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COGNITIVE INTERPRETATION OF VISUAL METAPHOR: THE INTERFACE OF RELEVANCE THEORY, CONCEPTUAL BLENDING, AND CONCEPTUAL METAPHOR THEORIES

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Abstract: The paper introduces the hybrid method for analyzing visual metaphor, which integrates approaches from Relevance Theory, Conceptual Blending, and Conceptual Metaphor Theory. The analysis relies on a visual metaphor that, in terms of conceptual integration, represents Multiple-Scope Networks. The article proposes specific modifications to explanatory tools of Relevance Theory, such as ad hoc concepts, emergent properties, and meta-representations, considering the cognitive processing of visual metaphors.

Keywords: visual metaphor, Relevance Theory, Conceptual Blending, Conceptual Metaphor Theory.

1. Introduction

Ad Foolen (2019, p. 39, 44) rightly notes that pragmatics and cognitive studies are being recontextualized toward each other. Due to the efforts of modern cognitive linguistics to shift toward the socio-pragmatic dimension, it is increasingly converging with pragmatics. This article attempts to explain the interpretation of visual metaphor through the use of a hybrid analytical method that combines explanatory tools from Relevance Theory (RT), Conceptual Integration Theory (CIT), and Conceptual Metaphor Theory (CMT). The research focus is justified by the observation that Relevance Theory alone does not provide exhaustive answers to several questions arising during the inference of metaphorical meanings – for example, how emergent properties of a metaphor arise, or how different levels interact within complex metaphorical structures. Conceptual Blending and

Conceptual Metaphor Theory offer structural and cognitive mechanisms that can aid us in understanding the processes of creating and adapting ad hoc concepts from RT, adapting ad hoc properties to purpose, and partially mapping one conceptual domain onto another. The idea of enhancing Relevance Theory (RT) with the tools of Cognitive Metaphor Theory has been suggested in several works. For example, researchers have noted that mapping can access the contextual assumptions of utterances (Gibbs & Tendahl 2009), enabling the hearer to obtain as many cognitive effects as possible following a path of least processing effort (Romeo & Soria 2014: 502). Conversely, a relevance-theoretic approach "leads us to the more appropriate way to carry out the matching of connected relations from source to target" (op. cit.). It can enrich the research mechanisms of CIT and CMT by explaining how the current context and cognitive goals influence the selection and interpretation of metaphorical mappings and blends, how ambiguity in metaphorical mappings is resolved depending on context and relevance, and why certain metaphorical mappings or blends are more preferred in certain contexts, corresponding to cognitive economy and maximum relevance – taking into account the cognitive expectations and assumptions of the interpreter.

In several studies, deriving metaphorical meaning equates to searching for implicatures and other cognitive effects (Bambini & Domaneschi 2023; Raoud 2022) along with considering varying levels of cognitive effort in processing metaphorical references and predications (Carston & Yan 2023). Regarding visual metaphors, attempts were made to link the levels of explicature and implicature in their interpretation with various stages of blending processes, evaluating the success or failure of metaphorical advertising according to sequentially applied criteria: "the level of metaphorical polysemy and ambiguity", "the presence of relevant interpretive context", and "the level of optimal innovativeness" (Kravchenko & Yudenko 2021). Attempts were also made to examine multimodal advertising in terms of ostensive stimuli triggering interpretive hypotheses on the cognitive processing of metaphor and the restoration of implicature in the blend (Kravchenko & Yudenko, 2023). Extended visual metaphors containing several sub-metaphors were explored in a similar vein, using an analysis algorithm that connects Grice's inferential pragmatics, interpretive hypotheses guiding conceptual integration in multiple blends that arise from the processing of a single metaphor, and contextual assumptions related to the cognitive context of brand values (Kravchenko et al. 2024; Kravchenko & Zhykharieva 2023).

