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Unrealistic scenarios, metaphorical blends and rhetorical strategies across genres

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ABSTRACT
In this paper I discuss a form of metaphorical creativity that involves the introduction of 'unrealistic' scenarios for rhetorical purposes in expository and argumentative texts. I primarily account for the nature and function of this form of creativity in terms of Fauconnier and Turner's (2002) notion of Blending, with some references to Conceptual Metaphor theory (Lakoff and Johnson 1980, 1999). I show that a proper account of the textual extracts I analyse needs to consider the role of genre in the construction and interpretation of texts, and allow for differences in meaning construction between writers and readers, and between different groups of readers.

1. Introduction

In this paper I discuss a form of metaphorical creativity in which pedagogic and argumentative goals are pursued by outlining scenarios that can be described as unrealistic, implausible, counterintuitive, absurd, or impossible. These scenarios are exploited by the authors as representations of topics that are particularly complex and/or controversial. I discuss in detail two specific examples, drawn respectively from a book on neuroscience and a newspaper article on European Monetary Union.

Within Conceptual Metaphor theory, metaphor is described as a tool that we use to think and talk about areas of experience that are typically abstract, complex, inaccessible, subjective and poorly delineated (target domains), in terms of areas of experience that are relatively more concrete, simple, accessible, physical and well-delineated (source domains) (Lakoff and Johnson 1990, 1999; Kövecses 2002). Studies focusing on the use of metaphor for pedagogic and argumentative purposes have stressed more specifically the tendency for source domains to correspond to areas of experience that are expected to be *familiar* to the main audience addressed by the speaker or writer (e.g. Petrie and Oshlag 1993; Charteris-Black 2005).

In the course of the paper I argue that the rhetorical use of partly *unfamiliar* scenarios in expository and argumentative texts involves a form of metaphorical creativity that is best accounted for in terms of Fauconnier and Turner's (2002) theory of Blending, or Conceptual Integration (see also Coulson and Pascual 2006). This theory explains metaphor in terms of conceptual mechanisms that also apply to other phenomena (e.g. counterfactuals), and can be regarded as complementary, rather than alternative, to Conceptual Metaphor theory (see Grady et al. 1999, Grady 2005, and Górska, this volume). More specifically, Conceptual Metaphor theory is primarily concerned with how conventional metaphorical expressions in language (e.g. 'I am at a crossroads in my life) reflect conventional patterns of metaphorical thoughts, known as conceptual metaphors (e.g. LIFE IS A JOURNEY). Blending theory, on the other hand, is concerned with online meaning construction, and can more adequately account for the meanings generated by unconventional or novel metaphors. In the course of the discussion, I show, however, that, contrary to established practice within applications of

Blending theory, different descriptions are needed in order to account for meaning construction on the part of writers as opposed to (different kinds of) readers (see also Rohrer 2005). I also reflect on the rhetorical use of my examples of unrealistic scenarios, which are exploited for explanatory and/or persuasive purposes by writers whose view of the topic of the text is considerably more detailed and sophisticated than that of the main audience they are addressing, as well as potentially controversial. Finally, I point out some important differences between my two examples, especially in terms of their textual realisation, and suggest that these differences can be explained with reference to the characteristics of the different genres from which they are drawn. I therefore suggest that the application of cognitive linguistic models such as Blending theory to the analysis of textual data needs to pay greater attention than has so far been the case to interpretative variability and genre differences.

2. Unrealistic scenarios and rhetorical strategies: two examples

In this section I introduce my examples. In section 3 I provide an analysis of both examples in terms of Blending theory. I cannot claim that my two examples are representative of the rhetorical use of unrealistic scenarios in their respective genres, but I do argue that that their specific characteristics can be explained in terms of the constraints and affordances of the genres within which they occur (see Semino 2002 and 2008: 93-5, 155-7, 219-22 for briefer discussions of these examples; see also Semino and Koller 2009 for further examples from political speeches).

Example 1: Neural networks and intertwined octopi

My first example is drawn from *Wet Mind*, a book in which two scientists, Stephen Kosslyn and Olivier Koenig, introduce what they call 'the new cognitive neuroscience' for an audience that explicitly includes 'the general reader', as opposed to experts in cognitive psychology and artificial intelligence (Kosslyn and Koenig 1992: x). Early in the book, in a section entitled 'Computing by connections', Kosslyn and Koenig reflect on the differences between computers and human brains, and introduce 'neural network' computation – a new form of computation that has 'brain-like features' (Kosslyn and Koenig 1992: 19). The authors explain that this form of computation 'is performed by sets of interconnected units that work together to perform a specific type of information processing', and add that '[i]t may be easiest to explain the key ideas of such computation if we begin with some fictional marine zoology' (Kosslyn and Koenig 1992: 19). The explanation continues with the following three paragraphs:

> Professor Jack Costlow was forced to work on a low budget. Having no money to fund deep sea explorations, he explored the mysteries of tidal pools. His rise to fame began with an accidental discovery of a form of recreation practiced by octopi. This game is illustrated in Figure 2.1. The octopi lined up in three rows. The octopi in the first row intertwined tentacles with the octopi in the second row, who in turn intertwined tentacles with the octopi in the third row. Professor Costlow noticed that whenever anything brushed one of the free tentacles of an octopus in the first row, that octopus would squeeze tentacles with all the octopi in the middle row. Those octopi in turn would squeeze tentacles with the octopi in the third row. What caught the Professor's attention, however, was what happened when something brushed against several of the octopi in the first row, leading all of them to squeeze the octopi in the middle row. Now some of the octopi in the middle row squeezed the octopi in

> the third row harder! Depending on how they squeezed, a different octopus in the third row waved its free tentacles out of the water.
>
> The Professor's first thought was that he had stumbled on a coven of sadistic octopi; he thought that squeezing those in the middle row brought them pain, and the more they hurt, the more they took it out on their brothers and sisters in the third row. But then he noticed something interesting. The octopi in the last row did not always respond in the same way. Depending on how many octopi were brushed in the first row, different octopi in the third row waved their tentacles out of the water.
>
> These intertwined octopi unknowingly were reporting to seagulls the density of small fish in the area: high, medium, or low. The octopi were operating as a kind of computational device, which is illustrated more formally in Figure 2.2. (Kosslyn and Koenig 1992: 19)

In the pages following this extract, Kosslyn and Koenig explicitly clarify how the bizarre octopus game discovered by Professor Costlow is relevant to an understanding of the structure and functioning of neural networks. As the section on 'Computing by connections' progresses, the authors spell out in detail a series of correspondences between this octopus scenario and the structure and functioning of neural networks in both computers and human brains (e.g. each octopus corresponds to a unit in a neural network). The establishment of these correspondences is facilitated by two figures: a visual representation of the octopus network (reproduced here as figure 1), and a highly schematic representation of a 'neural network' computer model, consisting of three rows of dots connected by multiple arrows.

