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# Editorial

Rainer Arntz who was member of the editorial board of the LSP Journal passed away unexpectedly before Christmas 2012. It is a major loss for his family, for our journal and for the world of LSP and specialized communication who has benefitted greatly from his research and skillful publications for decades. We wish to express our deepest sympathy to the family on behalf of the staff and all the readers of the LSP Journal.

Journal administrator Françoise Qvistgaard who has been working  part-time for the LSP Journal as well as for  LSP and professional communication (2001-2008) unfortunately has decided to prioritize getting a full-time job. On behalf of all those who have been enjoying Françoise's excellent work for many years, I thank her warmly for her commitment and relentless efforts to give this journal its present status.

Françoise Qvistgaard will be replaced by Jeannette Ørsted, who may be known to some of you. Jeannette Ørsted is based in Switzerland where she works part-time for the International Federation of Translators (FIT). After many years with The Union of Communication and Language Professionals in Denmark, she continued in management positions in the translation industry, first as a partner with Oversætterhuset (now TextMinded) and later as Head of the translation department in Plougman & Vingtoft, Intellectual Property Consulting. Later she joined CLS Switzerland where she was Group Manager for Terminology.  She has a degree in translation from CBS and a Master of Public Administration. Over the years she has been involved in many different aspects of the language profession spanning from management of language projects to professional development, standards, quality assurance and teaching.

I am very happy to announce that we will be able to draw on Jeannette Ørsted's expertise and excellent network and wish her a warm welcome as Journal Administrator.

This change, unfortunately, has caused a minor delay of the publication of the present issue as you may have noticed. The publication of book reviews has been postponed. May I finally remind you to encourage your colleagues and contacts to register as subscribers to the LSP Journal and submit papers.

Henrik Selsøe Sørensen
Editor in chief

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# Science and language: integrating discourse and context in the analysis of the Conclusions of experimental scientific articles "Memories of the Oswaldo Cruz Institute" (1909-1919 and 1980-1989)

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**Abstract**

The Conclusions of the experimental scientific articles from a traditional Brazilian journal were analyzed considering the 1909-1919 and 1980-1989 periods. The analysis integrated language and context by revealing types of arguments, rhetorical moves and linguistic traits. The findings were the change from a linear and less rhetorically elaborated discourse in the first period to a highly rhetorical density and ciclicity in the second period. They were correlated with the change from a cohesive, small and prestigious community to a big community pressured to adapt to the parameters of the big science, with no governmental support. The contributions to genre analysis, studies of science and teaching for academic purposes are discussed.

## 1 Introduction

Studies of genre have been traditionally associated with pedagogical purposes. The motivation for that is the belief that mastering the comprehension and the production of specific genres grant a faster and smoother access to specific social groups. A training/educational plan that considers genres is believed to be strategic for the "student success in all rhetorical situations" (Johns et al., 2006: 248). Therefore, a meta-awareness of the aspects of genres is expected to empower students and democratize their social participation (Ramanathan and Kaplan, 2000).

Extrapolating that application, some authors have studied genres to portray scientific communities, considering their typical social practices, beliefs and objectives (Salager-Meyer, 1999; Peacock, 2002; Samraj, 2002; Ayers, 2008; Bruce, 2008). In general, these studies analyze communities of different disciplines or of different areas of knowledge (i.e. social sciences vs. physical sciences).

For both applications, a model of a certain genre that achieves comprehensiveness and flexibility at the same time is an invaluable gain. In pedagogical terms, it would offer teachers/trainers the opportunity of competently emulating the discourse reality students will experience in the future. In studies of discourse communities, it would favor deeper and more critical analyses – triangulating different angles without losing sight of the aspects that push change in discourse habits.

Frequently, however, genre analyses consider few discourse elements and usually approach them with unequal focus: some researchers give more attention to linguistic aspects and others highlight the rhetorical structure. To illustrate how this practice is misleading, Coracini (1990) demonstrated that the sole consideration of linguistic aspects in research articles lead to the naïve idea that the scientific discourse is essentially objective. Indeed, the impression of objectivity is an argumentative resource itself, sustaining the "illusion of empirical evidence" – a conclusion that is only possible when pragmatic aspects are considered.

Some authors have already claimed for an integrated analysis. Swales (1990, 2004) used linguistic evidences to support the characterization of rhetorical moves. Atkinson (1999) was particularly fortunate in crossing the linguistic analysis, the rhetorical analysis and the historical context analysis in his study. Bruce (2008) claimed for the inclusion of types of procedural knowledge (what he called "cognitive genres") in the analysis. Yet, a systematization of an integrated model for genre analysis remains a challenge.

The purpose of this article is to respond to this challenge by proposing an integrated model, specifically focusing on the Conclusions of experimental scientific articles. The model draws on the Theory of Speech Acts, considering its application extended to discourse (the "pragmatic macrostructure", van Dijk, 1977). In addition, it is particularly inspired by Atkinson's practice of Discourse Analysis, which adopts two complimentary descriptive procedures: "the analytical reading of texts as deeply embedded in their soiciohistorical contexts (...) and the "reading-off" of such contexts from the texts themselves" (1999: 60).

## 2 The Study
The object of this study is a collection of experimental scientific articles from a renowned Brazilian Journal, "Memories of the Oswaldo Cruz Institute" (MOCI), in two different moments, 1909-1919 and 1980-1989. This is the oldest journal in Brazil still publishing today and it belongs to the area of Life Sciences.

### 2.1 The journal and the chosen periods of time
The MOCI is a relevant vehicle for the scientific production in Brazil since it started (1909). In its beginnings, it registered the arrival of the new microbiologic paradigm, brought by Oswaldo Cruz from France. In the present days, the journal is internationally recognized by its excellence.

The two chosen periods, 1909-1919 and 1980-1989, represent two key moments in history that are practically opposing in terms of opportunity for scientists (Schwartzman, 1991 and 1982). The first one is characterized as the Brazilian Illustration phase, a favorable moment for Brazilian scientists who were internationally acknowledged.

The other period is characterized as a crisis time which was marked by the lack of funding and support to scientists and the fast internationalization of science. The scientists at this time are considered a "group of pressure" (Schwartzman, 1991 and 1994), as they have to fight for resources and struggle for a place in the scenario of the "big science".

## 2.2 Selection of the *corpus*

A preliminary *corpus* included five samples of Conclusions for each of the two periods. The preliminary analysis helped determine the extent of a discursive pattern (Nwogu, 1997: 121) and enabled training for the definitive analysis. This analysis was subjected to the validation criterion of intra-rater agreement (Peacock, 2002: 485) six months after the first analysis.

The definitive *corpus* included 12 Conclusions of each period, randomly selected. The definitive analysis was submitted to two validation criteria: intra-rater agreement four months after the first analysis and inter-rater agreement. A graduate student of Linguistics, whose doctorate thesis included the analysis of rhetorical moves, evaluated 25% of the *corpus*. Particularly, the inter-rater agreement was performed for the analysis of rhetorical moves only, as the analysis of types of arguments is a novelty and would require long training of other evaluators. The agreement rates were 92.79% (intra) and 89.61% (inter). A high degree of agreement suggests that the interpretation has a "psychological reality", that is, the results are reliable (Kanoksilapatham, 2005: 273).

## 2.3 Procedures of analysis

The analysis included two complimentary procedures: the reading of the texts after the study of social and historical data (contextual reading) and the reading of the texts as symbolic indicators of the social and historical aspects (interpretative reading).

For the contextual reading, the general historical context of both periods was studied, considering local aspects relative to the journal and its discursive community. The source of data was texts of historians and texts published in the MOCI, such as editorials and homage notes. The organization of these data followed the criteria put forward by Swales (1990: 24-27) to characterize discursive communities: public objectives, intercommunication mechanisms, shared genres, and shared epistemological position. The only criterion that was not considered was the specialized lexicon, which would demand more attention and time of research.

For the interpretative reading, the analysis happened in three phases: 1) checking the presence of argumentation; 2) assessing the rhetorical moves; 3) assessing the types of arguments and the argumentative structure.

In addition, the linguistic aspects were subjected to a computerized analysis, helping evidence the contextual and the interpretative readings. For Upton and Connor (2001: 318), the analysis in multiple levels, combining the analysis of the manually categorized rhetorical moves and the computerized analysis of the lexical-grammatical aspects, is effective and invaluable.

In general, the model of analysis integrated the three levels of language, locutionary, illocutionary and perlocutionary, corresponding, respectively, to the linguistic aspects, rhetorical moves and types of arguments. Those three levels of language combined were confronted with the contextual data. Figure 1 demonstrates the intricate relation of these elements.

The picture shows the double possibility to start the analysis. Observing the picture carefully, it is possible to look through it from the contextual conditions to the locutionary level and vice-versa. That representation emphasizes the fact that when discursive phenomena is considered, there is no privileged start point in the analysis.



## Figure 1- Model of Analysis

### 2.3.1 Analysis of the linguistic aspects (locutionary level)

For the analysis of the linguistics aspects, the *corpus* was analyzed using the Wordlist and Concordance tools of *Wordsmith tools* 5.0. The concordance tool was specifically used for refined searches, such as those for adverbs, by filtering the search with typical adverb endings. The other tool provided information about specific words or types of word, such as the modal verb "can"[1]. The program provides information about the frequency of the items and about the distribution of the items in the *corpus*.

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[1] The linguistic elements and categories were originally in Portuguese. The translation into English should be considered an approximate correspondence.

The choice of the items was mainly guided by the search for marks of argumentation and subjectivity. Particularly, the search was inspired by studies of the relation between modalization and argumentation (Koch, 2006; Guimarães, 2001; Neves, 2007); hypotheses raised with the use of the program Unitex; and hypotheses originated from the experience with the scientific discourse.

| Elements/categories | Results of the search |
| --- | --- |
| Verb to be | is; are; was; were |
| Modal verbs | can and should (in different inflected forms in Portuguese) |
| Adverbs in -ly | possibly; perfectly; mainly; probably; easily; absolutely; really; partially; extremely; determinedly; meticulously; detailedly; frequently; usually; difficultly; only; totally; normally; substantially; visibly; potentially; deeply; essentially; preferably; relatively; properly; enormously; favorably; strongly; extraordinarily; classically; clearly; apparently; predominantly; notoriously |
| Use of the 1st person and passive voice | verbs in 1st person plural; the pronoun 'us'; passive voice |
| Verb tenses and moods | subjunctive; verbs with would (in Portuguese there is a verb tense corresponding to would) ; verbs with will (in Portuguese there is a verb tense corresponding to will) |
| Contrast connectors | but; however; on the other hand; on contrary; nevertheless; while; yet; nonetheless; although |
| Cause and effect connectors | given that; due to; so; for; because; since |
| Addition and emphasis connectors and expressions | also; even; really; too; in fact; moreover; including |
| Intensity expressions | very; all; few; only; just; almost; partial |
| Adjectives | possible; necessary; difficult; important; easy; probable; right; convenient; surprisingly |
| Cognition verbs | find; judge; think; conclude; see (understand); verify; know |
| Volition verbs | want, need |
| Verbs representing the speaker's relation with the object of knowledge | verify; obtain; identify; observe; seem; note; deserve; detect; suggest |

**Table 1:** Linguistic elements and categories

The Unitex 2.0 program worked as the first identifier of some classes of speech. That is possible because the program has tagged dictionaries (though the tagger is not perfect). One major fault of this program, however, is the fact that texts cannot be treated separately – what explains the use of Wordsmith as the definitive search program.

### 2.3.2 Analysis of rhetorical moves (illocutionary level)

To identify the rhetorical moves, a combination of textual and linguistic evidences (Peacock, 2002: 485) was used. The evidences were verbs, discursive markers, metadiscursive markers (Moraes, 2005) or textual structures such as narratives (Table 2).

| Textual/linguistic evidences | Examples[2] | Interpretation |
|---|---|---|
| Verbs | The parasitism of the anal glands by *T.cruzi* in skunks <u>suggests</u> a high degree of host-parasite adaptation… | The verb points to a conclusion of the previous fact, with a degree of uncertainty, though: 'deduction and hypotheses'. |
| Discursive Markers | … a high degree of host-parasite adaptation, <u>given that</u> the parasites are protected against the immune response in the lumen of the glands ... | The marker points to an explanation of the previous conclusion: 'Explanation'. |
| Textual elements | After the continuous use of insecticide with residual action, the *T. infestans* was eradicated, interrupting the domestic transmission of the Chagas disease. The O *P. megistus*, native species with great mobility, moving actively from the wild to the domestic environment, was the only captured triatominae of which domestic colonization was hampered by the insecticide used in the Epidemiologic Surveillance, implemented in the region in 1974 (Dias, 1982). | All the passage is a narrative passage, with verbs in the past and time expressions: "Phenomenon Narrative". |
| Other evidences | <u>The facts</u>, <u>altogether</u>, <u>corroborate</u> the possibility of "pêros" transmission of the Chagas disease … | In this case, the underlined words suggest a metalanguage about the text. The phrase, "the facts", prints an objective character to everything that was previously said. This passage illustrates the "ideation markers" (Moraes, 2005: 81), that is, organizers of blocks of ideas. The verb 'corroborate' contributes to the overall movement of |

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[2] All the passages from the MOCI were originally in Portuguese.

| | | deduction. Then, this an example of "Deduction And Hypothesis". |
|---|---|---|

**Table 2**: Examples of rhetorical moves

The rhetorical moves used in this work (Table 3) were a combination of the rhetorical moves proposed by Swales (1990) and the new moves identified in the texts of the preliminary *corpus.*

| Rhetorical moves | Reference | Examples |
|---|---|---|
| Statement of Results | Swales, 1990 | These granulations are gram-positive in relation to the remainder of the bacillus. (XB[3]) |
| Background Information | Swales, 1990 | When using sorology as a routine to aid diagnosis, it is convenient that the techniques be easily operated and interpreted, not involving high-cost equipment or reagents. (YG) |
| Unexpected Result | Swales, 1990 | ... it was not possible to note any significant difference between the mice infected with a hundred cercariae of the Porto Rico strain of the *S. mansoni* and those with the same infection from the Feira de Santana strain. (YE) |
| Reference to Previous Research (comparison) | Swales, 1990 | Quay and Levine, 1959, using the colchichine in the newly-born rats, showed that the cells in a certain lobule kept the same mitotic activity and cytologic development, but that those parameters were different from those found in other lobules. (*corpus* XA) |
| Reference to Previous Research (support) | Swales, 1990 | The successive injections in mice can frequently modify the virulence of the strains of toxoplasma, as demonstrated by Coutinho e Mendonça, 1975...( YC) |
| Explanation | Swales, 1990 | ... given that the parasites are protected against the immune response in the lumen of the glands, the parasites can be disseminated to tissues via blood flow. (YH) |
| Deducrion and Hypothesis | Swales, 1990 | The estradiol is possibly secreted by the Leydig cells …(YB) |
| Recommendation | Swales, 1990 | The possibility of similar cellular alterations in other structures of the Central Nervous System also deserves examination using similar methodology. (YA) |
| Phenomenon Narrative | Our *corpus* | The epidemiology of the Chagas disease in this municipality is characterized by a first phase in which the prevailing vector was *T. infestans,* […] of which domestic colonization was hampered by the |

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[3] Those letters represent the different preliminar corpora. The letter X represents the 1909-1919 corpus, Y, the 1980-1989 corpus.

| | | insecticide used in the Epidemiologic Surveillance, implemented in the region in 1974 (Dias, 1982). (YH) |
|---|---|---|
| Statement of Limitation | Our *corpus* | The question is to know if it is possible to continue in this path. Our opinion would be premature, given the small number of experiences… (XA) |
| Reason of Limitation | Our *corpus* | The researches were not continued due to the high environmental temperature, which made it difficult to avoid the fluidification of the gelatin membrane during the experience. (XA) |
| Recovery of Method | Our *corpus* | In this work, four antigens of different origins were used, the preparation technique of the antigens and all the reaction phases were kept constant. (YC) |
| Statement of Continuation | Our *corpus* | We intend to return to this point when we have more material. (XC) |
| Practical Implication | Our *corpus* | This way, besides the standardization of the reaction technique, optical equipment and reagents, the standardization of the antigens is also necessary. (2C) |
| Statement of novelty | Our *corpus* | In the hen pest, we believe ours are the first tests of complement fixation. (XC) |
| Acknowledgement of Collaborators | Our *corpus* | Now, to finish, it is our duty to express one more time our sincere thanks to the Doctor Professors Domingos de Góes and Fernando Terra. (XE) |
| Reason for Acknowledgement | Our *corpus* | ...for lending their patients for all the studies and researches we wanted to conduct, making our work by all means easier and following with great interest our results.  (XE) |

**Table 3**: Rhetorical moves in the Conclusion sessions

### 2.3.3 Analysis of arguments (perlocutionary level)

To verify the presence of argumentation in the sessions of Conclusion, we used the modalization as a general clue. The modalization is the manifestation of the subjectivity of the speaker and of his/her relationship with the listener. The connection between the modalization and the argumentation seems to occur through three bonds. The first bond is about debate, the negotiation between the parties. Through modalization, the speaker marks the "types of acts he/she desires to perform and provides clues to the listener about his/her intentions" (Koch, 2006: 86). Neves (2007: 200) argues that

> ...in a modalized statement, the interpersonal function is also marked, exactly because
> of the evident presence of the speaker and of the listener, both in the epistemic commitment
> (which is associated with a semantic role of experimenter for the speaker) and in the
> deontic involvement (including the several discourse persons, focused on the listener). (Neves, 2007:
> 200)

The second bond is about doubt, the uncertainty of argumentation, which particularly favors the debate. That aspect is expressed by the distance or proximity of the speaker in relation to what he says (Koch, 2006: 86). The epistemic modalization, particularly, materializes the degrees of uncertainty in terms of the speaker's knowledge and world perceptions. This type of modalization is especially found in technical and scientific discourses (Neves, 2007).

Finally, the third bound is about consensus, the object of negotiation in the argumentation, which is usually expressed by means of values. Specifically, the axiological axis includes moral, affective and technical values and the speaker's feelings and will, as well (Koch, 2006: 85). Another form of expression is through speculation, which anticipates the reality that the speaker wants to have accepted by his/her interlocutor so as to reach an agreement. Some of the marks of speculation are the verbal tenses and moods of the imaginary domain (*irrealis*).

As a result, the perlocutionary analysis was based on those three notions: doubt, debate and pursuit of consensus. The evidences for doubt were ''argumentative operators'' (Koch, 2006: 85) and all the other general modalization elements such as verbs, adverbs, adjectives and nouns. The evidences for the relationships between interlocutors were the types of assertion (Guimarães (2001: 70-71) the unipersonalization processes (Neves, 2007: 167-168) and the use of the first person singular, the verb moods and the evidentiality (Neves, 2007: 200). The evidences for the search of consensus were judgement values expressed by adjectives, adverbs, nouns; speculation, expressed by *irrealis* tenses and moods; thematization/focus and emphasis (Guimarães, 2001). Those clues are organized, with examples, on Table 4.

| Argumentative notions | Linguistic evidences | Examples |
|---|---|---|
| Doubt | Verbs | ... the same isogenic lineage <u>can</u> present different degrees of resistance … (YF) |
| | Argumentative operators | It has been <u>little</u> studied …(YC) |
| | Nouns | The <u>possibility</u> of existence ... (YA) |
| | Adverbs | <u>Probably</u> this is due to the fact that … (YD) |
| | Adjectives in predicative position | <u>It is also possible</u> that the intoxication happens … (XF) |
| Debate | Type of assertion | No example found. |
| | Unipersonalization or uses of the first person | From <u>our point of view</u>, <u>we judge</u> that … (YD) |
| | Evidentiality | … what is <u>in alignment with</u> Chagas's works (1982). (YG) |
| Pursuit of consensus | Judgement values | Our apparatus is extraordinarily <u>cheap</u> and <u>easy</u> … (X A) |

| | Speculation (*irrealis* tenses and moods) | …yet those differences <u>could</u> be related with possible antigenic differences. (YC)<br>... <u>in case</u> the surveillance and sprinkling activities <u>are suspended</u>. (YH) |
| | Thematization/focalization and emphasis | <u>It draws one's attention</u> the <u>observation</u> that the same isogenic lineage... (YF) |

**Table 4**: Examples of linguistic evidences of argumentation: the case of modalization.

Finally, the types and structure of the arguments were analyzed based on Perelman and Olbrechts-Tyteca's work (2005). The type of argumentative structure typically found was that on the structure of reality. Indeed, the nature of Conclusions, structured from specific to general facts, representing a movement from inside to outside, favors the predominance of the relation of cause and effect.

For the interpretation of the arguments, the rhetorical moves and the linguistic evidences were combined. In some cases, the order of the rhetorical moves was determining (see Table 5, example of 'unlimited development').

| Type of argument | Example | Analysis |
|---|---|---|
| Pragmatic | The successive injections in mice can frequently modify the virulence of the strains of toxoplasma, as demonstrated by Coutinho e Mendonça, 1975, yet those differences could be related with possible antigenic differences.<br>All these data demonstrate that the toxoplasmosis serum antibody titres using indirect immunofluorescence can change according to the used antigens. Thus, besides the standardization of the technique of the reaction, of the optical equipment and of the reagents, the standardization of the antigen is also necessary. (YC) | In this case, the "antigenic differences" is identified as the only cause for the change of the results in the strains. The researchers seem to do this through the "reference to previous research" move. Even when they cite diverging literature, they corroborate the privileged cause through the moves of "statement of results" and "reference to previous research by support". The "deduction and hypothesis" and "practical implication" moves reinforce the privileged cause and effect relation. Linguistically, that support is materialized by the connector "yet", which expresses contrast and, above all, a shift of focus, which leads the reader to concentrate on the subsequent idea (i.e. the privileged cause).<br>The "hypothesis and deduction" move (introduced by "All these data...) continue the text with an apparent consolidation of the cause highlighted. |

| | | |
|---|---|---|
| Waste | This modification greatly simplifies the technique of injections and enables its use requiring very few resources, available everywhere. (XE) | The values of "facility" and "economy" in the "practical implication" move suggest that the methodology (represented by "the modification") should be profited from. |
| Direction | The comparison between the figures points to an increase of the destruction of the cellular parenchyma of the pineal gland, when the number of stimulations were increased, suggesting the existence of a relation between the sound stimulus and the emergence of such intensive destructive aspects in the pineal glands of these animals. The possibility of the existence of similar cellular alterations in other structures of the Central Nervous System also deserves to be examined using similar methodology. (YA) | There is an idea of contagious spread subsumed for the other structures of the Central Nervous System. The idea is a propagation of the effect. The argument is founded on the idea that there is a natural flux of spread, and that is why it is necessary to continue the research. |
| Unlimited development | The isolation of the parasites from the anal glands (GA09) was only possible in the NNN medium. This difficulty can be associated with the heterogeneity of the samples of *T. cruzi* (Brener, 1977; Miles & Cibulskis, 1986), which would also be reflected in culture medium, as Thomaz et al. (1984 and Steindel et al. (1988) isolated parasites from anal glands in LIT medium of experimentally and naturally infected skunks, respectively. However, after the parasites of the glands were isolated, our strain presented an abundant growth in LIT medium. This result was also observed when the isolation was performed direct from the blood forms via hemoculture or xenodiagnoses, suggesting there may be an inhibiting factor for the growth of the parasite in the gland | The idea of "unlimited development" is corroborated by the moves of "reason of limitation": "This difficulty can be … naturally infected skunks" and " "suggesting there may be ... or even increased in the LIT medium". The combination of the recovery of results with the support of literature suggests that this research should be continued in this direction, to be "purified". The modal of uncertainty for the limitation of the research ("this difficulty <u>can</u> be"); the modal of speculation ("would also be reflected"), projecting the action to the future; the discursive connector, "However", to recover the data are all linguistic elements contributing to directing the attention of the audience to the research. The order of moves – unexpected result, justification, statement of results, reference to previous research for support, statement of results, deduction and hypothesis also direct the interpretation to the continuation of |

| | | |
|---|---|---|
| | content of the skunk (GA09). This inhibiting factor could be nullified in NNN medium and not nullified or even increased in the LIT medium. (YH) | research. |

**Table 5**: Types of arguments

Therefore, the analysis of the perlocutionary level was the result of an interrelation of the analyses of the locutionary and illocutionary levels (see Figure 1). The combination of the three levels of language was, in turn, interpreted considering the data of the context in which those texts were produced.

