

Arguing by metaphors

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In classical argumentation theory, metaphors usually lead to fallacies of reasoning: metaphors are governed by heuristic rules that never guarantee preservation of truth (TINDALE 2003, FISCHER 2014, 2015). However, in recent decades, frameworks of cognitive linguistics and embodied cognition have strongly influenced the concept of language and reasoning, which are no longer conceived as the processing of logic-formal systems (KAHNEMAN 2003, EVANS & FRANKISH 2009). Moreover, varied disciplines have demonstrated the productive use of metaphors in reasoning: physics (HESSE 1996), biology (KELLER 1995), psychology (GENTNER & GRUDIN 1985), etc. Metaphors are highly creative and might have a positive role in reasoning, as the history of science testifies (KUHN 1993, BOYD 1993). Metaphor is indeed based on a cross-domain mechanism of projection (*mapping*), which preserves relations from a source to a target domain, thus favouring analogical reasoning (BLACK 1962, GENTNER & JEZIORSKY 1993, LAKOFF & JOHNSON 1980/2003).

While the role in metaphor in reasoning is quite well established, what requires further clarification is its role in argumentation. As metaphors might require imagination as their main source of understanding, they have been considered as being too subjective and emotionally-driven to be investigated under the lenses of argumentation theory (ERVAS, GOLLA, ROSSI 2015). It has been argued that the intuitive nature of metaphors clashes with the reflective nature of argumentation (ERVAS, GOLLA, ROSSI 2016). However, they are not necessarily antithetical and, in case of live metaphors, imagination might deeply influence the intuitions of truth in argumentation (CARSTON 2002, 2010, ERVAS & SANGOI 2014). In this perspective, metaphors can elicit a more creative and productive argumentation style. Thus, metaphor should not be interpreted as a trap leading to fallacies, but rather as a helpful means for creative thinking (BLACKBURN 1984). The papers collected in this special issue precisely aim to show the ways metaphor acts as a powerful argumentative device in different fields, ranging from science to politics.

As Jean Wagemans argues in his groundbreaking article, «Analyzing metaphor in argumentative discourse», even though there are plenty of studies on how metaphor is important for understanding and reasoning, metaphor theory has paid little attention to argumentation theory, which aims at providing a scientific analysis of reasoning schemas. At the same time, argumentation theory considers metaphor just

as a rhetorical embellishment without exploring its argumentative potential. Wagemans aims at bridging the gap between metaphor and argumentation theories by showing that metaphor can be analysed as (1) (part of) a standpoint and (2) as (part of) an argument. He considers a variety of examples for the above two mentioned categories:

- (1) We should not think of *ourselves as machines*.
- (2) Thinking of *ourselves as machines*, is undesirable, because thinking of *ourselves as machines* will diminish our sense of responsibility.

Furthermore, he shows that in such cases metaphor does not only have an ornamental but also an argumentative function. For him, the argumentative function of metaphor is not limited to argument schemas based on analogy. His analysis thus aims at providing a new method to identify the different roles metaphors might assume in argumentative discourse.

Scientific language is at the heart of the issues related to the relationship between argumentation and metaphors. In science it is mandatory to distinguish truthful reasoning (carried out through a strong and valid argument) from persuasive ones (rhetorically effective). Metaphor, instead, has been classified often as a tool for oratorical purposes than as a cognitive and logical device. In her paper «Metaphor: the Good Argument in Science Communication», Giulia Frezza examines the controversial role of the metaphor as a scientific tool used in scientists' texts but in an invisible and deniable way. Frezza illustrates some examples that display four main behaviors towards scientific metaphor. During this analysis she highlights specific properties of metaphor use in scientific argumentation. In particular the polysemy of metaphorical meanings turns out to be very useful for the construction of shared meanings necessary for scientific development, in contrast with the traditional assumption that considers communication as a way to reducing multiple meanings. Scientific rigor, from this point of view, should not be considered only as a matter of finding non ambiguous words which express concepts in a clear, generalized, and valid way. Scientific knowledge is not only a process of discovery of new concepts that are true in abstract sense, but it is also the outcome of an interactive talking-and-thinking process. In this necessary interaction, the communication process mediates conceptual alterity of participants (teacher and students), by taking advantage of both deliberate (STEEN 2015) and conventionalized (LAKOFF & JOHNSON 1980/2003) metaphors.

Science and law have a complicated, often conflicting, relationship, which often results in communication problems, such as the attempt to put together genetics and food safety policies; a situation that Ivo Silvestro defines as being "awkward" in his paper «A metaphorical history of DNA patents». In the paper he tries to understand why this happens. There is, of course, a general problem, which is related to the differences between lawyers and scientists: "lawyers do not know science and scientists do not know law", Silvestro writes. But there are deeper reasons, which have to do with economics, industrial progress, and scientific discoveries. For example the birth of the information theory influenced a lot of other disciplines, which have used it as a source domain for their terminology (as in the words 'code' and 'transcription' in genetics). But the specific issue of Silvestro's analysis is the role that words and concepts, based on conceptual metaphors, play in legal decisions of the patent office and the Courts. For example certain entities (like synthetic

proteins) have been judged patentable or not in dependence of the implied metaphor: “cell is a living organism” (not patentable) or cell is a factory (patentable). Silvestro also shows the risk of metaphors usage in science, because they are often misleading. He concludes his interesting survey wishing that in cases like the DNA, in which we find the most common (and likewise misleading) metaphors (e.g. the “blueprint metaphor”), new intellectual property right will be expressly formulated to capture it. Maria Grazia Rossi, in her paper «Metaphors for patient education: a pragmatic-argumentative approach applying to the case of diabetes care», highlights the educative role of metaphor in argumentative discourse for patient care. More specifically, she investigates metaphors as argumentative devices in the context of communication in chronic (diabetes) care. She adopts a pragmatic-argumentative model of verbal communication useful to evaluate metaphors in clinical contexts. The argumentative theory of reasoning (MERCIER & SPERBER 2011), based on the idea that the main function of reasoning is arguing in communicative social contexts, is adopted as the main theoretical framework, where metaphors are described as framing and reframing strategies. Highlighting some features of the source domain (and hiding other features), metaphors provide a specific perspective under which interpreting the target domain. In this sense, metaphors play a constructive role in argumentation and – in the argumentative theory of reasoning framework – reasoning. In health communication, metaphors are quite widespread: their framing effects tacitly influence the way patient looks at her/his disease and may reinforce the way s/he experiences the illness, with potential bearing on the patient's sense of self. Even more important, metaphors have a perspective changing function in health communication. Following Gerard Steen's model of metaphor in language use (2008), Rossi argues that in health communication metaphors have a communicative function to offer an alternative perspective on the target of metaphor that occurs in doctor/patient interaction when a specific rhetorical effect needs to be achieved in order to make metaphor an effective educational tool.

Politics is another field in which argumentation strategies play a greater role not only in electoral campaigns, but also in citizenship discourses. Gabriele Tosato in the paper «Argomentazione metaforica in un corpus di assemblee politiche» analyses this aspect of metaphor through an analysis of a collection of the memoranda of an Italian council of foreigners, written between 2008 and 2014. In this corpus, metaphors are used mainly to describe what is the Council: its functions, its relationships with immigrants, society, parties and institutions in general. Counsellors are not professionals of politics and they need to find concepts that can give a meaning, and a conceptual background to their proposals, attitudes, and actions. Metaphors are a very good tool to express complex positions like these and are spontaneously used in council discourses. One of the counsellors, for example, says:

(3) io sono contento di stare qui come *portavoce* di tutti gli stranieri, sono orgoglioso di *portare avanti le idee* di tutti quelli che sono *dietro di noi* (Malick Kaire Gueye, 2008, 3: 4¹).

¹ [Editor's note] Gueye Malick Kaire is the name of the Counsellor, who intervened in the session of 10 April 2008 (page 4 of the memorandum) (Cfr. PROVINCIA DI BOLOGNA 2008-2013): http://www.cittametropolitana.bo.it/portale/Engine/RAServeFile.php/f/Consiglio_stranieri/Verbale3Se_duta10-04-08.pdf.

This sentence contains one of the metaphors that are used more frequently in the considered corpus, the “Transportation” metaphor, in which the source domain is a path in which we move. Other expressions that are frequently used in texts are the adverb ‘avanti’ in all its combination (“portare avanti, andare avanti”, etc.), and the verbs “mandare”, “guardare”, “farsi tirare”. In his paper Tosato shows how different metaphors, or different source domains, which enter in the process of interactive talking-and-thinking process (CAMERON 2003) of understanding the Council and the role of counsellors.

In the paper «Towards ‘Weight’ as a Rhetorical Concept», Curtis K.J. Hyra examines the concept of “weight” and its argumentative potential in politics. The author considers everyday physical conceptions of “weight”, for instance “weight” as mass, in order to understand what it means for concepts, arguments, to have weight. The author argues that the concept of “weight” and its framing devices are used to describe the deliberation process. The factors that influence a decision are the result of weighing the options on either side of an issue. The arguments have a “strength”, as every mass has, etc. The frames provided by the “weight” metaphor influences and changes the cognitive environment of an individual, as defined by Sperber and Wilson (1986), i.e. the set of facts, assumptions and beliefs that are manifest to a person. Analysing examples from politics (Donald Trump’s Election Campaign included), the author aims to show that, in a theory of rhetorical citizenship, the “weight” metaphor plays a role in rhetor’s agency and in the deliberation process, as it modifies the cognitive environment in the context of a deliberation.

“Metaphor” is an umbrella word, which includes many types of expressions and concepts. Argumentative discourse are part of our everyday life and they carry out general and specific characteristics in dependence of the domains of application: politics, science, health, citizenship, etc. For example, the different domains in which we conduct our reasoning and formulate our discourses have an impact on the outcomes of argumentation. The intersection of these factors stimulate different reflections in scholars that study the relationship between metaphor and argumentation. The papers collected in this volume explore some of these cases, showing the effects on social and personal decisions, the framing and other factors that intervene in deliberation processes, the emotional effects that are intimately entwined with metaphors, but also, more in general, with our rationality.

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Towards ‘Weight’ as a Rhetorical Concept

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Abstract Recent work in rhetorical citizenship by Christian Kock and Lisa Villadsen combines the theories of political argumentation and deliberation with rhetorical agency. A theory of rhetorical citizenship where deliberation in the context of political argumentation plays a crucial role makes use of rhetorical theory in both an epistemic and evaluative capacity. However, as much as deliberation is about weighing two sides of an issue, or two issues side by side, the metaphor of weight is not listed as a rhetorical concept in rhetorical canon. This essay explores a common sense scientific understanding of weight to explicate the senses in which we use the term “weight” metaphorically.

Keywords: argument, argumentation, cognitive environment, metaphor, rhetoric, rhetorical citizen, weight

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0. Introduction

«Rhetoric is the art...of making things matter» (FARRELL 1998: 1). Of the many definitions of rhetoric, this one stands out as the most pertinent to this paper. I say this because this definition makes the metaphorical link between rhetoric and matter explicit. Weight is a property of matter: things that do not have weight do not have matter. If rhetoric, as Farrell defines it, makes things matter, then rhetoric is in the business of giving ideas weight. I will not be concerned here with why we take some things to matter more than others, how weight is given to a thing, or when this can or should happen. In this essay, I will answer the question of what it means for concepts, arguments, to have “weight” by examining our conceptions of weight in the physical world¹ to see how the metaphor is used *in situ*. I will exploit the metaphor in the equivocation of physical weight and rhetorical weight. Doing so will be illuminated with the help of the cognitive environment, as developed by Christopher Tindale. The metaphor of rhetorical weight is prominent in deliberative situations, so this essay will draw on insights from theories in deliberative argumentation. In this essay, I will outline three concepts of weight given a very basic understanding of physics. Situating the metaphor of weight in the cognitive

¹ Some might say this is the ‘literal’ definition.

environment will illuminate the importance of outlining the different senses that are used given the concept of weight^{2,3}.

1. Deliberation and Rhetorical Citizenship

Rhetorical citizenship, as outlined by Christian Kock and Lisa Villadsen, combines two strands of research, «public argumentation and deliberation on the one hand, and studies in rhetorical agency on the other» (KOCK, VILLADSEN 2012: 11). Kock and Villadsen make sure to note that the concept of rhetorical citizenship is not their own. However, they provide a robust development of the concept in their book. Rhetorical citizenship widens the lens from a focus on particular discourses or speech acts to wider narratives and uses public argumentation and rhetorical agency to both describe and evaluate the contribution of wider narratives to «constructive civic interaction» (*Ibidem*). Rhetorical citizenship takes seriously the idea that democracies are constructed rhetorically. The pejorative sense of rhetoric⁴, is not the sense of rhetoric on which this theory of rhetorical citizenship builds. Rhetoric involves the acknowledgment that any speech act whatsoever cannot be removed from its context and evaluated in isolation. So, rhetoric is not merely adornment, but plays a constitutive role in communication in general. In political discourse, this means that an utterance in context changes the nature of the discourse, and creates an exigence to which the interlocutors respond or ignore (a type of response itself).

Here we see that my writing this paper is a rhetorical act as a rhetorical citizen. I assert my values by engaging with the material, by making an effort to maintain or grow a body of research that I deem valuable. Before any engagement with an interlocutor or any attempt at providing a reasonable or logical account of my position, I simply respond in a way that reveals my values. So, given this conception of rhetoric, we see that constructive civil contribution is a rhetorical act that expresses what the rhetor takes to matter in a political context.

² I do not intend to deeply engage literature on metaphor surrounding the cognitive processing of metaphor, although I do think it is worth mentioning. This debate takes note of the ubiquity of metaphor in language and parses through examples where metaphorical language is processed categorically versus examples where metaphorical language is processed conceptually. When a metaphor is processed categorically it is somehow passive in our language; the metaphor is lost for some further point. In these cases, the metaphor helps to orient the hearer or reader in a certain relation to the concept. For example, in the previous sentence the word “helps” is metaphorical. The way we would normally use “help” would be to refer to the actions of one person to aid or assist another person to achieve some goal. Here, the word “help” was used metaphorically in the sense that a metaphor cannot have a similar kind of effect in the physical world. This use is an example of categorization because the metaphor was not used to add something new to the concepts of metaphor and orientation. Alternatively, a metaphor that is processed conceptually is the traditional way that we think of metaphor being used, as a tool to draw comparisons across two otherwise dissimilar domains to shed light on some new feature for conceptualization. This paper notes the difference, and, furthermore, insofar as this is a difference, offers a fine-tuning of the conceptualization of the metaphor of weight that is found in rhetorical theory (Cf. STEEN, 2008: 213-241).

³ Furthermore, one might expect a corpus search of the co-occurrence between “weight” and “argument”. I do not think that this approach would be a relevant method to this paper. It makes no difference to my argument whether the word “weight” is related, through a corpus, to the word “argument”. What I am showing in this paper is that one phenomenon of argumentation is analogous to different senses of our physical or literal definitions of weight.

⁴ That is, rhetoric narrowly defined as speech acts aimed solely at persuasion, or merely adornment.

Combining this notion of rhetorical agency with public deliberation, we begin to see the importance of the rhetorical device of weight to take form. The word deliberation has as its root the Latin *libra*, or a pair of scales. This image is familiar to those who have even a vague notion of the zodiac sign. The prefix de- in Latin means ‘entirely’, so, to deliberate is to “weigh entirely”⁵. So, we see the metaphor of weight has obvious implications as an extended metaphor of deliberation. As argumentation is an important aspect to deliberation, that is, reason-giving for and against in any deliberative case, the rhetorical device of weight deserves further attention. What follows is an analysis of the common conception of weight in the scientific sense, and how those senses of weight provide insight into the metaphor of weight in deliberation.

2. Everyday Physical Conceptions of Weight

What follows is an outline of common physical conceptions of weight, while exploiting the metaphor to show the implications for weight as it pertains to argument.

Three notions of weight in two categories:

Weight as mass

1) Weight in terms of *density*. The higher the density of a material, the more weight it will have.

2) Weight in terms of *quantity*. The more of a certain material, the more it will weigh.

To illustrate the difference, consider two coins that are exactly the same size and shape (and denomination): one that is light, made out of wood, another that is heavy, made out of gold. The coin made out of gold is more massive in terms of density. There are more subatomic particles per cubic centimeter than in the wood coin. This is what weight means in terms of density. When you place one of each of the coins onto either side of a balance, the gold coin will weigh more. However, there is a way to tip the scale to the size of the wooden coin, by adding more wooden coins. If there are 50 wood coins on one side of the scale, the wood side will be heavier.

To flesh out this distinction in argumentation, we must draw a difference between argument, as a set of premises and a conclusion⁶, versus argumentation, or the entire discourse of a deliberation⁷. This is the difference between argument as product versus argument as process (GODDU 2011), the difference between argument and argumentation (VAN EEMEREN 2010), or, following Daniel O’Keefe, the difference between argument-1 and argument-2 (O’KEEFE 1977: 122-123). If we analogize the first definition of argument (argument-1) to our coins, we find that the idea of adding weight to the coin is hard to conceptualize in terms of density. For

⁵ Cf. <http://www.etymonline.com/index.php?term=deliberation>.

⁶ What I have in mind here are definitions such as Ralph Johnson’s in *manifest rationality* (2000: 168).

⁷ As in a definition given by Frans van Eemeren (2010: 29).

instance, one could somehow melt the gold coin and try to infuse it into the wood coin, thereby creating a coin that is a hybrid of wood and gold, denser than the wood coin alone. Contrastingly, a gold coin could be substituted for the wood coin. Since the coin represents the same denomination, we might say that it is the same coin, however, the substitution seems drastic enough that we might not want to make that claim. This problem points to the identity problem of arguments, that is, if you modify the original argument, in what sense do we make the claim that we are left with the same argument? This is analogous to either conception of “increasing the density of the coin”. The coin remains the same size, shape, and denomination, but the means of altering the coin’s density are drastic enough that it is hard to say that it is the same coin. I will not address the problem of the identity of an argument here. The point that I am making is that there is a sense in which the substance of an argument, the content of the premises/conclusions can be modified, and we still consider the argument the same, despite the fact that it has gone through an alteration. This is what it means to increase the density of an argument.

How we conceive of adding weight is more clear concerning Argument-2s. Argument-2s also avoid the identity problem of argument. In this second sense of argument, weight is added to an argument-2 by adding more premises, or more premise and conclusion sets to the existing argumentation on one side of the scale or the other. For instance, more weight is added to one side of the scale by adding more argument-1s. In this scenario, a metric ton of wood coins is many more (quantity) coins than a ton of gold coins, however, both weigh a metric ton. In terms of argumentation, this means that adding to the set of argumentation for or against either side of an issue has an effect in deliberation that is proportional to the weight of the individual argument. In other words, not all arguments are equal, but the scales may be tipped to one side by many ‘light’ arguments in the face of one ‘heavy’ one.

3. Weight and Gravity

Early on in a scientific education, we are taught that we often incorrectly equate weight and mass. Mass is not dependent on gravitational force; your body has an equal mass on the surface of the Earth as it does on the International Space Station. This is because mass is measured in terms of the density per cubic centimeter. However, the gravitational force changes from object to object such that a thing with the same mass will have different weight relative to the other masses around it. So, if you weighed yourself on your bathroom scale on earth, and then again on Mars, the number on the scale would differ greatly⁸. The way we conceive weight in terms of gravity leads to our third sense of weight.

3) Weight and *gravity*. Depending on the mass relative to the size and distance from another mass (setting)(context)(situation), a thing weighs relatively more or less.

While we had a preliminary illustration above, to properly exploit the metaphor of weight in terms of gravity, think back to experiments of dropping a feather and an

⁸ To further complicate matters, other factors such as atmosphere, rotation, and relative position on the rotating object all influence weight. i.e.) your bathroom scale will also change on the north pole because of the difference in centrifugal force from the poles to the equator. Thoroughly examining the extent to which the physical analogy holds might be a fruitful endeavor, these three distinctions provide enough material for our purposes here.

apple in a vacuum. Despite the differences in mass between both objects, both fall towards the earth at the same rate in a vacuum. This is because the force of gravity is acting equally on both objects. So, despite the differences in mass, each object falls at the same rate because the force of gravity is the same on both objects (partly because, relative to the mass of the earth the difference in mass between the apple and the feather is negligible)⁹.

Another factor that highlights why the context matters here is: that the material that surrounds a mass affects its weight. On Earth, we are surrounded by an atmosphere; that has an effect on how we can move in our environment due to friction in air and atmospheric pressure. On the moon, the atmosphere is negligible compared to the atmosphere on Earth. So, on the moon our mass and the moon's mass has an effect on our weight; there is only a negligible atmosphere so, air friction is negligible and the weight of the atmosphere that is constantly exerting pressure on us is also negligible¹⁰. I bring this up to show that the setting also has a further effect on weight.

In terms of argumentation, this notion of weight plays a role as a recognition that the same argument-1 might "tip the scales" depending on the weight of a competing argument-1. That is, in the case of deliberation where two parties are making arguments for their side, a given argument might be relatively light in comparison to a competing argument. This conception of weight takes into account the relative importance of each argument in relation to other arguments. As is the case for physical weight in this sense, it is not the amount of matter that will determine the weight of a thing, but how much matter a thing has in relation to another material object. Adding weight in this sense is different than simply adding to one side or the other because it shows that the relation between the two objects (arguments) is as important as the size or density of the argument itself. It is not simply the case that an argument can tip the scales, but there can be better or worse arguments depending on the context or relation to other arguments.

3.1 Weight vs. Amplification

While "weight" is not obviously in the rhetorical cannon, it appears prominently in a paper by Thomas Farrell, *The Weight of Rhetoric: Studies in Cultural Delerium*. In this paper, Farrell provides a robust treatment of the rhetorical device *magnitude* as found in the literature. His approach is to outline the ways in which magnitude manifests as a rhetorical concept in rhetoric and philosophy, and to show how we assign importance of significance to rhetorical concepts (FARRELL 2008). My approach in this paper is different from Farrell's. He takes on the rhetorical notion of magnitude as it appears in literature and philosophy, and outlines other ways that he thinks that importance is added to arguments, or to speech in general. I, on the other hand, tease out senses of weight as a physical concept in order to develop the metaphor as a rhetorical concept. In fact, Farrell uses "weight" as a rhetorical concept in his paper as an equivocation with magnitude (*Ibidem*). Defining weight in terms of magnitude is unproblematic insofar as Farrell is looking to outline the ways

⁹ It is important to note that this whole discussion is a gross oversimplification of the concept of weight and mass in physics. However, the distinctions are more or less correct and are more precise than a general conceptualization of weight that we may be attracted to otherwise.

¹⁰ The physics here is beyond a passing familiarity, so, would not be expedient to outline in a paper such as this.

in which we shift importance of one concept of another in-text. However, the equivocation of weight and magnitude breaks down at the metaphorical level. Magnitude is merely a measure of size relative to some other thing. Farrell shows the importance of magnitude¹¹ as a rhetorical concept; I argue that weight is deserving of being adopted by the rhetorical cannon on its own.

In Jeanne Fahnestock's book *Rhetorical Style* she outlines the rhetorical concept of amplification. Fahnestock offers Melancthon's definition of amplification as an exemplary definition at the beginning of the chapter, «In rhetoric it is emphasized that the orator should see what is good in a case, what bad, and he should augment the good things and the bad discreetly cover, and he should overwhelm with the amplification of good things» (FAHNESTOCK 2011: 390). Fahnestock's definition follows, where amplification is, «to [endow]with stylistic prominence so that it acquires conceptual importance in the discourse and salience in the minds of the audience» (*Ibidem*). With these two considerations in mind, we find from the outset that there is a difference between amplification and weight. In the first definition, the goal of the orator is to persuade the audience, but reason or arguments alone will not suffice. Therefore, the orator must overwhelm with the good aspects of the thing in question. This does not point to a fair and balanced¹² treatment of the topic of the oration, but to take a position and to amplify the good so as to overwhelm. There is no additional weight, the argument for the good, or the good itself is assumed, and methods of amplification are employed to persuade the audience, not through reason or argument, but through word selection.

Fahnestock goes on to outline several rhetorical devices of amplification that I will deal with briefly here.

Five from Quintilian¹³:

1) *Auxeisis* – “Heightening through strategic word choice”. For example: Calling a good person a Saint. The hyperbolic language amplifies the goodness of the person.

2) Series construction – to place words or concepts in a series that lead up to the most important.

Example: “He has been arrested for breaking and entering, resisting arrest... and aggravated assault”. This contrast with a diminishing strategy: “He has been arrested for aggravated assault, breaking and entering ...and resisting arrest”. The series build up to the final element, making it most prominent.

3) Comparison for the sake of inflating or deflating – a comparison is made that positions the good in contrast to something worse. For example: “A vicious terrorist is out there. It's not Osama bin Laden, it's AIDS”.

4) Heightening through reasoning – this is not reasoning strictly speaking, but using certain words so as to imply a certain characteristic or another point. For example,

¹¹ And, because of the equivocation, ‘weight’ as well. Farrell's paper provides a good backdrop for other ways in which weight applies to deliberative dialogue in rhetorical theory and as applied to text through various examples.

¹² Some might say objective.

¹³ All of the following five are taken from Fahnestock (2011: 391-396).

Fahnestock shows this through an example where words are used to describe Mark Antony's strength and size so that the audience will infer that it took a large quantity of alcohol to get him drunk.

5) *Congeries* – “accumulation of words and sentences identical in meaning”. This is more or less self-explanatory, the rhetor strings together phrases that have the same meaning so that the audience will diminish competing ideas. Here Fahnestock outlines Erasmus' extension of this device, however, the core concept remains.