The novelty of the article lies in the fact that visual metaphors have not yet been studied in terms of their cognitive processing and the creation of relational structures between domains from the perspective of a comprehensive approach that integrates elements from all the three theories. The article introduces new modifications to the Relevance Theory toolkit, specifically regarding primary

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and secondary ad hoc concepts derived through multistage inference, and metarepresentations as conceptual structures within the cognitive context of the viewer, which are "held" for testing propositional format representations. These modifications are discussed in detail in the methodological section of the article.

2. Literature review

In theoretical and methodological terms, the article relies on the study of metaphor within the framework of Relevance Theory and Conceptual Blending Theory.

2.1 Metaphor from the Perspective of Relevance Theory

According to RT, the relevance-theoretic comprehension procedure (Wilson & Sperber 2004: 259) involves following a path of least effort to compute cognitive effects and test various interpretive hypotheses (such as disambiguations, reference resolutions, implicatures, enrichments, and loosening) in order of their accessibility until the interpretation meets the current expectations of relevance. During processing, the addressee follows the path of least cognitive effort and completes the interpretation when they reach an optimal balance between the effort expended and positive cognitive effects. The relevance-theoretical approach interprets metaphor in the same way as other loose uses of non-metaphorical language (Sperber & Wilson 1995: 233-237), with a broad range of weak implicatures that are derived at the propositional level and prompt further processing of metaphor until it meets relevance expectations (Wilson & Sperber 1995: 222). In metaphor analysis, RT employs explanatory tools such as ad hoc concepts, emergent properties, and metarepresentations (Carston 2010a; 2012; Romero & Soria 2014; Stöver 2010; Wilson & Carston 2008).

'Ad-hoc concepts' are defined as concepts that are not linguistically given, but constructed pragmatically by hearers in the process of utterance interpretation "in response to specific expectations of relevance raised in specific contexts" (Carston 2002: 322). An ad hoc concept extends or narrows the scope of a source concept by manipulating the associated encyclopedic information in order to metaphorically adapt the source to the target and partially map one conceptual domain onto the other. To construct an ad hoc concept, the interpreter selects relevant ad hoc properties from either the logical or encyclopedic entry (Sperber & Wilson 1986/1995: 86) of the source concept. The logical entries specifying the logical relations that the concept has with other concepts (Vega Moreno 2007: 46) are finite, relatively stable, independent of speakers and times, and not "fully complete" (Sperber & Wilson 1986/1995: 88). The encyclopedic entry contains information about the denotation of the concept, including assumptions, cultural beliefs, and personal experiences stored in the form of propositional representations, scenarios or mental images, which are in constant flux (Sperber &

Wilson 1986/1995: 89, 93). In the terminology of Rubio-Fernandez (2008: 381-382), ad hoc properties are divided into core and non-core. Core properties correspond to a core semantic interpretation of the word, which would be constant across contexts. Non-core properties are activated in those contexts where they are relevant for interpretation. In turn, core and non-core ad hoc characteristics correlate with context-independent and context-dependent properties (Barsalou 1982). The paper will use the terms ***core*** and ***non-core properties***, as they allow us to indicate the strong and weak association of the chosen ad hoc characteristics with the source concept and, accordingly, are associated with strong or weak implicatures.

However, ad hoc concepts are not sufficient as an explanatory tool for deriving meaning in "category crossing" metaphors, where a literal interpretation of the predicate is incompatible with a literal interpretation of the subject (Wilson & Carston 2008: 14). In such cases, inference is proposed as a process of mutual adjustment of explicit content, context, and contextual implications, resulting in the emergent properties of the metaphor. The derivation of such properties determines the inferential transition from the encoded concept to the communicated concept and from the communicated concept to implicatures (op. cit.: 19).

