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Language for Special Purposes
Professional Communication
Knowledge Management
Cognition

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Editorial

Starting in 2016, the LSP Journal will be oriented towards International Business Communication

This issue will be the last "traditional" one. Our journal is about to modernize its scope, tuning it to the actual research and teaching environment which houses it, i.e. the Department of International Business Communication (IBC) at the Copenhagen Business School. Our legacy with a focus on languages for special purposes will be kept – and so will our community of authors and readers we hope - but the general scope will be oriented towards the interlingual and intercultural challenges posed by communication in a globalized business and organizational context.

The mission statement of the IBC is as follows:

Through dialogue with the business community and through the initiative Humanities in Business, IBC contributes to the development of humanities-based research and teaching which equip students with business-relevant competences.
Department of International Business Communication (IBC) is dedicated to research and education within the professional communication of businesses and the language, culture and communication technology challenges faced by international private and public businesses and organisations.

IBC collaborates with organizations, businesses and partners in education with a view to identifying and shedding light on current challenges through the department's research. Moreover, IBC conducts research in education and didactics in collaboration with national institutions of research and education.

During 2015, we shall set up a new editorial board and work on defining the renewed scope. At the same time, we shall enlarge the group of reviewers in accordance with the redefined scope, and probably in the late autumn of 2015, we shall publish the scope of the reborn journal as a special issue and present the new editorial team. At that time, we shall make an official call for papers.

No other issues will thus be published in 2015. This means that submissions made from now on will not be published until 2016.

Henrik Selsøe Sørensen
Editor in Chief

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The Construction of conceptual meaning in print footwear advertisements

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Abstract

The aim of this study is to shed some light on how print footwear ads are created and interpreted from a cognitive linguistic perspective. With this purpose in mind we will analyse the various ways in which metaphor, metonymy and image schemas together with color are exploited by advertisers in this type of products to persuade the audience and influence their choices. Hence, a cognitive linguistic approach has been used to analyze nine advertisements that were released between the year 2006 and 2013 in an online corpus, "Adsoftheworld", from its footwear section. The analysis is structured according to the theory of cognitive linguistics outlined over the last decades (amongst others see, for instance, Johnson, 1987; Lakoff, 1987 & 1990; Lakoff & Johnson, 1980 & 1999; Forceville, 1996, 2006, 2009 & 2012; Ruiz de Mendoza, 2000; Ungerer, 2000).

1 Introduction

Over the last few years, there has been a growing interest in the analysis of advertisements from a cognitive linguistic point of view (Forceville, 2006, 2009, 2012; Ungerer, 2000; Diez Velasco, 2001; Cortés de los Rios, 2010, among others). Metaphor, metonymy and image schemas play a crucial role in the interpretation and understanding of advertisements; hence, advertisers manipulate these mechanisms to attract and persuade the consumer to buy a specific product. Consequently, it is argued that these cognitive tools together with color can be used by advertisers to communicate persuasively and reinforce the most significant aspects of a footwear product.

This study will proceed by analyzing a corpus of nine print footwear advertisements in English. More specifically, we will follow the Lakoffian theory of metaphor, metonymy and image schemas (Lakoff & Johnson, 1980, 1999; Lakoff 1987, 1990; Johnson, 1987; Lakoff & Turner, 1989, etc.). Our analysis will also benefit from Forceville's pictorial metaphor theory and multimodality (Forceville, 1996, 2006, 2009 & 2012).

The layout of this paper is as follows: The first section is devoted to the basic preliminaries of metaphor, metonymy, image schema and color. The second section will encompass the corpus under analysis and the methodology. The third section will be aimed at the analysis of the corpus. Finally, the last section will include results and some conclusions.

2 Basic preliminaries

2.1 Metaphor

Since the mid 1970's there has been a growing interest in metaphor, which has become a central part of linguistic research (for instance, Lakoff & Johnson, 1980, Lakoff, 1987; Lakoff and Turner, 1989). The word "metaphor" was defined as a novel or poetic linguistic expression where one or more words for a concept are used outside of their normal conventional meaning to express a "similar concept" (Lakoff, 2006: 185). However, this traditional view has been challenged by many scholars and nowadays it has been demonstrated that it is central to ordinary natural language.

Barcelona (2011: 53) defines metaphor as "a symmetric mapping of a conceptual domain, the source, onto another domain, the target. Source and target are either in different taxanomic domains and not linked by a pragmatic function, or they are in different functional domains".

On the other hand, following the established "A is B" formula, decades of productive analysis by conceptual metaphor scholars have shown the crucial role of metaphor both in thought and, especially in the last decade, in the use of language for different purposes, emphasizing its pragmatic function (Villacañas & White, 2013).

It is particularly relevant in the field of cognitive semantics the contribution of the study of pictorial metaphor in advertising by Forceville (1996). His study provides a beneficial understanding of how conceptual metaphors can take various realizations. Three general categories of metaphorical realizations can be identified for advertising metaphors: verbal, pictorial and multimodal (Forceville, 1996, 2006), which can accommodate even more specific subtypes: pictorio-verbal, verbo-pictorial, etc. In addition, Forceville (2009) sheds light on novel and creative metaphors rather than conventional ones

His theory offers a very detailed and useful model for the analyses not only of metaphors but also metonymies in ads, and it has been adopted widely by scholars such as Rocamora Abellán, 2004; Koller, 2009; Hidalgo and Kraljevic, 2011; among others.

2.2 Metonymy

Like metaphor, metonymy was also recognized as a conceptual process. However, it has received initially little attention from cognitive linguistics compared to metaphor although it is probably even more basic to language and cognition (Barcelona, 2000: 4). Lakoff and Johnson (1980: 35) define metonymy as "using an entity to refer to another that is related to it". Metonymies have an associative relation, that is to say, an entity is usually used to refer to another entity in the same domain, "a stand for relation". Further on, metonymies are usually

represented by the schema **a** for **b**, where **a** represents the source domain and **b** symbolizes the target meaning of the metonymic operation (Lakoff and Johnson, 1980; Ruiz de Mendoza, 2000).

The crucial difference between metonymy and metaphor as Ruiz de Mendoza (1997: 282) has suggested is the nature of the mapping, whether it is an external or an internal mapping, basically if the mapping occurs within the "domain matrix" or if the mapping happens between two separated domains. Lakoff and Johnson (1980: 30) provided a definition attempting to make a clear cut between metaphor and metonymy:

> Metaphor and metonymy are different kinds of processes. Metaphor is principally a way of conceiving one thing in terms of another, and its primary function is understanding. Metonymy, on the other hand, has primarily a referential function, that is, it allows us to use one entity to stand for another. But metonymy is not merely a referential device. It also serves the function of providing understanding.

Taking this definition into consideration, it is said that there is not only a system of conventional metaphor, but there is also a system of conventional metonymic mappings, which are manifested in language and in the way we think and act. Advertising frequently uses metonymy simply by putting a product in close proximity to something copywriters want to draw attention to.

Goosens, on the other hand, (1995:159) claims that there is no clear-cut between metaphor and metonymy and that they may interact in many ways. Through examining and investigating data, Goosens (1995:174) uncovered two types of interactions between metaphor and metonymy that frequently happen: "One in which the experiential basis for the metaphor is a metonymy, yielding what we call metaphor from metonymy, the other in which the metonymy functioning in the target domain is embedded within a metaphor, i.e. metonymy within metaphor". This leads some linguists, such as Ruiz de Mendoza (2000: 115) to claim that the relation between metaphor and metonymy is a succession, rather than two separated phenomena. Other linguists also support this idea about the possible interactions between metaphor and metonymy (Ungerer, 2000; Uriós-Aparisi, 2009; Hidalgo and Kraljevic, 2011; Villacañas & White, 2013; among others).

2.3 Image schemas

Johnson (1987: xiv, xvi) defines an image schema as follows:

> An image schema is a recurring dynamic pattern of our perceptual interactions and motor programs that gives coherence and structure to our experience…..
> "Experience"…. is it to be understood in a very rich, broad sense as including basic perceptual, motor-program, emotional, historical, social and linguistic dimensions

Image schemas are thought of as experiential because they arise from our embodied experience, for instance as children we put things in and take them out of various kinds of objects, thus we treat these things as containers. Yet, they are unconsciously thought of and unnoticed because image schematic structuring is done automatically (Dodge and Lakoff, 2005: 60). Lakoff and Johnson (1999) call this phenomenon as "cognitive unconscious".

One of the most important things about image schemas is that they underlie all aspects of meaning and cognition and hence they motivate important aspects of how we think, reason, and

imagine, and can therefore play a very important role in persuasion. Nevertheless, in spite of this importance, they have not yet been sufficiently explored. As argued by Gibbs and Colston (2006: 260), "they are a crucial, undervalued dimension of meaning". We will explore how persuasive is the exploitation of image schemas for transmitting meaning in the print footwear advertisements. We believe that image schemas are helpful in attaining the goal of persuading and influencing the target audience.

As human beings are always evaluating what can be good or bad for them, advertisers fall back on these cognitive structures since the positive or negative value of each image schema is also added to the concept or picture. The first element of an image schema is assumed to carry a positive evaluation and the second one negative (Krzeszowski, 1993). However the value can change from one culture to another. Image schemas are highly used by advertisers because of their persuasive nature, that is to say advertisers manipulate image schemas depending on the negative or positive value the image schema represents.

2.4 Color

Another element to be highlighted due to its persuasive value is color. The color system has been a crucial factor in the understanding of embodied language (Feldman, 2006). It induces moods and emotions, influences consumers' perceptions and behavior. The physical attractiveness of the ads is an important component; hence, advertisers tend to spend extra expenditure on color due to its superior attention getting property, namely persuasion. Thus, our perception of colors does affect the way we feel and react to certain ads due to the concepts and sensations that colors convey to the observer. As Lakoff and Johnson (1999) state, colours and colour categories are not "out there" in the world but are interactional. Colour concepts and colour-based inferences are thus structured by our bodies and brains. Categories of cognitive colours are capable of "conveying" sensations or concepts to the person observing them.

What a color symbolizes, what it means, and its association may differ from one culture to another. Aslam (2006: 20) illustrates these differences through various examples, for instance, the color white symbolizes pureness and happiness in Australia and America, while it symbolizes death and mourning in East Asia. Black means stupidity and dullness in India, but it is associated to sorrow and grief in western culture.

3 Corpus and methodology

3.1 Corpus

The corpus used for data analysis is mainly a group of printed adverts of footwear, which were released between the year 2006 and 2013[1]. We looked for any ads that displayed cognitive content. This resulted in around thirty adverts, and the selection was kept open in order to determine later on what type of ads that would prove fertile for a qualitative study. Finally, the selection was narrowed down to nine adverts leaving only those that were more relevant from the linguistic point of view.[2]

Although new media devices have appeared and one of these modern devices is the internet; printed advertising still maintains an essential part of the advertising message as it provides a complete image and a word text in a very limited space/time span.

[1] Due to space constraints we could not include more footwear ads analysis. They majority of these ads were collected from an online website (<http://adsoftheworld.com/>.), more precisely from its footwear section.

[2] These footwear advertisements were used for academic motives.

3.2 Methodology

We will use a cognitive linguistic approach to analyze the persuasive nature of cognitive tools when used in advertising. More specifically, we will examine metaphor, metonymy, and image schemas together with color from cognitive semantics. Furthermore, we will investigate how these elements are used to promote the footwear products. Our analysis will be based on a table showing the cognitive structures (metaphors and metonymies), modality (monomodal or multimodal: pictorio-verbal, verbo-pictorial, (Forceville, 1996, 2006, 2009, 2012)) and image schemas that appear on the advertisements together with color.

For the analysis of image schemas, we will consider Evans and Green´s classification (2006), together with the motion image schema: forward-backward (Turner, 1991):

a. Space: up-down, front-back, left-right, near-far, center-periphery, path, straight-curved, scale.
b. Containment: in-out, full-empty.
c. Multiplicity: part-whole, count-mass.
d. Balance: axis balance, point balance equilibrium.
e. Force: compulsion, blockage, counterforce, diversion, enablement, attraction, resistance.
f. Cycle.
g. Attribute: heavy-light, dark-bright, big-small, warm-cold, strong-weak.

As for color, we preferred to follow the chart provided in Pamela Paul´s Article “Color by numbers” (2002).

4 Analysis of the corpus

Ad no. 1 (MIZUNO)

Figure 1 YOUR BODY IS OUR INSPIRATION: Mizuno Prof Runner I5

Type	
Cognitive structures	**metaphor**: MIZUNO IS A MUSCLE **metonymy**: THE FEET FOR THE WHOLE BODY
Metaphor modality	**multimodal**: pictorio-verbal
Metonymy modality	**multimodal**: pictorio-verbal
Image schemas	**movement/space/attribute**: forward-backward/up-down, front-back, straight-curved /strong-weak, dark-bright.

Table 1 Cognitive analysis of the ad illustrated in the figure 1

The first advertisement portrays the pictorio-verbal metaphor MIZUNO IS A MUSCLE based on the following image schemas: movement (forward-backward), space (up-down, front-back, straight-curved) and attribute (strong-weak, dark-bright). Forward, up, front, straight, strong and dark are positively valued and sanctioned as positive values in our culture. The characteristics of the muscle, excitability, extensibility, contractility, and elasticity are mapped onto Mizuno through this pictorio-verbal metaphor.

We can distinguish a metonymy: THE PART FOR THE WHOLE as in THE FEET FOR THE WHOLE BODY.

Regarding colors, red is predominantly used. The use of this color is significant as it serves to enhance the features of the product, namely dynamicity, passion, and daring. Furthermore, the red color connotes the desire to experience the fullness of living which leads to constant activity.

Ad no. 2 (Saint Vacant)

Figure 2 BETTER THAN HANDMADE

	Type
Cognitive structures	**metaphor:** FEET ARE THE EXPERTS IN SHOE MAKING **metonymy 1:** FEET FOR THE MANUFACTURER **metonymy 2:** THE TOOLS FOR THE CORDWAINER **multimodal:**pictorio-verbal **monomodal:**pictorial **monomodal:**pictorial **attribute/ space:** dark-brigh/ front-back, up-down.
Metaphor modality **Metonymy modalities**	
Image schemas	

Table 2 Cognitive linguistic analysis of the ad illustrated in figure 2

This advert of Saint Vacant contains the pictorio-verbal metaphor FEET ARE THE EXPERTS IN SHOEMAKING based on the image schemas of attribute and space. Dark, front and up are positively valued and sanctioned as positive values in our culture. The advertiser uses the image schema of attribute, more specifically, dark-bright to foreground the process of making the

product. On the other hand, we can observe a case of metaphor from metonymy, in which the metonymy FEET FOR THE MANUFACTURER is the basis for the metaphorical use.

The advertiser´s intention is to inform about the quality of the product, and the dedication this company has for shoemaking as it gives each shoe the appropriate time and attention. The headline BETTER THAN HANDMADE is an incomplete sentence because the comparative form should be between two things; however, by looking at both the pictorial elements and the verbal ones, we can complete the comparison: FEETMADE IS BETTER THAN HANDMADE.

Furthermore, we can depict two types of pictorial metonymies. On the one hand, THE PART FOR THE WHOLE, as in FEET FOR THE MANUFACTURER; on the other hand, OBJECTS USED FOR THE USER, as in THE TOOLS FOR THE CORDWAINER.

As regards color, the brown color of the shoe symbolizes physical comfort, ease and simplicity; moreover, it also represents the natural material used in making the shoe, namely the leather.

Ad no.3 (diesel)

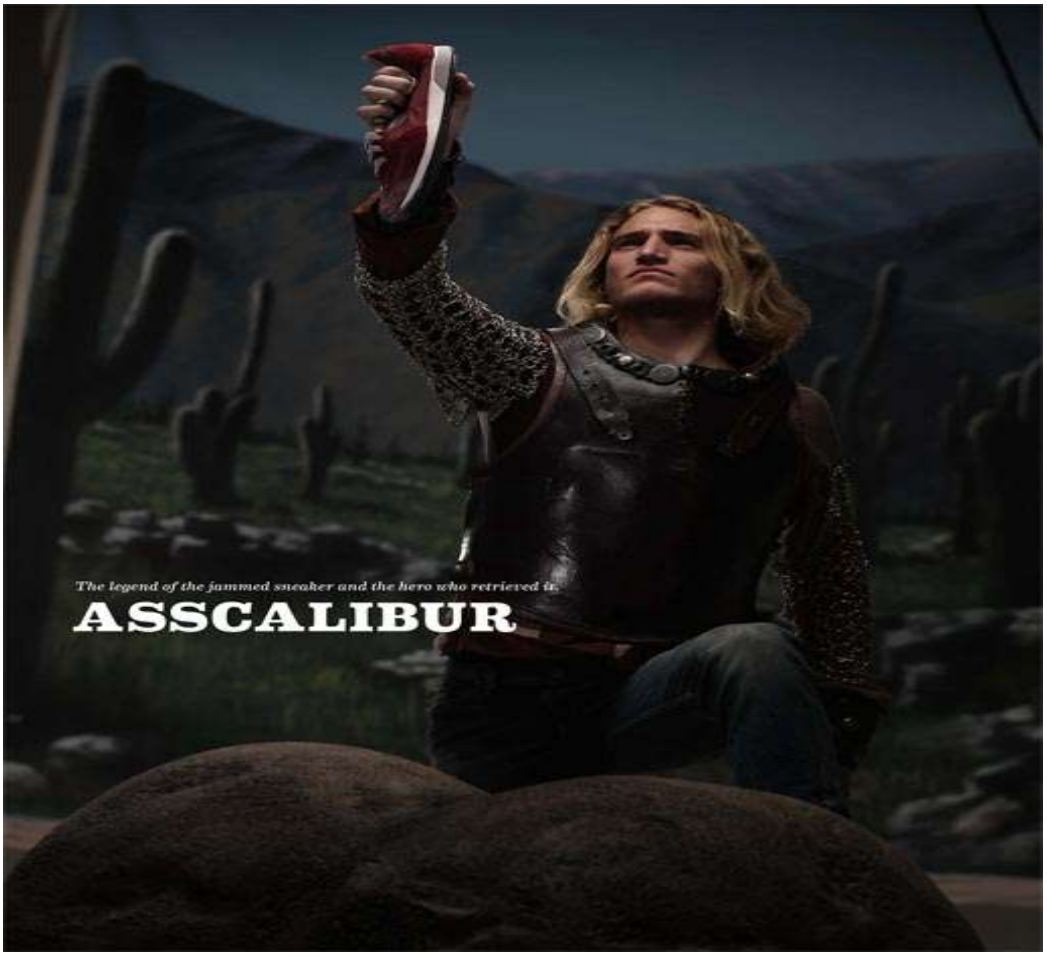

Figure 3 The legend of the jammed sneaker and the hero who retrieved it. ASSCALIBUR

Type	
Cognitive structures	**metaphor 1:**DIESEL SNEAKER IS A WAEAPON **metaphor 2:** THE MAN IS A HERO **metonymy 1:** THE BATTLE SUIT FOR A WARRIOR **metonymy 2:**THE BACKSIDE FOR A PERSON
Metaphor modalities **Metonymy modalities**	**monomoda**l: pictorial **multimodal:** verbo-pictorial **multimodal:** pictorio-verbal **multimodal**: verbo-pictorial
Image schemas	**space/ attribute:** front-back, up-down/ strong-weak, big-small

Table 3 Cognitive linguistic analysis of the ad illustrated in figure 3

The pictorial metaphor DIESEL SNEAKER IS A WEAPON shown in figure 3 is based on the image schema of space: front-back and up-down, being front and up positively valued. The strength and the destructive ability of the weapon are mapped onto the product. Taking into consideration the campaign of these FW1 sneakers in 2010 which was "Not made for running (great for kicking)" together with the advert in hand, we can claim that the main intention of the advertiser was to promote the product in a funny way, yet to maintain the characteristics of the product, namely strength. In addition, we can distinguish another verbo-pictorial metaphor THE MAN IS A HERO based on the image schema of attribute: strong-weak and big-small with the positive value of strong and big. In addition, big interacts with the primary metaphor IMPORTANCE IS SIZE.

On the other hand, we can depict two types of multimodal metonymies, CLOTHES FOR THE PERSON in this case, THE BATTLE SUIT FOR A WARRIOR, and THE PART FOR THE WHOLE metonymy as in THE BACKSIDE FOR A PERSON.

The headline ASSCALIBUR reminds us of the 1981 famous movie EXCALIBUR, which was directed by John Boorman, that retells the myth of King Arthur and the mystical sword EXCALIBUR. The advertiser uses an intertextual technique which is: "a network of textual relations…quotation, parody and allusions are commonly-used techniques to set up an intertextual relation between advertisements or target texts and source texts" (Liu and Thao, 2013: 11). The advertiser´s main objective behind using this technique is to capture people´s attention, interest and their desire to buy the product because people have the tendency to accept things they feel familiar with.

As regards colors, the advertiser uses dark tones to convey the sarcastic atmosphere.

Ad no. 4 (Mizuno)

Figure 4 THE SPECIES EVOLVED AGAIN: Mizuno Wave Creation I3

	Type
Cognitive structures	**metaphor:** MIZUNO IS AN EVOLVED SPECIES **metonymy:** THE SHAPE OF THE PERSON, WHICH IS THE COMPANY LOGO, FOR THE COMPANY. **multimod**al: verbo-pictorial **monomodal:** pictorial **attribute/ space/ containment**: dark-bright/near-far, front-back,up-down/in-out.
Metaphor modality	
Metonymy modality	
Image schemas	

Table 4 Cognitive linguistic analysis of the ad illustrated in figure 4

Advert nº 4 portrays the verbo-pictorial metaphor MIZUNO IS AN EVOLVED SPECIES based on the image schemas of attribute, space and containment with the positive value of dark, near, front, up and in. Evolved species endure a development through an evolutionary process and the result of this development is a new variety; thus those processes are mapped onto Mizuno, namely evolution and development to come out with a highly new style and technology. The advertiser makes use of the Darwinian Theory on the evolution of species, and he employs it in both the headline THE SPECIES EVOLVED AGAIN and the picture.

On the other hand, we have the following pictorial metonymy THE PART FOR THE WHOLE as in THE SHAPE OF THE PERSON, WHICH IS THE COMPANY LOGO, FOR THE COMPANY.

In addition, the advertiser uses light colors, namely white and blue. The white color is used to highlight the idea of the advert, i.e. a new and innovative product coming out to the market (see figure 4), by portraying the man as coming out from the womb and seeing the light for the first time. The blue color, on the other hand, is used to transmit tranquility and coolness. The blue color is number one in America according to a survey of 1,040 participants that was conducted by BuzzBack Market Research, in partnership with Pantone, Inc., in October 2003.

Ad no. 5 (Christian Louboutin fall winter 2010)

Figure 5

Type	
Cognitive structures	**metaphor**: THE SHOE IS A FLOWER **metonymy 1**: A BUTTERFLY FOR EACH TYPE OF WOMAN **metonymy 2**: FEMALE SHOE FOR FEMALE IDENTITY.
Metaphor modality **Metonymy modalities**	**monomoda**l: pictorial **monomodal:** pictorial **monomodal**: pictorial
Image schema	**attribute/ space/ containment/force**: dark-bright/ near-far, up-down/ in-out/attraction-resistance.

Table 5 Cognitive linguistic analysis of the ad illustrated in figure 5

THE 5th advert of Christian Louboutin shoes contains a pictorial metaphor THE SHOE IS A FLOWER based on the image schemas of attribute, space, containment and force with the positive value of dark, near, up and in. In addition, we highlight the image schema of force, with the positive value of 'attraction'. From the general context we can say that the season is spring; and as we know in spring flowers blossom, flourish and are at the top of their beauty, hence, all of these traits are mapped onto Louboutin shoes. The fact that there is only one shoe growing on the rock represents the uniqueness, the supremacy and the luxury of the product.

On the other hand, we can depict the following pictorial metonymies: FEMALE SHOE FOR FEMALE IDENTITY since the shoe is pink, sparkling, gold, and very feminine; the second metonymy is A BUTTERFLY FOR EACH TYPE OF WOMAN, each butterfly has a unique color representing different kinds of women, and almost all of them are bound to the shoe, which implies that no woman can resist the attraction of the product.
The green color on the ground predominates in order to convey the spring´s atmosphere, freshness, and ecology. Further on, the pink color connotes cheerfulness, emotions, warmness, and it is considered as the color of girls. The butterflies display plenty of bright and fresh colors which serve to represent women of different colors, types and nationalities.

Ad nº 6 (Adidas)

Figure 6 a³ Gigaride Unstoppable Cushioning

Type	
Cognitive structures	**metaphor:** A3 GIGARIDE IS A KANGAROO **metonymy:** THE BACK OF THE KANGAROO FOR THE LOGO. **monomodal:** pictorial monomodal: pictorial **attribute/ space/ movement/balance:** dark-bright/up-down, left-right/forward-backward/ point of equilibrium.
Metaphor modality **Metonymy modality**	
Image schemas	

Table 6 Cognitive linguistic analysis of the ad illustrated in figure 6

Advert nº 6 (see figure 6) contains a monomodal metaphor A3 GIGARIDE IS A KANGAROO based on the image schemas of attribute, space, movement and balance. Traits of the kangaroo, such as jumping capabilities, high speed, and balance are mapped onto the tennis shoe being this positively valued. Moreover, we can distinguish another classical metonymy, THE PART FOR THE WHOLE as in THE BACK OF THE KANGAROO FOR THE LOGO.
The color of the Kangaroo which is orange connotes adventure and extroversion. Moreover, the black background is used to highlight the product.

Ad nº 7 (Metro shoes)

Figure 7 HAPPY FEET MAKE HAPPY PEOPLE!

Type	
Cognitive structures	**metaphor 1**: METRO SHOE IS A HIGHLINE CONVERTIBLE CAR **metaphor 2**: THE FOOT IS A PERSON.
Metaphor modalities **Metonymy modality**	**metonymy**: FEET FOR THE PERSON **monomoda**l: pictorial **monomodal:** verbal **monomodal:** verbal
Image schemas	**attribute/space**: dark-bright/up-down, near-far, center-periphery.

Table 7 Cognitive linguistic analysis of the ad illustrated in figure 7

The pictorial metaphor METRO SHOE IS A HIGHLINE CONVERTIBLE CAR is based on the image schemas of attribute and space being dark, up, near, center positively valued. The main intention of the advertiser behind putting the shoe in a vertical position is to foreground the absorbing shock property of the shoe. Furthermore, the choice of the car as a highline convertible implicates that the shoe is ventilated and comfortable due to using primary materials like natural leather and cushioning. Traits such as comfort, ventilation, luxury and prestige are mapped onto the shoe. Moreover, the verbal metaphor, THE FOOT IS A PERSON offers a case of metaphor from metonymy. The source domain FOOT has a metonymic basis. In addition, we can distinguish a verbal metonymy, THE PART FOR THE WHOLE as in FEET FOR THE PERSON.