Two Non-Quintilian¹⁴

1) *Epichireme* – This device follows the dialectic syllogism and enthymeme and has two types. In the first, the syllogism or enthymeme is followed by an embellishment and restatement of the conclusion. The embellishment constitutes the amplification. In the second type each premise and/or the conclusion is followed by an embellishment. The embellishment constitutes the amplification here as well.

2) *Diminishing* – Opposite to certain nuanced forms of amplification are diminishing through brevity or silence. Brevity and silence can help to amplify other points by drawing attention away from the points that are made briefly or not at all.

The preceding concepts fall under the umbrella of forms of amplification. Fahnestock goes on to give an expert analysis of a section of Darwin's *Origin of Species* drawing on these devices of amplification. The analysis shows how Darwin was an expert rhetor and employed these strategies to gain audience adherence.

However, these concepts are different than adding weight, as they outline ways to embellish language, rather than making the arguments weightier. That is, the premises, set of premises, or argument-1 as a whole, are not *altered* in any way, rather, the existing points are embellished. By contrast, adding weight would involve adding premises, sets of premises, or whole argument-1's to add weight to the argument. Additionally, the existing premises could be more clear or precise or stated in a way that is tailored to a specific audience so that they gain importance. There also seems to be some overlap in the concept of 'diminishing' with the concept of 'weight' in terms of gravity, where an argument might have relatively more importance in relation to the surrounding arguments. However, the concept of weight can also be considered separate from diminishing when the context itself provides the relative scope of importance. For example, PETA's arguments may be taken to be more important at a vegan conference than a factory farming conference.

In the summary of the section on amplification, Fahnestock mixes metaphors:

It is always tempting to dissociate stylistic means from the substance of an argument. The place of style *after* invention in rhetorical pedagogy invites the separation, usually to the disparagement of style. But stylistic methods are better seen as the substance, the material in the language of argument, since the material of argument is language. Both amplification and diminution are then indissociable effects in an argument: the rhetor is always on a rising or falling curve; the slope is always positive or negative (*Ivi*: 414).

¹⁴ Both of the following are taken from Fahnestock (2011: 394-402).

Here we see that Fahnestock extends the metaphor of amplification as a physical property. While I agree with the general sentiment that the style cannot and should not be separated from the substance, the metaphor of weight points to something that is seen in Melanchthon's definition above. In this definition, the deliberation has already been carried out by the orator. In this case, amplification *is* a matter of style because it does not alter the materiality of the case being made. In other words, Melanchthon's definition appears to be sensitive to the difference between weight and amplification in that the definition separates the deliberation (between the good and the bad), from the style (the amplification of what the orator takes to be good). Here the orator does not add anything to the case being made for the good but highlights what has been established as good through style. Something that has weight, something that matters, certainly can be amplified, however, altering the weight of a point or an argument does not amplify that thing. It is an important distinction that shows that adding weight is not merely embellishment, such as the case with the devices outlined above but changing the argument-1's or argument-2 so that certain points have better support. Weight as a rhetorical concept is a strategy to add importance to arguments, where amplification has to do with embellishment.

Rhetoric is audience-minded, so to the audience, amplification may be thought of as a "making matter", however, the audience decides how weighty a claim is for themselves. Amplification is an element of style rather than substance because the orator wants to make it seem like certain aspects of their claims are larger, and therefore, have more weight. Re-visiting the methods outlined by Fahnestock may reveal that some concepts have to do with adding weight rather than amplifying. For instance, the device of accumulating words to heighten their importance is obviously one of amplification to make it seem like that word or corresponding concept is more important than another. The accumulation of words not change the substance of the argument but makes one concept more present than another.

Following the metaphor of amplification and weight, we see that a main difference between the two is the relationship with the material. Amplification does not change the weight of the object, but merely how that object is perceived. Think of a magnifying glass that amplifies the perception of whatever is on the other side, but that does not change the materiality of the thing. Furthermore, a device that amplifies sound does not constitute a material change, but a change of how waves travel through a medium. So, what this shows is that there is a difference, particularly in deliberative argumentation, between weight and amplification.

3.2 Situating the Concept of Weight in the Cognitive Environment

In his book *The Philosophy of Argument and Audience Reception*, Christopher Tindale outlines the concept of cognitive environment and the role argumentation theory plays within it. A cognitive environment for an individual, as defined by Sperber and Wilson, refers to «the set of facts, assumptions, and beliefs that are manifest to a person» (TINDALE 2015: 145). To be manifest is to be perceptible or inferable. The cognitive environment of an individual is the set of facts that are manifest to her. The *total cognitive environment*, that is, the shared cognitive environment between and among individuals, is a function of the physical environment and the collective of individual cognitive environments, the facts that an individual is aware of and the facts that she is capable of becoming aware of (*Ivi*). Cognitive environments are analogous to visual environments in the sense that we have access to information in our visual field, yet we do not necessarily process all of

the information in our visual field. However, someone else in our visual field might see something that we do not, and bring that idea or object to our attention (*Ivi*).

As shown before, to have weight a thing must be material. If the cognitive environment is analogous to the visual (or sensible) environment, then the thing in question would have matter. While it is true that even air has weight, the analogy holds best when considering material objects that are perceptible to the naked eye. If to have weight something must be material, and if something is material it is sensible, then we see that weight is a kind of presence as it is a perceptible thing in that environment that we are or are capable of being made aware of it.

While there are similarities between weight and amplification (i.e. the additive nature), there are also qualitative differences. As amplification is concerned, we find that one or another object *seems* larger than it is; in giving weight that thing *is* larger than it was. Here we find the difference between the pejorative sense of rhetoric, “making the weaker argument the stronger” and the non-pejorative that Fahnestock hopes to maintain. The cognitive environment shows that, through our language, we have the ability not only to amplify the importance of one argument, concept, meme, or another; we have in our language to manipulate the materiality of the argument, concept, or meme, to the extent that it “matters more”. This is an important distinction that helps to show why rhetoric is not necessarily merely style or adornment, but a social force, a tool we use to build our environment. It also sheds light on the importance of outlining the concept of weight as a rhetorical device.

4. The Brexit Deliberation

One recent political deliberation is the British referendum to decide whether or not to leave the European Union (dubbed ‘Brexit’). This case serves as a good example of a deliberation dialogue because it is a rather simplified example in politics, with many arguments for both sides. Furthermore, there are only two sides to the vote: vote to remain in the E.U. (hereafter referred to as ‘remain’), and vote to leave the E.U. (hereafter referred to as ‘leave’). What follows is an analysis of a summary of the arguments for and against as found on the website www.marketwatch.com. The analysis will highlight some of the uses of amplification, versus the uses of weight. The article (REKALITIS 2016) presents five arguments for the remain camp, and five arguments for the leave camp.

Points for the leave camp:

- 1) Control immigration
- 2) Make Britain great again
- 3) Reject the Brussels bureaucrats
- 4) Reject what the establishment wants
- 5) Lower prices

Points for the remain camp:

- 1) It’s the economy, stupid
- 2) Avoid scary uncertainty
- 3) A more secure World
- 4) Keep that easy access to sunny Spain
- 5) A hit to households

Here we see a summary of the arguments. For the leave arguments, we have the five points as reasons that support the conclusion, “Britain should vote to leave the E.U.”, and then five premises that support the conclusion “Britain should vote to remain in the E.U.”. The article provides further support under each heading for each point.

The first example of amplification is in the form of *auxesis* in, “Avoid scary uncertainty”. Similar to the use of the word “Saint” to describe a good person, the use of the word “scary” to describe the aftermath of a leave outcome amplifies the emotion that a person might feel in the aftermath of the decision. Despite the balanced nature of having five points for each argument, the *auxesis* amplifies the point in this case.

The second instance of amplification comes in the form of an allusion. On the leave side, the second point, “Make Britain great again” alludes to Donald Trump’s 2016 campaign slogan for President of the United States, “Make America great again”. This is an example of heightening through reasoning because the audience is to make the inference that this argument for the leave side is analogous to positions of nationalism held by Donald Trump. This device is used again in the remain side, in, “It’s the economy, stupid”. This was part of the campaign slogan of Bill Clinton in his presidential campaign in 1992. This heightens by reason as the audience is to infer that this point is analogous to Bill Clinton’s position on war and healthcare in that campaign.

The third example of amplification is by way of comparison between the two heightening by reason examples above. The audience draws the comparison of the leave vote being associated with the views of Donald Trump, and the remains vote as associated with the views of Bill Clinton. This constitutes the difference between a Republican in Trump, and a Democrat in Clinton; and a generally disliked candidate in Trump, with a generally liked candidate in Clinton. The comparison reveals something about the connotation that the article has, despite the fact that the sides are balanced with an equal number of arguments.

As examples of amplification, these points serve to heighten or diminish on one side or the other. However, this article also contains examples of adding weight. While there are, on the surface, only five arguments for each side, each premise has a line of sub-argumentation associated with it. For example, under the “Make Britain great again” premise, sub-arguments such as «The U.K. would be more competitive because it could make its own trade deals with other nations and legislate in the interest of British manufacturing» (REKALITIS 2016) add weight to the original point. This is adding weight in terms of quantity, not in terms of density as the sub-argument is an added premise to the original premise. They go on, «The billionaire co-founder of broker Hargreaves Lansdowne has argued a Brexit ‘would be the biggest stimulus to get our butts in gear,’ likening it to the Dunkirk retreat during World War II» (*Ibidem*). While we see that the devices of amplification may be present in these points as well, adding these premises to the argument set changes the weight of the deliberation by adding premises and/or argument-1s. The initial premise may not be particularly convincing or persuasive, but adding weight to the point helps to sway the deliberation to that side.

While I do not purport to establish what weight these points are given, it is clear that there is a qualitative difference between the device of amplification, as embellishment, and weight, as tipping the scales in a deliberation.

5. Weight, Amplification, Strength

The end result of a deliberation is often a decision (GOODIN 2000). The factors that influence the decision are the result of weighing the options on either side of an issue. Matters that have any importance are put on the scale to be measured. If something has no matter or, does not matter, it will not affect the outcome of a deliberation. This is the main difference between the rhetorical tool of amplification versus the concept of weight in deliberative rhetoric¹⁵.

In a deliberation, the amplification is not material, and so, cannot tip the scales. This seems to be contrary to an everyday intuition that the louder argument might be more influential than the more important one. It might just be the case that the scale and setting are different, and sometimes there is a reason to use multiple measuring devices (a scale vs. a sound level meter). This brings to light the difference between weighing and measuring, and the importance of applying the appropriate measuring device in the appropriate circumstance¹⁶.

Up to this point, I have purposely avoided the relationship between weight and strength. Analyzing the metaphor of strength given the metaphor of weight might help to better understand the rhetorical importance. Given structure mapping theory, the structure of the source and/or target domains can be stronger in the sense of being sturdier due to increased density or increased size, for example. There is more to be said on this topic, but not here. Furthermore, strength seems to be a metaphor that relates in important ways to both amplification and weight. The strength of an argument could say something about its amplification or its weight. One possibility is to say that if an argument is strong, but not convincing, then that argument might be amplifying its point. On the other hand, if the argument is strong and convincing, maybe the argument has more weight, the points are substantial, they matter more than the strong argument that makes use of amplification. Of course, there is no

¹⁵ There is an important distinction that I have not mentioned that may present an objection to my argument. It is an issue that is dealt with by Christian Kock in his paper *Norms of Legitimate Dissensus*. The objection is that, because different audiences assign different kinds of importance to any given argument-1 or argument-2 (i.e. practical importance, epistemic importance, normative importance), then the disambiguation between “weight” and “amplification” breaks down. That is, if there is no way to know how the audience is receiving the argument, and if there is no way to gauge the effect, then there is no way to tell the subjective reception of the argument. I grant that the difference between the objective and subjective conditions in terms of audience reception is a legitimate objection to my account. I have a very simple response to this claim: the subjective aspect is diminished by the fact that audiences share cognitive environments. So, while individuals may assign different value, and even different categories of value to any given argument, the shared cognitive environment provides the context, and therefore, moves towards a degree of objectivity. Furthermore, “objects” in the cognitive environment do not abide by physical laws but established norms of reason, or logic. Extending the metaphors slightly beyond their capacity, it is possible in principle that an argument interpreted as amplificative is given “weight”. What I mean is that a consensus of people may see a certain feature of an argument as “merely amplificative”, but through sub-argumentation, that feature shifts from amplificative to “weighty”. So, examining the physical or literal concepts helps to show differences in subjective interpretations of arguments, and how the value assigned to them can be altered.

¹⁶ I see the fact that certain weighing or measuring devices can and should be used in difference scenarios as a defense of Toulmin's fields of argumentation. Questions remain, however, when and why we take certain factors to be more important than others, how do we deliberate in cases of multiple fields, and does the metaphor break down in this meta- example?

absolute frame by which to judge which technique is preferable to another, but there is an important difference here as well¹⁷.

Chaim Perelman and Lucie Olbrechts-Tyteca provide a treatment of strength in *The New Rhetoric*. In this treatise, they deal with strength in terms of audience adherence, subjective interpretation of arguments, and effectiveness and validity. I agree with their account regarding the strength of an argument relative to an audience. However, there are two concepts that relate to weight as I have treated it. In their treatment of convergence and congruence, the pair note, «The convergence of arguments may cease to carry weight if the result arrived at by the reasoning shows up elsewhere some incompatibility that makes it unacceptable» (PERELMAN, OLBRECHTS-TYTECA 1971: 472). As we have seen, amplification describes features of embellishing arguments, and the strength of an argument is evaluated relative to some audience. The weight of an argument is a feature of converging arguments (with accompanying rhetorical devices), or congruent reasoning, that causes a tip of the scales in a deliberation. In other words, the multiple senses of weight each describes a nucleus of considerations that combine to give weight. Weight is distinguished as its own rhetorical concept by moving towards an objective¹⁸ feature of that argument. This consideration is over and above audience adherence, as the object (argument) in question “has matter” in the shared cognitive environment.

So, we see that amplification, weight, and strength may all have different and important senses in which they can be applied in rhetorical theory. Most important to rhetorical deliberation as a rhetorical citizen is the metaphor of weight. Further research studies that deeply engage the physical conception of weight might help to further precisify the concept, the following are possible areas of further study. The first engages or exploits metaphors in argumentation and rhetoric in a similar fashion carried out here. Metaphors might only be epistemically valuable to an extent, but exploring the limit to which they yield insights might prove useful for rhetoric. Furthermore, there are two types of deliberation as outlined by Goodin, internal and external, where the metaphor might apply differently¹⁹. Internal and external deliberation are two interesting lenses through which to examine the metaphor of weight. Further study might also draw on the nuanced differences between weight, amplification, and strength in a textual analysis so as to highlight the important aspects of each concept. Finally, I think that there is an important difference between adding weight by way of facts, versus adding weight by way of values. This distinction seems that it would be fruitful, as changing the nature or factual premise to one that states the same fact in terms of value might have a drastic effect on the reception of that argument. We might also find here that the weight of an argument that is based solely on facts fluctuates in audience reception from context to context, implying that certain audiences value certain facts more than others. How the rhetorical concept of weight applies in a given context, and then across contexts

¹⁷ This discussion could slip dangerously into the ancient Greek debate between the sophists and the philosophers. I do not here wish to engage the merits or extent to which “man is the measure of all things”, but, understanding the differences between the use of these metaphors in a discussion such as this might help and would be an interesting line of further investigation.

¹⁸ Objective in the sense of the agreement of a group of subjects, that is, consensus in a shared cognitive environment.

¹⁹ Cf. Goodin (2000: 54-79).

would appear to play with the fact/value distinction, an interesting line of research for argumentation theory.

6. Conclusion

Drawing on our physical knowledge of mass and weight, we see that the metaphor of weight is an important rhetorical concept. In the theory of rhetorical citizenship, this metaphor plays a role in the agency of the rhetor in a deliberation as to what they add, and how they modify the cognitive environment in the context of a deliberation. Decisions are made when the scales are tipped, so, adding the concept to the quiver of a rhetorical theorist can help to account for certain argumentative moves where an interlocutor shifts or adds importance to their argument.

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Sitography

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Metaphor: the good argument in science communication

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Abstract The relation between metaphor and argumentation in science communication is becoming a crucial tool for critical metaphor studies. In this article, by means of a crossed analysis (epistemological, cognitive and linguistic), I focus especially on a peculiar dynamic of metaphor use in scientific communication showing opposite, paradoxical attitudes towards the use of metaphors, respectively, ubiquity vs. invisibility, inclination vs. resistance, deliberate vs. non-deliberate. In this way, an overall philosophical reflection about the underlying reasons for the ambivalence in the use of metaphor in scientific communication would be proposed and discussed.

Keywords: metaphor and scientific argumentation, metaphor analysis, resistance to metaphor, critical discourse analysis, science communication.

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0. Introduction

In spite of the renowned epistemological studies about metaphor in science (e.g. HESSE 1966, WEINGART *et al.* 1995), metaphor's role as legitimate scientific tool is still in part controversial, somehow conflated with the more established notion of model (WIMMER, KOSSLER 2006). Historical and epistemological reasons could possibly explain this fact, which yet is beyond the scope of this article. Here, a typical opposition between the demand for clarity and rigor vs. the need for metaphorical open expressions in scientific language can be categorized by means two opposite behaviours: inclination for metaphor (*positive*) and resistance to metaphor (*negative*). As this article will discuss, these behaviors are both part of our linguistic nature and are even more emphasized in science communication.

Nowadays science is specialized, layered, and complex, so its language is becoming increasingly intertwined and interdisciplinary. A focus on argumentation in scientific language and in science communication has become an essential part of the picture. Metaphor, especially, is proven a useful tool for discussing epistemological, social and ethical issues involved (e.g. NERLICH *et al.* 2016). In the international journal *Nature*, for instance, one finds an on-going debate about the use of metaphors in scientific explanation (BALL 2011).

In the light of this flourishing debate a new field of critical metaphor analysis emerged that is linked with the subfield of discourse analysis, i.e. critical discourse

analysis. The studies by Nerlich's and her colleagues are a benchmark for acknowledging the state of the art in this field and for assessing what promising directions should be developed. Throughout the last years their approach targeted the evolution of metaphors in biomedicine, synthetic biology, climate change and ethics, describing paradigmatic changes by means of metaphor's shifts, and changes in narratives through times (e.g. CRAWFORD *et al.* 2008; HELLSTEN, NERLICH 2011, NERLICH *et al.* 2016).

They have also claimed that there is a need of filling the gap between ethics, the studies of scientific communication and metaphor, proposing a coherent direction of research on both ethical and metaphorical dimensions of science communication (NERLICH *et al.* 2016).

Another approach to this topic consists in observing more in detail how scientific metaphor functions in the argumentation strategies of science communication. In scientists' and media's speech, the argumentation style often mirrors asymmetries in information and in judgment between experts and general public (JASANOFF 2005). Moreover the argumentation strategy may be informed by a general assumption (not necessarily explicit) about the need of keeping control (at least with words) of the uncertainty of risk factors (PROCTOR, SCHIEBINGER 2008) for instance involved in experimenting a novel therapy, or trying to predict the effects of living closed to environmental disaster areas which entail a wide array of health problems. Science, as a matter of fact, does not have the power of monitoring risk without doubt. Scientific research is an open process which involves doubt and risk. This eventually leads to a dialectic between different actors (scientists, experts, journalists, politicians, regulators, physicians, opinion leaders, general people) in the use of argumentation for talking about controlling risk and assuming responsibility, or in other words *risk management* (DE MARCHI, RAVETZ 1999).

From the viewpoint of metaphor studies, these asymmetries and dialectic may result in diverging argumentative narratives that are often expressed by metaphors. For instance, the metaphoric argumentation "Illness is a war and we have to fight it" serves as a shortcut for making clear from physician's, and more generally from health system's viewpoint the urgency of action. By contrast, the same metaphor according to the patient may sound obnoxious: Who exactly is in war with whom? And where exactly is meant to be the battleground? The narrative entailed by this war-metaphor is extremely controversial.

The relation between metaphor and argumentation in science communication, therefore, could be better explored for identifying underpinning mechanisms at play in this peculiar context of communication. In this article I will focus especially on a peculiar dynamic of metaphor use in discourse showing opposite, paradoxical attitudes about the use of scientific metaphors: ubiquity/invisibility, inclination/resistance, deliberate/non-deliberate. My inquiry, then, will move from the following question: are there specific patterns underlying argumentation that may explain these paradoxical attitudes towards metaphor in scientific communication?

In Section 1, I will first briefly outline the traditional epistemological opposition ubiquity vs. invisibility of metaphor in science that has been discussed in detail elsewhere (FREZZA, GAGLIASSO 2016). In Section 2, I will analyse two other natural conflicting behaviours towards metaphor, inclination vs. resistance, in scientific argumentation by means of four different examples. In Section 3, I will draw to the deliberate vs. non deliberate character of metaphor. Therefore, in Section 4, a threefold dimension of the use of metaphor in science could be outlined dealing with the three paradoxical attitudes towards metaphor: (i) *epistemological* showing

metaphor's paradox of *ubiquity/invisibility*; (ii) *cognitive*, expressing *inclination/resistance* to metaphor; and (iii) *linguistic*, observing the *deliberate/non-deliberate* character of metaphor. Afterwards, I will propose a preliminary philosophical background discussing the social "shared making of metaphorical meaning" in ordinary language (NERLICH, CLARKE 2001). And, in order to further spell out the underlying mechanisms in the opposition between inclination/resistance towards scientific metaphor I will refer to Cavell's philosophical proposal of human intrinsic scepticism, epitomized by metaphor use (CAVELL 1994; FRISARI 2010). In the Conclusion, this crossed perspective (linguistic and conceptual) would be further discussed, contributing to develop an overall philosophical reflection about the reasons for the ambivalence in the use of metaphor in scientific communication.

1. The paradox of ubiquity and invisibility of metaphors in science

Voir, c'est déjà une opération créatrice, ce qui exige un effort.
Henry Matisse

One of the traditional criticisms made to the use of metaphors in scientific language has its roots in the ambivalence of ancient rhetoric, which claimed that metaphor can make the truth appear as well as give falsehoods the consistency of the truth (BLUMENBERG 2010). An opposition ensued between scientific argumentation – direct, logical and rational – and metaphor, which by contrast has ambiguous, intuitive, automatic, and oblivious features. This entails consequences, for instance, when observing the underlying cognitive processes of argumentation, where a tendency to ignore metaphors and emotions was highlighted leading to what has been dubbed a "cognitive prejudice" actually present even in the embodied cognition framework (ERVAS et al 2015).

An old champion of this kind of reasoning can be found for instance in Hobbes:

A man that seeks precise truth, had need to remember what every name he uses stands for; and to place it accordingly; or else he will find himself entangled in words, as a bird in limetwigs; the more he struggles, the more belimed (HOBBS 1651, 1, Ch 4: 28).

As anyone would acknowledge, Hobbes, in describing precise truth and clear meanings, is using both a metaphor (*entangled in words*) and a simile (*as a bird in limetwigs*). Hobbes' quotation highlights a typical feature in the debate about metaphor in scientific language: science tends to deny the use of metaphor, even when it is expressly making use of it. This process contributes to the generation of the ubiquity vs. invisibility of metaphors in science, spelled at length elsewhere and that will be briefly synthesized (FREZZA, GAGLIASSO 2016).

In old and current biology, medicine, ecology, genetics and neurosciences, for instance, there is a continuous production, spreading and establishment of metaphors. Metaphors are legitimate research tools for heuristics and cognition (such as in the classic metaphors of mind-computer, black-box, genetic-code, network, noise, mirror-neurons, epigenetic landscape), and they are the ancient roots of theoretical terms (individual, cell, genome, environment) (GAGLIASSO 2008) and of

influential theories (ecology, artificial intelligence, epigenetics). Metaphors in life sciences are everywhere, thus one would acknowledge their *ubiquity*, yet when scientists and the general public consider traditional notions such as organism, environment, cell or heredity, the origin of their metaphorical meaning often gets lost. This leads to the *invisibility* of most ordinary scientific metaphors – as also happens in general language use in the common process of the crystallization of metaphors (BLACK 1993).

Anyhow, not all metaphors become scientific terms. Therefore, there should be more, still unidentified, mechanisms at play in scientific argumentation that are bound to specific contexts of creation, use and consideration of metaphors.

2. Inclination vs. resistance to metaphor in science

The paradox of ubiquity/invisibility of metaphors in science can be paralleled to the inclination/resistance to metaphor. Without aiming to offer an exhaustive overview, I will consider four examples displaying four main arguments towards scientific metaphor: (1) a nominalist view of scientific language, (2) a pragmatic argument, (3) a heuristic argument and (4) a creative view of scientific language.

The first example comes from *Nature's Books and Arts blogs*, where a blog dubbed *The Last Word on Nothing* is running a sporadic series on the issue of scientific metaphors. Finkbeiner, the science writer, discusses supernovas' colour degeneracy with an American astrophysicist. They engage in a debate about the metaphoric vs. conceptual use of *degeneracy*, which leads to a tipping-point: «Words just mean what they mean» because they «don't keep the meaning of their origins» (FINKBEINER 2011). Finkbeiner argues that, with regard to «electron degeneracy» and «degenerate matter», anyhow «degenerating means falling away from your nature, from the higher, truer, nobler kind that you are and to which you belong» (*Ivi*). The astrophysicist instead «had no truck with such romantic linguistics», and explains his nominalist view of scientific language by the following example: (1) «Once a word is defined in math or physics “*it just means that*”», and he quoted Lewis Carroll: «“When I use a word”, Humpty Dumpty said in rather a scornful tone, “it means just what I choose it to mean – neither more nor less”. Maybe a little of a word's original flavor leaks through, he added, but “words don't keep the meaning of their origins”» (*Ivi*).