Carston (2010) proposes a slightly different model for the inference of meaning in "category crossing" metaphors, which includes a dual processing approach that combines propositional and metarepresentational levels. The idea of metarepresentations is further developed in Stöver's (2010) research, which distinguishes two types of structures at the metarepresentational level: categorization-based (conceptual metaphors) and sensory-based (undifferentiated representations based on sensorimotor experience related to emotions and feelings). The inclusion of conceptual metaphors in the metarepresentational level does not align, in our view, with Carston's idea of metarepresentations, which are rather understood as imagistic representations that do not fit into conventional structures. Furthermore, the integration of categorization-based and sensory-based representations at the same metarepresentational level seems questionable, given their differences in formation mechanisms, activation, level of structuring, stability, etc. However, the discussion of the mental architecture of the metarepresentational module is beyond the scope of this study.

The article will use the term "metarepresentation" in its first meaning, referring to categorization-based structures, utilizing these structures (conceptual metaphors) as relevant cognitive assumptions for testing hypotheses about permissible correlations between the source and target. This approach aligns, in our opinion, with Carston's idea that metarepresenting is held for *further processing* – of inspection of implications and associations (Carston 2010). That is, metarepresentations do not directly participate in inferences but assess them if relational relationships of ad hoc properties with the target can activate general-level conceptual structures, which become a cognitively relevant mechanism for confirming implicit assumptions. Modifications to such RT concepts as ad hoc concepts, emergent properties, and metarepresentations are proposed in the methodology of the study. In turn, the involvement of metarepresentations in Conceptual Blending processes is explained by their role as part of the generic space, which includes abstract structures and elements that are common to all input spaces.

2.2 Metaphor from the perspective of Conceptual Integration Theory

According to CIT, a conceptual integration network includes a set of mental spaces where processes of conceptual blending occur (Fauconnier & Turner 1998): input spaces, containing structures of elements to be integrated; a generic space, including abstract structures and elements that are common to all input spaces; and a blended space, which selects elements from inputs and combines them into unique structures not present in the inputs. Cross-space mappings as a mechanism for establishing connections between inputs and creating a foundation for integration include conceptual processes such as matching and counterpart connections, selective projection from the inputs, composition, completion, and elaboration (Fauconnier & Turner 2002: 47-48). The formation of a blend begins with Composition – the integration of projected elements from the inputs into the blended space, and continues with Completion – the addition of missing elements or relationships to the blend based on prior experience or knowledge. In the Elaboration stage, the blend undergoes further development through its application to new contexts or situations, to other conceptual domains, scenario construction, and so on.

Relations within the network are defined by principles of optimality as a set of constraints on the process of conceptual integration (Fauconnier & Turner 2000; 2002): (1) Integration Principle: representations in the blend can be manipulated as a single mental whole; (2) Topology Principle: the relational structure is preserved throughout the network; (3) Network Principle: consistency and compatibility of all projections must be maintained; (4) Unpacking Principle: the ability to recover input spaces from elements and connections in the blended space; (5) Relevance Principle: any element in the blend acquires meaning even if it is not present in the input spaces' structure; (6) Metonymic Compression Principle: compression of the "distance" between elements in the blend. Alongside the "compression" of what is inherently dispersed, the blend also performs the "unpacking" of what is compressed (Fauconnier & Turner 2002: 119).

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Structural connections when projecting elements from inputs into the blended space are based on vital relations: Change, Identity, Time, Space, Cause-Effect, Part-Whole, Representation, Role, Analogy, Disanalogy, Property, Similarity, Category, Intentionality, and Uniqueness (Fauconnier & Turner 2002: 101). These relations may undergo compression from one into another – e.g., Analogy into Category or Identity, Cause-Effect into Part-Whole, Identity into Uniqueness. The types of networks vary in increasing complexity, including: (1) Simplex Networks: one space contains a role structure, while another fills it with values; (2) Mirror Networks: each mental space has a shared organizing framework, such as in spaces related to the split self; (3) Single-Scope Networks: dominated by one input space, which establishes the structure for integration, filling the structure of the other input; (4) Double-Scope Networks: both input spaces have different frames and a combination of both frames becomes the organizing frame for the blend; (5) Multiple-Scope Networks: feature multiple levels of input spaces. For analysis in the article, we have chosen a visual metaphor that is processed as a Multi-Scope with three inputs, as such a metaphorical structure allows for demonstrating the potential of complementing the Relevance Theory approach with tools from CIT and CM.