The advertiser uses light colors to convey a positive atmosphere. Moreover, the red and the brown color are used to convey comfort and simplicity; and to represent the natural material the shoe is made of, in this case, leather.

Ad no. 8 (Asics)

Figure 8 STOP AT NEVER

Type	
Cognitive structures	**metaphor**: LIFE IS A JOURNEY **metonymy**: THE TRAINING SUIT FOR ATHLETES
Metaphor modality **Metonymy modality**	**multimodal**: pictorio-verbal **monomodal:** pictorial
Image schemas	**space/movement:** near-far, up-down; center-periphery, left-right, front-back/forward-backward

Table 8 Cognitive linguistic analysis of the ad illustrated in figure 8

The conventional metaphor LIFE IS A JOURNEY shown in figure 8 is based on the image schemas of space and movement in this advert. This metaphor interacts with the primary metaphor PROGRESS IS FORWARD MOVEMENT. The man wearing the training suit is running towards a known destination. As we can notice in the ad the man is full of confidence, his head is up, and knows exactly where he is going. We can observe that the athlete is in first position and this is manifested by the fact that we are seeing him from the back through the eyes of another athlete behind him. We observe that there is an axiological clash with the value of 'back' as this is prototypically negative. However, here a positive value is introduced. In addition we can distinguish the following pictorial metonymy: THE CLOTHES FOR THE PERSON, in this case, THE TRAINING SUIT FOR ATHLETES.

The headline "STOP AT NEVER" refers to the consumer, the company, and the product itself. First of all, by wearing ASICS the consumer will never stop and give up on his dream, and what [3]Erik Forsell, the new marketing veep states in one of his interviews "It's all about how you never stop pushing and trying to be your best" confirms the first supposition. Secondly, the company will never stop innovating and coming out with new products "but we'll never stop being a performance brand"**.** Finally, the product is strong and lasting and it will not disappoint its buyers.

As regards colors, we should highlight the white color of the lettering which is associated with freshness, purity, simplicity, and excellence. The advertiser uses light tones in the image to transmit a positive view about the future.

[3]http://5ksandcabernets.com/2011/11/stop-at-never-asics-says-it%E2%80%99s-ok-to-wear-their-shoes-with-jeans-or-even-in-a-marathon/

Ad no. 9 (Asics)

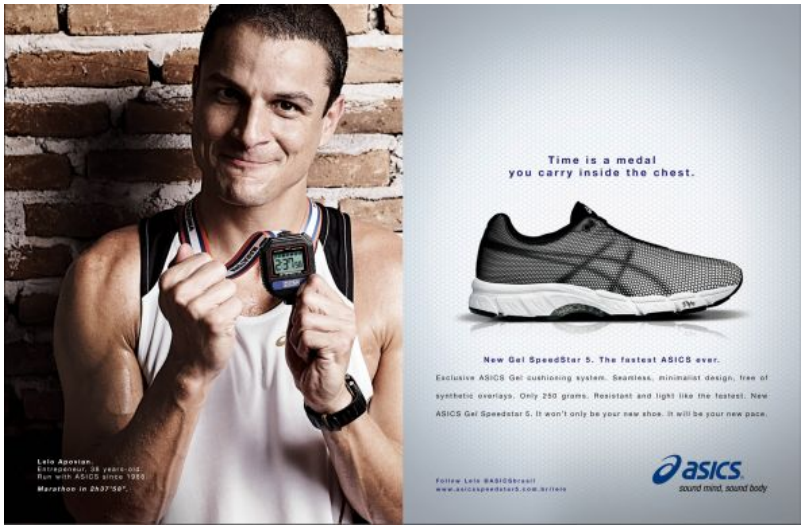

Figure 9 Time is a medal you carry inside the chest

Type	
Cognitive structures	**metaphor 1: TIME IS A MEDAL** **metaphor 2: THE CHEST IS A CONTAINER**
Metaphor modalities **Metonymy modalities**	**metonymy 1: THE STOP WATCH FOR THE COACH** **metonymy 2: THE CHEST FOR THE WHOLE BODY** **multimodal: verbo-pictorial** **monomodal: verbal** **monomodal: pictorial** **monomodal: verbo-pictorial**
Image schemas	**containment/multiplicity/space: in-out/part-whole/ up-down, front-back**

Table 9 Cognitive linguistic analysis of the ad illustrated in figure 9

The verbo-pictorial metaphor TIME IS A MEDAL interacts with the conventional metaphor TIME IS MONEY (Lakoff and Johnson, 1980). A medal is almost always something very precious that someone has earned as recognition for an achievement. Moreover, the physical value of the medal may not be of great importance; nonetheless, the emotional value is of great significance. Hence, time is considered as something priceless that should be spent wisely. Traits of the medal, such as valuable, important, priceless and precious are mapped onto time.

The verbal metaphor THE CHEST IS A CONTAINER is based on the image schemas of containment, multiplicity and space being in, part, up and front positively valued and sanctioned as positive values in our culture. The chest is thought of as a container where we can hide our precious and priceless things. As a matter of fact, the idiomatic expression get something off one's chest enhance the metaphor THE CHEST IS A CONTAINER. The advertiser´s main intention is not to shed light on the value of time as much as on the object you use to save time, in this case it is the product.

Two types of metonymy can be distinguished: THE PART FOR THE WHOLE as in THE CHEST FOR THE WHOLE BODY, and OBJECT USED FOR USER metonymy as in THE STOP WATCH FOR THE COACH.

The advertiser uses a grey background, which conveys an elegant and practical aspect of the product.

5 Conclusions

Cognitive semantics and its application in the verbo-pictorial field allowed us to establish a framework that gave a practical and coherent explanation of the meaning of print footwear advertisements. Our analysis has proved that most of the metaphors encountered are multimodal. Most of the metaphors are creative except from one conventional metaphor LIFE IS A JOURNEY. The majority of metaphors are based on image schemas to convey the positive values to the product. As a result, the metaphors under analysis always convey a good evaluation to the footwear products. Furthermore, two adverts have shown a case of metonymy based metaphor: Saint vacant shoe (advert no. 2) and Metro shoe (advert no. 7).

Metonymies used by advertisers are THE PART FOR THE WHOLE, OBJECTS USED FOR THE USER AND CLOTHES FOR PERSON. However, the first type has been used on a large scale to put focus on the feet standing for the whole body. On the other hand, most of the metonymies used in the selected sample are monomodal, pictorial, thus the analyses matches Forceville´s category of pictorial metonymy since most of the ads did not show the need of the text to understand the domain implied in the metonymy. Consequently, the significance of metonymy can be further claimed as a conceptual tool in footwear advertising.

With regards to image schemas, the majority of them are positive since the first element is represented either in the text or the image. The image schemas used in this type of advertising are those of attribute (dark-bright, big-small, strong-weak), movement (forward-backward), space (up-down, near-far, left-right, straight-curved, center-periphery, front-back), containment (in-out), balance, multiplicity (part-whole) and force. Further on, it is of importance that the image schema of front-back, in which back holds a negative value has been used as a positive one, hence, producing an axiological clash (advert no. 8). In addition, the most recurring image schema is space followed by attribute. Movement and containment follow on from these. It is curious the copywriter does not show shoes or trainers in movement with a higher frequency since the main function of this product is that of walking. Finally, force, balance and multiplicity are also used in lesser number.

With reference to the use of color, it differentiates from one ad to another depending on the mood the advertiser wants to convey. Most of the colors used in the sample are light tones, such as blue, white, pink, purple and green. Sometimes, even dark tones such as black, whose prototypical value is negative, carry a positive value. For instance, the color black in ad no. 1 conveys elegance, and it is used as a foregrounding technique to highlight the product.

Consequently, color as a cognitive tool plays an essential role in understanding of the analyzed ads. For instance, without the green color in advert no. 5 we would not be able to create the metaphor, THE SHOE IS A FLOWER; or in advert no. 1 we would not be qualified to identify the metaphor, THE SHOE IS A MUSCLE without the red color.

In short, our analysis demonstrates that cognitive metaphors, metonymies, image schemas and color are used persuasively to transmit meaning in print footwear advertising. Furthermore, it can be argued that the more advertisers make use of the conceptual richness of these cognitive tools, the more creative and affective their work will be to attract potential consumers.

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Analysing the myth of digital natives in an English course: A higher education collaborative approach

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Abstract

Researchers nowadays claim that educators must accommodate the learning styles of "digital natives". Thus, many new and challenging educational experiences have tried to cater for the "singularity" of digital natives. These studies have focused on facilitating the communication between teachers and students using the students' own language and style. In this context, we analyse the use of a Web 2.0 application in higher education integrated in a traditional language course. The paper questions the technical expertise of digital natives and observes the contribution of Web 2.0 to promote construction of knowledge while developing a proficiency in English. The conclusions signal the rewarding benefits of Wikis to construct knowledge collaboratively and the positive effects on the improvement of linguistic skills. Additionally, the study suggests that the incorporation of new online projects into traditional higher education requires careful planning with consideration given to sound pedagogy so as to lead to effective learning.

1 Introduction

The present research describes a computer-mediated communication approach that incorporates a Wiki platform into an English course calibrated according to the Common European Framework of Reference for Languages (Council of Europe, 2001). The purpose of our study is to observe digital natives' learning styles in specialized higher education. As Prensky (2001) put forward, digital natives are native speakers of the digital language of computers, video games, and the Internet, people that were born in -or after- the 1990s.

1.1 Rationale in terms of higher education

Since the Sorbonne Declaration in 1998, the priorities for the European Higher Education Area (EHEA) have been to promote policies to improve the quality and relevance of higher education. Specifically, much attention has been paid to learning for the future; in other words, higher education should enhance the competences required to face the challenges of the New Millennium. The philosophy behind the EHEA has required a deep modification of educational models introducing new methodologies aiming at students' life-long learning for either personal or professional purposes. Apart from discipline-specific competences, following the recommendations of the EHEA, students must master generic skills so as to be able to communicate effectively in the international labour market. For the purpose of our research, we would like to emphasize and comment on these priorities posed by the European Higher Education Area: employability skills; i.e., the ability to use new information technologies, learner-centred construction of knowledge, and the development of a proficiency in languages:

(a) Employability skills which entail, for example, the integration of students in groupwork, a fundamental requirement for their later employability. Recruiters often value the candidate's experience working in group settings, and identify team work as one of the core transferable skills valued by employers in the workplace (Elgort et al., 2008). Educational approaches have traditionally paid more attention to individual work than to groupwork; however, groupwork is today considered more effective for promoting student learning and retention than traditional teacher-centred methodology (Montero-Fleta & Pérez-Sabater, 2011).

(b) The ability to use new information technologies, the basics of which should not present a problem for most higher education students, as they belong to the New Millennium and are digital natives (Prensky, 2001). Web applications that facilitate participatory information sharing and collaboration on Web 2.0 can help to create constructivist learning environments that may imply a challenge for students to participate in a more active way in their education. However, some students may be reluctant to use recent Web 2.0 technologies in their studies as a mandatory activity that would be assessed (Anson & Miller-Cochran, 2009).

(c) A shift of the role of the instructors, from providers of information to facilitators of student learning, which involves a change from teacher-centred construction of knowledge to learner-centred. While in the traditional objectivist learning model, which has dominated higher education institutions, experts convey information to novices, in constructivist learner-centred approaches, teachers are facilitators of knowledge (Anson & Miller-Cochran, 2009). In constructivist learning, rather than passively receiving knowledge from the instructor, active learners need to do activities to construct knowledge (Dewey, 1916) and manage their own learning. Construction of knowledge requires an active involvement of the learner by exploring possibilities, inventing alternative solutions, collaborating with other students, trying out ideas and hypotheses, revising their thinking, and finally presenting the best solution they can derive (O'Loughlin, 1992; Cole, 2009).

(d) The development of a proficiency in languages, the acquisition of linguistic and communication skills and the ability to get a message across to others clearly and unambiguously are critical skills for professional success.

The present article takes all these factors into account and provides a new insight into the utilization of innovative Web 2.0 learning spaces in a university degree of Library and Information Science with students born in the last decades of the 20th century, i.e., digital natives. The incorporation of these four priorities in our teaching context will be revealed in Tables 1, 2, 3 and 4.

1.2 Digital natives and digital immigrants: Their new learning styles

The metaphor "digital natives" was coined by Prensky (2001) [[1]] to refer to children and young adults that were born into the digital era. Conversely, teachers, who were born before the digital era, are considered "digital immigrants", immigrants to computers, computer games, and the Internet. The initial binary distinction put forward by Prensky, however, has been defied recently by some scholars who have challenged its technological and biological determinism (e.g., Selwyn, 2009). That apart, researchers have claimed that factors such as the digital divide have not been taken into account in this over simplistic and shallow duality (Brown & Czerniewicz, 2010).[1]

Fundamentally, the distinction between digital natives and non-native users of computer technologies implies that current students learn differently compared with past generations (Bennett et al., 2008). Thus, researchers nowadays contend that educators should have to face the demand for accommodating the learning skills of this 'net' generation and meet their learning needs. Many new and challenging educational experiences have been developed in the last few years aimed at catering for the "singularity" of digital natives, so that teachers can communicate with students in their language and style (Prensky, 2001). Consequently, the new learning tools provided by the Internet are more prominent than ever in higher education to "meet the connectivity demands that today's students expect" (Blattner & Fiori, 2009, p. 17).

There is a vast amount of literature on the Wiki technology, although not much research has focused on its educational use. A Wiki website is: "a medium in which a group of individuals can work together asynchronously on an idea and easily capture the essence in a reusable format" (Mindel & Verma, 2006: 1). The principles of writing in Wikis echoes Bakhtin's (1986) dialogic nature of language and complies with the three elements necessary to foster learning described by Tinto (2003): mutual engagement, shared repertoire, and joint enterprise. The collaborative work carried out in a learning community develops a common ground of knowledge, putting into practice authentic tasks, knowledge development, and research or reflection, as reported in a previous article by Montero-Fleta & Pérez-Sabater, (2011).

[1] In 2009, Prensky nuanced this distinction and referred to "digitally wise persons" instead. However, for the purpose of this research we will centre on his original distinction well established in the literature.

The most common pedagogical application of Wikis is supporting writing instruction. The effectiveness of Wikis for collaborative learning and writing has been discussed in some recent studies (Bold, 2006; de Pedro et al., 2006; Leung & Chu, 2009, Lund, 2008). As Lamb (2004: 8) stated: "… Wikis stimulate writing, provide a low-cost but effective communication and collaboration tool, promote the close reading, revision and tracking of preliminary work". The advantages of reflection, reviewing, publication, and of observing cumulative written results are maximized as they unfold. As noted in an earlier paper on Wikis by Montero-Fleta & Pérez-Sabater, (2011), Wikis can be used by a team for joint writing where students engage actively exchanging ideas and can involve learners in their own construction of knowledge. Recent studies have investigated Wikis in language learning contexts, e.g., Mondahl, & Razmerita (2014). Scholarly research has focused specifically on students in primary and secondary schools (see Chang & Schallert, 2005). Positive experiences on collaborative learning and academic pilot studies in English for Specific Purposes have been published by Zorko (2009) or Kuteeva (2011). On the other hand, in more general higher education contexts, these new approaches to teaching and learning are sometimes difficult to implement, since the traditional model of education is deeply rooted in the university. In this sense, some scholars have described unsuccessful implementations of a Wiki-based activity in their learning environment. Cole (2009), for example, had a negative experience in introducing a Wiki technology into an existing teaching format; in her project; she claimed that the activity failed because it was poorly designed and did not motivate students.

At the moment, the use of Wikis to suit the assumed distinct learning styles of digital natives is attracting scholarly attention. Nonetheless, the incorporation of Web 2.0[2] in the language classroom to develop collaborative authoring through a Wiki approach is still in need of more research (Kuteeva, 2011). Further studies on current learning spaces and the introduction of Wikis to practise other linguistic skills than writing in higher education may be of interest. What is more, the "singularity" described by Prensky (2001) of current university students in specialized learning environments needs to be analysed as some innovative research has recently questioned the distinctive learning styles of digital natives (Bennett et al., 2008). Considering the research gap in our specific teaching context, introducing Web 2.0 tools in the learning process of our students may have an added value, as contended by Frumkin (2005) and Chawner and Lewis (2006). This added value is given by the fact that distributed content management tools are likely to be part of professional practice in information work in the near future, i.e., the field of study of our students.

2 Scope of the study and research aims

This research is in line with The European Higher Education Area (EHEA)'s emphasis on individual responsibility for learning. In language learning, the Common European Framework of Reference for Languages (CEFR) also encourages the development of independent learning. In the present research, the use of Wiki webpages was incorporated in

[2] Term fully accepted worldwide in the conference organised by O'Reilly in 2004. In that conference, a preliminary set of principles of Web 2.0 were established, being the first principle: "the web as a platform" (O'Reilly, 2007).

an English course as an innovative, technological and collaborative tool, to accommodate education to the skills and interests of digital natives, as suggested by Prensky (2001).

The purpose of this study was to implement a learning model based on constructivist principles and examine the process and product of Wiki interactions and students' involvement. Besides, this collaborative writing project focused on improving English grammar correctness in a higher education environment. The study centred on the learning style of digital natives in technologically oriented learning environments. Both the students' and teachers' feedback on the experience and the benefits of the activity for language learning were analysed. On balance, our research questioned the myth of digital natives, the homogeneous technical expertise of young adults and their need for particular learning styles. The following research questions were the focus of our study:

1. Do Wikis help the integration of digital natives in groupwork?
2. Do digital natives use Wikis proficiently?
3. Do Wikis promote learner-centred construction of knowledge in specialized environments?
4. Do Wikis contribute to the development of a proficiency in grammar?

3 Design of the study

3.1 Participants

The context in which we theorized and described a collaborative learning model was a graduate-level subject in a program in Library and Information Science at the Polytechnic University of Valencia that took place during the first semester of the 2011-2012 academic year. This required subject of English had been taught for the last ten years by the same faculty members, the authors of this study. Since this subject was framed in a technical context, that is, the School of Computer Science and Engineering, it offered us the right context for investigating how digital natives saw the incorporation of new technologies to language learning. The participants in the project were all the students registered in this required subject of English. Their level was lower intermediate, B1 according to the CEFR. At the end of the course, students had to attain the following level in the CEFR scale: upper intermediate or B2. The profile of the participants was young adult students, 45 male and 19 female. Their average age was 23, 60 were 23 and 4 were 22. They were university students born around 1990 in a developed European country and thus, most of them digital natives (95%). These figures were obtained through a simple survey on the students´ use of computers and the Internet, which was administered and developed following the questionnaire published by Margaryan, et al. (2011). This survey had shown that all of them used technology on a daily basis and had a positive attitude to the incorporation of new technologies to their university lessons. Interestingly, these students were even more experienced in the use of new technologies than standard digital natives in our country, due to the technical character of their university context. Besides, the fact that 20% of the participants already had a degree in computing evidenced their high technical expertise.

We would like to mention that, as commented above, we chose this sample of participants because they were registered in a subject that the authors had been teaching for approximately 10 years. The participants had experienced so far traditional lecture models in language

learning. In this particular context, a new collaborative model that implied students' involvement in knowledge construction was a challenge for them.

3.2 Methodology: The Wiki project

At the beginning of the course, we administered a diagnostic test to the students which showed grounding grammar deficiencies, mainly in the verb system and the use of prepositions. To solve this problem, we designed and carried out this pilot study over the course of a semester, which consisted in the creation of a grammar textbook. We dedicated 1 hour per week to this task in class during the 15 weeks of the course; at least 1 hour more per week had to be devoted to this activity both at home and in the computer lab. Students' dedication to the subject was the same as in previous courses where the creation of a project with similar characteristics was required, but the use of Wikis was a novelty this time. The project followed the recommendations for level B2 of the Common European Framework of Reference for Languages (CEFR) on grammatical competence. According to the CEFR, grammatical competence is a key issue in communicative language learning. For grammatical accuracy in the level B2 or upper intermediate, the CEFR recommends that the student:

> … [should have] good grammatical control; occasional 'slips' or non-systematic errors and minor flaws in sentence structure may still occur, but they are rare and can often be corrected in retrospect. Shows a relatively high degree of grammatical control. Does not make mistakes which lead to misunderstanding (Council of Europe, 2001: 114).

The grammar textbook created by the students was devised as a Wiki product, an example of constructivist learning, since it involved knowledge creation in groupwork. Teams were formed using the results of a diagnostic test from Dave (1992) *Oxford Placement Tests*, so that groups would have a heterogeneous linguistic level. As studied by Montero-Fleta & Pérez-Sabater, (2010), in this way, the students could work collaboratively in teams and learn from the other members of the team. The size of the group is important to reach maximum performance from each and every one of the students. In the pilot study here presented, students worked in groups of four because the results of our previous research had confirmed a better cohesion and intimacy in groups of four students.

Each group was assigned a specific grammar content type as a central topic of research. Individual groups were given the following instructions to create this grammar repository using a Wiki platform:

(1) Study the grammar point assigned. Check grammar books available in the library for information (Grammar points assigned were, e.g., the simple present, the simple past, conditionals, prepositions, linking words, etc.).

(2) Design a presentation of the theoretical content of the grammar point assigned. Highlight its special difficulties.

(3) Develop exercises of your own to put the grammar point into practice, making emphasis on the special difficulties involved. The vocabulary and context of the exercises will be closely related to your field of studies.

(4) Develop keys to the exercises.

(5) Deliver an oral presentation of the material developed. PowerPoint slides may be used.

(6) Your portfolio will include the presentation, exercises, keys, slides and references used. Self-assessment, group assessment and assessment of other groups' presentations will also be included.

To accommodate the learning styles of young adults, a new platform for teaching called PoliformaT was introduced in the university. This platform was used to host the activity. PoliformaT is based on the Sakai Project, an online Collaboration and Learning Environment founded in the University of Michigan and Indiana University. The PoliformaT Wiki website keeps record of the number of contributions over a period of time, hence showing the degree of collaboration and interactivity among members. It also offers the possibility to compare successive versions.

As suggested in the literature on new methodological environments, the teacher's role in technology enhanced language learning frequently tends to change (Rodgers, 2002). The teacher, as part of the constructivist model, is an instructor whose role centres on facilitating information sharing among learners, rather than on transmitting knowledge from teachers to students (Mindel & Verma, 2006). The teacher was always available for clarifications, both on specific content and on problems associated with technology. She involved each student in the process by checking that every student participated in the activity.

3.3 Data gathering tools

Research data were obtained from the following case study:

3.3.1 Process

An analysis based on a Likert scale was run with the respondents' specifications of their level of agreement to each statement in the questionnaire (see Tables 1, 2, 3 and 4), so as to get feedback towards their perception on groupwork and Wiki usability. The items of the questionnaire were chosen according to previous research on technically enhanced language learning by Montero-Fleta & Pérez-Sabater (2010) and by other scholars, such as Felix (2001), Salaberry (2001), Rodgers (2002) and Stepp-Greany (2002).

Moreover, to provide further feedback about the pros and cons of the implementation of the Wiki for collaborative work, students' motivation and attitudes, this research was supplemented with data obtained from a personal interview with the students following the patterns outlined in studies on the area like the one carried out by Bennett and Maton (2010). Thus, the interviews were conducted on a one-to-one basis. All the students were interviewed by the teachers/authors of this research for 5 minutes, 4 times during the course, once every month. They were asked about their learning preferences, attitudes towards technology, motivation and the development of the activity. The interviews were recorded and transcribed.

Concerning the data gathered, the participants explicitly agreed on the use of the data obtained in the study for research and dissemination of results. The following section, therefore, incorporates these data, although some interesting excerpts from these interviews can be appreciated more explicitly in Appendix A, Observations, at the end of this article.

3.3.2 Product

A survey measured students' perception of knowledge acquired. On the other hand, the material produced by the different groups was assessed by the teacher and also by the students. The assessment took place in the final sessions of the course, and was based on each group's presentation of the material collaboratively developed. To make grading simpler, a rubric containing criteria and standards linked to learning objectives was used as a scoring tool of group performance (see Appendix B).

The teacher's feedback on students' involvement was analysed according to their participation in terms of frequency, type and quality of contribution. They were traced on the number of times or length of interaction in the Wiki but mainly assessed for the quality of their contribution (see Appendix C). In addition, students took an achievement grammar test of the level B2 that was compared to the diagnostic grammar test administered at the beginning of the project.

4 Data analysis and discussion

These data are shown in response to the research questions posed and are related to the priorities of the European Higher Education Area (EHEA) mentioned in the rationale section of this article. As mentioned above, the items in each table are based on previous empirical research on language learning with technology (e. g. Felix, 2001). The results of the study are displayed in Tables 1, 2, 3 and 4 with an indication of the number of affirmative answers out of 64 respondents and the percentage they represent.

4.1 Research question 1: Do Wikis help the integration of digital natives in groupwork?

4.1.1 Students' perception

The data revealed that 71.95% of the students considered that the activity was motivating. Students showed a satisfactory degree of collaboration and interactivity among members but nearly half of the students questioned the suitability of the Wiki for groupwork. Moreover, 50% did not agree that the application favoured equal opportunities for participation**.**

	Strongly agree	**Agree**	**Disagree**	**Strongly disagree**
The Wiki website enhanced collaboration in groupwork.	20 31.25%	26 40.65%	16 25%	2 3.12%
The Wiki saved time in task completion.	16 25.00%	32 50.00%	14 21.87%	2 3.12%

The Wiki was more convenient than emails for groupwork.	12 18.75%	26 40.62%	26 40.627%	2 3.12%
The Wiki website favoured equal opportunities for participation.	14 21.87%	18 28.12%	16 25.00%	16 25.00%

Table 1 Students' perception on Wiki-based groupwork

Regarding the rewarding benefits of Wiki use in collaborative work, most students considered that the Wiki website had facilitated groupwork. As for the time dedicated to this task, most participants appreciated the time saved to construct the final document through successive interactions.

The features available in the platform were not always used successfully. Opinions against the convenience of Wiki projects (40.62%) showed the preference of some students for using email for their information exchange through consecutive drafts and elaboration of a final document. Many more students than expected shared these students' opinions.

