



Cognitive Operations in Eco-Friendly Car Advertising

M^a ENRIQUETA CORTÉS DE LOS RÍOS* & ISABEL NEGRO ALOUSQUE
Universidad de Almería (Spain)
Universidad Complutense de Madrid (Spain)

Received: 17/02/2021. Accepted: 13/10/2021

ABSTRACT

This paper presents a corpus-based analysis of printed eco-friendly car advertisements in English in line with the growing consumer interest in environmental issues and the development of green advertising. The aim of the research is threefold: 1) to unveil the content cognitive operations (for the purpose of this research, metonymy, metonymic chain, metaphoric amalgam and metaphor) underlying the ads and their modes of representation; 2) to examine the relationship between (i) these conceptual operations and the environmental claims made by advertisers, and (ii) the environmental claims made by advertisers and the text-image interaction. In this light, the paper yields two major findings: a) the cognitive operations underlying our corpus are usually rendered in the visual and verbal modes; b) the environmental claims underlying the ads correlate with the conceptual content and the text-image interplay. The conscious use of these mechanisms by advertisers can help the manner in which messages are interpreted.

KEYWORDS: Cognitive operations; Green advertising; Environmental claims; Multimodality; Text-image interplay.

1. INTRODUCTION

The last years have witnessed a growing consumer concern about environmental issues and a growing demand for green products and services. The automotive industry has seen a growth opportunity in the eco-friendly car market and consequently car manufacturers have invested in the development of hybrid technologies and electrification. This, in turn, has led to the development of eco-friendly car advertising.

Research on green advertising has been devoted to such issues as the categorization of green ads (Banerjee et al., 1995¹), consumer perception (Hassan & Valenzuela, 2016; Sheehan & Atkinson, 2012), and the effectiveness of environmental appeals (Chang et al., 2015; Choi & Lee, 2020; Segev et al., 2016). This paper focuses on the role of conceptual operations in a corpus of ecological car ads. A considerable amount of research on advertising has focused on metaphor and metonymy (Forceville 2012; Littlemore & Pérez Sobrino, 2017; Negro Alousque, 2014, 2015; Pérez Hernández, 2019; Pérez

**Address for correspondence:* M^a Enriqueta Cortés de los Ríos, Facultad de Humanidades, Universidad de Almería, Spain; e-mail: mecortes@ual.es. Isabel Negro Alousque, Facultad de Ciencias Económicas y Empresariales, Universidad Complutense de Madrid, Spain; e-mail: inagro@ccee.ucm.es

Sobrino, 2016, 2017; Ungerer, 2000) as well as the metaphor-metonymy interaction (Cortés de los Ríos, 2010; Forceville, 2009; Hidalgo & Kraljevic, 2011; Pérez Sobrino, 2013; Urios Aparisi, 2009; Villacañas & White, 2013). Content operations have been investigated in other areas such as branding (Pérez Hernández, 2011, 2016) and film translation (Negro Alousque, 2015b; Peña, 2016).

The present article presents an analysis of 100 ads for eco-friendly cars compiled through searches in Google images. For the purposes of this research, we will first explain the content cognitive operations (*metonymy, metonymic chain, metaphor and metaphoric amalgam*) that underlie the production and interpretation of the ads and the modes (visual, verbal) in which they are manifested. Then we will explore the connection between (i) these conceptual operations and the environmental claims made by advertisers, and (ii) the environmental claims made by advertisers and the text-image interaction. More precisely, the paper addresses the following research questions:

RQ1: What are the cognitive operations activated in our corpus? How do they interact?

RQ2: Which modes are used to cue those cognitive operations?

RQ3: Is there any kind of connection between the environmental claims made by advertisers and the cognitive operations cued?

RQ4: Is there any kind of connection between the environmental claims made by advertisers and the text-image interplay?

Section 2 outlines the theoretical background of this study. Section 3 deals with the corpus and the methodology employed. Section 4 seeks to provide an answer to the research questions through our corpus analysis. The last section presents some concluding remarks.

2. THEORETICAL BACKGROUND: COGNITIVE OPERATIONS

Cognitive operations have been introduced in cognitive linguistics theories in proposals by Lakoff (1987) and Lakoff and Johnson (1999) on conceptual metaphors, metonymies, and image schemas. More recently, Ruiz de Mendoza and Peña (2005:58) define the notion of cognitive operations as:

[. . .] a mental mechanism whose purpose is to derive a semantic representation from a linguistic expression (or from other symbolic device, such as a drawing) in order to make it meaningful in the context in which it is to be interpreted.

Meaning construction has been shown to be largely guided and constrained by a number of cognitive operations (Ruiz de Mendoza & Galera, 2014). These authors distinguish two general categories of cognitive operations, namely formal and content operations, where the former is a prerequisite for the latter to be activated, but not the other way around. Formal operations are “mental mechanism that allows language users to variously access, select, abstract, and integrate conceptual structure as needed for production and interpretation purposes” (Ruiz de Mendoza & Galera, 2014: 85-86). They identify five formal operations, namely cueing, selection, integration, abstraction, and

substitution. Nonetheless, these higher-level operations have no hand in inference making, but they are necessary for supplying early conceptual representations to content operations to draw the necessary inferences. Content cognitive operations, by contrast, (i.e., comparison, correlation, domain reduction and expansion, mitigation, strengthening, and parametrization), are lower-level mechanisms used to make inferences on the basis of cues provided by the context or the linguistic expression. For our purposes we will focus on content operations. Ruiz de Mendoza and Galera (2014) classify them into two basic categories: ‘identity’ (A IS B) and ‘stands for’ (A FOR B) relations.

‘Identity’ relations underlie five content cognitive operations: comparison (either by resemblance or by contrast), strengthening, mitigation, echoing and correlation. Comparison is the mechanism by which we unfold similarities (comparison by resemblance) or differences (comparison by contrast) across concepts. Metaphor and simile are associated with comparison by resemblance.