Let's dub the astrophysicist's a purely nominalist view of scientific language: in science, words have monosemous meanings and don't keep their original meaning. Finkbeiner disagrees with the scientist and concludes that «I swore to God that no one, scientist or not, can use the word 'degenerate' entirely separate from its original meaning. The uses of words are not separate from their origins» (*Ivi*).

The second example comes from another astrophysicist, who conversely does support the use of metaphor in science (SCHARF 2013). Even though he acknowledges that there are some issues at stake in the use of metaphor, for instance that they «can sometimes backfire, confusing more than elucidating, and even swaying scientific thought in unwanted ways», the astrophysicist then displays his pragmatic view on scientific metaphor by the following example: (2) «The simple truth is that scientists themselves constantly make use of analogies, metaphorical devices, and similes. Sometimes it's the only way to build an intuition for a problem, by relating it to something else» (*Ivi*).

This example exhibits a pragmatic attitude: scientists simply make use of metaphor in research, for bad or for good. Now, moving from the negative towards a more positive account of metaphor in science one finds an article entitled *Metaphor and message* by Kiser, from *Nature's Books and Arts blogs* that epitomizes the heuristic value of scientific metaphor with the following example:

(3) The known is a springboard to the unknown. This is how we learn. We need the familiar – and sometimes, if it serves, even the anthropomorphic – to begin to comprehend our wild cosmos. [...] Through metaphor we ally ourselves to the Universe, docking in with a linguistic click (KISER 2015).

This example highlights the most accepted view of scientific metaphor: metaphors transfer (in Greek *metà-pherein*; see BLACK 1954; BLUMENBERG 2010), therefore they are a way of creating bridges between notions or fields of study that are not connected yet. This approach epitomizes scientific openness and heuristics: the capability of transferring insights from an already known domain towards the unknown (e.g. HESSE 1966).

Quoting the words of the historian of genetics Nathaniel Comfort, Kiser emphasizes this heuristic view of the use of metaphor in science by endowing it with a more creative view of scientific language by means of imagery, along with the following example: (4) «What's needed is fresh, accurate imagery, nippy enough to keep up with the evolving science» (KISER 2015).

This last example shows the creative *good side* of metaphor in science by stressing its salient pragmatic features: its grip and utility in scientific argumentation. Moreover, by means of this example, we can underline yet again the traditional opposition between the alleged closeness of science as a language and the openness of science as research.

Let's briefly recall the examples mentioned above. The first (1) is the nominalist view of scientific language supported by the astrophysicist talking about the supernova degeneracy, and expressed by Humpty Dumpty's words: «When I use a word it means just what I choose it to mean». The second (2) is the pragmatic argument by which «scientists themselves constantly make use of analogies, metaphorical devices, and similes. Sometimes it's the only way to build an intuition for a problem, by relating it to something else». The third (3) is the heuristic argument in the use of metaphor by which «the known is a springboard to the unknown. This is how we learn. We need the familiar to begin to comprehend our wild cosmos». The fourth (4) is a creative view of scientific language, which emphasizes its imagery features: «What's needed is fresh, accurate imagery, nippy enough to keep up with the evolving science».

The four examples as a whole display a range of attitudes towards scientific metaphor from denial (1) to pragmatism (2) to appreciation (3 & 4), and from resistance to inclination. Three main elements can be highlighted. First: all the speakers in the circumstances described by the examples, as well as Hobbes in the above quote, found metaphors when looking for the right words. Second: moving from example (1) (denoting resistance to metaphor) to example (4) (emphasizing the creative power conveyed by metaphors), the situation is turned upside down: instead of becoming «entangled in words as a bird in limetwigs» as stressed by Hobbes, scientific language needs to look for imagery terms as much creative as possible to keep up with the creativity of science. Third: speakers' argumentations above

highlight that, although people pragmatically make use of metaphors, they at the same time are convinced that there aren't *only* "good metaphors".

The main issue emerging from the analysis of the examples is that notwithstanding the differences between all the arguments proposed (nominalist, pragmatic, heuristic and creative), in the end there is only one scenario: the speakers are caught in a dual attitude showing a resistance/inclination for metaphor. At the same time, speakers do not seem to have the capability to establish a valid criterion for distinguishing a good or a bad metaphor that is of great help when theorizing and communicating science (FREZZA, LONGO 2010). Moreover, often scientists and general people when using/hearing a metaphor might be unaware of their motivations for resisting or appraising it.

As showed by Matisse's quote in the opening of this section: even looking is a creative process, which requires an effort. Becoming aware of the use of scientific metaphor yet requires an effort: coming out from the paradox of ubiquity/invisibility and inclination/resistance to metaphor in science.

In this way, traditional issues such as the role of metaphor in heuristics as well as the entanglement between the power of metaphor and its risk in communication may be better explained especially if considered in the light of the deliberate use of metaphor as discussed in Deliberate Metaphor Theory (DMT) (STEEN 2013). Not far from a more inclusive approach between rational and unconscious cognition in psychology, or slow and fast thinking (KANHEMAN 2011; GIGERENZER 2007), DMT discusses how, in contrast with the idea of a fallacious, automatic and ambiguous use of metaphors in discourse and argumentation, intentional (but not necessarily conscious) constraints are at play too. In other words, we can and do use some metaphors deliberately, although we are not always "conscious" of them (STEEN 2015). A paradox between the use of deliberate vs. non deliberate metaphor ensued: not all metaphors are comprehended by what is traditionally considered the usual mechanism, that is online cross-domain mapping, but only deliberate metaphors (STEEN 2008). This implies broadening the study of metaphor and considering the use of metaphors, also scientific metaphors, from this inclusive and multilevel standpoint, as deliberate, intentional, and as possible routes to conceptual abstraction (JAMROZIK *et al.* 2016; FREZZA, GAGLIASSO 2016). The rationale underlying DMT is that when people become aware of their use of metaphors they could also develop a more critical thinking and more critically assess their behaviour.

3. Social bond and the power of metaphoric argumentation

A threefold dimension of the use of metaphor in science can now be proposed and paralleled to the three paradoxical attitudes towards metaphor shown in the previous sections: (I) epistemological, showing metaphor's paradox of ubiquity/invisibility, (II) cognitive, expressing inclination/resistance to metaphor, and (III) linguistic, observing the deliberate/non-deliberate character of metaphor. Considering these three dimensions, novel mechanisms can be outlined that are at play in the background of the argumentation strategy in science communication.

First of all, two principal contexts of speech should be identified: I) science (expert-to-expert communication); II) science communication (expert-to-general public communication). Whilst science is a non-ordinary speech context, when moving towards science communication the language becomes increasingly entangled with ordinary speech. Ordinary speech is the ground zero of the analysis, devoid of the contextual constraints of expert-to-expert scientific communication, which runs at a

higher level. At this stage we may expect the most natural conditions, mechanisms, and behaviours to be expressed through the use of metaphoric argumentation. Metaphor has been thoroughly studied from rhetoric, linguistics and cognitive perspectives (e.g. LAKOFF, JOHNSON 1980; GIBBS 2008) as well as in ordinary language. In this respect, Nerlich's and Clarke's pragmatics of polysemy (2001) offers an analysis of dual readings in metaphor and discourse.

The authors explain the basic social pragmatic effect of polysemous speech as the fact that we have evolved a linguistic capacity to move from precise and monosemous to vague and polysemous acts of speech depending on the situation and the discourse style. Metaphor is an integral part of the pragmatic effects of polysemy. Polysemous and metaphoric expressions are ways of keeping language alive, invigorating ordinary language use by means of an active process between speakers and hearers which collaborate in a «shared meaning making and remaking» (NERLICH, CLARKE 2001: 9). Often shared meaning-making is literally a joint action between hearer and speaker who agree on the word's meaning; otherwise one of the discussants proposes his/her private meaning and waits for the other's consideration and approval in a dialogical exchange. In science communication this process is yet particularly emphasized because many issues impinge on the shared meaning-making and on the speaker's/hearer's approval, such as cultural backgrounds, asymmetries of information and different framing narratives as discussed in the Introduction. For instance, looking back at the examples we can point out some major differences. In example (4), the Nature's Books & Arts Editor, Kiser quotes the historian of genetics Comfort, who openly speaks about the creative power of metaphor as fresh and nippy (KISER 2015) language apt to communicate a science that is evolving. By contrast, in the first example (1) the agreement between a scientist and a science writer on the meaning-making about "degeneracy" metaphorical vs. literal interpretation could not be found.

However, in contrast with the assumption that the goal of communication is reducing multiple meanings, Nerlich and Clarke claim that our linguistic pragmatic competence is essential for the construction of shared meanings, which endow us not only with linguistic but also with «social bonding» (NERLICH, CLARKE 2001: 10). This idea is consistent also in the field of scientific communication. Yet in the scientific context this social disposition should be distinguished and contextualised by means of the two abovementioned different contexts: scientific communication and thus "scientific bonding", i.e. social rules shared by the scientific community and science communication and thus "scientific-social bonding", i.e. a more general level including general public and media.

The second element of Nerlich's & Clarke's analysis evaluates the cost/benefits of the pragmatic effects of communication by means of Rachel Giora's theory of graded salience (GIORA 1997). Giora describes two parallel mechanisms for processing language: the first (bottom up), stimulus driven and bound to linguistic stimuli, the second (top down) predictive and integrative and dedicated to both linguistic and extra-linguistic stimuli (GIORA 2008). The bottom up mechanism is informed by salient interpretation (characterized by conventionality, frequency, and familiarity), and salient interpretation has unconditional priority (ease of processing) over less salient interpretation. However both processing run parallel: saliency is the basic, pursued route in initial conditions (automatic), the other route is useful especially for disambiguation, reactivation of meaning or in interpreting further expression in a chain of sentences (resulting in global coherence). Therefore, in such case, lexical access, context and saliency are at interplay.

Nerlich & Clarke interpret these findings in the light of the pragmatic feature of polysemy, which keeps open in the hearer's mind multifold meanings of polysemous words and metaphors. Indeed, there is a specific cost in terms of elapsing time, which however has a benefit value socially speaking: the creation of intimacy and social bond between speakers and hearers. Going back to example (3) that emphasizes the heuristic value of scientific metaphor, the social bonding of metaphor is clear-cut (namely marked by the use of the verb "to ally"): metaphor has an intrinsic learning value as «through metaphor we ally ourselves to the Universe docking in with a linguistic click» (KISER 2015).

Moreover, the pragmatics of polysemy is akin to the idea that interest drives communication: one prefers communication that is interesting (from Leech's *Interest principle*, 1983). And among interesting characteristics there are "unpredictability" and "news value", which, provoking and engaging us, will force us to think on-line. This principle is fundamental in science communication, where difficult and abstract concepts are communicated to, and should be understood by, general public. Gaining people's interest and attention will contribute to their active role in thinking, enhancing their understanding of the concept. We may recall example (4) underlining the need of a «fresh and accurate imagery» but «nippy enough» in order to keep up with the continuous evolution of science.

Nerlich & Clarke conclude their analysis with the insightful idea that in many cases «language is used to top up the context, not the other way round» (NERLICH CLARKE, 2001: 18), because eventually in many circumstances the context does not block unintended meanings.

Elaborating this idea in the field of scientific metaphor would require a thorough and dedicated analysis; here I shall confine myself to the following issue. All characteristics – social bonding, salient traits and the interest principle – are consistent, insightful and useful criteria also when evaluating the functioning of metaphorical speech in science, as highlighted in the analysis of the four above examples. By contrast, Nerlich's & Clarke's conclusion about the predominance of language over context cannot be considered as a valid criterion in the evaluation of metaphor use in scientific argumentation. Determined linguistic competences and rules bound to the special context of "scientific bonding" are both intertwined and challenged in the more extended context of the "social-scientific bonding" of science communication. Here language and context necessarily interact and are not running parallel.

Nerlich's & Clarke's insightful proposal, therefore, when embedded in the field of scientific argumentation entails an adjustment concerning at least two specific traits. Firstly, one should distinguish the two different kinds of bonding, "scientific bonding" and "scientific-social", both with specific procedures, languages and constraints. Secondly, the use of metaphor in scientific argumentation discussed in the examples reveals an underlying tension: *inclination* for metaphor (positive attitude) and *resistance* to metaphor (negative attitude). So far, I have dealt with a linguistic perspective, now I'd like to examine the reasons of this ambivalence from a philosophical standpoint.

The American philosopher Stanley Cavell (1994) proposed that metaphor is endowed with an inherent ambiguity because it exhibits the dual relationship that, as a matter of fact, we have with our language: an appraising side (*positive*) and a devaluing side (*negative*) (FRISARI 2010). In the appraising behaviour we tend to exalt through metaphor some features of the world that we want to emphasize. Think about example (3), where the creative view of scientific language is exalted by recurring to

metaphors that allow us to «ally ourselves to the Universe». Conversely, when turning to metaphors in the devaluing behaviour we tend to resize the very reality and the weight of our statements about it. Example (1) precisely emphasized this opposition discussing the metaphorical meaning of “degeneracy” in the quarrel between the science writer sustaining that «degenerating means falling away from your nature, from the higher, truer, nobler kind that you are and to which you belong» (FINKBEINER 2011) and the astrophysicist who «had no truck with such romantic linguistics» (Ivi).

According to Cavell, in these opposed moves a *natural* tendency of human language is revealed: the *unnatural* spillage from its own constraints, due to the human inherent tendency to scepticism. Cavell in this way emphasizes a perpetual instability between a claim to certainty and the disclaiming of certainty. The use of metaphor exemplary shows the dual mechanism expressed in our ordinary language which, being constitutive of our social given form of life *à la* Wittgenstein, is also our genuine way of relating with the others and experiencing the world, by presenting and representing ourselves as speakers and hearers.

Cavell’s explanation of the natural paradox between a claim to certainty and the disclaiming of certainty intrinsic to our language can shed light on the “natural” paradoxical resistance/inclination for metaphor in scientific argumentation. From Descartes and Kant to Popper, scientific method is a human rational solution to human natural scepticism. The sceptical move intrinsic in metaphorical argumentation, as described through Cavell’s analysis, as a matter of fact poses more than an issue to scientific argumentation as discussed at length elsewhere (FREZZA, GAGLIASSO 2016).

4. Conclusion

Three highlighted paradoxical attitudes towards metaphor correspond to a threefold dimension of the use of metaphor in science: epistemological, showing metaphor’s paradox of ubiquity/invisibility, cognitive, expressing inclination/resistance to metaphor, and linguistic, observing the deliberate/non-deliberate character of metaphor. Accordingly, in the light of Cavell’s proposal, this ambivalence can be enlightened by the intrinsic natural scepticism embedded in our cognitive-linguistic performance. Human intrinsic scepticism, exemplary displayed in the analysis of metaphor, sheds light on the natural ambivalence and on the paradox of the use of scientific metaphor discussed in previous Sections.

In this light, we can look back at Clark’s & Nerlich’s idea of social bonding at play in our language production that is akin also to Cavell’s proposal of “projective communication” as a solution to the sceptical underpinning of our relation with reality expressed exemplary by metaphor.

Cavell’s description of language as natural relational behaviour adds a fundamental, evolutionary trait to social bonding: in the shared meaning-making and remaking, our language does not recursively develop all possible linguistic paths (as would be possible for artificial intelligence), but only those that are public and shared, and that naturally evolve across times like other natural processes, i.e. biological canalization (DEACON 1997). This implies that no matter if we are inclined or resisting metaphor, eventually language and context would evolutionary sort out the solution shared within the social environment.

As a conclusion, this would de facto confirm the position sustained in example (2), supporting the pragmatic view of metaphor: sometimes it’s the only way to build an

intuition for a problem, by relating it to something else. However, talking about scientific metaphor, it should be recognised that the scientific bonding is twofold (within scientific community and with general people), bound to specific criteria, language, and context, and entails risks and responsibilities; something that should be acknowledged by those that make use of metaphor for communicating science.

By appraising this multifold perspective, the study of metaphor in science communication would result three times useful (epistemological, social & ethical viewpoint). From an epistemological standpoint, because usual disciplinary borders are melting away and metaphors in their heuristic value may let us “ally to the Universe” and “docking in with a linguistic click”, as in example (3). From a social viewpoint, because our globalized world and research require to deal with a renovating hybrid language, result of a melting pot of different cultures and scientific communities all over the world. Metaphors, thus, proliferate as bridges in projecting and translating the meaning of our words and of the different worlds inherent to them (DÍAZ-VERA 2015), providing new imaginary that, as in example (4), keep up with science openness and creativity. Here, the idea of metaphor as social bonding that allows dialogical shared meaning-making comes back on stage. From an ethical perspective, the great advances of research and technology, as well as their application in our daily life involve assuming responsibility in words and in practice, both by scientists, legislators, opinion leaders, CEOs and general people (JASANOFF *et al.* 2015). And metaphors in science communication are a champion for observing the dialectic between risk and responsibility.

In science communication the sceptical nature of our relation with reality intertwines with uncertainty and asymmetry of conditions (such as major conflict of interests). In spite of collapsing in the sceptical attitude described by Cavell, we might take on risk, and responsibility, for our actions and words. Science is increasingly challenged by a need to deal both with a highly specialist and popular language. As argued by example (2) metaphors represent a pragmatic shortcut for communicating in a non-specialized language and in multifarious contexts from disciplinary specialization to public communication.

In this regard, I wish to remark that a metaphor is not “just a shortcut”: it conveys a representation of the world that is more open than “Just the word”, as in the Humpty-Dumpty’s example (1). Metaphor is also powerful, unstable and paradoxical, and potentially with more impact than “Just the word”. The appraising side of metaphor, indeed, reinforces the image of reality we wish to present to the world, in a parallelism with the role played by emotions (ERVAS *et al.* 2015): either we are honest and aware of the specific meaning, inner meanings, and hidden ideologies conveyed by the metaphor, or our use of metaphor would not be frank. No matter if we are inclined or resisting to metaphor in science, as the speakers in the four examples, anyhow metaphoric communication in science should be intended as the social basis allowing to commit to our words and world rather than promoting hype attitudes in communication. Honest or dishonest, a scientist should be in the condition of making a disclosure of her/his use of metaphor, going explicit and explaining exactly the terms and the specific circumstances for which and in which she/he is using it. Responsible attitudes begin by raising awareness, and the use of deliberate metaphor in science might be a turning point of this new phase. As Black remarked in his foundational article *Metaphor* in 1954: No doubt metaphors are dangerous – and perhaps especially so in philosophy. But a prohibition against their use would be a willful and harmful restriction upon our powers of inquiry (BLACK 1954: 294).

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Metaphors for patient education. A pragmatic-argumentative approach applying to the case of diabetes care

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Abstract The purpose of this article is to investigate metaphors as argumentative devices in the context of communication in chronic care and, more specifically, in diabetes care. While scholars have compellingly insisted on the strong cognitive power of metaphors in communication and education (BLACK 1962, BURGERS, KONIJN and STEEN 2016, GIORA 2003, HESSE 1963, LOW 2008, ORTONY 1975, STEEN 2008, 2011), these insights have barely received attention in the field of health communication (CASARETT *et al.* 2010, DEMJEN, SEMINO & KOLLER 2016; DEMMEN *et al.* 2015, NAIK *et al.* 2011). This article introduces the main theoretical and practical problems with respect to the relationship between metaphors and argumentation, in both fields of health communication and philosophy of language. We will adopt a pragmatic-argumentative model of verbal communication with the final aim to propose a theoretical framework useful to evaluate metaphors in clinical contexts. The theoretical step discussed in this article constitutes the preliminary phase of a larger research program – *Metaphors for diabetes* – devoted to test the educational aptness of diabetes metaphors, in order to propose them as evidence-based instruments to health providers for patient education.

Keywords: metaphor, argumentation, patient education, diabetes, perspective change

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0. Introduction

The thesis that metaphors might have a relevant educational role has a robust tradition. Within the contemporary debate, for example, Ortony (1975) stresses this idea by arguing that metaphors are teaching devices. As many other scholars, Ortony points out that the educational utility of a metaphor depends on its strong proximity with our perceptual and emotional experiences; this embodied and embedded closeness of metaphors to the human experience makes it possible for unknown or not-well known concepts (communicated through metaphors) to become more imaginable, comprehensible and so more learnable. Aristotle (1966) had already recognized such a pedagogic function: due to their ability to put things in front of the eyes, metaphors give the opportunity to see and to grasp new relations and, as a consequence, they make knowledge acquisition possible and pleasant (for a comment to Aristotle's view of metaphor see e.g., LEVIN 1982). It is no coincidence that

metaphors intended as teaching devices are particularly used in the case of scientific divulgation and comprehension of abstract concepts (e.g., BLACK 1962, HESSE 1963, LAKOFF & JOHNSON 1980). Notwithstanding this recognized idea, there is still lack of a solid framework to understand metaphors as educational instruments; this goal would require a solid understanding – from a philosophical, linguistic and cognitive point of view – of the features that affect metaphor's quality or aptness.

From a theoretical point of view, the possibility to offer instruments to improve understanding depends on the possibility to distinguish between metaphors that are more or less apt to their educational function. The notion of aptness is used in a technical sense here; as specified by Giora: «Apt metaphors are those rated high in 'goodness', that is in getting across the figurative meaning» (GIORA 2003: 118). Although there are controversial positions on the notion of aptness and on its prior relevance with respect to other notions (e.g., salience, processing complexity), it is a well-recognized idea that aptness is one of the most important factors for metaphor understanding (CHIAPPE, KENNEDY & CHIAPPE 2003, DAMERALL & KELLOG 2016, KATS 1989, GIBBS 2008, GIORA 2003, TOURANGEAU & RIPS 1991).

While bearing in mind this debate, in this article we will propose a notion of *argumentative aptness* as a pertinent notion to qualify and classify metaphors from an argumentative point of view and within a particular dialogical context (§ 2). With respect to the educational effect of a metaphor, our assumption is that an argumentatively apt metaphor should involve a balance between (1) the complexity of the reasoning processes involved in the reconstruction of its meanings and (2) its informativeness: in an educational context, apt metaphors are metaphors sufficiently easy to be processed and understood (for a similar position see GREGORY & MERGLER 1990; PEXMAN, FERRETTI & KATZ 2000, these scholars distinguish between inferential processes and processing strategies in conventional and novel metaphors). Using an argumentative framework (WALTON, REED & MACAGNO 2008, MACAGNO & ZAVATTA 2014), we will analyze the well-known connection between metaphor, science and education to aim at explaining why patient education might be effectively grounded on the use of metaphors. More specifically, by using medical concepts as examples of abstract and very complicated concepts, we will point at the role of metaphors as instruments for comprehension and self-management within chronic care area.

1. An overview of metaphor framing as a reasoning device

With the book *Metaphors We Live By*, Lakoff and Johnson (1980) introduce perhaps the most influent contemporary conception of metaphor. By contrasting the traditional view of metaphor, according to which metaphor is primarily a phenomenon related to the realm of poetic or figurative language, the main idea proposed by Lakoff and Johnson was that metaphor is a question not just of novel poetic expressions, but mostly of ordinary everyday language. Within this perspective, metaphor is a central phenomenon also for the ordinary natural language semantics. By describing this revolution in understanding the nature of metaphor, Lakoff stated:

The word metaphor has come to mean a cross-domain mapping in the conceptual system. The term metaphorical expression refers to a linguistic expression (a word, phrase, or sentence) that is the surface realization of such a

cross-domain mapping (this is what the word metaphor referred to in the old theory) (LAKOFF 1992: 203).

This idea of metaphor as mental mapping, that is the idea of systematic correspondences from one conceptual domain to another, is useful to illustrate why it is possible to recognize an epistemic (and educative) function to metaphors. It is often said that, by using a metaphor we can explore, explain and understand something that we don't know yet in terms of what we know already. By structuring the less familiar concept in terms of the more familiar one (or by structuring the more abstract concept in terms of the more concrete one), metaphor can facilitate the processes of knowing and understanding. Let us think about the following metaphors: *God is light*; *Love is a journey*; *A Nation is a body*; or within the scientific domain, *The mind is a computer program*, *An atom is a solar system*, and *Light is a wave*. All these powerful metaphors intuitively explain why it is possible to say that metaphors may have a conceptual but also heuristic, epistemic and educative function. However, this is only half the story.

To familiarize with the other piece of the story, let us consider the very popular metaphorical titles of Richard Dawkins's books, *The selfish gene*, *The blind watchmaker*, *Climbing mount improbable*: all of them are metaphors to explain – or should we say popularize? – different aspects of the Darwinian theory of evolution by natural selection (DARWIN 1859). Clearly these metaphors are used to better explain some aspects of the Darwinian theory, but also to disseminate the Darwinian theory from a particular (and controversial) evolutionary perspective. In this context, the use of metaphors seems profitable because of their higher value and communicative effectiveness; namely, due to metaphors' persuasive power.

In more recent works, Lakoff himself points out this topic, by expressing the idea that the use of metaphors is not just a question of linguistic manipulation, but also a question of conceptual manipulation (LAKOFF 2008, 2014). The relevant focus here is the notion of manipulation: when we consider metaphors with respect to everyday reasoning, due to the conceptual manipulation of metaphors, their strong persuasive effect cannot be interpreted as rational (for a discussion see ERVAS, GOLA & ROSSI 2016a); for a review on the metaphorical persuasive effect see Sopory & Dillard (2002) and see Cuccio (2016) for an overview on persuasion and communicative power of metaphors).

