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War, race and sustainability: metaphorical frames for climate change

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Abstract The paper considers two frequently used metaphors in talking and thinking about climate change: the WAR metaphor and the RACE metaphor. The paper explores the effects of these metaphors on our understanding of climate change, highlighting their positive communicative aspects, as well as their limitations and potential negative implications in addressing the environmental issues, leading to an emphasis on competition rather than collaboration. To address these limitations, the paper suggests revitalizing the sustain metaphor as a more effective way to conceptualize climate change. This metaphor focuses on Sustaining the Earth and the ecosystem, rather than overcoming an enemy or competing in a race. It can shift our attention towards long-term sustainability and interdependence of all living organisms, better presenting the complex and interconnected nature of the climate change phenomenon.

Keywords: metaphor, framing, climate change, war, race, sustainability

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0. Introduction

The paper explores the use of different metaphorical framings to conceptualize climate change. While metaphors can be a powerful tool for communication in times of climate emergencies, they can also have negative effects on how the audience understands the problem. In the first section, the paper explores the topic by presenting the conceptual metaphor theory (Lakoff, Johnson 1980) and its developments (Kövecses 2002). In the second section, the paper examines metaphor as a framing device that shapes our perception and understanding of complex issues like climate change, by carefully distinguishing its framing and perspective-taking functions (Ortony 1975, Steen 2008, Steen 2010). The choice of certain properties from the source domain of a metaphor can indeed covertly influence how we conceptualize the target domain (Thibodeau, Boroditsky 2011, Thibodeau, Boroditsky 2013), potentially causing us to overlook or undervalue certain aspects. The perspective-taking function of metaphor might instead be deliberately used by speakers to bring about a change in how we look at the problem targeted by metaphor, i.e., climate change.

In the third section, the paper analyzes two commonly used metaphors in climate change debate: the WAR metaphor and the RACE metaphor. We discuss the different ways these metaphors impact our understanding of climate change, both positively and negatively. We argue that these metaphors can lead to a focus on competition rather than collaboration in addressing the problem of climate change. To address the limitations of these conceptual metaphors, the paper suggests using the Sustain metaphor as a more effective way to conceptualize climate change. In the fourth section, we argue that this metaphor emphasizes sustaining the Earth and the ecosystem, rather than viewing climate change as a fight or a race. By doing so, it redirects our attention towards long-term sustainability and the interconnectedness of all living organisms. Finally, we draw some conclusions, pointing out that a more nuanced and holistic understanding of climate change is needed when talking metaphorically about it, to promote a more effective communication and action in addressing this urgent issue.

1. Conceptual metaphor theory: an overlook

Both philosophy of language and cognitive science were and still are interested in Lakoff and Johnson's works (1980, 1999) on the nature of metaphors, as they are considered as crucial not only in language but also in human cognition. Metaphors play a significant role in our thinking and in how our minds function, as they serve as cognitive models for concepts. Additionally, metaphors are a tool for understanding one thing by relating it to another, particularly when dealing with abstract and intangible concepts. For example, the conceptual metaphors of time is money and time as a resource are claimed to shape the way we think about time in terms of efficiency, productivity, and prioritization. In this framework, these metaphors lead to widespread linguistic expressions, such as "wasting time" or "spending time" which imply that time should be managed and used effectively like a valuable resource. By using familiar conceptualizations, metaphors help us conceptualize everyday issues, but also complex scientific or societal problems. As Ortony (1975) pointed out, metaphor is "necessary and not just nice": it is necessary to talk and think about complex issues, such as climate change, that might not be explained in plain, literal terms.

For instance, we could talk about and think of the earth like an ice cream melting away, to understand the possible effects of the climate change. Metaphor is indeed a cognitive mechanism that allow us to understand a usually less know target conceptual domain, i.e., the climate change, in terms of a better-known source conceptual domain, as for instance the ice cream domain. In the process, the target conceptual domain is seen in light of some properties of the source domain (Lakoff, Johnson 1980, Gibbs 1994, Bowdle, Gentner 2005). For instance, in the metaphor "the earth is a melting ice cream cone", we highlight the property of "melting" of the ICE CREAM conceptual domain as the most relevant one to understand climate change; other properties such as the taste of the ice cream or its being made of milk or soya are not relevant, so they remain hidden or simply ignored (Ervas 2021; Gola, Ervas, Amitash 2019).