## 3 Results and discussion
### 3.1 Historical context

There were some evident differences between the discursive communities of the 1909-1919 and the 1980-1989 periods (Table 6). In terms of public objectives, the first period was characterized by the production of sera and vaccines and the international dissemination of the local research, while the second period was basically marked by the struggle of insertion in a more internationalized and standardized context of research. In the first period, there was a general pioneer spirit, because the researches were about typically Brazilian diseases and species. The context was positive because the Institute was successful in accomplishing its mission in Brazil and it was able to gain international acknowledgement. The Brazilian research was independent, in the same level of equality of that of the international science.

The period of the 80s, on the other hand, was marked by a constant effort to find a place in the international scenario of science. At this time, the world of science gained larger dimensions (*big Science*) and the interactions among scientists were more complex, beyond local interests. Science and technology were associated with a new kind of economy and industrial production. For Brazilian scientists, the pressure was even more dramatic because there was no governmental support. Science language and peer scrutiny was becoming standardized and institutionalized.

| Characteristics | 1909-1919 Period | 1980-1989 Period |
|---|---|---|
| Public objectives | Production of sera, vaccines and medicines to meet local needs; research and education; and international dissemination of local research (Scientific pioneering and positive scenario) | Insertion in the international and institutional context of the *big science* (Competition and negative scenario) |
| Intercommunication mechanisms | Mostly journals, but also doctoral theses, articles in popular tabloids and talks in congresses and events. Higher internal publishing. | Similar to the first period. All means were more internationalized and accessible. Efforts towards external publishing. Images, graphs and tables with increased relevance. |
| Shared genres | Descriptive articles (of species) were the most common ones. The IMRD sessions were not | The IMRD research article prevailed, with IMRD sessions clearly delineated. Descriptive |

| | delineated in the text. | articles were still frequent, with the same IMRD sessions (until 1987). Emergence of the notes, which, in practice, were smaller research articles. |
|---|---|---|
| Shared epistemological position | - Science as progress and civilization, associated with patriotism. <br> - Valorization of the expert. Scientific activity as a pursuit for excellence (higher vocation). <br> - Values in construction: peer scrutiny and language as a faithful reproduction of reality. <br> - Interaction of applied and basic researches for the resolution of practical problems. <br> - The new microbiologic paradigm. <br> -Discovery-driven. Investigative and experimental spirit. | - Science as a globalized activity, directly connected to economy and technology. <br> - Researcher as a restless worker and competitor (pressure group) <br> - Values in consolidation: standardized and institutionalized peer scrutiny and language. <br> - Overcoming the dichotomy of applied research and basic research in favor of the results. <br> - Interdisciplinarity. <br> - Valorization of the quantity of works published, of the novelty and of the experimental model. |

**Table 6** - Characterization of the 1909-1919 and 1980-1989 discursive communities

As for the intercommunication mechanisms, both periods were similar, because works were mostly published in journals. However, in the first period, most works were published in national journals, what is exactly the contrary situation compared with the second period. In the 80s, even the MOCI was opening to international submissions, and most of the articles were written in English. In addition, images, tables and graphs gained importance as intercommunication forms in the second period.

Concerning genres, however, the first period presented a higher quantity of descriptive articles of species. In the 80s, there was a high quantity of experimental scientific research articles in the IMRD format, with the sessions delineated in the text. In addition, there appeared the notes, which reproduce the structure of research articles in a smaller size. Probably, this genre was an alternative for the growing number of articles published and the reduced space for publishing.

In both periods, science was valued as progress. In the first period, though, this idea of progress was associated with the establishment of civilization, the suppression of a colonial delay and the expression of patriotism. The second period was marked by struggle to fit into a new standard of science production: a more globalized and economy-bound science. In this period, science was following the laws of market: competition, pursuit of innovation and prominence.

The scientist in the first period was considered a hero. The "expert" was valued by his passionate work, and, at the time, he reached high levels of prestige in the international community. The expert was opposed to the "man of rhetoric", a symbol of the colonial mentality. In the 80s, the scientist was a restless soul because his task was Herculean, considering budget constraints and competition to publish.

In the first period, the values of the scientific language and of the peer scrutiny were being established. Language was seen as a source of interference to science, so it should be controlled to function as a "mirror of reality". The peer scrutiny became a cornerstone of the team work and validation procedures of science. In the 80s, those values were already consolidated aligned with institutional standards.

Regarding the dichotomy Basic Science and Applied Science, both moments represented integration. In the first moment, integration was favored by the urgency of the problems (i.e. human and cattle pests). In the 80s, that integration was motivated by the pursuit of new results, which should be profitable. There was a general movement towards interdisciplinarity as well.

Another characteristic of both periods was the value of novelty. In the 1909-1919 period, novelty was expressed by the change from the "miasmatic" paradigm to the new microbiological paradigm. The period was marked by pioneering and discovery, as a result of knowledge exploration. In the 80s, novelty was made concrete in the attempt to adapt to an internationalized and market-driven science, characterized by competition. To be new meant to be innovative and prominent.

### 3.2 Linguistic aspects

In the 1909-1919 period, there were explicitly subjective/personal linguistic marks, such as first person (relevant frequency) and verbs expressing volition and judgment. On the other hand, an attempt to hide the subject was also noted (following the logics of the objective scientific language) by means of the passive voice (relevant frequency). In terms of connectors, the results show a trend for cause and effect. The findings do not reveal complexity and variety in terms of adjectives and adverbs, which could express values or assertiveness. There were no evidences of modalization or hedging, and no trace of speculation. A trend of assertive projection into future, denoting promise/commitment, was found in the use of the future. The following example illustrates the coexistence of subjectivism, in the presence of first person, and rhetorical simplicity:

> *Conclusions*
> *From our experiences, observations and researches, we can briefly conclude:*
> *1st The anaplasma is not a protozoa.*
> *2nd The anaplasma is a corpuscle of hematic nature, a product of the degeneration of the red blood cells.*
> *3rd The anaplasma is one of the blood cell degenerations resulting from some types of anemia determined by hemolytic poisons of diverse nature.*
> *4th There does not exist a disease named bovine anaplasmosis, which is, in the cases described by THEILER, a clinic form of piroplasmosis. The anaplasmosis of the other mammals is due to diverse causes (9A)*

The 1980-1989 period was characterized by the absolute presence of passive voice and by the frequent presence of less personal and more objective verbs in relation to the object of knowledge. These findings reveal a more complete alignment with the demand for objectivity in language. However, together with the objective evidences, there is a higher complexity in terms of adverbs and adjectives, expressing veracity, emphasis and preference; more modalization traits, working as hedges and supporting persuasion (especially through "should" and emphasis resources); higher complexity in terms of logical connectors, expressing opposition, intensity and emphasis; and more speculation, by means of "would".

All those evidences together seem to suggest a more dialogical scientific text towards consensus.

*Discussion*
*The experimental susceptibility of B. amazonica and B. peregrina from different geographic regions, together with the changes observed in relation to the susceptibility of B. straminea and B. tenagophila to the infection by S. mansoni in Minas Gerais, demonstrates the need of more researches for a better evaluation of the potentiality of other species of the same genus as hosts of this trematode. B. straminea and B. tenagophila planorbidae, considered non-transmitters in Minas Gerais, but experimentally susceptible, are being found naturally infected in this State. Dias Pinto et al. (1984), reported the finding, in 1981, of B. straminea naturally infected by S. mansoni in the Samambaia Dam, located in the boundary of the municipalities of Lagoa Santa and Pedro Leopoldo, Minas Gerais. Melo, Pereira & Corrêa (1982) recorded the first finding of B. tenagophila naturally infected in the municipality of Jaboticatubas, MG. This focus is still active and Melo, Pereira & Corrêa (1983) isolated the S. mansoni local strain for studies. Carvalho, Souza & Katz (in publication) registered the first finding of B. tenagophila naturally infected in Itajubá, South of Minas Gerais. Carvalho et al. (oral presentation) reported the finding of this planorbidae naturally infected by S. mansoni in the Pampulha lake, Belo Horizonte, MG.*
*Those findings seem to suggest that the mollusks B. straminea and B. tenagophila of these regions are changing into natural intermediate hosts of S. mansoni, as it occurs in the Brazilian Northeast and in São Paulo.*
*In the present work, the experimental infection of B. schrammi with that trematode was attempted, without success. This species of planorbideo was never found naturally infected or experimentally infected with this parasite (Paraense, Fauran & Courmes, 1964).*
*During the experiment, it was observed that the planorbideo, of small size (6-7 mm of diameter), has a great tendency to escape from water containing miracidia; then, covered Petri dishes are used to avoid its exit from water during miracidia exposure. In the maintenance aquariums, during the prepatent period, it was also observed that 30% to 40% of the specimens went out of water and died dissected on the walls, cover or outside the aquariums, despite being constantly returned to water. That behavior, probably related to the poor adaptation to the conditions of the laboratory, was responsible for the observed mortality rate.*
*Thus, the inherent characteristics of this species were considered, and it seems little probable that it gains any importance in the epidemiology of the esquistossomosis mansoni. However, more experiments will be necessary with specimens of other populations of B. schrammi for a safer evaluation of the potentiality of this planorbidae to be an intermediate host of the S. mansoni. (6B)*

In sum, the linguistic evidences of the first period suggest subjectivity, but the text is focused on the scientific object and it shows a simple rhetoric. In the 80s, there are a lot of objectivity evidences, but the text shows a complex rhetorical structure, through which the object of study is constantly interconnected with the network of peers.

### 3.3 Rhetorical moves

Two different scenarios in terms of the overall frequency of rhetorical moves were observed for the two periods. Considering 70% as a frequency cut, "virtually obligatory" (Peacock, 2002) moves were identified in both periods. In 1909-1919, only the 'Statement of Results' and "Deduction and Hypothesis" were virtually obligatory. Conversely, in 1980-1989, the 'Reference to Previous Research for Support' (present throughout the corpus), 'Statement of Results', 'Deduction and Hypothesis', 'Background Information', 'Reference to Previous Research for Comparison' and 'Practical Implication' were virtually obligatory. In 1909-1919, the 'Recovery of Method', 'Practical Implication' and 'Statement of Limitation' moves were optional (frequency cut: 40%). In 1980-1989, the optional moves were 'Explanation' and 'Recovery of Method'.

Thus, there was an increase in the use of 'Reference to Previous Research for Support', 'Background Information', 'Reference to Previous Research for Comparison' and 'Practical Implication' in 80-89. This profile seems to reflect a complex interlocutor network. In addition, the value of practical application reveals a connection of science to the objective demands of the external world. In 1909-1919, the rhetorical moves reflect a focus on the findings and on the method, which, due to the novelty scenario, was probably in consolidation.

The subdivision of the 'Reference to Previous Research' move proved important, as the 'support' surpassed the 'comparison' in the 80s. This fact points to a more positive and close peer network, implying the values of 'safety' and 'validation', in opposition to an antagonist and distant network.

The 'Reference to Previous Research', especially for support, appears in the whole Conclusion, but it specifically constitutes beginning and ending patterns in the Conclusions of the 80s. Therefore, it is also important to consider the distribution of moves. A study that considers move cycles (Peacock, 2002) can predict order and ciclicity, and move cycles are sensitive to variations in disciplines and in time.

Profiting from Peacock's proposal (2002: 481) of splitting Conclusions in three parts, (introduction, evaluation and conclusion) the move cycle patterns found in the present work were organized in the same manner. In the introduction, the findings for the 1909-1919 period were the presence of 'Statement of Results' and 'Deduction and Hypothesis', together or separately. In the 80s the only pattern found was the appearance of the 'Reference to Previous Research' move.

In the evaluation, the 1909-1919 period only presented the pattern 'Statement of Results' + 'Deduction and Hypothesis'. In the 80s, the cycles were 'Deduction and Hypothesis'+ 'Reference to Previous Research for support'; 'Statement of Results' + 'Reference to Previous Research for Support'; 'Statement of Results' + 'Reference to Previous Research for Comparison';  and 'Statement of Results' + 'Deduction and Hypothesis'; 'Background Information' + 'Reference to Previous Research for Support' and  'Reference to Previous Research for Comparison' + 'Reference to Previous Research for Support'.

In the conclusion, the 1909-1919 period revealed a different pattern: 'Acknowledgement of Collaborators' + 'Reason for Acknowledgement'. In the 80s, the following moves appeared separately: 'Deduction and Hypothesis', 'Practical Implication' and 'Reference to Previous Research for Support' (the latter appeared in the three parts of the Conclusions in the 80s).

Swales (1990) showed higher ciclicity in Introductions of Human Sciences compared with Exact Sciences. The present work showed a diachronic difference, for the 1909-1919 period presented less cyclic conclusions when compared with the texts in the 80s.

### 3.4 Arguments
In 1909-1919, the 'waste' argument is the only one "virtually obligatory". In 1980, the 'pragmatic' and 'waste' arguments are virtually obligatory, being the former more frequent than the latter. The 'waste' argument repeats the frequency rate found in the 1909-1919 period.

These results reveal the interaction of demonstration and argumentation in the scientific discourse, echoing Rauch's (1997) claim that values and beliefs coexist with the rational scientific knowledge. They also favor the idea that there are no linguistics aspects that can solely determine objectivity or subjectivity.

Particularly, the present study reveals the presence of argumentation in the scientific discourse by two means: entanglement and co-existence. In the first means, the argumentation and the demonstration are so interconnected that the distinction cannot be perceived. The consequence is the "illusion of objectivity". In the co-existence way, on the contrary, the argumentation can be distinguished and it works projecting the scientific work, through its promotion.

In general, the results reveal that in both periods argumentation coexists with demonstration. This fact is evidenced by the presence of the 'waste' argument in equal proportion in both periods. This argument promotes the scientific work by implying the idea that it has to be used, profited from, that it must be continued. Below, there is one example of this argument in each period.

> Here we conclude the presentation of our results about the vaccination against the spirochetosis, of which employment seems to us in all aspects recommendable, as one of the most practical means to obtain the prophylaxis of the destroying epizootia, so common among us. The same technique we use is recommended, equally in our point of view, for the preparation of vaccines for the other spirochetosis such as the Tick fever, the recurrent fever etc. (6A)

> The present work, clarifying in details the pathology of the experimental pest in two species of rodents potentially capable of participating in epidemics in human populations, proved the possibility of the development of serious pulmonary, splenic and hepatic lesions in these animals. Such findings can perfectly explain the high mortality observed in laboratory.
> It is possible that, at least partially, some of these findings can be extrapolated to men, thus ensuring a better knowledge of the pathology caused by Y. pestis in the organism of other susceptible hosts. (3B)

Particularly in the 1980-1989 period, there is the entanglement of argumentation in the scientific discourse, which is expressed by the 'pragmatic' argument, highly frequent in the period. This argument is intertwined with typically demonstrative moves and it contributes to the construction of cause and effect relations involved in the experimental work. In the following example, the 'pragmatic' argument is entangled in the presentation of the findings, favoring the cause "blocking or exhaustion of the host's immunologic system".

> Another interesting histopathological finding concerns the aspect of the white pulp of the spleen of the infected animals, a severe atrophy of Malpighi follicles is observed, with the absence of reactional centers, suggesting a possible blocking or exhaustion of the host's immunologic system, in response to the intense antigenic aggression caused by the massive release of bacterial endotoxin. (3B)

This occurrence reveals a more complex argumentative manifestation in the 80s: either internal and subtle or external and evident.

### 3.5 Synthesis of results towards an integrated model
In this section, integrated analyses of the Conclusions of both periods are presented and an overall model, irrespective of diachronic peculiarities, is proposed.

The 1909-1919 analysis (Table 7) suggests a focus on scientific findings. That aspect is corroborated by the simplicity of the textual logical sequence and by the absence of a persuasive complexity. The predominant rhetorical moves also corroborate this focus as the findings are recovered (Statement of Results) and become the axis of the researcher's reasoning (Deduction and Hypothesis)

| Levels of Analysis | 1909-1919 |
|---|---|
| Locutionary | Marks of explicit subjectivity: first person and judgement and volition verbs; passive voice; cause and effect connectors; assertive future projection (future tense) |
| Illocutionary | Obligatory moves: Deduction and Hypothesis and Statement of Results. Optional moves: Recovery of Method, Practical Implication, Statement of Limitation. Linear arrangement. Patterns: Statement of Results + Deduction and Hypothesis (beginning and middle of conclusions); Acknowledgement + Reason for Acknowledgement (end of conclusions). |
| Perlocutionary | Waste argument (coexistence of argumentation and demonstration). |
| Synthesis | Focus on the dissemination/projection of scientific findings. |

**Table 7:** Analysis of Conclusions (1909-1919)

In addition, the period implies promotion/projection of the findings, sustained by the 'Waste' argument. That projection is corroborated by the tendency to use future and the moves of 'Practical Implication', 'Statement of Limitation' (as it entails the overcoming of the limitation) and 'Recovery of Method' (which contributes to the continuation of the research).

The 1980-1989 Conclusion seems to focus on the network of peers; the scientific findings are constructed in interaction with this network (an axis) and projected/promoted to this same network. This discursive complexity is corroborated by linguistic and rhetorical elements. The linguistic features reveal marks of dialogue and pursuit of consensus: modals; connectors denoting contrast, intensity and emphasis; use of would representing speculation and, pursuit of consensus; and adjectives and adverbs denoting veracity, emphasis and preference (values that also reinforce the pursuit of consensus). On the other hand, the rhetorical moves of 'Reference to Previous Research for Support', 'Reference to Previous Research for Comparison' and 'Background Information' (by recovering the tacit knowledge shared among the network of peers) are all evidences for the participation of the network of peers in the construction of the Conclusions.

| Levels of Analysis | 1980-1989 |
|---|---|
| Locutionary | Marks of objectivity: passive voice and objective verbs. Complexity of adjectives and adverbs (notions of veracity, emphasis and preference). Modalization. Complexity of logical connectors (contrast, intensity and emphasis). Speculation (would) |
| Illocutionary | Obligatory Moves: Deduction and Hypothesis, Statement of Results, Reference to Previous Research for Support, Reference to Previous Research for Comparison, Practical Implication and Background Information. Optional Moves: Recovery of Method and Explanation. |

| | |
|---|---|
| | Cyclical Arrangement. Patterns: Reference to Previous Research for Support (beginning of Conclusions); Statement of Results + Deduction and Hypothesis, Statement of Results + Reference to Previous Research for Support, Statement of Results + Reference to Previous Research for Comparison, Background Information + Reference to Previous Research for Support, Reference to Previous Research for Support + Reference to Previous Research for Comparison, Deduction and Hypothesis + Reference to Previous Research for Support (middle of Conclusions); Reference to Previous Research for Support, Deduction and Hypothesis, and Practical Implication (end of Conclusions). |
| Perlocutionary | Pragmatic argument (entanglement of argumentation in demonstration). Waste argument (coexistence of argumentation and demonstration). |
| Synthesis | Focus on the network of peers, the result of the scientific work is constructed in the process of interaction with the network to be, then, promoted/disseminated to the same network. |

**Table 8:** Analysis of Conclusions (1980-1989)

The 'Pragmatic' argument reveals the intricate construction of the Conclusions, as the scientific findings and the considerations about them are intertwined in the entanglement of argumentation in demonstration. In contrast, the idea of promotion is expressed by the 'Waste' argument, which induces the continuation of the scientific work. The 'Practical Implication' move plus the linguistic elements (adjectives, adverbs and emphasis resources) corroborate the idea of continuation.

Comparing the two models of conclusion, the result is the following visual representation (Figure 2). To represent the fact that the research is an object projected/promoted to the discourse community (1909-1919), the arrows are aimed unilaterally at the community.
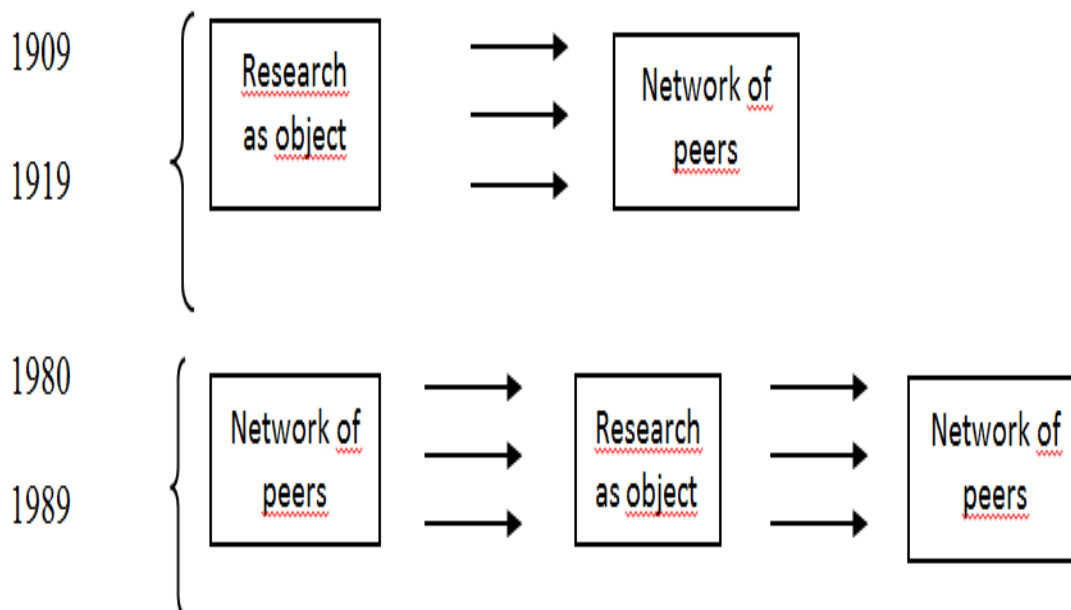


Figure 2: Graphical representation of the Conclusions of both periods

Conversely, the 1980-1989 period is characterized by a higher complexity in the interaction of the community with the research as an object. The network of peers participates in the construction of the conclusions, intertwined in the text, which is, in turn, promoted to this same community. The representation (Figure 2) shows this return by the fact that the network of peers is on the two extreme positions of the scheme.

From another point of view, the model of Conclusions can be designed by removing the peculiarities of each period (Figure 3). The graphical representation shows the model integrating the three discourse levels in interaction with the contextual factors.



**Locutionary**: Marks of objectivity + diachronic feautures.

**Illocutionary**:
1. Statement of results
2. Background information
3. Unexpected result
4. Reference to previous research (comparison)
5. Reference to previous research (corroboration)
6. Explanation
7. Deduction and Hypothesis
8. Recommendation
9. Statement of limitation
10. Reason of limitation
11. Recovery of method
12. Practical implication

Introduction: Diachronic patterns.
Evaluation: 1+7 and diachronic patterns.
Conclusion: diachronic patterns.

**Perlocutionary**: Waste argument + diachronic types.

Locutionary
Ilocutionary
Perlocutionary
Contextual Conditions

**Figure 3: Model of conclusion after the diachronic features are abstracted**

In the locutionary level, only the marks of objectivity, such as passive voice, were found, suggesting the project of an objective scientific language had already initiated in the early 1900s. In the illocutionary level, a list of more frequent moves and patterns of moves was drawn, considering the three-part model proposed by Peacock (2002: 481), which seems flexible enough for the purposes of the current paper. The moves that proved diachronic were not considered in the list. Only one pattern was constant in both periods, and only in the 'evaluation' part of the conclusion: 'Statement of Results' + 'Deduction and Hypothesis'. Finally, in the perlocutionary level, the 'Waste" argument is typical.

In terms of contextual conditions, the 1909-1919 community was small, homogeneous, patriot and pioneering. Those aspects are correlated with marks of personalization, a linear text and low complexity in rhetorical terms. The argumentation suggests the promotion of researches in the same prestige level of international researches. In the 1980-1989 period, the community was large and was characterized as a "pressure group", which struggled to fit in the big standards of the international science. These aspects are correlated with a higher rhetorical force and a complex entanglement of the research and the network of peers. Despite more objective, by the control of certain linguistic marks of personalization, the conclusions in this period were a truly elaborated rhetorical/argumentative artifact.