Also the Stanford psychologists Paul Thibodeau and Lera Boroditsky (2011, 2013) insist on this connection between metaphors, manipulation and persuasion, and investigate the role of metaphors in the way people conceptualize and reason about complex policy issues like crime, framed by the use of different metaphors. By offering their subjects two different metaphors of crime (the virus metaphor and the beast metaphor), the authors observe that metaphors influence the way subjects reason about complex issues. An experimental framework similar to that of Thibodeau and Boroditsky has been used to investigate the influences of metaphorical framing in the field of healthcare. David J. Hauser and Norbert Schwarz (2015) consider the enemy and war metaphors so widespread for cancer health information with a view to studying their influence on people's reasoning. In more detail, the authors examine the way in which enemy metaphors influence people's intentions to engage different preventive behaviors. By distinguishing between self-limiting behaviors (e.g., avoid sugary drinks; limit consumption of red meats) and self-bolstering prevention behavior (e.g., eat more of a variety of

vegetables; be physically active for at least 30 min every day), Hauser and Schwarz summarize their findings as follows:

Our findings suggest that framing cancer as a feared enemy metaphor has unintended side-effects that may impair efficient prevention strategies. Main behaviors that reduce the risk of cancer require one to limit enjoyable activities, from sunbathing to drinking alcohol and eating red meats. Yet, limiting a constraining oneself is not a concept closely associated with fighting enemies. Hence, a bellicose message frame that emphasizes fighting an enemy may render these protective behaviors less compelling than they might otherwise be (HAUSER and SCHWARZ 2015: 74).

From these experimental studies emerge the idea that the persuasive effect of a metaphor derives from the way in which such metaphor frames the considered issue. But since metaphorical frames very often influence people in an unconscious manner, the persuasive function is usually associated to a negative view of metaphors in everyday reasoning. Questioning this negative conclusion, Ervas, Gola and Rossi (2014, 2015, 2016a, 2016b) have sketched a framework within which metaphor is understood as a positive instrument of reasoning. This proposal is founded on two assumptions: (1) the adoption of the argumentative theory of reasoning (SPERBER & MERCIER 2011), based on the idea that reasoning is for arguing in communicative social contexts; (2) the interpretation of metaphors as framing and reframing strategies playing a constructive role in argumentation and – building on the first assumption – reasoning. In this article, we aim at continuing the specification of this theoretical framework in order to show that metaphors can be used as educational instruments within the context of chronic care. Whereas the purpose of the current paragraph is to look at the contemporary debate on metaphors' theory to better clarify why metaphors function for reasoning as framing strategies or framing instruments, the next paragraph will be aimed at carefully laying out our argumentative explanation of metaphors.

1.1. Figurative framing and metaphors

In this paragraph, we will look at the contemporary debate with a view to consider some of those models that may be helpful in understanding the educational role of metaphors within the institutional context of patient-provider interactions in diabetes care.

As briefly touched upon in the previous section, after the cognitive turn, it also became clear that metaphors are both linguistic and conceptual devices (for a discussion of the cognitive turn, see STEEN 2011). Within this framework, many scholars have experimentally manipulated metaphorical frames to stress the importance of metaphors as a way to (1) understand things by adopting a certain (and often new) perspective and, consequently, (2) change others' behavioral choices (KEEFER *et al.* 2014, HAUSER & SCHWARZ 2015, SCHERER, SCHERER & FAGERLIN 2015). On a more theoretical level, a recent paper authored by Burgers, Konijn and Steen (2016) discusses important aspects of the framing theory in detail, interpreting figurative language as a framing type, i.e. the figurative framing. In particular, authors clarify the notion of frame expanding the traditional framing theory (e.g., ENTMAN 1993; SCHEUFELE 1999) and emphasizing two distinct elements of a frame: framing device, the linguistic packaging of a frame traditionally

acknowledged – how something is said; reasoning device, the new feature of their proposal, namely the conceptual content of a frame – what is said. Based on this distinction, Burgers, Konijn and Steen (2016: 13) propose a research agenda for figurative framing. More specifically, the authors establish a taxonomy of types of figurative frames and show the importance of the four key processes identified within framing research: frame building, frame setting, individual-level of frames and the feedback loop from audience to journalists (SCHEUFELE 1999). The first process – frame building – is crucial for our purposes. In this regard, Burgers, Konijn and Steen (2016: 13) apply the process of frame building to the case of figurative framing and then underline:

With respect to the topic, figurative frames containing metaphor and/or hyperbole can present their readers with a particular problem description and evaluation. This suggests that such figurative frames would be used relatively more often if knowledge about the problem is lacking in the audience. That is, we propose that *figurative frames containing metaphor and/or hyperbole are used more often when talking about new topics (e.g., new technological or policy developments such as net neutrality) compared to established topics. Furthermore, abstract and complex topics (e.g., advanced scientific or economic concepts) invite more metaphoric frames than straightforward topics* (BURGERS, KONIJN and STEEN 2016: 13, authors' original emphasis).

The case of the institutional context of patient-provider interactions precisely suits this description. Certainly, it is a communicative context marked by an asymmetrical distribution of knowledge and procedures, both for health providers and patients. Health providers have an advantage with information about procedures, therapeutic regimen and clinical understanding. But on the other hand, patients have an advantage with information about their subjective experience with illness – that can be particularly helpful in establishing diagnosis and plays a major role in disease monitoring; patients also have an advantage when they are called upon to express their preferences and values on treatment options. It follows from the above that frame building and metaphors might be especially useful in this context.

However, it is still not clear what exactly a reasoning device is: what is ambiguous, or at least not yet determined, is the framework within which the nature of reasoning is to be understood (ROSSI 2014). Ervas, Gola & Rossi (2014, 2015, 2016a, 2016b) have already adopted an argumentative perspective to understand the nature of the reasoning process, stressing the evolutionary and cognitive advantages derived from an argumentative theory of reasoning and communication (SPERBER & MERCIER 2011). This article is an attempt to take a further step in this direction by detailing the commitment with an argumentative perspective, further specified at the pragmatic and normative level (§ 2).

1.2. Deliberate metaphors and perspective changes

The current emphasis on figurative framing is a possible effect of adopting a conception of metaphor as mental-mapping. However, Steen (2008) noticed that framing is just one of the forms of perspectivization, and it relates mainly to the way in which metaphor is understood at the conceptual level of analysis. As set out in that article, it is only since we adopt a “Three-Dimensional Model of Metaphor” that it becomes possible to recognize three distinct functions of metaphors: naming, the

function related to the linguistic level of analysis; framing, the function related to the conceptual level of analysis; and perspective changing, the function related to the communication level of analysis (STEEN 2008: 231).

In our opinion, this shift of the focus on the communication function of metaphors has significant theoretical implications, crucial also for our analysis. It is not just that the educational function – which is the subject of this article – needs to be evaluated at both the conceptual and communicative levels of analysis. What is at stake here is a deeper understanding of human communicative interactions. Steen himself (2011) stressed the relevance of a multi-level approach to the psychology of discourse processing in order to have a more comprehensive model of language (and metaphor). Consistently with the increasingly widespread adoption of pragmatic language models (e.g., SPERBER & WILSON 1986, 2008), the identification of the discourse level as the appropriate one leads to constrain any metaphor processing model to a plausible discourse processing model. As we are going to see below (§ 2), the central importance of the discourse level and of the resulting conversational-dialogical dimension of human interactions is a requirement also for a pragmatic-argumentative approach to metaphor and language.

For the purpose of this paragraph, we want to underline that the relevance of the communicative function of metaphor is clearly recognized within this theoretical framework, and it is properly expressed by means of the deliberate use of a metaphor. Steen offers the following definition:

I propose that a metaphor is used deliberately when it is expressly meant to change the addressee's perspective on the referent or topic that is the target of the metaphor, by making the addressee look at it from a different conceptual domain or space, which functions as a conceptual source (STEEN 2008: 222; see also 2010, 2011).

Steen's analysis of deliberate metaphors as a powerful change in thinking within communication interactions is highly important for our aim of education in chronic care by means of metaphors. In this context, the use of deliberate metaphors might be helpful to reorganize, for example, incorrect knowledge and erroneous symptom interpretations (ERVAS *et al.* in press). For patients with diabetes, both examples might have an indirect impact – but a very important one – on self-management, and therefore on clinical outcomes (STREET 2009).

While it is well recognized that argumentation and reasoning might play an important educational role by just enabling perspective change (see e.g., SCHWARZ & ASTERHAN 2010), the relationship between metaphor, argumentation and perspective change has not been given sufficient attention. The next section will be devoted to analyze this relationship.

2. Metaphors as argumentative devices

What we can conclude from the previous discussion is that framing and perspective change are two relevant forms of perspectivization exploited by metaphors. With respect to the notion of reasoning device as the conceptual content of a frame (§ 1.1), in this paragraph we will adopt an argumentative perspective on reasoning and interpret more properly the notion of reasoning device as argumentative device. With respect to the relationship between metaphor and perspective changing (§ 1.2), we

will advocate an interpretation of argumentation as a communicative instrument to actualize the metaphorical perspective changing.

On the one hand, scholars have already noted that metaphors are useful to structure and organize the arguments of a message (GENTER 1982, 1989); on the other hand, other scholars have seriously begun to emphasise the role of argumentation in patient-provider interaction (BIGI 2014a; PILGRAM 2015). However, literature exploring the argumentative properties of metaphors is lacking (but see e.g., ERVAS *et al.* 2015, MACAGNO & ZAVATTA 2014, OSWALD & RIHS 2014). With respect to this topic, our hypothesis is that since metaphors are argumentative devices they have a role in educational contexts.

We have already noted that the opportunity to use metaphors as educational instruments relies upon the possibility to assess metaphors and distinguish them on the ground of their (argumentative) aptness. Ortony explicitly makes a similar connection between the educational function of metaphors and their quality; and then he associates the measure of the quality of a metaphor with the notion of presupposition:

The educational power of metaphor is thus twofold. The vivid imagery arising from metaphorical comprehension encourages memorability and generates of necessity a better, more insightful, personal understanding. But also, it is a very effective device for moving from the well-known to the less well-known, from vehicle to topic. As we shall see, there are potential dangers inherent in the use of metaphor in this respect, dangers associated with the presuppositions underlying the use of any particular metaphor (ORTONY 1975: 51).

There is a sort of paradox in this passage: on the one hand, Ortony (*Ivi*: 45) appreciates the «great educational value» of metaphors; on the other hand, he recognizes a danger in terms of what a metaphor presupposes and implies. This clarification should not be considered just as a theoretical detail: by expecting to be able to point at metaphors as instruments for patient education, our research investigation makes a stronger commitment with this theoretical point. To know with enough precision which constraints make a metaphor an effective educational device is a way to safeguard the quality of instruments of care from a communicative point of view. To this purpose, to explain the dialogic nature of presuppositions (see also e.g., KECKES & ZHANG 2009, MACAGNO 2016a), we advance a pragmatic-argumentative approach.

With the aim to show the relevance of linguistic approaches within the field of health communication in chronic care, Bigi (2016) has offered plenty of reasons that encourage the adoption of a pragmatic-argumentative approach in the domain of patient-provider interactions. These advantages apply also to the case of metaphors.

Within a pragmatic-argumentative framework, the felicity conditions of a speech act are determined on the basis of its effects on the interlocutor. Walton expresses the general criteria for the reasoning evaluation with the following words:

In this pragmatic framework, two participants are reasoning together in a goal-directed, interactive, conventionalized framework called a *dialogue*. An argument is evaluated as good (correct, reasonable) to the extent that it contributes to the goal of the dialogue. An argument is evaluated as bad (incoherent, fallacious) to the extent that it blocks the goals of the dialogue (WALTON 1996: 1).

The value of such a dialogical effect therefore depends on the way the speech act contributes to the determined contextual goal – e.g., practicing shared decisions making on treatment options and care plans (WALTON 1996, WALTON, REED & MACAGNO 2008; MACAGNO 2016). Along the same vein, Macagno underlines two crucial elements within a pragmatic-argumentative approach to presuppositions: «(1) presupposition can be considered as a form of *decision* to treat a proposition as shared; (2) presuppositions are crucially related to the speaker and hearer's beliefs and knowledge» (MACAGNO 2016: 8). With respect to this second element the author further specifies that «presupposition involves essentially a gap of knowledge, as the speaker cannot know the hearer's beliefs or values, or what he holds to be true» (*Ivi*: 14). That is because sometimes metaphors could be dangerous: they are subject to presuppositional failures.

From this point of view, the hearer fills the gap of knowledge by interpreting, reconstructing and then accepting a presupposition through a contextual renegotiation of meanings. The interpretation is driven by at least two types of different reasoning processes: the presumptive reasoning process and the non-presumptive or systematic one. Considering metaphors as «presumptive failures that trigger the non-presumptive interpretation» (MACAGNO & ZAVATTA 2014: 464), then the acceptance – and communicative effectiveness – of a metaphor depends on the type of presumptive clash called into question. Going back to our definition of argumentatively apt metaphor, we are proposing to assess the argumentative strength of a metaphor by calculating the number and type of violated presumptions (see also MACAGNO 2016, ROSSI, MACAGNO & BIGI 2016a and 2016b).

3. Metaphors for diabetes

In this paper, we aim at proposing a theoretical framework that suits the usage of metaphors as educational instruments within the context of chronic care. The sketched pragmatic-argumentative model represents the philosophical preliminary step of a broader research program devoted to the assessment and test of metaphorical educational value.

The use of metaphors might be exploited in the context of chronic care due to the crucial role played by patient education. In such a context, this theoretical implication has also a strong social relevance: it is consistent with the view proposed by the paradigm of patient-centered medicine, whose social relevance is already highlighted in the field of health communication (e.g., BALINT 1957, ENGEL 1980) and within worldwide health policy guidelines (WHO 2007). More specifically, the dialogical effect interpreted as an effort to reach a common dialogical purpose has an important role in chronic care, where the active participation of patients is a constitutive part of care. Or to put it another way, the dialogical effect on the interlocutor can be considered an indirect mediator of behavior change and therapeutic adherence (see also BIGI 2016, STREET 2009).

Built on this basis, a critical scrutiny of health providers' recourse to metaphors serves as our starting point. Some studies have produced preliminary evidence by showing that the use of metaphors in clinical encounters leads to a positive evaluation of the providers' communication skills (e.g., CASARETT *et al.* 2010). While this topic has already been investigated in some fields of healthcare such as psychotic disorders (e.g., MOULD *et al.* 2010) or end-of-life and cancer care (e.g., DEMJEN, SEMINO & KOLLER 2016, DEMMEN *et al.* 2015), much remains to be done in other fields such as diabetes care. In this last area, studies on medical

metaphors are devoted mostly to observing the use of metaphors by patients, as ways to understand their illness experience (e.g., PATERSON, THORNE & DEWIS 1998, YOUNGSON *et al.* 2015) and there is still a lack of significant data on the use of metaphors by providers for patient education. A notable exception is represented by the study conducted by Anand D. Naik *et al.* (2011). These researchers have mapped the diabetes ABCs (hemoglobin A1C, systolic Blood pressure, and low density lipoprotein (LDL) Cholesterol) with a weather metaphor and have used weather icons «as a method of translating the ABCs into predictors of future health consequences» (NAIK *et al.* 2011: 385). By introducing this metaphor as one of the two educational innovations with patients with a diagnosis of type 2 diabetes mellitus, Naik and collaborators have indirectly proposed that an educational approach based on the use of metaphors would facilitate understanding, engage patients and increase their self-management abilities.

Based on these preliminary positive conclusions, we are systematically collecting diabetes metaphors used by patients and providers by conducting a systematic review of the literature. Furthermore, we have already collected metaphors from a corpus of 53 video-recordings of follow-up consultations registered in a monocentric study in the North of Italy, containing over 190.000 words (BIGI 2014b). From the analysis of this corpus, we intend to develop an approach to metaphors as educative devices within the framework of a pragmatic-argumentative model of communication. This will have the double advantage of testing the solidity of a pragmatic-argumentative approach to metaphors, and to produce results that will be used to offer evidence-based communication instruments to health providers.

Rossi, Macagno and Bigi have started looking at the identified metaphors by using two main classification criteria: by using a linguistic criterion, they are distinguishing between conventional vs. creative metaphors; by analyzing the communicative contexts in which metaphors occur, they are also distinguishing among three main communicative functions of a metaphor – information giving, decision-making, and rapport-building. Due to the analysis of the dialogical context we have recognized just 64 metaphors (28%) with an educational role, but only a limited number of them (15; 43%) were creative metaphors. However, their educational role may or may not be positively interpreted also in terms of their argumentative aptness. At the present state of research, we are now analyzing metaphors by using a pragmatic-argumentative approach to metaphors precisely to evaluate their argumentative aptness. Let's consider the following example extracted from our corpus.

Dialogical context: The doctor is explaining the relationship between glycaemia and glycated hemoglobin, two of the most important concepts to understand diabetes functioning and management.

Text: *The blood is like a river with polluting substances* (a), which we need to keep under control. The glycaemia during the day tells me how I am doing at that specific moment. The glycated hemoglobin tells me the global trend of diabetes. *If I go to buy a dress, the glycated hemoglobin is the size, and glycaemia is the model* (b). The size tells me my condition; I can the customize the model.

Type of metaphor: creative metaphor.

Main communicative function: information giving.

Educational role: .

The doctor deliberately makes use of more than one figurative expression. While the first figurative expression (a) seems easy to be understood – it is an attempt to build a correspondence between the level of glycaemia in the blood and the level of polluting substances in a river; metaphors within the final part of the text (b) are much more complex (and not completely correct): the relationship between size and model does not sound as the same as for the relationship between glycated hemoglobin and glycaemia. Moreover, it is not obvious that they are readily understandable to patients¹. The major complexity of the reasoning process involved in the reconstruction of the metaphorical meaning for the case (b) should penalize also its informativeness: it does not look so simple understand the correspondence between the pair of glycated hemoglobin-glycaemia through the pair of size-model. What the doctor would like to explain is that the glycaemia values depend on the slight choices concerning healthy habits (e.g., eating habits and healthy lifestyles) within certain limits, and therefore that the patient (1) can modify his/her eating habits and/or lifestyles to keep under control the glycaemia values, and consequently, (2) can also positively affect his/her glycated hemoglobin value. One of the problems with this complex correspondence is that you cannot alter the relationship between size and model in the same way: surely you can choose your preferred model, still this personal choice does not usually alter your size. Before testing the educational efficacy of some diabetes metaphors with patients, we are going to calculate the number and type of violated presumptions to assess their argumentative strength and explain, for example, the difference between the cases (a) and (b) mentioned above.

4. Provisional conclusions

At a general level of analysis, health providers need communicative instruments for engaging and educating patients. Given that patient self-monitoring and patient self-managing play a major role in the process of care, patient education should be considered a primary therapeutic goal in chronic care. The theoretical framework discussed above represents the first step of a broader ongoing research program developed in collaboration with Sarah Bigi and Fabrizio Macagno, named *Metaphors for diabetes* (<http://www.unicatt.it/healthyreasoning>). Within this research program, metaphors described and classified from an argumentative point of view and within a particular argumentative context (the clinical one) are expected to become evidence-based educational instruments for health care providers.

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¹ A previous discussion of this example is available within the article of Ervas *et al.* (in press).

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A metaphorical history of DNA patents

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Abstract The aim of this paper is to retrace the history of genetic patents, analyzing the metaphors used in the public debate, in patent offices, and in courtrooms. I have identified three frames with corresponding metaphor clusters: the first is the industrial frame, built around the idea that DNA is a chemical; the second is the informational frame, assembled around the concept of genetic information; last is the soul frame, based on the idea that DNA is or contains the essence of the individual.

Keywords: DNA, DNA metaphors, patents, information

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1. Foreword: when law meets science

Science and law have a complicated relationship, and often face communication problems – if not quarrels – for example when trying to “bring together” psychiatric, and more recently neurosciences and criminal law (see for example GAZZANIGA 2008) or biotechnologies and food safety policies (see for example TAGLIABUE 2015).

Why this awkward situation? An easy answer is: because lawyers don't know science and scientists don't know law. This is true – in most circumstances – but it's also too simple. We must also say that in some situations the law must ignore science, because the aim of the law is to regulate human conflicts, contrasts that arise, and need to be resolved, using ordinary knowledge and thus ordinary language. For example, in the *Nix v. Hedden* case, the US Supreme Court decided that tomatoes should be classified as a vegetable rather than a fruit, using the ordinary meaning of the words “fruit” and “vegetable”, instead of the scientific meaning.

Moreover, in law we may encounter legal fictions, which are facts assumed or created by courts in order to apply a legal rule. Legal fictions can be contrary to science, for example considering electricity – a flow of electric charge for physics – a material thing, and this in order to apply the law on goods.

In this complex picture, we have metaphors. Metaphors used in scientific research¹, metaphors used in the communication of science, metaphors used by lawyers in their argumentation. Metaphors that can facilitate communication between scientists, lawyers, and the general public, but that can also be misleading.

¹ The scientific language is highly metaphorical; see Hallyn 2014.

In this paper, I will focus on a particular class of metaphors: those built around DNA² in the debate about genetic patents, with the aim of developing a brief metaphorical history of DNA patents from the 1970s to the Myriad case in 2013.

2. Before the molecular biology

This brief history starts in the 1970s with US patent number 3,710,511 (*Procedures for use of genic male sterility in production of commercial hybrid maize*), filed in 1971 and granted in 1973. But to understand the importance of this patent for our history, we need to go back in time to the beginning of the 20th century. At this time, the molecular basis of heredity was almost unknown and information theory – the importance of which will be specified later – was yet to come, and in order to avoid the taint of old hypotheses, such as Darwin’s gemmules or Weissman’s determinants, the Danish botanist Wilhelm Johannsen in 1909 introduced the new and, supposedly, theory-free word ‘gene’. Perhaps as a consequence of the mysterious nature of the gene, we have the diffusion of the metaphor of gene-action (KELLER 2000): the gene is “something” whose action caused a specific trait in the organism (and the transmission of this trait to descendants). The trait caused by the gene in fact defined the gene, because the presence of the trait (in the individual or in her relatives) was the only thing that was known. This concept is often called, in contraposition to the *molecular gene* (i.e. a gene defined by properties of the DNA molecule), the *Mendelian gene* (HULL 1974, DUPRÉ 2004, CALVERT *et al.* 2011) or *operational gene* (BURIAN 2000); because of the dependency of this concept on the phenotype (the observable properties of the organism), in this paper I use the term *phenotypic gene*.

Before the discovery of the role and structure of DNA, we had only phenotypic genes; but we should not think that the advent of the molecular gene and the ability to discover the DNA sequence of a gene has obliterated the phenotypic gene: this concept is still present in all situations where the molecular nature of a gene is unknown or useless. This is true in particular for mendelian traits (such as, in humans, blood type or albinism) that depend on a single gene acting in accordance with the dominant and recessive rules taught in every school.

The genic sterility of the aforementioned patent refers to a phenotypic gene. In the description of the patent we read that «an understanding of the specific chemical nature and operation of the DNA which comprises the genes of chromosomes is not essential to an understanding of the present invention», and this because «it is sufficient to note that the DNA which comprises each gene of a chromosome is capable of directing cell metabolic functions in a particular manner» (PATTERSON 1971: 2).

So the first genetic patents were not, strictly speaking, DNA patents but phenotypic patents based on the gene-action metaphor.

² “Built around” in the sense that – using the terminology of the conceptual theory of metaphors (LAKOFF *et al.* 1980) – I will consider not only metaphors where DNA is in the target frame (such as “DNA is the blueprint of the organism”) but also metaphors where DNA is in the source frame (such as “Quality is in the firm’s DNA”).

3. Patenting a chemical substance

The 1940s and 50s, with the discovery of the role³ and structure of DNA⁴, saw the development of a new gene concept based on a new metaphor: the genetic program.

This change was made possible by the development of information theory, namely the discovery that information is a measurable quantity that we can mathematically analyze, studying in particular how this information is transmitted from a source to a destination through an emitter, a channel, and a receiver⁵. The text signaling the birth of information theory was *The Mathematical Theory of Communication* (SHANNON 1948), published in 1948 by the mathematician and electrical engineer Claude E. Shannon. In this text there is no reference to genetics, but Shannon was interested in this new discipline: his PhD thesis of 1940 at MIT was entitled *An Algebra for Theoretical Genetics*, and in the summer of 1949 he annotated his notebook with estimates of the «bits storage capacity» of various items such as punched cards, phono records, and the «genetic constitution of man» (cited in GLEICK 2012: 230). With Shannon the genome became information measurable in bits or base pairs (bps), the unit now used in biology (for a critic analysis of this informational approach, see GRIFFITHS 2001 and LONGO *et al.* 2012).

Shannon was, of course, an outsider in biology; nevertheless the information language was adopted by geneticists, starting with James Watson and Francis Crick, discoverers of the double helix structure of DNA. Their discovery was announced in April 1953 in a famous article published in *Nature* (WATSON *et al.* 1953b); a month later, the two scientists published a second article dedicated to the genetic implications of the double helix structure, writing: «It follows that in a long molecule many different permutations are possible, and it therefore seems likely that the precise sequence of the bases is the code which carries the genetical information» (WATSON *et al.* 1953a: 965). So it's not surprising that the language of genetics is largely informational: DNA is *transcribed* into RNA and then *translated* into protein; we have a genetic *code* where every nucleotide triplet, or codon, corresponds to a specific amino acid, and if two triplets corresponds to the same amino acid, they are said to be *synonymous* codons, and so on.