INSERT FIGURE 1 ABOUT HERE

In the terms used within Conceptual Metaphor theory, the correspondences between the octopus game and neural networks can be described as linguistic realisations of cross-domain mappings from an OCTOPUS source domain to a NEURAL NETWORKS target domain.[1] The extract above is, however, sufficient to show that the scenario outlined by Kosslyn and Koenig does not straightforwardly reflect what readers already know about octopi (or their OCTOPUS conceptual domain), simply because real-world octopi do not behave like those discovered by Professor Costlow. Rather, the octopus game described in the extract appears to have been invented by the authors in order to match as precisely as possible the view of neural networks that they want to convey to their readers. In section 3, I suggest that the authors' imaginative conception of the octopus game can be more adequately accounted for in terms of Fauconnier and Turner's (2002) Blending theory.

Example 2: European Monetary Union and trains with multiple engines

My second example is drawn from a newspaper article that appeared in the 'Comment' section of the London-based *Independent* newspaper on 1st January 1999 – the day when the euro became the official currency of eleven countries within the European Union, collectively known as 'Euroland'.[2] In the article, Josef Joffe, then columnist of the German newspaper Süddeutsche Zeitung, points out that there is no precedent in history of monetary union

[1] More specifically, following Steen (2008), Kosslyn and Koenig's use of the octopus scenario involves 'metaphor in thought' without 'metaphor in language'. Readers are encouraged to think about neural networks in terms of the octopus game, but the linguistic expressions relating to the octopi and their environment refer directly to elements within the imaginary world inhabited by Professor Costlow, and hence are not used metaphorically in terms of, for example, the Metaphor Identification Procedure proposed by the Pragglejaz Group (2007).

[2] At the time of writing (late 2009) the number of countries that are part of Emu has grown to 16.

without political union, and that European Monetary Union (Emu) will fail if the eleven countries do not federate into a super-state. In the course of the article, Joffe repeatedly uses metaphor in order to support his argument. For example, he compares the adoption of the euro by different nation states to 'putting the cart before the horse', and talks about a new 'battle line' between 'politics' and 'sound money'. In addition, he invites his readers to think about the euro as a train that will derail unless 'all the cars […] move at the same speed in the same direction at all times', and acknowledges that a recent crisis in the economies of East Asia 'did not derail the Emu train as it moved toward the 1999 starting line'. He then concludes the article with the following paragraph:

> Think about trains where each car has its own engine and engineer. Either they all act as one, or the couplings will break and the train will derail. (*The Independent*, 1st January 1999)

Here readers are explicitly invited to contemplate a scenario containing trains that are not just unlike the real-world trains that they will be familiar with, but also unlikely ever to exist, as it would be both unnecessary and dangerous for the cars of a single train to have different engines and engineers. In the next sentence, the author presents two possible outcomes of such a peculiar train setting off on a journey: one where all the cars 'act as one', and another where they do not, causing the couplings to break and the train to derail. On the basis of readers' background knowledge of vehicles, the latter option is obviously much more plausible than the former.

In terms of Conceptual Metaphor theory, it can be argued that earlier references to trains in the article facilitate the establishment of metaphorical correspondences between the components of this scenario and some important aspects of Emu (e.g. between the train and Emu, and between the train's cars and the countries of Euroland). However, as with the previous example, the train scenario outlined at the end of the article does not correspond to readers' existing knowledge about trains (their TRAIN conceptual domain), but seems to have been constructed ad hoc to match the writer's view of Emu, and particularly to support his main point that monetary union without political union is bound to fail.

I describe the scenarios outlined by the extracts above as unrealistic because they correspond, in part, to familiar situations, but include elements and relations that clash with readers' background knowledge of those situations. Expressions evoking such scenarios are far from uncommon in language use generally, and include many semi-fixed idiomatic phrases, such as 'putting the cart before the horse' in the article from *The Independent*. In the study of humour, the notion of 'incongruity' is used to capture the way in which similar scenarios can be exploited for humorous purposes (see Attardo 1994: 47-9 for an overview of incongruity-based approach to humour). Although humour scholars recognise that incongruity does not necessarily result in humour (e.g. Oring 2003: 3), I have used the term 'unrealistic' in order to avoid the impression that I am primarily dealing with a strategy for the creation of humorous effects. Indeed, while the description of the octopus game has a number of humorous elements, Joffe's description of trains with multiple engines does not. I will return to this difference between my two examples in the conclusion.

In the next section I show how Blending theory can be used to account for the kind of metaphorical creativity that results in the production of unrealistic scenarios such as the ones I have introduced, and for their exploitation in the service of rhetorical goals such as explanation and persuasion. I will also point out both similarities and differences between my

two examples, and stress the relevance of the fact that they occur in quite different genres, namely, a section from a chapter in a scientific book whose audience includes non-expert readers, and a newspaper article that appeared in the 'Comment' section of a British daily newspaper. A 'genre' has been defined as 'a relative stable set of conventions that is associated with, and partly enacts, a socially ratified type of activity' (Fairclough 1992: 126), and as comprising 'a class of communicative events, the members of which share some set of communicative purposes' (Swales 1990: 58). Differences among different types of activities and communicative purposes are reflected in differences in the structural characteristics of genres, which Swales (1990) describes in terms of 'moves' consisting of different 'steps'. Here I will not undertake a fine-grained analysis of the structure of the two texts, [3] but I will consider the textual realisation and positioning of the two metaphorical scenarios under analysis in terms of the communicative purposes of the two different genres.