In the conceptual theory of metaphor, «metaphor is primarily a matter of thought and only derivatively a matter of language» (Lakoff, Johnson 1980: 153). This means that the metaphorical verbal expressions are just the superficial structure of a deeper conceptual structure which might be represented also in other modalities (Forceville 1994). For instance, in Fig. 1, the metaphor of the earth melting away like an ice cream cone is pictorially represented.

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Fig. 1 Example of visual (or pictorial) metaphor (Credits: 123RF, Creative agency: Aunt Spray).

A visual metaphor, also called pictorial metaphor, is indeed an image where the source and the target conceptual domains are pictorially presented (or suggested) and compared. Text might accompany a visual metaphor, modulate its meaning and create a multimodal pictorial metaphor. This phenomenon is quite widespread, especially in social campaigns dedicated to the nature and actions for sustainability, such as in Fig. 2.

Fig. 2 Example of multimodal visual metaphor in a social campaign (Credits: World Environment Day, Creative agency: Valappila Communication, India).

Thus, multimodal metaphors might have a strong impact because they go beyond language, remaining in our long-term memory and shaping our understanding. These behave like internalized cognitive models that influence the way we think and act (Schnell, Ervas 2022). This is particularly striking in the case of the current climate crisis in social-political debates, which greatly influence public perception and action required. Recognizing the conceptual nature of metaphors allows us to transform the communicative aims of discourse on the climate crisis, as we would like to point out.

2. Metaphor as a framing and perspective-taking device

In scientific discourse, metaphor often serves to understand abstract concepts by relating them to more concrete concepts. Researchers have shown that metaphors can act as effective tools in argumentation, either by introducing or supporting a particular

viewpoint (Wagemans, 2016, Wagemans 2019, Van Poppel 2020, Van Poppel 2021). Moreover, within the scientific realm, metaphors have been employed to inspire imaginative thinking (Blackburn 1984, Hofstadter 1995, Indurkhya 2010). Indeed, metaphors make use of analogies to connect objects having different meanings, such as the earth and the ice cream, which may not have been previously connected. In this way, metaphors create new similarities, by exploiting certain attributes of an object that become relevant, even if they were not previously considered as such. Metaphors help to frame and reason about abstract concepts by selectively emphasizing certain aspects of the concrete conceptual domain while disregarding others. This process is called "metaphorical framing": «to construct something in terms of something else results in a particular view of the "something" in question, often including specific attitudes and evaluations» (Semino 2008: 32). This process of selecting relevant properties is a creative one, as it allows for new ways of categorizing things. However, it is important to note that these categorizations may become conventionalized through continued use in a linguistic-scientific community (ex. "herd immunity", "electromagnetic waves", etc.).

The conceptual metaphor theory (Lakoff, Johnson 1980) recognizes that metaphorical framing can have a subtle and influential impact on reasoning and evaluation of arguments. However, it is important to note that metaphor operates differently from the deliberate and critical use of rationality. The framing effect, which arises from metaphorical thinking, is seen as a cognitive bias that can affect decision-making and evaluations based on how an issue or argument is presented, rather than adhering to logical or normative rules (Entman 1993). For instance, in a well-known experiment on the framing effects of the "beast" vs. "virus" metaphors to describe crime as a societal problem, Thibodeau and Boroditsky (2011, 2013) found that even the mention of a metaphor in a text, via a single metaphorical word, can significantly impact how people approach and solve social problems like crime and how they gather information to make informed decisions about crime. Surprisingly, the influence of metaphors on decision-making is covert, as people do not consciously recognize their role and instead attribute their choices to other source of information. The use of metaphors in language helps reinforce existing knowledge structures and encourages reasoning that are consistent with the metaphorical frame. Contrary to being merely decorative language devices, metaphors have a deep impact on how we think and act regarding relevant societal issues. The authors concluded that exposure to a metaphor can lead to significant differences in opinions on how to address the social problems presented in the text Thibodeau and Boroditsky (2011, 2013). More research should be done to check whether different linguistic formulations of the same underlying conceptual metaphors also present different framing effects.