The double nature, molecular and informational, of DNA – which in reality is a metaphor, and quite a problematic one, as we will see in the next paragraph – is ignored by US, European, and Japanese patents offices, which established in 1988 that DNA is no different from any other isolated biological material and «eligible for patents on the same basis as other chemical compounds»⁶. In other words, in the 80s there was no significant difference between DNA and a dye or a solvent. This attitude is coherent with, and perhaps a consequence of, the industrial metaphor of life developed in patent law in the 70s and culminating with the “life is largely chemistry” motto, as stated in the Chakrabarty case.

The industrial metaphor of life, a sort of evolution of material mechanisms of the

³ In 1944 by a team guided by Oswald Avery.

⁴ In 1953 by the Nobel Prize winners James Watson, Francis Crick and Maurice Wilkins, and the often forgotten Rosalind Franklin.

⁵ For a good introduction to information theory, see Gleick 2012. For a philosophical analysis, see Floridi 2011.

⁶ US, JAPAN, AND EUROPEAN PATENT OFFICES 1988, cited in Gold *et al.* 2010.

17th century, is connected with the development of genetic engineering.⁷ When, in the early 1970s, it concretized the ability to manipulate the genome by inserting DNA fragments from other species, along with an attitude of caution there was also a strong interest in commercial exploitation. Stanley N. Cohen at Stanford University and Herbert W. Boyer at the University of California, San Francisco developed the recombinant DNA technique (The history of the Stanley-Boyer patents is reconstructed in HUGHES 2001). From the scientific point of view, this technique was an extremely powerful research tool, since it allowed for isolating a single gene, but the two universities also noticed the economic potentials of this technology – it is estimated that the revenue of the three patents granted in 1980 is over 200 million dollars (FELDMAN *et al.* 2007) – and in 1974 filed a patent application.

How to communicate to the general public, potential investors, and policy makers the importance and economic potential of recombinant DNA? William Carpenter, a Stanford student who was doing an internship at the Office of Technology Licensing, was appointed to investigate the possible commercial applications of the work of Cohen and Boyer. After meeting the two scientists, Carpenter presented a report that described the technology as a *gene transplant* able to transform bacteria in *genetic factories* for the production of substances otherwise difficult to obtain, such as insulin or viral proteins for the synthesis of vaccines. *Harvard Magazine* coined the term «bacterifactory» to indicate bacteria transformed in a factory.

The industrial metaphor *the cell is a factory* spread rapidly, becoming one of the most common metaphors in science and in science communication (see REYNOLDS 2007). The source frame of this metaphor offers several elements that explain its success, such as the specialization and division of labor, or the importance of the exchange of substances between the various units (factories and cells). Another very important element of the metaphor relates to the economic importance of the industrial sector, which in those years was going through a deep crisis in the United States. To maintain economic supremacy, the Carter and Reagan administrations (also) pointed to biotechnology, and the cell factory metaphor allowed them to consider this conversion as a sort of natural evolution of the economy, from real factories to genetic factories (COLYVAS 2007).

If the cell is a factory, then we can patent it – with a product patent, not a process or use patent⁸. And this is what happened with US patent 4,259,444 for genetically modified bacteria invented by the Indian-American microbiologist Ananda M. Chakrabarty, a patent that arrived at the US Supreme Court which, in 1980, ruled in a 5 to 4 decision that «a live, human-made micro-organism is patentable subject matter» (Diamond v. Chakrabarty, 447 U.S. 303 [1980]). The man behind this case was the patent attorney for General Electric Leo I. Malossi, which also claimed – in addition to the new method used to produce it, and a compound formed of a support substance and the bacterium – the genetically modified bacterium itself. This was contrary to the practice followed by the patent office and accepted by biotechnology companies. But General Electric was not a biotechnology company: its main

⁷ The term «genetic engineering» dates back to the 1950s: the term appears to have been coined by the fiction writer Jack Williamson in his novel *Dragon's Island* in 1951 – before the discovery of the double helix structure of the DNA (according to STABLEFORD 2004).

⁸ A product patent is a patent on the product itself, regardless of how it has been obtained; a process patent is a patent on a method or process and is not infringed by a product made by another process; a use patent is a patent on the use of the product for a specific purpose.

activities were in the field of engineering; the interest in biology was recent, and signaled a strong diversification due to a contraction of investment in the aerospace sector⁹.

After the refusal of the US Patent Office Board of Appeals – based on the fact that a living organism, even if artificial, is not patentable because is not a new composition of matter – the Chakrabarty case went to the US Court of Custom and Patent Appeals, where it crossed a similar case, Bergy, concerning a patent on a purified strain of fungus. The court, in a majority opinion written by Justice Giles S. Rich, decided that the fact that microorganisms, as distinguished from chemical compounds, are alive is a distinction without legal significance (In the matter of the application of Malcolm E. Bergy *et al.*, patent appeal no. 76–712. US Court of Customs and Patent Appeals, 563 F. 2d. 1031 [1977], p. 1038).

The Solicitor General of the United States appealed the decision to the US Supreme Court, which vacated the decision and sent it back to the Court of Custom and Patent Appeals. In the new decision, Justice Rich was more explicit in applying the industrial frame to microorganisms, also using the aforementioned term “bacterifactory”. The conclusion was clear-cut: «In fact, we see no legally significant difference between active chemicals which are classified as ‘dead’ and organisms used for their chemical reactions which take place because they are ‘alive’. Life is largely chemistry» (In re Bergy, 596 F.2d 952 (C.C.P.A. 1979): 975).

The Solicitor General also appealed this new decision, and in 1980 the Supreme Court definitively closed the Chakrabarty case, ruling, as mentioned, that genetically modified microorganisms – and in general living organisms – are patentable: «The relevant distinction was not between living and inanimate things, but between products of nature, whether living or not, and human-made inventions» (Diamond v. Chakrabarty, 447 U.S. 303 [1980]: 313).

DNA don’t escape this “industrial framing”, and this mechanistic metaphORIZATION is apparent in one of the *amicii curae* sent to the Supreme Court: the Brief of Dr. George Pieczenik submitted on 29th January 1980. After describing the *dualistic property* of DNA, which is «definable like ordinary inanimate chemical compounds» and «capable of transforming susceptible host cells», Pieczenik used two interesting metaphors for the ability of DNA to alter the functional properties of cells: «analogously as an engine to its camshaft or an architect to his blueprints» (PIECZENIK 1980:7). Whether a camshaft or a blueprint, it is obvious that this frame is favorable to DNA patents.

Talking of the “blueprint metaphor”, it is interesting to note that this is one of the most common metaphors used in scientific communication – and perhaps one of the most misleading: first of all because the linear relation between the blueprint and the construction (or the architect, in the Pieczenik’s version) is inadequate for the complex processes of genic expression, where only in rare circumstances do we see a perfect correspondence between one gene and one trait. Second, this metaphor has in its source frame concepts that are not intended to be projected into the target frame, but which are unlikely to be omitted by an inexperienced audience; most problematic is the idea that a blueprint has an author, a concept that if projected onto DNA conduct in line with the idea of intelligent design (on these limits of the blueprint metaphors, see PIGLIUCCI 2010 and PIGLIUCCI & BOUDRY 2010).

⁹ The history of the Chakrabarty patent is reconstructed in Kevles 1994.

4. Patenting the soul

The 1990s were the years of the Human Genome Project (HGP), the vast international initiative to sequence the entire genome of humanity started in 1990 and officially concluded in 2000 – though for some genes there was only a “working draft” – with a historic press conference at the White House.

A short glance at the speech of US president Bill Clinton is sufficient to get an idea of what had changed from the genetic factories of the firsts DNA patents. After a comparison between the map of the human genome and the first map of America – «a map that defined the contours and forever expanded the frontiers of our continent and our imagination» –, Clinton pointed to the figure of Galileo Galilei and his discovery that we can use «the tools of mathematics and mechanics to understand the motion of celestial bodies». Galileo «learned the language in which God created the universe» – and now, thanks to the HGP, «we are learning the language in which God created life [...] gaining ever more awe for the complexity, the beauty, the wonder of God’s most divine and sacred gift»¹⁰.

This is a small example of what Dorothy Nelkin and Susan Lindee call «the DNA mystique»: the «spiritual imagery [that] sets the tone for popular accounts of DNA, fueling narratives of genetic essentialism and giving mystical powers to a molecular structure» (NELKIN *et al.* 1996:40). DNA is not simply a molecule or a blueprint, but the essence of the individual, the source of the boundaries of personhood. On this view, DNA is the soul, in the Aristotelian sense of psyche, the form or plan of the individual – the analogy between the two is acknowledged for example by biophysicist Max Delbrück, who suggested that Aristotle should be posthumously awarded a Nobel Prize «For the discovery of the principle implied in DNA» (DELBRÜCK 1976) – and perhaps also in the Christian sense of an immortal animating principle «that bears the marks of good and evil: a man my look fine to outside world, but despite appearances, if he is evil, it will be marker in his genes» (NELKIN *et al.* 2004: 41).

This reference to the *true self* of a person is one aspect of the social reception of genetic tests, often perceived as revelations of the real nature of a person, her past (with genealogical information) and future (with disease predisposition). In this regard, the soul metaphor is linked to the *blood rhetoric* that, in the 19th and 20th centuries, matched with class- and race prejudice and eugenics; but in the genomic era DNA is not only a factor of discrimination and segregation, but also an instrument of reconciliation and repair. Such is the case for the genetic test used by Las Abuelas de Plaza de Mayo (the grandmothers of Plaza de Mayo) to identify the children of the desaparecidos abducted by the military dictatorship in Argentina. Another interesting example is the ability of genetic ancestry tests – a consumer genetic test to find out the geographical origin of one’s family – to construct a genealogy for African Americans families lacking a traditional ancestral narrative (NELSON 2016).

4.1. Genetic patents and slavery

If DNA is the soul of a human being, holding the intellectual property¹¹ of the human

¹⁰ A transcript of the speech is available online at <http://www.genome.gov/10001356/june-2000-white-house-event/>.

¹¹ Intellectual property, which includes patents, copyright, trademarks, and other institutions, is a monopoly assigned by law; the idea of the possession of an intangible good is mostly metaphoric.

genome is equivalent to possessing a human being, i.e., slavery.

The slavery argument has been raised a few times (and immediately rejected). It has been presented to the European patent office by some members of the European Parliament in opposition to the patent granted for the gene that encodes a particular human hormone, relaxin, capable of relaxing the uterus during childbirth. The response has been quite dry: the patents of genes confer no rights on individuals (Howard Florey/Relaxin; Oppositions by Fraktion der Grünen im Europäischen Parlament; Lannoye; EPO 6/1995 388). A similarly harsh rejection came from the US Patent office (USPTO) during the consultation for the new guidelines of 2001, which introduced more stringent criteria for genetic patents. An anonymous petitioner asked the USPTO to not accept any patents covering human genes because these patents constitute a violation of the Thirteenth Amendment, and the reply was that patents have nothing to do with slavery (Federal Register/Vol. 66, No. 4).

4.2. The common heritage argument

The slavery argument has been less important than the common heritage argument, the idea of which is to apply the common heritage of humankind doctrine to the human genome. This is a principle of international law which holds that defined territorial areas – such as outer space or the sea bed – should be protected from exploitation by individual nation states or corporations. This principle is stated in the first article of the UNESCO Universal Declaration on the Human Genome and Human Rights, adopted unanimously and by acclamation in 1997: «The human genome underlies the fundamental unity of all members of the human family, as well as the recognition of their inherent dignity and diversity. In a symbolic sense, it is the heritage of humanity».

The development of this idea is connected to the HGP, and became the most important argument against the filing of genetic patents from scientists involved in the project. The intellectual property of sequenced DNA became a conundrum and internal divergence on this topic led, in 1992, to the resignation of James Watson as head of the project¹².

In the context of a publicly funded project (in fact the biggest publicly funded project ever) of basic research, it is difficult to disagree with this principle, but it's important to examine whether the common heritage reference is a serious claim (as affirmed in STURGES 1999) or just a plea to the importance of the genome – such that the real common heritage of humankind is the Human Genome Project.

The correct answer is the latter, at least when we read the aforementioned UNESCO declaration carefully: the genome is the heritage of humanity “in a symbolic sense”. The reason for this, as stated in the report (Document 29 C/21) is very simple: DNA is not a territorial area, but a resource present in practically every cell of every human being, such that an international management of this resource could violate the rights of individuals and groups, with compulsory exploitation. If the (time-limited and partial) monopoly of a private company could be a problem, it's unlikely that the solution would be a (unlimited) monopoly of some supranational institution. There are other problems too: the “human genome” is an abstract concept (we have individual genomes, with unique or rare mutations, and large sections of DNA shared with other species, including unicellular organisms); a preservation approach, part of the common heritage doctrine, could imply the impossibility of genetic therapy; last,

¹² On Watson's resignation, see Roberts 1992; for an in-depth account, see Cook-Deegan 1996.

if the aim is to ban the intellectual property of DNA, this is the wrong approach, because the common heritage is compatible with private exploitation¹³.

Given these difficulties, why is this argument so popular? Maybe because DNA is not only a chemical that embodies genetic information, but also the essence of the individual, what make me me and what make us humans and not chimpanzees.

5. Patenting DNA as information

The soul metaphor of DNA has shaped the opposition to genetic patents, with wide results in public opinion and research policies – many of the big research projects in genetics discourage patents (CONTRERAS 2011) – but small consequences for patents offices and courts, where the industrial metaphor of DNA remains standard and the idea of an untouchable genetic essence is largely unthinkable. Nevertheless, the development of bioinformatics and the widespread use of computers in the analysis of genetic sequences has led to some small digressions from this standard.

5.1. Copyright and computers

The scientific challenge is no longer the manipulation of the genome to create “genetic factories”, but the understanding of complex genetic functions or diseases. So, next to *traditional* genetic patents for DNA sequences used in the production of improved or novel organisms, we find patents covering the DNA used in diagnostic tests. Without the fence of the industrial metaphor, the intellectual property space opens up to other possibilities, such as copyright¹⁴.

The idea of the use of copyright – a legal right conceived for creative work and the original expression of ideas – for the genome was introduced by the Nobel prize Walter Gilbert, who in 1987 announced his intention to create a company, the Genome Corporation, for sequencing human DNA and selling the information obtained¹⁵. Lacking utility, these sequences cannot be patented, but for Gilbert «someone worked it out and wrote it down – so the order of the letters is copyrightable, like a string of letters in a book» (ROBERTS 1987).

Another analogy is drawn with pictures (a photo is copyrightable, though the scene in the photo is not) and, above all, computer programs; the common denominator is the idea that DNA is information. This reframing of DNA influenced, at least, one patent office: in 1995 we find an international patent application (number WO1996US05320) for the genome of the bacterium *Haemophilus influenzae* that does not concern the molecule, but the information of the sequence stored in an electronic format. The application, never approved, was withdrawn in 2005, so we can only speculate on what the consequences of this patent might have been. But it's very likely that, if approved, the patent would not have covered genetic tests nor the creation of a genetically modified organism with part of the genome of the

¹³ For a critique of the common heritage argument, see Resnik 2004 and Ossorio 2007; for an apology (and a defense of genetic patents), see Queloz 2015.

¹⁴ A patent is a limited duration (usually 20 years) right relating to an invention, granted by a patent office in exchange for public disclosure of the invention; copyright protects original works of authorship including literary, dramatic, musical, and artistic works; copyright usually lasts for the life of the author plus 70 years.

¹⁵ For the free flow of knowledge, the copyright of DNA will be a disaster: no utility requirement, no evaluation of novelty, at least 70 years of protection instead of the 20 of patents.

bacterium, for example for the production of a vaccine. It would, however, have granted something even more important: the ability to analyze, with a computer, the genome of the bacterium.

5.2. The European way: genetic information that performs its function

Another minor deviation from the industrial frame is contained in the European directive 98/44 on the legal protection of biotechnological inventions, approved on May 12, 1998 after intense debate and the first proposal of the Council of the European Union being rejected, in 1995, by the European Parliament.

Like almost all European laws, the directive is the result of numerous compromises, so article 5 establishes that «the human body [...] and the simple discovery of one of its elements, including the sequence or partial sequence of a gene, cannot constitute patentable inventions» unless «an element isolated from the human body [...], including the sequence or partial sequence of a gene, may constitute a patentable invention» (Directive 98/44/EC, art. 5).

A similar strategy of balancing different interests and sensibilities is detectable in article 9:

The protection conferred by a patent on a product containing or consisting of genetic information shall extend to all material [...] in which the product is incorporated and *in which the genetic information is contained and performs its function* (Directive 98/44/EC, art. 9, emphasis mine).

The aim is to limit the extent of genetic patents – where too-wide protection can harm competition and technological innovation –, but it is interesting that this limitation is achieved using the concept of genetic information. And it is not only DNA is considered, for intellectual property, genetic information rather than a chemical, but also genetic information with a function – and, most importantly, a function that is active.

Practically, this means that the validity of a gene patent is limited to biologically active materials. For example, a Monsanto patent for a genetically modified soybean plant has no effect on the soybean meal produced by these plants, because the meal is «a dead material», as stated by the European Court of Justice (Monsanto Technology LLC v Cefetra BV and Others, Case C-428/08).

5.3. The American way: the Myriad case

The rules for gene patents were written, in Europe, by parliament; in the United States, conversely, the matter was established by judicial decision, in particular with the Myriad case¹⁶, where the Association for Molecular Pathology challenged certain claims in issued patents owned or controlled by Myriad Genetics that covered the isolated DNA sequences of two genes, BRCA1 and 2 and their main mutations, connected with breast and ovarian cancers (BRCA stands for BREast CAncer)¹⁷.

The patents of these genes are particularly unpleasant for several reasons: Myriad have stolen the march on public research; breast cancer is a very delicate and

¹⁶ Association for Molecular Pathology v. Myriad Genetics, No. 12-398 (569 U.S. ___ June 13, 2013).

¹⁷ In Europe, BRCA patent oppositions and appeals began in early 2001, but without worldwide attention and a real discussion about the patentability of the human genes. See Matthijs *et al.* 2013 for further details.

sensitive disease, and for some mutations, the BRCA test is highly predictive; not forgetting Myriad's business model of exclusively offering diagnostic testing services, without licensees, and sending cease and desist letters also to universities. The cost of testing for BRCA1 and 2 is perceived as an obstacle for many women to take control of their lives¹⁸, so it is no surprise that standing alongside the plaintiff Association for Molecular Pathology is the American Civil Liberties Union.

The case was heard in 2010 in the Southern District Court of New York, which ruled that none of the challenged claims were patent eligible. Myriad then appealed to the US Court of Appeals for the Federal Circuit, which overturned the previous decision. As in the Chakrabarty case, there was an appeal to the Supreme Court, which remanded the case to the lower court, which did not change its opinion. So on September 25, 2012, the American Civil Liberties Union filed a second petition. On June 13, 2013, in a unanimous decision, the Supreme Court invalidated Myriad's claims to isolated genes maintaining those on complementary DNA¹⁹.

Despite some reference to what we have called the DNA mystique – in particular in some *amicii curiae*, where we read that «genetic code is a divine gift» (SCARNECCHIA *et al.* 2013) or that «DNA's importance flows from its ability to encode and transmit the instructions for creating a human being» (WATSON 2013) – the key point of the case is whether isolated DNA is a patentable subject matter, i.e., if it is «made by man»²⁰. The genomic DNA, present in the human chromosome, is of course natural and not patentable, but the isolated gene, artificially separated from the rest of the genetic material, could still be considered a natural phenomenon? And what about the complementary DNA (cDNA), that is, the sequence without noncoding sequences? The three courts, as stated, all answered differently: all natural (and thus not patentable) for the Southern District, all artificial (and thus patentable) for the Federal Circuit, isolated natural and cDNA artificial for the Supreme Court. These different evaluations are grounded in different visions of the nature of DNA, different conceptions that are manifest in the three decisions, all containing a short introduction of biochemistry that is very interesting to read in the search for metaphors.

The Southern District's decision focuses on the informational aspects of DNA, using a great many linguistic and essentialist metaphors, in particular in parts III-A and B and, of course, in the conclusion: «This informational quality is unique among the chemical compounds found in our bodies, and it would be erroneous to view DNA as *no different* than other chemicals previously the subject of patents» (Association for Molecular Pathology v. U.S. Patent and Trademark Office, No. 09-cv-4515, 94 USPQ2d 1683 [S.D.N.Y. March 29, 2010]: 122-123).

If the only thing that matters is the meaning of the sequence of nucleotide, it is obvious that this meaning is the same in genomic DNA, in isolated DNA, and even in cDNA, where we have suppressed *meaningless* sequences.

For the Federal Circuit, DNA is a chemical: the informational dimension is simply dropped: «We recognize that biologists may think of molecules in terms of their uses, but genes are in fact materials having a chemical nature and, as such, are best

¹⁸ See for example the testimony of Angelina Jolie on her mastectomy: Jolie 2013.

¹⁹ The case also involved other claims that are not taken into account here.

²⁰ Patentable subject matter may include «anything under the sun that is made by man», as affirmed by the Supreme court quoting the testimony of Pasquale Joseph Federico, a high-ranking official of the US Patent Office, before a House subcommittee in 1951.

described in patents by their structures rather than their functions» (Association for Molecular Pathology v United States Patent and Trademark Office, 689 F 3d 1303: 45). And if it is a chemical, the isolation of the molecule from the rest of the chromosome is sufficient to consider it human-made and thus patentable.

For the Supreme court DNA is information, and confirmation of this is found in the patent's claims:

Myriad's claims are simply not expressed in terms of chemical composition, nor do they rely in any way on the chemical changes that result from the isolation of a particular section of DNA. Instead, the claims understandably focus on the genetic information encoded in the BRCA1 and BRCA2 genes (Association for Molecular Pathology v. Myriad Genetics, No. 12-398 [569 U.S. ____ June 13, 2013]: 14)

Because the genetic information doesn't change with the isolation of a section of DNA, the claims on isolated BRCA genes are invalid.

However, cDNA is patentable, despite the fact that cDNA «contains the same protein-coding information found in a segment of natural DNA» (*Ivi*: 1). At first sight, it seems that DNA is information when it comes to isolated genetic material, but a chemical when it comes to cDNA (this is, for example, the interpretation of DOLIN 2013). But the problem could be the ambiguity of the term 'information', because cDNA contains the same "protein-coding information", but does not contain the same "raw information", because the (human-made) removal of noncoding sequences changes the text of the DNA.

Is interesting to note that the US patent office, in the new examination guideline, disregards the Supreme court's indication that DNA should be treated as information, interpreting the decision in the old frame of chemical substances²¹.

6. Conclusion: and now something completely different

We have seen how the first economically important applications of genetics, in the industrial frame of genetic factories, has smoothly taken intellectual protection in the direction of industrial patents. This solution, with the development of biotechnology and a tendency to consider the informational aspect of DNA, has shown its limits – nevertheless without a true abandonment of the patent system.

A way of overcoming genetic patents could, however, come from the new field of synthetic biology, the design, or re-design, of new biological parts, devices, and systems. This field represents a puzzle when it comes to the question of intellectual property (RAI *et al.* 2007), not only regarding patent and copyright, but also *sui generis* database rights, the public domain, and the commons. All the currently available options come from the computer industry, because the most common metaphors used for synthetic biology come from this industry: the organism is a computer, DNA is the operating system of this computer, the biotechnologist is the software engineer who writes new code or hacks an old one, and so on (for a deep analysis of the metaphors used in synthetic biology, see HELLSTEN *et al.* 2011).

If we can learn something from the past, maybe it is that these solutions will have some limits. Perhaps what we need is something completely different: a new intellectual property right expressly designed for DNA, which accounts for the

²¹ The same chemical frame is used by the Department of Justice in their *amicus curiae*, invoking a "magic microscope" able to look deep inside cells and find any natural molecule within them.

complex characteristics of genetic material and the various instances of stakeholders, from biotechnology industries to activist groups. In a similar, but perhaps more balanced way to what happened in the USA with the introduction of plant patents for asexually reproducing varieties of plants (KEVLES 2007). But at the moment this solution seems utopian.

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Argomentazione metaforica in un corpus di assemblee politiche

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Abstract How do metaphors work when their chief function is an argumentative and persuasive one? Building on a previous corpus study of the memoranda of an Italian council of foreigners, this paper aims to demonstrate how metaphors function when different ideological perspectives face each other in a single communicative space over a series of gatherings, studying them from various points of view (linguistic, conceptual, textual, pragmatic and enunciative), adopting a corpus approach with the support of blending theory. The role of metaphors in such cases is twofold. Political perspectives confront one another precisely through metaphors: as a result, metaphors interact not only at a textual level, as predictable, but also systematically, through multiple meetings over the years. Secondly, even though metaphors betray different perspectives, they also unexpectedly reveal a common element: metaphors semantically incorporate the speakers' social and communicative identity. Thus, they play a crucial communicative and argumentative role, as this identity forms a "fence of consensus", a common cluster of values between members of a group (irrespective of their different political perspectives), not necessarily shared by those outside the group. In sum, metaphors cover important rhetorical and conceptual functions, and their interaction results in complex argumentative strategies. In addition, these systematical phenomena confirm the importance of a corpus approach in metaphor research

Keywords: metaphor, immigration, corpus, identity, persuasion

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0. Introduzione

In questo articolo descriviamo il funzionamento argomentativo delle metafore in uno specifico ambito di comunicazione e uso della lingua: il dibattito di una assemblea politica in cui i partecipanti sono orientati a un fine comune. Basiamo le nostre osservazioni sullo studio di un corpus condotto in precedenza.