An important issue in group assessment is recognizing the individual effort performed (Davies, 2009). As shown in Table 1 students did not agree that Wikis promoted similar contributions in length to knowledge construction from each student. Although the Wiki website recorded the successive contributions to the final draft, respondents were divided when discussing if the Wiki had shown the individual work done. They were particularly interested in the topic since part of their final assessment was going to be based on the extent and quality of their texts uploaded onto the Wiki website. For this reason, half of the students feared being judged as unproductive group members. The instructor had requested the use of the Wiki by all the students in the course; so, personal involvement of every student in every step of the process was expected. It is worth mentioning that some groups distributed roles among members, hindering the presence of some of them in the website. In some cases, a member of the group had been named to play the role of editor-in-chief and was the one responsible for updating the information in the Wiki, although all of them contributed equally. This demonstrated that the students in this group had used the Wiki simply as a repository of the work in progress.

Finally, it is important to comment that, in the interviews, some students stated their preference for carrying out this project individually.

4.1.2 Teachers' perception

From the teacher's point of view, being able to have access to the page history facilitated tracing each student's contribution. Wikis keep a record of the changes made as every version of the Wiki page is stored; and the teacher can revert to an older version of the page to see the

changes made in it. But, nevertheless, tracking down the changes made in successive interactions was a cumbersome task and extremely time-consuming for the teacher. An important fact to take into account regarding the Wiki assessment is that, although Wiki projects are generally devised for collective assessment because of the nature of the tool, in the present approach the students were assessed both for group and individual contribution. In our case, there were short interactions of some students which richly contributed to the final product. Conversely, some students interacted extensively but exhibited low quality contributions that did not improve the ongoing draft much. We were not surprised to see that highly committed Wiki contributors interacted more frequently than other students.

The students' engagement in the Wiki was satisfactory although not unanimous, as in a similar project carried out previously (Montero-Fleta & Pérez-Sabater, 2010); the lecturer checked the progress by accessing the Wiki regularly and gave feedback either verbally or by email on, for example, spelling errors or source citing, as indicated by Holtman (2009). Follow up treatments on Wiki collaboration and active research will require a higher emphasis on the participation of every student in the tasks, entering data, editing other group members' information, and putting into practice organizational and negotiation skills to meet learning objectives.

4.2 Research question 2: Do digital natives use Wikis proficiently?
Unlike Prensky's (2001) premises, the results indicated that for the Wiki website usability, not all the students of this research were at ease using this platform. Table 2 presents the responses to the statements and the equivalent percentage.

	Strongly agree	Agree	Disagree	Strongly disagree
Technical problems were encountered when editing.	10 15.62%	20 31.25%	32 50%	2 3.12%
Technical problems were encountered when using graphics and tables.	10 15.62%	30 46.87%	20 31.25%	4 6.25%
Technical problems were caused by low Internet speed.	8 12.50%	28 43.75%	22 34.37%	4 6.25%

Table 2 Students' perceptions on technical problems with Wikis

Participants complained about the tool. In their opinion the Wiki tool used was unfriendly. Moreover, it did not have any grammar or spelling checker, unlike word processing software. Nearly half of the students reported technical problems in editing when trying to add or correct contents or improve format. They commented on the difficulties when drawing graphics and tables, or about the Internet loading speed provided by the host server. The Internet speed did not depend on the broadband offered by the Internet supplier but on availability of the university host server. In the interviews, most students commented upon the unfriendly interface and the great amount of time dedicated to the activity.

In conclusion, these data imply that, in spite of the digital native character of the students involved in this project, they still encountered difficulties in dealing with technology proficiently, as the study of Cole (2009) also indicated. These results are in relation with recent pioneer research about digital natives and their technological expertise. The innate, expert character of current university students is questioned on the basis that children and young adults do not form a heterogeneous group: in this generation of digital natives there is a diverse and varied group of individuals with different relations to technology (Selwyn, 2009). In parallel, researchers have recently highlighted that this generation of students is fluent in the use of computers for some academic and recreational purposes, but a significant

proportion of current students have "lower computer skills than might be expected of digital natives" (Bennett et al., 2008: 778). In the interviews, the technical problems experienced made some students admit their preference for carrying out this task without a Wiki platform, as it had been carried out in previous years. Their commentaries support the idea of variations and differences in digital expertise and learning styles within this group of digital natives.

4.3 Research question 3: Do Wikis promote learner-centred construction of knowledge in specialized environments?

The quantitative analysis on the students' perception of the use of Wiki sites on knowledge construction is shown in Table 3.

	Strongly agree	Agree	Disagree	Strongly disagree
The Wiki website was useful to construct knowledge collaboratively.	10 15.62%	30 46.87%	20 31.25%	4 6.25%
It was helpful to read the Wikis of the other groups.	12 18.75%	32 50%	18 28.9%	2 3.12%

Table 3 Students' perceptions on knowledge construction with Wikis

Most students recognized the usefulness of the Wiki site to share and construct a project collaboratively. The groups' feedback on the Wikis of the other groups helped to increase motivation and facilitated students' learning from the work on the different grammar topics covered in the project. Notwithstanding this, few individual students were not happy to share their knowledge with other students; they feared that others might benefit from their knowledge.

On the other hand, the students were asked to report on the frequency of different types of contributions made during the project at the end of the course. In their opinion, new content was the most frequent type of contribution (51%), clarifying ideas and providing examples (13%) was second in the scale, followed by reorganizing information (11%), grammar revision (10%), style (5%), format (6%), and adding references (4%). The page history corroborated that some students were mostly involved in providing new content whereas few students focused more on rearranging already existing information (see Appendix C).

4.4 Research question 4: Do Wikis contribute to the development of a proficiency in grammar?

A vast majority of the students had positive feelings on the linguistic skills acquired through the implementation of the project as Table 4 highlights.

	Strongly agree	Agree	Disagree	Strongly disagree
The Wiki project helped you to learn the singularities of the grammar points dealt with.	34 53%	28 43.75	2 3.12%	0 0%
The Wiki project helped you to have a good command of the grammar units.	30 46.87%	28 43.75%	4 6.25%	2 3.12%
The Wiki project helped you to develop the theoretical and practical content required.	30 46.87%	34 53.1%	0 0%	0 0%

Table 4 Language improvement through Wikis

The findings demonstrate that our students' perceptions were very positive towards the benefits of the project carried out. In parallel, the results of the grammar achievement test administered at the end of the course confirmed the students' positive perceptions because they were much better than those obtained in the diagnostic test: a 15% improvement rate was observed. Therefore, the final assessment confirmed the teachers' initial intuitions that the project would make students pay closer attention to grammatical correctness and text organization, in line with the study carried out by Kuteeva (2011). What's more, at the end of the course, the results of the final grammar achievement test were slightly higher than those obtained in this same subject during the previous years. For example, during the course 2010-2011, 75% of the students passed, while in the year of the project, 2011-2012, 85% of the students were able to succeed.

On the other hand, throughout the interview with the students, many of the participants singled out that the approach had helped them improve grammatical correctness when writing in English. Students learned by delving into the grammar point assigned and by elaborating clear examples on this grammar point using vocabulary related to Library and Information Science. This enhanced the assimilation of the theoretical content and the integration of English writing skills into their professional field. Referring to topics of their degree and using specific vocabulary was important to most participants. Additionally, it is interesting to notice that our students enjoyed taking advantage of having the opportunity to learn from the work done by the other groups.

Feedback on the final project of all the groups involved gave rise to lengthy discussions supported by clarifications provided by the participants where linguistic skills were put into practice. For the students, a vital factor influencing the quality of the final product was

audience awareness. Being aware that all their peers would read their projects online forced them to pay closer attention to form and correctness, in accordance with the research on online writing published by Abras (2002) and Kuteeva (2011).

On the whole, the collective work carried out by the students implied a participatory approach to constructivist language learning that connected students across space and time. The Wiki approach created a student-centred learning environment which produced student-driven course content, a repository of topical knowledge for further use that supplemented and extended delivered material, as observed by Cole (2009). This knowledge repository may serve as the starting point for future projects carried out in the same subject on subsequent years, following the indications of Anson and Miller-Cochran (2009).

5 Conclusion

In general, the study has presented positive outcomes to the research questions posed, but certain data have surfaced in the study that we had not foreseen. The present approach provided the students with the opportunity to experience the implementation of online technologies in higher education for knowledge construction with further applicability in professional environments. However, unlike the very positive engagement of students in a previous research on the topic (Montero-Fleta & Pérez-Sabater, 2010), in the present study, the introduction of new paradigms and practices to language learning in higher education was partly successful. This research may break the myth of digital natives, as highly computer skilled young adults encountered technical problems in the tasks devised to meet their particular learning styles, a conclusion unforeseen in our technologically oriented learning context.

Regarding the suitability of Wikis to promote learner-centred construction of knowledge accommodating the learning styles of young adults, we can conclude that both teachers and students agreed on the rewarding benefits of Wikis to construct knowledge collaboratively in the language classroom. Yet, some reluctance shown by students posits that university students' involvement in digital technologies is not homogeneous in contrast with popular portrayals of digital natives as technical experts with distinctive learning styles, as other recent research suggests (e.g., Bennett et al., 2008; Selwyn, 2009; Margaryan, et al. 2011). This may be due to the newness of the task. The previous lack of experience with the website may have prevented them from taking full advantage of its features. As for language development, both students and teachers thought that the project undoubtedly had a positive effect on the improvement of linguistic skills and grammar awareness.

In general, it is finally worth mentioning that our research is in the line of thought of scholars such as Bayne and Ross (2007) who claim against the over simplistic binary metaphors in education of "digital natives" and "digital immigrants". They have adeptly noted that what is really important is to continually rethink the project and purpose of education. In this concern, our conclusion will not be that our students are not more engaged and interested in computers than previous generations, or that incorporating technology in the language class is not an effective learning tool. What we would like to imply is that the use of technology alone does not improve achievement and motivation among digital natives; it also necessitates a methodology which is pedagogically sound and leads to effective learning, real life

communication, and projection into the professional world. Incorporating new online projects in a traditional higher education course requires careful planning with consideration given to sound pedagogy so as to lead to effective learning (Murray et al., 2007; Leung & Chu, 2009). In the same way, in our opinion, the methodological emphasis to meet current students' needs may be due to the fact that university administrators want to create a culture of enterprise. As posited by Bayne and Ross (2007), it is part of a market driven campaign that is colonising the public discourse of the university these days.

Further implementations of our approach will encompass the data obtained in this experience and will count on improved defined process guidelines to overcome the problems raised in this study. Moreover, follow up research could address conflicting topics in Wiki-based assignments such as percentage of the Wiki content creation in the final course grade. The debate about the myth of digital natives, the homogeneous technical expertise of these students in specific contexts and their particular learning styles can be further analyzed using other parameters such as the use of simulations and computer games, tools frequently claimed to be the learning preferences of digital natives.

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7 Appendix A. Observations. Excerpts from the interviews shown as in the original:

1. Integration of digital natives in groupwork.

"In the past, every time we had to be part of a groupwork, we had to meet one day just to put together ideas, another day, to reformulate them, another day to add more points, again to eliminate other things and again to change some points" (Javier, male student, aged 23).

"I was the one who most contributed. Many students accessed the Wiki a number of times but just to edit or correct minor thoughts" (Carmen, female, aged 23).

"In our case I was in charge of making the changes in the Wiki, so it seemed that I myself performed all the work but it is not true. I uploaded the information but all of us worked" (Borja, male, 23).

"I continuously receive and receive mails from friends and colleagues, so I'd rather use email tool for collaborative work" (Juan, male student, aged 23).

2. Digital natives and proficient use of Wikis

"Although at the beginning it was a bit hard, I am an expert now with Wikis" (Manuel, male, 23).

"We were more used to interact via email and we communicated via mail and once the content was presentable we uploaded it in the Wiki" (Jose Manuel, male student, aged 23).

"I often preferred to use my personal email to share my work with my team members and also with the teacher" (Teresa, female student, aged 22).

"I believe it should have a friendlier interface and more text edition options. To publish the information was time consuming" (Pedro, male, 23).

"At the beginning I had problems in editing the information and making it attractive but after a few attempts problems were solved. It is also true that some days the loading speed was really slow" (Alfredo, male, 22).

3. Wiki promotion of learner-centred construction of knowledge in specialized environments.

"You demand yourself more and more in content and presentation just wanting to be the best group, we tried to be the real authors of the material presented avoiding copying from others" (Francisco, male, 23).

"I loved gossiping on other groups and checking on their work" (Emilio, male, 23).

"Sometimes it is not clear who brings new content and who corrected some small things from them" (Iván, male, aged 23).

4. Wiki's contribution to the development of language proficiency.

"I have learned a lot trying to find the right words for our Wiki" (Luisa, female, 23).

"I don't like grammar much, I like computers, but it is good to know the language well" (Toni, male, 23).

"I hate grammar and the topic I had to prepare but I must say I have learnt a lot" (Christian, male, 23).

Appendix B. Teacher's and student's grading of the grammar textbook.

PRODUCT ASSESSMENT				
	Poor	**Fair**	**Good**	**Very good**
Grammar correctness				
Accuracy of ideas				
Theoretical content				
Examples provided				
Illustrative exercises				
Organization of ideas				
Vocabulary used				
Creativity				
References				
Keys				
Presentation				
PPT slides				
Solving questions				
Portfolio presented				

Appendix C. Teacher's and student's grading of contribution to groupwork.

ASSESSMENT OF CONTRIBUTION TO GROUPWORK				
Clarifying ideas	Reorganizing information	Grammar revision	Style and Format	Adding references

OWL ontology use for terminology work

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Abstract

In this paper we revisit the question of the relationship between ontologies and terminologies, i.e. whether the former can be useful for building the latter. We review some of the approaches taken to address that topic and then construct a domain ontology for terminological purposes by means of the OWL-based ontology editor *TopBraid Composer Free Edition*. After showing how we have constructed the ontology, we analyze the results by focusing on five aspects: representation of conceptual relationships and characteristics; representation of linguistic relationships; use of abstract concepts; data categories that can be represented; and ontology display. Our results indicate that ontologies can be created for terminological purposes, but this comes with limitations.

1 Introduction

The concept of *ontology* comes from Greek philosophy and is usually defined as the "subject of study in philosophy that is concerned with the nature of existence" (Summers, 1995: 989). As Sowa (1999) states, "its primary task, as it was practiced by its founder Aristotle, is to bridge the gap between what exists and the languages, both natural and artificial, for talking and reasoning about what exists". In a simplified way, we can assert that it studies the entities that exist and how they are related to one another, in order to reason about them.

In the past decades the concept of *ontology* was adopted by computer science, in order to develop "formalized, semantic, and logic-based models, which can easily be implemented in computer systems" (Øhrstrøm *et al.*, 2005: 425). The study of ontologies was specially undertaken by artificial intelligence, which led to the birth of the subfield of ontological engineering. In this field *ontology* is usually defined as "an explicit specification of a conceptualization" (Gruber, 1993: 199). This author understands *conceptualization* as "an

abstract, simplified view of the world that we wish to represent for some purpose" (*idem*). Consequently, an ontology describes a certain abstract vision of the world in an explicit, formal way. This vision is made up of "objects, concepts, and other entities that are presumed to exist in some area of interest and the relationships that hold them" (Genesereth & Nilsson, 1987 *apud* Gruber, 1993: 199). Nowadays ontologies play a crucial role in the Semantic Web, a movement led by the World Wide Web Consortium (W3C) which encourages the inclusion of semantic content in web pages.[1]

At this point it is interesting to refer to the components of an ontology, especially from the point of view of ontological engineering. According to Corcho et al. (2005: 144-145), any ontology is made up of concepts, relations, instances, constants, attributes, axioms and rules. These authors describe these elements as follows:[2]

– Concepts, also called classes, represent ideas about the physical or abstract objects that constitute a domain. As the authors point out, concepts "are usually organized in taxonomies through which inheritance mechanisms can be applied" (Corcho et al., 2005: 144). In this way, a class can be divided into subclasses that represent more specific concepts: for instance, an ontology can contain the class `means of transport`, and this can further contain the subclass `car`.
– Relations, or relationships, represent a type of association between concepts of the domain. The majority of relations link two concepts, so they are called binary relations.
– Instances represent individuals or specific elements of an ontology. So, for example, the concept `car` can be instantiated as "2001 Ford Focus".
– Constants are numerical values that do not change during much time. For example, the minimum number of nights in a hotel is one.
– Attributes, also called properties, describe properties of concepts and of instances. The authors distinguish two types of attributes: "class attributes" and "instance attributes" (*idem*: 145). The former describe concepts and take their values in the concept where they are defined. The latter describe instances and take their values in them.
– Formal axioms are logical expressions that are always true and are normally used to specify constraints in the ontology.
– Rules are generally used to infer knowledge in the ontology, such as attribute values.

Two more disciplines that have benefitted from the formal specification provided by ontologies are natural language processing (NLP) and terminology. Beale *et al.* (1995: 4) single out the uses of ontologies for NLP:

> An ontology for NLP purposes is a body of knowledge about the world (or a domain) that a) is a repository of primitive symbols used in meaning representation; b) organizes these symbols in a tangled subsumption hierarchy; and c) further interconnects these symbols using a rich system of semantic relations defined among the concepts. […] The ontology must be put into well-defined relations with other knowledge sources in the system. In this application, the ontology supplies world knowledge to lexical, syntactic and semantic processes, and other microtheories.

We would like to emphasize the statement "the ontology supplies world knowledge to lexical, syntactic and semantic processes," as it indicates that the concepts in the ontology can be connected to lexical units, and thus a knowledge base made up of concepts organized in

[1] http://en.wikipedia.org/wiki/Semantic_Web
[2] We have provided our own examples.

hierarchies could be enriched with linguistic information. This idea was borrowed as well by terminology.

Terminology is mentioned in this paper with a twofold meaning (Valeontis and Mantzari, 2006: 1):

> 1. the scientific field pertaining to the study of relations between concepts and their designations (terms, names and symbols) and the formulation of principles and methods governing these relations in any given subject field; and the task of collecting, processing, managing and presenting terminological data in one or more languages, as well as
> 2. the set of terms belonging to the special language of a specific subject field.

As these authors explain (*idem*):

> Fundamental for the theory of terminology is the distinction between objects, i.e. entities in the external world, concepts, which are the units of knowledge that constitute the mental representations of objects, and designations of concepts, which can be terms, names and symbols. Concepts are further determined by means of the relations they have to other concepts, as well as by definitions, which constitute the descriptive, metalinguistic denotation of concepts.

These components (objects, concepts, designations of concepts, relations, definitions) are similar to those of ontologies, and that is why many researchers have explored the connection between ontologies and terminologies, and how they can be beneficial to one another.[3] We will specifically focus in this paper on using ontologies for terminology. A number of authors have dealt with this topic: for instance, Feliu et al. (2002), Temmerman and Kerremans (2003), Cabré (2004), Moreno Ortiz (2008), Faber et al. (2009), Leonardi (2012), or Durán-Muñoz and Bautista-Zambrana (2013).[4]

The connection between ontologies and terminologies is explained by Moreno Ortiz (2008: 3) as follows: the terminologist works with concepts; he draws up and defines in a systematic way the conceptual relationships that exist among those concepts, creates taxonomies and specifies which lexical units are used, in the diverse languages involved, to make reference to those concepts. Therefore, the author adds, it seems that a formalized, explicit and standardized conceptual representation system should facilitate the terminologist's work, at least partly.

However, as other researchers claim, the relationship between ontologies and terminologies is not so apparent. For instance, according to Hirst (2009: 8), "a lexicon, especially one that is not specific to a technical domain […], is not a very good ontology."[5] L'Homme and Bernier-

[3] In this respect, Grabar et al. (2012: 376) point out that "because of the proximity in their semantic content and application contexts, terminologies and ontologies may be better thought of as part of a continuum rather than completely distinct types of artifacts."

[4] It is worth noting that ontologies have become an important object of study for a number of terminology-oriented research groups and that several periodical conferences have been dealing with this area of expertise for years now: the Terminology & Ontology: Theories and Applications Conference (TOTh), the International Conference on Terminology and Artificial Intelligence (TIA) and the Terminology and Knowledge Engineering Conference (TKE). (cf.
Durán-Muñoz and Bautista-Zambrana, 2013).

[5] However, as Hirst elaborates on this issue, he goes on to state that "it is possible that a lexicon with a semantic hierarchy might serve as the basis for a useful ontology, and an ontology may serve as a grounding for a lexicon. This may be so in particular in technical domains, in which vocabulary and ontology are more closely tied than in more general domains" (Hirst, 2009: 14).

Colborne (2012) agree with this idea and state that ontologies and terminologies are dealing with different objects: "ontologies are dealing with terms = class labels or with terms = linguistic expressions listed in annotations; dictionaries are dealing with terms = form + meaning" (*idem*: 396). In this way, the authors point out that "trying to exchange contents from one resource to the other will inevitably result in making several adjustments (in the ontology or in the dictionary), unless one compromises on the very nature of the objects that are represented in them" (*idem*: 398). For her part, Gromann (2013: 427) states that "terminologies and ontologies cannot be treated equivalently as they differ from a syntactic, semantic, and pragmatic perspective"; as she explains, the most relevant syntactic difference is the refined modeling of semantic relations and fine-grained natural language contents of terminologies, which have no corresponding elements in the ontology. From a semantic point of view, "ontologies realize the extensional definitions, while terminologies fully focus on intensional definitions of concepts" (*idem*: 426). On a pragmatic level, "terminologies are interested in how terms are used in specialized communication, while ontologies seek to draw inferences on the specific state of a certain domain of discourse" (*idem*: 426).

Taking the previous ideas as a background (commonalities and differences between ontologies and terminologies), we will describe the work that we have carried out in this field, namely constructing an ontology for terminological purposes, and we will show which aspects we have been able to portray in our ontology, and which ones not, so as to determine whether ontologies can be (properly) used for terminology work. Specifically, we set out to check which possibilities or obstacles we have encountered when dealing with the following aspects:

- Representation of conceptual relationships and characteristics.
- Representation of linguistic relationships (synonymy, near synonymy, collocations).
- Use of abstract or *artificial* concepts to better structure the domain.
- Data categories that can be represented.
- Ontology display.

The paper is organized as follows. Section 2 deals with how we have built our ontology; we explain the methodology that we have used and describe the implementation by means of the application *TopBraid Composer*. Section 3 discusses the results and offers some concluding remarks.

2 Creation of the ontology

Creating an ontology requires that we follow some ordered and defined steps, that is, to adopt a certain methodology. There are many methodologies for constructing ontologies, some of them devised for ontological engineering and some thought out for terminology. However, we consider that all of them have activities in common. In this case, we have opted for an ontological engineering methodology.

As a general rule, every methodology consists of a series of development-oriented activities: the most common are specification, conceptualization, formalization and implementation (Gómez-Pérez *et al.*, 2004). These authors describe them as follows: Specification is about determining why the ontology is being built, and what its intended uses and final users will be. Conceptualization consists in structuring the knowledge about a domain by means of significant models, on the knowledge level. It implies creating a so-called *conceptual model*, which is a representation of the expert's knowledge, external to the computer, by means of non-

computable structures that describe the problem and its solution (Gómez Pérez *et al.*, 1997; Fernández-López *et al.*, 1997). A conceptual model is usually made of intermediate representations, based on graphics and tables that can be understood by both domain experts and ontology developers. On the other hand, formalization transforms the conceptual model into a formal or semi-computable model. In this way, as Gómez Pérez *et al.* (1997) explain, the problem is modeled from the point of view of the system; they add that this is carried out through formalisms or knowledge representation techniques, some of which are based on concepts (such as frames), some on relationships (such as logic and semantic networks), and some on actions (such as scripts). Finally, implementation involves building computable models, that is, computer-readable ones, by means of an ontology language; according to Clark *et al.* (2004), "(a)n ontology language is a means by which one can formally describe a knowledge domain, with the goal of enabling computers to provide various kinds of reasoning services about that domain, and about the knowledge described by an ontology for that domain."

We must point out, however, that there are computer applications, such as *Protégé*, that automatically translate conceptual models into formal models described by means of ontological languages, so sometimes it is not necessary to carry out the formalization activity *per se*.

As regards the terminology field, against the background of growing interest in ontologies as a base for terminology work, some research groups have devised and created editors to build ontology-oriented terminological resources: some examples are *OntoTerm*, *Multilingual Categorisation Framework Editor* or *TERMINAE*. However, as Durán-Muñoz and Bautista-Zambrana (2013) point out, there are not freely available tools for building ontology-based terminological resources that enable the inclusion of multilingual designations or that support enough features so as to make a difference from traditional terminology editors (by offering, for instance, clear organization of specialized knowledge, systematic and coherent definitions, representation of multidimensionality, dynamicity, addition of multilingual information, among other features). Moreover, the existing ontology-based terminological editors might not be well suited to different methodologies and conceptual models (cf. Bautista Zambrana, 2013: 327).

The alternative is not straightforward either: it still remains difficult to find standard ontology editors that meet all the features needed to properly construct an ontology aimed at terminologists, or translators. Although, as we have observed, there are many computer applications for building ontologies, these are mainly intended for ontological engineering. Still, we propose to explore their possibilities and check whether they are suitable for terminology work.

This study was carried out taking into account the needs of a terminological project on package travel[6] (cf. Bautista Zambrana, 2013); it involved the phases of specification and conceptualization, as well as support activities such as knowledge acquisition.

2.1 Specification activity

The specification activity consisted in determining the motivation we had to build the ontology, which uses and end-users it would have. In this regard, it is an ontology aimed at translators, terminologists and other professionals that need multilingual documentation, and is thought out

[6] As regulated by the *Council Directive 90/314/EEC of 13 June 1990 on package travel, package holidays and package tours.*

as a base for the creation of a multilingual ontoterminological data bank or dictionary on package travel, for the Spanish, English and German languages. This implied that the ontology would have an independent, common backbone, composed of concepts, properties, and relationships among concepts, valid for all the languages involved, and that every concept, property and relationship would be lexicalized by means of their corresponding terms in Spanish, English and German.

2.2 Conceptualization activity

The conceptualization phase required some previous support activities, especially those aimed at acquiring conceptual and linguistic knowledge; to this end, we compiled a multilingual text corpus (Spanish-English-German) on package travel, containing laws and contracts (terms and conditions), in order to extract the most important terms (and therefore their underlying concepts) of this domain, and the conceptual relationships that they hold with each other. Translation equivalents for the three languages were also detected. In this sense, it must be pointed out that our approach to extracting concepts was mainly semasiological, i.e. we adopted a bottom-up method to extract the terms that would later populate the ontology; the relationships were extracted using bottom-up and top-down methods.