Strengthening places a concept up a scale, whereas mitigation places the concept lower down on the scale. Echoing activates irony, and correlation establishes a connection between two independent domains of experience. Correlation is grounded in both physical and socio-cultural experience and gives rise to metaphors such as MORE IS UP (Pérez Hernández, 2011). For example, *His popularity keeps going up*, where growing popularity is seen as an ascending object.

Metaphors may occur within metaphoric amalgams. There are two types of metaphoric amalgam: (i) A single-source metaphoric amalgam consists in integrating one of the metaphors in a complex into the conceptual configuration of the other; (ii) A double-source metaphoric amalgam results from mapping two different source domains onto the same target domain.

‘Stands for’ relations underlie the following content cognitive operations: expansion, reduction, parametrization and saturation. In domain expansion a subdomain grants access to its matrix domain, thus broadening the amount of conceptual material. By contrast, domain reduction results from giving conceptual prominence to a subdomain. Domain expansion and reduction are linked to the two types of metonymic relationship that can hold between a domain and its subdomains (Ruiz de Mendoza & Otal, 2002). In source-in-target metonymies, the source domain is a subdomain of the target domain, thus involving domain expansion. An instance is Chevron’s fountain pen (subdomain), which stands for the promise of the company’s manager – the matrix domain (Felices Lago & Cortés de los Ríos, 2009). On the other hand, target-in-source metonymies are those in which the target is a subdomain of the source, thus involving domain reduction and the consequent highlighting of part of a domain. For instance, in *Britain has rolled over the EU’s trade deals*, *Britain* stands for and highlights a prominent subdomain, *Britain’s government*.

Parametrization is a particular type of expansion activated by the metonymy GENERIC FOR SPECIFIC.

Metonymies can occur in metonymic chains (Ruiz de Mendoza & Galera, 2014). Metonymic chains consist in combining two or more metonymies in such a way that the target domain of the first constitutes the source domain of the following one. This phenomenon of metonymic patterning in

discourse has been studied by Barcelona (2005), who uses the term metonymic chains to refer to “direct or indirect series of conceptual metonymies guiding a series of pragmatic inferences” (Barcelona, 2005: 328). Metonymic chains can work within metaphoric mappings, thus giving evidence of the metaphor-metonymy interaction (Hidalgo & Kralievic, 2011; Pérez Hernández, 2019; Pérez Sobrino, 2013, 2016, 2017). Four types of interactional pattern can be distinguished: a) double metonymic reduction of the metaphoric source domain; b) double metonymic reduction of the metaphoric target domain; c) double metonymic expansion of the metaphoric source domain; and d) double metonymic expansion of the metaphoric target domain. Our analysis reveals that a double metonymy subsumed within a metaphor may involve expansion and reduction processes.

Saturation is a mechanism whereby missing structures of linguistic patterns are fully elaborated into longer patterns on the basis of contextual information and linguistic clues. Hence this content operation comprises the process through which we supply “constructionally undetermined expressions with missing or non-explicit information and substantial utterances (i.e. minor clauses) with the elided verb and partial associated clausal structure” (Ruiz de Mendoza y Galera, 2014: 98). An example of saturation is the utterance: *Josh, I’m leaving to the church in two minutes. Are you ready?* which has to be extended into a fully developed utterance like *Are you ready to go out?* However, they also (ibid) stress that not only the contextual information should be taken into consideration but also the grammatical components in a way that both the syntactic and the semantic elements should be elaborated coherently.

As illustrated in our corpus, a large number of metaphoric and metonymic mappings are grounded in image schemas (Johnson, 1987; Lakoff & Johnson 1980, 1999), which additionally underlie metaphor-metonymy interaction. Image schemas are abstract representations of recurring dynamic patterns of bodily interactions that structure the way we understand the world. They are schematic and exist beneath conscious awareness (Johnson, 1987).

A range of image schemas taxonomies have been proposed by cognitive semanticists. Evans and Green (2006) group image schemas according to the nature of the experiential grounding such as: SPACE (up-down, front-back, left-right, near-far, centre-periphery, path, straight-curved, scale) and ATTRIBUTE (heavy-light, dark-bright, big-small, warm-cold, strong-weak), among others. Each pair of concepts follows a PLUS-MINUS parameter, which means that the former concept has a positive value, whereas the later carries a negative meaning. Let us consider the IN-OUT concepts in the CONTAINER schema. If we take our body as a container, whatever we put in it -food and air- is regarded as positive, since we need to eat and breathe to survive. However, we may find instances in which there is an axiological clash, so that the positive value proves to be negative, or vice versa. For example, “if the container, for example home, is positively charged, being IN it is also positively charged; if the container, for example prison, is negatively charged, being IN it is also negatively charged” (Krzyszowski, 1993: 317).

Metaphors and metonymies do not only manifest themselves in language, but also occur non-verbally and multi-modally (Forceville, 2009; Forceville & Urios-Aparisi, 2009; Downing & Mujic,

2011; Villacañas & White, 2013). Multimodal metaphors and metonymies are those whose target and source are rendered in two different modes. Advertising is a type of multimodal discourse, where overall meaning is construed through four modes: written language, spoken language, visuals, and sound. In this regard, our analysis shows how image and text interact in the creation of meaning.

3. CORPUS AND METHODOLOGY

This study presents a corpus-based analysis of eco-friendly car ads. These have been compiled through simple searches in Google Images focusing on various car brands: Ford, BMW, Volvo, Toyota, Nissan, Audi, Mercedes Benz, Alfa Romeo, Tata, Tesla, Honda, Volkswagen, and Renault. An initial corpus consisting of 166 online advertisements were selected. After close scrutiny, the total number of advertisements triggering cognitive content in the visual and/or verbal mode(s), where sensitive environmental topics had been introduced, was 100.

