in the fact that it focused sharply on the basic problems of literary criticism and literary study, first of all on the specificity of its object, that modified the conception of the literary work.

5. The extensive investigations of the problems of intertextuality from the literary and linguistic points of view (Grivel 1978; Jung 1970; Van Dijk 1978).

Intertextuality has been recently studied in the texts of various communicative spheres, in particular, intertextuality in scientific communication in different languages such as Russian, English, German, Spanish text (Bazhenova 2001 Chernyavskaya 2009; Litvinenko 2008; Luzon, 1997; Marinkovich 2010).

### **The concept of intertextuality**

In order to work out the concept of intertextuality it is necessary to place special emphasis on that it is analyzed from different points of view.

There is a great variety of conceptions of intertextuality which in general terms can be summarized in two groups: *the broad approach*, where intertextuality is a universal property of the text, and *the narrow approach*, positing that it is a specific property functionally conditioned by different types of discourse.

The term intertextuality has its origin in the theory developed by Bakhtin on the dialogical or polyphonic utterance.

In 1967 Julia Kristeva published her article "Bakhtine, le mot, le dialogue et le roman" in which, starting from the ideas of M. Bakhtin on "others' words" and "dialogism" (Bakhtin 1979), she introduced the concept of intertextuality that up to date enjoys great popularity.

According to Julia Kristeva "any text is constructed as a mosaic of quotations and is the absorption and transformation of another text" (Kristeva 1997:3).

Texts are inherently intertextual: they enclose elements of other texts for a specific purpose. Intertextuality considers the text as a fabric or a network, a terrain where texts that come from very different discourses are crossed and ordered.

There were two main concepts distinguished in the theoretical discussions on the topic of intertextuality (Chernyavskaya 2009):

- the global model of poststructuralism, that considers any text like a part of a universal intertext, which conditions it in all its aspects;
- more precise structuralist or hermeneutic models, which find the concept of intertextuality to be restricted to conscious, intentional or marked

references between a text or groups of texts. Both models have their own cognitive potential and their assumptions in terms of language theory, text theory and knowledge theory.

## Discussion

In the academic discourse, intertextuality is the universal principle of the scientific text construction at the level of content since any text is linked retrospectively and prospectively with other research. According to the law of the knowledge continuity, each new scientific text is connected with a complex mechanism that carries out the storage of knowledge as well as communication between the people who produce this knowledge. The interpretation of the text depends on the knowledge one has of other texts. The intertextuality activates the reader's knowledge stored in the memory while text recipients have to be armed with previous information to be able to understand the new texts.

On the surface of the scientific text the intertextuality has a set of markers capable of identifying the knowledge provided within the new scientific knowledge, and it is very important to point out that the academic discourse requires the use of explicit markers.

The methods of intertextual representation within the scientific text are the following:

1. Intertextual inclusions that reproduce the borrowed fragment on the surface of the new text structure - quotation (complete and reduced), indirect style, inclusion of "others' words" or combination of words:

*El Institute for Cultural Landscape Studies de la Universidad de Harvard dice que son "aquellos paisajes que han sido creados, usados, modificados o protegidos por las personas, desde los jardines históricos y los parques urbanos a las reservas para la conservación, los vecindarios, las granjas y los bosques"*

*Según Feynman, "Los principios de la Física, hasta donde yo puedo ver, no indican nada en contra de la posibilidad de que se puedan manipular cosas átomo por átomo"; simplemente era necesario con buscar y encontrar los métodos y las técnicas que permitieran llevarlo a cabo (Valbuena 2006:1).*

The cited fragments are usually marked by the quotation marks, as well as by way of changing character font, italic type.

2. Intertextual inclusions that are references and do not reproduce borrowed fragments within the new text structure, but refer the reader to the source of information, to the previous pretext. Formal markers of references are parentheses, brackets, numbers of different registers, symbols:

*Sin embargo, la organización Mundial de Salud considera que el agua potable suele ser la principal fuente de nitrato en la dieta de lactantes (Mompo y Armentia, 1993) (Sarmanho 2008:14).*

*Para Zhang y col.<sup>38</sup> la temperatura de irreversibilidad en láminas delgadas formadas por partículas de níquel sigue una dependencia exponencial a campos bajos (Jiménez Villacort 2007:47).*

3. Intertextuality may manifest itself by changing verbal system:

*Una vez expuesta la fotoresina se pasa al revelado sumergiendo la muestra en una disolución de revelado “developer” durante un minuto (Suárez 2007:6).*

In this case the marker of intertextuality is the verbal identity, i.e. usage of other verbal system. The formal marking of the quotation in the scientific text is obligatory whereas the marking of the references is obligatory only for its bibliographic variety.

In Spanish scientific text we observe citations, references, intercalations, inclusions in English, for example: *Esta técnica de deposición se conoce con el nombre de “spinner coating” (Suárez 2007:62).*

There are some English intercalations translated into Spanish:

*Esta fragmentación de la molécula principal se conoce como “cracking pattern”, o fragmentación, que será el término utilizado en este trabajo». «Stragglng: Fenómeno de dispersión de energía de las partículas incidentes (en principio mono-energéticas), al interaccionar con la muestra». «Resultan sumamente útiles las llamadas “scoring functions” o funciones transformadoras, obtenidas a partir del establecimiento de límites críticos y su correspondiente escala de calidad» (Quiñones 2006:332).*

English acronyms are observed in the texture of the Spanish scientific text, for example:

*Otros métodos también utilizados en la solidificación de óxidos, como EFG (Edge Defined Film Fed Growth) o Micro pulling down, utilizan crisol y extraen el fundido (Merino 2006:52).*

There are some cases of English acronyms translated into Spanish, for example:

*Para los suelos agrícolas se ha definido la Capacidad de Carga de Metales Pesados (LCASHM: Load Capacity of Agricultural Soils for Heavy Metals) (Chen et al., 2001) (Rodríguez Jordá 2009:6).*

Also in the Spanish structured texture there may be an English acronym expanded in English, for example:

*“Dichos trabajos conllevaron a la aparición de nuevas técnicas o al desarrollo de anteriores ya conocidas, tales como la Espectroscopia de Fotoemisión Resuelta en Ángulo (ARPES del inglés «Angle Resolved Photoemission Spectroscopy»)” (Valbuena Martínez 2006:12).*

Notable aspects of scientific terminology include the use of Latin terms, for example:

*Para la extracción del DNA genómico de D. melanogaster, D. simulans y D. mauritiana se utilizaron...*(Méndez 2008:32)

Symbolic relations represent a variety of intertextual links in Spanish scientific texts being used different systems of symbols (signs), namely: formulas, diagrams, graphs, drawings, and so on (Dolzich 2012).

Latin phrases and locutions are often used to navigate through the scientific text. For example, Et. Al (and others): when we quote a text with more than one author; Supra: Up; Infra: Down; Op. Cit: Citing work; Idem: the same; Ibid. = Ibidem, that means "in the same place".

## **Conclusion**

We may therefore conclude that intertextuality is the universal principle of the scientific text construction, which is connected retrospectively and prospectively with other research, has a set of intertextual markers and is open to a wide discourse space.

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