3. Unrealistic scenarios and metaphorical blends

In this section I suggest that the unrealistic scenarios evoked by my two examples arise from a creative process in which a writer (or, potentially, speaker) crafts an unfamiliar version of a familiar situation in order to convey a particular view of the topic they are discussing. Such creative process cannot fully be accounted for in terms of uni-directional models of metaphor such as Conceptual Metaphor theory, in which features of the source domain are mapped or transferred onto features of the target domain: octopi, for example, do not link their tentacles in the way described by Kosslyn and Koenig, nor do trains have many separate engines, as in the scenario outlined by Joffe. Rather, the unrealistic scenarios I have introduced arise by modifying familiar scenarios (octopi living in the sea, trains with single engines) on the basis of some of the characteristics of the phenomena under discussion (e.g. the multiple connections among units in neural networks, the separate economies of the countries of Euroland). This kind of creativity can be accounted for by Fauconnier and Turner's (2002) Blending theory, which explains a wide range of phenomena (including metaphor) in terms of the merging of elements from two or more 'mental spaces' into a 'blended space' in which new meanings may be generated. [4]

Fauconnier and Turner (2002: 40) define mental spaces as 'small conceptual packets constructed as we think and talk, for purposes of local understanding and action'. Mental spaces are connected to schematic structures in background knowledge, and join to form complex networks during cognitive activities such as the production and comprehension of texts. 'Blending', or 'Conceptual Integration', is described as a process of meaning construction which minimally involves two mental spaces functioning as 'inputs', a generic space containing structure shared by the two input spaces, and a blended space that contains material projected from the input spaces, as well as 'emergent structure' of its own. Emergent structure corresponds to new content that arises as a result of 'running' the blend, namely, the process of imaginatively developing the blend beyond what is projected from the input spaces.

Fauconnier and Turner (2002) argue that blending is a basic and fundamental cognitive process that applies to a wide variety of phenomena, such as counterfactuals, grammatical

[3] For the purposes of this discussion, I will consider the section from *Wet Mind* where the octopus metaphor occurs as a 'text', but I will consider the book as a whole when taking genre into account.

[4] While Blending theory has a number of weaknesses (e.g. see Gibbs 2000), it has considerable explanatory power, especially in the case of descriptions of 'hybrid' situations such as the ones I am discussing.

constructions, analogy, and metaphor. Coulson and Pascal (2006) have shown more specifically how the notion of conceptual integration can be used to explain the way in which unrealistic scenarios (such as a dead child testifying at her own murder trial) can be exploited for argumentative purposes in a variety of discourse contexts in which persuasion is the main goal. Coulson and Pascal argue that the unrealistic nature of these scenarios results from a process of compression, whereby complex phenomena are construed in terms of simpler conceptual frames that provide what Fauconnier and Turner (2002) call 'global insight' and 'human scale'. Similar considerations apply to my examples, which, unlike those discussed by Coulson and Pascal, also involve metaphoricity.

In what follows I argue that the writers' creative conception of the scenarios I have introduced can be explained as the result of a blending operation in which elements from two different input spaces (e.g. containing respectively octopi and neural networks) have been merged into a blended space that, as is often the case with blends, contains implausible and/or unrealistic elements. More specifically, both of the scenarios introduced so far can be explained in terms of what Fauconnier and Turner (2002) call 'double-scope' conceptual networks:

> A double-scope network has inputs with different (and often clashing) organizing frames as well as an organizing frame for the blend that includes parts of each of those frames and has emergent structure of its own. In such networks, both organizing frames make central contributions to the blend, and their sharp differences offer the possibility of rich clashes. Far from blocking the construction of the network, such clashes offer challenges to the imagination; indeed, the resulting blends can be highly creative. (Fauconnier and Turner 2002: 131)

Fauconnier and Turner (2002: 154) point out that double-scope networks are one of the two types of networks that can account for what they call 'metaphoric integrations' (the other being 'single-scope' networks). The double-scope conceptual networks I outline below in order to explain my two examples can be described as metaphorical because, in the terms of Grady et al. (1999:114-17), they involve some 'incompatibility' between the input spaces, and the fusion of 'saliently distinct elements' from the input spaces into single elements of the blend (e.g. units in neural networks and octopi). In the terms used in Conceptual Metaphor theory, the perception of these elements as 'saliently distinct' results from the fact that the two input spaces are structured by different conceptual domains (e.g. the OCTOPUS domain and the NEURAL NETWORKS domain). The resulting (blended) scenarios are explicitly outlined in each text as ways of making sense of the phenomena the writers' are concerned with. In accounting for readers' possible interpretations in terms of Blending theory, however, it is neither necessary nor appropriate to postulate the same blending operations that are needed to explain the writers' conception of each scenario.

Let me now reconsider each example in turn.

3.1 The octopus game as a metaphorical blend, and genre

In the pages following the extract I quoted above from Kosslyn and Koenig's *Wet Mind*, the authors illustrate the central features of neural networks by making systematic parallels with the octopus game they introduce at the beginning of the section on 'Computing by connections'. In particular, they spell out that:

- each octopus corresponds to a unit in a neural network;

- the intertwining of tentacles corresponds to connections between units in a neural network;
- the three rows of octopi correspond to three layers in neural networks, which are labelled respectively 'input layer', 'hidden layer' and 'output layer';
- the brushing of an octopus in the first row and the squeezing of an octopus in the third row correspond to a unit being 'on' (or 'active') as opposed to 'off', and hence a '1' as opposed to a '0' in the binary vectors that constitute the inputs and outputs to the network;
- the squeezing of a tentacle corresponds to an 'excitatory' connection in a neural network, whereby, when the first unit is turned on, it tries to turn on the second one;
- the tickling of a tentacle corresponds to an 'inhibitory' connection in a neural network, whereby, when the first unit is turned on, it tries to keep the second one off;
- the strength with which a tentacle is squeezed or tickled corresponds to the different 'weights' of different connections in neural networks;
- the brushing of the octopi in the first row corresponds to the event/signal that functions as input to a neural network;
- the squeezing and tickling of tentacles corresponds to the transmission of a signal through the network;
- the density of fish corresponds to information processed by a neural network;
- the waving of tentacles in the third row corresponds to the output of a neural network;
- the seagulls correspond to the entity that interprets the information transmitted by a neural network.