2.1. Framing climate change

In the same vein, framing a problem like climate change via metaphors might imply that certain dimensions of the problem appear with greater relevance. This is very important especially in uncertain situations, such as those the climate change forces us to face:

> If individuals are given an ambiguous or uncertain situation to consider, the different ways in which a message is presented or framed – apart from the content itself – can result in very different responses, depending on the terminology used to describe the problem or the visual context provided in the message. […] For many members of the public, climate change is likely to be the ultimate ambiguous situation given its complexity and perceived uncertainty (Nisbet 2009: 16).

For instance, as it has been pointed out (Watts 2018), we should not use the words "uncertainty" and "global warming", but rather the words "risks" and "global heating", if we want to communicate the seriousness and the urgency of the problem. Thus, Greta Thunberg's metaphor of Earth as "a house on fire" is much more appropriate to communicate the urgency of measures and call the political leaders for action! Also, while "global warming" and "climate change" are often used interchangeably, it is important to note that global warming is merely a component of climate change. Global warming specifically pertains to the increase in worldwide temperatures, primarily caused by the growing levels of greenhouse gases in the atmosphere. On the other hand, climate change encompasses broader modifications in climate indicators, such as long-term alterations in precipitation, temperature, and wind patterns.

2.2. Novel vs. conventionalized metaphors as deliberate metaphors

Nevertheless, it is important to note that not all metaphors bring about a change in belief or attitude. Many commonly used metaphors naturally activate related concepts without people even noticing them. As a result, these metaphorical frames often serve to reinforce the underlying background knowledge that people already accept as true (Nelson *et al.* 1997). Such background knowledge is not necessarily true, sometimes is just part of shared stereotypes or "system of commonplaces" in a linguistic community: in Black's words,

> from the experts' standpoint, the system of commonplaces may include half-truths or downright mistakes (as when a whale is classified as a fish); but the important thing for the metaphor's effectiveness is not that the commonplaces shall be true, but that they should be readily and freely evoked (Black 1955: 287).

Novel metaphors are different because they introduce new uses of language without any existing associations or "system of commonplaces". These metaphors offer a fresh perspective on a topic and lead to new knowledge. Indeed, they compel the audience to view the target in a completely new way, from an unprecedented perspective (Steen 2008). In comparison to conventional metaphors, novel metaphors (particularly similes or direct metaphors according to Steen) are the most suitable examples of deliberate metaphors. These metaphors are intentionally used by a speaker to change the addressee's perspective on a topic during a speech or conversation, drawing their attention to a specific source from which to consider the target. This process requires cross-domain mapping during metaphor processing, thus taking more time and effort to be pursued when compared to conventional metaphors.

In contrast to the conceptual theory of metaphor (Lakoff, Johnson 1980), the deliberate metaphor theory (Steen 2008, 2010, 2013, 2017) pointed out that the communicative aspect of a metaphor cannot simply be limited to its conceptual vs. linguistic aspects (but see criticism in Gibbs 2017). According to deliberate metaphor theory, metaphors serve a communicative purpose that extends beyond the commonly recognized metaphorical functions, such as the naming and the framing functions. The communicative function of a metaphor involves providing the listener with a different viewpoint on the target of the metaphor. This function is separate from the metaphorical framing function, which is present in every conceptual structure created by metaphor. The perspective-changing function intentionally shifts the listener's focus on the metaphor target. In such cases, the speaker may deliberately use a metaphor, whether it is conventional or novel, to alter the listener's perspective on the target. While novel metaphors are more effective at serving this function because they introduce a completely new frame, conventional metaphors

can also fulfill this purpose if used intentionally and revitalized in conversation. In these cases, metaphors are deliberate, i.e. intentionally used *as* metaphors to have specific communicative effects on the audience.