In the first stage, we proceeded to explore the product as represented in the advertisement, together with its verbo-pictorial context, in search for possible manifestations of source domains which were visually or verbally associated with it.

In the second stage, we identified the conceptual operations underlying the ads – metaphor (s) and/or metonymy/metonymies. Conceptual complexes (metonymic chains and metaphoric amalgams) were identified in this stage.

In the third stage, we described the mode of representation of the metaphor(s) and or metonymy/metonymies – monomodal (verbal or pictorial) or multimodal. We also looked at the role of elements such as colour and size in the visual representation of the conceptual operations.

In the fourth stage, we examined the relationship between and the environmental claims made by advertisers. In the final stage, we analysed the role of text in the identification of the conceptual operation triggered by the image and the connection between the type of environmental claim underlying the ads and the text-image interaction.

4. CORPUS ANALYSIS

4.1. Corpus analysis: conceptual operations and modes of representation

The ads in our corpus highlight social benefits of eco-friendly cars rather than private benefits. Advertisers resort to two major conceptual operations to make their environmental claims: metaphor and metonymy. A close look at our corpus revealed that metaphor and metonymy frequently occur within conceptual chains, on the one hand, and that they often interact in various patterns.

As far as the modes of representation are concerned, metaphor and metonymy are usually cued in both the visual and verbal modes. Furthermore, the source and the target domains are usually visually and verbally manifested. The source domain is generally cued by an image or a pictorial detail, whereas the target object is visually rendered by the image of the car model being advertised or of a car made by the brand being advertised, or else by the visual logo.

A multimodal metonymic chain GREEN FOR NATURE FOR NATURE-FRIENDLY underlies the bulk of ads. We are confronted with images of a green car and/or a green background, or a green element (green-coloured words or letters, a green part of the car). The source domain is also verbally represented: *Green which has a style* (Ford Fusion Hybrid); *Green never looked so Good* (Tesla); *Greenness is awesomeness* (Tata). *Beetle went green*. The target domain is visually rendered by the logo or verbally triggered by the reference to the car model or brand. The metonymic process triggered by these ads involves two consecutive domain operations (see Figure 1). The first operation (expansion) highlights nature by virtue of an ATTRIBUTE FOR OBJECT (GREEN FOR NATURE) metonymy. The second operation gives access to the subdomain NATURE through an OBJECT FOR ATTRIBUTE metonymy (NATURE FOR NATURE-FRIENDLY), thus involving metonymic reduction. Figure 1 schematizes this combination of metonymies.

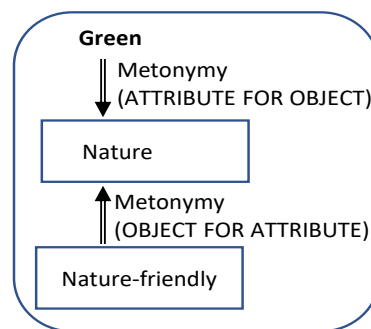


Figure 1. The GREEN FOR NATURE FOR NATURE-FRIENDLY metonymic chain in eco-friendly car advertising.

In other ads (e.g., Tesla, Toyota Camry, Volkswagen Beetle and Ford Fusion Hybrid), the source domain NATURE is visually cued by a natural landscape (e.g., a beach with trees, a forest with wild animals, or a park, as shown in Figure 2), an animal or a part of a plant (e.g., flowers). Rarely is the metonymy only reflected verbally, as in *Naturally driven* (Honda); *Reliable. Naturally* (Nissan).



Figure 2. Ad for Toyota Camry. Ad reproduced with permission.

A similar metonymic chain underlies the interpretation of ads depicting blue cars in a blue background, e.g. Nissan Electric (see Figure 3): BLUE FOR CLEAN SKIES FOR CLEAN AIR FOR CLEAN ENERGY. The metonymic projection involves three consecutive metonymic processes. First the blue colour is made to stand for clean skies. Then a double reduction domain process is activated by a RESULT FOR ACTION metonymy: CLEAN SKIES FOR CLEAN AIR FOR CLEAN ENERGY. The metonymic chain is also verbally cued in some ads: *When blue is greener than green* (Volkswagen). Figure 4 provides an illustration of this process.

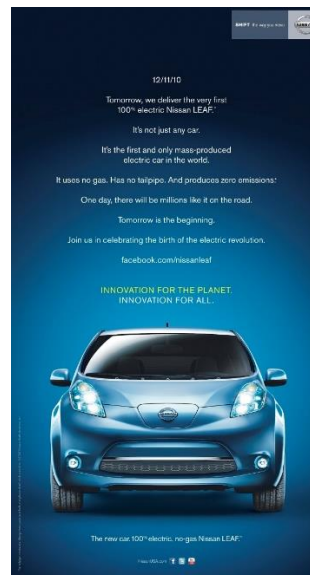


Figure 3. Ad for the electric Nissan LEAF. Ad reproduced with permission.

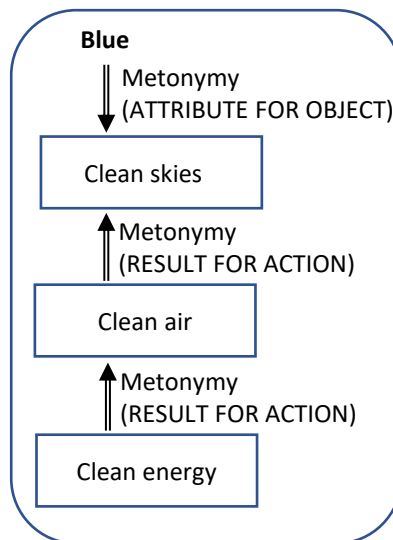


Figure 4. The BLUE metonymic chain in eco-friendly car advertising.