Further correspondences are added by Kosslyn and Koenig that I do not have the space to consider here.

In Fauconnier and Turner's (2002) terms, the imaginative process which resulted in the creation of the octopus scenario can be explained in terms of a double-scope network involving the following spaces:[5]

- An 'octopus' input space containing octopi with their characteristic tentacles, and the environment in which they are normally found. This space is linked to richer schematic structure containing general knowledge about marine creatures and settings, including material that can be potentially recruited into the space.
- A 'neural networks' input space containing units, connections between units, three layers (input, hidden and output), active units (1), inactive units (0), excitatory connection, inhibitory connections, information to be processed, the processing of information, entities interpreting the output of the network, etc.. Some of the contents of this space are the result of entrenched metaphors which I do not have the space to discuss in this analysis (note, for example, the use of terms such as 'on/off', 'weights', etc. to describe neural networks).
- A generic space containing entities that join with each other via multiple connections to form a larger structure that conveys information.
- A blended space in which octopi form a three-row network by joining their tentacles, and squeeze one another's tentacles in order to communicate the density of fish to seagulls. In this space, each octopus is a unit in a neural network, the rows of octopi are the layers in the network, the density of fish is the information processed by the

[5] My account is highly simplified, in that it does not consider that *Wet Mind* has two authors, and that the section I am concerned with is probably the result of multiple discussions and drafts.

network, and so on for all the correspondences listed above (see figure 2 for a visual representation of the three main spaces within the conceptual integration network).

INSERT FIGURE 2 ABOUT HERE

This conceptual integration network can be described as metaphorical as there are fundamental incompatibilities, as well as parallels, between the two input spaces: for example, octopi's tentacles can be seen as similar to the links that connect units in neural networks, but octopi are very different kinds of entities from these units, and 'behave' in very different ways. Nonetheless, in the blend individual octopi are fused with the units in neural networks, tentacles are fused with links among units, and so on. Hence, the 'octopus' input space can be seen as functioning as 'source' input space in a metaphorical conceptual integration network, and the 'neural networks' space as the 'target'[6] (see Grady et al. 1999, Grady 2005).

The blend also displays what Fauconnier and Turner (2002: 134) call 'high asymmetry': it contains material projected from both input spaces, but inherits the organising frame of one of the two input spaces, i.e. the 'neural networks' space. NOTE FROM WESAM??? More specifically, the 'octopus' input space provides the participants and setting for the blended scenario, namely the marine location, the octopi, the fish, and the seagulls. All other structure, however, comes from the 'neural networks' space, resulting in octopi that behave in ways that clash with readers' background knowledge of octopi. The unrealistic nature of the scenario described in the extract above can be explained as a result of the clashes that arise from asymmetry in the blend, where the organising frame projected from the 'neural networks' input space overrides the organising frame of the 'octopus' input space.

The integration of the two input spaces into the blend achieves human scale by compressing complex and inaccessible entities, structures, and processes into a scenario involving a manageable and highly imaginable set of entities, structures, and processes. While neural networks have many layers and large numbers of connections, for example, the octopus network only has three rows and a relatively small number of connections for each octopus. The clashes that arise in the blend due to the differences between the two input spaces arguably contribute to the effectiveness of Kosslyn and Koenig's description: they provide some elements of humour to the introduction of a complex and potentially dreary topic, and make the description of neural networks more striking and memorable than it would have been otherwise. The image reproduced as figure 1 makes it easier for readers to imagine octopi engaged in an unrealistic behaviour, and adds further, potentially humorous details (e.g. the personification of the octopi by means of facial expressions).

This analysis of the octopus scenario in terms of Blending theory can provide a plausible (if highly simplified) account of the creative process that the authors engaged in as they were planning and writing the section on 'Computing by connections'. As experts in the field, they already possessed detailed knowledge of the phenomena I have included in the 'neural networks' input space, and tackled the challenge of conveying part of that knowledge to their readers by choosing an apt 'source' input space (octopi are interesting creatures, they have tentacles, etc.), and producing a blended scenario that suited their goal of introducing a difficult area in a clear, precise, and entertaining way. It would not be appropriate, however,

[6] The terms 'presentation space' and 'reference space' have also been used to capture the functions of different input spaces in conceptual integration networks (see Brandt and Brandt 2002, Coulson and Oakley 2005).

to suggest that the same blending operations can be unproblematically proposed as an account of the readers' interpretation of the above extract from *Wet Mind*.

It is in fact a limitation of most applications of Blending theory that no distinction is made between authors and readers. As Rohrer (2005) points out:

> blending theorists have typically not differentiated the perspective of the reader from that of the author in their analyses. In giving their analyses, blending theorists often construe their interpretation of the blend to be identical to both other readers' and the author's perspective. (Rohrer 2005: 1687)

In the case of the octopus game, readers can only construct something approximating the conceptual integration network I have outlined above after reading the whole section on 'Computing by connections', which consists of 14 pages and includes several sub-sections. The three paragraphs I quoted above are only preceded by a very brief and general description of neural network computation, and outline a scenario whose setting and participants are drawn exclusively from what I have called the 'octopus' input space. It is only in the pages following the extract that the parallels between this imaginary scenario and neural networks are spelt out, in a gradual, step-by-step fashion. Hence, while it is clear from the beginning that the digression into 'fictional marine zoology' will ultimately be relevant to a description of neural networks, first-time readers do not need to be inclined or able to infer the connections between the octopus network and neural networks. In other words, the processes and products of readers' interpretation of the 'Computing by connections' section will vary depending on their existing knowledge, approach to reading, etc.. Here I will just consider two main alternatives.