## 4 Conclusions

This work analyzed the Conclusions of experimental scientific articles of two periods: 1909-1919 and 1980-1989. In the first period, the Conclusions were linear and relatively simple in rhetorical terms, with a focus on the research findings to be promoted to the community of peers. Those data are correlated with a small and cohesive community, which favored consensus. This community was in the same level of international scientists, enjoying prestige as pioneers in tropical pests and species. Another characteristic was the gradual adoption of a standardized scientific language and peer scrutiny.

In the 1980-1989 period, the Conclusions were cyclic and rhetorically complex. One peculiarity was the occurrence of the 'Pragmatic" argument. Those characteristics are correlated with a pressure atmosphere, in which the community of that time counted on no support from the government and struggled to adapt to the big science dimensions. The surface of the texts convey objectivity and pure demonstration. However, a thorough analysis, considering the three levels of language in contrast with the context, shows the opposite.

The work contributes to the studies of genre by proposing a model of Conclusions that goes beyond the traditional description of rhetorical moves and linguistic aspects only, by integrating these language levels with the illocutionary level in contrast with the contextual factors.

Another contribution of the paper is to the studies of Science, as the idea that science is sensitive to diachronic values and that it also includes persuasion was corroborated. Specifically concerning Brazilian science, the articles recovers the moment of prestige and brilliance experienced by the famous scientists of the beginning of the 20th century. On the other hand, another epoch is revisited (80s), revealing a scenario of struggle to adapt to a new scenario of science, with no governmental support.

In pedagogical terms, the present work claims that academic training must consider, in addition to the knowledge of academic texts, a critical perspective of discourse genres and communities. Particularly, learners should be researchers of their own aspiring scientific communities to perceive their values and beliefs and observe how these elements influence the texts. They should also understand that there are no absolute criteria to define good or bad science and that the language/discourse is an evidence that persuasion is part of the scientific practice. The pedagogical approach for academic purposes, therefore, is necessarily critical and it necessarily includes learners in the research of genres and communities aiming at more real discoveries about disciplinary habits and values.

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# Análisis contrastivo de los títulos en los artículos de investigación de neurología redactados en español e inglés

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**Abstract**

In this paper, we studied the titles of 200 research articles drawn from two journals, one written in English (100 titles) and the other one written in Spanish (100 titles) in the field of neurology in the period 2001-2012. We recorded the frequency of different variables, including length, lexical density (content and function words), title types (nominal, verbal, simple, compound), title structure (nominal groups, pre- and post-modifiers, punctuation usage) and collaboration practices in order to determine whether cross-linguistic differences were observed. Our results show that similarities outweigh differences.

## 1 Introducción

En la antigüedad los libros (*volumen*) se escribían en largas láminas de papiro o pergamino que se enrollaban en cilindros (*umbilicus*) de madera, hueso o marfil, que llevaban ataba una etiqueta con el título (*titulus*). En occidente, a los títulos se les asignó una página entera, lo que da una idea de su importancia. La invención posterior de la imprenta dio un carácter menos exclusivo a los títulos y, como afirma Grutman (2002: 599) a propósito de las obras literarias, "anteriormente largo y descriptivo, con una sintaxis a veces compleja, el título se ha convertido en la actualidad en una oración sin verbo o incluso en un sintagma nominal"[1].

## 1.1 Sobre la importancia de los títulos en la investigación científica

Debido no sólo al mayor número de revistas científicas, que suelen duplicarse cada 12 años (Stix, 1994), y, por tanto, del mayor número de artículos publicados, sino también a la interdisciplinariedad de la investigación actual, los científicos optan cada vez más por basarse en los resúmenes como fuente de información concisa y fidedigna (Salager-Meyer, 1991). Pueden incluso ni siquiera llegar hasta el resumen y detenerse simplemente en el título para

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[1] Nuestra traducción libre de la oración original.

decidir si les merece la pena leer el artículo que tienen ante sí. De hecho, se ha demostrado que los médicos a veces toman decisiones clínicas a partir de los títulos de artículos publicados en diferentes revistas (Haynes et al. 1990; Goodman 2000). Por ello es imprescindible que el título de un artículo despierte el interés no sólo de su destinatario primario (editores y revisores), sino también de sus lectores potenciales (Yitzhaki, 1994).

Para poder informar con concisión y plenitud, es decir, para ajustarse a los "principios de informatividad y economía (Bush-Lauer, 2000), los títulos deben ser claros, exactos y precisos (Swales y Feak, 2004; Day, 1998; Hartley, 2008). Cuanto más preciso y exacto sea un título, más útil será, por ejemplo, para los documentalistas a la hora de almacenar, buscar y recuperar la información (Bush-Lauer, 2000; Soler, 2007 y Wang y Bai, 2007, entre otros). Por todo ello se puede afirmar que los títulos tienen una importancia primordial en la investigación científica puesto que son la primera interacción entre un lector y cualquier documento de tipo académico (Jakobovits y Jakobovits, 1987; Alley, 1996; Whissel, 1999; Anthony, 2001; Gross et al., 2002, Haggan, 2004, etc.). Sin embargo, no hace mucho tiempo que las monografías dedicadas a la escritura de artículos científicos han empezado a resaltar la importancia de los títulos (Zeiger, 2000, Goodman et al., 2001).

Los argumentos mencionados en líneas anteriores justifican ampliamente que las publicaciones en torno a los títulos hayan ido creciendo de forma sustancial bajo el paraguas que Duchet (1973) acuñó con el neologismo "Titrologie" ("Titulogía") (Roy, 2008) en su estudio de los títulos en las obras literarias. A continuación comentaremos de forma resumida algunos estudios sobre títulos que hemos organizado en cuatros grandes grupos[2]; 1) estudios de tipo disciplinario, 2) estudios de tipo interdisciplinario, 3) estudios de tipo genérico, y 4) estudios de tipo lingüístico.

## 1.2 Revisión de la literatura sobre los títulos académicos
### 1.2.1 Estudios de tipo disciplinario
Los estudios de tipo disciplinario han girado principalmente en torno a la dirección de empresas, la lingüística, la medicina, la sicología y la veterinaria. En el área de la dirección de empresas, se ha observado que la temporalidad se refleja en la puntuación y la elección de palabras (Forray y Woodilla, 2005). En el campo de la lingüística, las similitudes entre los títulos se han atribuido a las características comunes de los documentos analizados, la codificación lingüística, los fines comunicativos propios de los títulos y la pertenencia a una misma disciplina, y la media de palabras por título ha sido de 10,7 (Gesuato, 2009). En este mismo terreno también se ha puesto de relieve una amplia gama de combinaciones en la estructura de los títulos compuestos (Cheng et al., 2012). En el ámbito de la medicina, se ha comprobado que la media de palabras por título es de 10,9, que los títulos son en un 99% de tipo nominal, están formados en un 75% por una sola unidad y van acompañados de locuciones post-modificadoras en un 68% (Wang y Bai, 2007); también se ha verificado que los editores a veces modifican los títulos de los artículos originales para aumentar su claridad e informatividad y que la política editorial de algunas revistas sólo incluye directrices acerca de su longitud (Goodman et al., 2001). En cuanto a la sicología y la veterinaria, se ha comprobado que los títulos de los artículos de investigación tienen una media de 12 palabras (Whissell, 1999) y de 8,8 palabras (Cianflone, 2010), respectivamente.

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[2] Esta división se ha establecido sólo a efectos organizativos ya que cada grupo suele englobar más de un enfoque.

### 1.2.2 Estudios de tipo interdisciplinario

La perspectiva interdisciplinaria es la que ha acaparado más estudios. Yitzhaki (1994) analizó una muestra de artículos de investigación en las ciencias llamadas "duras" y "blandas" y encontró una correlación moderadamente positiva entre el número de palabras de contenido y el número de autores en las ciencias duras, frente a una correlación más bien baja en las ciencias sociales y ninguna correlación en las humanidades. Estas diferencias las atribuyó el autor a la incidencia de la autoría múltiple en los artículos propios del ámbito de las ciencias duras. Fortanet et. (1997; 1998), por su parte, estudiaron la sintaxis y los signos de puntuación de los títulos en las ciencias informáticas, la economía, la lingüística aplicada, los negocios y la química, y llegaron a las siguientes conclusiones: 1) los títulos más largos son característicos de las ciencias químicas y los más cortos de la lingüística aplicada; 2) la estructura sintáctica más común es la de 'premodificador + núcleo + post-modificador'; 3) las combinaciones nucleares son más frecuentes en lingüística aplicada, negocios y economía, frente a la pre-y post-modificación en la química y las ciencias informáticas; 4) el uso de la terminación –ing, tanto en su función de sustantivo como de verbo, es mayor en la economía, la lingüística aplicada y los negocios, y se equipara al de la terminación –ed, en su función de verbo o adjetivo, en las ciencias informáticas y en la química; 5) la frecuencia del artículo definido es mayor en la economía, la lingüística aplicada y los negocios, mientras que su frecuencia es similar a la del artículo indefinido en las ciencias informáticas y en la química; 6) el punto, los dos puntos y el punto y coma son los signos de puntuación más frecuentes en los títulos de la economía y los negocios, y los menos frecuentes en las ciencias informáticas.

Otros autores que también han abordado el estudio de los títulos desde este ángulo son Anthony (2001), que trabajó con artículos de investigación en diferentes ramas de las ciencias informáticas y Haggan (2004), que se ocupó de analizar este mismo tipo de documentos en el terreno de la lingüística, la literatura y las ciencias. Anthony observó, por un lado, que los títulos tienen una media de nueve palabras y, por otro, que un 13% del total de su muestra corresponde a títulos compuestos por dos unidades separadas por un punto y coma, siendo sus componentes semánticos más frecuentes la descripción y el ámbito de estudio. En cuanto a Haggan, informó de ciertas similitudes en las combinaciones sintácticas y estructurales de los títulos y registró unas medias de 9,7, 9,4 y 13,8 palabras en literatura, lingüística y ciencias. También comprobó que los títulos compuestos tienen mayor presencia en la literatura que en la lingüística y en las ciencias.

Al estudio de los signos de puntuación en tanto que delimitadores de unidades informativas se dedicaron asimismo Dillon (1982) y Lewinson y Hartley (2005), entre otros. Así, Dillon anotó una incidencia creciente de los dos puntos en las ciencias de la educación, la crítica literaria y la sicología, mientras que Lewinson y Hartley comprobaron que los títulos con dos puntos son más largos e informativos que los títulos sin ellos y que su incidencia es más común en las letras que en las ciencias.

### 1.2.3 Estudios de tipo intergenérico

En su investigación con artículos de investigación y artículos de revisión en las ciencias biológicas (biología, medicina, bioquímica) y las ciencias sociales (antropología, lingüística, sicología), Soler (2007) identifica varias construcciones estructurales, a saber, títulos nominales, oraciones completas, títulos compuestos y títulos en forma interrogativa. La construcción más común en ambos campos de conocimiento es el título nominal, mientras que la oración completa se encuentra en mayor proporción en los artículos de investigación de las

ciencias biológicas y los títulos compuestos son más característicos de los artículos de investigación que de los artículos de revisión. La construcción interrogativa, por su parte, se utiliza en contadas ocasiones pero es más propia de los artículos de revisión. En este mismo estudio Soler también analiza la longitud de los títulos, siendo la media de palabras por título de 10,89 en las ciencias sociales (7,98 en la lingüística) y 14,98 en las ciencias biológicas (15,48 en medicina).

En una obra posterior, Soler (2011) siguió con los mismos campos de conocimiento y los mismos tipos de documentos pero esta vez escritos en español y en inglés. Comprobó, por un lado, que en ambas disciplinas los títulos de los artículos de investigación son más largos que los títulos de los artículos de revisión y, por otro, que en las ciencias sociales los títulos de los artículos de investigación escritos en español son más largos que los de los artículos de investigación redactados en lengua inglesa.

### 1.2.4 Estudios de tipo intercultural

El primer estudio de tipo intercultural que se llevó a cabo fue obra de Buxton y Meadows (1977). Estos autores analizaron los títulos de artículos de investigación escritos en alemán, francés e inglés en el campo de las ciencias naturales y sociales, y comprobaron que los títulos de las ciencias naturales tienen una carga informativa mayor que los de las ciencias sociales. Asimismo, señalaron que, independientemente de su contenido informativo, los títulos en las ciencias sociales son más difíciles de codificar que los de las ciencias naturales.

Nord (1995), Busch-Lauer (2000) y Hartley (2012) también investigaron las variaciones lingüísticas en los títulos. Nord registró el mismo número de funciones en los títulos de poemas y artículos académicos redactados en alemán, español, francés e inglés, y ninguna variación de tipo cultural. En su estudio con títulos de artículos de investigación y presentaciones a congresos escritos en alemán e inglés, Busch-Lauer observó que los títulos médicos son largos, precisos e informativos, mientras que los títulos lingüísticos son cortos, imprecisos, abstractos y capciosos, y atribuyó estas diferencias a cuestiones de estilo. Comprobó asimismo que la mayoría de los títulos alemanes son de tipo compuesto y más cortos que los títulos ingleses, que son de tipo simple. En cuanto a Hartley, su estudio consistió en proponer varias formas de mejorar la carga informativa de los títulos de artículos académicos redactados en español e inglés.

Las referencias relacionadas en líneas anteriores son un claro reflejo de la importancia asignada al estudio de los títulos. Sin embargo, la mayoría de estas obras son más bien tipo generalista y se notan a faltar trabajos más específicos con subespecialidades como, por ejemplo, la neurología dentro del campo de la medicina. Éste es el marco de la presente investigación, que abordamos desde un punto de vista contrastivo (véase sección siguiente). Nuestro estudio también incluye una sección dedicada a las prácticas colaborativas con el fin de averiguar su funcionamiento dentro de la especialidad médica que nos ocupa.

### 2 Objetivo y muestra

Nuestro objetivo en este trabajo ha consistido en llevar a cabo un análisis contrastivo inglés-español de títulos de artículos de investigación publicados en dos revistas pertenecientes al campo de la neurología, *BMC Neurology* y *Revista española de neurología*, con el fin de averiguar si existen diferencias y/o similitudes entre ambas lenguas.

Ambas revistas son de libre acceso si bien la revista en lengua española necesita de un permiso que otorga fácilmente la propia revista. En cuanto a la muestra estudiada, se compone de un total de 200 títulos, a razón de 100 títulos por lengua, que hemos recogido al azar en periodos de dos años a partir del año 2001 hasta el año 2012 (cinco periodos: A, B, C, D y E) y 20 títulos por periodo. Hemos elegido el año 2001 como punto de partida por ser la fecha del lanzamiento en la red de la revista en lengua inglesa.

Con el fin de evitar posibles desequilibrios entre las dos muestras seleccionadas, nos hemos basado en algunos de los criterios comparativos apuntados por Connor y Moreno (2005: 1) todos los artículos cuyos títulos se han analizado son artículos de investigación; 2) antes de ser seleccionados para su publicación los artículos pasan por un proceso de arbitraje y revisión; 3) los artículos seleccionados son inéditos; 4) el periodo analizado es el mismo para ambas muestras (2001-2012); 5) las dos revistas son un punto de referencia en el campo de la neurología y tienen una proyección internacional; y 6) ambas revistas tienen un factor de impacto relativamente elevado (*BMC Neurology*: 2,17 y *Revista española de neurología*: 1,083).

Aunque la muestra estudiada (200 títulos) pueda parecer pequeña, creemos sin embargo que algunas consideraciones de cierta relevancia se pueden sacar en claro y servir de base para estudios posteriores.

### 3 Metodología

La metodología que hemos seguido ha sido de tipo cuantitativo. Hemos registrado manualmente y analizado las siguientes variables para averiguar las diferencias y similitudes existentes entre los títulos de los artículos de investigación redactados en español y en inglés y entre sus autores: longitud de los títulos, su densidad léxica (palabras de contenido y palabras funcionales), tipos de títulos (nominales, verbales, compuestos), su estructura (grupos nominales, categorías gramaticales, signos de puntuación) y sus prácticas colaborativas.

Para obtener el cómputo total de palabras en los títulos, hemos adoptado dos criterios. El primero de ellos ha sido el ortográfico, es decir, hemos contabilizado como una palabra cualquier ítem lingüístico precedido y/o seguido por un espacio o un signo de puntuación. Así, hemos considerado como una sola palabra las abreviaciones y acrónimos del tipo de "ADN" (ácido desoxirribonucleico), "CALLS" (*cognitive assessment of later life status*), "EPICES" (epidemiología del ictus en España), "MRI" (*magnetic resonance imaging*), "REHACOP" (rehabilitación cognitiva en psicosis) o "SPECT" (*single photon emission computed tomography*). También hemos contado como una sola palabra las contracciones españolas o preposiciones agrupadas con artículos del tipo de "del" o "al". El segundo criterio que hemos seguido ha sido el sintáctico-semántico: 1) hemos contado como diferentes palabras los grupos de palabras separadas por una barra o un guión siempre que significaran dos conceptos diferentes ("ACE-inihibitors", "Acute/subacute", "atención/hiperactividad", "opsoclono-mioclono-ataxia", etc.); 2) aún conteniendo algún tipo de separación, las palabras con un único significado del tipo de *follow-up*, por ejemplo, se han contabilizado como una sola unidad.

### 4 Resultados y discusión
### 4.1 Densidad léxica

Se aplica el término "densidad léxica" a la cantidad de información transmitida por un texto en función del número de palabras de contenido que contiene. A mayor densidad léxica, mayor carga informativa, y a menor densidad léxica, menor carga informativa. Para poder obtener la densidad léxica de los títulos de nuestra muestra, hemos contabilizado todas las palabras y hemos separado las palabras de contenido de las palabras funcionales. Las palabras de contenido están formadas por sustantivos, verbos, adjetivos y adverbios, mientras que las palabras funcionales las componen las preposiciones, los artículos y las conjunciones.

| Palabras | Español | Inglés |
|---|---|---|
| Palabras de contenido | 863 (60,30%) | 1.071 (72,41%) |
| Palabras funcionales | 568 (39,70%) | 408 (27,59%) |
| Total de palabras por muestra | 1.431 (100%) | 1.479 (100%) |
| Media de palabras de contenido por título | 8,63 | 10,71 |
| Media de palabras funcionales por título | 5,68 | 4,08 |
| Media de palabras por título | 14,31 | 14,79 |
| Total de palabras en toda la muestra = 2.910 | | |

**Tabla 1**: Palabras de contenido y palabras funcionales

Según la Tabla 1, el número total de palabras de los 200 títulos analizados asciende a 2.910 palabras de las cuales 1.479 corresponden a la muestra inglesa y 1.431 a la muestra española. El hecho de que ambas muestras contengan más palabras de contenido, con una densidad léxica del 60,30% para la muestra española y del 72,41% para la muestra inglesa, pone de relieve que los títulos de en ambas lenguas se caracterizan por su elevada informatividad. Ello no es de extrañar puesto que la función primera que ha de cumplir cualquier título es la de informar con claridad y precisión sobre el contenido del artículo al que hace referencia para que al leerlo el lector saque la mayor información posible (Gesuato, 2009).

Por otra parte, el hecho de que la muestra española se caracterice por un mayor porcentaje de palabras funcionales (39,70%) frente a la muestra inglesa (27,59%) no haría más que confirmar que la lengua española es relativamente analítica pues recurre a palabras funcionales para expresar las relaciones entre palabras, mientras que la lengua inglesa es más bien sintética ya que puede expresar esas mismas relaciones mediante compuestos nominales y adjetivales (Sapir, 1921 [1971]; Saussure, 1916 [1974].

En cuanto a la media de palabras por título, es muy similar en ambas muestras. Así, la media en la muestra española asciende a 14,31, mientras que en la muestra inglesa la media es de 14,79. En la muestra española el número de palabras por título tiene un abanico que se extiende de cuatro a 29 palabras y en la muestra inglesa está abanico oscila entre las seis palabras del título más corto y las 29 palabras del título más largo. Estos datos indican que los títulos de nuestro corpus médico son bastante largos, por lo que no seguirían las recomendaciones de Fischer y Zigmond (2004) de que el título de un artículo de investigación debería contener entre cinco y 10 palabras. Tampoco se ajustarían a las medias comunicadas por Whissell (1999), Anthony (2001), Haggan (2004), Wang y Bai (2007), Gesuato (2009) o Cianflone (2010). Por el contrario, nuestros resultados sí se aproximarían a las medias reportadas por Haggan (2004) en ciencias y Soler (2007) en biología y medicina (véanse líneas anteriores).

Por otra parte y de acuerdo con la Tabla 2, en la muestra española hay 23 variantes en cuanto a número de palabras por título se refiere, siendo la variante más numerosa el título con 15 palabras (11 títulos), seguida por la variante con nueve palabras (nueve títulos). En la muestra inglesa hay 20 variantes, siendo la variante más numerosa el título con 18 palabras (12 títulos que, por cierto, doblan en número a los seis títulos españoles), seguido por los títulos con 14 y 15 palabras a partes iguales (11 títulos).

| Palabras por título | N.º títulos español | N.º títulos inglés |
|---|---|---|
| 4 | 2 (8 palabras) | 0 |
| 5 | 2 (10 palabras) | 0 |
| 6 | 2 (12 palabras) | 1 (6 palabras) |
| 7 | 2 (14 palabras) | 0 |
| 8 | 3 (24 palabras) | 1 (8 palabras) |
| 9 | 9 (81 palabras) | 7 (63 palabras) |
| 10 | 6 (60 palabras) | 9 (90 palabras) |
| 11 | 6 (66 palabras) | 9 (99 palabras) |
| 12 | 5 (60 palabras) | 7 (84 palabras) |
| 13 | 8 (104 palabras) | 7 (91 palabras) |
| 14 | 7 (98 palabras) | 11 (154 palabras) |
| 15 | 11 (165 palabras) | 11 (165 palabras) |
| 16 | 8 (128 palabras) | 4 (64 palabras) |
| 17 | 4 (68 palabras) | 5 (85 palabras) |
| 18 | 6 (108 palabras) | 12 (216 palabras) |
| 19 | 2 (38 palabras) | 3 (57 palabras) |
| 20 | 4 (80 palabras) | 2 (40 palabras) |
| 21 | 6 (126 palabras) | 2 (42 palabras) |
| 22 | 0 | 3 (66 palabras) |
| 23 | 1 (23 palabras) | 3 (69 palabras) |
| 24 | 2 (48 palabras) | 1 (24 palabras) |
| 25 | 1 (25 palabras) | 0 |
| 27 | 1 (27 palabras) | 1 (27 palabras) |
| 29 | 2 (58 palabras) | 1 (29 palabras) |
| Total de variantes | 23 | 20 |
| Total de palabras | 1.431 | 1.479 |
| Total de títulos | 100 | 100 |

**Tabla 2**: Variantes por número de palabras por título

La diferencia entre ambas muestras reside principalmente en que los títulos españoles contienen más palabras funcionales que los títulos ingleses que, por el contrario, incluyen más palabras de contenido, como lo ilustran los ejemplos siguientes, que están formados por el mismo número de palabras y son los más largos encontrados en ambas muestras:

1. Utilidad de la escala Wender-Utah y de las escalas de síntomas para el diagnóstico del trastorno por déficit de atención/hiperactividad familiar en adultos. Validez convergente y concurrente (D)[3]
(16 palabras de contenido y 13 palabras funcionales)

2. Características clínicas y demográficas de los casos de demencia diagnosticados en la Región Sanitaria de Girona durante el período 2007-2010: datos del Registro de Demencias de Girona (ReDeGi) (E)
(17 palabras de contenido y 12 palabras funcionales)

3. Acute/subacute cerebral infarction (ASCI) in HIV-negative adults with cryptococcal meningoencephalitis (CM): a MRI-based follow-up study and a clinical comparison to HIV-negative CM adults without ASCI (D)
(22 palabras de contenido y siete palabras funcionales)

Pormenorizando con la diferencia entre palabras de contenido y palabras funcionales, la muestra española incluye siete títulos con el mismo número de palabras de ambos tipos: un título con dos, nueve y 10 palabras de cada (tres títulos) y dos títulos con seis y siete palabras de cada (cuatro títulos). La muestra española contiene además dos títulos con más palabras funcionales que de contenido, los dos con nueve palabras funcionales y seis y siete de contenido, respectivamente. En esta misma muestra se engloban asimismo otros 14 títulos en los que las palabras de contenido aventajan a las palabras funcionales en sólo una unidad, figurando dentro de esta última variante un título con un total de 27 palabras:

4. Identificación de deleciones en el gen de la distrofina y detección de portadoras en familias con distrofiamuscular de Duchenne/Becker (D)
(10 palabras de contenido y 10 palabras funcionales)

5. Estudio de las implicaciones pronósticas del paciente con ataque isquémico transitorio antes de la implantación de un proceso consensuado de tratamiento en la región sanitaria de Lleida (D)
(14 palabras de contenido y trece palabras funcionales)

Por el contrario, la muestra inglesa siempre incluye más palabras de contenido que palabras funcionales en todos los títulos, lo que volvería a poner de relieve no sólo su carácter eminentemente sintético, sino también su mayor carga informativa. Hay incluso un título que no incluye ninguna palabra funcional, siendo todas ellas de contenido:

6. Two novel connexin 32 mutations cause *early onset X-linked Charcot-Marie-Tooth disease* (B)

Además de no contener ninguna palabra funcional, este título se caracteriza por su verbalizad y por su compuesto formado con ocho palabras (resaltado en cursiva en el ejemplo), aspectos que se tratarán en los siguientes apartados.