These metonymic chains give evidence of the role of colour in activating conceptual operations. An additional category of metonymic chain underlies the interpretation of ads which highlight a functional car attribute (e.g., Audi, BMW, Nissan LEAF). First, a reduction metonymic operation makes an object stand for the car attribute, e.g. a turn-on button for electrification, or a socket, as shown in Figure 5. Then, the attribute stands for the product through an expansion process, as schematized in Figure 6:

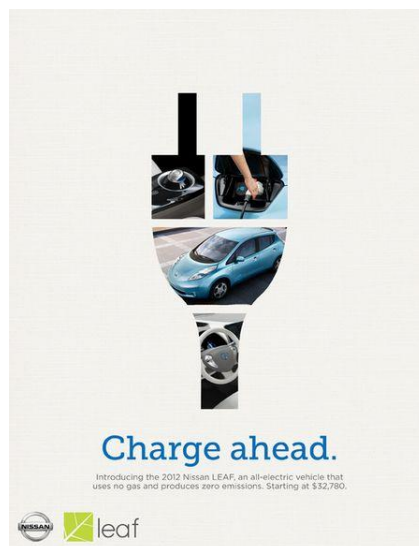


Figure 5. Ad for the electric Nissan LEAF. Ad reproduced with permission.

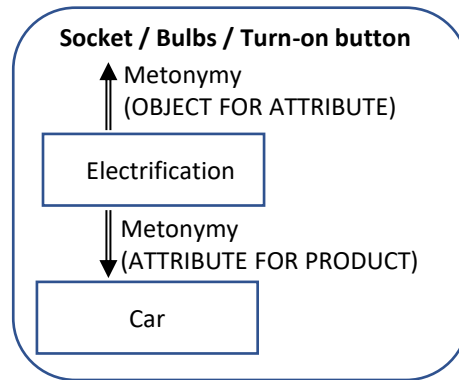


Figure 6. Metonymic chain OBJECT FOR ATTRIBUTE FOR PRODUCT.

A substantial proportion of ads exploit the high-level metaphor NON-LIVING ENTITIES ARE LIVING ENTITIES². This metaphor is based on the GREAT CHAIN OF BEING proposed by Lakoff and Turner (1989), a cultural model that defines the attributes and properties of natural beings. In this model, natural beings are arranged in the following hierarchy: God, humans, animals, plants and complex and natural objects. In our corpus cars are equated with human beings, plants and natural objects. CHAIN OF BEING metaphors frequently operate within metaphoric amalgams. This means that they are conceptually refined by another metaphor that projects particular features of the source domain onto the target domain.

Let us consider a few examples. The ads for Honda Eco and Ford Fiesta ECONetic feature a car in a wood. A verbal metaphoric amalgam associates both nature and the car with people: *Nature’s best friend*. Additionally, the text reveals the mapping triggered: friendship is mapped onto eco-friendliness (see Figure 7).

Source	→	Target
People	→	Cars Nature
Personal relations	→	Ecofriendliness

Figure 7. The metaphoric amalgam underlying an ad for Honda Eco.

A further instance of personification is provided by an ad for Nissan Leaf (see Figure 8). The comparison through a resemblance operation is carried out through a combination of verbal and pictorial elements. The car is metaphorically depicted as a pooping baby. The text reads: *The tiniest emission*. The main metaphor operating in the interpretation of the ad is CARS ARE PEOPLE, which activates a conceptual correspondence between the baby’s droppings and the low car emissions. The

target domain inherits the benefits of the baby’s poo (tiny). The communicative impact of this verbo-pictorial metaphor is reinforced by the attribute image schema (BIG-SMALL), SMALL being positively valued. In this case, an axiological clash is produced. The interpretation activates the ICM of size related to small objects.

The green colour of the droppings manifests the metonymic chain operating within the metaphoric mapping. The subdomain green triggers a double metonymy touching upon the metaphorical source (see above). The schematic representation of the interaction patterns between metaphor and metonymy in this ad is provided in Figure 9.



Figure 8. Ad for Nissan Leaf. Ad reproduced with permission.

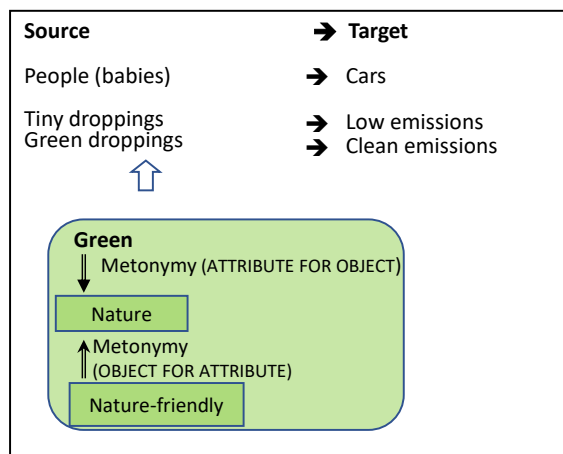


Figure 9. Schematic representation of the interaction patterns between metaphor and metonymy in an ad for Nissan Leaf.

Other ads profile the metaphor CARS ARE TREES. A characteristic of trees, namely their ability to release oxygen and reduce carbon dioxide in the atmosphere, is mapped onto low/zero emissions, both improving air quality and thus reducing pollution. The metaphor is visually rendered by hybrid or juxtaposed images where the car appears covered by grass, as illustrated by the ads for Volvo (see Figure 10), Volkswagen and Renault Zoe.

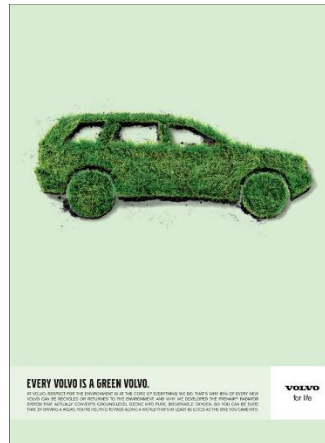


Figure 10. Ad for Volvo. Ad reproduced with permission.