Despite the differences in approaches to metaphor in cognitive linguistics – focused on cognitive motivation, conceptual organization, and inference patterns – and the relevance-theoretical approach, which emphasizes the role of context in the adjustment of concepts, they are not mutually exclusive, since both approaches involve the conceptual adjustment of encoded information. Foolen notes that contemporary research clearly demonstrates "a wider movement aiming at the exchange and integration of Pragmatics on the one hand and Cognitive Linguistics" on the other (2019: 21). Productive for an integrative approach is the idea of combining the principle of relevance with mapping (Romero & Soria 2007; 2014). According to this idea, mapping is formed based on searching for properties that allow the listener to achieve the maximum cognitive effects while following the path of least effort in processing. Positive cognitive effects are achieved through the unusual conceptualization of some propositional component, which depends on a mapping that modifies the cognitive environment by downplaying, adding, or strengthening certain properties of the target concept in an analogical way (Romero & Soria 2014: 502). The ad hoc concept, obtained as a result of the pragmatic adjustment of the source domain, forms the basis of mapping.

3. Methods

The article employs the method integrating CIT and CMT analysis models, which are combined with RT explanatory tools such as ad hoc concepts, emergent properties, and metarepresentations. The possibility of including stable knowledge structures – conceptual metaphors – in the integrative analysis model can be explained as follows. From the perspective of CIT, we proceed from the idea that, despite the dynamic nature of processing as "dynamic cognitive work in real-time" (Fauconnier & Turner 2008: 368), there is an element of conventionality in the conceptual integration model, since constructed blends utilize the structure of more stable, complex, and traditional conceptual structures. They (a) can be part of the generic space, which includes abstract structures and elements common to all input spaces; (b) maintain relational structure throughout the network, satisfying the topology principle and correlating with Lakoff's (1990) invariance principle; (c) support the unpacking principle through the use of traditional metaphorical and metonymic mappings (Coulson & Oakley 2003). From a RT perspective, the inclusion of conceptual metaphors represented in long-term memory in integrative analysis models is suggested by the hybrid metaphor theories by Tendahl (2009) and Stöver (2010). The former theory is generally presented within cognitive linguistics but incorporates the ad hoc concepts from RT. The latter theory proposes a model for processing metaphors based on the relevance-theoretic principle of modularity, incorporating conceptual metaphors at the metarepresentational level of processing. Conceptual metaphors, when available, can be "held" as part of the cognitive context of the interpreter to check implications and associations.

The analysis algorithm for visual metaphor includes three parts, defining the three-component structure of the main part of the article:
1. Analysis of the visual metaphor within the framework of Conceptual Blending Theory.
2. Analysis of the same metaphor using the relevance-theoretical approach.
3. Integrative analysis combining tools from RT, CIT, and CMT.

The article proposes some modification of the metaphor analysis method used in RT, in particular, the derivation of primary and secondary ad hoc concepts when processing visual metaphors containing numerous or incongruent visual details. Primary concepts are inferred during the explicature stage, propositionally linking the source to the target. If the explicature does not account for certain visual details or does not fit the constraints of the local or encyclopedic context, secondary ad hoc concepts are inferred to allow for metaphorical adaptation of the source to the target. In this process, the assumption associated with the primary ad hoc concept is maintained, interacting with contextual assumptions and weak implicatures from secondary ad hoc concepts.