Once we had collected all this information together, we were able to proceed to the conceptualization phase.[7] It consisted in organizing and structuring the knowledge acquired in the abovementioned activity, by means of external representations, independent from the knowledge representation paradigms and ontology languages that we would later use to implement the ontology; in other words, we represented the domain under study —package travel— through concepts that were comprehensible by both domain experts and ontology developers, that is, by means of diagrams and tables; the result was the conceptual model of the domain. For instance, one of the steps required to construct taxonomies from the concepts extracted from the corpus. Figure 1 illustrates a small taxonomy for the English language.

tourist service
- transport
- accommodation
- trip
  - visit
  - excursion

Figure 1 *Taxonomy as part of the conceptualization phase*.

2.3 Implementation

The next step, formalization, was replaced by the subsequent activity, implementation, since we decided to employ a computer tool to build the ontology. We needed a tool that was user-friendly, well-documented, and that had the capability of exporting the produced ontology into

[7] Our work was partly based on the METHONTOLOGY methodology (Gómez-Pérez et al., 2004).

other formats. Thus, in order to carry out this task, we pre-selected three ontology editors based on their general relevance, usefulness, usability and adaptability: *Protégé*, *NeOn Toolkit* and *TopBraid Composer*.

In this section, with the aim of finding an appropriate ontology editor, we compare the three selected tools —*Protégé*, *NeOn Toolkit* and *TopBraid Composer*— by focusing on the aspects that are most relevant for our purposes: simplicity (clarity, user-friendliness), documentation, user community and export capabilities.[8]

Protégé

Protégé[9] is one of the most used and best-known tools for creating ontologies. It is a free and open-source application, with three main versions: *Protégé-OWL*,[10] *Protégé-Frames*[11] and *WebProtégé*. We decided to try the OWL version (versus the Frames one), given the rise of this language as an interchange format for semantic data, and owing to the greater amount of documentation on the Web, as well as of browsers capable of reading ontologies written in OWL. *Protégé-OWL*, in turn, is divided into two large groups of versions, those which start from 3.X and those which do it from 4.X. We decided to try the first, in particular the version 3.4.6, since it is more stable, is based on the more widespread (up to now) OWL 1.0, and supports OWL and RDF(S)[12].

By means of *Protégé-OWL* we can represent concepts, relationships and properties, and moreover each entity can be documented with labels in all the desired languages (see Figure 2). Descriptions for each entity can be added as well, in any language. The ontology can be created in a great variety of formats (OWL/RDF, RDF, Experimental XML), what facilitates its subsequent use in other applications, and in general its sharing and interoperability with other platforms.

The large amount of manuals and tutorials about *Protégé* on the Web are a great advantage to take into account.

[8] These are mainly extrinsic aspects. The three applications are internally quite similar, since they are based on OWL.
[9] http://protege.stanford.edu/
[10] OWL, or Web Ontology Language, is based on the DAML-OIL web ontology language, which in turn builds on the RDF and RDF(S) languages. More information at http://www.w3.org/TR/owl-features/
[11] This version is based on frames, a knowledge representation paradigm. The official website of *Protégé* describes it as follows: "In this model, an ontology consists of a set of classes organized in a subsumption hierarchy to represent a domain's salient concepts, a set of slots associated to classes to describe their properties and relationships, and a set of instances of those classes - individual exemplars of the concepts that hold specific values for their properties" (see http://protege.stanford.edu/overview for more information).
[12] RDF(S) or RDF Schema is a semantic extension of the ontology language RDF. We can find many of its components in OWL. More information at http://www.w3.org/TR/rdf-schema
.

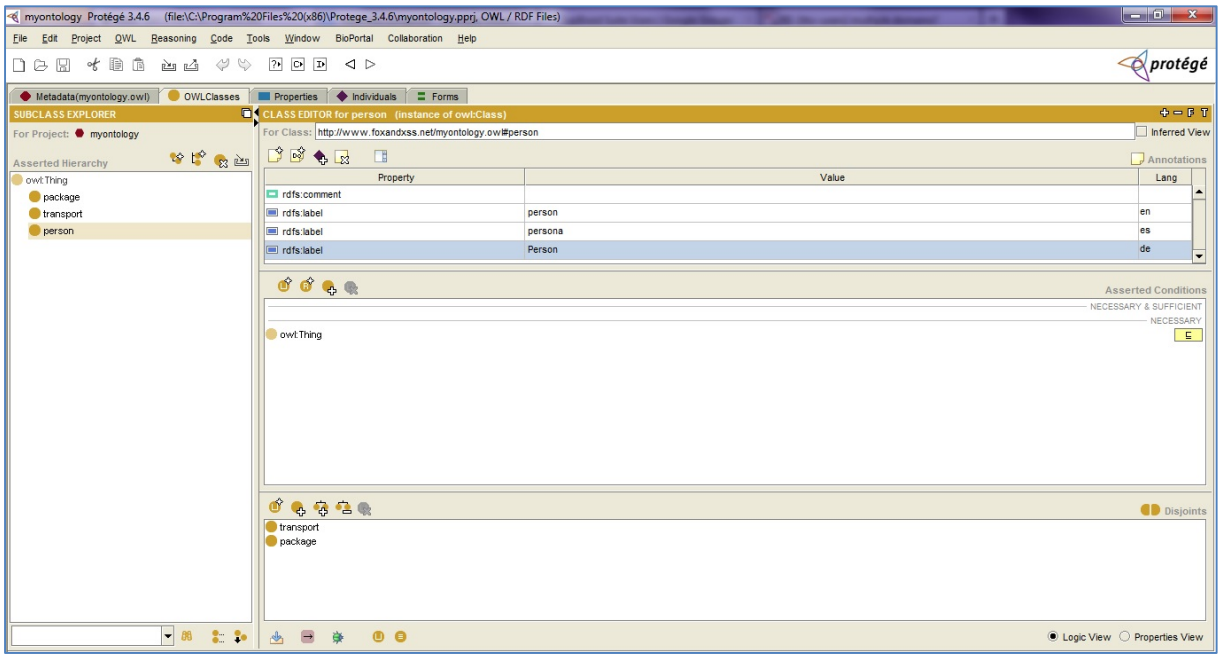

Figure 2 *Class editor of Protégé 3. 4. 6.*

Another remarkable aspect of *Protégé-OWL* is its large community, with more than 240,000 registered users: there are various official mailing lists (which cover the different versions of the program), as well as an extensive wiki with documentation for users and developers, and relevant links about the program.[13]

NeOn Toolkit

NeOn Toolkit[14] is a much more recent and less-known tool than *Protégé*. It was created within the NeOn Project (European Commission's Sixth Framework Programme) and has had a number of versions, the last being 2.5.2, as of December 2011. This one was the version used for our comparison. *NeOn Toolkit* is aimed at creating ontologies with OWL, and for that purpose it includes a complete editor, which supports OWL 2. The editor is quite intuitive and allows creating concepts, properties and relationships in a relatively easy way; likewise, labels can be added to each one of the cited entities. We can state that, broadly speaking, it is easier to manage than *Protégé*, owing partly to the lower number of options (see Figure 3). As in the case of *Protégé*, ontologies can be saved in several formats (in this case, OWL, RDF and RDF(S)).

[13] http://protegewiki.stanford.edu/wiki/Main_Page>
[14] http://neon-toolkit.org/wiki/Main_Page

However, the program has less documentation than other analyzed applications and does not have a considerable user community (for example, in the form of a forum) where one can ask questions or look for information; there exists, nevertheless, a mailing list for these purposes.

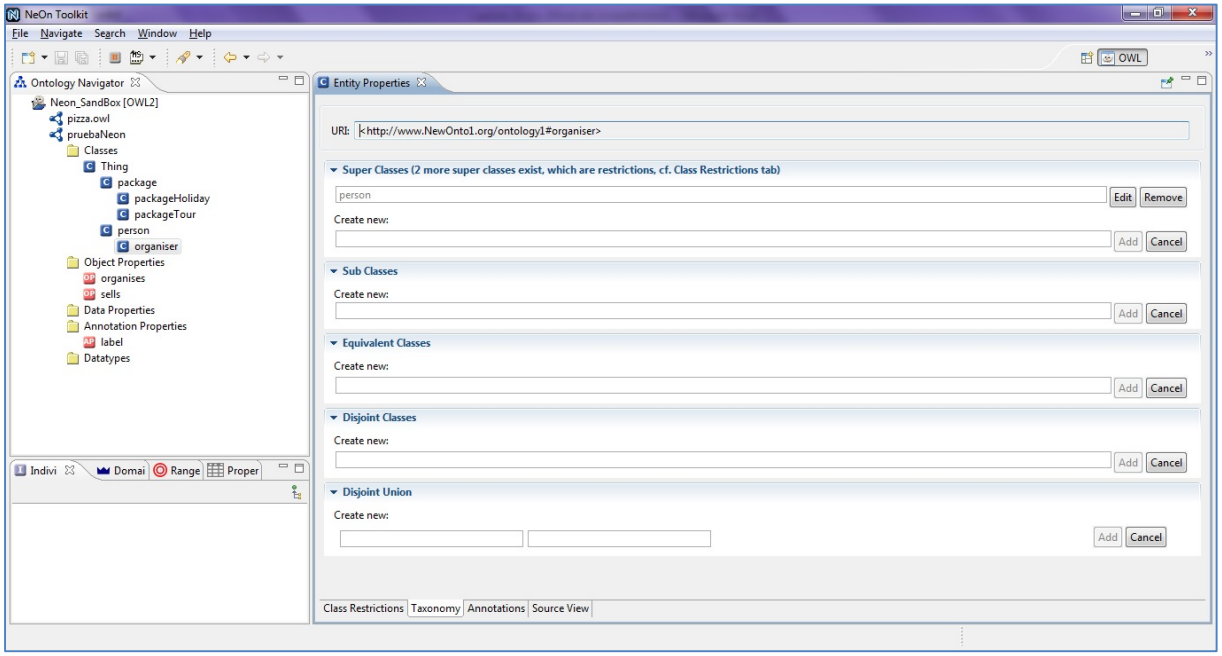

Figure 3 *Taxonomy editor in* NeOn Toolkit *2. 5. 2.*

TopBraid Composer

Finally, we will deal with *TopBraid Composer Free Edition* (hereafter *TopBraid*). This program of the company TopQuadrant is remarkable for its usability and the help that its extensive documentation provides: basic guides (TopQuadrant, 2011, *Getting started Guide*), manuals, and a Google group page containing numerous frequent questions, together with answers from the users themselves and the program developers.[15]

One of its key features is, as mentioned above, the ease of use: the application is quite intuitive, while we can find detailed explanations of every procedure (such as creation of classes, properties and relationships) in the basic guides and manuals. Like *Protégé*, *TopBraid* is oriented towards logic work (inferences, reasoning tasks), but one can also use the program and benefit from its many features without making use of those functionalities.

[15] <https://groups.google.com/forum/?fromgroups#!forum/topbraid-users>

As in the other applications, labels can be attached to each concept, relationship or property (see class editor in Figure 4). In this respect, a disadvantage is that the corresponding language code has to be added manually behind the corresponding designation or definition, by writing, for instance, "{@es}" (the quotation marks are ours).

We must also emphasize the capacity of the application to export into other formats, although it offers fewer alternatives than other programs: Turtle, XML/RDF abbreviated, XML/RDF, N-Triple and Java.

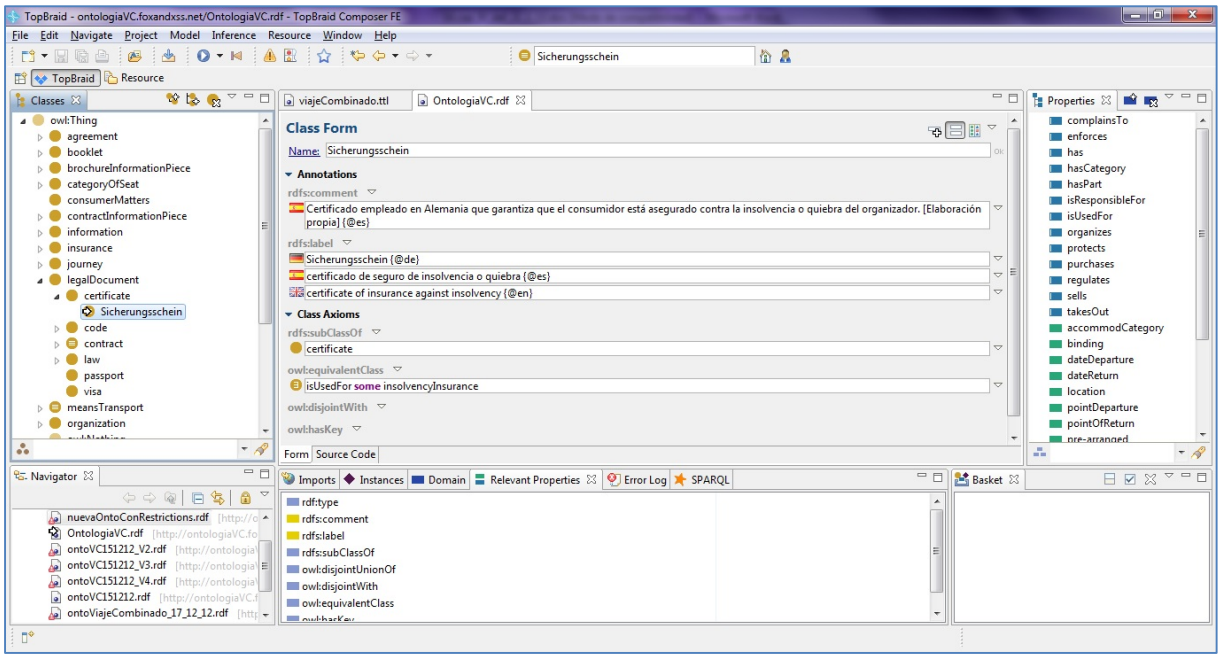

Figure 4 *Class editor of* TopBraid Composer.

Next, we offer a summary table of the main advantages (or disadvantages) brought by each program. We have assessed the main aspects cited so far (usability or simplicity, that is, clarity and intuitiveness; guides or documentation; community; and export capabilities), by giving a score from 0 (lowest) to 5 (highest), according to the user experience offered by each program.[16]

[16] In the table, "a" stands for usability; "b" for documentation; "c" for community; and "d" for export capabilities.

Aspects → / Programs ↓	a	B	c	d	Total score
Protégé	3	4	5	5	17
NeOn Toolkit	4	3	1	5	13
TopBraid Composer	4	5	5	4	18

Table 1 *Comparison and scores for characteristics of ontology editors.*

As we see, *TopBraid* obtains the highest score, followed very closely by *Protégé*. However, we have decided to select *TopBraid*, because we have found its ease of use and clarity very advantageous; in addition, it complies with the criteria of exporting to formats that allow working later on with other programs. The only drawback we have detected is the fact that it is a commercial application, since we would have preferred to employ an open-source program.

In the next section we will tackle the implementation of the ontology by means of *TopBraid*.

2.3.1 Ontology implementation by means of TopBraid Composer

The last activity in the process of constructing an ontology is implementation, which consists, as we explained above, in building computable models (readable by computer) in an ontology language. In other words, it involves formally representing previously collected concepts. This activity, as pointed out, can be carried out manually, i.e., by writing the ontology with the corresponding code of the chosen language, or by means of a computer application. We have opted for the second option, and as we concluded in the previous section, it was determined that the most appropriate program was *TopBraid Composer Free Edition*. In this way, this section will focus on explaining how we have transferred the conceptualization obtained in the previous activity to a computable model, by means of the aforementioned application.

Our aim is to construct a domain ontology, aimed at translators and terminologists who need conceptual and linguistic documentation on package travel. In this way, the ontology will be made up of concepts, relationships among those concepts and some relevant properties. The relationships will be hierarchical and associative. Each entity is to be accompanied by linguistic labels in English, Spanish and German. The labels used to lexicalize the concepts will thus constitute the terms of our specialized domain. A definition in Spanish, with an indication of its source, is to be added to each concept.

The first step is to create a project in *TopBraid*. For that purpose we have given it a name, "OntologiaVC". Inside the project, we have created a RDF file in RDF/OWL format, "OntologiaVC.rdf". This file will be our ontology.

Once the project and the file have been created, we can start working on the ontology. As we can see, there are different working sections (Figure 5): on the left side, we can find the concept tree; in the middle, we can see the class editor (or the relationship or property editor, as

appropriate); on the right side, the list of properties[17] (which contains the relationships and intrinsic attributes).

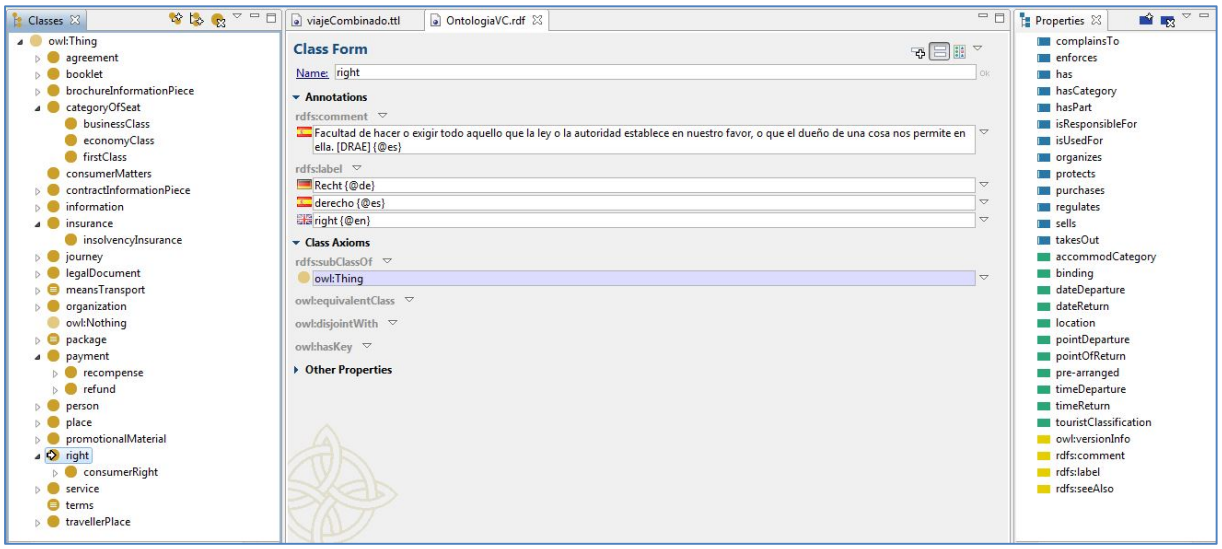

Figure 5 *Working sections in TopBraid*.

The first step consists in representing all the classes selected in the previous phase of conceptualization. To that effect, *TopBraid* contains a class tree and a class editor, which we show next (Figure 6):

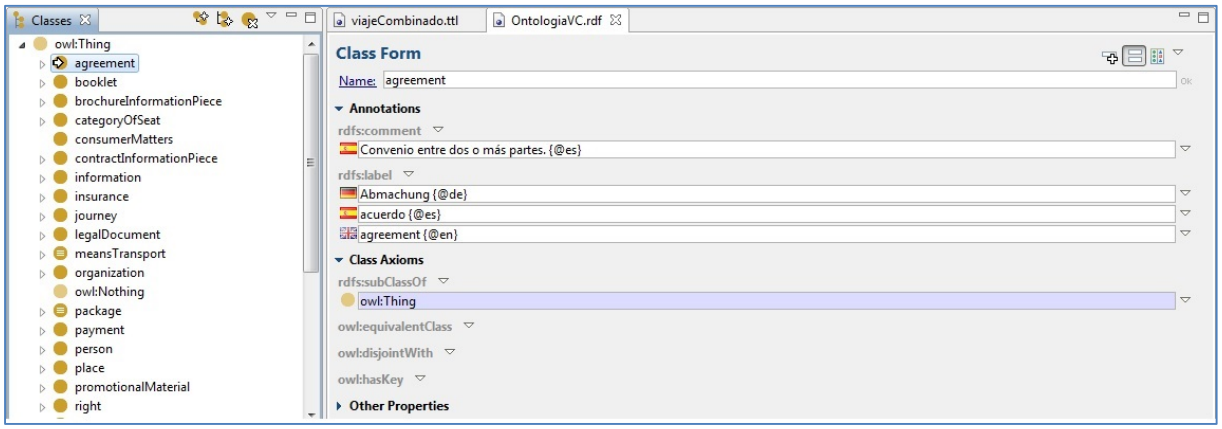

Figure 6 *Class tree and class editor in* TopBraid.

[17] In OWL, both relationships and intrinsic attributes are called *properties*.

In the class editor there is a form where we can include the name of the class: it is specifically the concept identifier, not a linguistic designation for the concept. However, although we could have opted for naming the concepts as a number or any character string, we decided to use the corresponding terms in English, in many cases as an abbreviated form, without spaces: for instance, *legalDocument*.

Regarding the way of implementing the lexicalizations associated to each concept, there exist several methods. Montiel (2011: 203-210) sets out the three main ones:[18]

– Including multilingual labels in the ontology: it is the most widespread modeling option and consists in making use of the labeling functionality of RDF(S) and OWL.
– Combining the ontology with a mapping model: It consists in mapping, establishing correspondences or equivalences among conceptualizations in different languages.
– Associating the ontology with an external linguistic model: The ontology entities are linked to linguistic data stored outside of the ontology. It is the case of the model put forward by Montiel (2011: 232), *Linguistic Information Repository* (LIR), which consists of a linguistic layer in different natural languages that captures the conceptual knowledge represented in a specific domain ontology, so it provides the conceptual model with linguistic information. Another remarkable example of external linguistic model, intended to model lexica and machine-readable dictionaries, is Lemon.[19]

In our case, we have opted for using the labeling functionality provided by RDF(S) (and included in OWL), since it allows assigning linguistic labels to concepts, relationships and properties; in addition, we consider that this functionality can adapt well to the domain conceptualization we have performed and to the divergences that may arise both on the conceptual level (different categorizations of reality in different cultures) and on the linguistic level (synonymy and polysemy). In particular, these designations or lexicalizations can be added in *TopBraid* in the Annotations section, under rdfs:label. By means of this label, RDF(S) allows us to add designations, in all the desired languages, to each concept. We can see an example in the following Figure:

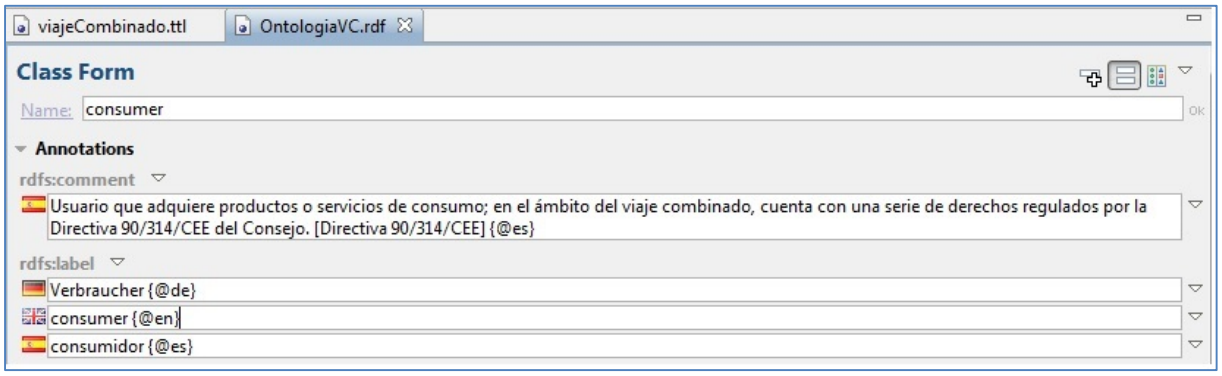

Figure 7 *Labels in the class editor of* TopBraid.

[18] Although these methods are generally applied to ontology localization, we consider they can also be used to include terminological information in ontologies.
[19] http://lemon-model.net/index.php

Next, the relationships were represented. These can be implemented in OWL by means of the so-called *object properties*, which represent connections between two classes of the same ontology. With that aim, in the Properties section, on the right side of the interface, we created each relationship or object property for our ontology. Like classes, relationships are identified by a unique name given by the user, to which different designations can be associated, in the desired languages. For example, we added the meronymic relationship *hasPart* and associated it with the following linguistic equivalents: *tiene parte* (Spanish), *hast part* (English) and *hat Teil* (German). We can observe it in the following screenshot:

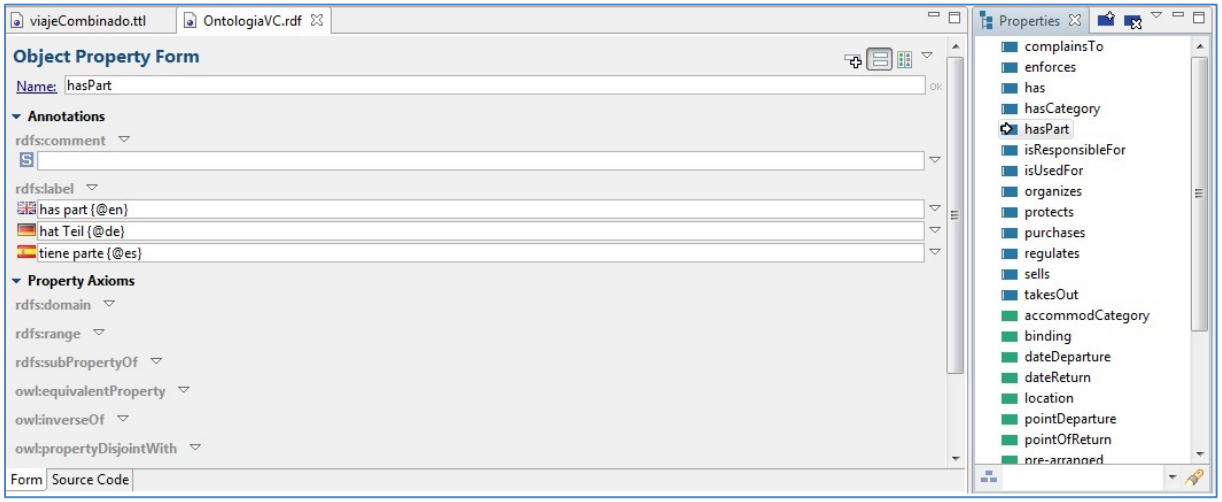

Figure 8 *Relationship editor in* TopBraid.