Occasionally, the metaphorical source undergoes a process of double metonymic expansion via a PART-FOR-WHOLE metonymy and a PRODUCER FOR PRODUCT metonymy (oxygen for tree leaves). This metonymic chain is visually cued by the image of tree leaves coming out of the exhaust pipe (Renault Clio), clearly suggesting that it is a clean diesel car. The metaphor-metonymy interplay is schematized in Figure 11.

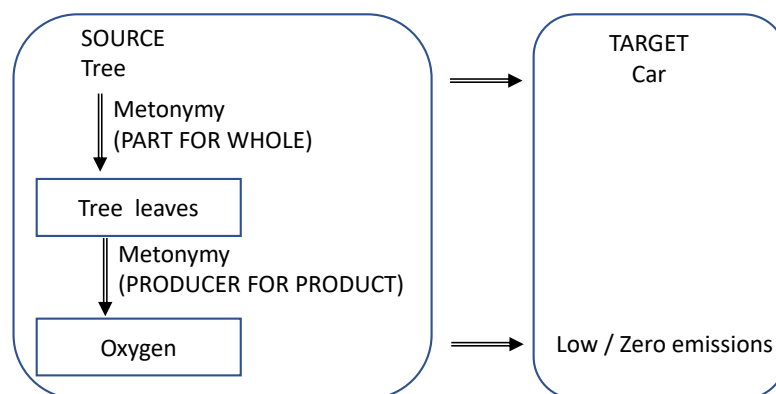


Figure 11. Schematic representation of the interaction patterns between metaphor and metonymy in an ad for Renault Clio.

Sometimes the CARS ARE TREES metaphor combines with the CARS ARE PEOPLE metaphor in a double-source metaphor, as exemplified by an ad for Volkswagen, where the former metaphor is

visually rendered by the image of a car fused into the top of a tree, whereas the latter metaphor is verbally triggered: *Eco-logical*. As we see, the breakdown of the word ‘ecological’ conveys the idea of the car as an intelligent person, which involves the mapping of a characteristic of human beings (ability to think) onto environmental consciousness.

The last CHAIN OF BEING metaphor equates cars with natural objects in a natural landscape, which visually cues the metonymic basis of the metaphoric source domain (NATURE FOR NATURE-FRIENDLY). The source domain is occasionally rendered by the text as well: *Nature reinvented* (see Figure 12). The cognitive weight of the car as a natural element is visually confirmed by its big size (BIG-SMALL image schema) and its central position (CENTRE-PERIPHERY image schema). The big size of the visual element combines with the use of big letters to cue the ATTRIBUTE image schema in order to reinforce the features of the car being advertised.

In the ad for Volvo, the source domain of nature is activated by the image of a tiger lying on the car bonnet (see Figure 13).

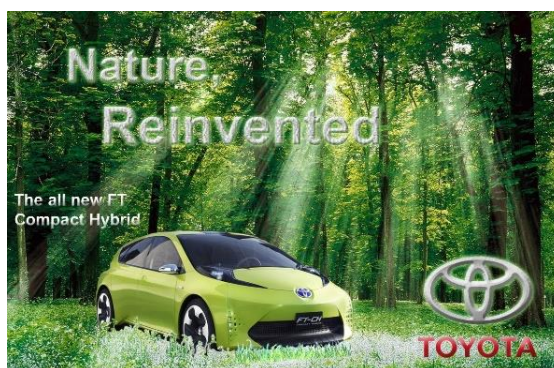


Figure 12. Ad for FT Compact Hybrid Toyota Ad reproduced with permission.

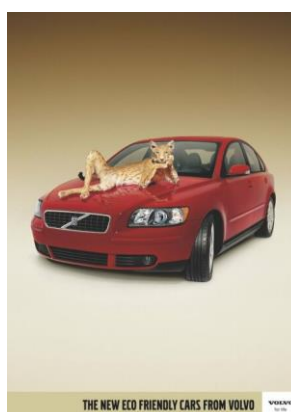


Figure 13. Ad for Volvo. Ad reproduced with permission.

The other metaphors are those based on the path schema. A few ads (e.g. Tesla, Toyota Hybrid) profile the metaphor MAKING PROGRESS IS MOVING FORWARD. This metaphor is visually and

verbally encoded. The image of a car moving along a road is accompanied by the text: One small step on the accelerator. A giant leap for mankind (Toyota). Go boldly into the future (Tesla). Moving forward, together (Honda Eco). In the ad for Toyota Hybrid (see Figure 14) a metonymic chain involving a double expansion process (tree leaf for tree for environment) is integrated into the metaphor, as visually cued by the hybrid image of a tree leaf and a car that deviates from the normal road the other cars are moving along. The metaphor-metonymy interaction is also verbally expressed: It's time to take cars in a new direction along a cleaner, more open road that travels the outskirts of convention. The text activates the following mappings:

- Moving along the common land route is driving an ordinary car.
- Deviating from the common land route is driving a car using the latest technology.

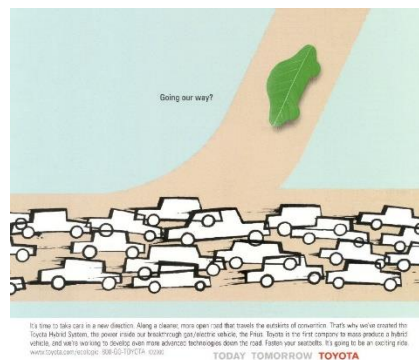


Figure 14. Ad for Toyota Hybrid. Ad reproduced with permission.