A relatively knowledgeable and involved reader may read the description I quoted above as the textual realisation of a blend right from the beginning, and may therefore try to reconstruct (parts of) the metaphorical network while reading the passage for the first time. Fauconnier and Turner's 'unpacking principle' is relevant here:

> Other things being equal, the blend all by itself should prompt for the reconstruction of the entire network. (Fauconnier and Turner 2002: 332)

Fauconnier and Turner argue that being exposed to 'a material anchor for the blended space' may be sufficient as a trigger to retrieve or construct the entire network, especially when one is faced with 'disintegrations and incongruities in the blended space':

> In fact, it might be better to say that at first we recognize a space with incongruities and that those incongruities prompt us to take the space as a blend and look for its inputs. (Fauconnier and Turner 2002: 332)

This applies to the case I am discussing, as the unrealistic elements in the verbal and visual representations of the octopus scenario may well prompt readers to attempt to retrieve the input spaces that were merged to produce this scenario. Readers will, however, differ in the extent to which they are able to engage in this retrieval of the network, and particularly in the construction of the 'neural networks' input space, depending on their existing knowledge and their willingness to expend the necessary cognitive effort. Readers who do attempt to unpack the blend will also differ in extent to which they will have to adjust the conceptual integration

network as they read Kosslyn and Koenig's gradual explication of the various correspondences between the two input spaces.

Other readers, in contrast, may not attempt to unpack the blend on a first reading, or, to put it in more general terms, may not try to work out right from the beginning the ways in which the octopus scenario applies to an understanding of neural networks. These readers may initially simply imagine the octopus scenario for its own sake, with no connection with the topic of neural networks. This approach to an initial interpretation of the octopus game is arguably licensed by the fact that the octopi in question are part of the imaginary world in which Professor Costlow achieves fame after accidentally discovering an unknown form of animal behaviour. Those readers who initially approach the extract quoted above as a piece of amusing fiction may therefore never arrive at a conceptual integration network such as the one I described earlier: they may construct the unrealistic octopus scenario on the basis of the textual input as a separate, independent mental representation, and then map elements from this scenario to their developing mental representation of neural networks as they read Kosslyn and Koenig's explanation of the various correspondences. For these readers, the octopus game itself will function as a (rather unusual) metaphorical source scenario. The incremental interpretation of the metaphor, in such cases, may be explained either in terms of unidirectional source-target mappings from the readers' mental representation of the octopus game to their mental representation of neural networks, or in terms of the construction of a conceptual integration network in which the two input spaces already share most of their structure.

Whatever their approach to the interpretation of the description of the octopus game, readers of *Wet Mind* are closely guided by the authors in the establishment of metaphorical correspondences between octopi and neural networks, in a way that is typical of scientific writing (see Semino 2008: 125ff.). As authors of a book-length introduction to cognitive neuroscience, Kosslyn and Koenig have the space to introduce the octopus scenario over three whole paragraphs, and to include humorous details that are not strictly necessary to their explication, such as the fact that the aptly named Professor Costlow had little funding, and hence had to explore sea creatures that lived in shallow water. However, while the humorous tone persists in many of the subsequent references to the octopi, Kosslyn and Koenig's main concern is to spell out with great precision the correspondences between octopi and neural networks that they intend to convey, as shown in the extracts below:

> Such networks have layers of units, and each octopus corresponds to a unit. The octopi in the first row serve as units in the *input layer*; those in the third row serve as units in the *output layer*; and those in the middle are in the *hidden layer*. (Kosslyn and Koenig 1992: 20)

> The input to and output from the network consists of *binary vectors*, ordered series of 1's and 0's. By analogy to the octopi, if an octopus in the first row is brushed, it is "on" (active) and corresponds to a "1". (Kosslyn and Koenig 1992: 21)

Similarly, the authors explicitly point out the areas where there is no neat correspondence between their octopi and neural networks, or where the octopus game provides an overly simplified view of the phenomena under discussion. This applies particularly to the application of the octopus game to neural networks in human brains:

> In addition, if an octopus is tickled enough, it gets rather giddy and will try to tickle the octopi in the next layer, distracting them from being activated by squeezes.
>
> Brain cells (neurons) have the same two kinds of connections, although they are much more complex than the units in these networks; indeed, in the brain some units always try to activate others, whereas other neurons always try to inhibit others. These effects, however, can sometimes be altered by the cell on the receiving end if specific chemicals are present. (Kosslyn and Koenig 1992: 22)

In other words, the scientific nature of the text and the explanatory function of the octopus scenario are reflected in the textual realisation of the metaphor, which is explicated in minute detail, so that its interpretation is progressively 'closed' in line with the authors' intentions (see also Knudsen 2003). In Fauconnier and Turner's terms, readers who interpret the scenario via a conceptual integration network are not encouraged to 'run' the blend freely and imaginatively, but are guided and constrained by the authors in terms of the correspondences (or 'counterpart connections') they establish and the inferences they draw. More specifically, the octopus scenario is not used as a source of inferences in the blend, as the blend is entirely dependent on the organising frame of the 'neural networks' input space. Hence there is no back projection of inferences from the blended space to the 'neural networks' input space.

In addition, references to the octopus game cease in the rest of the relevant chapter from *Wet Mind* after the main characteristics of neural networks, and the appropriate technical terms, have been introduced. Hence the octopus game can be seen an example of what Boyd (1993) calls an 'exegetic' or 'pedagogical' metaphor: its function is to introduce a complex topic to non-experts, rather than to contribute to theory-making, or to provide vocabulary for concepts for which no alternative terminology exists. In the next section, I show how the train metaphor for Emu shares some of the characteristics of the octopus metaphor but also differs from it, primarily as a result of crucial differences between the relevant genres.