Una assemblea politica è uno spazio comunicativo in cui differenti prospettive ideologiche si incontrano a più riprese, producendo un intreccio di testi. In quest'arena, le metafore, ideologicamente orientate, si combattono interagendo tra loro sia nella singola porzione testuale, sia sistematicamente, sull'insieme dei testi. Ciò su cui concentreremo la nostra attenzione saranno le modalità di strutturazione e

interazione delle metafore in dipendenza delle esigenze argomentative e contro argomentative.

Una modalità di controargomentazione considerata tra le più efficaci è la rielaborazione interna di una stessa metafora; e vedremo che prospettive differenti impiegano una stessa metafora declinandola secondo le proprie esigenze. Ben possibile è anche rispondere a una metafora con un'altra; anche perché ogni prospettiva ideologica ha le sue metafore preferite. Infine, le metafore mostrano particolari modalità linguistico-concettuali di interazione l'una con l'altra.

Premessa essenziale di questa analisi sarà la scoperta, invece, delle prospettive ideologiche stesse di cui le metafore sono il riflesso: dal corpus emergeranno, in particolare, diverse posture valutative, a partire dalle quali verrà sottolineato il ruolo cruciale svolto dall'identità dei partecipanti nella capacità argomentativa delle metafore.

In modo secondario verranno toccate altre tematiche. La capacità persuasiva di una metafora intrattiene con il problema del vero un rapporto complesso, di cui emergeranno alcune sfumature. Inoltre, il confrontarsi delle opinioni in un'assemblea si rivela legato, paradossalmente, al consenso che la tiene unita: una metafora, anche di parte, può contenere elementi per cui riscontra il favore di tutti.

Infine, risulterà chiaro un aspetto metodologico: uno studio estensivo e sistematico di una serie omogenea di discorsi rende visibili fenomeni di relazione tra metafore che l'esplorazione di singole porzioni di testo difficilmente può restituire.

1. Caratteristiche comunicative del corpus e metodologia d'indagine

Il corpus studiato è costituito dai verbali delle sedute di una consulta di stranieri, il *Consiglio degli stranieri e apolidi della Provincia di Bologna*, istituzione esistita dal 2008 al 2014, nella quale i cittadini non comunitari residenti nella provincia eleggevano i loro rappresentanti. Conta 270mila parole per circa 900 pagine di verbali, e copre cinque anni e mezzo di riunioni. Dal punto di vista comunicativo si tratta di dibattimenti assembleari politici, i cui partecipanti sono orientati a un interesse comune – a differenza delle assemblee parlamentari, in cui sono avversari. La lingua italiana vi tiene il ruolo non di lingua franca, ma di lingua seconda, essendo i partecipanti immersi nella realtà sociolinguistica, culturale, e para- ed extraverbale dell'italiano¹.

I principali strumenti teorici impiegati sono le metodologie di analisi di corpora applicate alla metafora (DEIGNAN 2005), e le proposte della linea di studiosi anglosassoni che comincia con Ivor Richards e Max Black, passa per la Teoria concettuale della metafora e numerosi studi di psicolinguistica, e giunge a una sintesi nella teoria degli Amalgami (FAUCONNIER, TURNER 2001; GRADY, OAKLEY, COULSON 1999): secondo una visione della metafora allo stesso tempo linguistica e concettuale, e che cerca inoltre di integrarvi i valori pragmatici, argomentativi ed emotivi dei discorsi.

Il corpus è stato scelto per studiare le migrazioni e in particolare gli atteggiamenti adottati da chi ne fa esperienza in prima persona. Poiché le metafore sono fondative

¹ Abbiamo studiato i verbali del Consiglio in un più ampio lavoro di tesi magistrale in Teoria della comunicazione, sostenuta nell'ottobre 2014 presso la Facoltà di Filosofia della Sapienza Università di Roma, dal titolo *Metafore interculturali. Il Consiglio degli stranieri della Provincia di Bologna: prospettive teoriche per un'analisi dei linguaggi*. Il capitolo dedicato allo studio del corpus conta 57 pagine, di cui dieci sulla metodologia adottata, più 7 di appendici.

del pensiero, nonché forme di elaborazione concettuale uniche nel linguaggio (giacché difficilmente riformulabili in espressioni piane senza perdita di valore conoscitivo), se studiate in discorsi collocati spazio-temporalmente esse divengono spie degli atteggiamenti culturali e politico-sociali, e riflesso di qualsiasi elaborazione teorica, anche se implicita e inconsapevole.

Si sono prese in considerazione le metafore non occasionali, ma *sistematiche*. Sistematiche per la frequenza, sì, ma soprattutto per l'aggregabilità dei termini in famiglie: quando più parole mostrano una coerenza concettuale, disvelano un'unica e dinamica di pensiero, avente un primario ruolo concettuale nel discorso.

In una prima fase (*Indagine*) si è stilata una lista di termini metaforici sia estraendo concordanze da alcune sedute², sia tramite lettura tradizionale da altre. Dalla lista di termini hanno cominciato (fase di *Mappatura*) a emergere famiglie di metafore, riportate in figura 1. Ne è risultato che tutte le metafore lavorano su un unico metaforizzato (è un terzo senso di "sistematicità"), il "che cos'è questo nostro Consiglio?": ovvero tematizzano ed elaborano la situazione discorsiva stessa.

In una terza fase (*Analisi*), dapprima si sono selezionati i più rilevanti termini della lista, tramite estrazione delle concordanze e verifica del reale rilievo metaforico. Momento essenziale di tutto lo studio è stata la successiva analisi pragmatica ravvicinata di tutte le occorrenze dei termini scelti, consistente nell'interrogare ogni occorrenza con una lista di domande attinenti alla pragmatica dell'espressione. Ogni occorrenza ha potuto esser così categorizzata secondo diversi criteri e aggregata ad altre occorrenze in gruppi, di cui infine è stata vagliata la consistenza numerica.



(FIG. 1) Sistema metaforico del corpus e parole metaforiche

2. Consenso e differenziazione ideologica all'interno di una stessa metafora

2.1. Il consenso generico di 'portare avanti' e l'identità dei locutori

Tutte le metafore rilevanti del corpus elaborano un unico target, il "che cos'è il Consiglio": quali ne sono le funzioni e in che modo deve relazionarsi agli altri attori

² Il software usato è il *Text Concordancing Service*, sviluppato da Marco Veneziani dell'ILIESI-CNR di Roma.

sociali – immigrati, società civile, partiti, istituzioni. In altre parole, le metafore tematizzano la situazione discorsiva stessa in cui si trovano i consiglieri: non essendo professionisti della politica devono elaborare un orizzonte di senso per le loro riunioni. Non per caso il numero delle occorrenze delle metafore aumenta nei periodi cruciali dell'esistenza del Consiglio, cioè le prime riunioni e gli avvicendamenti della presidenza, mentre scema nei periodi di *routine*.

Nel Consiglio si manifestano diverse posizioni politiche, cioè modi di intendere il ruolo del Consiglio. Tuttavia, dietro la questione politica si gioca una più grossa questione identitaria. Le differenti posizioni sono dunque ben più complesse attitudini politico-identitarie che abbiamo chiamato *posture* perché sintetizzano olisticamente più dimensioni problematiche in un unico atteggiamento valutativo (come nell'espressione «*evaluative stance*» corrente negli studi sulla metafora).

La metafora di gran lunga più importante di tutte è la metafora del Trasporto, realizzata da 'avanti' e dalle sue numerose combinazioni – “portare avanti, andare avanti”, ma anche “mandare, guardare, farsi, tirare”. È in gran parte grazie a essa che si svolge la funzione di definizione di “cos'è il Consiglio”. La metafora del Trasporto (d'ora in poi anche solo “il Trasporto”) si iscrive in una più vasta area, quella del Procedere.

Il Trasporto riscontra per un verso un uso trasversale alle posture, per un altro viene declinata diversamente da ciascuna postura. Ciò è possibile per le sue caratteristiche linguistiche e concettuali. 'Avanti' è un “*metaphoreme*”, un termine in cui si rinviene un ricco nocciolo stabile di «*linguistic, semantic, pragmatic, and affective patterns*», che allo stesso tempo si specializzano in impieghi diversi, sia per formulazione che per valori semantici, concettuali, testuali. I metaforemi sono le «*preferred ways of expressing metaphorical ideas across discourse communities*» (CAMERON, DEIGNAN 2006: 679-680).

Dal punto di vista pragmatico, le combinazioni di 'avanti' hanno sempre una connotazione positiva: solo 5 delle 90 occorrenze di 'avanti' nel 2008 ha valore negativo. Le ragioni di questo valore pragmatico positivo vanno cercate nei valori semantici del Trasporto (cfr. ECO 1984: 129), o meglio, nella sua strutturazione concettuale: esso costruisce un *mapping* di alcuni caratteri essenziali della situazione, fornendo un orizzonte di senso ai consiglieri. C'è un soggetto – nominalmente il consiglio – che si occupa del tema – la condizione degli immigrati, si suppone – e la sua azione è “andare avanti”, “portare avanti” – migliorare la condizione degli immigrati. Il Trasporto è, dal punto di vista concettuale, un mezzo indispensabile ai consiglieri per pensare la loro azione nel Consiglio.

Dal punto di vista argomentativo, il Trasporto genera un consenso trasversale, che tiene assieme l'assemblea; inoltre, dato il suo valore sempre positivo, consente a chi lo usa di incontrare il favore dell'uditorio. Tale concordia è però costruita su una indeterminatezza e un equivoco. La strutturazione concettuale del Trasporto non precisa del tutto il contenuto degli elementi che mappa; allo stesso tempo la situazione comunicativa lascia indefinito chi sia il soggetto che agisce nel Consiglio, il soggetto che “va avanti”.

Il *mapping* riportato sopra infatti è solo un racconto approssimativo e *stereotipato* di cos'è e cosa fa il Consiglio, perché ogni postura attribuisce a ogni elemento del *mapping* un valore differente. Non è scontato che il Consiglio debba rivendicare vantaggi per gli immigrati; può anche volerli rendere visibili e assicurarne un trattamento paritario; o, ancora, può preoccuparsi trasversalmente dei problemi della società italiana.

Il compito assegnato al Consiglio e le altre questioni politiche celano il rapporto di ciascun consigliere, di ciascun locutore, con la propria identità di in-migrato e con la popolazione immigrata. Nel momento in cui *si enunciano* nelle assemblee (cfr. BENVENISTE 1974, ONO 2007), alcuni locutori tengono per fermo di dover *ripresentare* nel Consiglio null'altro che la propria identità di immigrati; altri invece non lo danno per scontato, o perché mettono quell'identità tra parentesi, o perché hanno compiuto un'elaborazione interculturale dell'idea del sé che li ha avvicinati agli autoctoni. Si tenga presente che dal punto di vista linguistico il Trasporto evoca, in questi locutori, i valori emotivi relativi allo spostamento geografico dalla nazione d'origine alla nuova (cfr. ELLERO 2010, CHECCOLI 2010)³.

Nonostante non abbia un valore persuasivo specifico, 'avanti' mantiene comunque una capacità di consenso che più di tutto mostra il ruolo dell'identità nell'argomentazione. Infatti un interlocutore autoctono non sarà minimamente influenzato da un tropo che codifica l'identità di straniero; rimanendo estraneo al recinto del consenso del Consiglio e a qualsiasi postura.

Si disvelano così differenti ideologie, differenti "filosofie della migrazione": chi sono io che vengo da un'altra geografia e un'altra storia? Quanto mi sento legato al prima, e quanto al dopo? Sono uno straniero o un nuovo italiano?

2.2. Le specializzazioni ideologiche di 'portare avanti'

La rielaborazione interna di una stessa metafora è considerata una delle strategie controargomentative più efficaci (LITTLEMORE, LOW 2006: 8-9). Le varie declinazioni ideologiche di 'avanti' interagiscono però a livello sistematico piuttosto che testuale (cfr. § 3), generando quella che Harald Weinrich chiamava una "disputa metaforica", che coincide di norma con una disputa sulle cose stesse (WEINRICH 1976: 131-132, cfr. MOUTON 2013); una disputa che impiega in modo innovativo metafore tradizionali italiane (cfr. BIORCI 2012: 125). Nel nostro corpus ciascuna postura declina in modo diverso 'avanti' e, quindi, l'idea di Consiglio. Illustriamo qui le posture seguendo un criterio di "distanza dalla società autoctona", cioè basandoci sul grado di separazione dalla (o fusione nella) nuova società di arrivo sentito dai consiglieri.

La più distante di tutte è la postura Partigiana; presente solo in un piccolo numero di occorrenze, essa si tiene separata dalla società autoctona. Il compito del Consiglio qui è rivendicare vantaggi per gli stranieri:

(1) intanto la Provincia poi *manda avanti*, i Comuni *mandano avanti*, poi il governo nazionale quello che farà vedremo. Intanto il nostro dovere è di chiedere le nostre cose e i nostri diritti (Azif Raza 2008, 7: 33)⁴.

Non c'è idea di lavoro congiunto con le istituzioni, né queste sono i principali interlocutori. In un intervento i rappresentanti degli immigrati sono addirittura considerati i consolati e la ambasciate (Oltion Nallbani 2009, 4: 18).

Nella postura della Condizione immigrata – che non emerge però con 'avanti' – l'atteggiamento di rivendicazione è altrettanto presente; ma assai diversa è l'idea del sé: «siamo noi che ci troviamo nella situazione, noi che viviamo nella strada con gli

³ Cfr. nota 6.

⁴ Riportiamo nome e cognome del consigliere, anno, numero della seduta, pagina del verbale (Cfr. PROVINCIA DI BOLOGNA 2008-2013). In corsivo sono evidenziate parole e sintagmi metaforici; le parole piane coinvolte nel *mapping* sono indicate con un asterisco (cfr. nota 6).

stranieri e l'ambasciatore o il Console non sanno niente degli stranieri»; «dobbiamo dimenticare la nostra cittadinanza come marocchini, filippini, albanesi, perché noi siamo immigrati» (Hassan Abid 2009, 4: 12; 5: 15). Anche se non c'è identificazione con il paese di arrivo, c'è un paradossale legame con esso, come percezione di estraneità.

La postura Portavocistica attenua ulteriormente la distanza dalla società autoctona, perché lascia cadere l'atteggiamento rivendicativo. Il Consiglio ha una semplice funzione di rappresentanza degli immigrati sia presso le istituzioni che presso la società civile. Tale funzione è espressa con l'amalgama del portavoce e l'immagine di un gruppo di persone alla cui testa stanno i consiglieri:

(2) io sono contento di stare qui come *portavoce* di tutti gli stranieri, sono orgoglioso di *portare avanti le idee* di tutti quelli che sono *dietro di noi* (Malick Kaire Gueye 2008, 3: 4).

Nella quarta postura, l'Istituzionale, il Consiglio non è più settorialmente legato agli immigrati, ma è una istituzione che si occupa dell'immigrazione di concerto alla gestione delle altre problematiche del territorio, a fianco della Provincia e delle altre istituzioni.

(3) il nostro augurio è che non ci debbano essere contrasti in merito alle questioni che *portiamo avanti*, ripeto, per il bene comune della società bolognese (Bouchaib Khaline 2008, 3: 3).

È la postura che più di tutte lascia da parte l'identità di straniero: il locutore si enuncia vestendosi del ruolo di uomo delle istituzioni. L'empatia con una supposta "causa immigrata" è messa tra parentesi, benché non abbandonata.

Infine, per la postura Unitarista il ruolo del Consiglio è di rappresentare una parte dei *cives* della società italiana, gli immigrati. I consiglieri che la incarnano, pur consci che gli immigrati scontano certamente le difficoltà di chi non ha la cittadinanza ed è guardato come un estraneo, hanno d'altro canto elaborato l'idea di sé in modo interculturale, e si sentono accomunati agli autoctoni sotto molti altri aspetti.

(4) è impossibile fare la differenza nei bisogni [diversi, per alcuni consiglieri, tra immigrati e autoctoni] e penso che ci dobbiamo esprimere parlando dei nostri bisogni come cittadini. [...] se non vogliamo *essere sempre indietro*, ma *guardare avanti*, dobbiamo pensare che questi [le seconde generazioni] sono italiani o comunque lo saranno e la differenza tra gli immigrati italiani regge fino ad un certo punto, perché qui non è più un fenomeno, è la società che cambia e bisogna saperla amministrare e governare (Sanja Basic 2008, 8: 11).

2.3. La codifica dell'identità in-migrata nella metonimia della voce

Assieme alla metafora del Trasporto, la metonimia della Voce (d'ora in avanti anche solo "la Voce") dà luogo a un vero e proprio amalgama che riassume ancora meglio del Trasporto il concetto del Consiglio: "portiamo la voce (degli immigrati) avanti dentro le istituzioni italiane".

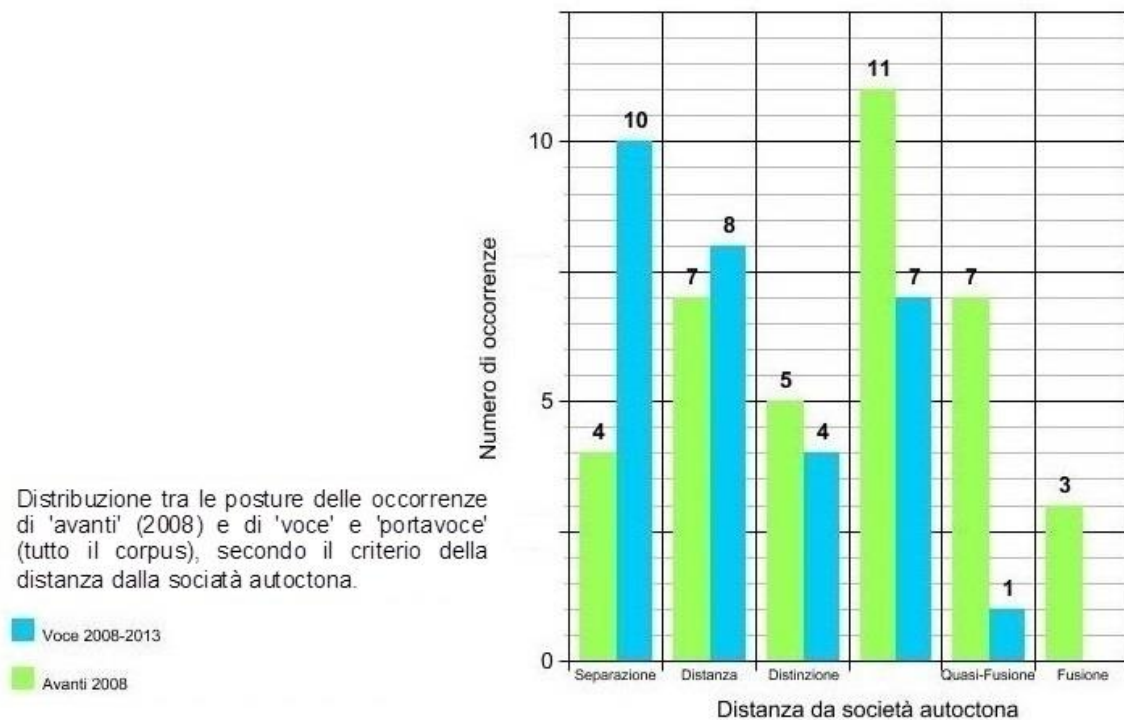
Dalla Voce risulta chiaramente il ruolo svolto dall'identità del locutore nell'argomentazione, mostrando la Voce un particolare legame con l'identità in-migrata. La Voce sta per l'avere presenza pubblica, garantendosi dalla subalternità; ma sta anche per le sofferenze e gli sforzi degli immigrati: esperienze chiaramente

rilevanti e che quindi comportano la codifica linguistica di una forte carica emotiva e identitaria nei termini ‘voce’ e ‘portavoce’.

(5) Qualche ragazzo clandestino che *non ha nessuna voce e non può dirlo a nessuno* e tra virgolette *non è visibile*, le forze dell’ordine lo avrebbero fatto inginocchiare, gli hanno fatto mettere le mani per terra e calpestate (Qasim Abbas Syed 2008, 7: 7).

Il legame della Voce con l’identità in-migrata è particolarmente evidente nel confronto tra la distribuzione delle occorrenze di ‘avanti’ tra le posture, e la distribuzione delle occorrenze di ‘voce’ e ‘portavoce’, come riportato in figura 2, in cui le posture sono ordinate secondo il criterio della distanza dalla società autoctona. La Voce mostra un legame con le prime posture, dato che le sue occorrenze si collocano più alla sinistra del grafico di quelle della metafora del Trasporto. La differenza è dovuta al fatto che la Voce non mappa soltanto il ruolo del Consiglio, ma prevede anche un contenuto per esso.

Questa differenza trova conferma intrecciando la distribuzione delle occorrenze tra le posture con la ricerca delle occorrenze con forza illocutoria direttiva. Le occorrenze in cui si fa una perorazione esplicita del ruolo del Consiglio appartengono alla postura istituzionale; le proposte delle prime posture invece restano quasi sempre implicite. I locutori delle prime posture possono dare per scontato che il Consiglio “porta avanti la voce degli immigrati” per rivendicarne vantaggi, dato che la loro identità di locutori non è altro che la loro identità di in-migrati. Questa tacita presupposizione è un vero e proprio *luogo comune* secondo cui “nella mia bocca di consigliere risuona la voce degli immigrati, ai quali appartengo io stesso”.



(FIG. 2) Grafico di distribuzione delle posture

Un luogo comune che invece i locutori della postura istituzionale sono costretti a tematizzare e rielaborare: di fronte all'uditorio ma anche di fronte a se stessi, proprio perché quell'identità fa parte di loro⁵.

(6) Allora è nostro impegno far sì che la *voce* dei nostri elettori sia *portata qui*, sia discussa, ma quella *voce* deve *arrivare* ad una sintesi di carattere politico, tecnico, culturale, così che *portiamo nell'altra* aula, nell'altro Consiglio dei cittadini italiani di questa Provincia documenti, proposte concrete (Bouchaib Khaline 2008, 5: 28).

La Voce chiama questi ultimi a empatizzare con una visione di sé e degli altri tendenzialmente dicotomica, in cui da un lato ci sono gli in-migrati, dall'altra gli autoctoni. Quando sente usare o usa la Voce, nel locutore l'identità di in-migrato diventa *totalizzante*, escludendo le altre identità (istituzionale, di nuovo italiano, ecc.). Dal punto di vista della capacità argomentativa, la Voce si spinge dunque più lontano del Trasporto, poiché obbliga e persuade i locutori a cambiare postura.

3. Strategie plurali di argomentazione metaforica

Nel paragrafo precedente ci siamo occupati di ciò che accade dentro una singola metafora, valutando le sue diverse declinazioni e la funzione svolta da un elemento comunicativo – l'identità dei locutori. In questo paragrafo allarghiamo lo sguardo alle interazioni tra metafore differenti. Miriamo a comprendere come differenti locutori, in un medesimo spazio comunicativo e in una serie omogenea di testi, rielaborano le metafore che già si sono affacciate nella discussione con altre metafore, per corroborare, contrastare, o piegare a propri fini le argomentazioni in esse contenute.

La rielaborazione di una metafora tramite un'altra può realizzarsi con differenti modalità testuali e linguistico-concettuali. È importante distinguere tra interazioni che si realizzano a livello di porzione testuale tra due proferimenti metaforici, e interazioni sistematiche, che si realizzano su più discorsi omogenei tra loro. Queste ultime sono difficilmente rilevabili esaminando direttamente il testo, ed emergono invece tramite le metodologie di ricerca dei corpora.

3.1. Alternative metaforiche di tipo sistematico

3.1.1. Innesto di una metafora

Come visto, una delle posture non emerge dall'analisi degli usi di 'avanti'. Nell'avanzare la sua proposta politico-identitaria Hassan Abid usa peculiarmente la metafora della Nostra Battaglia:

(7) dobbiamo dimenticare* la nostra cittadinanza come marocchini, filippini, albanesi, perché noi siamo *immigrati*, noi abbiamo *nel nostro compito una battaglia* che dobbiamo farla insieme* con grande rispetto e fratellanza e amore (Hassan Abid 2009, 5:15).

⁵ Cfr. Steen 2013, che distingue tra uso inconsapevole, deliberato, consapevole di una metafora.

Benché usata da molti consiglieri, la Nostra Battaglia caratterizza peculiarmente la proposta politico-identitaria di Hassan Abid. Essa ha la funzione di serrare i ranghi tra gli immigrati, far superare le divisioni delle appartenenze nazionali per poter riconoscere una comune condizione e migliorarla; è solo occasionale la designazione di un nemico, e totalmente assente l'invito alla violenza – rischio semantico di cui Abid si mostra ben conscio – proprio perché target comunicativo sono gli stranieri. La metafora della Nostra Battaglia costituisce dunque una via concettuale alternativa alla metafora del trasporto, dato che elabora il medesimo target con un source differente (come in 3.2.2, ma in modo sistematico).

L'argomentazione di Abid trae comunque vantaggio dalla metafora del Procedere e del Trasporto. In (7), e altrove, il piano “dimenticare” è di fatto strutturato dal metaforico “non tornare indietro”: l'uditorio non può non richiamare alla mente la metafora del trasporto, data la sua importanza.