4.2. Corpus analysis: conceptual operations, environmental claims and degree of conceptual complexity

Ads for eco-friendly cars make five types of environmental claim, ranging from a general claim about environmental awareness raised through car driving and claims about the brand commitment to sustainability, to claims about the environmental impact of particular car models and informational claims about the environmental attributes of the car.

One third of the ads (e.g. Ford Mondeo, Honda Jazz Hybrid, Toyota) present car driving as a sign of an environmentally-friendly lifestyle, and encourage consumers to buy the car being advertised in order to promote such lifestyle, as illustrated by the use of the imperative: *Go green. Save Earth* (Toyota Prius), *Go green with Mini. Redefine green. Start a new way of thinking* (Toyota). These ads rely on the GREEN FOR NATURE FOR NATURE- FRIENDLY metonymic chain, which is mostly represented in the visual and verbal modes.

The environmental claim of ads for car brands lies in highlighting a corporate image of environmental responsibility. These ads also rely on the GREEN FOR NATURE FOR NATURE- FRIENDLY metonymic chain to project such an image.

The third type of environmental claim made by eco-friendly car advertisers is the environmental impact of the car. The ads express a positive relationship between the car or brand being advertised and the environment through the GREEN FOR NATURE FOR NATURE- FRIENDLY metonymic chain, or a CHAIN-OF-BEING metaphor that equates cars with trees or natural elements integrated into a natural landscape, which is frequently a wood or forest³.

The fourth type of environmental claim underlying ecological car ads is linked to functional attributes of the car, such as low fuel consumption, low/zero emissions and electrification. These ads profile metonymies, metonymic chains or (metonymy-based) metaphoric amalgams. For instance, electrification is the focus of a set of ads that trigger a double metonymic process. Light bulbs, a socket or a turn-on button are metonymically made to stand for the attribute, which in turn represents the product.

It is worth noting that a positive car attribute such as low fuel consumption can be highlighted by focusing on the negative effects of high fuel consumption. It is the case of the ad for Ford Mondeo, where the gauge indicator is depicted as a saw or an axe that may kill nature – visually represented by a tree. This image encodes a CAUSE FOR EFFECT metonymy, which is also verbally cued: *Wasting energy is a crime*.

Finally, the environmental appeal of a small proportion of ads relies on innovative technology. Such an appeal is presented through the PATH-schema based metaphor MAKING PROGRESS IS MOVING AHEAD.

On the whole, when the ads make claims related to the particular environmental benefits of a car, they carry more figurative meaning, thus displaying a higher degree of conceptual complexity. The ads frequently activate a (metonymy-based) CHAIN-OF-BEING metaphor, or a metonymic chain.

Table 1 displays the relationship between the environmental claims underlying the ads and the conceptual operations activated.

Environmental claim	Conceptual operation
Environmentally-friendly lifestyle	GREEN metonymic chain (GREEN FOR NATURE FOR NATURE-FRIENDLY)
Brand environmental responsibility	GREEN metonymic chain (GREEN FOR NATURE FOR NATURE-FRIENDLY) BLUE metonymic chain (BLUE FOR CLEAN SKIES FOR CLEAN AIR FOR CLEAN ENERGY)
Environmental impact of the car	NATURE FOR NATURE-FRIENDLY metonymy Metonymy-based CHAIN-OF-BEING metaphor (CARS ARE NATURAL ELEMENTS)

Environmental benefits of the car	Metonymy-based CHAIN-OF BEING metaphor (CARS ARE TREES)
Clean energy/Low fuel consumption	Metonymic chain
Electrification	Metonymy-based metaphor
Reduced emissions	PATH-schema based metaphor (MOVING AHEAD IS MAKING PROGRESS)
Innovative technology	

Table 1. Relationship between environmental claims and conceptual operations.

4.3. Corpus analysis: environmental claims and text-image interplay

Image-text interaction in visuals has been discussed by several scholars such as Kress and van Leeuwen (2006), Forceville (1996) and Negro Alousque (2015c). Kress and van Leeuwen (2006) claim that the image is an independently organized message, connected with the text but independent. Forceville (1996) examines image-text interaction in advertising within the framework of cognitive linguistics. He postulates the notion of verbo-pictorial metaphor as a metaphor always encoded visually and occasionally in additional verbal form. Negro Alousque (2015c) suggests a metaphoricity scale of the image on the basis of its relationship with the text. In this paper we look at the role of text in the identification of the conceptual operation triggered by the image and the connection between the type of environmental claim underlying the ads and the text-image interaction.

As earlier mentioned, the ads which aim to raise the consumer's environmental concern encode a multimodal GREEN FOR NATURE FOR NATURE-FRIENDLY metonymic chain. Given the conventional nature of the metonymy, the text (e.g. *Go green*) works as a linguistic support of the image. Consumers readily perceive the underlying environmental appeal of the ad by simply looking at the image, which features a car in a green background or a car and a green pictorial detail (see above).

Similarly, general claims about the brand's environmental responsibility or the environmental impact of a particular car model mostly rely on the metonymy NATURE FOR NATURE-FRIENDLY, which is most frequently visually and verbally expressed, or on the metaphor CARS ARE NATURAL ELEMENTS. Again, the text (e.g. *Nature reinvented*) merely backs the image.

In contrast, when the environmental claim of the ad is linked to an environmental benefit of the car, image and text combine to construe meaning. This is exemplified throughout the corpus. For example, in the ad for Nissan Leaf (see above), it is the text that triggers the car-baby association evoked by the image. In an ad for the Tesla brand, the metaphoricity of the image is not explicit, and

it is the text *Go boldly into the future* that yields the correct interpretation of the image. Similarly, in the ad for Ford Mondeo, where we see a tree and a gauge indicator depicted as a saw or an axe, the text *Wasting energy is a crime* both clarifies and strengthens the environmental claim. The environmental claim can also be highlighted by the combination of text and colour. Thus the ‘zero emissions’ phrase is often shown in green.