3.2 The Emu train as a metaphorical blend, and genre

For ease of reference, below I quote again the final paragraph of Josef Joffe's 1999 newspaper article on the introduction of the euro, which evokes an unrealistic train scenario:

> Think about trains where each car has its own engine and engineer. Either they all act as one, or the couplings will break and the train will derail. (*The Independent*, 1st January 1999)

As with the octopus example, it is possible to account for the significance of this scenario in the context of Joffe's article in terms of a metaphorical conceptual integration network that involves what Fauconnier and Turner (2002) call a double-scope blend. The network includes the following generic and input spaces:

- A 'train' input space containing a normal train, as well as other entities and processes associated with it, such as: separate cars making up the train, an engine, an engineer, smooth travel, the possibility of derailment, and so on. This space is linked to richer schematic structures containing further knowledge about trains and train travel, which can potentially be recruited.
- An 'Emu' input space containing 11 countries with a shared single currency but separate governments and economies, the possibility of success and the possibility of failure;
- A generic space containing an entity consisting of different parts that are separate but linked.

The following correspondences between elements from the two input spaces are implicitly suggested in the previous part of the article, where the writer invites readers to '[t]hink about Emu as a train where all the cars must move at the same speed in the same direction at all times. Unless they do, the train will derail.':

- the train corresponds to Emu;
- the different cars correspond to the countries participating in Emu;
- the cars moving in the same direction at the same speed corresponds to the countries' economies growing at the same rate, and the countries' governments agreeing to the same policies;
- smooth train travel corresponds to the success of Emu;
- train derailment due to cars travelling at different speeds and in different directions corresponds to the failure of Emu due to differences in the countries' economic growth and disagreements among the difference governments.

In spite of these correspondences, however, there are significant incompatibilities between the two input spaces. The cars that make up real-world trains are propelled by a single engine and are not (one would expect) serviced by different engineers. In contrast, the countries of Euroland are still separate nation states, with separate economies, fiscal systems and governments. This lack of correspondence accounts for the unrealistic nature of the scenario contained in the fourth space, the blend, which is modelled on the 'Emu' input space and provides inferences that are crucial to the author's argument.

INSERT FIGURE 3 ABOUT HERE

This blended space includes entities, participants and processes that are projected from the 'train' input space (i.e. train, engine, engineer, train travel, derailment, etc.), but inherits most of its organising frame from the 'Emu' input space (see figure 3 for a visual representation of the three main spaces within the conceptual integration network). As a result, it includes a very unusual train where each car has its own separate engine and engineer. In the blend, the train is fused with Emu, the cars with the countries of Euroland, and the engineers with the separate governments. This fusion of 'saliently distinct elements' from the two input spaces (Grady et al. 1999: 117) accounts for the metaphoricity of the blended space, which includes two possible future developments of Emu. In the first development, the train's cars/Emu countries act as one. In the second development, they do not, and the train derails/Emu fails. Crucially, new meaning, or 'emergent structure' arises from the 'running' of the blend. General knowledge about trains provided via the 'train' input space suggests that the possible two future scenarios outlined by Joffe are not equally likely, as a train where each car has a separate engine and engineer is more likely to derail than to travel successfully. This leads to the inference that Emu in its current state is likely to fail. The only way to prevent failure would be to remove the conflicts between the two input spaces by making Emu more like real-world trains. This would involve eliminating the separate engines/economies and engineers/governments, thus turning the eleven countries of Euroland into a single political entity. These inferences are projected back to the 'Emu' input space, where they are intended to affect readers' expectations about the future or, for any readers with influence on the matter, potential future courses of action.

Compression in the blend helps to achieve human scale, thus contributing to the effectiveness of Joffe's argument. The cars that make up a train are simpler entities than the countries participating in Emu. Similarly, the couplings that connect the cars of a train are much less

complex than the agreements that bind together the countries of Euroland. Derailment is also a relatively clearcut event that happens rapidly, dramatically and uncontroversially. In contrast, the failure of Emu would take a long period of time, involve many different people, events and processes, manifest itself in complex ways, and cause controversy as to what exactly is happening.

As with the octopus example, the conceptual integration network I have outlined can provide an account of the creative process through which the writer produced the train scenario described in the final paragraph of the article. Josef Joffe is a political scientist as well as a journalist, and presumably developed a rich and detailed view of Emu over a long period of time, and independently of train metaphors.[7] In other words, for the article's author what I have called the 'Emu' input space is linked to a rich array of knowledge about Emu and its background. This knowledge includes the (controversial) view that the Emu enterprise was flawed, due to the unprecedented and risky decision to unify the currencies of a group of countries that would nonetheless remain separate nation states.

Some of the correspondences between trains and Emu that are exploited by Joffe for the purposes of his argument rely on highly conventional metaphorical mappings that have been subsumed by Conceptual Metaphor theorists under the EVENT-STRUCTURE METAPHOR (Lakoff 1993, Lakoff and Johnson 1999: 178ff.). As Grady and his colleagues have pointed out,

> conceptual metaphors are among the stable structures available for exploitation by the blending process. (Grady et al. 1999: 110)
>
> conventionalized metaphoric patterns may provide ''ready-made'' counterpart connections for the real-time construction of blends […]. (Grady 2005: 1596)

More specifically, Joffe's representation of the success or failure of Emu in terms of the smooth or interrupted travel of a vehicle exploits basic metaphorical mappings such as ACTIONS ARE SELF-PROPELLED MOVEMENTS, DIFFICULTIES ARE IMPEDIMENT TO MOTION and LONG-TERM PURPOSEFUL ACTIVITIES ARE JOURNEYS. In fact, MOTION/JOURNEY metaphors have been found to be frequently used for rhetorical purposes in political discourse generally (e.g. Chilton 2004, Charteris-Black 2005), and the specific choice of a train scenario is consistent with the use of MOTION/JOURNEY metaphors for the EU generally and the euro specifically in contemporary media discourse in the UK, Germany, and other countries (see Semino 2002, Musolff 2004). In this sense, Joffe's train metaphor is not as novel as Kosslyn and Koenig's octopus metaphor. However, as with the previous example, Joffe creates an ad hoc, unrealistic version of a familiar train scenario on the basis of his view of Emu. The unrealistic nature of the train scenario he evokes is central to his rhetorical strategy, as he intends to persuade his readers that the current state of Emu is as absurd and doomed to failure as a train where each car has a separate engine and engineer.