3. The metaphors for climate change

As pointed out, metaphors also «make it possible socially coordinated epistemic access to a particular thing or natural phenomenon» (Boyd 1979: 483). In Mary Hesse's view, conventional metaphors are most frequent in familiar contexts and «least disturb the network of meanings», whereas «scientific theories are metaphorical redescriptions» that make people aware of a shift in the network of meanings (Hesse 1988: 3). Via scientific metaphor we can extend our knowledge, noticing "similarities", while ignoring some differences (Hesse 1988, Gentner, Bowdle 2008). The scientific normative classification proposed via metaphorical redescription is anyway constrained by criteria of prediction, test, and self-correction, within a social network of conventions.

However, there is a fundamental distinction between the *pedagogical* and the *theory-constitutive* functions of metaphors (Boyd 1979). On the one hand, the pedagogical function of metaphor refers to the use of metaphors in teaching and learning about a scientific issue. Metaphors are often used by educators or scientist to help explain complex concepts or ideas in a more accessible way for students or laypeople. By comparing an abstract concept to something that is more familiar or concrete, metaphors can help students or laypeople to better grasp and retain information. For example, a teacher might use the metaphor of a "cognitive toolbox" to explain the concept of metacognition. By comparing different cognitive strategies and skills to tools in a toolbox, students can understand how to use these strategies effectively and when to apply them in different situations.

3.1. The *greenhouse* and the *bathtub* metaphors

On the other hand, the theory-constitutive function of metaphor refers to the role metaphors play in shaping the way we understand and think about the world. In Boyd's words, they are «those in which metaphorical expressions constitute, at least for a time, an irreplaceable part of the linguistic machinery of a scientific theory» (Boyd 1979: 186). However, as already highlighted in the previous section, metaphors are not just linguistic devices, but also cognitive tools that structure and shape our conceptual systems. They can influence the way we perceive, categorize, and understand various scientific phenomena. For example, the greenhouse metaphor entered the scientific discourse to explain how gases like CO_2, nitrous oxide, and methane work in the atmosphere, i.e., similarly to the way greenhouse panes trap the sun's heat by capturing the heat radiated from the Earth. The greenhouse metaphor promotes analogical reasoning to grasp a more complex scientific concept, but as every analogy, it comes with limitations: while we can open the door or the window of a greenhouse to release the heat, this is not a viable solution for the "Earth-house" (Armstrong *et al.* 2018). In another scientific metaphor, the climate system has been represented by a bathtub, where the water level signifies the amount of CO_2 present. The addition of greenhouse gases into the atmosphere from human sources is akin to pouring water from a tap into the tub. If this addition continues unchecked, the tub will eventually overflow, unless we mitigate the situation by draining some water out through the drain. To reduce the overall water amount in the tub, more water needs to leave through the drain than is entering through the faucet, unless we can eliminate some of it through carbon sinks. Similarly, unless we effectively remove enough CO_2 through carbon sinks, the atmosphere will become overwhelmed with CO_2.

However, as in the case of the greenhouse metaphor, there is no drain in the atmosphere system.

3.2. The *tipping point* metaphor

In summary, while the pedagogical function of metaphors focuses on their use as teaching tools to facilitate understanding, the theory-constitutive functions highlight the broader cognitive influence of metaphors in shaping our conceptual systems and worldview. However, sometimes it might happen that a constitutive scientific metaphor enters the social discourse, thus acquiring a pedagogical function for laypeople. This is the case of the tipping point metaphor, which was introduced by Hans Joachim Schellnhuber, internationally renowned climate scientist and founder of the Potsdam Institute for Climate Impact Research, to explain the notion of abrupt climate change, but then picked up by BBC journalist Alex Kirby (2004). The tipping point is the point at which the object is displaced from a state of stable equilibrium into a new equilibrium state that is qualitatively dissimilar (and typically worse) from the first. The tipping point metaphor became an icon for climate science to talk about catastrophic, rapid, and urgent events. However, when it entered the social debate on climate change, it became a call to action for climate change by avoiding other (socio-economic) tipping points. Thus, the metaphor acquired other meanings passing through different discourse domain to serve different communication purposes (Van der Hel *et al.* 2017).