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[3] La letra entre paréntesis corresponde al periodo del cual se ha extraído el ejemplo.

Las diferencias relacionadas entre las dos lenguas no impiden que en su conjunto, y como ya se apuntó en líneas anteriores, los títulos médicos de nuestras muestras sean largos, precisos, informativos y por ello resulten de bastante utilidad para investigadores y documentalistas (Busch-Lauer 2000).

## 4.2 Títulos nominales y verbales

Antes de adentrarnos en más datos cuantitativos amén de otras consideraciones, se hace necesario establecer una distinción entre títulos nominales y títulos verbales. Así, un título nominal, también denominado "indicativo" (Huth, 1990; Goodman, 2000) o "descriptivo" (Fischer y Zigmond, 2004), no incluye ningún verbo conjugado, como lo ilustran los ejemplos siguientes:

7. Perfil de la epilepsia en un servicio de neurología en Costa Rica (A)

8. Incidence and characteristics of total stroke in the United States (A)

Por el contrario, y como lo testificó el ejemplo 6, el título verbal, también aludido como de "oración afirmativa" (Rosner, 1990), "informativo" (Huth, 1990; Goodman, 2000; McGowan y Tugwell, 2005), "declarativo" (Smith, 2000; Goodman et al., 2001), "concluyente" (Fischer y Zigmond, 2004) o "de oración completa" (Haggan, 2004; Soler, 2007), incluye un verbo en forma conjugada (resaltado en negrita en los siguientes ejemplos de títulos verbales):

9. Autonomic nervous system dysfunction **predicts** poor prognosis in patients with mild to moderate tetanus (A)

Este título, al igual que los demás presentes en la muestra inglesa, está formado por una oración que anticipa los resultados o las conclusiones de un tema de investigación. Sin embargo, los títulos verbales encontrados en la muestra española no se ajustan a esta característica pues todos ellos están formulados en forma interrogativa y, por tanto, presuponen que sea el destinatario del mensaje quien deba aportar los resultados o conclusiones de la investigación acerca de la cual informan. La casi nula presencia de esta estrategia retórica, que sirve más para llamar la atención que ofrecer resultados y a la que Zorilla (2003) se opone, no parece ser muy del agrado de los investigadores biomédicos que buscan conclusiones y no preguntas (Lewinson y Hartley, 2005; Longdon-Neuner, 2007; Soler, 2007; Wang y Bai, 2007).

10. ¿**Existe** relación entre la enfermedad de Alzeihmer y defectos en el ADN mitocondrial? (A)

Con referencia al número de títulos nominales y verbales, la Tabla 3 indica una mayor presencia de los primeros en ambas muestras. Así, el corpus español sólo contiene cuatro títulos verbales, todos ellos configurados en forma interrogativa, frente a 96 títulos nominales, y el corpus inglés, a pesar de incluir un mayor número de títulos verbales que el español, sigue teniendo más títulos nominales (87) que verbales (13). Probablemente, y como lo afirma Jaime-Sisó (2009), estos últimos serían más característicos de trabajos con cierta relevancia que se publican en revistas biomédicas generalistas más punteras y de mayor difusión internacional, y no de revistas más especializadas y de menor difusión como las que hemos utilizado en nuestro estudio

| Tipos de títulos | Español | Inglés |
|---|---|---|
| Nominal | 96 | 87 |
| Verbal | 4 | 13 |
| Total de títulos | 100 | 100 |

**Tabla 3**: Títulos verbales y nominales

Al optar por la objetividad, los títulos nominales intentan huir de cualquier alusión subjetiva o temporal, más característica de los títulos verbales. En este sentido, la descripción estática que caracteriza al título nominal se opondría al dinamismo del título verbal, más propio del título periodístico, que se muestra más categórico y definitivo. Por su semejanza con los títulos de anuncios, los títulos verbales podrían dejar entrever la influencia que ejercen los textos científicos popularizados sobre los textos académicos (Rush, 1998). Testigo del poder generalizador de los títulos verbales es el tiempo presente utilizado, que sirve para elevar al rango de verdades universales conclusiones basadas en estudios individuales, lo que podría infringir las reglas básicas del lenguaje científico.

La elevada incidencia de la estructura nominal en los títulos de nuestra muestra concordaría entonces con la hallada en estudios anteriores como, por ejemplo, Busch-Lauer (2000), Haggan (2004), Longdon-Neuner (2007), Soler (2007)[4], Wang y Bai (2007), Afful y Mwinlaaru (2010) o Cheng et al. (2012). Asimismo, de todos los títulos tanto nominales como verbales, sólo seis (cinco en español y uno en inglés) están configurados en forma interrogativa.

Además del ejemplo 10, los siguientes títulos ilustran la configuración interrogativa:

11. Disecciones arteriales craneocervicales en la edad pediátrica: ¿una patología emergente o infradiagnosticada? (D)

12. **Is** MRI better than CT for detecting a vascular component to dementia? A systematic review and meta-analysis (A)

**4.3 Títulos simples y compuestos**
Al igual que Fortanet et al. (1997), Day (1998), Anthony (2001), Hartley (2005), Zorilla (2003), Wang y Bei (2007), Gesuato (2009) o Afful y Mwinlaaru (2010), hemos dividido nuestros títulos entre "simples" o formados por una sola unidad, que pueden incluir una o dos comas, y "compuestos" o formados por unidades separadas entre sí por los restantes tipos de puntuación, es decir, dos puntos, un punto, un guión o un punto de interrogación (no hemos encontrado ningún título con un punto y coma). Como en ninguno de los títulos con comas presentes en nuestro corpus la coma funciona como demarcador de unidades diferentes, hemos decidido no incluirlos dentro del grupo de los títulos compuestos. En el caso del español, la coma tiene una función especificativa, mientras que en inglés sirve para separar diferentes adjetivos calificativos o indicar una secuencia de elementos. Los siguientes títulos con comas ilustran nuestra decisión:

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[4] Según esta autora, los títulos nominales son más comunes a la lingüística y la sicología; sin embargo, las oraciones completas están bastante presentes en la biología (51%) y la bioquímica (46%).

13. Evolución del accidente cerebrovascular en la ciudad de Rivera, Uruguay (C)

14. Codificación en neurología pediátrica basada en la Clasificación Internacional de Enfermedades, 9.ª revisión (CIE-9), 5.ª edición (2006) (D)

15. Family history and stroke outcome in a bi-ethnic, population-based stroke surveillance study (A)

16. Differential expression of the capsaicin receptor TRPV1 and related novel receptors TRPV3, TRPV4 and TRPM8 in normal human tissues and changes in traumatic and diabetic neuropathy (B)

Aparte de los ejemplos 1, 2 y 3 (sección 4.1.) en los que el límite entre unidades venía señalado por dos puntos, los siguientes ejemplos corresponden a la modalidad de título compuesto en los que la separación entre unidades está indicada por un punto:

17. Talamotomía estereotáxica de la enfermedad de Parkinson y otros tipos de temblor. Experiencias de la actividad multiunitaria en el tálamo basada en semimicroelectrodos (A)

18. Traumatic brain injury as a risk factor for Alzheimer disease. Comparison of two retrospective autopsy cohorts with evaluation of ApoE genotype (A)

El guión aparece en el siguiente título inglés y cumple la misma función demarcadora que los dos puntos:

19. Subthalamic nucleus deep brain stimulation in elderly patients − analysis of outcome and complications (B)

Por el contrario, en el español el guión se utiliza para separar fechas o especificar un término dado, por lo que los títulos resultantes serían simples (véanse también los ejemplos 1, sección 4.1. y 14 en esta misma sección) :

20. Evolución de la incidencia de migraña en Álava en el período 2004-2008 (E)

En español la barra no sirve para diferenciar unidades del título sino palabras, como lo ejemplifica el título siguiente (ejemplo 1, sección 4.1.):

21. Identificación de deleciones en el gen de la distrofina y detección de portadoras en familias con distrofiamuscular de Duchenne/Becker (D)

En el único título inglés que contiene este signo de puntuación, la barra se utiliza para separar dos conjunciones:

22. Abduction paresis with rostral pontine and/or mesencephalic lesions: Pseudoabducens palsy and its relation to the so-called posterior internuclear ophthalmoplegia of Lutz (A)

Con respecto a los puntos de interrogación, figuran como demarcadores en dos títulos, uno español (de apertura y de cierre) y uno inglés (de cierre) (ejemplos 11 y 12, sección 4.2.). El ejemplo español contiene además otro signo de puntuación (dos puntos), que también desempeña el mismo papel de separador entre unidades diferentes.

Los paréntesis sólo figuran en la muestra española, y su función es la de encerrar elementos intercalados en el enunciado. El siguiente ejemplo contiene además otros dos signos de puntuación indicadores de un título compuesto (uno y dos puntos):

23. Tiempos de llegada al hospital y hasta la atención neurológica de pacientes con ictus agudo. Análisis de un registro multicéntrico nacional: registro EPICES (II) (E)

De acuerdo con la Tabla 4, tanto la muestra española como la inglesa contienen un 65% y un 48% de títulos simples, respectivamente. En cuanto a los títulos compuestos, la muestra española los incluye en un 35% frente al 52% de la muestra inglesa. Es decir, en la muestra española se observa un claro predominio de títulos simples sobre títulos compuestos, casi el doble (65% vs. 35%), mientras que en la muestra inglesa la frecuencia de títulos compuestos es muy similar a la de los títulos simples (52% vs. 48%). Esta mayor incidencia de títulos compuestos ingleses corroboraría la supremacía de los títulos compuestos ingleses sobre los títulos ucranianos y rusos en lingüística y matemáticas aplicadas hallada por Yakhontova (2002).

| Signos de puntuación | Español | Inglés |
|---|---|---|
| 1 barra | 5 | 1 |
| 1 coma | 3 | 5 |
| 2 comas | 1 | 1 |
| 1 paréntesis | 7 | 0 |
| Puntos de interrogación (sin función demarcadora) | 4 | 0 |
| Sin signos de puntuación | 45 | 41 |
| Total títulos simples | 65 (65%) | 48 (48%) |
| 1 guión (con function demarcadora) | 0 | 1 |
| 1 punto | 12 | 1 |
| 2 puntos | 22 | 49 |
| Punto(s) de interrogación (con función demarcadora) | 1 | 1 |
| Total títulos compuestos | 35 (35%) | 52 (52%) |
| Total títulos | 100 (100%) | 100 (100%) |

**Tabla 4**: Títulos simples y compuestos

Dentro de los signos de puntuación utilizados para diferenciar los títulos simples de los compuestos, la variante más común en ambas muestras corresponde a los dos puntos: del total de 35 títulos compuestos españoles, 22 se caracterizan por este demarcador, y del total de 52 títulos compuestos ingleses, 49 llevan los dos puntos. En este sentido, nuestros datos se diferenciarían del 13% de títulos con este signo de puntuación observados por Anthony (2001) en el campo de las ciencias informáticas. Sin embargo, sí se ajustarían a los datos aportados por Haggan (2004), Hartley (2007) o Cheng et al. (2012), entre otros.

Al igual que Busch-Lauer (2000), Afful y Mwinlaaru (2010) y Cianflone (2010), creemos que la disparidad de resultados en cuanto a la estructura de los títulos se debe principalmente a cuestiones de tipo estilístico individual. El estilo de cada autor sería también el causante del predominio de la marca del punto en la muestra española (12 títulos) frente a un solo título con un punto en la muestra inglesa, puesto que ambos signos de puntuación cumplen la misma función de especificar el contenido del primer elemento del título compuesto (ejemplos 1, 15, 17, 18 y 23)

Por otra parte, el hecho de que un título sea compuesto no siempre implica que contenga un mayor número de palabras. Si bien los títulos compuestos más largos en español (dos títulos) y en inglés (un título) contienen cada uno 29 palabras [ejemplos 1, 2 y 3, sección 4.1.) y son de tipo compuesto, los títulos simples más largos en ambas lenguas no se quedan muy a la zaga en cuanto a longitud se refiere. Así, el título simple más largo en español tiene 27 palabras, mientras que su homónimo inglés está formado por 26 palabras (ejemplo 16 en líneas anteriores):

24. Estudio de las implicaciones pronósticas del paciente con ataque isquémico transitorio antes de la implantación de un proceso consensuado de tratamiento en la región sanitaria de Lleida (D)

En este sentido, nuestros resultados contradecirían en cierta medida a Anthony (2001), Lewinson y Hartley (2005) y Hartley (2007; 2008), para quienes los títulos compuestos serían más largos que los títulos simples. Por el contrario, apoyarían los datos aportados por Afful y Mwinlaaru (2010) de que no existen grandes diferencias entre ambos tipos de títulos con respecto al número de palabras que los forman. Ahora bien, nuestros datos sí estarían en consonancia con los dos primeros autores en cuanto a la mayor transmisión de carga informativa de los títulos compuestos, principalmente en el corpus inglés (véase sección 4.1).

### 4.4 Grupos nominales

Se aplica la etiqueta de "grupo nominal" a un conjunto de palabras que se agrupan en torno a un sustantivo o núcleo. El núcleo puede modificarse tanto por adjetivos como por otros sustantivos que, en inglés, suelen precederle, mientras que en español estos adjetivos o sustantivos aparecen en posición de post-modificación. Ejemplos en las dos lenguas son los siguientes títulos en los cuales los núcleos se han destacado en negrita y los modificadores en subrayado:

25. Eficacia y tolerancia de gabapentina en la distonía y el **espasmo** hemifacial: **estudio piloto** (A)

26. Presencia de **anticuerpos** antiChlamydia pneumoniae en **procesos** vasculares periféricos y neurológicos (A)

27. Masitinib **treatment** in patients with progressive multiple **sclerosis**: a randomized pilot **study** (A)

28. A biochemical marker **panel** in MRI-proven hyperacute ischemic **stroke**: a prospective **study** (E)

Como se podrá observar, los compuestos de los títulos españoles están formados por sustantivos post-modificados, bien por un sustantivo que funciona como adjetivo ("estudio piloto", "antiChlamydia pneumoniae"), bien por un adjetivo propio ("hemifacial", "vasculares periféricos", "neurológicos"). Por el contrario, la modificación de los sustantivos ingleses se obtiene mediante la anteposición de adjetivos ("progressive multiple", "randomized", "biochemical", "proven", "hyperacute ischemic", "prospective") o de sustantivos que funcionan como adjetivos ("masitinib", "pilot", "marker", "MRI").

Si la muestra inglesa contiene 92 títulos con un total de 190 grupos nominales, la muestra española por el contrario sólo contiene 29 grupos nominales en 28 títulos. La diferencia entre ambas lenguas en este apartado vendría a poner de relieve la naturaleza aglutinadora de la lengua inglesa que suele sintetizar conceptos por la vía de compuestos formados por un núcleo, que actúa como determinado, al que preceden otro u otros sustantivos y/o adjetivos que lo modifican y que actúan como determinantes. El español, por su parte, utiliza la post-modificación a la hora de estructurar los grupos nominales y recurre a frases explicativas en las cuales las relaciones semánticas entre sus términos se expresan a través de preposiciones. En este sentido, la complejidad sintáctica y la riqueza semántica del inglés no sólo estarían relacionadas con la longitud de los títulos (sección 4.1.), sino también con el número de grupos nominales y adjetivales como un medio de condensar la información. Esta elevada frecuencia de grupos nominales está directamente relacionada con la baja frecuencia de preposiciones en la misma muestra, es decir, a mayor frecuencia de grupos nominales, menor frecuencia de preposiciones, y viceversa. No obstante, ambos tipos de construcciones (pre- y post-modificación) son propios de la escritura académica (Biber y Gray, 2010).

Sólo hemos encontrado un compuesto formado a la inglesa en la muestra española y se trata de un anglicismo que aparece resaltado en cursiva en el siguiente ejemplo:

29. Una nueva aproximación en el diagnóstico de la enfermedad de Alzheimer con biomarcadores: descripción del *AD-CSF-Index* (E)

Asimismo, la muestra inglesa contiene 10 verbos en gerundio/participio de presente frente a uno solo en la muestra española, siendo este predominio testigo de una mayor agilidad, concisión y dinamismo en la construcción de los títulos. Estos títulos se realizan a menudo como frases verbales que siempre contienen alguna forma de expansión nominal, preposicional y/o verbal. Ejemplos de esta categoría gramatical, destacada en negrita, son los que se mencionan a continuación:

30. Prevalencia de la enfermedad cerebrovascular en la comunidad rural de Salamá, Honduras, **utilizando** el método epidemiológico de captura-recaptura (C)

31. **Estimating** the probability of stroke in Korean hypertensive patients **visiting** tertiary hospitals **using** a risk profile from the Framingham study (B)

En cuanto al único pronombre personal hallado en la muestra española, se trata de la forma impersonal "se" (destacado en negrita) del siguiente título verbal:

32. ¿**Se** puede atribuir el fenotipo conductual del síndrome X frágil al retraso mental y al trastorno por déficit de atención/hiperactividad? (B)

4.5 Palabras funcionales

En la Tabla 5 se relacionan las diferentes variantes encontradas en las palabras funcionales, con una mayor presencia en la muestra española que en la inglesa (sección 4.1.). En la sección de artículos, a efectos de contabilización hemos considerado como tales las contracciones "del" y "al" formadas por las preposiciones "de" o "a" y el artículo determinado "el".

En ambas muestras, las preposiciones presentan una frecuencia superior a la de las demás palabras funcionales, lo que era de esperar por su mayor abanico de variantes. En la lista de preposiciones de ambas muestras, las dos primeras posiciones las ocupan "de" (49,41%) y "en" (28,82%) en español, y sus homólogos "in" (32,03%) y "of" (30,47%) en inglés. La presencia tan elevada de la preposición "de" en comparación con las demás preposiciones se debe a que en español cubre un gran rango de significados semánticos (causativo, posesivo, composicional, instrumental, propósito, locativo, productivo, etc.) que, en inglés, se expresan mediante grupos nominales y adjetivales, de ahí a que, por ejemplo, la diferencia entre las preposiciones "in" y "of" sea muy exigua en inglés. Por otra parte, y a pesar de que la frecuencia de las preposiciones inglesas es menor que la española, ofrece sin embargo una mayor variedad de preposiciones (18 variantes) frente a las 16 variantes españolas.

| Español | Inglés |
|---|---|
| De = 168 (49,41%) | In = 82 (32,03%) |
| En = 98 (28,82%) | Of = 78 (30,47%) |
| Con = 28 (8,24%) | With = 30 (11,72%) |
| Por = 11 (3,24%) | To = 13 (5,08) |
| Para = 9 (2,65%) | For = 11 (4,30%) |
| Entre = 5 (1,47%) | After = 7 (2,74%) |
| Sobre = 5 (1,47%) | On = 7 (2,74%) |
| A= 4 (1,18%) | From = 5 1,95%) |
| Tras = 3 (0,88%) | By = 41 (1,56%) |
| Mediante = 2 (0,59%) | At = 3 (1,17%) |
| Antes = 1 (0,29%) | During = 3 (1,17%) |
| Como = 1 (0,29%) | Versus/vs. = 3 (1,17%) |
| Contra = 1 (0,29%) | Among/amongst = 2 (0,78%) |
| Durante = 1 (0,29%) | As = 2 (0,78%) |
| Hasta = 1 (0,29%) | Between = 2 (0,78%) |
| Según = 1 (0,29%) | Over = 2 (0,78%) |
| - | Following ('after') = 1 (0,39%) |
| - | Without = 1 (0,39%) |
| 340 preposiciones (100%), 16 variantes | 256 preposiciones (100%), 18 variantes |
| Y = 44 (93,61%) | And = 48 (90,57%) |
| O = 3 (6,39%) | Or = 2 (3,77%) |
| - | As = 2 (3,77%) |
| - | Than = 1 (1,89%) |
| 47 conjunciones (100%), 2 variantes | 53 conjunciones (100%), 4 variantes |
| El/la/los/las/del/al = 157 (86,74%) | The = 38 (38,38%) |

| Un/una = 24 (13,26%) | a/an = 61 (61,62%) |
|---|---|
| 181 artículos, 8 variantes | 99 artículos, 2 variantes |
| Total palabras funcionales = 568 (100%) | Total palabras funcionales = 408 (100%) |

**Tabla 5**: Variantes en las palabras funcionales

Al igual que las preposiciones, las conjunciones funcionan como enlaces entre las diferentes partes de una misma oración. En ambas muestras las que ocupan la primera posición, muy alejada de las restantes conjunciones que apenas tienen relevancia, son las conjunciones coordinantes copulativas "y" y "and", con una frecuencia similar en español y en inglés (86,74% y 90,57%, respectivamente).

En español es también de resaltar la elevada frecuencia de los artículos definidos (86,74%), tanto en su forma primaria como contracta. Esta mayor incidencia frente a la de los artículos indefinidos se debe a que no sólo tienen un mayor número de variantes (6), sino también que aparecen tanto en su forma singular como plural, lo que no ocurre con los artículos indefinidos, que sólo se han registrado en singular. El artículo definido se emplearía para indicar que "el referente existe y es localizable" (Leonetti Jungl, 1990: 45), "mientras que con el uso del indefinido se manifiesta que la existencia y la identidad del referente no forman parte de la experiencia común" (Martínez Arnaldos, 1991: 134). En cuanto a la muestra inglesa, contiene casi la mitad de artículos, lo que es lógico puesto que los artículos ingleses no contienen ni género ni número. Además y según apunta Longdon-Neuner (2007), los libros de estilo suelen aconsejar que los artículos, tanto definidos como no definidos, deberían evitarse en los títulos para facilitar la labor de los documentalistas.

### 4.6 Colaboración
Hemos considerado como indicadores de colaboración el número de autores y su procedencia, así como el número de centros participantes en cada artículo. El primer dato que salta a la vista en la Tabla 6 es que en cada muestra analizada los trabajos en colaboración representan el 99% del total de los publicados, lo que es un claro indicio de que en la especialidad médica de la neurología la investigación se lleva a cabo en equipo. Siguiendo con esta misma tabla, la muestra española contiene 11 variantes en cuanto a número de autores se refiere, que van desde un artículo firmado por un solo autor hasta un artículo con 24 autores. La muestra inglesa, por su parte, incluye 15 variantes en el número de autores, que oscilan entre también un único artículo firmado por un autor y un artículo firmado por 25 autores. En este último artículo, todos sus autores son de origen español aunque proceden de 11 ciudades españolas diferentes. La colaboración exclusiva entre autores españoles en la muestra inglesa se encuentra en otros cinco artículos, lo que equivale a un 6% del total de la muestra. Este bajo porcentaje reflejaría, por lo menos en la muestra analizada en este estudio, que los autores españoles son un tanto reacios a publicar en una revista anglosajona de neurología[5]. No obstante, habría que aclarar que el número de autores por artículo es en cierto modo relativo pues en algunos artículos un único autor representa a un grupo de investigadores.