As with the octopus example, one cannot straightforwardly attribute to readers the conceptual integration network that I have suggested in order to model the author's creativity and intentions in devising the unrealistic train scenario. The current example is also different from the section from *Wet Mind* analysed earlier in terms of the textual realisation of the metaphor, and the degree of controversy surrounding the topic of the article.

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[7] This does not of course mean that conventional conceptual metaphors do not play a role in expert views of economic and political issues.

While the octopus game is introduced at the beginning of Kosslyn and Koenig's discussion of neural networks, the unrealistic train scenario concludes Joffe's article. In the preceding part of the article, the writer presents his view of Emu in some detail, and, as I have already mentioned, uses a more conventional train metaphor to support this view. More specifically, Joffe points out, with reference to several examples, that, historically, political union has always preceded monetary union, and makes clear that, in his view, control over monetary and fiscal policy is central to modern nation states.

In Fauconnier and Turner's (2002) terms, the previous text provides enough detail for readers to recognise the absurd scenario presented in the last paragraph of the article as the linguistic realisation of a blend, and to unpack the blend into a conceptual integration network along the lines of the one described above. This can potentially enable readers to reflect on the clashes I mentioned earlier, and draw different conclusions from the ones intended by the author. I will return to this point below. As with the octopus example, however, some readers may nevertheless construct the scenario described in the final paragraph as an independent mental representation. These readers may follow Joffe's invitation to 'Think about trains where each car has its own engine and engineer' by setting up unidirectional source-target mappings from the unrealistic train scenario to their mental representation of Emu, or, in terms of Blending theory, by constructing a conceptual integration network in which the two input spaces already share most of their structure.

In contrast with Kosslyn and Koenig's use of the octopus scenario, the train metaphor is presented by Joffe in a way that leaves some aspects of its interpretation 'open'. For example, it does not matter whether the counterpart of 'engineer' in the 'Emu' input space is a country's government, its head of government, or its finance minister, as long as the engineer corresponds to those who normally intervene to deal with economic and fiscal issues. Similarly, it is not made fully clear what the notion of derailment corresponds to. A reference is made in the article to the eleven countries returning to their original currencies, but other references to the failure of Emu are also metaphorical (e.g. 'disintegrate'), and hence not very explicit. On the other hand, however, the key inferences intended by the author are conveyed very strongly: trains such as the ones described in the final paragraph are highly likely to derail, and hence Emu is highly likely to fail unless it is made to resemble normal trains via the creation of a 'United States of Europe'.

In this sense, Joffe's use of the train scenario is typical of the metaphors used for argumentative purposes in the political arena. It frames a particular issue in a way that strongly facilitates some inferences and blocks others, it includes some element of vagueness, and it has a strong emotive potential: derailments are dramatic events, which do not just result in damage to vehicles, but typically involve human casualties (e.g. see Chilton 2004, Charteris-Black 2005, Semino 2008: 91ff.). In addition, a climactic effect is achieved by ending the article with such a strikingly inplausible image. It has in fact been noted in relation to the print media that particular metaphors may be used in key textual positions, and particularly the beginning, middle and end of articles (e.g. Koller 2003, Semino 2008: 114).

Readers are likely to differ, however, in the extent to which they accept the inferences intended by the author of the article. This will depend, for example, on the extent and nature of their previous view of Emu, and, possibly, on their ability to unpack the blend and consciously consider the aptness of the choice of source scenario and the legitimacy of the inferences it generates. For example, some readers may be aware of the flexibility included in

the agreements subscribed by countries participating in Emu, and hence conclude that these are inappropriately represented via the couplings that connect trains, which are relatively inflexible and cannot be re-connected if they are broken during travel. For some readers, in other words, the nature of the clashes between the two input spaces may cast doubts on the validity of the whole conceptual network, so that they may *recognise* the inferences that are generated in the blend but resist their back-projection to the 'Emu' space. Fetterley's (1978) notion of 'resisting reader', which was developed in the context of Feminist literary criticism, can be extended to cases such as this, where some readers may consciously reject the inferences that are facilitated by Joffe's use of the train scenario. For these readers, Emu may be more aptly represented via a reptile metaphor: when a snake moves, different segments of its body move to the left and to the right of an imaginary central axis, but this does not compromise the wholeness and well-being of the animal, nor its ability to reach its destination. Indeed, more than a decade after the introduction of the euro, there have been plenty of negotiations over, for example, the budget deficits of individual countries, but, broadly speaking, Emu has succeeded without further political integration.

4. Conclusions

In this paper I have discussed two cases of metaphorical creativity involving scenarios that do not straightforwardly correspond to familiar situations, but rather include some unrealistic and rather absurd elements. I have argued that the imaginative conception of such scenarios on the writer's part seems to be driven by their expert view of the topic, and by the goal of presenting that view to their audiences in a clear, persuasive and striking manner. I have shown that Fauconnier and Turner's notion of blending can be applied to provide an account of this creative process, and I have suggested more specifically that what I describe as 'unrealistic' scenarios arise from a process of metaphorical conceptual integration in which the blended space inherits most of its organising structure from the space that functions as 'target', even if part of this structure clashes with the structure of the 'source'. I have treated Blending theory as complementary to Conceptual Metaphor theory, and I have combined aspects of both theories in order to provide a comprehensive account of the textual and conceptual phenomena I have attempted to explain (see also Górska, this volume).