A modification is also proposed concerning the possible connection between ad hoc concepts and the emergent properties of a metaphor. In the case of selecting a peripheral, context-dependent ad hoc property from the encyclopedic entry of the source concept, the ad hoc concept inferred on the basis of this property can, when aligned with the goal, generate an emergent property of metaphor. The

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creation of other emergent properties may involve other peripheral ad hoc properties associated with the selected one or weak implicatures from secondary ad hoc concepts.

The integrative method for analyzing visual metaphors includes the following stages:

1. Derivation of Explicature – the inference of visually encoded inputs using reference assignment and enrichment.

2 (i). Construction of the ad hoc concept of the dominant input space (in case of integration as a Single-Scope network).

2 (ii). Inference of ad hoc concepts from two or more input spaces (in Double-Scope and Multi-Scope networks).

3 (i). Projection of ad hoc properties of the selected ad hoc concept into the blend as structures for integration; matching implicatures from the ad hoc concept of the dominant input with elements or relations from the structure of the non-dominant input; creating mappings in the Composition of the blend (in Single-Scope networks).

3 (ii). Projection of ad hoc properties of ad hoc concepts from two/multiple inputs into the blend as structures for integration – with the selection of matching for mappings in the Composition of the blend (in Double-Scope and Multi-Scope networks).

4 (i). Verifications of mappings for relevance to contextual constraints and generic-space conceptual metaphors from the viewer's cognitive context (if metarepresentations are available and relevant for maintaining mappings as assumptions) (in Single-Scope networks).

4 (ii). Verifications of mappings for relevance to generic-space metarepresentations and contextual constraints. If implicatures from ad hoc properties do not meet the presumption of optimal relevance due to contextual constraints, processing continues with the inference of secondary ad hoc concepts from inputs that satisfy constraints and are projected into the blend as emergent properties of the metaphor (in Double-Scope and Multi-Scope networks).

5 (i) Completion of the Blend: Selection of new ad hoc properties associated with the concept of the dominant input but not encoded by the verbal and visual codes of the metaphor. Projection of implicatures based on ad hoc properties into the blend, filling in additional structures from another input and forming new mappings. Inference of additional meanings (in Single-Scope networks).

5 (ii) Completion of the Blend: Selection from the encyclopedic entry of multiple input concepts of additional ad hoc properties, projected into the blend as new mappings (in Double-Scope and Multi-Scope networks), with the inference of possible emergent properties of the metaphor.

6. Elaboration of the Blend: Development and refinement of elements and connections based on the context processing related to the new conceptual domain accessible to interpreters, provided that its interaction with the blend requires minimal cognitive effort and delivers cognitive gains.

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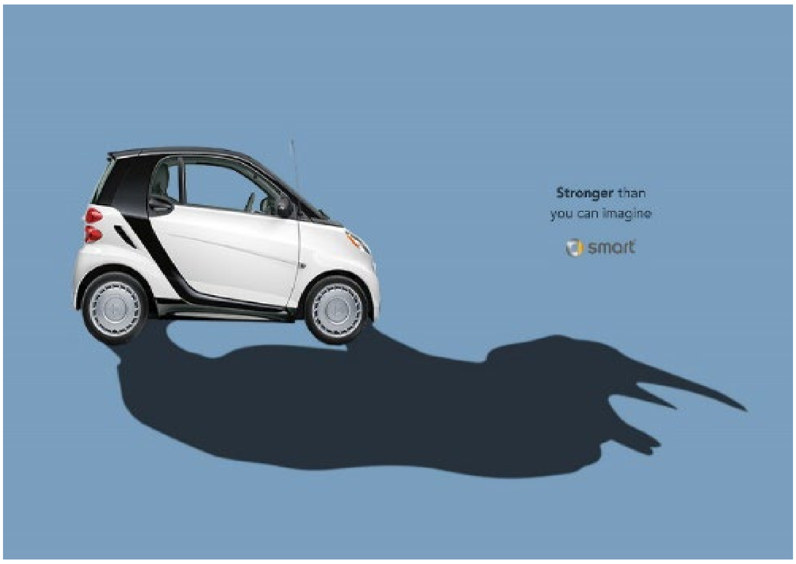
4. Results and discussion

4.1 Visual metaphor analysis within the framework of Conceptual Blending Theory.

By type of conceptual integration, the metaphor, visualized by Picture 1, refers to a Multiple-Scope network, which involves three inputs, the combination of which results in a blend.