La variante que mayor incidencia presenta en la muestra inglesa es la de cinco autores en un total de 18 artículos, mientras que en la muestra española la variante más frecuente es la de

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[5]  En un estudio posterior podría resultar interesante comprobar si este mismo fenómeno ocurre con autores procedente de otros países como China, por ejemplo.

seis autores en 23 artículos, aunque también incluye 17 artículos con cinco autores, con lo que se puede comprobar que ambas muestras se parecen en la variante de cinco autores. Sin embargo, la media de autores por artículo es ligeramente diferente pues es mayor en inglés (6,17) que en español (5,40).

| N.º autores | español | inglés |
|---|---|---|
| 1 | 1 | 1 |
| 2 | 13 | 9 |
| 3 | 13 | 10 |
| 4 | 9 | 13 |
| 5 | 17 | 18 |
| 6 | 23 | 12 |
| 7 | 9 | 10 |
| 8 | 5 | 11 |
| 9 | 2 | 4 |
| 10 | 7 | 3 |
| 11 | 0 | 3 |
| 12 | 0 | 3 |
| 13 | 0 | 1 |
| 23 | 0 | 1 |
| 24 | 1 | 0 |
| 25 | 0 | 1 |
| Total/media de autores/artículo | 540 (5,40) | 617 (6,17) |

**Tabla 6**: Variantes en los autores

Aunque nuestro estudio no haya incluido cuestiones de tipo diacrónico, hemos creído conveniente dedicar algún espacio a este apartado. Así, la Tabla 7 indica que la media de autores por artículo en ambas muestras es mayor en los dos últimos bloques analizados: 6,50 y 6,30 de media en los periodos D y E para los títulos españoles y 7,25 y 6,45 de media en los mismos periodos para los títulos ingleses. Es decir, el pico en la media de autores corresponde al periodo D, siguiéndole una reducción en el periodo E, si bien la media correspondiente a ambos periodos resulta todavía más elevada que en los tres periodos anteriores (A, B y C). Del aumento de la colaboración científica en diferentes sectores se han ocupado extensamente diversos estudios (Laband y Tollison, 2000; Cronin, 2005; 2012; Cronin et al., 2003). Este fenómeno se ha relacionado con la especialización creciente de la ciencia en general y con "la necesidad de afrontar problemas cada vez más complejos que hacen necesaria la intervención de equipos multidisciplinarios" (Sancho Lozano et al., 2006). En este sentido se podría recordar a Castells (2000), quien afirma que "La investigación científica de nuestra época deja de ser científica si no es global"[6], aunque la colaboración y la noción de "autor solitario" dependen mucho de cada disciplina en particular (Cronin, 2005; 2012).

Por otra parte, los títulos ingleses del periodo D contienen más palabras (327), no sólo de contenido (235) sino también funcionales (92), con una media de 16,35 palabras por título, que los otros periodos. Estos resultados coincidirían con los de Yitzhaki (1994), que

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[6] Nuestra traducción de la frase original.

estableció una correlación positiva entre el número de palabras de contenido y el número de autores en los artículos científicos: a mayor número de palabras de contenido, mayor número de autores. Sin embargo, esta correlación positiva no se da en los títulos españoles pues si bien el pico de autores está en el periodo D, el pico de palabras se halla en el periodo E (356 palabras compuestas por 210 palabras de contenido y 146 palabras funcionales con una media de 17,8 palabras por título). A la vista de estos datos nos preguntamos si los títulos tanto españoles como ingleses han ido ganando en carga informativa, pero sería necesario analizar una muestra mayor para atrevernos a dar este presupuesto por válido.

| | | Autores | Total palabras | Palabras de contenido | Palabras funcionales |
|---|---|---|---|---|---|
| Periodo español | A | 89 (4,45) | 261 (13,05) | 162 | 99 |
| Periodo inglés | A | 113 (5,65) | 271 (13,55) | 196 | 75 |
| Periodo español | B | 99 (4,95) | 241 (12,05) | 151 | 90 |
| Periodo inglés | B | 109 (5,45) | 303 (15,15) | 225 | 78 |
| Periodo español | C | 101 (5,05) | 275 (13,75) | 164 | 111 |
| Periodo inglés | C | 121 (6,05) | 274 (3,65) | 192 | 82 |
| Periodo español | D | 130 (6,50) | 298 (14,09) | 177 | 121 |
| Periodo inglés | D | 145 (7,25) | 327 (16,35) | 235 | 92 |
| Periodo español | E | 121 (6,30) | 356 (17,8) | 210 | 146 |
| Periodo inglés | E | 129 (6,45) | 304 (15,20) | 223 | 81 |

**Tabla 7**: Autores y palabras por periodo

Con respecto a los diferentes tipos de colaboración, hemos establecido las siguientes variantes: 1) colaboración local, que se desarrolla entre científicos de una misma ciudad dentro de un mismo país; 2) colaboración nacional, que se produce cuando dos o más investigadores del mismo país pero de diferentes ciudades trabajan en un mismo proyecto de investigación; 3) colaboración local + nacional, cuando toman parte en la investigación científicos de uno o más organismos dentro de una misma ciudad y de otras ciudades del mismo país; 4) colaboración internacional, cuando la investigación la llevan a cabo científicos de uno o más organismos de diferentes países; 5) colaboración local + internacional, aplicada al trabajo conjunto entre investigadores de una misma ciudad dentro de un mismo país y de otros países; 6) colaboración nacional + internacional, referida a los trabajos firmados por autores de diferentes ciudades dentro de un mismo país y de otros países; y 7) colaboración local + nacional + internacional, que tiene que ver con el trabajo en equipo entre investigadores de una misma y diferentes ciudades del mismo país e investigadores de otros países.

| Tipos de colaboración | Español | Inglés |
|---|---|---|
| Sin colaboración | 1 (España) | 1 (Israel) |
| Local | 71* | 44* |
| Nacional | 8** | 10** |
| Local + nacional | 14*** | 18*** |
| Internacional | 4**** | 3**** |
| Local + Internacional | 1***** | 12***** |
| Nacional + internacional | -****** | 3****** |
| Local + nacional + internacional | 1******* | 9******* |
| Total | 100 | 100 |

**Tabla 8**: Colaboración

***Muestra española***

* Colaboración local: España (41 títulos); Cuba (8 títulos); Chile (4 títulos);  Argentina y México (3 títulos por cada país); Brasil, Colombia, Uruguay y Venezuela (2 títulos por cada país); Costa Rica, Honduras y Hungría (1 título por cada país).
** Colaboración nacional: España (7 títulos), Brasil (1 título)
*** Colaboración local + nacional: España (14 títulos)
****Colaboración internacional: Colombia y España; Chile e Italia; España y EE.UU.; Canadá, Perú y EE.UU. (1 título por cada bloque)
*****Colaboración local + internacional: España y Uruguay
*******Colaboración local + nacional + internacional: Colombia y EE.UU.

***Muestra inglesa***

*Colaboración local: EE.UU. (6 títulos); Noruega y Taiwán (4 títulos por cada país); Alemania y Japón (3 títulos por cada país); Canadá, España, Pakistán, Suecia y Reino Unido (2 títulos por cada país); Australia, Austria, China, Corea del Sur, Egipto, Eslovenia, Grecia, Irán, Kuwait, Lituania, Países Bajos, Portugal, Singapur  y Tailandia (1 título por cada país)
**Colaboración nacional: Alemania, España, Japón, Países Bajos y Reino Unido (1 título por cada país); EE.UU. (5 títulos)
***Colaboración local + nacional: España y EE.UU. (4 títulos por cada país); Alemania (3 títulos); China, Corea del Sur, Francia, Italia, Países Bajos, Suecia y Reino Unido (1 título por cada país)
****Colaboración internacional: Alemania y Suiza; India y Reino Unido; Alemania, Austria y EE.UU. (1 título por cada bloque)
*****Colaboración local + internacional: Alemania y Bélgica (2 títulos); Alemania y Canadá; Austria y Egipto; Pakistán y Reino Unido; Suecia y Estados Unidos de Norteamérica; Suiza y Países Bajos; Alemania, Australia y Bélgica; Alemania, Grecia e Italia; Australia, Hong Kong y Reino Unido; Finlandia, Grecia y EE.UU.; Australia, Italia, Suecia y EE.UU. (1 título por cada bloque)
******Colaboración nacional + internacional: Canadá, Reino Unido y EE.UU.; Italia y Estados Unidos de Norteamérica; Suiza y EE.UU. (1 título por cada bloque)
*******Colaboración local + regional + internacional: Alemania y Suiza; Bélgica y EE.UU.; Estonia y Finlandia; Italia y Reino Unido; Suiza y Países Bajos; Sri Lanka y EE.UU.; Suecia y EE.UU.; Suiza y Francia; Alemania, Francia, Reino Unidos y EE.UU. (1 título por bloque)

Según la Tabla 8, se puede observar que los países de procedencia de los autores de los títulos españoles ascienden a 17, mientras que la muestra inglesa involucra a autores procedentes de 34 países, exactamente el doble. De los países involucrados en la muestra española, sólo en dos es lengua oficial el inglés (Canadá y EE.UU.), mientras que lo es en seis de la muestra inglesa (Australia, Canadá, Estados Unidos de Norteamérica, Hong Kong, Reino Unido y Singapur). Los demás países incluidos en la muestra española, a excepción de tres (Brasil,

Canadá y Hungría), tienen como lengua oficial el español. En la muestra inglesa 28 países no tienen el inglés por lengua oficial: dos países de África (Egipto, Kuwait), nueve países de Asia (Japón, China, Corea del Sur, India, Irán, Pakistán, Sri Lanka, Taiwán, Tailandia) y 16 países de Europa (Francia, España, Bélgica, Suecia, Suiza, Alemania, Austria, Estonia, Finlandia, Italia, Grecia, Países Bajos, Portugal, Eslovenia, Noruega, Lituania). Se da la circunstancia de que en el artículo de la muestra española firmado por autores procedentes de Hungría, uno de ellos tiene apellidos españoles, al igual que los autores que firman el artículo conjunto entre Canadá, EE.UU. y Perú, por lo que se podría inferir que se trata de científicos de habla española que están desarrollando su labor investigadora en esos países. En la muestra inglesa no hay ningún título firmado por autores procedentes del continente latinoamericano. El hecho de que la muestra inglesa incluya tan pocos artículos firmados por autores de habla hispana podría entenderse como un rechazo por su parte a publicar en una revista inglesa, o que no se atreven a hacerlo, tal vez por temor a no saber expresarse correctamente en ese idioma o por evitar un posible rechazo de su trabajo.

Además de los datos referidos a los autores, otros detalles relacionados con los distintos tipos de colaboración merecen también comentarse. Si la frecuencia de títulos que reflejan la colaboración "nacional" e "internacional" es muy similar en ambas muestras (española 8/4 e inglesa 10/3, respectivamente), por el contrario, la incidencia de la colaboración "local", "local + internacional" y "local + nacional + internacional" se aleja bastante de una muestra a otra (española 71/1/1 e inglesa 44/12/9). Además, en los títulos españoles no hay ninguna colaboración "nacional + internacional", que sí aparece en tres títulos ingleses. Sólo en seis títulos españoles tiene representatividad la colaboración "internacional" frente a la de 27 títulos ingleses. Finalmente, en ambas muestras, y principalmente en la española, se observa un claro predominio de la colaboración "local" sobre las demás variantes. Estos resultados coinciden con la afirmación de Sugimoto y Cronin (2012) de que la proximidad geográfica desempeña un papel importante a la hora de trabajar en equipo. En cuanto a la mayor colaboración internacional en la muestra inglesa, se podría atribuir sin duda a la internacionalización alcanzada por la lengua inglesa.

## 5 Conclusiones

En este estudio hemos analizado una muestra de artículos de investigación publicados en dos revistas punteras en el campo de la neurología, una española y otra inglesa, para averiguar si existen diferencias y/o similitudes en la formulación de sus títulos. Por tratarse de textos situados contextualmente, es lógico que los títulos pertenecientes a una misma disciplina en lenguas diferentes presenten una serie de similitudes y diferencias en términos de longitud, densidad léxica, estructura, formulación lingüística, signos de puntuación y prácticas colaborativas. Dentro de las similitudes se pueden incluir las siguientes: 1) una mayor presencia de palabras de contenido, cuya consecuencia es su elevada informatividad que se traduce en que los títulos analizados cumplen su función innata, que es la de informar con efectividad y eficiencia; 2) emparentada con la referida efectividad y eficiencia de los títulos se halla el gran número de palabras que los conforman y que es una de las características del discurso médico escrito dentro de la cual se incluye la disciplina neurológica; 3) una presencia casi omnipotente de títulos nominales en detrimento de los títulos verbales, que apenas tiene representación, con el fin de ajustarse al ideal de objetividad perseguido por cualquier lenguaje científico; 4) una elevada presencia de grupos nominales, propios de la escritura académica; 5) unos títulos simples y compuestos similares en longitud; 6) un mayor número de preposiciones que de las demás palabras funcionales por poseer las primeras una gama más

amplia de variantes; y 7) una labor investigadora mayoritariamente en equipo. A las diferencias observadas entre ambas muestras, pertenecen 1) al mayor número de palabras funcionales en los títulos españoles frente al mayor número de palabras de contenido en los títulos ingleses, que subrayan el carácter analítico de la lengua española, que recurre más a las locuciones preposicionales para expresar conceptos completos, frente al carácter sintético de la lengua inglesa, que se sirve más de compuestos nominales y adjetivales para comunicar los mismos conceptos; 2) unos compuestos nominales españoles caracterizados por la post-modificación frente a la pre-modificación de los compuestos nominales ingleses; 3) una mayor presencia de títulos simples en español que en inglés, que se decanta por los títulos compuestos, hecho que se puede atribuir a cuestiones de estilo individual; 3) una mayor frecuencia de artículos, tanto determinados como indeterminados, en los títulos españoles que en los títulos ingleses, por su ausencia de número y género; 4) una colaboración local, propia de la muestra española, frente a una colaboración internacional en la muestra inglesa; 5) la intervención de un menor número de autores por artículo en la muestra española que en la inglesa; y 6) un abanico menos amplio de países en la colaboración internacional española que en la inglesa, lo que pone de relieve, una vez más, el carácter de *lingua franca* del idioma inglés.

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# A genre analysis of PhD dissertation acknowledgements across disciplinary variations

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## Abstract

This study examined PhD dissertation acknowledgements (DA) written by EFL authors in an English-speaking context. A total of 120 texts from six different disciplines were collected as the study corpus. The study attempted to investigate whether or not the variable of discipline would exercise influences on the construction of DA in terms of their generic structure and linguistic choices made to modify thanking acts. It is found that subtle variations existed in employing strategies of writing DA between soft science and hard science PhD students. A number of factors contributed to the diversity, including the area of research, academic conventions, exposure to English, language proficiency, and socio-cultural norms or expectations. In addition, the study also suggests that ESP practitioners attend to genre analysis of DA at both macro and micro levels in order to develop ESP learners' awareness of broad socio-cultural and narrow linguistic perspectives as they learn to construct appropriate dissertation acknowledgements.

## 1 Introduction

Expressing gratitude in academia is a common practice and is also commonly seen in academic texts, in particular, in dissertation acknowledgements (DA). However, writing acknowledgements does not simply involve listing the individuals acknowledged for their assistance; rather, "acknowledgements are sophisticated and complex textual constructs which bridge the personal and the public, the social and the professional, and the academic and the lay" (Hyland, 2003: 265). Acknowledgements not only provide writers with space to signify interpersonal relationships by employing rhetorical devices, but reflect writers' personal identity and socio-cultural, contextual or conventional values. Compared with other academic texts such as the introduction, literature review, methods, results, discussion and conclusion in dissertations and journal research articles, researching DA is generally regarded as marginal and thus has received relatively less attention (Cheng, 2012; Hyland, 2004a).

To express appropriate personal gratitude through rhetorical elements relies much on what identities writers adopt in different situations; that is, how writers position themselves through elaborated language use in their DA. Nevertheless, acknowledgements are not entirely personal but can also be context-embedded. Language users in different contexts may have various thought patterns, and these affect writers' preferred patterns of rhetoric. Use of the full range of one specific language will not occur with equal frequency across different contexts (Kaplan, 1987; Nkemleke, 2006). In addition, writing acknowledgements also involves social and cultural pragmatism. Socio-cultural variations and preferences could affect how the expressions of thanking acts are arranged and realised (Cheng, 2012). In other words, personal identities and language use in DA are inevitably influenced by the contexts writers are exposed to.

Previous research on DA has been conducted from two main perspectives. A majority of the research, mainly following Hyland's (2004a) model, has examined the compatibility between their corpora and Hyland's universal three-tier structure, and has attempted to identify whether new localised moves/steps existed due to socio-cultural differences; meanwhile, another direction has compared the differences of DA written by non-native (NNS) and native English speakers (NS). Very few studies have compared and contrasted DA written by EFL learners studying in English-speaking countries across different disciplines. Moreover, the existing research has seldom addressed the issue of the keywords used to modify thanking acts in DA. Therefore, the present study endeavours to compare and contrast PhD dissertation acknowledgements written by EFL learners in an English-speaking country, to be specific, Taiwanese students studying in the US, across various disciplines, namely, hard sciences and soft sciences, in order to investigate how DA are structured, sentence patterns and lexical elements chosen in the expressions of thanking acts, and whether disciplinary conventions or the targeted culture (i.e. the US) will affect the above across the two major science areas.

## 2 Literature Review

In studying acknowledgements, most researchers have adopted the genre analysis approach (Swales, 1990). According to Bhatia (1993), a genre is highly structured and conventionalised, and has specific constraints such as lexis and moves exploited by the members in a community to achieve communicative purposes. Studies on conventionally recognisable texts of a genre can better attend to the dynamic/negotiated aspects of situated language use (Lee, 2001). Analysing a genre helps ESP practitioners and writers identify how texts are structured and distinguished in conventional and socio-cultural contexts in order to

realise their communication purposes (Hyland, 2004a). Moreover, analysing texts in the genre approach offers researchers "explicit and systematic explanations of the ways language functions in social contexts" (Hyland, 2004a: 18), which also helps writers acquire the specialist culture (Bhatia, 1997).

Giannoni (2002), as the first genre analyst studying acknowledgements, analysed acknowledgements in journals and concluded that their generic structure not only reflects the varieties of different disciplines but is affected by national patterns of the disciplinary communities. However, it was Hyland (2003, 2004a) and his colleague (Hyland & Tse, 2004) who started to analyse dissertation acknowledgements systematically and established the three-tier generic structure of expressing gratitude in DA. In their model, DA mainly consist of three moves, namely, one obligatory move, the thanking move (Move 2) where writers map credit to individuals and institutions, and two optional moves, the reflective move (Move 1) in which writers introspectively comment on their research experience, and the announcing move (Move 3) where they make a public statement of responsibility and inspiration. In the thanking move, there are four sub-divided steps, namely, presenting participants (Step 2.1), thanking for academic assistance (Step 2.2), thanking for resources (Step 2.3), and thanking for moral support (Step 2.4). There are two sub-divided steps in Move 3, namely, accepting responsibility (Step 3.1) and dedicating the thesis (Step 3.2). Hyland (2003: 266) also acknowledges that DA not only "play an important role in promoting a competent, even rhetorically skilled, scholarly identity" of the acknowledgers, but also reveal their social and cultural characteristics in situated settings.

The above three studies (Hyland, 2003, 2004a; Hyland & Tse, 2004) opened a window for subsequent research to scrutinise DA in more detail. Zhao and Jiang (2010) examined DA written by Chinese speakers in China using a corpus from English-related disciplines, and found that the structure generally follows Hyland's model. However, subtle differences were still identified. In their corpus, Moves 1 and 2 are absent, especially Step 3.2, and the writers were prone to excessively use the bare mention form and modifiers in their thanking acts. Zhao and Jiang contributed these differences to cultural, mental and academic diversities in various contexts. Similarly, Cheng and Kuo (2011) investigated DA in the applied linguistics discipline written by Chinese speakers in Taiwan. Their study found that Taiwanese writers tend to express their gratitude explicitly and use more complex strategies to thank their advisors, while Yang (2012a) compared DA in the same single discipline written by Taiwanese students studying in both Taiwan and the US. He argued that the rhetorical language in his samples was relatively direct, emotional and precise, and that academic conventions, institutional preferences, the language context and socio-cultural factors were the likely cause of this tendency. In addition, Yang (2012a) identified a unique step in Move 3 from his corpus, Making a confession, where writers confessed themselves to those who had made sacrifices due to their postgraduate study.

Variations in arranging moves/steps and employing strategies to thank others for their assistance are also commonly seen in other contexts. For instance, a new step was found in Muslim cultures. Al-Ali (2006, 2010) identified a step named Thanking Allah (God), which is caused by Arabic writers' academic and social conventions. Furthermore, these writers tend to use contextualised components to specifically realise their thanking acts. In Nkemleke's (2006) study, writers are apt to employ nativised deferential strategies and nominal phrases to display good manners to their advisors and superiors. Afful and Mwinlarru (2010a. b.) also argue that writers use different lexical, grammatical and discoursal elements to construct their

identities and signify particular relationships with various individuals who are thanked. All of these four studies confirm that the construction of dissertation acknowledgements has a feature of hybridism and is dynamic because they are shaped and appropriated to accommodate newly accepted practices and localised socio-cultures (Bhatia, 2004).

To better clarify socio-cultural influences on employing strategies in expressing gratitude, some studies have compared and contrasted DA written by native English speakers (NS) and non-native English speakers (NNS) in diverse contexts. Lasasky (2011) collected DA in the applied linguistics discipline written by NS and NNS Iranians, but found that statistically there was no significant difference between the two groups in terms of constructing DA, although the step Thanking Allah was identified. In contrast, by collecting texts from the same discipline, Cheng (2012) found a number of subtle differences between NS Americans and NNS Taiwanese in terms of employing thanking strategies. She discovered that Taiwanese writers tend to use more explicit but fewer implicit thanking strategies than American students. Taiwanese also use relatively more complex rather than simple strategies. Furthermore, the two groups adopt different strategies and preferences in arranging the thanked addressees. Cheng (2012) contributed this distinctness to diverse social norms and expectations in Taiwan and the US.

In contrast to the above studies, Scrivener (2009) investigated DA written by PhD history students between 1930 and 2005 in the US. Rather than adopting Hyland's model, she attempted to discover the academic and life evolutions from history majors' dissertation acknowledgements. She concluded that societal changes and features of an academic discipline impact how DA are constructed. For example, librarians and archivists are the second most frequently acknowledged groups, and these history majors are no longer lone scholars as they once were because they have gradually included more and more individuals to be thanked in their acknowledgements. Besides, the language use has also dramatically changed from formal to less formal voice in terms of the authorial subject from the third person s/he to the first person I. This study not only reflects the fact that acknowledgements are not simply a fixed form, but bridge writers' ways of living, communication and interaction with the public, the social, the professional and the academic (Bazerman, 1997; Hyland, 2004a).

In sum, a number of factors can indeed affect the construction, the strategies and the linguistic realisations used in DA such as discipline, cultural expectations, language background, social norms, and academic conventions. Previous studies have undertaken the cross-examination of the influences of these variations. However, some perspectives might still be overlooked, such as the diversities of disciplines studied by a single ethnic group, the status of English use, and the context in which English is used. To bridge the gap, the present study examines dissertation acknowledgements written by a group of EFL learners with an identical ethnic background, specifically Chinese-speaking Taiwanese, studying in an English speaking country, namely the US, across a wide range of academic disciplines. This research attempts to investigate whether disciplinary, socio-cultural and contextual differences affect the structure construction and linguistic choices in realising the thanking acts.

## 3 Research methodology
### 3.1 Corpus
This study is based on 120 PhD dissertation acknowledgements written in English by native Taiwanese students (TW) who studied their doctoral degrees in the US. In order to compare

and contrast the similarities or differences of DA between the soft and hard sciences, the corpus collected texts from 6 different disciplines. The texts from the soft sciences represent the disciplines of applied linguistics (APL), business studies (BUS), and public administration (PBA), while those from the hard sciences include the disciplines of medical science (MED), electronic engineering (EEN), and biology (BIO). Each discipline equally contributes 20 texts, giving a total of 120 texts. All of the acknowledgements in the dissertations were written between 1990 and 2011.