I cannot claim that the use of unrealistic scenarios such as the ones I have discussed is as frequent in educational or media texts as the exploitation of source domains such as ANIMALS or MOTION via conventional metaphorical expressions. However, my examples demonstrate a highly conscious and potentially effective use of creative metaphors to guide and constrain the understanding of complex topics on the part of text recipients who are likely to be less well-informed than the text producers. In that sense, I have attempted to provide a cognitive linguistic account of a distinctive and powerful rhetorical strategy. In fact, my observations on the characteristics and rhetorical function of my examples are consistent with what Coulson and Pascual (2006) have noted in relation to the use of unrealistic (but non-metaphorical) scenarios for argumentative purposes. When explained as double-scope conceptual integration networks, both my examples achieve human scale via multiple compressions, and the clashes between the two input spaces (which make the blends unrealistic) are exploited to further the authors' goals. In the case of the octopus game, the clashes between the two input spaces increase the strikingness and humorous potential of the blend, thus making a rather complex explanation more accessible, and, at various points, rather entertaining. In the case of the train scenario, the combination of material from the 'train' input space with the organising frame of the 'Emu' input space leads naturally, in the blend, to inferences that support the author's argument.

Both of my examples exhibit the characteristics that Steen (2008) associates with 'deliberate' metaphors. First, it is explicitly signalled textually that readers need to switch their attention from the main topic of the text to a different conceptual domain: Kosslyn and Koenig preface their digression into Professor Costlow's work by making clear that their digression into 'fictional marine zoology' will help to explain the 'key ideas' of neural network computation; Joffe begins the final paragraph of his article with 'Think about', which functions as an explicit 'signal' of metaphoricity or 'tuning device' (Goatly 1997: 168ff., Cameron and Deign an 2003). Secondly, both examples can be described as novel metaphors, albeit to different extents: as I mentioned earlier, the octopus metaphor is radically novel, while the train metaphor relies, at least in part, on entrenched mappings. Both the octopus metaphor and the train metaphor are extended locally and exploited at different points in the (part of the) text in which they occur. In this sense, they also contribute to the intra-textual coherence (Chilton and Schäffner 2002: 29) of the section on 'Computing by connections' and the newspaper article respectively.

I have also pointed out, however, some important differences in the textual development of the two scenarios, which have consequences for how one might attempt to model in terms of Blending theory the interpretative processes of different kinds of readers. The octopus game is introduced as a part of fictional narrative digression at the beginning of the introduction to neural networks (in Semino 2008: 156, I described it as a mini-allegory). This means that only a minority of readers may be willing and able to 'unpack' the blend realised in the description of the octopus game, at least on a first reading. Most readers may simply imagine the octopus scenario as a separate mental representation and then establish correspondences with neural networks as the authors gradually spell them out. I have also shown that the octopus scenario is exploited by the authors in a way that is typical of metaphors that have a primarily pedagogic function: the correspondences between the octopus game and neural networks are explained in minute detail in order to prevent inappropriate inferences, and the octopus metaphor is abandoned when enough technical terminology and concepts have been introduced. All this is consistent with the goal of providing an account of the phenomena that is as clear, precise and accurate as possible. In addition, Kosslyn and Koenig's description of the octopus game include several potential triggers of humour, which arguably contribute to the appeal and accessibility of the introduction to neural networks.

In Joffe's article, in contrast, a train metaphor is first introduced just before the mid-point of the text, and the unrealistic scenario is used as the conclusion to the whole piece. Although the hypothetical trains evoked by Joffe are clearly absurd, the description does not seem to involve a humorous intent or humorous potential.[8] The author does not explicitly point out

[8] In this paper I only have space for some brief observations on the relationships between blending and humour, and between metaphor and humour. It has been shown that blending operations are often involved in humorous texts and/or images, but no satisfactory explanation has been provided as to why some blends are humorous and others are not (e.g. Coulson in press, Krikmann 2009). It has also long been recognised that both metaphor and humour involve the evocation of different and clashing conceptual structures, but there is no consensus on what exactly separates the two phenomena, and, more specifically, on why some metaphors are funny and others not (see Attardo forthcoming). Nonetheless, several of the characteristics that different scholars have attributed to humorous metaphors apply more clearly to the octopus metaphor than to the train metaphor. The 'distance' readers are likely to perceive between octopi and neural networks is greater than the distance they are likely to perceive between trains and monetary union, not least because travel metaphors are conventionally applied to a variety of human enterprises (Morrisey 1989). In addition, following Oring (2003) and Attardo (forthcoming), it could be argued that, in the case of the octopus game, the incongruity between source and target mental representations is not fully resolved in interpretation, or, more precisely, that the appropriateness readers may

the correspondences between his unusual trains and Emu, nor does he attempt to constrain fully the readers' interpretation of the metaphor, thus leaving it more 'open' than in the case of the octopus example. He does, however, provide enough guidance to enable readers to infer the main cross-space correspondences, and, crucially, to draw a set of inferences that support his general argument. Compared with the octopus example, readers are more likely to be able to unpack the blend by inferring from the text the whole conceptual integration network, but this does not necessarily mean that they will accept the author's intended inferences.

Apart from the influence of readers' pre-existing views, it is important to take into account their awareness of the nature of the genres that each text belongs to. Kosslyn and Koenig are likely to be perceived by readers as authorities in their area, whose illustration of neural networks is not driven by ideological motives.[9] In contrast, the fact that Joffe's article occurs in the Comment section of *The Independent* newspaper marks it out as an opinion piece, so that readers are more likely to expect that it will reflect a controversial view. I have therefore suggested that a single, general account in terms of Blending theory does not necessarily do justice to interpretative variation across different kinds of readers, and I have proposed some possible different interpretations of the two examples.

The need to take into consideration interpretative variability and genre differences in cognitive linguistic accounts of textual phenomena is by no means restricted to the phenomena I have discussed, however. I hope this paper will encourage greater attention for both readers and texts in future applications of cognitive linguistics to text analysis.

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attribute to the description of neural networks as intertwined octopi is 'spurious' rather than 'genuine'. Finally, the entities functioning as source in each metaphor differ in their potential for funniness (Attardo forthcoming): arguably, octopi inherently have more potential for the creation of humour than trains, and especially derailing trains.

[9] In fact, the notions of persuasion and ideology are also relevant to the use of metaphor scientific discourse, in spite of a general view that scientific writing is neutral and objective (see Semino 2008: 125ff.)

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