The implementation of the object properties in OWL posed a problem for the correct representation of the relationships we wanted to reflect in the ontology. The reason is that the primary way of establishing which is the first part of the relationship and which the second consists in specifying the *domain* (first part, expressed in OWL by the label rdfs:domain) and *range* (second part, expressed by rdfs:range). For instance, in the relationship `contract` *hasPart* `terms`, `contract` is the domain and `terms` is the range.[20]

However, given that object properties are independent from classes, if we use again *hasPart* with a different domain and range (for example, `cabin` *hasPart* `berth`), it will be inferred that any instance of `cabin` is also one of `contract`, and vice versa; the same would be the case for terms and berth. Obviously, we do not want to have those inferences in our ontology; on that account we had to search for other methods of representing the desired relationships. There are two possible solutions: in the first place, we can use operators such as OR when specifying the respective domain or range. We can draw an example from the *TopBraid manual* (TopQuadrant, 2011: 26):

[20] We will use another font to distinguish the concepts (as well as the relationships and properties) from its respective linguistic designations.

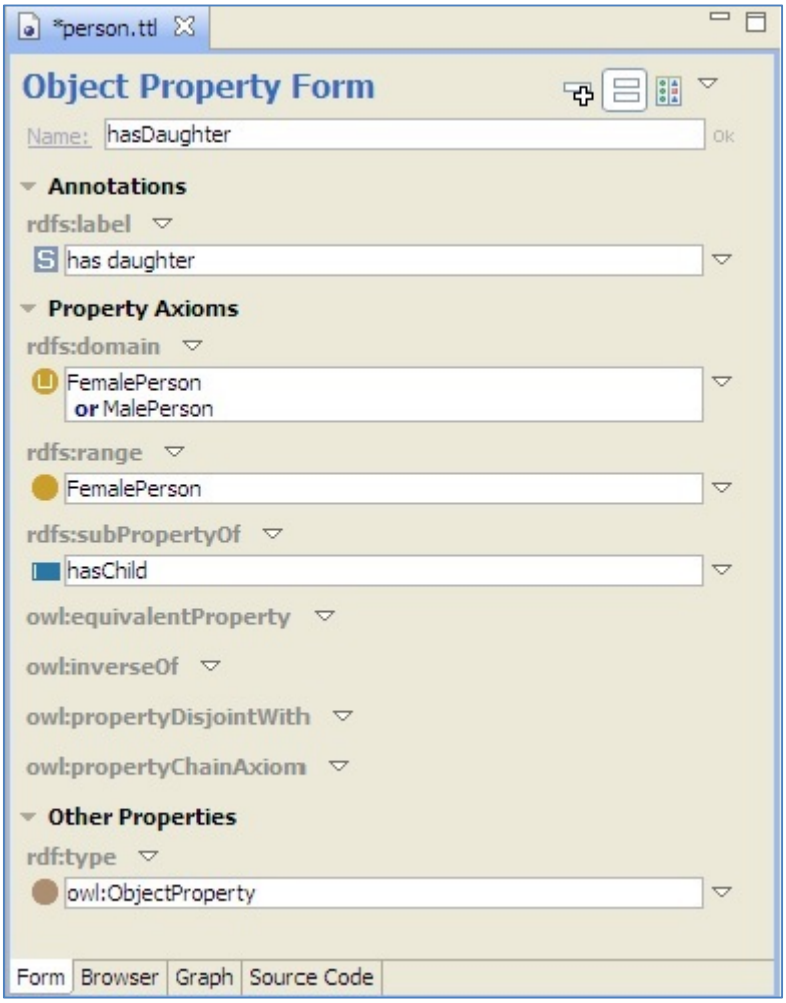

Figure 9 *Use of the OR operator.*

As we can see, the domain field of the form contains the expression `FemalePerson` or `MalePerson`, which constitutes the relationship `FemalePerson` or `MalePerson` *`hasDaughter`* `FemalePerson`. This means that either a woman or a man can have a female daughter. This solution is valid when we deal with very specific relationships, such as *`hasDaughter`*, since it is acceptable for the domain (the first part of the relationship) to be either a woman or a man. However, it is not valid when we wish to apply it to diverse concepts not related to one another, as in the case of *`hasPart`*. This relationship is applicable to multiple classes of different nature, so it is necessary to resort to the second solution: it consists in employing the so-called *OWL restrictions*. They bring the advantage of defining only classes; in contrast, object properties only define relationships, in such a way that their values (domain, range) remain always true, irrespective of where the relationship is being used. For their part, OWL restrictions can be used to restrict the individuals or instances that belong to a class, by

declaring, with the statements rdfs:subClassOf and owl:equivalentClass, the following restrictions (TopQuadrant, 2011: 41):

– Quantifier restrictions: *allValuesFrom* and *someValuesFrom*.
– Cardinality restrictions: *minCardinality*, *cardinality* and *maxCardinality*.
– *hasValue* restrictions.

An example of how restrictions work is the following (TopQuadrant, 2011: 41): taking the class `USCitizen` as an example, if we declare under rdfs:subClassOf that the nationality property *hasValue* 'USA', this means that `USCitizen` is a subclass of all things for which the value of the nationality property equals (*hasValue*) 'USA'.

On the contrary, if we declare the same restriction in the field owl:equivalentClass (that is, by writing nationality *hasValue* 'USA' in that space), this means that the class `USCitizen` is equivalent to all things for which the value of nationality property equals (*hasValue*) 'USA'. From this we can draw two inferences:
– if it is known that an individual is a US Citizen, it can be inferred that his nationality is 'USA', and
– if it is known that an individual's nationality is 'USA', it can be inferred that he is a US Citizen.

In our case, we have opted for utilizing owl:equivalentClass declarations, with the quantifier restriction *someValuesFrom* (represented by *some* in the OWL code), which denotes that a class has at least one relationship to an instance of another class. We can see an example of this in the form corresponding to the class `organizer` (Figure 10).

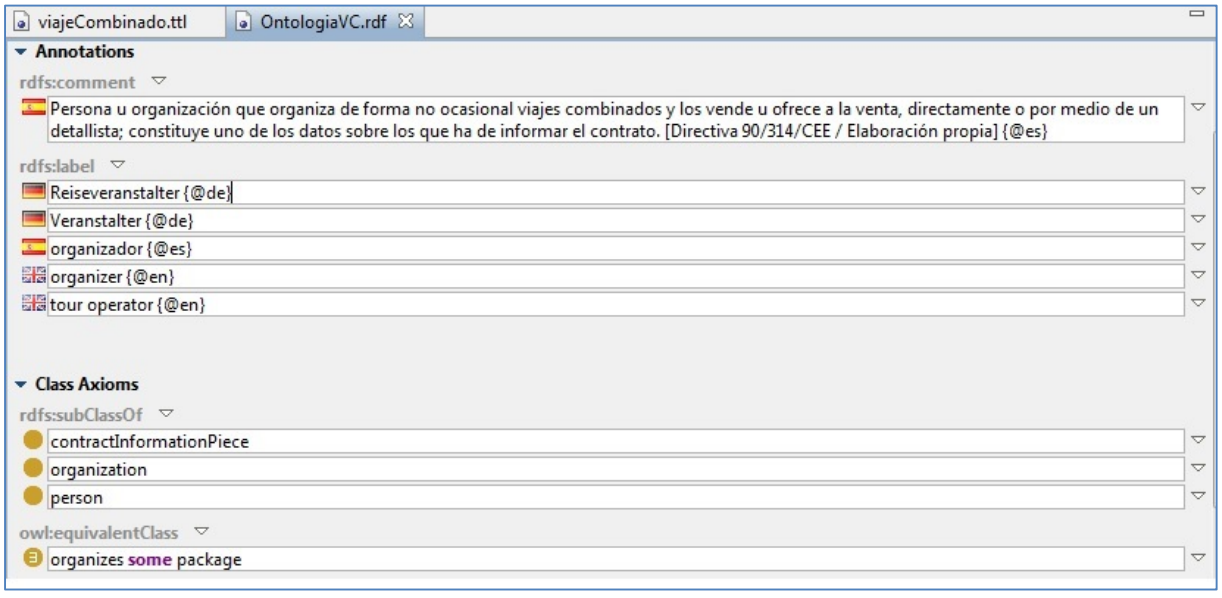

Figure 10 *Formulating relationships for the class* organizer.

By means of the declaration we have made under owl:equivalentClass, we are asserting that `organizer` equals all the things that organize at least one travel package. Therefore, we can infer that if an individual organizes any travel package, it must be an organizer.

Finally, the properties were implemented. These bear correspondence in OWL with the so-called *datatype properties*, which are used to represent attributes or intrinsic properties of a concept. What characterizes datatype properties, from a strictly formal point of view, is that they associate a class (implemented as a domain) to a literal, which is a XML Schema Datatype (XSD) value with which we can represent character strings, integers, etc. In the following Figure we can observe the form we used to implement the property `dateReturn` (date of return), with its respective labels, and with the indication that its domain is the class `meansTransport` (means of transport) and its range, a xsd:string literal. This means that the property `dateReturn` applies to the class `meansTransport` and that its values can take the form of strings.

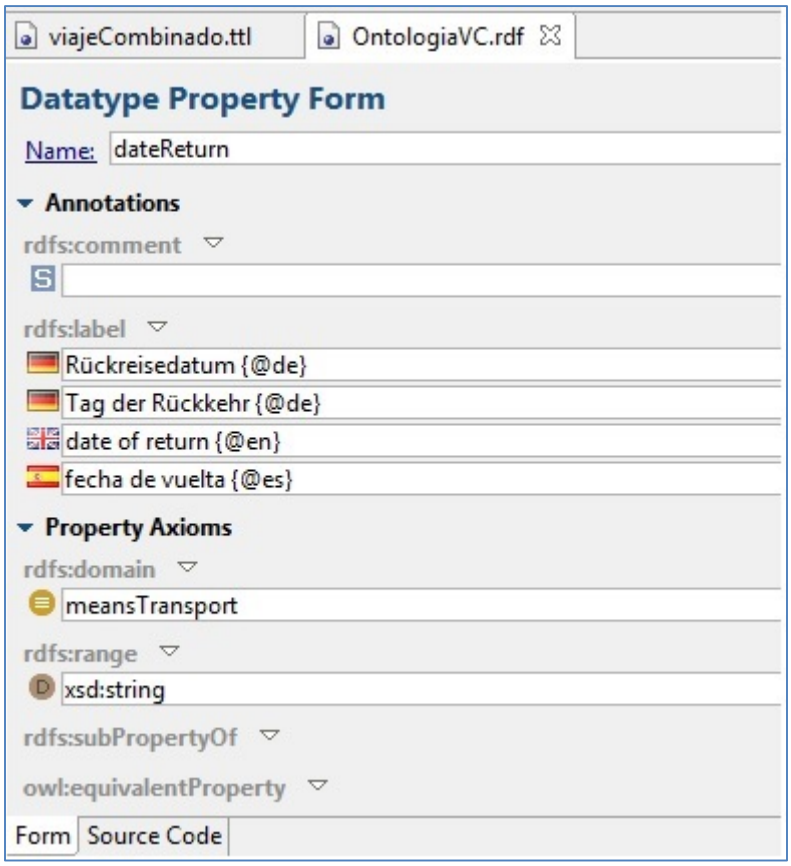

Figure 11 *Property editor*.

The last element that we have included in the ontology at this stage is the definition of each one of the concepts, in Spanish. To that aim, we have resorted to several sources: in the first place, the conceptual information offered by the ontology itself, so, for each definition, we have taken into account the superordinate concept or hypernym, in order to place it as the first word of the definition, whenever it has been possible. In addition, we have made use of the information provided by the relationships and properties.

In the second place, with the purpose of completing the definitions with other data not reflected in the conceptual structure, we have resorted to some general dictionaries, such as the *Diccionario de la Real Academia Española* (Dictionary of the Royal Academy of the Spanish language) (2001), María Moliner's *Diccionario de uso del español* (Dictionary of Usage of the Spanish language) (2007) and the website of *Oxford Dictionaries* (2010).

Thirdly, some definitions are based on what is set out, defined or explained in the European Directive on package travel (Council Directive 90/314/EEC). Finally, other definitions contain information from specialized dictionaries and webs. The definitions have been implemented through the annotation property rdfs:comment. The following Figure illustrates the definition of the concept `retailer`:

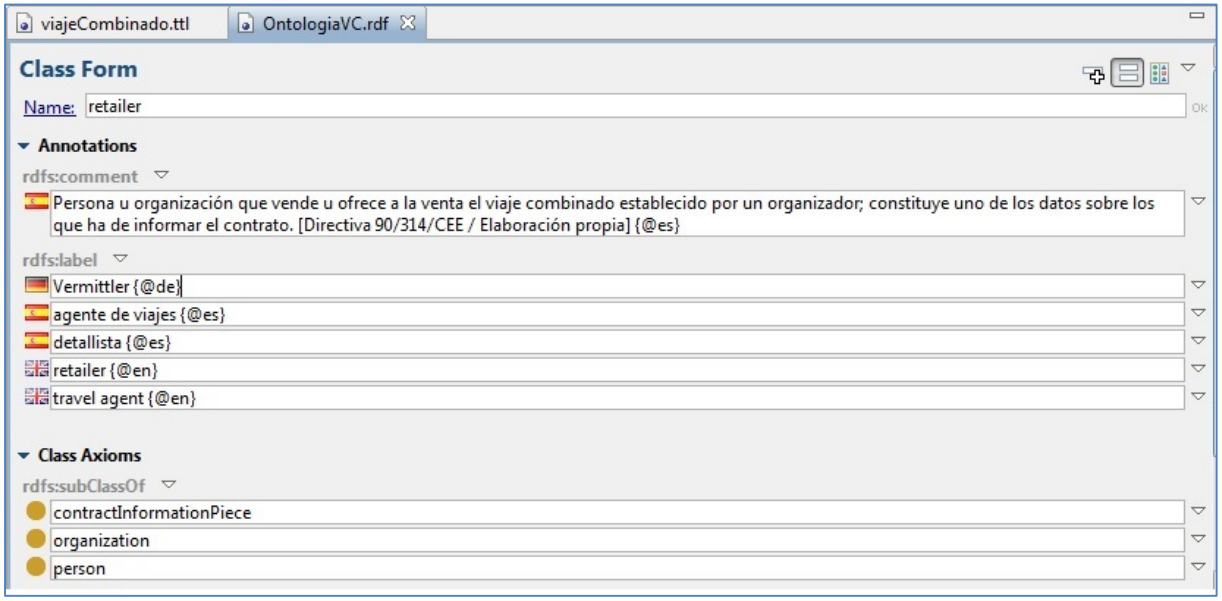

Figure 12 *Definition of* retailer.

In the end we have created an ontology containing 108 concepts, 13 types of relationships (that link in turn many more concepts) and 11 types of properties. We have provided the concepts, as well as the relationships and properties, with linguistic realizations, i.e. terms, in Spanish, English and German.

3 Discussion and conclusions

After constructing our ontology, we have encountered some positive results, as well as some obstacles. With respect to the aspects we established at the beginning, we have obtained the following results:

- Representation of conceptual relationships and characteristics. We have found that constructing an ontology with a standard OWL ontology editor allows representing all types of conceptual relationships in a formal way: both hierarchical (generic and partitive) and associative relations. Characteristics can also be represented my means of datatype properties in OWL.

- Representation of linguistic relationships (synonymy, near synonymy, collocations). We were able to represent paradigmatic relationships such as synonymy by means of the label capabilities of OWL. In this way, if a concept has two possible lexicalizations in a given language, we can add both terms as separate labels with the indication of the corresponding language (for instance, see *retailer* and *travel agent* in Figure 14).
- However, this label functionality does not permit to express near synonymy, nor preferred or admitted terms. As for syntagmatic relationships, such as collocations, we have not found a way to represent them; however, the lexicalizations of the conceptual relationships that we have established can be considered in many cases as collocations as well.
- Use of abstract or *artificial* concepts to better structure the domain. We had to create some classes for classification purposes (cf. L'Homme and Bernier-Colborne, 2012). For example, we had to implement the class `brochureInformationPiece` to encompass all the information items that a brochure must contain. However, we consider that these abstract classes can help solve some categorization divergences that may exist among the conceptual structures of different languages.
- Data categories that can be represented. We have been able to represent several data categories that are standard or widely used in terminography (cf. Cabré, 1999: 124), namely term identifier (by means of the class name), entry term in three different languages (with language identification), definition and its source,[21] and synonymous terms. However, one major drawback is the lack of flexibility to add different terminological data categories that are normally included in standard terminological records (cf. Cabré, 1999: 124-125): grammatical category, context, or administrative data such as author of the record. Moreover, as we mentioned above, we cannot represent certain linguistic categories such as near synonymy or collocations.
- Ontology display. Since our objective is to provide terminologists and translators with an ontoterminological data bank, we consider that we must try to offer the data stored in the ontology in a user-friendly way. *TopBraid* (or for that matter, any standard ontology editor) is not appropriate for users not familiar with ontologies, but its export capabilities can prove useful: the resulting ontology can be exported to some interchangeable formats and can be thus be viewed by means of ontology browsers such as *OWLViewer*,[22] *Ontology Browser*[23] or *SWOOP*,[24] although these might pose slight viewing problems. Another option is the use of *OntoDiccionario* (Bautista Zambrana, 2013), an application capable of interpreting the ontology built with *TopBraid* and of displaying it in a user-friendly way, specially aimed at terminologists and translators.

This study set out to determine which possibilities or obstacles we encounter when constructing an OWL ontology for terminological purposes. The results of this study indicate that ontologies are a good instrument to represent conceptual relationships and characteristics in a formal and consistent way, when we wish to build an ontoterminological data bank or dictionary. Moreover, ontologies offer the possibility of expressing that knowledge in several languages, as we have observed with the use of labels. This is without a doubt interesting, all the more so

[21] We have added a definition in Spanish for each concept, but we could have done it as well for English and German.
[22] http://agem.cnb.csic.es/VisualOmics/OwlViewer/index_OV.html
[23] http://code.google.com/p/ontology-browser
[24] http://code.google.com/p/swoop

because of the current research being made in the Linked Open Data framework, which seeks to expose, share and connect pieces of data, information and knowledge on the Semantic Web (Declerck and Wandl-Vogt, 2014). As these authors state, "by interlinking multilingual and open (language) resources, we foresee a linguistic linked open data (LLOD) cloud, a new linguistic ecosystem, that will allow the open exploitation of such data." Terminology could undoubtedly benefit from that initiative.

However, when constructing our ontology, we had to compromise on some other aspects, as L'Homme and Bernier-Colborne (2012) point out. We were not able to represent certain linguistic relationships such as near synonymy, term preference, or collocations. We could not include textual contexts or usage notes either. On the other hand, although creating abstract concepts facilitates the representation of the conceptual structure of a domain across languages and cultures, it still remains difficult to organize the conceptual model in a way that can accommodate all the categorization differences that can arise when dealing with culturally-dependent domains, such as tourism legislation.

We are aware that external linguistic models such as Lemon address and solve some of these drawbacks (for instance, term preference), but we consider that further research is needed to improve the representation of terminologies by means of ontologies, or to build a better knowledge-based approach to terminology.

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IPCC communicative practices: A linguistic comparison of the *Summary for Policymakers* 2007 and 2013

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Abstract

The present paper undertakes an analysis of language use in two so-called Summaries for policymakers (SPMs), published as part of the IPCC (Intergovernmental Panel on Climate Change) Assessment Reports 4 (AR4, 2007) and 5 (AR5, 2013). Through a comparative analysis, we investigate how scientific claims are conveyed through expressions indicating various levels of (un)certainty, through scalar systems established by the IPCC to indicate levels of likelihood, confidence and evidence, as well as through non-predefined linguistic means. We also consider to what extent contrasted claims may indicate a difference in argumentative emphasis in the two summaries, without diverging from the overall purpose of the IPCC: to present a consensual view on current climate knowledge. Further, the analysis assumes a textual perspective, investigating to what extent the summaries have a narrative structure with a clear storyline. The results show that, generally, the two SPMs adhere to the expressed purpose of the IPCC. However, there are differences indicating a strengthened basis for scientific certainty in the AR5-SPM. The narrative analysis discusses the lack of explicit reactions to the stated complications. The findings also point towards the need for further analyses to assess the reception of text layout and language use by policymakers.

1 Introduction

In September 2013, the Intergovernmental Panel on Climate Change (IPCC) published the first component of the 5th Assessment Report (AR5)[1], namely Working Group I's report on the physical scientific basis (WGI). Since 2007, when the previous report, AR4,[2] was published, there has been much discussion of the IPCC texts, notably on the issue of how to convey (un)certainty (e.g. Bowman et al. 2009; Budescu et al. 2009; Budescu et al. 2014; Harris et al. 2013; Hulme 2013; Jonassen and Pielke 2011). In 2010, an international scientific body, the InterAcademy Council (IAC), undertook a comprehensive review of IPCC procedures, structure and governance, including the issue of communicating at the interface between science and policy. Their assessment (InterAcademy Council 2010)[3] contributed to putting IPCC discourse on the public agenda. With those discussions as a backdrop, the current paper undertakes a comparative analysis of a selection of phenomena related to language use in the AR4 and AR5 summaries for policymakers (SPMs)[4],[5], published as part of the WGI reports[6],[7],[8]. Our main purpose is to explore both similarities and differences between the two documents and to investigate to what extent AR5-WGI-SPM has adhered to or neglected the recommendations proposed in the IAC review. We believe such an investigation is important due to the vital role played by the IPCC in constructing and communicating a consensus about the current state of climate knowledge to non-scientists, notably policymakers, but also other interested stakeholders.

Our intention is to broaden the current discussion of language use in the IPCC assessment reports from the calibrated language for handling uncertainties set out in the document 'Guidance Note for Lead Authors' (2010)[9] to also considering other language devices that may contribute to fulfil the communicative goals of the IPCC. By means of a comparative linguistic analysis, we therefore investigate how scientific claims are conveyed through expressions indicating various levels of (un)certainty, through the scalar systems such as those established by the IPCC to indicate levels of likelihood, confidence and evidence, as well as through non-predefined linguistic means. We further investigate to what extent the recommendations from the IAC on how to evaluate evidence and deal with uncertainty are reflected in AR5-WGI-SPM. We in addition consider in both SPMs to what extent contrasted statements referring to different claims may indicate different argumentative emphasis, without diverging from the overall purpose of the IPCC: to present a consensual view on current climate knowledge. Finally, inspired by the fact that the authors of AR5-WGI-SPM

[1] http://www.ipcc.ch/report/ar5/
[2] http://www.ipcc.ch/report/ar4/
[3] http://reviewipcc.interacademycouncil.net/report/Climate%20Change%20Assessments,%20Review%20of%20the%20Processes%20&%20Procedures%20of%20the%20IPCC.pdf
[4] http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-spm.pdf
[5] http://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5_SPM_FINAL.pdf
[6] http://www.ipcc.ch/report/ar4/wg1/
[7] http://www.ipcc.ch/report/ar5/wg1/
[8] Note that all the Assessment Reports (AR) comprise 3 Working Group (WG) Reports as well as a Synthesis Report. Each of the part-reports contains a Summary for Policymakers (SPM). The two SPMs analysed here are the ones from WGI of AR4 and AR5, respectively. The labels AR4-WGI-SPM and AR5-WGI-SPM are used in the running text and the tables to refer to the summaries in question. In the cited examples, the simplified labels AR4-SPM and AR5-SPM are used to denote the same two texts.
[9] http://www.ipcc.ch/pdf/supporting-material/uncertainty-guidance-note.pdf

call their text a "narrative" (p. 2), we examine to what extent the text corresponds to the typical narrative structure, with specific content components and actors. Recent research on the concept of narrative in the policy process (Jones 2010, 2013) has found that the use of "heroes" is "particularly powerful in shaping opinion about climate change" (Shanahan et al., 2013: 456).

Our findings will show that, as expected after the IAC review, there are observable differences between the two SPMs with regard to the issues we focus on. However, we also find that the IAC recommendations are only partially adhered to in AR5-WGI-SPM. Finally, we will claim that AR5-WGI-SPM does not represent a full narrative. These findings provide a basis for discussing possible implications for the potential impact of texts such as the SPMs on target audiences.

The structure of the paper is as follows: After a brief description of our material and theoretical foundation (section 2), we analyse how claims are conveyed through expressions for different levels of (un)certainty, and present some quantitative data relating to the two SPMs (section 3). We proceed to consider the issue of argumentative force of contrasted claims (section 4). Section 5 considers AR5-WGI-SPM from a text structure perspective, while we in section 6 discuss findings related to differences between the two SPMs as well as some paths for further studies.

2 Material and theoretical foundation

As already stated, this paper investigates two part-documents[10] from the IPCC, the SPM of WGI of AR4 and AR5. The IPCC on its website states that their work is "policy-relevant and yet policy-neutral, never policy-prescriptive".[11] To be policy-relevant and at the same time policy-neutral may represent a challenge (Fløttum and Dahl 2011). The SPMs are targeted at policymakers and based on the full WGI report's chapters, which represent the outcome of the assessment of numerous scientific papers. Given the context in which the summaries are produced – through specific approval procedures between scientific experts and government officials – they may be characterised as a scientific and political co-construction of knowledge and situated somewhere between scientific and political discourse.

The discipline of linguistics allows for a detailed analysis of language aspects ranging from macrostructure (the genre or text type perspective) to the study of micro-level elements (words and sentences). Meaning can be expressed in numerous ways, and the chosen expression or grammatical structure depends on a range of textual and contextual factors (Nerlich et al. 2010). The rhetorical function of a text, i.e. how the text 'interacts' with its readers (e.g. Hyland 2000), is influenced by language choices made at different text levels. In the current paper, we consider features linked to the micro-level, notably to discuss (un)certainty, as well as features related to the macro-level, in our consideration of AR5-WGI-SPM as a narrative text.

A basic theoretical assumption for our work is that all texts are inherently polyphonic, or multivoiced, so that a given text may present different points of view to which the author(s)

[10] Our analysis is based on the running text only, excluding figures, tables and boxes.
[11] http://www.ipcc.ch/organization/organization.shtml

relate(s) in different ways (Fløttum 2010; Nølke et al. 2004). The most typical example of linguistic polyphony is reported speech ('NN stated that there is…') or quotations from external voices ('NN stated as follows: "…"'). However, for texts like the SPMs, where such instances of external voice are not found, it is interesting to study linguistic devices indicating implicit and *internal* polyphony (points of view existing within one authorial community). In a sentence like "The sea level on the west coast is now stable, but it will rise during the next decade", the connective *but* links two points of view in contrast, which may correspond to different, potentially divergent, scientific claims. The author(s) can agree with both; however, by inserting *but*, the second claim is emphasised as argumentatively stronger than the first one. This type of construction contributes in a subtle way to implicit argumentation.