Due to the severely limited availability of English DA written by Taiwanese PhD students in Taiwan, all 120 texts were collected in the US using the ProQuest Digital Dissertations Database. Several measures were taken to ensure the native identity of the authors for accurate representation of Taiwanese students, as follows: setting keywords to limit the topics related to Taiwan only, checking the author's name spelling system, reading the author's curriculum vitae, and screening from the content of abstracts and acknowledgements. The present corpus consists of a total of 43,166 running words. The length of the DA ranges from 54 to 1,456 words with an average of 420.6 words in the soft sciences, and 50 to 1,669 words with an average of 298.8 words in the hard sciences. Table 1 shows the detailed total and average running words of the texts in each discipline, and compares the present corpus to that of Hyland (2003).

| Discipline | Present corpus | | | Hyland's corpus | | |
|---|---|---|---|---|---|---|
| | Texts | Words | Average | Texts | Words | Average |
| APL | 20 | 7,917 | 395.9 | 20 | 7,718 | 385.9 |
| BUS | 20 | 7,298 | 364.9 | 19 | 2,512 | 132.2 |
| PBA | 20 | 10,022 | 501.1 | 20 | 3,594 | 179.7 |
| Soft disp. | 60 | 25,237 | 420.6 | 59 | 13,824 | 234.3 |
| | | | | | | |
| MED/COM | 20 | 6,356 | 317.8 | 20 | 3,470 | 173.5 |
| EEN | 20 | 4,833 | 241.7 | 19 | 2,771 | 145.8 |
| BIO | 20 | 6,740 | 337.0 | 19 | 3,864 | 203.4 |
| Hard disp. | 60 | 17,929 | 298.8 | 58 | 10,105 | 174.2 |
| | | | | | | |
| All totals | 120 | 43,166 | 359.8 | 117 | 23,929 | 204.5 |

**Table 1**. Acknowledgement corpus (20 DA from each discipline) vs. Hyland's corpus (2003)

**Note**: APL: Applied linguistics, BUS: Business studies, PBA: Public administration, MED: Medical science (Present)/ COM: Computer science (in Hyland's), EEN: Electronic engineering, BIO: Biology.

## 3.2 Analysis

The texts were analysed for their generic structure and linguistic realisation in terms of structural moves/steps, sentence patterns of expressing thanking acts, and lexical choices in modifying thanking acts. To investigate the generic structure of acknowledgements employed by the Taiwanese authors, Hyland's (2003) three-tier scheme of dissertation acknowledgements was adopted. The texts were coded manually by the researcher after a

research assistant and the researcher went through every four randomly-selected texts in each discipline together (i.e. 24 texts in total, with an inter-coder reliability of 88.6%) to reach a consensus of categorisation of moves and steps. The coding of the sentence patterns of expressing thanking acts, which was adopted from Hyland and Tse (2004), also applied the identical procedure as above, and the inter-coder reliability of this classification reached 91.2%. Regarding the lexical choices of realising thanking acts, a text analysis and concordance programme WordSmith Tools v 5.0 (Scott, 2008) was used to count word frequency and identify the keywords used in modifying and receiving thanking acts.

## 4 Results and Discussion
### 4.1 Generic structure
As Table 2 shows, the generic structure of this present corpus also largely follows Hyland's (2004a) three-tier model of DA. The thanking move is obligatory so all of the writers utilised one step in this move at least once while the other two moves, namely the reflecting and announcing moves, are apparently optional because only 26% and 46% of the DA respectively include these two. Expressing gratitude for intellectual support, ideas, analyses, and feedback, etc. from academic communities and for the encouragement, friendship, sympathy, and patience etc. of non-academic associates is regarded as indispensable across each discipline. However, to these writers, claiming responsibility for any flaws or errors in their dissertations seems to be unnecessary; hence, not a single instance of Step 3.1 was located in the present corpus. Though there is no great difference between the two science areas in terms of move/step structure, some subtle variations were still found. For instance, the reflecting move is used twice as often in the DA in the soft sciences, and there is also 20% higher use of Step 2.1, introducing those to be thanked, compared with those in the hard sciences. In particular, the discipline of public administration (PBA) has significantly higher occurrences of each move and step (excluding Step 3.1) than any other discipline. It is believed that the core of public administration is involvement in human relationships, and thus writers in this discipline may tend to emphasise the assistance offered by various other parties during their research journey. After all, public administration is closely associated with interaction, communication, and human relationships, and DA rightly provide a chance to display these functions. Besides, it is also predicted that writers in the soft sciences would apply writing strategies more rigorously than students in the hard sciences. Step 2.1 in DA serves as a topic sentence in writing a paragraph, by which authors introduce or summarise the main idea of the entire paragraph to increase reading accessibility. Presenting the participants to be thanked at the beginning helps readers determine the subject and perspective of the paragraph. Thus, even though all the writers studied their PhD degrees in the American educational system, they did not all strictly follow the general guidelines of how to write a paragraph in academic texts.

|  | Soft disciplines | | | | Hard disciplines | | | | |
|---|---|---|---|---|---|---|---|---|---|
|  | APL | BUS | PBA | All | MED | EEN | BIO | All | Total |
| **1 *Reflecting Move*** | 20 | 15 | 70 | 35 | 15 | 15 | 20 | 17 | **26** |
| **2 *Thanking Move*** |  |  |  |  |  |  |  |  |  |
| **Step 2.1** | 55 | 45 | 100 | 67 | 40 | 60 | 45 | 48 | **58** |
| **Step 2.2** | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | **100** |
| **Step 2.3** | 100 | 100 | 100 | 100 | 100 | 95 | 100 | 98 | **99** |
| **Step 2.4** | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | **100** |
| **3*Announcing Move*** |  |  |  |  |  |  |  |  |  |
| **Step 3.1** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| **Step 3.2** | 50 | 45 | 50 | 48 | 60 | 30 | 40 | 43 | **46** |

**Table 2**. Percentages of acknowledgements with each step by discipline

The argument that writers in the soft sciences are prone to construct more and generically more complex acknowledgements than the hard science students is also proposed by Hyland and Tse (2004). Tables 3 and 4 respectively compare the current corpus with Hyland's (2004a) in terms of acknowledgements with each step and the average number of steps per text by discipline. Generally, in both corpora, the soft science students tended to use Move 1 and Step 3.1 much more frequently than the hard science students did. Yet, still some major variations exist between the two contexts. Firstly, in the present corpus, Step 2.4 seems to be obligatory with a 100% occurrence, and Step 3.2 has a much higher appearance rate than in Hyland's corpus. In contrast, Step 3.1 is not identified at all in the current corpus. The possible explanations can be that the Taiwanese writers in the present study studied their PhD degrees in the US while the Hong Kong writers in Hyland's corpus studied in their home country (i.e. Hong Kong), and studying in a foreign country made the Taiwanese writers depend much more on the moral and spiritual support of friends, colleagues, family or religious beliefs. Hence, after successfully completing their degrees, these students would be apt to dedicate their dissertations to those who had provided such spiritual assistance and moral support. Due to a similar reason, the average occurrence of moves/steps in the Taiwanese corpus is even higher than that in Hyland's corpus (2004a) as the Taiwanese students might have relatively more people to be thanked. Other possible reasons may be that Taiwanese students tend to consider DA as a very formal genre, and they have a cultural expectation of expressing gratitude for any assistance, both of which may contribute to the detailed and elaborate production of their DA (Cheng, 2012). Though the students in the soft disciplines tended to produce more steps than those in the hard disciplines in both corpora, interestingly the lowest average of the present corpus in electronic engineering is close to the highest average of Hyland's corpus in applied linguistics, i.e. 7.3 vs. 8.5. Thus, it is assumed that the variation of contexts in which PhD students study also affects the average number of steps produced.

| | Soft disciplines | | Hard disciplines | | |
|---|---|---|---|---|---|
| | Present | Hyland's | Present | Hyland's | Total |
| **1 *Reflecting Move*** | 35 | 26 | 17 | 13 | **23** |
| **2 *Thanking Move*** | | | | | |
| **Step 2.1** | 67 | 39 | 48 | 19 | **43** |
| **Step 2.2** | 100 | 100 | 100 | 100 | **100** |
| **Step 2.3** | 100 | 75 | 98 | 59 | **83** |
| **Step 2.4** | 100 | 77 | 100 | 66 | **86** |
| **3 *Announcing Move*** | | | | | |
| **Step 3.1** | 0 | 11 | 0 | 3 | **2** |
| **Step 3.2** | 48 | 4 | 43 | 2 | **24** |

**Table 3**. Comparison of percentages of acknowledgements with each step by soft and hard disciplines

**Note**: Hyland's study combines both master and doctoral dissertations

| Discipline | Present | Hyland's | Overall |
|---|---|---|---|
| APL | 10.0 | 8.5 | **9.3** |
| BUS | 10.3 | 3.7 | **7.0** |
| PBA | 14.3 | 4.8 | **9.6** |
| ***Soft disp.*** | ***11.5*** | ***5.7*** | ***8.6*** |
| | | | |
| MED/COM | 9.1 | 5.3 | **7.2** |
| EEN | 7.3 | 4.6 | **6.0** |
| BIO | 11.0 | 5.8 | **8.4** |
| ***Hard disp.*** | ***9.1*** | ***5.2*** | ***7.2*** |
| | | | |
| **All totals** | **10.3** | **5.5** | **7.9** |

**Table 4**. Text complexity: average number of steps per text by discipline

**Note**: differences in summed totals due to rounding

Tables 5 and 6 respectively show the average frequency with which steps occurred in each discipline and a comparison with Hyland's (2004a) figures. The rankings of moves/steps produced from the highest to the lowest in the two different sciences are identical. The top two frequently-produced steps are Step 2.2 and Step 2.4, which suggests that academic and emotional assistance are mostly valued and appreciated by the writers. Hyland's comparison also shows the same tendency. However, comparatively, the soft science DA still exhibit a higher frequency of each move/step than those from the hard sciences. The results support both Giannoni's (2002) and Hyland's (2004a) observations that writers from the hard disciplines tend to construct less complex acknowledgements in academic texts.

|  | Soft disciplines | | | | Hard disciplines | | | | |
|---|---|---|---|---|---|---|---|---|---|
|  | APL | BUS | PBA | All | MED | EEN | BIO | All | Total |
| **1 *Reflecting Move*** | 0.2 | 0.05 | 0.7 | 0.32 | 0.15 | 0.15 | 0.2 | 0.17 | **0.24** |
| **2 *Thinking Move*** |  |  |  |  |  |  |  |  |  |
| **Step 2.1** | 0.55 | 0.45 | 1.35 | 0.78 | 0.4 | 0.6 | 0.65 | 0.55 | **0.67** |
| **Step 2.2** | 4.4 | 4.25 | 5.5 | 4.72 | 3.7 | 3.25 | 4.65 | 3.87 | **4.29** |
| **Step 2.3** | 1.8 | 1.8 | 2 | 1.87 | 1.8 | 0.95 | 2.25 | 1.67 | **1.77** |
| **Step 2.4** | 2.6 | 3.2 | 4.25 | 3.35 | 2.45 | 2 | 2.8 | 2.41 | **2.88** |
| **3 *Announcing Move*** |  |  |  |  |  |  |  |  |  |
| **Step 3.1** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| **Step 3.2** | 0.5 | 0.45 | 0.5 | 0.48 | 0.6 | 0.3 | 0.4 | 0.43 | **0.46** |

**Table 5**. Relative frequency of steps in each text by discipline

|  | Soft disciplines | | Hard disciplines | | Total | |
|---|---|---|---|---|---|---|
|  | Present | Hyland's | Present | Hyland's | Present | Hyland's |
| **1 *Reflecting Move*** | 0.32 | 0.3 | 0.17 | 0.2 | **0.24** | **0.2** |
| **2 *Thinking Move*** |  |  |  |  |  |  |
| **Step 2.1** | 0.78 | 0.4 | 0.55 | 0.2 | **0.67** | **0.3** |
| **Step 2.2** | 4.72 | 1.6 | 3.87 | 1.7 | **4.29** | **1.7** |
| **Step 2.3** | 1.87 | 1.2 | 1.67 | 0.9 | **1.77** | **1.0** |
| **Step 2.4** | 3.35 | 1.2 | 2.41 | 1.0 | **2.88** | **1.1** |
| **3 *Announcing Move*** |  |  |  |  |  |  |
| **Step 3.1** | 0 | 0.1 | 0 | 0 | **0** | **0.1** |
| **Step 3.2** | 0.48 | 0.1 | 0.43 | 0 | **0.46** | **0.1** |
|  |  |  |  |  |  |  |
| **Avg. per text** | **11.52** | **4.9** | **9.1** | **4.1** | **10.31** | **4.6** |

**Table 6**. Comparison of relative frequency of steps in each text by soft and hard disciplines

**Note:** Hyland's study combines both master and doctoral dissertations

## 4.2 Participants acknowledged

Table 7 shows the percentages of gratitude expressions toward different individuals. Overall, other academic teachers were most frequently thanked, followed by family members, committee members, colleagues, advisors, friends, institutions, study participants, and religious beliefs. However, there is a slight difference between the two science areas. In the soft sciences, family members are most frequently acknowledged, while other academic teachers are most usually thanked in the hard sciences. It is supposed that hard research usually involves much collaborative team work; thus, naturally other academic teachers' assistance was highly appreciated. In contrast, many social science studies relied on the researchers themselves alone and thus emotional support, in particular from family members and friends, would become relatively more highly valued. Besides, some variations also exist

across disciplines. Participants in the research were fairly crucial in the applied linguistics discipline, especially concerning language teaching topics; therefore, they enjoyed higher occurrences of acknowledgement than in other disciplines. Another example is the gratitude to institutions. Most of these Taiwanese who studied medical science and biology were supported by third parties either at home or in the targeted countries. Apparently, the hard science PhD students had more chances of obtaining scholarships or sponsorship than the soft science PhD students, which means institutions receive greater appreciation in the above two hard disciplines. This situation, that discipline affects who should be acknowledged in DA, was also evidenced in Scriverner's (2009) research.

| | Addressees | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Disp.** | AD | OT | CM | CO | FM | IN | FD | PA | RL |
| APL | 11.96 | 16.85 | 11.41 | 16.30 | 12.50 | 7.61 | 11.41 | 11.96 | 0 |
| BUS | 9.10 | 18.19 | 17.05 | 9.10 | 19.31 | 8.00 | 11.36 | 4.00 | 4.00 |
| PBA | 6.52 | 20.43 | 18.26 | 10.00 | 23.48 | 8.26 | 7.39 | 3.91 | 1.73 |
| *Soft* | *8.98* | *18.64* | *15.76* | *11.70* | *18.81* | *7.97* | *9.83* | *6.44* | *1.86* |
| | | | | | | | | | |
| MED | 12.50 | 15.48 | 11.90 | 19.64 | 18.45 | 9.52 | 7.14 | 4.76 | 0.60 |
| EEN | 16.26 | 17.89 | 17.07 | 8.94 | 22.76 | 3.25 | 7.31 | 5.69 | 0.81 |
| BIO | 8.64 | 24.86 | 15.14 | 11.89 | 17.30 | 9.19 | 8.65 | 3.78 | 0.54 |
| *Hard* | *11.98* | *19.75* | *14.50* | *13.87* | *19.12* | *7.77* | *7.77* | *4.62* | *0.63* |
| | | | | | | | | | |
| **Totals** | **10.32** | **19.14** | **15.20** | **12.66** | **18.95** | **7.88** | **8.91** | **5.63** | **1.31** |

**Table 7**. Percentages (%) of gratitude expressions toward different addressees

**Note**: Differences in summed totals due to rounding; AD: Advisor, OT: Other teacher, CM: Committee, CO: Colleague, FM: Family, IN: Institution, FD: Friend, PA:  Participant,     RL: Religion

Interestingly, advisors were much less thanked in the present study compared with other studies examining Taiwanese writers' DA constructed in Taiwan. Both Cheng's (2012) and Yang's (2012a) investigations show that advisors were always highly and firstly acknowledged by Taiwanese writers in dissertation acknowledgements. Socio-cultural differences of advisor-advisee relationships in the two contexts can contribute to this diversity. In Confucian societies such as Taiwan, Japan, Korea, and China, the role of advisors is always authoritative and powerful. Advisors are not only the experts in the researched fields but can make crucial decisions on failing or passing PhD candidates' dissertations (Cheng, 2012; Krase, 2007; Li, 2005). The hierarchy of advisor-advisee is strictly obeyed and thus Taiwanese writers in Taiwan would "view advisors as indispensible addressees and always place them at the initial position of acknowledgements" (Cheng, 2012: 14). Nevertheless, in western academic culture, advisors are regarded as joint partners rather than authorities. Advisorship seemingly emphasises the cultivation of the independent ability of carrying out research, and thus mutual growth and enhancement confine the relationship with advisees (Cheng, 2012; Krase, 2007). Indeed, socio-cultural expectations, academic conventions and disciplinary variations all affect who should be thanked in priority in dissertation acknowledgements.

## 4.3 Gratitude expressions

According to Hyland and Tse's (2004) categorisation, there are five main types of patterns used to express gratitude in thanking acts, Move 2. They are, nominalisation (N) (e.g. My sincere thanks go to…), performative verb (V) (e.g. I thank…), adjective (A) (e.g. I am grateful to …), passive (P) (e.g. Appreciation is given to …), and bare mention (B) (e.g. X is very helpful in …). Table 8 exhibits the occurrence percentages of patterns expressing gratitude in the present study by discipline and an overall comparison with Hyland's (2004a) findings. Generally, there is no difference in pattern ranking between the soft and hard sciences. The performative verb pattern was used most commonly, while the passive pattern was used the least by these Taiwanese students. Using the performative verb pattern always begins with the subject I and this suggests a very direct authorial voice which "was particularly marked in the science and engineering texts" (Hyland, 2004a: 266). Similarly, in the present corpus, the disciplines of medical science and engineering also show this tendency, where the performative verb pattern was used more frequently than in other disciplines, particularly the soft disciplines. The least use of the passive pattern is not unusual as Chinese is regarded as a language without voice category. Passive voice in Chinese is expressed in a covert way instead of a marked way, which possibly makes Chinese-speaking writers feel uneasy about using passive voice in constructing English DA (Zhao & Jiang, 2010).

| | Patterns | | | | |
|---|---|---|---|---|---|
| **Discipline** | N | V | A | P | B |
| APL | 16.13 | 55.38 | 18.28 | 4.84 | 5.38 |
| BUS | 13.45 | 50.29 | 11.70 | 2.92 | 21.64 |
| PBA | 10.82 | 35.06 | 17.32 | 1.30 | 35.50 |
| *Soft disp.* | *13.27* | *45.92* | *15.99* | *2.90* | *21.94* |
| | | | | | |
| MED | 5.00 | 55.90 | 13.04 | 3.11 | 22.99 |
| EEN | 15.20 | 59.20 | 14.40 | 4.80 | 6.40 |
| BIO | 12.50 | 42.93 | 17.93 | 7.61 | 19.02 |
| *Hard disp.* | *10.64* | *51.70* | *15.32* | *5.32* | *17.02* |
| | | | | | |
| **All totals** | **11.96** | **48.81** | **15.66** | **4.11** | **19.48** |
| **Hyland's** | **33.66** | **33.70** | **15.41** | **10.96** | **6.79** |

**Table 8**. Occurrence percentages (%) of patterns expressing gratitude in the present corpus

**Note**: Differences in summed totals due to rounding; N: Nominalisation, V: Performative-verb, A: Adjective, P: Passive, B: Bare mention

The bare mention pattern, signifying a more implicit and reserved thanking act, was ranked the second highest in the present corpus; the ranking of two extreme ends of thanking acts (i.e. explicitness in V pattern vs. implicitness in P pattern) as the consecutive first and second places cannot be found in other similar studies where Chinese-speakers' DA were analysed (e.g. Hyland, 2004a; Zhao & Jiang, 2010). It is believed that the interwoven complexity of socio-cultural perspectives and habits of English use contributes to this cause. Zhao and Jiang's (2010) observation suggests that Chinese-speaking students in China, as an EFL context, are more reserved when expressing their feelings and emotions; thus, the bare

mention pattern is most commonly used in their corpus. In contrast, Chinese-speaking students in Hong Kong, where English is used as a second and one of the official languages, used the bare mention pattern least but the performative verb pattern far more in Hyland's (2004a) corpus. It can be predicted that the longer Chinese-speaking students are exposed to an English-speaking environment, the more likely it is that they would express their gratitude explicitly. Hence, the Taiwanese students in the present study, who had been educated in an EFL context for a long time and then studied for their PhD in an English-speaking context, would display these two seemingly opposite preferences. In addition, the passive pattern was used almost twice as often in the hard disciplines than in the soft disciplines. Academic training of using the passive voice to represent objectivity in the hard sciences probably caused this variation.