The corpus analysis yields two major findings concerning the relationship between the environmental claims made by car advertisers and (i) the metaphors/metonymies cued (RQ3), (ii) the text-image interplay (RQ4):

1) The broader the environmental claim made by car advertisers, the less the conceptual content and thus the less conceptual complexity.

2) The broader the environmental claim, the less close the text-image relationship.

5. CONCLUSIONS

This paper has attempted to provide an insight into the use of cognitive operations (particularly, metaphor and metonymy) in ecological car advertising and their mode of representation. The analysis has revealed that metaphor and metonymy are frequently integrated within conceptual complexes (metonymic chains and metonymy-based metaphors) which are both visually and verbally rendered, thus enriching conceptual content. These findings contribute to research on conceptual chains, which, to the best of our knowledge, has focused on linguistic manifestations.

The study also shows that the role of metaphors and metonymies used by advertisers is not merely linked to meaning construction, but is also closely related to the communicative intent of the ad, namely making an environmental claim, and to the scope of the message. Thus, when advertisers make general claims about an environmental responsibility or the environmental impact of the car, ads display a lower degree of conceptual complexity. By contrast, when claims are made about the environmental benefits of the car, metonymic chains and metonymy-based metaphors are activated, thus increasing conceptual complexity. In the same vein, the research shows that text-image interplay is not only the result of the multimodal representation of metaphor and metonymy, but is associated with the purpose of the ad.

Thus, when the focus is on responsible environmental behaviour or commitment to sustainability, the verbal element works as a support of the visual element. On the contrary, when ads highlight environmental attributes of the car, text and image combine to create meaning. New research avenues include the analysis of content operations in other genres as well as their pragmatic contribution.

ENDNOTES

1. Banerjee et al. (1995) have studied the structure of green advertising in terms of sponsor type (for profit or non-profit), ad focus (whether the ad focuses on non the advertiser or the consumer), and depth of ad (depending on the extent of environmental information).
2. Ruiz de Mendoza and Mairal (2007) have proposed the existence of so-called high-level metaphors, which are the result of putting into correspondence generic concepts such as actions, processes, events, etc. Lakoff's (1993) Event Structure metaphorical system contains cases of high-level metaphors such as ACTIONS ARE TRANSFERS (*She gave him a kiss*), STATES ARE LOCATIONS (*She is in pain*), and CAUSES ARE FORCES (*The news brought him discomfort*).
3. Hartmann and Apaolaza-Ibáñez (2009) discuss the persuasive effect of this metaphor. They propose the concept of *virtual nature experience* to account for the positive effects of green advertising. They claim that consumers' response to nature imagery in green advertising may arouse pleasant feelings similar to those experienced in nature, thus having a positive influence on the consumer's attitude towards the brand.

REFERENCES

- Banerjee, S., Gulas, C. S. & Iyer, E. (1995). Shades of green: A multidimensional analysis of environmental advertising. *Journal of advertising*, 24(2), 21-31.
- Barcelona, A. (2005). The multilevel operation of metonymy in grammar and discourse, with particular attention to metonymic chains. In J. F. Ruiz de Mendoza Ibáñez & S. Peña Cervel (Eds.), *Cognitive Linguistics: Internal Dynamics and Interdisciplinary Interaction* (pp. 313-352). Berlin/New York: Mouton de Gruyter.
- Chang, H., Zhang, L. & Xie, G. X. (2015). Message framing in green advertising: The effect of construal level and consumer environmental concern. *International Journal of Advertising*, 34(1), 158-176.
- Choi, D., & Lee, H. (2020). Beneficiary Foci Types and Performance Appeals in Green Advertising. *Sustainability*, 12, 3-15.
- Cortés de los Ríos, M.^a E. (2010). Cognitive devices to communicate the economic crisis: An analysis through covers in *The Economist*. *Ibérica*, 20, 81-106.
- Downing, L. H. & Mujic, B. K. (2011). Multimodal metonymy and metaphor as complex discourse resources for creativity in ICT advertising discourse. *Review of Cognitive Linguistics. Published under the auspices of the Spanish Cognitive Linguistics Association*, 9(1), 153-178.
- Evans, V. & Green, M. (2006). *Cognitive Linguistics: An introduction*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Felices Lago, A. & Cortés de los Ríos, M.^a E. (2009). A cognitive-axiological approach to print-eo-advertisements in *The Economist: The energy sector under scrutiny*". *Revista de Lingüística y Lenguas Aplicadas*, 4, 59-78.
- Forceville, C. (2012). Creativity in pictorial and multimodal advertising metaphors. *Discourse and Creativity*, 113-132.
- Forceville, C. (2009). Nonverbal and multimodal metaphor in a cognitivist framework: agendas for research. In C. Forceville & E. Uriós-Aparisi (Eds.), *Multimodal Metaphor* (pp.19-42). Berlin: Mouton de Gruyter.
- Forceville, C. (1996). *Pictorial Metaphor in Advertising*. London: Routledge.
- Forceville, C. & Uriós-Aparisi, E. (2009). *Multimodal Metaphor-Applications of Cognitive Linguistics*. New York: Mouton de Gruyter.
- Hartmann, P. & Apaolaza-Ibáñez, V. (2009). Green advertising revisited: Conditioning virtual nature experiences. *International Journal of Advertising*, 28(4), 715-739.