Another theoretical assumption is that even if texts clearly are written by a specific author (authors), they are not (typically) unidirectional, from writer to readers. Rather, the writer takes the readers into account (Roulet et al. 2001). Objections that readers may be expected to have are countered, allowances are made for doubts and uncertainties in the information, evaluative (often promotional) expressions are used, e.g. to draw attention to *new* findings and *improved* methods. The features selected for investigation in sections 3 and 4 rest on these two basic assumptions of texts. For reasons of space, we will primarily present text examples from AR5-WGI-SPM. However, two tables (Table 1 and 2) in section 3 provide quantitative data from both SPMs.

3 Levels of (un)certainty in consensual claims

The aim of the IPCC in a general sense is "to provide the world with a clear scientific view on the current state of knowledge in climate change and its potential environmental and socio-economic impacts".[12] This is commonly understood as a purpose of providing a consensus view on existing knowledge (see e.g. Corner and Hahn 2009). Obviously, "a clear scientific view" does not in itself imply a consensual view. However, in the context of the IPCC and the three Working Groups' SPMs, the line-by-line approval process undertaken by the participating members is intended to result in a document presenting a consensual view, through language that is comprehensible to policymakers. We hypothesise that in addition to the IPCC scalar expressions (see 3.1), (un)certainty will also manifest itself through other non-predefined linguistic expressions. These expressions may have different meanings and rhetorical effects (3.2).

3.1 IPCC expressions characterising likelihood, confidence and evidence

One important aspect dealt with in the IAC review (InterAcademy Council 2010) involves the scalar systems developed by the IPCC to communicate observations and findings related to likelihood, levels of confidence and degrees of evidential agreement, supporting claims and statements in the reports. These systems may be regarded as examples of the principle of writer-reader interaction: they have been consciously developed with a target group in mind. Table 1 presents the quantitative results for the use of pre-defined terms established by the IPCC to represent these various dimensions in the two SPMs:

[12] http://www.ipcc.ch/organization/organization.shtml#.Ujqw2_M4Vdg

IPCC labels	**AR4-WGI-SPM 5916 words**		**AR5-WGI-SPM 9708 words**		
	N	Relative per 1000 words	N	Relative per 1000 words	Non-technical qualifications
LIKELIHOOD					
Virtually certain	0	0	6	0.618	
Extremely likely	0	0	3	0.309	
Very likely	13	2.197	22	2.266	
Likely	18	3.042	53	5.459	
More likely than not	1	0.169	2	0.206	
About as likely as not	0	0	2	0.206	
Unlikely	0	0	2	0.206	
Very unlikely	3	0.507	2	0.206	
Exceptionally unlikely	0	0	0	0	
Extremely unlikely	1	0.169	2	0.206	
CONFIDENCE					
Very high confidence	1	0.169	8	0.824	
High confidence	1	0.169	40	4.120	
Medium confidence	0	0	36	3.708	
Low confidence	0	0	15	1.545	
Very low confidence	0	0	0	0	
Non-technical use of confidence (not italicised)	6	1.014	8	0.824	AR4: increased, strengthening, higher, less AR5: greater, no, less, increased
EVIDENCE AND AGREEMENT					
Robust evidence	0	0	1	0.103	
Medium evidence	0	0	0	0	
Limited evidence	0	0	1	0.103	
Non-technical use of evidence	3	0.507	13	1.339	AR4: observational, insufficient, stronger AR5: new, indirect, observational, strong, strengthening, modelling, insufficient
High agreement	0	0	0		
Medium	0	0	0		

agreement					
Low agreement	0	0	0		
Non-technical use of agreement	1	0,169	1	0,103	AR5: improved

Table 1 Frequency of IPCC labels

We observe that there have been notable changes in the way different predefined levels of (un)certainty are expressed. In AR4-WGI-SPM, a quantitative scale of likelihood dominates. Here is an example:

(1) Average Northern Hemisphere temperatures during the second half of the 20th century were *very likely* higher than during any other 50-year period in the last 500 years and *likely* the highest in at least the past 1,300 years. (AR4-SPM, 9)

At times a confidence scale is used, but this scale is much more frequently used in the AR5-SPM (see Table 1), a trend also revealed by a word frequency analysis of the SPMs of AR4 and AR5 by Grundmann (reported in Pielke 2013). The IAC review criticises the use of both scales together and suggests that "the confidence scale is redundant when the likelihood scale is used" (InterAcademy Council 2010: 31). The review also raises the issue of differences in interpretation of probabilities by expert and non-expert audiences (e.g. Budescu et al. 2009; Patt and Schrag 2003). Later studies (e.g. Budescu et al 2014; Harris et al. 2013) have pointed to cultural and translation issues complicating the use of probability expressions. However, in AR5-WGI-SPM, we see that in addition there is abundant use of the likelihood scale. One may ask why both scales are used simultaneously, thus contravening the IAC recommendations.

The IAC recommends that all WGs should use a qualitative level-of-understanding scale in their SPM, "supplemented by a quantitative probability scale, if appropriate" (InterAcademy Council 2010: 39). This advice is also reflected in the Guidance Note accompanying AR5. The amount of *evidence* should be described as 'limited', 'medium' or 'robust', and the degree of *agreement* as 'low', 'medium' or 'high'. In contrast to the terms denoting likelihood and confidence, these new summary labels are not rendered in italics, which may make them less visible to readers.

Comparing AR4 and AR5, it is not surprising that we do not find any instances of these labels in AR4-WGI-SPM (except for some instances of non-technical use with various qualifications; see Table 1). In AR5, just a few instances are found. For combinations of a summary term and the word *evidence*, there is one occurrence with *limited* as well as one instance of *robust* (example 2).

(2) There is robust evidence that the downward trend in Arctic summer sea ice extent since 1979 is now reproduced by more models than at the time of the AR4 […]. (AR5-SPM, 11)

There are no occurrences of findings characterised by a summary term and the word *agreement*. However, there are some instances of the words *evidence* and *agreement* appearing either alone or in combination with another qualifier (see Table 1), as in (3)–(4).

(3) There is evidence for human influence in some individual ocean basins. {3.2, 10.4} (AR5-SPM, 13)

(4) Confidence in projections of global mean sea level rise has increased since the AR4 because of the improved physical understanding of the components of sea level, the improved agreement of process-based models with observations, and the inclusion of ice-sheet dynamical changes. (AR5-SPM, 18)

One may question to what extent the use/mix of both predefined and non-predefined qualifications of evidence and agreement provides the intended assistance in non-experts' interpretation of the SPM message.

Two of the IPCC scalar expressions not used in AR4-WGI-SPM are *virtually certain* and *extremely likely*. In AR5-WGI-SPM, there are six occurrences of *virtually certain* and three of *extremely likely*. We also note that there are eight occurrences of *very high confidence* (see examples (5)–(6)). The numerical value given for the first expression is '> 99% probability', for the second, '95–100%' and for the third, 'at least a 9 out of 10 chance of being correct'. With the conception of scientific knowledge as always containing a certain level of uncertainty, all three values seem to indicate the highest certainty levels any finding may achieve. The use of these expressions in AR5 indicates a strengthened basis for scientific certainty in the period between AR4 and AR5.

(5) It is virtually certain that there will be more frequent hot and fewer cold temperature extremes over most land areas on daily and seasonal timescales as global mean temperatures increase. (AR5-SPM, 15)

(6) The mean rates of increase in atmospheric concentrations over the past century are, with very high confidence, unprecedented in the last 22,000 years. (AR5-SPM, 7)

3.2 Non-technical linguistic devices for expressing different levels of (un)certainty

In addition to the scalar expressions technically defined by the IPCC, the texts make use of linguistic devices which are also used in everyday language, and which to varying degrees express certainty. The most important ones are discussed here, and their frequency is presented in Table 2.

Non-technical linguistic devices	**AR4-WGI-SPM 5916 words**		**AR5-WGI-SPM 9708 words**	
	N	Relative per 1000 words	N	Relative per 1000 words
Impersonal constructions:				
there is/are	11	1.859	43	4.429
Epistemic expressions:				
May	2	0.338	5	0.515
Could	5	0.845	2	0.206

Conditional expressions:				
if + would. could or other verb	7	1.183	4	0.412
Imprecise qualifiers:				
Mainly	4	0.676	1	0.103
Many	6	1.014	13	1.339
Generally	2	0.338	1	0.103
Booster words:				
improvement(s)/improved	11	1.859	9	0.927
Better	3	0.507	2	0.206
New	9	1.521	5	0.515
Contrasting expressions:				
But	14	2.366	14	1.442
However	4	0.676	6	0.618
even if	3	0.507	1	0.103
Not	17	2.873	19	1.957

Table 2 Frequency of non-technical linguistic devices

3.2.1 The impersonal construction There is/are

This is a traditional 'objective' device for not specifying the author(s) in scientific writing, as in the following examples:

(7) There is no clear trend in the annual numbers of tropical cyclones. (AR4-SPM, 9)

(8) There has been further strengthening of the evidence for human influence on temperature extremes since the SREX. (AR5-SPM, 13)

The relevance of this construction is that it implicitly expresses high certainty (in contrast to for example 'there may be'). It can be understood as a reduced version of the construction "We have found that there is …" where *we* (i.e. the authors) would represent the 'real subject' (in a grammatical sense) of the claim. From Table 2 we see that AR5 uses this construction more frequently than AR4 (43 versus 11).

3.2.2 Passive constructions with no expressed agent

Another device typical of scientific writing is the passive voice (e.g. Sager et al. 1980), as in "Sea-level rise has been observed by satellites during the last decades". It is a useful tool for topicalisation, enabling the theme of the claim (here: sea-level rise) to be presented first in the sentence. However, these constructions are often found without an expressed agent (human or non-human), as in the following example:

(9) The strongest ocean warming is projected for the surface in tropical and Northern Hemisphere subtropical regions. (AR5-SPM, 17)

These passive constructions are typically used with research verbs such as *estimate, observe, project* and *show*. When presented through the passive voice without an agent, the claim in question gives the impression of being certain, but without any acknowledged source or actor.

3.2.3 Epistemic and conditional expressions

There are numerous linguistic devices which contribute to modifying the truth value of statements. Some of the most common ones are modal verbs like *may, might, can* and *could.*

These have a complex semantic potential (Lyons 1977), but of interest in the present paper is their use as epistemic modifiers, adding nuances to categorical statements (Hyland 1998b). The distribution of the items we have considered is given in Table 2, and some examples are discussed below.

(10) The Greenland Ice Sheet and other arctic ice fields likely contributed no more than 4m of the observed sea level rise. There may also have been a contribution from Antarctica. (AR4-SPM, 9)

In the perspective of (un)certainty or truth value, the modification from *there also have been…* to *there may also have been* is important. The modal *may* adds some uncertainty to the underlying statement. The message becomes less categorical, but at the same time we understand that the status of the reported research makes the modification necessary.

The modal *could* adds the same kind of uncertainty as *may* to the presented observations:

(11) There is insufficient knowledge to quantify how much CO2 emissions could be partially offset by CDR on a century timescale. (AR5-SPM, 21)

In this context, the following passage from an editorial in *Nature* (2010) is worth quoting. The editorial is an attack on the media (blaming news reporters for not being sufficiently interested in the continuously accumulating scientific knowledge), including a "lecture" to climate scientists:

> This does not leave researchers who deal with the media impotent when they want to communicate uncertainty. They should learn from Kent [a previous CIA intelligence analyst] and the IPCC, and use more precise language. Kent identified 'weasel words', such as 'could', 'suggest' and 'may', that were best avoided because they were "expressions with sound but upon reflection almost without meaning". These are not words of science, but of the news media. The world is an uncertain place, but scientific findings can be virtually certain, likely, improbable or highly doubtful. Take your pick. (Nature, Editorial, 21 October 2010, 467: 883)

It seems odd to claim that the cited words are "weasel words" and not "words of science, but of the news media". There are numerous studies on the use of these types of hedging devices in scientific discourse (e.g. Hyland 1998b; Fløttum et al. 2006). As illustrated by Table 2 and examples (10)-(11) above, the IPCC also uses such modal expressions, albeit to a modest extent in the SPMs originating from the physical science-based WGI report.

Another construction of a similar kind is the conditional construction introduced by *if* and the subjunctive verb form *were,* followed by the modal *would* in the subsequent proposition:

(12) (…) if this contribution were to grow linearly with global average temperature change, the upper ranges of sea level rise for SRES scenarios shown in Table SPM.3 would increase by 0.1 to 0.2 m. (AR4-SPM, 14)

The conjunction *if* introduces a hypothesis, which is followed by a nuance of uncertainty added to the scenario presented.

These expressions may all affect the perception of (un)certainty, and contribute to less definite messages. This may annoy policymakers, who tend to prefer messages which are 'certain' and can be transformed directly into measures and action, as expressed by former Danish Prime Minister Anders Fogh Rasmussen at a conference for climate researchers in 2009 (see Hope 2010):

> "I would give you the piece of advice, not to provide us with too many moving targets, because it is already a very, very complicated process. And I need your assistance to push this process in the right direction, and in that respect, I need fixed targets and certain figures, and not too many considerations on uncertainty and risk and things like that."

However, a balance must be struck between a sound scientific foundation and the needs of policymakers, and these expressions from everyday language ensure that the politicians are alerted to the current status of the claims. The modal devices presented above constitute useful tools for this purpose. The question is how easily these non-predefined expressions are interpreted in comparison with the IPCC predefined expressions of uncertainty, which in addition in many cases are typographically visible through the use of italics.

3.2.4 Imprecise modifiers

Some adverbs will through their meaning impose a tone of certainty on statements in which they occur, without expressing any absolute truth. However, it should be noted that there will always be limitations to the capacity of language to express precision in the way the IPCC is striving for. Typical examples of this phenomenon are *generally* and *mainly*. They may also be characterised as implying imprecision, but it is a kind of imprecision which is 'positively' oriented. Table 2 shows the number of occurrences in each SPM for these two adverbs as well as for the quantifier *many*, which has a similar effect. It may be discussed whether *mainly* conveys a higher degree of precision than the other two, but a definite answer would require an in-depth linguistic investigation of the word in a variety of linguistic contexts. Here are some examples:

(13) Simulated global-mean trends in the frequency of extreme warm and cold days and nights over the second half of the 20th century are generally consistent with observations. (AR5-SPM, 10)

(14) There is *very high confidence* that these losses are **mainly** from the northern Antarctic Peninsula and the Amundsen Sea sector of West Antarctica. (AR5-SPM, 5)

In situations where it is not possible to state absolute numbers, but where it still is relevant to express a comprehensive and general existence of some fact, the modifier *many* can be used:

(15) Surface temperatures will remain approximately constant at elevated levels for many centuries after a complete cessation of net anthropogenic CO2 emissions. (AR5-SPM,20)

Even if these expressions are used at the expense of precision, they may seem to contribute to orienting the discourse towards certainty. In fact, what they do is only to demonstrate that science is making progress.

3.2.5 Booster words

General language devices are important in the framing of statements and may have a clear impact on interpretation. In the following, we will look at some non-technical words which serve to enhance the 'quality' of a claim, viz. *improvement/improved*, *better* and *new*. The words are heterogeneous in terms of grammatical status, representing nouns, verbs and adjectives. We discuss them here under the common heading of *boosters* (see e.g. Hyland 1998a), as they are used to draw attention to what may be described as the increased 'value' of a finding, a method, a model etc. In this way they may also be seen as contributing to the certainty of the phenomenon in question. Table 2 above provides the figures for the two texts, and examples (16)–(20) illustrate how they are used.

(16) The understanding of anthropogenic warming and cooling influences on climate has **improved** since the TAR, […]. (AR4-SPM, 3)

(17) There has been some **improvement** in the simulation of continental-scale patterns of precipitation since the AR4. (AR5-SPM, 11)

A further comment is pertinent here. The words *improve(d)* and *improvement* contain a positive feature, but this can be modified in different directions according to any accompanying qualifications. In (17), the pronoun *some* which qualifies *improvement* is very vague, and this particular combination cannot be interpreted as contributing to certainty in a significant way.

(18) However, there is *high confidence* that regional-scale surface temperature is **better** simulated than at the time of the AR4. (AR5-SPM, 10)

The comparative adjective form *better* is in itself adding more certainty to the processes it describes. In (19)-(20) we observe that 'newness' in these cases is related to data, set of scenarios and climate model simulations which by themselves say nothing about certainty, but contribute to an understanding of science reported by the IPCC as increasing in quality:

(19) **New** data since the TAR now show that losses from the ice sheets of Greenland and Antarctica have *very likely* contributed to sea level rise over 1993 to 2003 (see Table SPM.1). (AR4-SPM, 5)

(20) A **new** set of scenarios, the Representative Concentration Pathways (RCPs), was used for the **new** climate model simulations carried out under the framework of the Coupled Model Intercomparison Project Phase 5 (CMIP5) of the World Climate Research Programme. (AR5-SPM, 14)

To sum up the analysis of the use of these non-predefined linguistic devices, we claim that they contribute to expressing various meaning nuances which may influence the overall understanding of certainty and uncertainty conveyed by the two SPMs. We note that there are no significant differences in the frequency of these expressions in the two SPMs, except for the use of *there is/are*.

3.3 "The scientific community"

We would like to draw attention to an expression found in AR5, viz. *the scientific community*. It is used twice in AR5-WGI-SPM but is not found in AR4-WGI-SPM. Here is one of the examples:

(21) Many semi-empirical model projections of global mean sea level rise are higher than process-based model projections (up to about twice as large), but there is no consensus in the scientific community about their reliability […].(AR5-SPM, 18)

This *scientific community* is a general expression with no precise reference. It probably comprises both the IPCC authors and scholars outside this community. However, it is a way of bringing in a human sender of the message, which may add a hint of a 'personal flair' to the otherwise objective and technical text. In this context, it may also be mentioned that there are no occurrences of the personal pronoun WE in the two SPMs studied here. The documents represent the collective voice of the IPCC, and the most obvious device for representing this voice would in a general language text have been WE, in its inclusive meaning ('we, the science community'). The fact that it is not used fits with the traditional view of scientific discourse as neutral and non-personal (Fløttum et al. 2006). It is interesting to note that the WGI-SPM of the First Assessment Report (1990)[13] started as follows: "We are certain of the following:…". In the WGI-SPM of the Second Assesment Report (1995)[14], however, this approach had changed to the impersonal one also seen in the subsequent reports. It may be noted that psychological experiments have shown that the level of engagement in climate change discourse increases when the discourse is founded in a WE-perspective (Haddad et al. 2012).

4 Traces of argumentation in contrasted claims

We know that the climate debate in general − due to the comprehensive impact of climate change and the high number of stakeholders involved − is particularly multi-voiced or polyphonic. There are many important questions related to the voices participating in this debate: Which voices are present, explicitly or implicitly, which ones are the dominant ones and which voices are absent (Fløttum 2010; Fløttum and Dahl 2011; Fløttum and Gjerstad 2013)? The IAC review recommended that IPCC "Lead Authors should explicitly document that a range of scientific viewpoints has been considered" (InterAcademy Council 2010: 20). However, we do not find any clearly divergent viewpoints in the SPMs under study here. There are nevertheless traces of what we may call *internal polyphony* (presence of several viewpoints; see section 2). One obvious example of this is the connective *but*, linking two points of view in contrast, which may correspond to different claims. In this construction − p BUT q − there is no disagreement, but an implicit argumentation is presented, where the q statement is considered the most important (according to the linguistic instructions embedded in *but*). We observe in Table 2 that especially *but* and the similar connective *however* are relatively frequent in both SPMs (14 occurrences of *but* in both; 4 and 6 respectively of *however*). In addition, there are some instances of *even if* (3 in AR4, 1 in AR5), with a concessive meaning. Here is an example with *however*:

[13] http://www.ipcc.ch/ipccreports/far/wg_I/ipcc_far_wg_I_spm.pdf
[14] http://www.ipcc.ch/ipccreports/sar/wg_I/ipcc_sar_wg_I_full_report.pdf

(22) Current global model studies project that the Antarctic Ice Sheet will remain too cold for widespread surface melting and is expected to gain in mass due to increased snowfall. However, net loss of ice mass could occur if dynamical ice discharge dominates the ice sheet mass balance. (AR4-SPM, 17)

In everyday language, the interpretation of (22) could be rendered as follows: The authors accept that 'the Antarctic Ice Sheet will remain too cold for widespread surface melting'. Then, by the connective *however*, it is emphasised that what counts here and now is that 'net loss of ice mass could occur'. The connective *however* indicates that the last claim is the strongest argument, in a sense overriding the fact that the verb form *could* indicates a lower level of certainty than the verb form *will* in the p statement. These viewpoints seem to refer to specific claims about which there is consensus, but where the second one is presented as a stronger argument (implicitly for doing something) than the first.

In the next example, the argumentation concerning different findings is conveyed through a construction with *even if* (expressing a concession), and where the emphasis is on the claim in the following clause – *a further warming …*, also conveying contrast:

(23) Even if the concentrations of all greenhouse gases and aerosols had been kept constant at year 2000 levels, a further warming of about 0.1°C per decade would be expected. (AR4-SPM, 12)

Constructions of negation realised through *not* can also convey different meanings. In its polemic use, it is clearly polyphonic, integrating an underlying and opposing point of view, as in the last part of the following statement:

(24) […] it is *extremely unlikely* that global climate change of the past 50 years can be explained without external forcing, and *very likely* that it is **not** due to known natural causes alone. (AR4-SPM, 10)

Here we see that an implicit point of view – 'it is due to known natural causes alone' – is refuted through the construction with *not.* The contrast is further emphasised by the former part of the statement, including the IPCC expressions *extremely unlikely* and *very likely.* It seems reasonable to interpret this as an implicit and consensual 'response' to the climate change critics opposing IPCC statements on anthropogenic climate change. However, of all the negation occurrences in AR4-SPM, this is the only one with a polemic meaning. The others are of the descriptive type, implying no polemic, thus fitting well into the consensus frame.

There is always a potential for some degree of subjectivity in the interpretation in this kind of analysis, but in AR5-SPM, the proportion of polemic negations seems to be higher. The following example may be seen as refuting an underlying viewpoint:

(25) There is *high confidence* that changes in total solar irradiance have **not** contributed to the increase in global mean surface temperature over the period 1986 to 2008, (AR5-SPM, 13)

However, again the SPM expresses a consensus on this refusal of solar irradiance contribution to surface temperature.

5 AR5-WGI-SPM from a text structure perspective

Both SPMs have a format which to some extent mirrors a classical scientific paper, with the exception of an explicit Discussion section. However, in the Introduction section of AR5-WGI-SPM, we find the following statement:

> (26) This Summary for Policymakers (SPM) follows the structure of the Working Group I report. The **narrative** is supported by a series of overarching highlighted conclusions which, taken together, provide a concise summary. (AR5-SPM, 2)

It is interesting that the IPCC uses the word *narrative* to refer to its own text. The notion of narrative has been used in a somewhat loose sense to describe a variety of texts genres. However, some research has also been done on applying the notion in a more rigorous way in order to understand to what extent there may be a 'storyline' in non-fiction texts related to climate change (Fløttum 2013; Fløttum and Dahl 2012; Fløttum and Gjerstad 2013). With a basis in our previous studies on UN documents and White Papers related to climate change, we argue that such documents can be considered to be part of what could be called *climate change narratives.* By this term we refer to text and talk presenting climate change as a certain type of complication, with implicit or explicit recommendations or imperatives for action(s) taking place or that should be taking place to achieve some particular effect(s). In other words, narratives have a plot. In addition, different characters or actors are involved, such as nature, humans, society and countries, in the roles of hero, victim or villain. The classical structure of a narrative comprises typically (Adam 2008) five components – Introduction, Complication, Reaction, Resolution and Final situation. Among these, the Complication component is mandatory. The Reaction component may include suggestions of action (or non-action) which could or should take place to achieve some particular effect(s).

Now the question is: to what extent does AR5-WG1-SPM have a structure of this kind? The answer is not straightforward. However, it is clear that the text emphasises the Complication component, and thus the starting point for a plot is in place. Through the projected scenarios included in the report –in the shape of four Representative Concentration Pathways – potential future or Final situations are also integrated. However, there is one component that is missing in order to fulfil a 'real' story: the Reaction component. Thus, there is no clear storyline in the Summary. Even though there are indications of a temporal development, e.g. "Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia." (p.3), there is no line from Complication via Reaction to a Final situation. Thus, the IPCC's use of the term *narrative* in its traditional sense is not borne out by the structure of the SPM. This is not surprising, as the SPM of WGI is a summary of the physical science basis. Also, by not including a Reaction component, which would contain recommendations and imperatives for action, the IPCC is loyal to the requirement of being policy neutral. However, we may see implicit 'scientific reactions' through the claims which are presented as relatively uncertain, thus requiring more research. Further, it may also be argued that numerous IPCC claims clearly indicate pertinent political reactions (such as measures to reduce emissions of CO2), but this is not explicitly stated.

The issue of storyline will, however, be an important one when the full AR5 report including the Synthesis Report becomes available during 2014. As it turns out, the SPM of WGIII (but not of WGII) also uses the word *narrative*. When all the part-reports are finalised, it will also be more relevant to examine to what extent we can identify different characters assuming narrative roles such as hero, victim and villain. Our hypothesis is that there will be no clear heroes in any of the part-reports, but victims and villains are likely to be identifiable. Already in the SPM under study here, we can perceive implicit villains (humanity as a whole) as well as victims (both nature and humans).

In the introduction to AR5-WGI-SPM, the IPCC refers to the important "series of overarching highlighted conclusions" for policymakers. From a content perspective, when taken together, these highlights provide a concise summary of the text. But there is no textual coherence between the highlight statements, which would be needed for this to constitute a coherent story, a narrative. Thus, no full 'story' is being told, neither in a narrative sense nor through the highlighted conclusions. However, what the highlights do contribute to is an increased understanding of the extremely complex phenomenon of climate change, or more specifically, the observed changes, drivers and future global and regional developments.

6 Discussion

In this paper we have shown that the IPCC Assessment Reports (AR) 4 and 5 display notable differences in terms of how they represent certainty in their Working Group I Summary for policymakers (WGI-SPM). AR5 makes extensive use of both the likelihood and confidence scales, while the confidence scale is almost absent in AR4. This raises the question of what the implications are of using both or only one of these scales for the understanding of the documents. This is an issue that requires further research. It is also somewhat surprising that the AR5 authors have not followed the IAC's advice of not to use the confidence scale when the likelihood scale is used. Along the same lines, we also wonder why the new summary terms (e.g. 'medium evidence', 'high agreement') proposed by the IAC were not used in AR5-WGI-SPM. What we found was that the word *evidence* is used fairly extensively, but – except for two instances − not in combination with the recommended qualitative labels. This is all the more surprising since extensive discussions have taken place in the past couple of years regarding the language used in the IPCC reports.