Experts need a competence in translating their own language into a language closer to the society, if they want to reach some changes in people behavior and bring about social change toward the climate change issues. Indeed, scientific metaphors might represent scientific "blind-spots" and ethical challenges in social discourse (Frezza 2018), and some metaphorical framing might be more apt than others to achieve some communicative goals on the attitudes toward a societal problem. Indeed, although it is widely acknowledged that metaphors have a persuasive function, there is still no consensus on the specific properties that impact their quality in argumentation and, consequently, their ability to persuade. This lack of agreement is highlighted by different perspectives presented in various studies (Sopory, Dillard 2002, Damerall, Kellogg 2016, Frezza 2016 also critiques the use of metaphors in scientific communication). However, it is understood that the persuasive effects of metaphors are dependent on how they frame the problem and enhance the acceptability of the argument's conclusion (Ervas *et al.* 2018).

3.3. The *WAR* and *RACE* metaphors

For instance, we might talk about our actions to face the climate change issue in terms of "engaging in a war against the climate change" or "racing toward a solution for the climate change effects", possibly leading to different effects for the audience's call for action. Both the WAR and the RACE metaphor have been largely used in newspapers and social media to communicate the urgency and risks of the climate crisis. For instance, in August 15, 2016, the Scientific American presented the title *World War Mentality Needed to Beat Climate Change*, and also the New Republic titled a page *A World at War. We're under attack from climate change – and our only hope is to mobilize like we did in WWII*. «It's not that global warming is like a world war. It is a world war. And we are losing» wrote McKibben, an author and activist who co-founded 350.org to fight the Keystone XL pipeline project (McKibben 2016). War metaphors can foster solidarity among individuals when emphasizing the severity of a concern and the significance of taking action to confront it (Atanasova, Koteyko 2015). However, the metaphorical framing of war also evokes

violence, destruction, chaos, and death when sustainability requires peaceful cooperation, nurturing and order (Gallagher 2009). Thus, new metaphors for climate change emerged in political discourse, such as the race metaphor in the words of Patricia Scotland, the secretary general of the Commonwealth: «Climate change efforts are race against time» (December 13, 2018[1]); or in the words of the American Republican consultant, Frank Luntz:

> The "emotional home run" would be an emphasis on the dire economic consequences of action, impacts that would result in an "unfair burden" on Americans if other countries such as China and India did not participate in international agreements" (Environmental Working Group, 2003[2]).

Still, the race metaphorical framing make competition relevant rather than cooperation. Flusberg and colleagues (2017) compared the war and the race metaphors in an experimental study, investigating to what extent the participants perceived a sense of urgency, acknowledged the risks associated with climate change, and were open to altering their own behavior and intensifying their personal efforts to solve the climate crisis. The experiment compared the communicative effects of three distinct articles use to discuss climate change: (1) framing it as a metaphorical war, (2) framing it as a metaphorical race, and (3) using a non-metaphorical approach to address the issue of climate change. After reading the article, the three groups of participants were asked questions to assess their beliefs about climate change. Additionally, some participants indicated their willingness to participate in conservation actions, like reducing their consumption of agricultural products associated with climate change-causing farming methods. The hypothesis of the authors was that

> by describing US efforts to reduce greenhouse gas emissions as a war that must be fought, participants in the study would be led to feel an additional sense of urgency and risk surrounding the issue and would be further motivated to address it by modifying their own conservation behavior (Flusberg *et al.* 2017: 771).

The results of the study indicate that people are influenced by both the positive and negative aspects of the war metaphor when discussing climate change. This supports the idea that using war metaphors can increase feelings of urgency and risk regarding this issue, thus raising awareness and public support through communication. The use of war language captures attention and leads individuals to perceive risks associated with climate change, including damage, loss of life, and financial implications. Additionally, it conveys a sense of opposition and the need for collective action to prevent destruction. On the contrary, the race metaphor had no such an impact, probably because «the consequences of losing a race do not appear to be as bad as those of losing a war» (*Ivi*: 780). It is still uncertain whether war metaphors can be a successful long-term messaging strategy for climate change issues, as further research is needed.