- Hassan, R. & Valenzuela, F. (2016). Customer perception of green advertising in the context of eco-friendly FMCGs. *Contemporary Management Research*, 12(2), 169-182.
- Hidalgo, L. & Kraljevic, B. (2011). Multimodal metonymy and metaphor as complex discourse resources for creativity in ICT advertising discourse. *Review of Cognitive Linguistics*, 9(1), 153-178.
- Johnson, M. (1987). *The Body in the Mind: The Bodily Basis of Meaning, Imagination, and Reason*. Chicago: University of Chicago Press.
- Kress, G. & van Leeuwen, T. (2006 [1996]). *Reading images: The Grammar of Visual Design*. London: Routledge.
- Krzeszowski, T. (1993). The axiological parameter in preconceptual image schemata. In R. A. Geiger & B. Rudzka-Ostyn (Eds.), *Conceptualizations and Mental Processing in Language* (pp. 307-330). Berlin: Mouton de Gruyter.
- Lakoff, G. (1987). *Women, Fire, and Dangerous Things: What Categories Reveal about the Mind*. Chicago: University of Chicago Press.
- Lakoff, G. & Johnson, M. (1999). *Philosophy in the Flesh: The Embodied Mind and its Challenge to Western Thought*. New York: Basic Books.
- Lakoff, G. & Turner, M. (1989). *More than cool reason: A field guide to poetic metaphor*. Chicago: University of Chicago Press.
- Lakoff, G. (1993). The contemporary theory of metaphor. In A. Ortony (Ed.), *Metaphor and thought* (pp. 202-251). Cambridge: Cambridge University Press.
- Lakoff, G. & Johnson, M. (1980). *Metaphors we Live by*. Chicago: University of Chicago Press.
- Littlemore, J. & Pérez Sobrino, P. (2017). Eyelashes, speedometers or breasts? An experimental cross-cultural approach to multimodal metaphor and metonymy in advertising. *Textus*, 30(1), 197-222.
- Negro Alousque, I. (2015a). Hugo Chávez and the building of his self-image through metaphor. *Ibérica*, 29, 83-104.
- Negro Alousque, I. (2015b). The role of cognitive operations in the translation of film titles. *33rd International Conference of the Spanish Association of Applied Linguistics (AESLA): Language Industries and Social Change*. 14-16 April 2015, Madrid. Elsevier. Available at: <http://dx.doi.org/10.1016/j.sbspro.2015.11.339>
- Negro Alousque, I. (2015c). The role of text in the identification of visual metaphor in advertising. *33rd International Conference of the Spanish Association of Applied Linguistics (AESLA): Language Industries and Social Change*. 14-16 April 2015, Madrid. Elsevier. Available at: <http://dx.doi.org/10.1016/j.sbspro.2015.11.379>.
- Negro Alousque, I. (2014). Pictorial and verbo-pictorial metaphor in Spanish political cartooning. *Círculo de Lingüística Aplicada a la Comunicación*, 57, 59-84.
- Peña Cervel, S. (2016). Motivating film title translation: a cognitive analysis. *Círculo de Lingüística Aplicada a la Comunicación*, 66, 301-339.
- Pérez Hernández, L. (2019). XL burgers, shiny pizzas, and ascending drinks: Primary metaphors and conceptual interaction in fast food printed advertising. *Cognitive Linguistics*, 30(3), 531-570.
- Pérez Hernández, L. (2016). The role of mitigation and strengthening cognitive operations in brand names design: a case study of Spanish and American wine brands. *Social Semiotics*, 26(2), 128-150.
- Pérez Hernández, L. (2011). Cognitive tools for successful branding. *Applied Linguistics*, 32(4), 369-388.
- Pérez Sobrino, P. (2017). *Multimodal Metaphor and Metonymy in Advertising* (Vol. 2). John Benjamins Publishing Company.
- Pérez Sobrino, P. (2016). Multimodal metaphor and metonymy in advertising: A corpus-based account. *Metaphor and Symbol*, 31(2), 73-90.
- Pérez Sobrino, P. (2013). Metaphor use in advertising: analysis of the interaction between multimodal metaphor and metonymy in a greenwashing advertisement. In E. Gola and F. Ervas (Eds.) *Metaphor in Focus: Philosophical Perspectives on Metaphor Use* (pp. 67-82). Cambridge: Cambridge Scholars Publishing.
- Ruiz de Mendoza, F. J. & Galera, A. (2014). *Cognitive Modeling: A linguistic Perspective*. Amsterdam/Philadelphia: John Benjamins.
- Ruiz de Mendoza, F. J., & Mairal, R. (2007). High-level metaphor and metonymy in meaning construction. In G. Radden, K.M.Köpcke, T. Berg and P. Siemund, (Eds.), *Aspects of Meaning Construction in Lexicon and Grammar* (pp. 33- 49). Amsterdam/Philadelphia: John Benjamins.
- Ruiz de Mendoza, F.J. & Peña, S. (2005). *Cognitive Linguistics. Internal Dynamics and Interdisciplinary*

Interaction. Berlin/New York: Mouton de Gruyter.

- Ruiz de Mendoza, F.J. & Otal, J.L. (2002). *Metonymy, Grammar, and Communication*. Colección Estudios de Lengua Inglesa, Granada, Comares.
- Segev, S., Fernandes, J. & Hong, C. (2016). Is your product really green? A content analysis to reassess green advertising. *Journal of Advertising*, 45(1), 85-93.
- Sheehan, K. & Atkinson, L. (2012). Special issue on green advertising: Revisiting green advertising and the reluctant consumer. *Journal of Advertising*, 41(4), 5-7.
- Ungerer, F. (2000). Muted metaphors and the activation of metonymies in advertising. *Metaphor and metonymy at the crossroads: A cognitive perspective*, 321-340.
- Urios-Aparisi, E. (2009). Interaction of multimodal metaphor and metonymy in TV commercials: Four case studies. *Multimodal Metaphor*, 11, 95-116.
- Villacañas, B., & White, M. (2013). Pictorial metonymy as creativity source in “Purificación García” advertising campaigns. *Metaphor and the Social World*, 3(2), 220-239.