Another difference between the two summaries is the use of *virtually certain* and *very high confidence* in AR5-WGI-SPM, two expressions which were not seen in AR4-WGI-SPM. The use of these in AR5 indicates an increased level of certainty in the period between the two reports. Thus, the findings characterised by these expressions do not necessarily concern new phenomena; rather, the expressions add more certainty to previously investigated phenomena. This may also contribute to strengthening the impact of the reports, something which non-technical booster words like *better* and *improved* also contribute to. Other non-technical linguistic constructions studied contribute to various meaning nuances which may influence the overall understanding of certainty and uncertainty conveyed by the two SPMs, but with no significant quantitative differences in occurrences between the two SPMs.

Further, we have drawn attention to constructions bringing in contrasted statements referring to different claims. When linguistic devices (such as *but* and *however*) indicate one claim as more important than another, this contributes to an argumentative tone – typical of scientific papers (Fløttum et al. 2006) – which otherwise seems to be absent from the IPCC summaries.

Thus, the two SPMs – through well-known linguistic devices, both IPCC-defined and everyday language devices – adhere to the expressed purpose of the IPCC, namely to present a consensual message to be used by policymakers; a message which is publicly recognised with genuine controversies not included. Thus the ongoing debates manifesting themselves outside the context of the IPCC work do not have a place in the IPCC SPMs. One may wonder if this consensus dominance is contributing to the overall understanding of the multifaceted climate change phenomenon, or whether more emphasis on divergent perspectives would facilitate or improve the understanding (Hulme 2013).

This has not been a text reception analysis, and it is therefore difficult to assess the impact of the new layout presented in AR5, mainly in the shape of highlights extracted from all chapters and presented in high-visibility locations. However, from a cognitive and linguistic point of view, it has been established (e.g. van Dijk 1980) that presenting readers with the essence of a text (i.e. a summary of the main points), enhances the understanding of the message. In this way, the new format is likely to serve policymakers better than previous reports.

Regarding the text structure, introduced as a *narrative* in the AR5-WGI-SPM introduction, there are components which clearly match a storyline interpretation. However, the Reaction component is lacking, even though it may be seen as implicit in the numerous observed climate changes and drivers. We expect an overarching storyline to become more prominent when all three Working Group reports are considered together in the Synthesis Report, a storyline which should represent the complete story that the IPCC can report. Finally, we may ask whether a more human face of climate change through linking powerful human stories to the scientific basis would have a more significant impact on target audiences for initiating appropriate reactions.

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A case study of letters to shareholders in annual reports before, during and after the financial crisis

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Abstract: The present study investigates changes in themes and linguistic strategies in letters to shareholders from a large Danish bank's annual reports published before, during and after the financial crisis. It draws mainly on genre theory and uses corpus linguistics as the primary method for collecting and analysing data. The study investigates the occurrence of recurrent and idiosyncratic themes, interactional discourse markers and charged and neutral words across three periods of time: before the crisis (2004-2007), during the crisis (2008-2011) and after the crisis (2012-2013). It is found that while the first (pre-crisis) and second (during crisis) periods differ from each other mainly with respect to the themes discussed in light of the developments in external circumstances and the bank's financial performance, the latter (post-crisis) period reflects a more fundamental shift in genre, manifested in a less technical vocabulary, higher frequency of interactional discourse markers and more charged words.

1 Introduction

The current study investigates changes in themes and language use in annual reports from a major Danish bank, Danske Bank, from 2004 to 2013[1]. In the years before the financial crisis, the bank showed strong financial results, but like most of the banking sector in Denmark and elsewhere, it was hit hard when the financial crisis set in in 2008. As a consequence, the bank's image in the Danish population was severely damaged during the crisis. The bank fell from its pedestal: From being perceived as an extremely successful, almost infallible, financial institution with a highly skilled and professional management, the bank earned a reputation as a business whose management had taken hazardous decisions to the detriment of shareholders and customers (Andersen 2009; Nyholm, 2010; Rechnagel and Nielsen, 2009).

The assumption on which this article is based is that during the 10-year period being investigated, the development in the bank's financial performance is reflected both in the

[1] Available at Danske Bank's website, www.danskebank.com/en-uk/ir/Reports/Pages/Reports-archive.aspx#Report2013

themes discussed and in the language used in the introductory narrative section commonly referred to as the 'letter to the shareholders'. Hence, in this article I will identify and analyse the *theme(s)* selected in the company's description and interpretation of its financial performance in a given year in the period from 2004 to 2013, and investigate changes in how these themes are presented. Furthermore, I will analyse variation in *linguistic features*, focussing on charged words and the use of interactional discourse markers (Hyland, 1998, 2005). The findings will be discussed in the context of the company's performance and the situation in the financial sector and in the economy in general.

2 The genre of annual reports

A primary characteristic of a genre is the communicative purpose it is intended to fulfil (Bhatia, 1993; Swales, 1990). Annual reports have been described as a complex genre serving two subordinate communicative purposes: to give a true and fair view of the company's financial position, and to provide a positive image of the company (Ditlevsen, 2012: 97). In addition to presenting quantitative data about the company's financial performance, the annual report is thus an argumentative text implicitly encouraging readers to invest in the company or hold on to their existing investments (Bülow-Møller, 2003).

The genre of annual reports has undergone substantial change during the past decades (Ditlevsen, 2012; Beattie, Dhanani and Jones, 2008). From being a "rather dull" (Beattie, Dhanani and Jones, 2008) document produced with the sole purpose of meeting certain statutory requirements, annual reports have developed into colourful, magazine-like documents with numerous non-statutory texts. The volume of annual reports has increased due to the growing proportion of non-financial, often non-mandatory, narrative sections and visual elements supplementing the financial statements and other statutory sections (Beattie, Dhanani and Jones, 2008; Ditlevsen, 2012).

Thus, it has been argued that the annual report has developed into a public relations document (Beattie, Dhanani and Jones, 2008), and that the practices of investor relations and public relations have to a certain extent converged (Silver, 2004; Laskin, 2009). One explanation for this development is the growth in the number of active private investors (Morris, McKay and Oates, 2009: 699), which means that annual reports are not aimed at institutional investors alone. Moreover, modern annual reports aim to reach not only investors, but also other groups of stakeholders, including employees, customers, the media and society as a whole (Subramanian, Insley and Blackwell, 1993; Laskin, 2009; Lischinsky, 2011).

2.1 Narratives in annual reports

The annual report comprises a number of subgenres. Some sections of the report contain mainly quantitative data and primarily serve to present a true and fair view of the financial situation, notably the financial statements with accompanying notes. Others contain textual elements serving mainly to present as positive an image of the company as possible (Ditlevsen, 2012). Narratives are generally used in annual reports to make complex financial and accounting content accessible to non-expert audiences (Jameson, 2000), and to allow writers to interpret quantitative data and present it in a way which is favourable to the company.

An important narrative section in annual reports is the message called 'Letter to the shareholders', 'CEO's letter', 'Executive letter' or something similar. It is claimed to be the most widely read section of the report (Hyland, 1998, Crombie and Samujh 1999), and it has

been studied by a number of scholars (e.g. Hyland, 1998; Crombie and Samujh, 1999; Kohut and Segars, 1992; Thomas, 1997; Swales, 1988). The letter to the shareholders is a voluntary text usually placed as an introduction to the annual report, and it should not be confused with the obligatory and more technical 'Management's review' (Danish Financial Statements Act, 2001), or the Business Review in the UK. The letter to shareholders gives the management's evaluation of the past year and discusses the company's overall performance. Although it reports partly on quantitative data such as the revenue and the profit for the year, the letter to the shareholders is largely a subjective and promotional text (Hyland, 1998). Its communicative function is, as stated above, to present a positive corporate image, and the words and themes in the letter have been carefully selected for this purpose (Skovhus, 2011).

2.2 Presenting good and bad news in letters to the shareholders

Although letters to the shareholders overall seek to convey a positive image of the company, intuitively, the themes and language strategies should differ when comparing 'good news' and 'bad news' letters. A number of studies of annual reports have compared companies' presentation of their financial performance in good years and bad years.

Kohut and Segars (1992:13) found that high performance annual reports tended to be overall wordier than low-performance reports, which suggest that good news messages give rise to more elaboration, whereas unfavourable results are presented in fewer words. They did not, however, find any significant differences in the length of words or sentences (ibid: 14). Kohut and Segars moreover observed a difference in the themes addressed in the annual reports of high and low performing companies. High performers were more inclined than low performers to make references to the past, and conversely, low performers tended to emphasize future opportunities over poor past financial results (ibid: 18).

Subramanian, Insley and Blackwell (1993) found that the mean readability levels were significantly higher when companies reported good news than when they reported bad news. Good news was presented early in the text and conveyed in short simple sentences, whereas bad news was conveyed in longer and more complex sentences, using many passives (Subramanian, Insley and Blackwell, 1993: 58). Thomas (1997) similarly found a higher frequency of passives in bad news messages than in good news messages.

Jameson (2000) compared shareholder reports of equity mutual funds whose returns were ambiguous (referred to as mixed-return shareholder reports) with those of funds whose results were unambiguously positive (top-return reports). She found that the mixed-return reports were less direct than the top-return reports because the two main themes – relative and absolute performance – were introduced later, and the spans between the main themes were longer in mixed-return reports than in top-return reports (Jameson, 2000: 18).

Based on a case study of the annual executive letter from a small New Zealand business, Crombie and Samujh (1999) argued that it can make strategic sense for a company to mention a number of minor problems and in this way distract attention from more serious ones. However, as indicated above there is a general tendency for companies to focus on positive aspects in narratives, and in studies by Hildebrandt and Snyder (1981), and more recently Rutherford (2005), it was found that positive words occur more frequently than negative words in letters to shareholders and OFRs respectively, regardless of the company's financial performance. Hildebrandt and Snyder also found, less surprisingly perhaps, that negative words are less frequent in good years than in bad years.

Bülow-Møller (2003) discussed the occurrence of human agents in grammatical subject position in letters to shareholders, and concluded that the management is only the dynamic subject in sentences describing positive developments. Explanations for unfavourable situations, on the other hand, must usually be found in external circumstances such as markets, unreasonable government intervention, the weather, etc. The underlying rationale behind this strategy seems to be the often adopted principle of taking credit for success, while denying responsibility for failure (Bülow Møller, 2003; Thomas, 1997).

2.3 Metadiscourse in letters to shareholders

Hyland (1998) analysed the use of metadiscourse in CEO's letters to shareholders, defining metadiscourse as the aspects of a text which go beyond the propositional content and signal the presence of the author (1998). Metadiscourse is thus used as "the cover term for the self-reflective expressions used to negotiate interactional meanings in a text, assisting the writer (or speaker) to express a viewpoint and engage with readers as members of a particular community" (Hyland, 2005: 37). It is a crucial device for influencing how readers understand the propositional content of a text (Hyland, 1998). Hyland distinguishes between two types of metadiscourse: interactive (originally, in Hyland 1998, referred to as 'textual') metadiscourse, which helps guide the reader through the text, e.g. *but, and, in addition to* and *finally*, and interactional (originally 'interpersonal') metadiscourse, which involves the reader in the text, and reveals the author's attitude towards the propositional content, e.g. *possible, in fact, unfortunately*, and the use of personal pronouns (Hyland, 2005).

In a comparison of CEOs' letter to shareholders with directors' reports – a compulsory account of financial and operational details required by the authorities – Hyland found a significantly higher proportion of metadiscourse in CEO's letter than in directors' reports. He proposes that this difference underlines the essentially rhetorical nature of CEOs' letters, the primary purpose being to "gain the reader's acceptance for the particular definition of reality preferred by the writer" (Hyland, 1998: 233).

In analysing how metadiscourse is used to (re)establish the author's credibility, Hyland found extensive use of first person pronouns in CEOs' letters compared with directors' reports. However, in years when the company's performance has not lived up to the expectations, a more diffident ethos is promoted, and first-person pronouns are rare (Hyland, 1998: 237). This finding is in line with Bülow-Møller's (2003) assertion that the management is only the dynamic subject in sentences describing positive developments, see above, and with Rutherford's (2005: 371) finding that the least profitable companies in his study made most use of the word *company*.

Based on the above literature review, I arrive at the basic assumptions that that the annual report is a complex genre with a dual informational-promotional function; that the letter to the shareholders primarily serves a promotional purpose as it presents the management's interpretation of selected events; and that the themes and linguistic strategies in letters to shareholders differ depending on the company's performance in a given year.

3 Research questions

In light of the assumptions presented above, the overall question which will be addressed in this study is the following: How have the themes and the language use changed in annual reports from Danske Bank during the period from 2004 to 2013. In other words, the study will explore

what the bank writes about in letters to shareholders, and *how* it writes about it. More specifically, the following questions will be addressed:

1. what are the themes discussed in letters to shareholders before, during and after the financial crisis, and how are they presented
2. which changes in linguistic features can be observed when comparing letters to shareholders from annual reports published before, during and after the financial crisis, and more specifically, which changes can be observed in the
    - use of interactional metadiscourse
    - use of charged words

4 Methods

The investigation was carried out by collecting and analysing narratives from Danske Bank's annual reports from 2004-2013 (English versions). In the sections below, I will provide a brief description of how the text corpus was collected and how the analyses were performed. More specific detail on methods will be provided in the relevant sections below.

4.1 Collecting the corpus

The corpus used for this study consisted of introductory narratives from Danske Bank's annual reports published from 2004 to 2013. The ten texts were retrieved manually by downloading the entire annual report, identifying the relevant section, and saving it in a format which was appropriate for analysis in WordSmith Tools (see below). The texts were referred to by different names in the years investigated: *Summary*, *Executive statement*, *To our shareholders*, and *Letter to our shareholders*, and the length of the texts varied greatly, from 738 to 1918 words (see below).

4.2 Analysing the corpus

The corpus analysis tools WordSmith Tools 6.0[2] were used to analyse the texts. Using the WordList and KeyWords functions in Wordsmith Tools, it was possible to produce frequency profiles of the letters to shareholders. Depending on the nature of the analysis, frequency profiles were produced either for groups of texts, reflecting the three time periods (2004-2007; 2008-2011; 2012-2013), or for texts from individual years.

Where relevant, stopwords were excluded using WordSmith Tools' standard list of stopwords. Keywords were extracted by comparing the relevant frequency list with a reference corpus wordlist, *viz.* the British National Corpus.

The quantitative analyses performed with WordSmith Tools 6.0 were supplemented by qualitative interpretations of the data as will appear from the analyses and discussions below.

5 Results and discussion

5.1 Financial performance 2004-2013

The changes in themes and linguistic features will, as mentioned previously, be analysed in light of the bank's financial situation and the situation in the economy in general. Consequently,

[2] www.lexically.net/wordsmith/

this section will start with an overview of the development in Danske Bank's financial performance in the relevant years.

Different measures have been used in studies of accounting narratives to analyse and compare companies' financial performance, e.g. total revenue, return on assets, return on equity and net profit. In line with Subramanian, Insley and Blackwell (1993) and Rutherford (2005), I shall draw on the measures *net profit* and *return on equity* (RoE) to characterise financial performance and distinguish between good and bad years. In addition to this purely quantitative assessment, I will, where relevant, evaluate whether the group's performance in a given year meets, outperforms or underperforms the expectations expressed in the previous year(s).

As illustrated by Figure 1, following a steady increase from 2004 to 2007, the bank's net profit dropped dramatically in 2008, the year of the onset of the financial crisis. The financial hardship persisted until 2011 (with a slight pickup in 2010), and is not over yet, but since 2012, there has been a slight upward trend indicating that Danske Bank, along with other banks, is recovering from the crisis. This is supported by statements from the bank as well as from independent experts (Gardel, 2013; Nielsen, 2014). The RoE percentages largely corroborate the net profit developments.

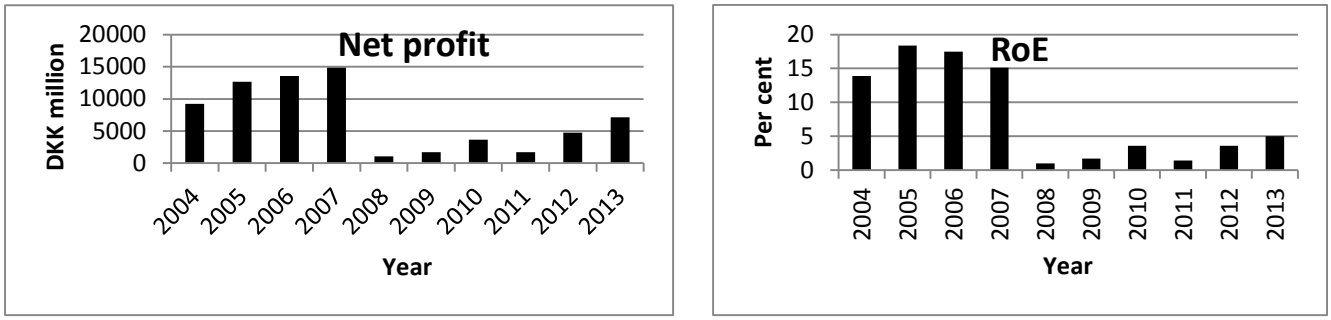

Figure 1 Development in Danske Bank's financial performance from 2004 to 2013

Based on the developments presented in Figure 1, as well as in the macro-economic trends in general, Danske Bank's annual reports can be grouped into three time periods: before the financial crisis (2004-2007), during the financial crisis (2008-2011) and after, or in the wake of, the financial crisis (2012-2013)[3]. The analyses of themes and linguistic features presented below will to a large extent follow this categorisation.

5.2 Focus and themes

The bank's annual report opens each year with an introductory text serving the function of a letter to the shareholders as described above. In the following sections, I will analyse developments in the themes and focus of these letters to shareholders.

5.2.1 Title

The first thing worth noting is that the introductory narrative is not necessarily referred to as a 'letter to shareholders' in the title, but has a number of different names in the years studied, as

[3] It is debatable when and if the bank is past the financial crisis, but based on the profit and RoE developments shown in Figure 1, and statements from the bank and independent experts, I will categorise 2012-2013 as the 'post crisis' period.

illustrated by Table 1

Year	Title
2004-2009	Summary
2010-2011	Executive statement
2012	To our shareholders
2013	Letter to our shareholders

Table 1 Title of introductory narrative

'Summary' can be characterised as a neutral term which simply tells the reader that what follows is a short version of a longer text (in this case the financial review or even the full annual report). The term 'Executive statement', used in 2010 and 2011, focuses on the text having been authored by the executive management of the company, and thus giving the management's interpretation of financial and operational developments. This is supported by the texts having been signed by the CEO and the Chairman of the board. Furthermore, the term 'statement' seems to signal that the text is formal and neutral.

When changing the title to 'To our shareholders' in 2012, focus is placed on the relationship between the bank and its shareholders, and the relationship is further personalized through the use of the personal pronoun 'our'. In 2013, the word 'letter' is added in the title, thus again accentuating that the address to the shareholders is of a more personal nature. Below, I shall investigate whether the use of different titles in different years is associated with more comprehensive changes in readability, themes and language use.

5.2.2 Readability and length

In this section, I will briefly consider differences in the overall length and readability of the introductory narratives (Figure 2).

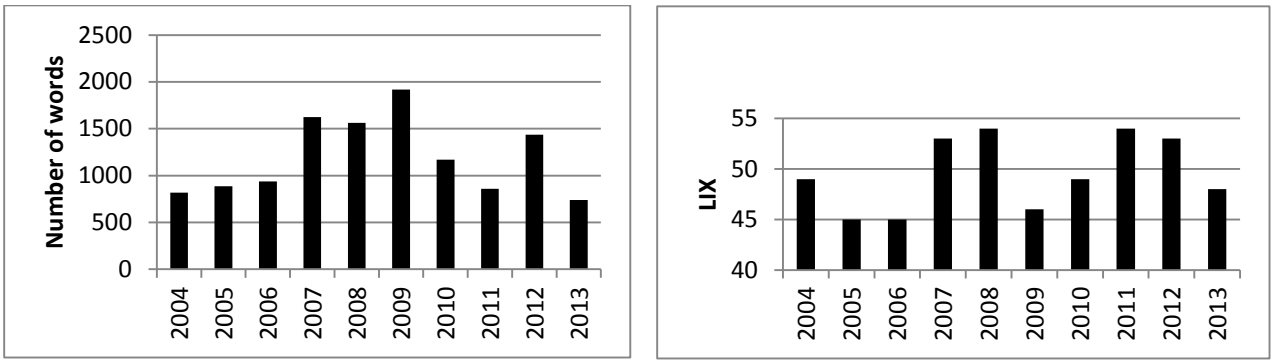

Figure 2 Number of words and LIX[4] in introductory narratives 2004-2013

[4] www.lix.se

In most years, there is a relationship between wordcount and LIX, in the sense that an increase (or decrease) in wordcount is generally accompanied by a decrease (or increase) in readability. An example of this is the marked increase in the length of the 'Summary'(from 936 to 1625 words) as well as in the LIX (from 45-53) observed from 2006-2007. At first sight, these changes do not coincide with the developments in financial performance reported above, as the drastic decline in net profit and RoE did not materialise until the 2008 report, cf. Figure 1 above. However, a closer look at the introductory narrative reveals that the increase in LIX and word count coincides with a shift from Danske Bank reporting exclusively positive results and record-setting profits from 2004-2006 as illustrated by the following examples:

1) "The Group realised a net profit of DKr10,558m, against DKr9,286m in 2003. This is the best financial result in the Group's history." (Annual Report 2004)
2) "The year 2005 was a particularly good year for the Danske Bank Group. The Group posted a net profit of DKr12,822m, which was the best result in the history of the Group." (Annual Report 2005)
3) "The year 2006 was another good year for Danske Bank Group." (Annual Report 2006)

to more moderate reports already in 2007, with the lurking financial starting to have an effect on the market conditions and the company's performance, notably in the fourth quarter. Hence in 2007, the bank's performance is no longer unambiguously positive, and although the net profit rose by 10% relative to 2006, the 2007 results did not live up to the group's expectations. The following examples illustrate how the group explains its performance in light of the market trends:

4) "The financial markets were very volatile in 2007. Despite these conditions, Danske Bank Group saw favourable developments in a busy and transformative year." (Annual Report 2007)
5) "The Group's market and life insurance operations were naturally affected by the turbulence in the financial markets, but still achieved growth and strengthened the foundation for future activities." (Annual Report 2007)
6) The generally lower level of activity, higher funding costs caused by the considerable turbulence in the financial markets and higher expenses were the main reasons for the fall in the fourth quarter." (Annual Report 2007)

The turbulence in the markets and its effect on the performance at Danske Bank thus apparently lead to wordier and more difficult texts, with longer words and sentences and more detailed explanations, as illustrated for instance by the above examples.

2009, 2010 and 2011 are exceptions to the rule of word count and LIX moving together. In 2009, another difficult year in terms of financial performance, LIX dropped markedly, whereas the word count remained high; the introductory narrative can thus be characterized as a long text, kept in relatively simple language. In 2010 the financial performance improved, and the word count dropped to approx. the same number as before the crisis, whereas the LIX increased. The same pattern can be seen in 2011, however, without this being associated with better

financial results. From 2012 to 2013, there is a drop in word count as well as in LIX, coinciding with an improvement in the financial performance.

Although it is not entirely consistent, there seems to be a tendency for declining financial performance to result in longer and more detailed introductory narratives, whereas performance improvements are generally associated with a decline in the number of words. 2011 is the only clear exception to this rule. To some extent, LIX and word count follow each other, but, as already mentioned, 2009-2011 are exceptions to this rule. The findings generally contradict Kohut and Segars' (1992:13) observation that high performance reports tend to be wordier than low-performance reports, and that there is no relationship between performance and the length of words or sentences, i.e. readability (ibid: 14).

5.2.3 Recurrent themes

Based on Wordlists (excluding stopwords) produced in Wordsmith Tools, a number of recurrent themes could be identified by detecting words which occurred across all or most texts from all three time periods. As we shall see below, although these words were used consistently throughout the ten-year-period, considerable variation could be observed with respect to the frequency with which the items occurred in the texts, and how and when they were introduced.

A total of 16 words (excluding stopwords) occurred in all 10 texts. Furthermore, a number of words occurred in texts from all three periods, however not necessarily in all texts from each period. Table 2 below lists words which occurred in texts from all three time periods.

10 texts	**9 texts**	**8 texts**
GROUP	ITS	CUSTOMER
BANK	MARKETS	BANKS
DANSKE	NEW	DANISH
CAPITAL	ACTIVITIES	CREDIT
FINANCIAL	MARKET	RESULT
YEAR	END	DENMARK
CUSTOMERS	PROFIT	TOTAL
BANKING	CORPORATE	LOAN
BUSINESS	GENERAL	FOCUS
GROWTH	CONDITIONS	DIVIDEND
NET	THROUGH	DIRECTORS
ECONOMIC	LOW	FUTURE
BOARD	SHAREHOLDERS	EFFECT
EXPECTED	SATISFACTORY	ANNUAL
LEVEL	CONTINUE	PLATFORM
SHARE		RISK
		INCREASE
		BASIS
		VALUE
		DEMAND

Table 2 Words occurring in all three periods (2004-2007, 2008-2011 and 2012-2013), either in all ten texts, in nine of the texts or in eight of the texts.[5]

A number of these words occurred with largely the same relative frequency across the three periods being investigated, which in most cases is not surprising; for instance, it is to be expected that the use of general words such as *year*, *annual*, *business*, *economic*, *market*, *focus*, and *Denmark* will remain relatively stable irrespective of the performance in a given year (see Rutherford, 2005: 367). More remarkably, yet still in line with e.g. Hildebrandt and Snyder (1981) and Rutherford (2005), words with positive connotations, e.g. *increase* and *satisfactory*, also appear with the same frequency in texts from all three periods. A closer analysis of the frequency of charged words in the three periods will follow in the section on charged words below.

We will now focus the discussion on the recurrent items associated with most frequency variation across the time periods in order to investigate how and to what extent the prominence of a theme changes according to the bank's performance in a given year or period. Hence, words with standard deviations above 1.5 across all ten years were extracted. Subsequently, general,

[5] The analysis in Wordsmith does not take multiword units, such as 'net profit' or 'Danske Bank' into account.

non-thematic words such as *year*, *through*, *end*, *basis*, *banking* and *corporate* were excluded. Furthermore, for the current analysis I excluded the recurrent and highly frequent words *Danske*, *Bank* and *Group*. In most cases these words indicate self-mention, which I will return to in the section on interactional metadiscourse. Thus, we are left with a list of eight recurrent items whose prominence varies markedly across the investigated periods: *profit*, *customer(s)*, *growth*, *Board*, *share(s)*, *shareholder(s)*, *result* and *loan*. Figure 3 illustrates the variation in the occurrence of these recurrent themes across the three periods.