When the patterns used and individuals acknowledged in thanking acts were cross-compared, some subtle differences between the sciences were identified. Firstly, it is found that family members and other academic teachers are the two major addressees, with 40% being thanked with performative-verb use in both science areas; however, there is a relatively high usage of the bare mention pattern in thanking family members in the soft science DA and other academic teachers in the hard science DA, as Table 9 shows. The results are different from what Hyland and Tse (2004) argue in that the bare mention pattern, as a low-key way of expressing thanks, is usually over-represented in offering gratitude for resource support. Probably, the Taiwanese students were more emotionally reserved than the Hong Kong students. Other subtle variations include the hard science students tending to use adjective patterns to appreciate both moral and academic help (i.e. FM and OT) while their soft science counterparts mainly use it to appreciate academic assistance (i.e. AD, OT and CM). Besides, hard science students used a passive pattern to thank committee members and institutions, while soft science students used it to thank various addressees (i.e. AD, OT, CO and PA mainly). This difference between a widespread distribution and a concentrated distribution of individuals thanked using different patterns substantiates the argument that writers in the soft sciences are apt to use a greater variety of patterns than those in the hard sciences (Hyland & Tse, 2004). Furthermore, the types of research in the various disciplines may also account for this difference. That is, research participants were acknowledged more frequently in the soft disciplines while institutions were more commonly thanked in the hard disciplines.

| | Addressees | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **AD** | **OT** | **CM** | **CO** | **FM** | **IN** | **FD** | **PA** | **RL** | **TOTALS** |
| Nominalisation | | | | | | | | | | |
| SOFT | 13.9 | 19.4 | 12.5 | 2.8 | 18.1 | 8.3 | 16.7 | 6.9 | 1.4 | 100 |
| HARD | 12 | 22 | 8 | 18 | 10 | 8 | 8 | 14 | 0 | 100 |
| **TOTAL** | **13.1** | **20.5** | **10.7** | **9.0** | **14.8** | **8.2** | **13.1** | **9.8** | **0.8** | **100** |
| Performative-verb | | | | | | | | | | |
| SOFT | 10.6 | 19.3 | 17.9 | 8.0 | 19.7 | 6.6 | 9.1 | 6.9 | 1.8 | 100 |
| HARD | 13.4 | 20.9 | 11.7 | 14.2 | 21.8 | 4.6 | 7.5 | 4.6 | 1.3 | 100 |
| **TOTAL** | **11.9** | **20.1** | **15.0** | **10.9** | **20.7** | **5.7** | **8.4** | **5.8** | **1.6** | **100** |
| Adjective | | | | | | | | | | |
| SOFT | 12.4 | 22.4 | 15.7 | 7.9 | 11.2 | 7.9 | 10.1 | 11.2 | 1.1 | 100 |
| HARD | 16.2 | 14.7 | 25 | 8.8 | 20.6 | 4.4 | 7.4 | 2.9 | 0 | 100 |
| **TOTAL** | **14.0** | **19.1** | **19.7** | **8.3** | **15.3** | **6.4** | **8.9** | **7.6** | **0.6** | **100** |
| Passive | | | | | | | | | | |
| SOFT | 14.3 | 28.6 | 7.1 | 14.3 | 7.1 | 7.1 | 0 | 14.3 | 7.1 | 100 |
| HARD | 12.5 | 12.5 | 50 | 0 | 0 | 16.7 | 4.2 | 4.2 | 0 | 100 |
| **TOTAL** | **13.2** | **18.4** | **34.2** | **5.3** | **2.6** | **13.2** | **2.6** | **7.9** | **2.6** | **100** |
| Bare mention | | | | | | | | | | |
| SOFT | 3.6 | 17.9 | 15.7 | 13.6 | 25.7 | 10.7 | 7.9 | 2.9 | 2.1 | 100 |
| HARD | 5 | 25 | 10 | 12.5 | 21.3 | 17.5 | 6.25 | 2.5 | 0 | 100 |
| **TOTAL** | **4.1** | **20.5** | **13.6** | **13.2** | **24.1** | **13.2** | **7.3** | **2.7** | **1.4** | **100** |

**Table 9.** Percentages (%) of thanking patterns used to thank different addressees by soft and hard disciplines

**Note**: Differences in summed totals due to rounding

### 4.4 Lexical choices to realise and modify the thanking acts

Table 10 shows the lexical choices used to realise the thanking acts between soft and hard science authors. The results demonstrate that there is no significant difference between the two groups, and that both of them tended to use verbs to express gratitude. However, this tendency is completely opposite to Cheng's (2012) claim that Taiwanese students tend to use more noun forms to express their thanks than native English speakers, who employ more verb forms. One possible explanation is that the authors in the present study were more or less assimilated into the academic conventions and language use in an English-speaking environment, though this assimilation may be either purposeful or unintended.

| | Lexical items | Soft | % | Hard | % | Total | % |
|---|---|---|---|---|---|---|---|
| Noun | gratitude | 57 | 10.34 | 57 | 11.75 | 114 | 11 |
| | thanks | 88 | 15.97 | 65 | 13.40 | 153 | 14.77 |
| | appreciation | 45 | 8.17 | 44 | 9.07 | 89 | 8.59 |
| | gratefulness | 2 | 0.36 | 0 | 0 | 2 | 0.19 |
| | indebtedness | 1 | 0.18 | 0 | 0 | 1 | 0.10 |
| | debt | 4 | 0.73 | 5 | 1.03 | 9 | 0.87 |
| Verb | thank | 193 | 35.02 | 194 | 40 | 387 | 37.36 |
| | appreciate | 18 | 3.27 | 12 | 2.47 | 30 | 2.90 |
| | appreciated | 8 | 1.45 | 4 | 0.82 | 12 | 1.16 |
| | acknowledge | 20 | 3.63 | 14 | 2.89 | 34 | 3.28 |
| | recognize | 0 | 0 | 2 | 0.41 | 2 | 0.19 |
| | owe | 16 | 2.91 | 8 | 1.65 | 24 | 2.32 |
| Adjective | gratefulness | 60 | 10.89 | 44 | 9.07 | 104 | 10.04 |
| | Indebted | 22 | 3.99 | 24 | 4.95 | 46 | 4.44 |
| | thankful | 15 | 2.72 | 11 | 2.27 | 26 | 2.51 |
| | appreciative | 2 | 0.36 | 0 | 0 | 2 | 0.19 |
| | obliged | 0 | 0 | 1 | 0.21 | 1 | 0.10 |
| Total | | 551 | 100 | 485 | 100 | 1036 | 100 |

**Table 10**. Frequency of lexical realisations of explicit thanking acts for the soft and hard disciplines

**Note**: Differences in summed totals due to rounding

The word and keyword analysis show some slight variations between the two science areas. Table 11 shows the numbers of distinct (different) words used, while Table 12 exhibits the total numbers of keywords generated when the two corpora were compared with the BNC (British National Corpus, a daily spoken and written English corpus), respectively. It suggests that firstly, soft science students might have a better command of English vocabulary; thus, they tended to use more distinct words than the hard science students did. Yet, relatively higher TTR (distinct words/total running tokens) in hard science DA implies that these authors are used to writing shorter sentences but with higher lexical density; in other words, their writing style may be more concise and straightforward. In addition, keyword use also demonstrates that soft science students employed comparatively more overused keywords than their hard science counterparts did, suggesting that the lexis used in soft science DA contained fewer daily words and their lexical choices better represent the main features of aboutness and keyness (Archer, 2009; Baker, 2009; Scott & Tribble, 2006) in this genre.

| Discipline | Distinct words (DW) | TTR (DW/tokens) | Sentences | Means in words | Standard deviation |
|---|---|---|---|---|---|
| APL | 1,885 | 23.81 | 510 | 15.52 | 13.14 |
| BUS | 1,779 | 24.38 | 563 | 12.96 | 10.30 |
| PBA | 2,145 | 21.40 | 647 | 15.49 | 10.59 |
| *Soft disp.* | *1936* | *23.20* | *573* | *14.66* | *11.34* |
| | | | | | |
| MED | 1,691 | 26.60 | 460 | 13.82 | 10.49 |
| EEN | 1,216 | 25.16 | 466 | 10.37 | 9.26 |
| BIO | 1,642 | 24.36 | 719 | 9.37 | 9.05 |
| *Hard disp.* | *1,516* | *25.37* | *548* | *11.19* | *9.60* |
| | | | | | |
| **All totals** | **1,726** | **24.29** | **561** | **12.92** | **10.47** |

**Table 11**. Distinct words, TTR, and sentence length of the present corpus

| | Soft disciplines | Hard disciplines |
|---|---|---|
| Total keywords | 372 | 329 |
| Overused keywords | 328 | 292 |
| Underused keywords | 44 | 37 |

**Table 12**. Keywords of soft and hard disciplines with reference to BNC

As Appendix 1 lists, the selected overused keywords which were mainly employed in the thanking acts also show some variations between groups. This wordlist contains the lexis, modifying the types of assistance obtained from various addressees and the extent of the author's emotional state in expressing gratitude. On the one hand, it again corroborates that soft science students were able to use a greater variety of words to modify their thanking acts, while on the other hand, it displays subtle variations of priorities in acknowledging help in the top 20 words of very high keyness between groups. For instance, hard science authors tended to use unspecific words (e.g. support, assistance or help) more frequently, while soft science authors would apparently identify their reasons for thanking more specifically. However, both keyword lists mirror the same fact. That is, the key features of this genre address the issues of what is to be acknowledged and how to magnify gratitude for academic and moral assistance. Moreover, a large number of non-daily adjectives (esp. –ful, such as grateful, insightful, helpful, thoughtful and superlatives such as deepest, endless, sincerest or foremost) make dissertation acknowledgements a relatively formal genre (Hyland & Tse, 2004). Hence, keyword analysis not only helps researchers ensure what DA is really about in a target situation and its diversity across disciplines, avoiding trivia and insignificant detail (Scott & Tribble, 2006), but also helps student writers to distinguish variations between texts, determine the content of texts, and identify textual and rhetorical styles (Archer, Culper, & Rayson, 2009; Baker, 2009).

**5 Conclusion**

As discussed earlier in this study, acknowledgements are sophisticated and complex, and their constructions are heavily affected by many factors such as academic conventions, author's language proficiency, socio-cultural expectations or even personal writing style. The present study attempted to investigate a less attended variable influencing the construction of dissertation acknowledgements, namely discipline variations. The results demonstrate that though generally most EFL writers followed Hyland's (2004a) three-tier model to compose their acknowledgements, subtle differences exist between the two science areas in terms of generic construction and lexical realisations in modifying thanking acts. It is believed that the diversities of research per se (i.e. its epistemology, ontology and methodology) and writers' exposure to an English-speaking environment together with the above factors could contribute to the variations in constructing DA.

The pedagogical implication of this study for ESP practitioners is as follows. Compared with other genres in academic texts, acknowledgements have received relatively less attention in research (Hyland, 2004a) and furthermore, teaching how to write appropriate acknowledgements is not well accommodated either. Rather than mimicking formulaic structures and rhetoric, graduate students should be explicitly informed of the possible factors which would affect how they employ thanking moves/steps, strategies and lexical choices while constructing appropriate DA. In addition, listing word frequency and identifying keywords used in various DA corpora can be helpful in presenting writers with possible lexical choices and constraints in different settings, which serves as a reference to cater for academic, linguistic, socio-cultural, disciplinary and contextual differences. Hence, ESP instructors are advised to conduct genre-based writing instruction of this genre at both macro (i.e. socio-cultural) and micro (i.e. linguistic) levels (Hyland, 2004b; Paltridge, 2001; Yang, 2012b) as it can assist PhD students in writing impressive and proper acknowledgements.

Additional analysis can be done to complement this research. A cross-cultural comparison can be conducted to examine whether discipline variations exercise similar influences on DA written by native English speakers. Furthermore, an intra-cultural analysis is also recommended. Texts collected from other Chinese EFL learners (e.g. from mainland China) who studied in the US, can be compared to ensure whether authors' socio-cultural backgrounds exercise greater influences on constructing DA than the variations in English speaking environments, or vice versa. Finally, qualitative methods can be adopted into the inquiries. To better realise the account of why authors choose certain arrangements and lexis in different disciplines and to learn how they perceive themselves as writers of DA, continued analysis such as interviews or ethnographic methods can be integrated into projects that concentrate on corpus analysis.

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## 7 Appendix
**Appendix1.** Overused keywords employed to modify thanking acts in two sciences with reference to BNC

| Soft disciplines | | | Hard disciplines | | |
|---|---|---|---|---|---|
| Key word | Keyness | Frequency | Key word | Keyness | Frequency |
| SUPPORT | 849.3895264 | 190 | SUPPORT | 685.6174316 | 148 |
| ENCOURAGEMENT | 707.8490601 | 81 | ENCOURAGEMENT | 682.8666382 | 74 |
| GUIDANCE | 321.3438721 | 51 | GUIDANCE | 399.9871216 | 56 |
| INSIGHTFUL | 311.7173157 | 23 | GRATEFUL | 310.5231934 | 44 |
| SINCERE | 306.6517029 | 33 | ASSISTANCE | 236.3457947 | 40 |
| SUGGESTIONS | 293.0917358 | 43 | PATIENCE | 209.0389099 | 27 |
| PATIENCE | 237.2440186 | 32 | SINCERE | 201.7852478 | 22 |
| LOVE | 194.8524475 | 64 | INSIGHTFUL | 173.3990936 | 13 |
| COMMENTS | 181.4472809 | 36 | SUGGESTIONS | 168.7018585 | 26 |
| INVALUABLE | 180.2219238 | 24 | ADVICE | 156.47966 | 38 |
| DEDICATION | 172.7871704 | 22 | HELP | 146.996994 | 58 |
| DEEPEST | 153.5054932 | 19 | LOVE | 135.4749756 | 45 |
| ALWAYS | 153.3752899 | 74 | CONTINUOUS | 117.1722336 | 21 |
| ADVICE | 148.9017029 | 41 | ESPECIALLY | 100.0851669 | 34 |
| UNCONDITIONAL | 134.1839905 | 16 | THANKFUL | 90.87915802 | 11 |
| ASSISTANCE | 127.9447327 | 28 | VALUABLE | 88.89487457 | 19 |
| VALUABLE | 127.2196884 | 27 | SPECIAL | 86.58507538 | 34 |
| HELP | 124.7024384 | 61 | COMMENTS | 78.30434418 | 18 |
| INSPIRATION | 124.5999527 | 20 | FRIENDSHIP | 76.09213257 | 14 |
| MENTORING | 122.6819382 | 9 | INVALUABLE | 73.04397583 | 11 |
| DEEPLY | 117.2798538 | 25 | ADVICES | 69.79037476 | 5 |
| ENDEAVOR | 117.1376343 | 8 | DEDICATION | 69.70275879 | 10 |
| FRIENDSHIP | 109.5598755 | 20 | GREAT | 62.92067337 | 41 |
| UNDERSTANDING | 86.79158783 | 28 | ENDEAVOR | 57.78165054 | 4 |
| GENEROUSLY | 78.66903687 | 11 | GENEROUS | 57.55865097 | 12 |
| CONTINUOUS | 76.92755127 | 17 | GENEROUSLY | 57.4994545 | 8 |
| ESPECIALLY | 75.84360504 | 33 | HELPFUL | 56.65489578 | 13 |
| TIMELY | 72.33976746 | 10 | DEEPEST | 56.37428284 | 8 |
| INSPIRED | 70.67552185 | 15 | INSPIRATION | 55.31654358 | 10 |
| ENDLESS | 66.01902008 | 13 | FOREMOST | 52.72362137 | 8 |
| MANY | 63.89118195 | 70 | ENDLESS | 52.17824936 | 10 |
| SINCEREST | 63.66653442 | 5 | MENTORING | 52.12264633 | 4 |
| HELPFUL | 59.93144608 | 15 | ALWAYS | 51.8959198 | 36 |
| EDITING | 59.20835495 | 10 | KNOWLEDGE | 50.82569885 | 21 |
| INSIGHTS | 59.08026505 | 10 | PRECIOUS | 49.73204803 | 10 |
| HEARTFELT | 58.89132309 | 7 | INSIGHTS | 49.0126152 | 8 |
| FEEDBACK | 56.21112061 | 11 | PROOFREADING | 48.86028671 | 4 |
| SHARING | 52.1133728 | 13 | EXPERTISE | 48.12690735 | 11 |
| GRACIOUSLY | 51.12567902 | 6 | SINCERELY | 43.09775925 | 8 |
| WONDERFUL | 49.13499069 | 15 | UNDERSTANDING | 43.0551033 | 16 |
| UNWAVERING | 48.02345657 | 5 | UNCONDITIONAL | 42.77565002 | 6 |
| CONSTRUCTIVE | 47.44129944 | 9 | CARE | 38.07379532 | 23 |
| GREATLY | 47.06027985 | 13 | OPPORTUNITY | 36.8275032 | 15 |

| | | | | | |
|---|---|---|---|---|---|
| KNOWLEDGE | 46.08368301 | 23 | DEEPLY | 35.86294556 | 10 |
| GENEROUS | 43.91822433 | 11 | EDITING | 33.46864319 | 6 |
| SUPPORTIVE | 43.52952576 | 8 | WONDERFUL | 31.43604469 | 10 |
| DISCUSSIONS | 42.98007202 | 12 | SUPPORTS | 30.26088524 | 7 |
| PATIENTLY | 42.39264679 | 7 | SHARING | 29.78320694 | 8 |
| THOUGHTFUL | 39.86115265 | 7 | ENCOURAGING | 28.92959976 | 8 |
| WISDOM | 39.50578308 | 9 | STEADFAST | 28.61402512 | 3 |
| ENCOURAGING | 39.46471405 | 11 | CHALLENGING | 27.90635681 | 6 |
| TEACHING | 38.33738708 | 17 | HELPING | 27.67040825 | 9 |
| DATA | 38.21007156 | 26 | DISCUSSIONS | 27.58444023 | 8 |
| KINDNESS | 38.16832733 | 7 | TREMENDOUSLY | 26.46580887 | 4 |
| SUPPORTING | 37.56524658 | 11 | SUPPORTIVE | 25.89236832 | 5 |
| ADVICES | 37.44016266 | 3 | EXPERIENCES | 25.84810257 | 8 |
| PRECIOUS | 37.18175125 | 9 | INSPIRING | 23.98058319 | 4 |
| INSPIRING | 36.7943573 | 6 | | | |
| CONSTANT | 36.66481781 | 13 | | | |
| FELLOWSHIP | 36.43498993 | 7 | | | |
| EXPERTISE | 35.64498901 | 10 | | | |
| EXPERIENCES | 35.23467255 | 11 | | | |
| SCHOLARSHIP | 34.53067017 | 7 | | | |
| HUMOR | 33.81703949 | 3 | | | |
| PERSEVERE | 33.61241913 | 4 | | | |
| ENCOURAGEMENTS | 33.44131851 | 3 | | | |
| POSSIBLE | 32.55728149 | 30 | | | |
| GENEROSITY | 32.44838715 | 6 | | | |
| FOREMOST | 32.25347519 | 6 | | | |
| LOVING | 32.2256012 | 8 | | | |
| COUNTLESS | 32.00497437 | 6 | | | |
| INTERVIEWS | 31.73026848 | 9 | | | |
| SUPPORTS | 31.54142761 | 8 | | | |
| WILLINGNESS | 30.70469666 | 7 | | | |
| PERSPECTIVES | 30.2885685 | 6 | | | |
| CHALLENGES | 29.88908958 | 7 | | | |
| GREAT | 28.66644669 | 35 | | | |
| INTELLECTUAL | 28.12630463 | 9 | | | |
| CONSTANTLY | 27.94377899 | 9 | | | |
| SCHOLARLY | 27.67696762 | 5 | | | |
| BLESSINGS | 27.2507515 | 4 | | | |
| HELPING | 26.62705612 | 10 | | | |
| PRICELESS | 26.5873909 | 4 | | | |
| ENTIRE | 24.90049171 | 10 | | | |
| TREMENDOUS | 24.07941246 | 7 | | | |
| REWARDING | 23.96828461 | 5 | | | |

**Note**: Keywords are ranked from the highest keyness to the lowest.

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# What do "They" Mean by That?
# The (Hidden) Role of Language in a Merger

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**Abstract**

The need for a common language between multilingual merging companies is clear but the problems of understanding between people in mergers, where they use the same language, is less well known. Two companies with the same activities and speaking the same language may not necessarily use the same expressions, meanings, and practices causing confusion that translates into costs for the company. This article focuses on monolingual mergers, when communication turns out to be less self-evident than may be imagined. Through the pragmaterminological approach, this paper proposes human resources management and communication management a way to consider the companies' linguistic material for the success of a merger.

## 1 Introduction

When people join a company they need to have to access the company's linguistic universe. It is quite common not to understand expressions used by older staff members. To enable newcomers to understand their new environment, companies often use glossaries with definitions of expressions of many kinds. These expressions are most important for the life of the group because without them not only communication is not efficient but also the integration to the group (socialisation) is not satisfactory. In a merger the integration process is a reciprocal one since companies do not necessarily organise their reality in the same way linguistically. For example the designations of products or services may not be the same and staff members need to learn those in use by the *other* company as if they were joining a new one.

In a multilingual merger it is natural to look for a common language, but even in a monolingual one it is necessary to be aware of the different expressions that companies use. Like for multinational management (Maschan et al., 1997), for the success of a merger, language appears to be a major factor since people need to understand and integrate expressions that should form a common ground in the new entity. In monolingual mergers,

languages seem to be taken for granted because everyone speaks the same one. Nevertheless among staff of each merging company one question is frequent: 'what do *they* mean by *that*?'

It is not only a matter of words or acronyms, but more precisely of terms that create the network of expressions that are particular to one firm. The linguistic individuality of a company can be considered a social dialect or sociolect: company-speak (de Vecchi, 1999) which is characterized by the terms it uses. In a merger two company-speaks combine. The paper makes path from topics about mergers in connexion with language matters and the specific problem of data gathering. Then it explores the shift from words to terms and the fields where they are applicable leading on to the last section where a pragmaterminological approach is proposed.

## 2 Language and mergers

Management, language and mergers have been studied in many contexts with differing aims in view. Among them, the place of language in multinational management (Marschan, Welch & Welch, 1997); cultural factors in international mergers (Majidi, 2007); the introduction of a common language in cross-border mergers (Piekkari et al., 2005), communication failures (Louhiala-Salminen et al., 2005), intercultural discourse (Clyne, 1994); distance in mergers (Lehto, 2006); multicultural aspects (Trompenaars, 1993); culture and organisations (Hofstede, 1994); acculturation (Nahavandi & Malekzadeh, 1988); conflicts in organisational cultures (Weber & Camerer, 2003); case studies (Véry, 2002). The issues of language, however, in connection with mergers and acquisitions have seldom been broached, except in those cases where different languages are spoken in the companies that merge, a common occurrence in transnational mergers (see in particular Vaara et al., 2005). The main reason for introducing a common language is to facilitate communication (Piekkari et al., 2005). The way language organises conceptual systems is perhaps even more important, embodied essentially in the specific words used.

The fact that merging companies use the same language does not mean that everything real or not (including conceptual categories and procedures) has the same name. A merger is the gathering of two different groups that do not necessarily use the same expressions for the same purposes. The names of products or services are good examples because a customer needs to "see" the differences between companies. In the case of a merger when two communities become a single one, people are confronted with expressions whose meaning is not obvious, and misunderstandings may occur. The situation is seldom mentioned except when explicit cases are reported (Véry, 2002; de Vecchi, 2003). In the context of a merger it is not easy for everyone to openly state: *I do not understand what they say*.

In 1990 Air France took control of UTA (Union des Transports Aériens) and the staff was merged in 1992 (Autier et al., 2001). In this merger observed by de Vecchi (2003), staff frequently asked: *what does 'this' mean?* or *what do 'they' mean by that?* The question was raised not only because different expressions were used but because the ways of "thinking" the activity was different, and the consequence that the same objects could have different names. The observation showed that what was not understood was in fact the terms used by each company. In other words, the expressions that encapsulate what people have in their minds when they use them at work. In a merger it is not only the language as a system that has to be observed but the way each company specializes it to express its own reality.

When a term is used, it is important to know what it refers to in order to situate it in a cultural, sociolinguistic or terminological universe. Those all-too-frequently used acronyms are also good examples of this situation and thereby become involved in communication conflicts, giving rise to inefficiency. Moreover, according to the position of a given individual, losing or keeping power (Vaara et al., 2005) can be the result of understanding and controlling the company's terms. In the case of a merger, it is important to manage the linguistic material of the company in as much as the referents of both companies are not necessarily the same and the practices induced from these may differ as well. It is up to the communication manager to facilitate the understanding of terms that the new company, resulting from the merger, use to communicate. Terms are not isolated from the group that uses them and staff members need to know and understand not only terms but also the links they create. Companies are places where, for each group, specific knowledge is applied by specialized staff.

## 3 The problem of language observation

Gathering and observing data in a merger is no easy task: staff and companies are so involved in the problems brought on by the merger (Feldman & Spratt, 2000) that, in such times of stress, issues of language tend to be pushed aside. But other reasons also contribute. The first is the situation of staff and the companies themselves: confidentiality is all-important. A second reason concerns the language awareness of the speakers themselves. It is well known that speakers are not necessarily aware of the way they speak, and when they sense they are being observed, they pay greater attention to the way they speak. This is the paradox of the observer, as Labov describes it (Labov, 1986). Awareness of language issues occurs when a misunderstanding gives rise to an explanation: *What does this mean - in your firm*? A third reason is the position of the observer gathering the data, and who may be regarded with suspicion by both employees and management. Staff members know that the words or expressions they use contain important information and that silence may be an asset. It can be strategically advantageous to withhold information and when there is a merger, the situation becomes more critical. Consultancies in charge of overseeing mergers and acquisitions could be a source of information, but they do not generally communicate on this subject for reasons of confidentiality, and also because they do not know how to (Cerruti-Bozzola and David, 2007). Piekkari et al. (2005) use invented names in their research; de Vecchi (1999) omits any reference to the company under study and in the example of the two cosmetics firms below, the informer, frightened of losing his job, declined to mention any mention of consultancy or company names (de Vecchi, 2004). Cross (2001) disguises figures of assets and revenues "to protect the company's identity" and uses a pseudonym to place the headquarters of the company observed.

The best way to observe how language is used in the case of mergers and acquisitions is to bring into play an observer who is at the same time a participant. This person will need to be trained for the task and at the same time feel legitimate and involved in the issues of understanding, action and culture. This is an uncommon situation (Piekkari et al. 2005; de Vecchi, 2003). It was in this sort of situation that the linguistic markers described below in the case of the merger of Air France and UTA in 1992 were obtained. The linguist was on the staff of one of the companies and thus had the legitimacy of belonging to the organisation as well as having the theoretical tools required of the observer which allowed a better understanding of the linguistic material of the merger.

**4 From words to terms**

Brand or product names are data that are easy to consider as belonging to the linguistic universe of a company. For example, American Airlines and British Airways have a business class, but for air transport, *Club World* is specific to British Airways. Employees – and customers- have to be able to distinguish companies, products and services. "Club" and "world" are usual English words but together they designate something specific to this particular company. Other words belong to the jargon of the professions, and are used by different companies, but sometimes unexpected expressions are very characteristic of one firm in particular. Paper napkins are called *ouatose* (cellulose) by Air France. The verb *surclasser* (to upgrade) has a specific form in the same company: *repinver* (from *report involontaire*). For the same transporter, small plastic bags containing sugar, a napkin, and a plastic spoon is called a *complexe*, but *cristalito* in Spanish in Aerolineas Argentinas, and sometimes have no name in other airlines. The mere mention of them identifies the speaker. They could be anecdotic if it were not that they are objects used every day and included in a long series of actions done by different communities inside the company (from purchaser to user). Acronyms are very frequent, and firms often make glossaries for staff, and not only for insiders but also for the general public. Particular nouns (common and proper), noun phrases, acronyms, verbs and adjectives designating the products, objects, departments, needs, and practices of the community create a network that has to be learned by their new members. Considering them as simple words or groups of words hides their real value in the network: a terminological value. In this connection, it is useful to look at one example in detail.