4. The revitalization of the *sustain* metaphor

As pointed out, conventional metaphors can have a transformative effect when deliberately used, as they can be revitalized in conversation. In these cases, the commonly

[1] Commonwealth.org webpage: https://thecommonwealth.org/news/climate-change-efforts-are-race-against-time-secretary-general

[2] *Ibidem*

accepted ideas associated with the conventional metaphor can come to life in the minds of the listeners and be critically examined. Conventional metaphors possess properties that are usually overlooked as irrelevant, but these properties can become relevant in a new context. Research has shown that conventional metaphors, in particular, can bring the audience to find a new interpretation of the underlying assumptions that support a conclusion (Ervas *et al.* 2018, 2021). In the process, conventional metaphors are revitalized to reinterpret the logical connection between the premises and the conclusion. The newly emphasized properties of the metaphor's source concept influence the contextual assumptions and implications of the metaphor. Additionally, they evoke expectations or hypothetical scenarios that lead to backward inference from a conclusion to the supporting assumptions (Wilson, Carston 2006, Mazzone 2015).

The effects of reframing and perspective changing are particularly important in situations such as a climate crisis, where it is necessary to approach problems from a different angle to find innovative solutions. As the well-known saying suggests, our problems cannot be solved using the same mindset that created them in the first place. Thus, it is essential to seek out new perspectives and or renew old frames of thinking to successfully address the societal challenges that the climate crisis arises. For instance, the illness metaphor has been renewed when applied to the Earth climatic problems: in social campaigns or cartoons, the Earth has been personalized and represented as sick, the other planets (where human beings do not live) as not sick, etc. Also, human being, as part of the Earth systems, have been represented as having consequences for their health. Earth's "vulnerability" translates into human beings' health risks and impact on society. Thus, instead of the violence of war or the rush of the race, support, care and protection in a metaphorical embrace might have better effect on the actions people can do to face climate change.

The very idea of sustainability includes the lexicalized metaphor of a "sustain": in this perspective, we ourselves with our hands should support the Earth. This metaphor embodies the idea of nurturing and maintaining the planet, emphasizing the interconnectedness between humans and the environment. It does not communicate urgency, but it might make us think that recognizing Earth's limits is recognizing our own limits. By understanding the sustain metaphor, we can recognize the importance of acknowledging and respecting the limits of the Earth. This recognition implies that if we push the planet beyond its limits, we are ultimately pushing ourselves beyond our own limits. In other words, the sustainability of the Earth is directly linked to our own sustainable existence. Thus, revitalizing the sustain metaphor, we should no more fight or race against change, but we should rather aim at the "conservation of change", which is a natural inevitable phenomenon to protect. The focus should be on preserving and protecting the natural processes of change that occur on our planet. Promoting the conservation of change means understanding that change is an inherent part of life, and it is essential to safeguard and nurture these changes for the benefit of future generations. This mindset encourages us to shift from a short-term, exploitative approach towards a long-term, sustainable perspective. Ultimately, embracing the sustain metaphor incentives a sense of responsibility towards the Earth. It challenges us to rethink our relationship with the environment and actively participate in its preservation rather than viewing it as a resource to be consumed or exploited.

5. Conclusions

This paper considered different conceptual metaphors for climate change. Two frequently used metaphors of climate change were examined: the war and the race metaphors. Findings not only point out their positive communicative aspects but also call attention

to their limitations. The authors argue for the potential of novel conceptual frameworks and reconceptualizations, pointing out some negative implications due to war/race internalized cognitive models which focus on competition rather than collaboration. The authors suggest revitalizing the sustain metaphor as a more effective way to conceptualize climate change and thus to move action towards collaboration, rather than competition. Findings suggest that conceptual metaphors not only serve as frameworks for understanding but also carry the potential of restructuring thought about important societal issues. Thus, novel conceptualizations with more focus on collaboration are possible, where large-scale reconceptualizations carry the potential for more effective communication and, therefore, may bring on social change in society.

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