(8) Noi siamo qua, ormai siamo qua e come ha detto il Consigliere Khalid *non possiamo tornare indietro*. Allora, rimangono qui a fare che cosa? Questi signori, questo famoso partito Lega Nord che ha fatto questa proposta vogliono solo facchini, traslocatori e magazzinieri? No, un giorno avranno questori, avvocati, ingegneri, impiegati di banca di origini non italiana (Hassan Abid 2008, 8: 28).

La Nostra Battaglia, raccolta l'interpretazione generale dell'esperienza della migrazione fornita da ‘avanti’, la declina a suo vantaggio, chiamando così gli immigrati a serrare i ranghi: da un lato escludendo da una partecipazione alla Battaglia tutto ciò che si lega al paese di origine – le ambasciate ad esempio – e dall'altro chiarendo che non si troveranno alleati tra gli autoctoni.

3.1.2. Concorrenza tra sottoaree metaforiche a partire dallo stesso source

Questo particolare fenomeno emerge dall'area delle metafore di Contrasto. Nell'area del Contrasto non si riscontra quella omogeneità concettuale tra termini presente invece nell'area del Procedere e del Trasporto, in cui l'uso delle parole suppone un'unica dinamica di pensiero alle proprie spalle. La mancanza di omogeneità è in parte causata dalla presenza di tre diverse sottoaree di metafore, due delle quali sono in concorrenza argomentativa tra loro (tralasciamo la terza che svolge una funzione banale). Ciascuna area si differenzia dalle altre sia per i termini in cui di preferenza si realizza, sia per le funzioni concettuali, che riflettono più importanti contrapposizioni posturali e pragmatiche.

Da un lato l'area della Nostra Battaglia, la più importante, che si sostanzia nei lessemi ‘battaglia’, ‘difendere’, ‘lottare’, e che conta 95 occorrenze sulle 185 totali dell'intera area. Dall'altro l'area della Conflittualità convenzionale, che si realizza di preferenza in ‘colpire’ e ‘combattere’; la chiamiamo “convenzionale” perché si concreta in formule assai consuete, abituali (“combattere la mafia”). Eccone un esempio significativo:

(9) si cerca di *colpire* l'immigrato, direttamente l'immigrato, ma non si riesce mai a *colpire* la richiesta italiana di lavoro nero, perché il problema, ciò che si deve chiedere il Governo, alle istituzioni è: per quale motivo vengono in Italia i cittadini stranieri clandestini? (Bouchaib Khaline 2008, 4: 24)

Dal punto di vista concettuale, le due sottoaree non costituiscono due source alternativi per uno stesso target; la mappatura del target di ciascuna si sovrappone solo parzialmente a quella dell'altra; in entrambe sono mappati gli immigrati, e le leggi o il governo. Più che a livello di target e della strutturazione che riceve, la loro opposizione si gioca sul source: le due metafore competono in quanto versioni alternative interne al vocabolario del contrasto, in quanto differenti narrazioni della conflittualità. Infatti nel contesto di una consulta di migranti la conflittualità è importante di per sé, perché essa vale per ciò che evoca: valori emotivi forti poiché legati all'identità dei locutori e nei quali sono poco distinguibili il senso piano e quello metaforico⁶.

(10) A Via Filippo Beroaldo mi hanno aggredito*, hanno rovinato* la mia macchina e mi hanno dato delle botte* con delle stampelle. [...] Un messaggio che volevo lanciare a tutti è quello di *avere coraggio*. Dobbiamo *difenderci* fino in fondo*, non *avere paura*, non perdere la pazienza [...] faccio parte di una delle Antenne che possono raccogliere le problematiche che riguardano la discriminazione; l'unica *arma* che abbiamo adesso per raccogliere, per tirare fuori i problemi dall'inizio (Malick Kaire Gueye 2012, 1: 8).

Anche qui un consenso generico fa sì che i locutori diano per assunto, come *luogo comune* della comunicazione, che ci sia della conflittualità⁷; ma prendono posizioni diverse a riguardo. Di qui una disputa sulla narrazione della conflittualità che riflette le diverse attitudini politico-identitarie.

È solo ora che entra in gioco la strutturazione concettuale, guidata – anche qui – dalla immedesimazione con l'identità in-migrata o meno. La Nostra battaglia prende il punto di vista degli immigrati. Nel *mapping* del termine 'difendere' c'è un soggetto – il consiglio e la popolazione immigrata; un oggetto – gli immigrati; e, in secondo piano, degli antagonisti – le leggi, il governo, e tutte le parti della società ostili agli immigrati. Nel *mapping* di 'battaglia', invece, si serrano i ranghi degli immigrati e si propone una lettura sociologica della condizione immigrata – almeno nella proposta di Abid.

La Conflittualità convenzionale invece adotta un punto di vista neutro. Così il suo *mapping* prevede un soggetto (un'istituzione o una legge) che va ad agire ('colpire', 'combattere') su un fenomeno negativo ("combattere la mafia", "colpire il lavoro nero"). Nell'esempio (9), Khaline vuole sottolineare la conflittualità dei provvedimenti: ma facendo attenzione a restare in una prospettiva che, tramite giornalistiche formule neutre, non dicotomizza il dibattito in un "noi-loro". Sono due gruppi di locutori ben differenziati a impiegare di preferenza l'una o l'altra sottoarea. Benché formata da usi in gran parte convenzionali, e a cui non si attribuirebbe valore di pensiero se si esaminasse una ristretta porzione testuale, dal punto di vista

⁶ In questo caso bisogna mettere tra parentesi l'idea che le metafore mentano letteralmente, perché ciò che conta è prendere in carico l'intero spettro dei valori semantici ed emotivi elicitati dalle parole, per afferrare appieno il valore argomentativo delle metafore. Senza questo duplice valore piano e metaforico, nell'esempio in (8) Abid non si affretterebbe a mettersi al sicuro da una interpretazione di «battaglia...» in senso violento aggiungendo «...con fratellanza e amore». Sull'opposizione letterale e metaforico cfr. Ariel 2002, Guastini 2003, Rastier 1994; Gibbs 1989 e 2002, Giora 2002, Israel 2005.

⁷ È una verità della comunicazione (cioè un *luogo comune*: cfr. BLACK 1983: 57) e non una verità della scienza. Ovviamente non è la differenza culturale a generare conflitti; semmai sono *fenomeni sociali* vasti come le migrazioni che generano perturbazioni *nelle società* (e non "tra le culture").

sistematico ‘colpire’ e ‘combattere’ rivelano valori concettuali e argomentativi specifici (cfr. DEIGNAN 2005: 127; LAKOFF, JOHNSON 1998: 76).

3.2. Interazioni tra metafore in una porzione di testo

3.2.1. Sottoelaborazione di una metafora con un'altra

Discutendo del tema delle classi separate, Khalid Saoui interviene dicendo

(11) È proprio *da lì* [la scuola] che *nasce*, proprio in quel posto lì *nasce* la società multietnica del futuro. [...] chi sostiene questo, anche in buona fede, continua a pensare che la presenza degli immigrati sia una presenza temporanea (Khalid Saoui 2008, 8: 23-25).

Poco dopo Hassan Abid fa l'intervento in (8) e a proprio sostegno dice «come ha detto il consigliere Khalid, non possiamo tornare indietro». Benché Saoui usi tutt'altra metafora, Abid può riprenderne le parole perché i rapporti concettuali tra le due metafore glielo consentono intrinsecamente. Di una metafora più complessa – il diventare adulti, fatto biologico ma anche “esistenziale” – c'è un aspetto – la progressione lineare di “andare avanti” – che corrisponde a una più semplice metafora di spostamento (similmente alle *inheritance hierarchies* in LAKOFF 1993: 222-225; cfr. anche LAKOFF, JOHNSON 1998: 33-40, 45-52). In questo modo Abid aumenta di credito presso l'uditorio, non solo perché fa appello al fatto che anche un altro consigliere la pensa così, ma soprattutto perché usa la metafora del Procedere, che più di tutte riscontra consenso.

3.2.2. La sostituzione del source

Durante la discussione di un parere sui provvedimenti provinciali di welfare Saoui propone una modifica per rendere chiaro che le misure suggerite non mirano alle sole esigenze degli immigrati, ma della popolazione intera. Saoui puntualizza che

(12) quando io *difendo* i diritti del lavoratore emigrante in maniera separata, io non compio una buona cosa a mio avviso; devo *difendere* i diritti di tutti, perché il diritto è una ricchezza, non è un privilegio e ho la necessità *strategica* di far capire agli autoctoni che la *difesa* dei miei diritti vuol dire anche la *difesa* dei loro diritti (Khalid Saoui 2008, 8: 9-10).

Poco dopo Sanja Basic ne riprende l'intervento in (4), per corroborarlo esprimendo la sua adesione. Entrambi mirano a un duplice obiettivo: se c'è il fine, come dichiarano, di non prestare fianco a strumentalizzazioni, è anche evidente l'intento di proporre ai colleghi una visione Unitarista dell'immigrazione e del Consiglio.

Le divergenze invece esistenti tra i due interventi sono la dimostrazione perfetta di come le differenze ideologiche si concretino in diversità concettuali e presuppongano differenze identitarie. La mappatura di Saoui è più complessa e meno facile da accettare nell'uditorio: suggerisce che la vittima da difendere non sono gli immigrati, bensì trasversalmente i lavoratori, e dunque chiede di abbandonare l'idea di una separazione tra “noi e gli italiani” ben presente nel Consiglio. La mappatura della Basic invece non chiede questo sforzo di rottura con il convincimento identitario “noi-loro” (benché richiami a sentirsi parte della società italiana), perché fa appello

alla metafora di ‘avanti’, che tiene uniti gli immigrati nell’idea di un progresso della propria condizione. Benché i due interventi siano riconducibili alla stessa postura, le filosofie politiche che li sostanziano sono molto differenti: la prima una concezione chiaramente socialista (Saoui è sindacalista della FIOM), l’altra un’idea più repubblicana basata su una serena identificazione nella nuova nazione.

4. Conclusioni

Ogni comunità di discorso, soprattutto ai suoi inizi, impiega dei dispositivi linguistico-concettuali per situarsi nel mondo. Tra questi, le metafore, con la loro capacità di esplorare e strutturare il nuovo (CIMATTI 1999: 67-71) e fornire prospettive di senso. I dispositivi dell’orientamento – ‘avanti’ nel nostro caso – godono di una capacità argomentativa primaria (§ 2.1-2), e di una influenza sugli altri dispositivi successivamente impiegati (§§ 3.1.1, 3.2.2).

La codifica di identità sociali nei tropi, generica o di contenuto, risulta fortemente persuasiva presso i locutori che vi si identificano. D’altro canto, coloro che non appartengono a quella identità sociale e a quella comunità di discorso non sono soggetti alla capacità argomentativa dei dispositivi di orientamento, risultando estranei al recinto del consenso.

L’orientamento ideologico si riflette nella strutturazione concettuale delle metafore a partire dal punto di vista che assume enunciandosi. Per le metafore poco connotate rispetto ai temi della situazione comunicativa e alle posizioni ideologiche, l’assunzione di un punto di vista da parte di ciascuna postura si estrinseca in più declinazioni alternative. Le metafore che hanno caratteri intrinseci, invece, sono di per sé atte a venir usate da certe ideologie, e a esser scartate da altre (§§ 2.3, 3.1.2).

Differenti metafore possono interagire tra loro alla scala della porzione testuale, oppure sistematicamente in un intero discorso o insieme di discorsi. Alcune delle modalità di interazione tra metafore emerse dal corpus esaminato sono la competizione sistematica di due source e la sostituzione di un primo con un secondo in una porzione di testo; la sottoelaborazione di una metafora con un’altra; l’innesto; l’opposizione tra sottoaree.

In alcuni casi una metafora trae forza argomentativa da un elemento che pertiene alla predicazione propria del termine – lo spostamento dalla vecchia alla nuova nazione per ‘avanti’, o la colluttazione in ‘difesa’. Ciò offre una visione sfumata del rapporto tra vero e metafora, poiché sembra mettere in secondo piano la questione della falsità della metafora rispetto alla sua capacità di elicitazione.

Infine, dal punto di vista metodologico, allargare lo sguardo ai fenomeni sistematici di più testi omogenei tra loro – tramite la raccolta in aree, la categorizzazione secondo diversi criteri incrociati, e lo studio della distribuzione diacronica – consente di individuare le relazioni di interazione e opposizione tra metafore ideologicamente connotate.

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Analyzing metaphor in argumentative discourse

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Abstract This paper is aimed at providing the building blocks of a method for analyzing metaphor in argumentative discourse. It focuses on two specific argumentative uses of metaphor: (1) metaphor as (part of) a standpoint and (2) metaphor as (part of) an argument. After an explanation of some basic argumentation theoretical insights concerning types of standpoints and arguments, it will be demonstrated how these insights can be applied by analyzing a number of concrete examples of the use of metaphor in argumentative discourse.

Keywords: analogy, argumentation, argument classification, metaphor, metaphorical argument, metaphorical standpoint, *Periodic Table of Arguments*, typology of arguments, typology of debate propositions

Invited paper.

0. Introduction

How to analyze metaphor in argumentative discourse? This question can be addressed from the perspective of metaphor theory as well as from the perspective of argumentation theory¹.

Within metaphor theory, the dominant tradition before 1980 saw metaphor as a poetic or rhetorical device, i.e. as a special means of expression with an effect on the addressee that was deviant from ordinary language use and held to be typical of specific types of discourse, like poetry, political oratory, and so on. After 1980, when a number of publications caused a revolution in this field of study, metaphor came to be regarded as a conceptual device, a tool for thinking about one thing in terms of something else (e.g. STEEN 2013). This tool was not only considered ubiquitous in language but also fundamental for our thought in that it enabled people to deal with abstract, complex and less well understood phenomena in terms of more concrete, simple and better understood phenomena. A great number of studies showed how metaphor is important for understanding, reasoning, imagining, and communicating the same patterns emerging across different language, cultures and periods in comparable manifestations (e.g. GIBBS 2008).

¹ I would like to thank Gerard Steen, Giulia Frezza, and Andreas Finsen for their helpful comments on an earlier version of this paper. I would also like to thank Andreas Finsen for providing some of the examples analyzed in this paper and for discussing how to reconstruct them.

It is interesting to see how metaphor has not been singled out for extensive argumentation-analytical attention in this context. The dominant school of metaphor analysis in cognitive linguistics does highlight the important role of entailments of conceptual phenomena (e.g. LAKOFF & JOHNSON 1980, KÖVECSES 2010). But these are conceptual analyses that do not engage in the analysis of metaphor in argumentative discourse, nor do they make clear distinctions between for instance reasoning and argumentation. And although there are some specific case studies about, for example, argumentation by analogy in politics (MUSOLFF, 2004), these are exceptions that are isolated islands in an archipelago of discourse-analytic studies of metaphor with little systematic and exhaustive input from the discipline of argumentation theory.

Within argumentation theory, metaphor is traditionally viewed as a stylistic device that is used for ornamental purposes only. The historical background of this view is situated in classical rhetoric, where metaphor is conceived as a trope related to the virtue of style called “ornamentation” (*ornatus*), which is headed under the third task of the speaker, the “wording” (*elocutio*) of the speech². From the 1950s, the traditional view has been questioned by scholars such as Perelman and Olbrechts-Tyteca, who started studying the argumentative dimension of metaphor by relating it to their description of the discursive techniques that people use in order «*to induce or to increase the mind’s adherence to the theses presented for its assent*» (PERELMAN & OLBRECHTS-TYTECA 1969: 4, original italics). But although they were «the first to analyze metaphor systematically in the context of argument schemes based on analogy» and other scholars have elaborated on their theoretical considerations, it remains unclear «in which manifold way metaphor is related to other forms of similarities in texts» and also «which inferential processes we should assume to take place when understanding metaphors in specific types of texts and how these (processes) are connected with the explicit textual elements and argument schemes of analogical reasoning» (UEDING 2001: 1102, my translation).

In my view, these desiderata concerning the analysis of the argumentative use of metaphor still hold. In studying the relation between metaphor and argument, some present-day scholars stick to the traditional conceptualization of metaphor as a stylistic device (e.g. GARSSSEN 2009). This approach is premised on the idea that elements of argumentative discourse, if expressed in figurative language, can be transformed into literal language. Now this assumption may hold in many cases, but there is no reason to believe that argumentative content can always be reconstructed in this way. It makes sense, therefore, to not *a priori* exclude figurative language from having an argumentative function as such.

Other scholars tend to view the relation between metaphor and argument along the same lines as Perelman and Olbrechts-Tyteca. Their approach is premised on the idea that metaphor is to be conceived in terms of argument schemes based on analogy, in which the concept of similarity plays a pivotal role (see e.g. OSWALD & RIHS 2014: 141-143, SANTIBÁÑEZ 2010: 947-978, SVAČINOVÁ 2014: 71-72). Again, I do not think that this assumption holds in all cases. Although it is true that metaphorical expressions can sometimes be reconstructed as part of an argument scheme based on analogy or as supportive of arguments functioning within such a scheme, it may also be the case that they play a role in other types of arguments (or

² For a more detailed account of the conceptualization of metaphor in classical rhetoric see e.g. Lausberg (1998: 250-256) and Ueding (2001: 1103-1115).

even in other types of elements that occur in argumentative discourse such as standpoints or starting points).

In this paper, therefore, I will take a different approach to the analysis of the argumentative use of metaphor. Instead of conceptualizing metaphor exclusively as a presentational device or in terms of argument schemes based on analogy, I distinguish between two crucial manifestations of metaphor in argumentative discourse: (1) metaphor as (part of) a standpoint and (2) metaphor as (part of) an argument³.

The central aim of this paper is to provide the building blocks of a method that can be used for analyzing the role of metaphor in argumentative discourse. In Section 1, I discuss the various ways in which a metaphor may occur in elements of argumentative discourse that can be labeled as ‘standpoints’ because the acceptability of their propositional content is doubted or criticized⁴. First, I expound a typology of propositions developed in debate theory. I explain the main characteristics of the propositions distinguished within this typology and provide a number of non-metaphorical examples. Then, I illustrate how to use the typology by reconstructing a number of concrete examples of metaphor as (part of) a standpoint. In Section 2, I discuss the various ways in which a metaphor may occur in elements of argumentative discourse that can be labeled as “arguments” because they are put forward in support of disputed claims⁵. First, using the theoretical framework of the *Periodic Table of Arguments* as a point of departure, I present a three-step method for analyzing metaphor as (part of) an argument. Then, I illustrate the use of this method by analyzing a number of concrete examples and identifying which types of arguments are involved. Finally, in Section 3, I briefly summarize my findings and indicate directions for further research.

1. Metaphor as (part of) a standpoint

Within present-day debate theory, as well as in some approaches within argumentation theory, it is common to make a distinction between three types of propositions that participants in a debate may put forward (SCHUT & WAGEMANS 2014: 25-33):

- (1) propositions of policy (P)
- (2) propositions of value (V)
- (3) propositions of fact (F)

Propositions of policy (P) usually predicate of a specific act (course of action, policy) that it should be carried out. In addition, they may also include as their constituents an actor, an object of the act, and a temporal indication. An example in which all of

³ The distinction is in line with the conclusion of a research project carried out by van Nimwegen, who remarks that «the reconstruction of metaphorical argumentation [...] should begin with the question if the metaphor functions as the standpoint or as support» (2015: 23).

⁴ For a general description of the nature and reconstruction of standpoints see e.g. van Eemeren et al. (2014: 13-16).

⁵ For a general description of the nature and reconstruction of arguments see e.g. van Eemeren et al. (2014: 1-7, 19-21).

these constituents are present is “The city of Amsterdam should legalize soft drugs in 2017”.

The second type, propositions of value (V), predicate of an entity (thing, person, event or act) that it has a specific value or that it can be judged or evaluated in a specific way. Examples of this type are moral judgments such as “Circumcision is reprehensible”, aesthetic judgments such as “*Interstellar* is a great movie”, legal judgments such as “This act is to be qualified as murder”, and logical judgments such as “This proposition is true”.

The third and last type, propositions of fact (F), predicate of an entity (thing, person, event, or act) that it has a specific empirical property that, within the specific context of use, does not count as evaluative or recommending. Propositions of fact are connected to observation and measurement rather than to judgment and prudence. An example of this type of proposition is “The earth is flat”. As is clear from this example, the truth or acceptability of propositions of fact is considered to be debatable rather than to be established beforehand. The difference between propositions of fact and propositions of value is not that while the former express *objective truths*, the latter only express *subjective opinions*. In as far as they are used in argumentative discourse, all three types of propositions express the opinion of the arguer, the acceptability of which can always be doubted or criticized.

In order to enable an analysis of the argumentative function of the constituents of these types of propositions, I indicated in Figure 1 for each type of proposition what sort of predicate *Q* is attributed to what sort of subject *X*⁶.

	<i>subject (X)</i>	<i>predicate (Q)</i>
<i>proposition of policy (P)</i>	act A (course of action, policy)	to be carried out
<i>proposition of value (V)</i>	entity E (thing, person, event, act)	judgment J
<i>proposition of fact (F)</i>	entity E (thing, person, event, act)	characteristic C

(FIG.1) Subjects and predicates of the three types of propositions.

How to use the typology of debate propositions in the analysis of metaphor as (part of) a standpoint in argumentative discourse? I explore this issue by giving some concrete examples, identifying the type of standpoint involved, and indicating the role of the specific metaphor involved.

The first example is taken from the domain of philosophical discourse. In *The structure of behavior*, the philosopher Merleau-Ponty argues against the view that the physiology of the nerve system can be understood as a keyboard, a metaphor that continues to reverberate in debates in contemporary cognitive science.

Example 1

The organism cannot properly be compared to a keyboard on which the external stimuli would play and in which their proper form would be delineated for the simple reason that the organism contributes to the constitution of that form (MERLEAU-PONTY 1967: 13).

Since Merleau-Ponty provides a reason for why he thinks that the organism is not to be compared with a keyboard, we can take the phrase “the organism can be compared to a keyboard” as a reconstruction of the standpoint that he is aiming to

⁶ For a more detailed explanation of this way of characterizing the constituents of propositions see Wagemans (2014: 25-42).

refute. On the basis of the typology of debate propositions, the proposition expressed in the standpoint can be identified as a proposition of fact (F). The standpoint does not contain any other elements than the metaphor itself: the entity belonging to the target domain (E_T), “the organism”, is the subject (X) of the proposition, while the entity belonging to the source domain (E_S), “a keyboard”, is its predicate (Q). The reconstruction is depicted in Figure 2.

The organism (X) can be compared to a keyboard (Q) (F)

(FIG. 2) Metaphor as a standpoint expressing a proposition of fact.

The second example of metaphor as a standpoint is taken from the domain of political discourse. In discussing the state of the military, the U.S. army officer Lt. Col. Ralph Peters was asked whether “honor should dictate” that a former Chairman of the Joint Chiefs should comment on the release of Bowe Bergdahl, who is charged with desertion. In the interview, that was part of the program *The O’Reilly Factor* broadcasted by Fox News Channel on April 21, 2015, Peters stated, among other things, that “our soldiers are lions”.

Example 2

Honor only dictates to honorable men. And unfortunately, beginning with Rumsfeld, we have appointed some very, very weak three – and four – star generals, men and women who do not have the courage of their already weakened convictions. [...] Our soldiers are lions, but they’re led by far too many craven, politicized weaklings (CAREY 2015).

Now imagine that Peters is asked to defend his statement that “our soldiers are lions” against the background of the fact that one of them has been charged with desertion. In this case, the metaphor functions as a standpoint and we can see that “our soldiers”, the entity belonging to the target domain (E_T), is the subject (X) of the proposition expressed in that standpoint, while ‘lions’, the entity belonging to the source domain (E_S), is its predicate (Q). Since it is clear that the arguer does not want to convey that the soldiers he is talking about literally belong to the biological species of lions, but rather that they should be judged as brave, the type of proposition is not to be identified as a proposition of fact but rather as a proposition of value (V). The analyst, when reconstructing the standpoint, is therefore advised to substitute the entity belonging to the source domain with the specific judgment represented by that entity, which functions as the predicate of the proposition involved. The reconstruction is depicted in Figure 3.

Our soldiers (X) are brave (Q) (V)

(FIG. 3) Metaphor as a standpoint expressing a proposition of value.

In the examples discussed so far, the standpoint contained no other elements than the metaphor itself. Such standpoints, so I propose, can be called “metaphorical standpoints”. On the basis of the description of the content of the various types of propositions in Figure 1, I have specified in Figure 4 the content of the propositions expressed in such metaphorical standpoints.

	<i>subject (X)</i>	<i>predicate (Q)</i>
<i>proposition of value (F)</i>	entity E_T belonging to the target domain	entity E_S belonging to the source domain
<i>proposition of value (V)</i>	entity E_T belonging to the target domain	judgment J represented by entity E_S belonging to the source domain

(FIG. 4) Subject and predicate of metaphorical standpoints.

Metaphor may not only function as a standpoint, but also as part of a standpoint. This is the case, for instance, when there is a difference of opinion regarding the quality or the use of a metaphor (VAN NIMWEGEN 2015: 22-23). Apart from the elements of the metaphor itself, such a standpoint also contains elements expressing a value judgment about that metaphor or a recommendation concerning its use. The following two examples are meant to illustrate how to determine the role of the metaphor in these cases.

In the first example, Anderson is criticizing a specific metaphor used by scientists working in Computational Theory of Mind (CTM) by pointing out what he calls an «important disanalogy» between the elements from the source and target domains.