'Plan' is a word which anyone who knows English can easily identify, but in a company the meaning of 'plan' may go much further. What can we read into the *Novartis Equity Plan 'Select'* or *Bonus Plan,* using standard English only? What kind of 'plan' is involved? How do these 'plans' correspond to similar schemes in another pharmaceutical company, such as Sanofi-Aventis? How does *Ford Flexible Work Program* as used at the Ford Motor Company in its career 'plan' correspond to General Motors' practice, for that matter, what help could one find relying only on one's knowledge of English? The answers to all these questions will be unsatisfactory, and the examples could be multiplied. For example, when 'plan' is part of *Equity plan 'Select'* it contains a conceptual content which is limited to Novartis as a 'career plan' and it is the same for Ford's *Flexible Work Program*. In both cases they are terms that belong to each company because they express their way these plans or programs are conceptualized.

Many of these examples are legally protected, such as brand names (®, ™), and are thus not just part of the company's linguistic universe but also their property. In addition to the desire each company may have to distinguish their 'plans' or 'programs', each company constructs a network of terms that corresponds to its needs, and which are not interchangeable. In other words, we are firmly placed in discourse, not language, but the use comes to establish a local norm.

If Novartis merged with another laboratory and the new institution needed a 'plan' in the Human Resources sense, there is no reason why *Equity Plan 'Select'* or *Bonus Plan* would be kept as such. If they were, the staff of the *other* laboratory would need to understand what Novartis means by them. Even if they disappeared, terms would become part of Novartis history (and their linguistic heritage). At the same time, new terms may also be created. Such a situation takes us to a second case: that of conceptualization.

The situation is not far removed from that exposed by Schein: "Members of a founding group coming together to create a new organization need to learn about each other's semantic space (even if they start with a common basic language, such as English) in order to determine what they mean by such abstractions as "a good product", of "high quality," produced at "low cost," to get into the "market" "as rapid as possible". (2004:112) In our example, what is a "plan"? In a merger, consensus in the use of these expressions is important at work because people need to share a new semantic space. Both companies may think of a 'plan' in different ways even if for Human Resources (HR) as a discipline it is the same concept. What matters here is the fact that names given by each merging company are the result of a conceptual construct based on that of HR, but shaped by the background of each company. In a merger the HR concept 'plan' will be revised in a new consensual way and renamed (if necessary) or adapted. The conceptual and the linguistic level may then vary because the community makes them vary but not the discipline.

### 4.1 From fields of knowledge to real activity in terminology

Companies can be considered as a resources portfolio based on what they know (Tarondeau, 1998), for this reason they occupy a place on a market. Many types of knowledge converge in a company's activities (strategy, marketing, HR, logistics, production, etc.). Basic knowledge about marketing or production is not different from one company to another, but the way they do it is. This difference leads to different expressions, actions, and ways of doing them. As a consequence it is not only terms that may differ: concepts can also be different. A company "acts" because it "thinks" in a specific way, the customer must "see" this difference and the staff must "live" this mindset. In other words, all these differences lead to different corporate cultures, and language is very much part of them.

Nevertheless there is a "distance" between a field of knowledge as considered by terminology and the real activity of a company where that knowledge is applied (cf. core competencies Prahalad & Hamel, 1990). This distance can be easily exemplified through the example of aviation. If aviation is a field of knowledge, commercial, military and private aviation are sub-fields with their specific term networks; we consider them to be fields of activity. If Air France and UTA were both in the same field of knowledge (aviation) and even the same field of activity (commercial aviation), how is it possible that they had terminological misunderstandings? The answer comes from the fact that their company-speaks, the terms that characterize a company, are situated in another type of field: the field of operations. That is to say the way a company, and not an activity, specializes language for its own needs in actual practice. The three fields are therefore interlocked as shown in figure 1.
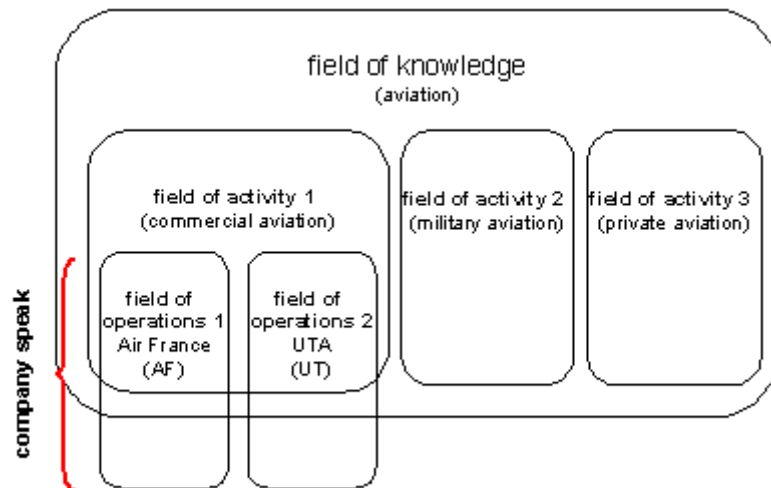
**Figure 1**. Fields of knowledge, activity and operations

Figure 1 also shows that part of the field of operations is outside the field of activity. The reason is that this part has to do with other fields of knowledge and activity that companies are involved in (finance, marketing, HR, supply chain, etc.). A company is a place where many tasks are carried out and for each one terminological conflicts may also appear. Two examples of conceptual and terminological contrasts are illustrated below.

**4.2 When expressions encapsulate different conceptualizations**
In 2002 two small French cosmetics firms (de Vecchi, 2004) merged and the communication director of the new entity reported that the staff was having trouble in 'understanding' the following text:

*Les objectifs fixés permettent de réduire les coûts de la manière souhaitée. Cette économie vise des nouveaux investissements qui permettront d'augmenter la productivité et l'offre. Le client aura plus de choix. Le marketing se focalisera sur les nouveaux produits Europe.*

[The new objectives will reduce costs as desired. These savings target new investments that will increase productivity and offer. Customers will have more choice. Marketing will focus on the new Europe products. (Translated by de Vecchi, 2004)]

In such an apparently simple and short text the following expressions were not interpreted in the same way: 'new objectives', 'reduce costs' and 'Europe products'. Before the merger and in its own context each company understood these expressions in its own way. After the merger, when staff from the two firms began working together, misunderstandings started. The table below shows the differences in interpretation.

| Expression | Meaning in company A | Meaning in company B |
|---|---|---|
| *new objectives* | to get rid of specific merchandise | to reach 15% market share |
| *reduce costs* | renting costs | distribution costs |
| *Europe products* | a line of products | a design of bottles |

**Table 1**. 'Problems of understanding'

These meanings could not be found in any usual dictionary by putting together 'new' and 'objectives', only those actually involved in each company can make the appropriate

interpretation of 'new objectives'. It is therefore important to identify what has been *conceptualized* by people or an institution at large by means of what is *expressed*. In this case, only 'Europe products' was a term for one of the companies, but conceptualizations appeared in the text as semantic forms (Rastier, 1996). They can be considered as terms if we accept that they encapsulate conceptualizations from each company at a particular time of their history, and not static concepts used in management disciplines. Neither conceptualizations nor terms did match and the solution in this case was to put managers around the table and to explain what these expressions meant for *them*, and what they had in mind when using those expressions.

### 4.3 When terms do not match

For the Air France and UTA merger the observations focused on the on-board service that was not the same for each airline. Even in the same aircraft cabin crews of each airline did not use the same material or procedures, and terminology reflected the situation. Staff of one company may have used a term familiar to *them*, but not necessarily so for the other company involved in the merger. In sociolinguistics variables are elements that are known in advance to have different realizations (Hudson, 1980), for example: two different pronunciations of a same word. In our case it can be the designation an object used by each airline. In mergers however, variables may not be systematically known in advance. Interpretation problems or wrong actions will show them up immediately and are indicated by markers which are typically used. As mentioned before, it is even possible to tell which company a speaker originally comes from, just by noting the terms used. From then on, speakers know that there is an alternative to the way they express what they conceive, i.e. an alternative to their own term. Furthermore, the actual forms of variables may also be used as a sort of index of the extent to which an individual is integrated into the company which produced them, according to whether they are used or not after the merger. These markers appear in both spoken exchanges and written texts – including typographically – with fairly similar formulations, as is shown in table 2 (adapted from de Vecchi, 2003).

| Spoken markers | Written markers |
|---|---|
| *for us, it's an X* | *from now on X* |
| *in our firm, it's a X* | *formerly X* |
| *they call it X* | *which becomes X* |
| *here we say X* | *in the place of X* |
| etc. | etc. |

**Table 2**. Linguistic markers

The table 3 shows examples of these variables from the merger of Air France-UTA (de Vecchi, 2003).

| | terminological variable | term as used by AF | term s used by UT |
|---|---|---|---|
| • | on-board food cart | *comodi, voiture, VRA* | *trolley* |
| • | means of transport for the crew from the airport to the hotel | *navette* | *navette* |
| • | period during which a crew member can be called on to replace another crew member | *réserve* | *astreinte* |
| • | self-service bar in a precise place of the plane | *mini-bar* | *RV5* |

**Table 3**: Variables from the merger of Air France (AF) – UTA (UT)

When two companies merge, the different variables may come in conflict for a time, and then a process of harmonization will begin to prevent the conflict from spreading. In the first instance this takes the form of 'informal standardization', also known as *normaison* (Gaudin, 2003), whereby a spontaneous solution is found by those actually involved in the communication process. Then, when the staffs realize the actual significance of the term, it will undergo a process of regulation and then of 'internal' standardization proper, in which experts should take part. Even if terminology involves standardisation as agreement between specialists of a field of knowledge or in technology to regulate terms in order to facilitate communication (L'Homme, 2006), it is also possible to regulate terms in merging companies in the same way. At their level staff members are specialists that need to agree on what they think, and the way they designate real or abstract objects they use. In the case of Air France and UTA and for the sector observed  most of the terms that remained after the merger were those from Air France, not by any specific decision as far as informers reported (de Vecchi, 1999), but quite possibly because the number of Air France staff using these expressions was much larger, and because of  the widespread use in internal documents.

## 5. Towards the pragmaterminological approach
### 5.1 Managing what terms refer to
Communication flows, both spoken and written, are most important in a company today and comprise terms of various forms, whose meaning is often impenetrable to anyone who is not directly concerned with their use. Added to this, many expressions have more than one meaning, which can lead to erroneous interpretations, so that it is necessary 1) to explain what is being referred to, that is to refer to the non-linguistic world, be it to a material object or an abstract one and 2) to explain the meaning. The place of the referent, which is intimately connected to the issues of sign and meaning (Rey, 1973; Eco, 1988; Klinkenberg, 1996), features in Ogden and Richards' triangle (Ogden & Richards, 1923), see figure 2. Even if from a purely semantic analysis point of view, this model may be discussed in different perspectives: objectivist, subjectivist and intersubjectivist (Kravchenko, 2006), for the working, communication and understanding needs of staff members in a merger this model is most useful because it allows people to immediately understand their situation. It has to be noted that in each company and for internal corporate cultural reasons meanings exist before the merger. They may be new for the *other* company, and it is this dynamic that the Ogden and Richards' triangle in its first version helps.
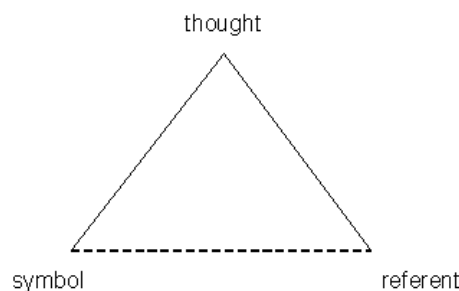
**Figure 2**. The Ogden and Richards' Triangle

The issue of the referent becomes apparent when the players do not understand the expressions used. For example: *comodi, voiture, VRA* for Air France were unknown terms (symbols) for UTA crews, used to their form: *trolley*. The referent and thought corresponded but not the term: *What do they mean by comodi?*

## 5.2 The pragmaterminological approach

In the case of companies or fields of operations the pragmaterminological approach (de Vecchi, 2007) proposes that a term can only be properly used and analysed if four conditions or factors determining the value it takes in the community that produced it are taken into account: i.e. the linguistic-cognitive, social, time and pragmatic factors. They must be treated in a staff member perspective to situate the user in his or her real working situation.

### 5.2.1 The linguistic-cognitive factor

This is the traditional terminology treatment that analyzes a term linguistically, the concept conveyed by the term from a language viewpoint: giving a definition, explaining how it is used in context, stating the terms linked to it and that create a network in that field of knowledge or activity and supplying adequate translations and equivalents appropriate for the field. In this traditional approach 'plan' can be understood differently according to the field in which the term is applied. 'Plan' is a term of management as a field of knowledge; of HR as a field of activity. But only in Novartis as a field of operations does *Equity Plan 'Select'* take its particular meaning.

*ATLAS food on-board cart* can be considered a term of aviation as a field of knowledge; of passengers' airlines as a field of activity; but only in Air France as a field of operations does it become specifically a *VRA* where it will be noted that the acronym refers to: *voiture repas Atlas*. (At the same time the term used by UTA was *trolley*[1]). The term is part of the company-speak and is linked to a specific field of operations (company) where it makes sense and has a specific meaning. Staff can then integrate it linguistically and cognitively. At the very least, an appropriate definition of the term is necessary to characterize the concept, if not, remaining misunderstandings may bring about inefficiencies or loss of time, with all the ensuing financial consequences.

### 5.2.2 The social factor

If we accept that a company is a group of communities, two aspects must be taken in account. On one hand, these communities share the terms used by the whole company, for example the name of a product or service which is easily identified by everyone. On the other hand, staff working on the development of one particular new product or service will share terms within the narrower sphere of the project itself. Terms may thus be specific to a particular product or service. This is the usual case for a project when code names are used whether it is for reasons of confidentiality or just because a definitive name has not yet been given. For instance, Airbus Industries used the code name A3XX before naming this family of airliners A380. These situations create divisions inside the company between those who know and understand and those who do not. Obviously not everybody needs to know everything in the same way, and each community is a specialist at its own level having a *savoir décalé* (Roqueplo, 1990: 75), but a minimum of understanding is required at the global level if the company is to work effectively. Taking into account the social factor of a term used in company-speak can thus be considered a recognition of the community where the term is used, beyond the linguistic-cognitive factor.

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[1] Air France used the Atlas Group Airlines standard and UTA the KSSU standard (KSSU stands for KLM, Swissair, Sabena and UTA) (Autier et al., 2001).

For Air France's *voiture repas Atlas*, the communities concerned would be: product management, catering, crews, logistics, providers, and maintenance (and the list is certainly not exhaustive), but not necessarily marketing, HR or administration communities. It is important to foresee the possibility of giving access to a concept where it may be necessary. In a company, terms are relevant and are used for exchanges within work communities where they are useful. If this social aspect of a term is ignored, a meaning corresponding to the use by another community may be wrongly attached. Acronyms are frequently involved in this case. Context may in some cases solve the situation, but people are not always aware that in the same company the same expression may convey other meanings.

### 5.2.3 The time factor

Terms can be dated. For any business, they appear at some point of time in its history. Technological, commercial, social or organizational changes are all reflected in the diachrony of terms. They have a precise place in their history, a place which they occupy and which becomes a semantic feature of the term. A period of time is characterized by the use of particular linguistic forms. Before the euro started being used in Europe as currency on January 1st, 2002, the French cellular phone company Bouygues Télécom offered a flat rate (*forfait*) of 240 French francs for a monthly use of 240 minutes named *forfait 240*. When the euro came into circulation, this rate became the "4 hours flat rate" (*forfait 4 heures*) because the amount in French francs and minutes no longer matched. The term lost its purpose (the rate became 36.58 euros, at the rate of 6.55657 FF for 1 €) and the name of the rate evolved. Today the corresponding term does not exist anymore and the closest one could find would be *eden forfait classique 2 heures* (standard 2 hours rate).

In a merger, these time features are added to the issue of managing terms. The new entity inherits a double history to which we may add a terminology of restricted usage for a transition period, while the standardization process is being carried out for the new element. It is unlikely and even hardly desirable that the new entity should use 'obsolete' expressions, from linguistic, cognitive and social viewpoints, since the referent no longer corresponds to the current situation, but rather to a past episode of the history of the merger or of the companies which preceded it. This dynamic is close to the life cycle of a term described by Ahmad and Collingham (1995), but for this author the cycle refers to "specialised areas" that are the field of knowledge (see above 4.1) and describe 5 parts in the cycle. As we have seen, the dynamic *inside* a company is different due often to the commercial innovation. Coinage (inception and birth), currency (growth) and obsolescence (death), 3 out of 5 parts of the cycle, do not always give time to translators or terminologists for verification and validation (maturity) of the standardisation seen from outside the field of operations. There is no reason to standardize outside a mobile telephone company the name of a commercial concept like '*forfait 4 heures*', since only staff members and customers need to understand it – but they need this knowledge as soon as possible. For this reason, during the period of transition (see Fig. 3) what is most important in the temporality of a term is valid / invalid use of a term in respect to the period considered. The life cycle of a term inside a field of knowledge and inside a field of operations does not correspond to the same rational.
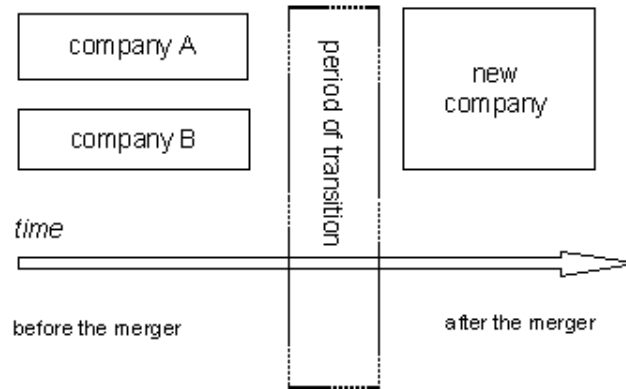
Figure 3 shows the situation in schematic form.



**Figure 3**. The time factor

The period during which a term is valid counts. The point is that in a merger each company brings its own terminological history, so it is necessary to state when a term is valid since terms may coexist as a daily referent for staff of the other company. An example of this terminological history appears in the fares of railway company Thalys, the high speed train linking France, Belgium, the Netherlands and Germany. In 2002, it offered seven types of fare: *Mini, Tourist, Weekend, Child, Youth, Senior* and *Business*. In 2009 they became: *HI-LIFE, OptiWay, Smoove, YOUTH, Senior, Kid* and *Kid&Co,* each with its own logo. In 2012 they are *Flex, Semi-Flex*, and *No-Flex*. Senior staff know the transformation of terms but those just joining Thalys may not know what the *Mini* or the *Smoove* was. Seniority appears clearly through those who know and those who do not (de Vecchi, 1999).

**5.2.4 The pragmatic factor**
For a company, two facets, which are closely linked, are relevant in this connection. The first is the factor of action, that is to say concrete action, which must be taken from the collocations of a term (de Vecchi, 2007). The second is the factor of implicit or explicit cultural practices, which are nevertheless describable: *we have always done it this way… In our firm, things just don't happen like that*. These situations hold for company-speak in any field of operations, but they are amplified in the case of a merger. If staff members need to know a term, they need to know also what "to do" with its referent. Practises are intimately linked to the term itself.

For a given term, an action is to be carried out in a company A but not in company B and the cultural usages may be different. For example, a *report* can be 'forwarded' (type of action) in company A to be 'analyzed' by management (cultural usage) or 'archived' (type of action) in company B, since in company B the whole process of analysis has already been completed (cultural usage). Behaviour is perhaps the best way to explore a company culture (Thévenet, 1993). The extralinguistic facets are very much dependent on the will of the people involved. If the facet of the action can be formulated using the verbs found in the proximity of the term under study, the extralinguistic facet is much less so and depends on the will of the people to

state behaviours and practices. The need for standardization once more makes itself felt: after a merger, there can no longer be different actions or different practices carried out by players working together in relation to the same terms and their implications.

It is not enough to simply indentify terms over the different phases of the merger process, it is also necessary to keep the various aspects correctly updated, as has already been suggested. If this identification and treatment of terms has been prepared beforehand, it could contribute to improving communications in that very short and crucial period immediately following a merger (Feldman & Spratt, 2000; Véry, 2002). This treatment would also help to integrate staff better, and thus be of interest to human resources.

As an example, a term such as Air France's *VRA* after the merger, see above, could be analyzed using pragmaterminology as shown in table 4:

---

Term: **VRA**
Linguistic factor:
    Forms: acronym for 'voiture repas ATLAS'
    Translations: *cart*
    Equivalents: *trolley*
Cognitive factor:
    Definition: on-board food cart using ATLAS standards
    Connected terms: *voiture boisson atlas, mini-bar…*
    Remark: corresponds to the former UTA usage: trolley.
Social factor: cabin crew, catering, service methods department, constructor, outsourcing
    company…
Time factor:
    ATLAS standard, by Atlas Group, valid since 1970 …
    Remark: UTA's former standard (KSSU) has been abandoned.
Pragmatics factor:
    - actions: fill inside and put objects on the VRA following the company's service
    method, do not overload, follow constructor's instructions…
    - practices: follow AF on-board service methods, former UTA's presentation of the
    VRA are not valid…

---

**Table 4**. Example of analysis of a term

Even if data need further technological development that need not be detailed here, it is clear that the term in this case *VRA* conveys much more information than the simple expansion of the acronym or its definition. A term can conceal much information that staff and at to some extent other stakeholders may need to know when necessary. For instance, in a merger, the pragmatic factor may differ while others remain stable, but the actions to be carried out and the way to execute them may be very different from one company to the other and this difference must be stated somewhere for each merging company to have a reference of how the *others* do things.

## 6. Conclusion

In a monolingual merger, language as a system is seldom perceived as an issue to be explored. It is an added value that the pragmaterminological approach brings to language for HR and communication in considering the linguistic material this situation no matter what language is spoken. The multilingual situation appears to be a second step.

Further linguistic and terminological research is necessary in merging companies, but it cannot be done without a model that can explain the behaviour and implications of terms. Companies shape the languages they use and the result is often hastily designated *jargon*, which is not an appropriate name for the situation, since there is a pejorative connotation. The pragmaterminological approach, specific to organisations, could provide a tool that answers not only the question *what do 'they' mean by that?* but also '*who' says that? 'When' do they say that?* And *what do they 'do' with that?* These are questions that are part of the integration and in the case of a merger will be asked by two companies becoming a single one.

Gathering all these factors may also help to answer a subsidiary question: *what do 'they' call what we call 'x'?* Which is, besides the *what do they mean by that?*-question, also an understanding strategy because people need to know which term corresponds to their reality. It is a whole process that includes not only term users but also a linguistically conscious manager and an appropriate technology.

Language can be seen as an interface between the tangible and the intangible. By nature it reflects the needs of people in a company to name things, and it crystallizes cultural marks for its users. They in turn stamp it with a period of the history of their company both socially and technologically. In the case of a merger-acquisition, these aspects all come together in a mutual integration of terms actually used by both companies: some will survive, some will disappear and others will appear.

It is true that any culture, even a corporate culture, recognizes itself in what it produces (Cuche, 1996) whether they are artefacts in the line of thought of Schein (2004) or linguistic signs following the Sapir-Whorf hypothesis. Our proposal can embrace a wide spectrum of a company's culture through language, thought of essentially as a form of representation of explicit company knowledge and practices. Last but not least and beyond the creation of a database resulting from the approach, it is necessary to have in HR and in a communication department a person who understands the value language has in a company and the place that a company speak has in it. This is what a linguist sensitive to business life or a manager who considers language as part of his business could do as part of the success of a merger.

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