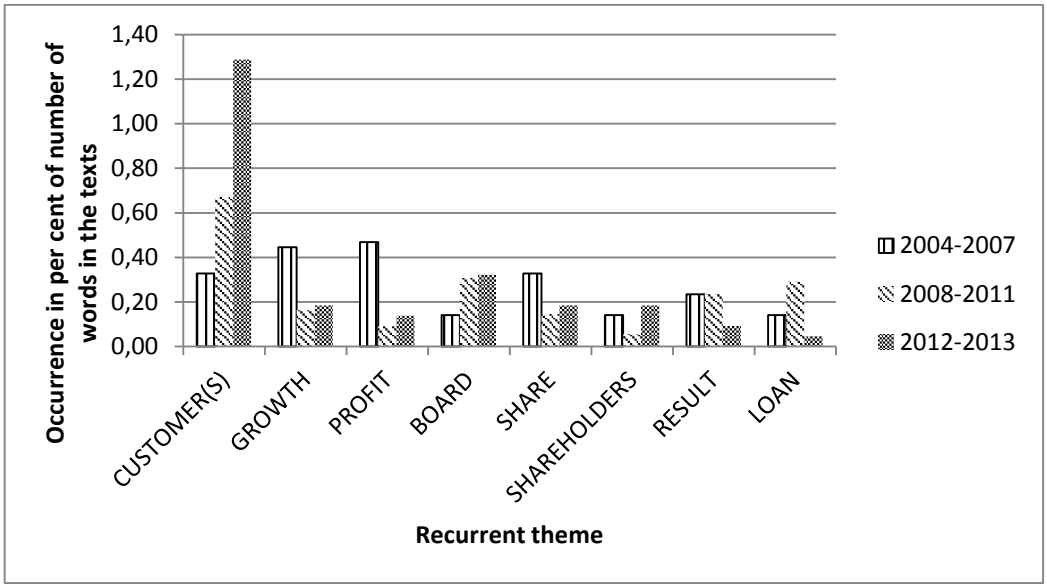

Figure 3 Occurrence of recurrent words as a percentage of total number of words in the texts from the three periods

The most pronounced variation is seen with respect to the words *customer(s)*, *growth* and *profit*. In the period from 2004-2007, the word *customer(s)* occurs between 1 and 6 times in the texts. In the period from 2008-2011, customers are mentioned 10-12 times in each of the texts. In 2012, the focus on customers peaks with no less than 20 occurrences of the word. In 2013, there is a decline to 8 mentions of the words. These changes in the mentioning of customers can be seen as a reflection of a general shift in the bank's focus. As mentioned in the introduction, when the financial crisis set in, the bank was criticised for losing money on faulty dispositions and letting the customers pay the bill for its hazardous risks. Conceivably, in order to remedy this reputation and bad image, more focus was put on customers in the difficult years during the financial crisis, and, in particular, in the post-crisis year. An example is the introductory paragraph from the annual report 2009:

> "The year 2009 was unusual and challenging for the financial sector, for the Danske Bank Group and for many of its customers. The Group's earnings suffered considerably from the economic downturn, since business conditions were difficult for both the Group and its customers. Many customers saw their earnings – and their creditworthiness – deteriorate." (Annual report 2009)

The increased focus on customers starting in 2008 moreover reflects a shift away from the focus on *profit* and *growth* seen in the high-performing period (2004-2007), cf. Figure 3. This change

is manifested not only in the number of occurrences, but also in the directness of presentation of the themes (Jameson, 2000). In the unambiguously high-performing years from 2004-2006, the *net profit* theme was introduced early in the text, usually in the first sentence (after 4, 13 and 11 words respectively); however, in 2007, the first mention of *net profit* was preceded by two paragraphs (61 words) describing the volatility and turbulence in the markets affecting the bank's activities, despite the increase in net profit. The number of words preceding the *net profit* theme peaked in 2008 (340 words), and was also high in 2009 (86 words). In 2010, the theme is again introduced relatively early (17 words preceding it), which coincides with the bank's performance improving compared to the previous year. In 2011 and 2012, the profit theme is absent. It reoccurs in 2013, where it is introduced late in the text (214 words). On the whole, the *net profit* theme is thus introduced early in the unambiguously positive years, whereas in years where the results are poor, or not clearly positive, it is occurs later, or is even absent. These findings are generally in line with Jameson (2000), who found that the performance theme was introduced later when reports were not unambiguously positive.

A closer analysis of the word *growth* in context revealed that not all occurrences were related to the bank's growth; in a number of cases, the word was used to describe economic growth generally or in selected markets – or rather the absence of such growth. This use of the word has been excluded from the analysis, which led us to conclude that the *growth* theme has been absent since 2010. Similar to the *net profit* theme, a marked change can be observed from 2007 to 2008, with the growth theme being introduced much later than in the previous years. This is again in line with Jameson (2000).

Figure 3 above furthermore indicates that more focus is placed on the *Board* in narratives from low-performing than from high-performing years. A closer analyses of the context showed that in one year (2009), it is emphasised that the executive board has not received any bonuses. However, for the most part, the higher frequency of the word *Board* in low-performing years can be explained by more 'practical' issues related to the resignation of both the chairman of the Board of Directors and the CEO, as well as the appointment of a new chairman and CEO.

In the high-performing period from 2004-2007, the relatively high occurrence of the words *shares* and *shareholders* is generally associated with frequent mentioning of increases in earnings per share and distribution of dividends to shareholders. In the 2008-2011, earnings per share were historically low, and no dividend was distributed to shareholders; thus, little attention is drawn to the theme, and when mentioned it is mainly to describe the (mostly poor) developments in the price of the Danske Bank share. In 2012-2013, there is a slight increase in the use of the word *shareholders*, which coincides with the title of the introduction being changed to 'To our shareholders' (2012) and subsequently 'Letter to our shareholder' (2013), and the bank apparently addressing its shareholders more directly. There is also a slight increase in the occurrence of *share(s)* coinciding with an increase in earnings per share.

A small decrease could be observed in the frequency of the word *result* in 2012-2013. A closer analysis of the context reveals that *result* is sometimes used as a thematic word referring to the bank's financial performance, but just as frequently as a general, non-thematic word in constructions such as 'as a result of…'. Hence, the variation in use across the periods under investigation does not apparently reflect a shift in focus.

Finally, as can be seen in Figure 3, the use of the word *loan* is more prominent in the period from 2008-2011 than in the other periods. The leap in the number of occurrences of the word

(from two in 2007 to nine in 2008) coincides with the onset of the financial crisis, forcing the bank to write down on loans to corporate customers and financial counterparties, thus calling for increased focus on this theme during the years of the crisis.

5.2.4 Idiosyncratic themes

Themes which were idiosyncratic to one time period were also identified and analysed. The idiosyncratic items reveal first of all that the different periods have different content focus depending on certain external circumstances, which is, not surprisingly, reflected in the relative frequency of certain lexical items.

In the 2004-2007 period focus is for instance on *mergers*, *investments* and *purchase*, and the proper nouns *Sampo*, *Northern Bank* and *BG* occur frequently, because they are names of banks that Danske Bank acquired or merged with during this period. In all four years, the words *approval* and *approve* occur, either in connection with mergers and acquisitions or in connection with the Board approving distribution of dividend.

In 2008, the focus changes, and the most prominent lexical items are *guarantee*, *package(s)*, *bond(s)*, *subordinated (debt)*, *service*, *scheme* and *ICAAP*. This reflects the onset of the financial crisis, causing the Danish government to implement bank packages and issuing depositor guarantees, and more focus being put on the reporting of risks.

Thus, there is a clear shift in content focus from the high-performing years 2004-2007 to the years of the financial crisis in 2008-2011, which comes as no surprise. A more remarkable observation is that, unlike the two previous periods with their clearly identifiable thematic focus areas, the recovery years, 2012-2013, are not in the same way characterized by unique lexical items associated with certain events and developments. At the top of the list of idiosyncratic lexical items we find non-thematic words like *soon*, *aimed*, *top* and *steps*. Further down the list, we also find thematic words such as *profitability*, *upgrade*, *restoring*, *reorganisation*, *trust(ing)* and *prudent*, reflecting a focus on financial recovery, rebuilding of trust, and more cautious behaviour than before the crisis; thus, overall the post-crisis narratives are characterised by a vocabulary which is less technical and specialised.

As appeared in previous sections, the post-crisis narratives were also characterised by having the strongest focus on customers (as indicated by the high frequency of this word), and addressing the shareholders directly (as indicated by the titles). Overall, the language use in the post-crisis narratives thus appears to be less focussed on detailed explanations and interpretations of factual circumstances and events, and more concerned with the bank's relationship with shareholders and customers. The excerpts below from the 2008 and 2013 reports respectively serve to illustrate this change:

> "The Danish state charges an annual guarantee commission of DKr7.5bn. Through the Private Contingency Association, the participating banks are jointly and severally liable for payment of the commission and for a guarantee commitment of DKr20bn, half of which falls due only if the losses incurred by the sector as a whole exceed DKr25bn. The Danske Bank Group's share of the scheme is around one third. During the two-year guarantee period, the participating banks may not pay out dividends or buy back shares." (Annual report 2008)

> "The year 2013 was a year of change and progress for Danske Bank. We took important steps towards executing our strategy aimed at fulfilling our vision to become the most trusted financial partner. We will continue to focus relentlessly on meeting customer needs, simplifying operations and becoming more efficient." (Annual report 2013)

This apparent change in strategy with more focus on relationship-building will be further analysed in the section on interactional discourse markers below.

5.3 Linguistic features

In the previous sections, the focus has been on Danske Bank's selection and presentation of content themes in introductory narratives from 2004-2013. The following section will investigate whether the changes in themes are accompanied by changes in language use, more specifically the use of metadiscourse markers and the occurrence of charged words.

5.3.1 Interactional discourse markers

In order to further examine the shift to a less technical and more personal writing style in the post-crisis years 2012-2013, I looked into the occurrence of interactional discourse markers used by authors to express their viewpoints and to involve readers in the unfolding text (Hyland, 2005: 49). Hyland distinguishes between a number of categories of interactional discourse markers. In this analysis, the attention will be focussed on *a)* self-mention, making explicit reference to the author, e.g. by means of first person personal pronouns; and *b)* engagement markers, addressing readers as participants in an argument, e.g. by means of second person personal pronouns and inclusive *we*, pulling readers into the discourse at critical points or by referring to shared knowledge (Hyland, 2005: 52-54).

Self-mention

Explicit reference to the author, Danske Bank, occurs either by means of the personal pronouns *we*, *our* and *us*, or by referring to the bank in the third person as *the Group*, *Danske Bank*, or simply *the Bank*, or by means of the pronoun *it*.

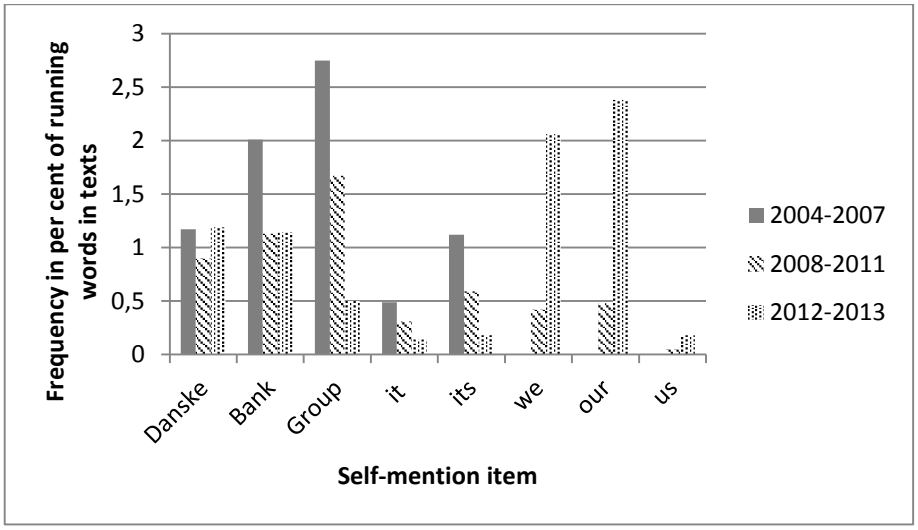

Figure 4 Frequency of self-mentions as a percentage of running words in the text

As illustrated by Figure 4, in the 2004-2007-period, the bank exclusively refers to itself in the third person, as *Danske Bank*, *the Bank* or *the Group*, whereas there were no occurrences of

first person pronouns. The first use of first person pronouns to mark author presence is in 2010; however, third person reference is still dominant throughout the crisis-period (2008-2011). This changed markedly in 2012-2013, where the bank made extensive use of first person pronouns as a means of self-representation.

The relatively infrequent occurrence of first person pronouns in the years of the crisis (2008-2011) compared with the years of recovery (2012-2013) is in line with the findings of Hyland (1998) and Rutherford (2005) reported above: In the more favourable and promising post-crisis years, the company seeks to accentuate its ethos, whereas in the least profitable years, a more diffident ethos is promoted (Hyland, 1998: 237), and the company refers to itself mainly in the third person (Rutherford, 2005: 371). Based on Hyland (1998) and Rutherford (2005), one would have expected that the very successful pre-crisis years would be characterised by an equally or even more extensive use of first person pronouns than in 2012-2013, but contrary to these expectations, the bank refers to itself exclusively in the third person.

The marked increase in first person pronouns in 2012-2013 seems to reflect not only that the bank is reinforcing its ethos in light of more positive financial developments, but also a general preference for using a more personal writing style. This is in keeping with the general tendency argued above, namely that in the post-crisis narratives the bank attempts to rebuild its relationship with shareholders and customers.

Engagement markers

Seeing that the audience of the annual report could be any of the bank's stakeholder groups, including shareholders, customers and employees (Laskin, 2009; Lischinsky, 2011), mentioning of these stakeholders are, for the purpose of this analysis, considered as devices used to address readers. The use of the personal pronoun *you* and inclusive *we* are also generally considered engagement markers, but there were no occurrences of these pronouns in any of the analysed texts.

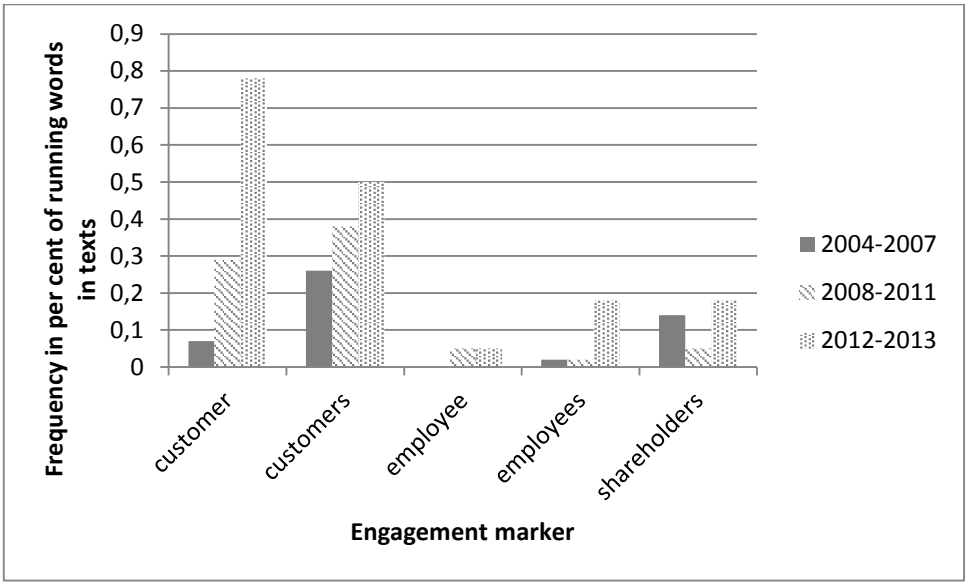

Figure 5 Frequency of engagement markers as a percentage of running words in the text

As has been shown previously, *customers* (both in singular and plural form) receive more attention in narratives from the post-crisis years than in the other two periods. Similarly, *employees* (plural) are mentioned more frequently in the 2012-2013-reports than in the other periods, whereas *employee* (in the singular) occurs with the same frequency during the crisis (2008-2011) and after the crisis (2012-2013), but is not used in the pre-crisis reports (2004-2007). *Shareholders* (occurring only in the plural) are mentioned with approximately the same frequency in the pre-crisis and the post-crisis years, but less often during the crisis. Overall, the percentages in Figure 5 indicate that engagement with readers is more frequent in 2012-2013 than in the other two periods, which further substantiates the claim that the post-crisis reports are more personal and focussed on relationship-building.

In addition to these concrete manifestations of reader involvement, qualitative analyses also suggested a stronger tendency in the post-crisis years to engage with readers from different stakeholder groups. Examples of the bank addressing the employees directly are:

> "The employees at Danske Bank delivered a great effort in 2012 despite many changes and – in some markets – a challenging public debate." (Annual report 2012)
>
> "(…) we thank all employees for their efforts and resilience." (Annual report 2012)
>
> "We would like to express our gratitude to all our employees for their dedication and hard work during these challenging times" (Annual report 2013)

and an example of customer involvement is the following:

> "We will continue to focus relentlessly on meeting customer needs" (Annual report 2013)

Other examples of reader involvement are "It is however important to remember that…" and "Considering that conditions for financial services business have changed…", both from the 2013 report. While these are not addressing a particular stakeholder group, it should be remembered that the narratives from 2012 and 2013 directly address the shareholders, as indicated by the titles ('To our shareholders'; 'Letter to our shareholders'). Thus, it may be argued that engagement with readers is generally aimed at shareholders unless another stakeholder group is specifically mentioned, and this could be the reason why 'shareholders' are not mentioned as frequently as the other stakeholder groups.

5.3.2 Charged words

When analysing and comparing the occurrence of recurrent and idiosyncratic themes above, some preliminary observations were made with respect to the use of words with positive connotations. In this section, I will further investigate the occurrence of charged words.

Five independent persons (four linguists and a financial expert) were asked to categorise words (excluding stopwords) which were idiosyncratic to one of the three time periods as either *neutral*; *positively charged*; *negatively charged* or simply *charged*. The latter category included words which the respondent did not consider to be entirely neutral, but which could also not be categorised as positive or negative, e.g. *culture* and *transformative*. In comparison, words such as *favourable* and *trust* were categorised consistently as *positively charged*, and *weak* and *turmoil* as *negatively charged*. There was substantial variation across the respondents with respect to their use of the different categories. For instance, one respondent (R2) assigned the *charged* label only four times in all three periods and instead used the *positively charged* and

negatively charged categories, whereas another (R5) made extensive use of the *charged* label (43 times altogether), and used *negatively charged* and *positively charged* less frequently.

All idiosyncratic words from each of the three periods were presented to the respondent in a list, i.e. out of their context. Consequently, judging whether a word had positive or negative connotations was not always a straight-forward task. The respondents were asked to give their 'gut reaction' and base their judgments purely on their immediate intuitive response. Once the respondents got used to the task, they did not have major problems assigning words to the different categories.

First of all, I looked at the distribution of charged words (*positively charged*, *negatively charged* and simply *charged*) and neutral words in the three periods (Figure 6). Of the 276 idiosyncratic words presented to the respondents, 47 words, on average, were marked as charged. This average covers a good deal of variation across the respondents. However, all five respondents agreed that the highest proportion of charged words – and hence the lowest proportion of neutral words – was found in the post-crisis years (2012-2013). This finding corresponds well with the claim that the language use in texts from the post-crisis reports reflects a change in writing style, using fewer technical words and engaging more with readers by means of interactional discourse markers.

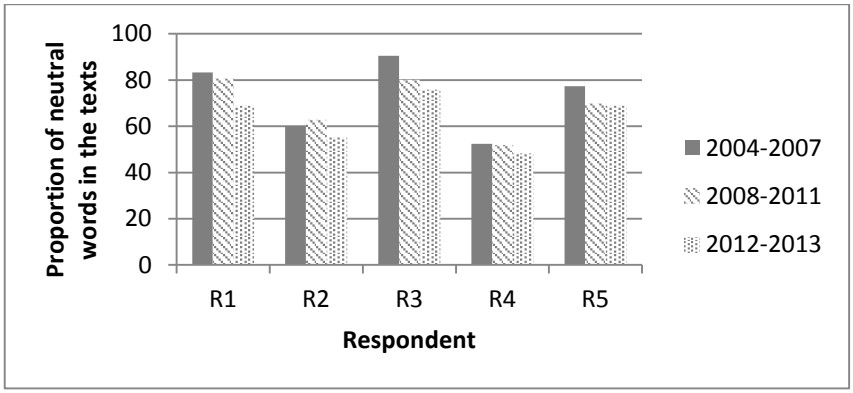

Figure 6 Percentage of words categorised as neutral (as opposed to words categorised as charged)

Furthermore, four out of five respondents found that the highest proportion of neutral words was found in the pre-crisis years (2004-2007), which was also the period with fewest engagement markers. All in all, narratives from the successful pre-crisis years seem to favour the most neutral writing style with little engagement with readers, preference for non-charged words, and also the most neutral title ('Summary').

As already mentioned, I also asked the respondents to mark charged words as either positive or negative (to the extent that they found it possible to do so). All five respondents agreed that by far the highest proportion of negatively charged words was found in the 2008-2011 period, i.e. during the crisis. This was to be expected, and is also in line with Hildebrandt and Snyder (1981). Furthermore, four out of five respondents found that the post-crisis period contained considerably more positively charged words than any of the other periods, despite the fact that the bank's financial performance was evidently much stronger in the pre-crisis years (2004-

2007). This further supports the claim of a neutral and factual writing style during this period, as opposed to a more subjective and personal writing style preferred in the 2012-2013-period.

Hildebrandt and Snyder (1981) found that companies generally tended to focus on positive aspects in narratives, and Rutherford (2005) found that positive words occur more frequently than negative words, regardless of the company's financial performance. An analysis of the proportion of positive and negative words in the three periods (Figure 7), showed, in line with Hildebrandt and Snyder (1981), that, overall, positive words clearly dominated.

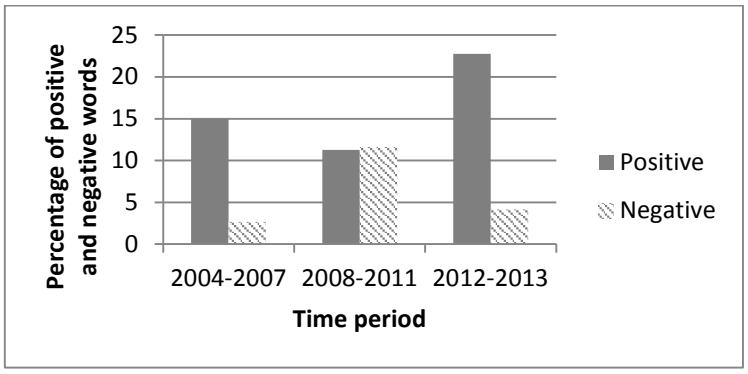

Figure 7 Percentage distribution of positive and negative words in the three time periods (means for the five respondents)[6]

However, in the 2008-2011-period, negative words were found by four out of the five respondents to slightly outweigh the positive, and on average the distribution was found to be more or less even. This does not unambiguously confirm Rutherford's (2005) findings, but it is worth noting that even in years of severe financial hardship, positive words were found to be almost as frequent (and according to one respondent more frequent) as negative ones.

6 Conclusions

A comparison of the high-performing pre-crisis period (2004-2007) and the period of the financial crisis (2008-2011) reveals a shift in terms of *a)* word count and LIX, *b)* the prevalence of recurrent themes, and the level of directness for central recurrent themes (*growth* and *profit*), and *c)* the nature of idiosyncratic themes. A marked increase in word count and LIX, as well as later introduction of the *net profit* theme could be observed already in the 2007 report, reflecting the bank's concerns about instability in the external economic environment before this had materialised in the bank's own financial performance. The 2008-2011-period also saw a stronger emphasis on customers.

When comparing the recovery period (2012-2013) with the two previous periods, several notable changes were observed: non-thematic words such as *soon*, *aimed* and *steps* occurred with higher relative frequency than thematic words; the most prevalent thematic words were words such as *restoring*, *trust* and *prudent*, and *customers* were mentioned more frequently than in previous years. On the whole, the bank seemed more concerned with rebuilding trust with customers and shareholders and re-establishing its ethos, than with reporting on concrete events and developments. This is supported by the analysis of interactional discourse markers which

[6] The percentages shown in Figure 7 represent only two of the four categories which the respondents could choose between, which is why the percentages do not add up to 100. In addition to *positively charged* and *negatively charged*, the respondents could also assign the labels *charged* and *neutral*.

showed an increase of self-mentions and engagement markers in 2012-2013, and thus generally a preference for a more personal writing style. Furthermore, the analysis of charged and neutral words revealed that the 2012-2013-period was considered by all five respondents to contain the highest number of charged words, most of which were positively charged.

Together, these developments can be interpreted as a general genre shift from relatively impersonal, factual expositions, using fairly technical and neutral vocabulary, into a more personal, engaging and letter-like address to shareholders, using a less specialised vocabulary and more charged words. The change is further supported by the new titles in 2012 and 2013 ('To our shareholders' and 'Letter to our shareholders'). Or, seen from the opposite perspective, the change in titles reflects a more fundamental shift in genre and communicative purpose. In the summaries from 2004-2007, the dominant communicative purpose and strategy was, it seems, to provide 'a true and fair view' (Ditlevsen, 2012: 97), i.e. an informational and neutral account of the situation in the company, which was very favourable at the time; hence the relatively high number of positively charged words. In the years of the crisis (2008-2011), the vocabulary was still dominated by thematic expressions, and the style was factual and largely non-personal. However, the relatively high frequency of positively charged words considering the disastrous financial situation that the bank was in, and the slight increase in engagement markers, reflects a move towards a more persuasive purpose. In 2012-2013, the communicative purpose and strategy had shifted into being primarily promotional, aiming mainly at providing 'a positive image of the company' (Ditlevsen, 2012: 97). Consequently, although the financial performance was a long way from the pre-crisis level, the number of positively charged words by far outweighed the number of negative words, and interactional discourse markers were used frequently as an engaging and persuasive device.

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