Example 3

My specific criticisms of CTM [Computational Theory of Mind] [...] emerge over the course of this volume, but it is worth an initial if brief reflection on an important disanalogy between the brain and a computer: whereas a computer is typically understood as a device that carries out a specific instruction set on (and in response to) inputs, brain responses to stimuli are characterized instead by specific deviations from intrinsic dynamics (ANDERSON, 2014: xx).

Since Anderson provides a reason for having a negative point of view regarding the quality of the brain-as-a-computer metaphor, the implicit standpoint he is defending can be reconstructed as “The brain is a computer is not an accurate metaphor”. On the basis of the typology of debate propositions, the standpoint can be identified as a proposition of value (V). In this case, the metaphor “the brain is a computer” is the subject (X) of that proposition, while the judgment regarding its quality “not an accurate metaphor” is its predicate (Q). The reconstruction of this standpoint is depicted in Figure 5.

The brain is a computer (X) is not an accurate metaphor (Q) (V)

(FIG. 5) Metaphor as part of a standpoint expressing a proposition of value.

The analysis illustrates that in cases where an arguer expresses a point of view regarding the quality of a specific metaphor as metaphor, the metaphor functions as the subject (X) of the proposition of value (V) expressed in the standpoint.

Sometimes people do not provide a positive or negative judgment concerning the metaphor itself, but point at the positive or negative consequences of the use of that metaphor. This is the case in the next example, in which philosopher Peter Hacker criticizes the use of the metaphor that humans are machines in *Gesprek op 24*, a program that was broadcasted on Dutch national television on June 7, 2013⁷.

⁷ For a similar reconstruction of this example see van Nimwegen (2015: 23).

Example 4

If we start thinking about ourselves in a way in which some neuroscientists recommend we do, namely as machines, it will provide us with a range of excuses which are not really legitimate excuses, it will diminish our sense of responsibility, and answer-ability for ideas, and those are very deleterious social consequences and moral consequences (VAN DER WIELEN, 2013).

Since the arguer provides a reason for holding a point of view concerning the use of the metaphor, he is apparently anticipating doubt or criticism regarding its acceptability. We can therefore reconstruct the phrase “We should not think about ourselves as machines” as the implicit standpoint. Unlike in the former example, the standpoint in this example is not to be identified as a proposition of value but as a proposition of policy (P). On the basis of the description of the content of the constituents of this type of propositions given in Figure 1, ‘the act of thinking about ourselves as machines’ is the subject (X) of this proposition and ‘not to be carried out’ is its predicate (Q). The reconstruction of this standpoint is depicted in Figure 6.

The act of thinking about ourselves as machines (X) should not be carried out (Q) (P)

(FIG. 6) Metaphor as part of a standpoint expressing a proposition of policy.

When expressing a point of view regarding the use of a specific metaphor, so this analysis illustrates, the metaphor functions as the object of the act that is the subject (X) of the proposition of policy (P) expressed in the standpoint.

The typology of debate propositions is generally applicable in that it can be used for the purpose of identifying the type of any proposition in the discourse, whether that proposition functions as a standpoint or as an argument. For the analysis of metaphor as (part of) an argument, however, it is not enough to only identify the type of *proposition* at issue but rather to identify the type of *argument* involved. In the next section, I will explain which additional theoretical distinctions can be helpful in accomplishing this task.

2. Metaphor as (part of) an argument

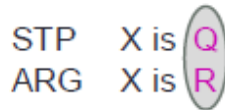
I now turn to discussing the various ways in which a metaphor may play a role in elements of argumentative discourse that can be labeled as arguments. More specifically, I present a three-step method for identifying the type of argument involved that is based on a standard for classifying arguments called the *Periodic Table of Arguments* (WAGEMANS 2016).

The theoretical framework of the *Periodic Table of Arguments* combines three distinctions regarding specific characteristics of arguments⁸. The first distinction is between predicate arguments and subject arguments. In order for an argument to function as an attempt to establish or increase the acceptability of the standpoint it supports, the propositional content of that argument should share exactly one element with that of the standpoint, while the transfer of acceptability from the argument to the standpoint is facilitated by the alleged existence of a specific relation between the non-shared elements.

⁸ For a more detailed explanation of these distinctions and their sources see Wagemans (2016).

In the case of predicate arguments, which are of the general form “X is Q, because X is R”, the shared element is the subject (X), while the transfer of acceptability is facilitated by the alleged existence of a specific relation between the predicate of the argument (R) and that of the standpoint (Q) (see Figure 3).

PREDICATE ARGUMENT

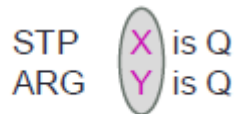


(FIG. 7) The linguistic structure of a predicate argument.

An example is “The suspect was driving fast, because he left a long trace of rubber on the road”, in which the arguer uses the relation between the predicates “driving too fast” and “leaving a trace of rubber on the road” in order to establish or increase the acceptability of the standpoint.

In the case of subject arguments, which are of the general form “X is Q, because Y is Q”, the shared element is the predicate (Q), while the transfer of acceptability is facilitated by the alleged existence of a specific relation between the subject of the argument (Y) and that of the standpoint (X) (see Figure 4).

SUBJECT ARGUMENT



(FIG. 8) The linguistic structure of a subject argument.

An example is “Biking on the lawn is forbidden, because walking on the lawn is forbidden”, in which the arguer uses the relation between the subjects “walking on the lawn” and “biking on the lawn” in order to establish or increase the acceptability of the standpoint.

Once it is analyzed whether there the mechanism behind the argument is based on a relation between the predicates or between the subjects, the question arises how to further characterize this relationship. In order to answer this question, it is helpful to make use of the distinction explained in Section 1 between propositions of policy (P), propositions of value (V), and propositions of fact (F). When providing an argument in support of a standpoint, the arguer always instantiates a specific combination of types of propositions (PP, PV, PF, VP, VV, VF, FP, FV, or FF). Each of these instantiations employs a different relation between the predicates (in the case of predicate arguments) or between the subjects (in the case of subject arguments) as the underlying mechanism of the argument.

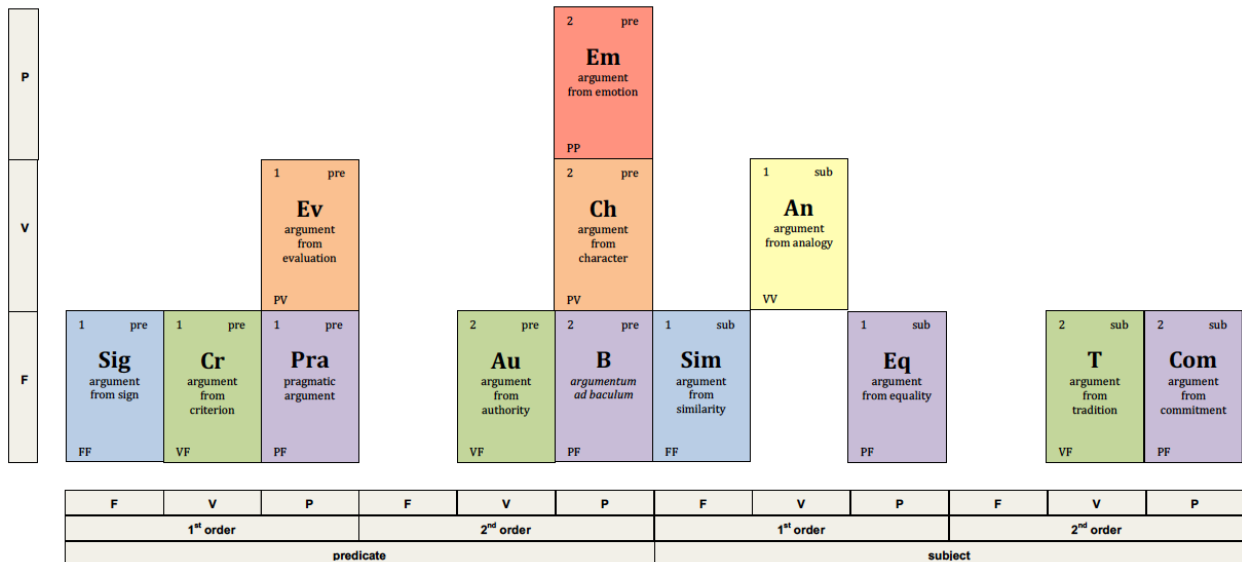
The predicate argument “The suspect was driving fast, because he left a long trace of rubber on the road”, for example, instantiates a combination of two propositions of fact (FF). In this case, the relation between the predicate of the argument and that of the standpoint can be characterized as a sign relation, because “leaving a long trace of rubber on the road” is taken to be a sign for “driving fast”. The subject argument “Biking on the lawn is forbidden, because walking on the lawn is forbidden”, to give another example, instantiates a combination of two propositions of value (VV). In

this case, the relation between the subject of the argument and that of the standpoint can be characterized as an analogy relation, because “walking on the lawn” is taken to be analogous to “biking on the lawn”.

The third and final distinction constituting the theoretical framework of the table is the distinction between first-order arguments and second-order arguments. Different from first-order predicate arguments, the predicate of the argument in second-order predicate arguments does not relate to the predicate of the original standpoint, but of the truth or acceptability of the standpoint as a whole. While a first-order predicate argument has the general form “X is Q, because X is R” and exploits the relation between R and Q, a second-order predicate argument has the general form “(X is Q) is true or acceptable, because (X is Q) is R”. An example of a second-order predicate argument is “The economy will grow, because the ECB has said so”. In this case, the arguer exploits the fact that a specific standpoint is uttered by an expert as an indicator of its truth or acceptability.

Second-order arguments are often regarded as fallacious because they do not establish or increase the truth or acceptability of the standpoint as such. For how could, in the example mentioned above, the sheer fact that the ECB has said something contribute to the truth or acceptability of what has been said at all? But second-order arguments nevertheless count as arguments, because they render standpoints true or acceptable in the eyes of an audience that accepts a certain (type of) authority.

When taken together, the three distinctions constitute a theoretical framework for argument characterization. Within this framework, types of argument are described as (1) subject arguments or predicate arguments; (2) PP, PV, PF, VP, VV, VF, FP, FV, or FF arguments; and (3) first-order or second-order arguments. This combinatory approach yields 36 types of arguments, which can systematically be ordered and presented in the form of a *Periodic Table of Arguments* (see Figure 9).



(FIG. 9) The *Periodic Table of Arguments* (as depicted in WAGEMANS 2016).

The *Periodic Table of Arguments* can be used for heuristic purposes, i.e. for generating arguments in support of a specific standpoint, as well as for analytic purposes, i.e. for identifying the types of argument used in an existing text or

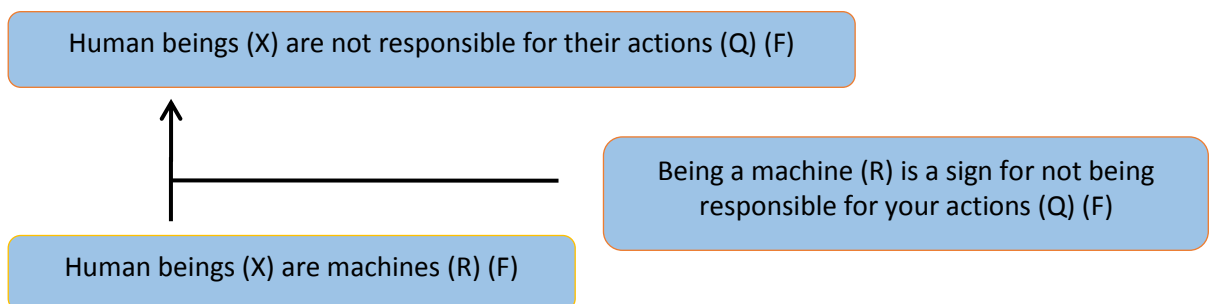
discussion. In the latter case, the three constituents of the theoretical framework of the table correspond to the three steps of a method for describing the characteristics of a specific argument. In the first step of this “Argument Identification Procedure”, the analyst determines whether the argument at issue is a predicate argument or a subject argument. In the second step, the analyst identifies the types of propositions involved and determines the nature of the specific relation between the predicates or subjects involved. And finally, as a third step, the analyst decides whether the argument is to be viewed as a first-order argument or as a second-order argument. How to use this method in the analysis of metaphor as (part of) an argument? I will explore this issue by giving some examples and identifying the type(s) of argument(s) involved.

As is clear from the definition of predicate arguments, a metaphor may function as an argument supporting a standpoint that has the entity belonging to the target domain (E_T) as the subject (X) of its proposition. This is, for instance, the case when the standpoint “Human beings are not responsible for their actions” is defended by the metaphor “Human beings are machines” (cf. Example 3).

Example 5

Human beings are not responsible for their actions, because human beings are machines.

Using the three-step method explained earlier in this section, the argument can be identified as a first-order predicate argument linking a proposition of fact (F) to another proposition of fact (F). This argument is listed in the *Periodic Table of Arguments* as the ‘argument from sign’. The identification of the type of argument allows us to formulate the relation between the predicates as “being a machine is a sign of not being responsible for your actions”. Since this proposition functions as a reason for ascribing to human beings the characteristic of “not being responsible for their actions” on the basis of ascribing to them the characteristic of “being machines”, we can reconstruct it as an implicit argument supporting the justificatory force of the metaphor as an argument from sign⁹. While the proposition expressed in the standpoint has the entity belonging to the target domain (E_T) as its subject (X), the proposition expressed in this implicit argument has the entity belonging to the source domain as (E_S) as its subject (R). In this way, the metaphor functions as an argumentative device that enables the transfer of what is ascribed to the entity belonging to the source domain (E_S) to the entity belonging to the target domain (E_T). The complete reconstruction is depicted in Figure 10.



(FIG. 10) Metaphor as an argument from sign.

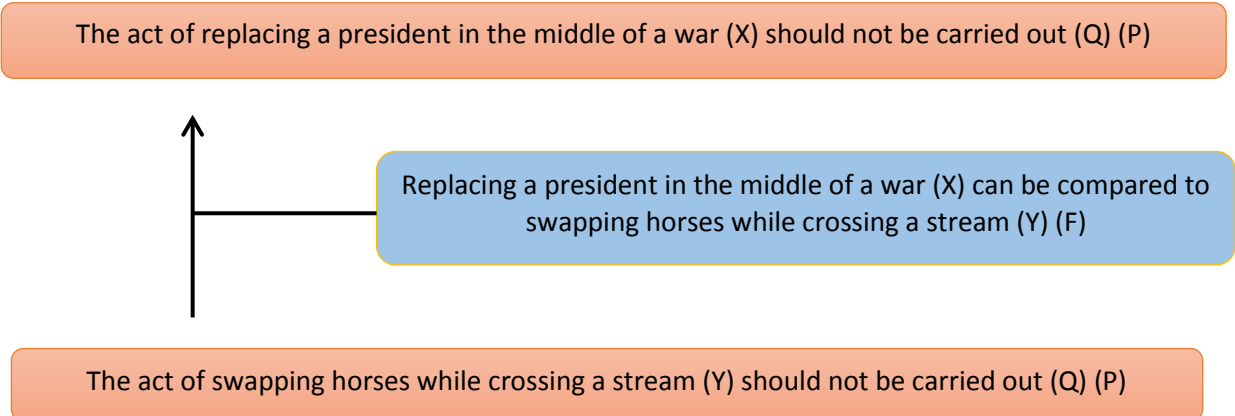
⁹ For a general overview of methods for analyzing implicit arguments see e.g. van Eemeren et al. (2014: 17-18).

One could also imagine a situation in which the metaphor as such is not (or only partly) mentioned in the argument. An example is to be found in the following fragment taken from a speech held by the former U.S. president Abraham Lincoln on June 9, 1864. Lincoln is defending the standpoint that he should not be replaced, given that the country is in the middle of a civil war¹⁰.

Example 6

I have not permitted myself, gentlemen, to conclude that I am the best man in the country; but I am reminded, in this connection, of a story of an old Dutch farmer who remarked to a companion once that “it was not best to swap horses while crossing a stream”.

Taking into account the contextual information provided above, the standpoint that is defended can be formulated as “One should not replace a president in the middle of a war” and the argument as “One should not swap horses while crossing a stream”. Using the three-step method explained earlier in this section, the argument that is given can be identified as a first-order subject argument linking a proposition of policy (P) to another proposition of policy (P). This argument is listed in the *Periodic Table of Arguments* as the ‘argument from comparison’. The identification of the type of argument makes clear that in this case, the relation between the subjects of the argument and the standpoint can be formulated as “replacing a president in the middle of a war can be compared to swapping horses while crossing a stream”. This metaphor supports the justificatory force of the argument, for it is on the basis of the comparison between the two situations that the property of “not to be carried out”, which is ascribed to the act of swapping horses while crossing a stream, can also be ascribed to the act of replacing the president in the middle of a war. Like in the previous example, the metaphor functions as an argumentative device that enables the transfer of what is ascribed to the entity belonging to the source domain (E_S) to the entity belonging to the target domain (E_T). The complete reconstruction is depicted in Figure 11.



(FIG. 11) Metaphor as supporting the justificatory force of an argument from comparison.

Analogous to the definition of a “metaphorical standpoint”, I propose to call an argument that does not contain other elements than the metaphorical expression itself a “metaphorical argument”. The previous two analyses concerned examples of such

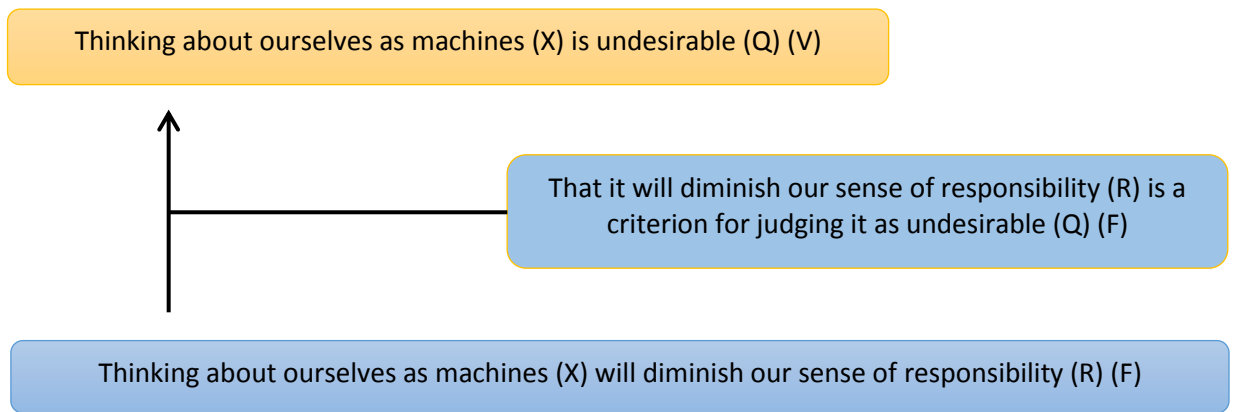
¹⁰ Alternative reconstructions of this example can be found in Eimers (2008), Garssen (2009) and Svačinová (2014).

metaphorical arguments. The next and final analysis concerns an example of metaphor as part of an argument, c.q. an adaptation of Example 3.

Example 7

Thinking about ourselves as machines is undesirable, because it will diminish our sense of responsibility.

In this example, the standpoint that ‘thinking about ourselves as machines is undesirable’ is defended by means of the argument that ‘it will diminish our sense of responsibility’. Using the three-step method explained earlier in this section, the argument can be identified as a first-order predicate argument instantiating the combination VF, which is listed in the *Periodic Table of Arguments* as the ‘argument from criterion’. The identification of the type of argument allows us to formulate the relation between the predicates as “that it will diminish our sense of responsibility is a criterion for judging it as undesirable”. Both in the standpoint and the argument, the metaphor functions as the object of the act that is the subject (X) of the proposition expressed. The reconstruction is depicted in Figure 12.



(FIG. 12) Metaphor as part of an argument from criterion.

Since metaphors may part of a proposition of policy or proposition of value, one could imagine many more examples of metaphor as part of an argument. I think, however, that this example suffices for the present purpose of illustrating how to use the three-step method of identifying the type of argument in analyzing metaphor as part of an argument.

3. Conclusion

In this paper I explored the relation between metaphor and argument by providing some building blocks for a method that can be used in order to systematically analyze the role of metaphor in argumentative discourse. Different from the traditional view of metaphor as a presentational device and the more recent view of metaphor as (supporting) an argument scheme based on analogy, I started from the assumption that metaphor may manifest itself as (part of) a standpoint and as (part of) an argument. Making use of a typology of propositions developed in debate theory and of a three-step method for identifying types of argument derived from the theoretical framework of the *Periodic Table of Arguments*, I analyzed a number of

concrete examples and indicated the role of the metaphor within the constellation of elements involved in the argumentation.

From these qualitative analyses it can be concluded, first of all, that when a standpoint does not contain any other elements than a metaphor, the entity belonging to the target domain (E_T) can be reconstructed as the subject (X) of the proposition expressed in the standpoint and the entity belonging to the source domain (E_S) as its predicate (Q). I have proposed to call these standpoints ‘metaphorical standpoints’ and have provided reconstructions of two examples of them, one expressing a proposition of fact (F) and the other expressing a proposition of value (V). In the latter case, the analyst may have to transform figurative language into literal language in order to reconstruct the standpoint, for it is the value judgment (J) that is represented by the entity belonging to the source domain rather than that entity itself that functions as the predicate of the proposition expressed in the standpoint (e.g. ‘brave’ instead of “lions”).

Second, when metaphor occurs as part of a standpoint, for instance in cases where something is said about its value or use, the analyses have shown that metaphor can be reconstructed as the subject (X) of a proposition of value (V) or as the object of the act (A) that is the subject (X) of the proposition of policy (P) expressed in the standpoint respectively.

Regarding the third possibility examined in this paper, arguments that do not contain any other elements than a metaphor, it seems appropriate to reconstruct the entity belonging to the target domain (E_T) as the subject (X) of the proposition expressed in the argument and the entity belonging to the source domain (E_S) as its predicate (Q). I have proposed to call such arguments “metaphorical arguments”. The analyses of two examples of them has shown that metaphorical arguments may be based on a relation between the predicates (e.g. a sign relation). This finding contradicts the view that metaphor should always be understood in terms of an argument scheme based on analogy. In fact, the only situation in which the concept of analogy (similarity, comparison) plays a role is when the metaphorical argument supports the justificatory force of an argument that can be characterized as a subject argument.

As to metaphor occurring as part of an argument, finally, the propositions involved can be reconstructed in the same way as metaphor occurring as part of a standpoint. Depending on the combination of types of proposition instantiated, the type of argument can be identified by using the three-step method derived from the theoretical framework of the *Periodic Table of Arguments*.

A brief summary of these findings can be found in Figure 13. For each of the four different manifestations of metaphor in argumentative discourse examined in this paper, I indicate the general form of the standpoint or argument and mention the corresponding examples (metaphorical expressions are in italics).

role of the metaphor	general form	example
metaphor as a standpoint (metaphorical standpoint)	E_T is E_S (F)	(1) <i>The organism can be compared to a keyboard</i>
	E_T is J (represented by E_S) (V)	(2) <i>Our soldiers are brave (lions)</i>
metaphor as part of a standpoint	(E_T is E_S) is J (V)	(3) <i>The brain is a computer</i> is not an accurate metaphor
	A concerning (E_T is E_S) should not be carried out (P)	(4) We should not think of <i>ourselves as machines</i>
metaphor as an argument (metaphorical argument)	E_T is Q, because E_T is E_S [predicate relation between E_S and Q]	(5) Human beings are not responsible for their actions, because <i>human beings are machines</i>

		[being a machine is a sign for not being responsible for your actions]
	E_T is Q, because E_S is Q [subject relation between E_T and E_S]	(6) One should not replace a president in the middle of a war, because one should not swap horses while crossing a stream [replacing a president in the middle of a war can be compared to swapping horses while crossing a stream]
metaphor as part of an argument	A concerning (E_T is E_S) is Q, because A concerning (E_T is E_S) is R [predicate relation between R and Q]	(7) Thinking of <i>ourselves as machines</i> , is undesirable, because thinking of <i>ourselves as machines</i> will diminish our sense of responsibility [that it will diminish our sense of responsibility is a criterion for judging it as undesirable]

(FIG. 13) Manifestations of metaphor in argumentative discourse.

I do not claim that the overview of possible manifestations of metaphor in argumentative discourse depicted in Figure 13 is exhaustive. The research findings do make clear, however, that the assumptions underlying the traditional view of metaphor as a presentational device and the more recent view of metaphor as (part of) an argument scheme based on analogy do not hold for all these manifestations. First of all, when reconstructing argumentative content, it is not always possible nor necessary to transform figurative language into literal language. From this we may conclude that the function of metaphor is not purely ornamentative but also argumentative. Second, metaphor cannot always be conceived in terms of argument schemes based on analogy but may also play a role as (part of) a standpoint expressing different types of propositions and as (part of) argument schemes that are based on other concepts than analogy. For the purpose of analyzing all these different argumentative functions of metaphor, the typology of debate propositions and the *Periodic Table of Arguments* have proven to be suitable tools.

The qualitative analyses carried out in this paper can be complemented by quantitative research on the role of metaphor in argumentative discourse. The theoretical building blocks provided in this paper may then be further developed into a fully-fledged method for analyzing metaphor in argumentative discourse by integrating the results of these two types of research. The building blocks may also be used to further explore ways of evaluating the quality or the use of metaphors. Since every type of argument can be criticized in a limited number of ways, the method for identifying the type of argument presented in this paper may be combined with a typology of criticisms in order to develop a method for evaluating the use of metaphor in argumentative discourse.

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