Picture 1. Visual metaphor "Smart is Bison".
Source: https://www.behance.net/gallery/23874955/Print-Ads/modules/178130745

Input Space 1 (Smart): car, compact, small, maneuverable. Input Space 2 (Bison): animal, large, strong, enduring; power, wild nature, speed. Input Space 3 (Shadow): reflects the object, conceals or symbolizes its hidden properties. The Generic Space includes conceptual structures CARS ARE ANIMALS, EXTERNAL APPEARANCE IS COVER, ABILITIES ARE ENTITIES INSIDE, and image-schemes Force and Transformation, Container, Entity, and Surface. The integration of the inputs is based on the vital relations of Similarity, Property, Part-Whole, and Cause-Effect. The Smart input projects structural elements "compact, small" into the blend; the Bison input accounts for strength, power, and endurance; the Shadow input projects into the blend the ability to reflect the object, including its hidden, invisible properties.

The alignment of relations is possible based on the vital relationship of Properties, achieved in the blend through a series of compressions: metonymic compression "Shadow for Bison", "Shadow for Car", "Bison for Strength", reducing the mental distance between the car and its shadow, and ensuring compression in the blend: the bison stands for the car's strength. The projection of strength and power properties from the Bison input into the Car input, mediated by the Shadow input, visualizing the strength of both the animal and the car, resolves the conflict between physical size and power. Thus, the conflicting elements of the inputs are aligned on the Strength (Property) component, compressed

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into the vital Similarity relation, and projected into the blend as Car's Power Is Bison's Strength. Simultaneously, such a projection is supported by decompression in the blend based on the vital cause-effect relationship: if the bison is large, then it is powerful – if the shadow reflected by the car is as large as the bison's shadow, then the car is powerful. In other words, the car's shadow stands for its power (corresponding to the bison's strength).

At the same time, the new structure in the integrated space, A Car's Power Is a Bison's Strength, does not resolve the conflict between the input frames Car and Shadow. The visualization of the shadow instead of the animal becomes a stimulus for further conceptual integration, since car advertising often visualizes an animal that symbolizes cars. In this metaphor, the element 'invisibility' or 'hiddenness' is projected from the Shadow input, adding a new level of interpretation in accordance with the concept of shadow as a symbol of hidden properties and qualities (compare with linguistic metaphors like 'shadow economy', 'shadow side of the personality'). In this case, Part-Whole relations become vital, projected into the blend as the decompressive relation "the shadow is what is hidden" (in the car). The projection "Hides strength" is supported by the elements from Input 1 – small and compact – and the background knowledge that the power of a car is provided by its internal component, the engine, meaning that the power may not correspond to the visible form of the Smart car and may be hidden. The projection from Input Shadow – "shows the hidden property" – fills the frame structure of the Smart car, creating mappings: the Power of the Smart Car Is the Hidden Strength of the Bison; the Car's Appearance Is a Cover, hiding its strength. These mappings align with general-level conceptual metaphors in the generic space: ABILITIES ARE ENTITIES INSIDE and APPEARANCE IS COVER.

The Completion of the blend is possible by projecting onto the Car input such properties of the Bison as speed (runs faster than a horse), implying that the Smart car is faster than other cars whose power is measured in horsepower. The Elaboration of the blend is carried out as its Expansion – projecting from the Car input such properties of the Smart as high maneuverability, economy, etc., developing the blend with new elements: a small car combines power, maneuverability, and economy. The integration of the concepts encoded by the visual metaphor is presented in Fig. 1.

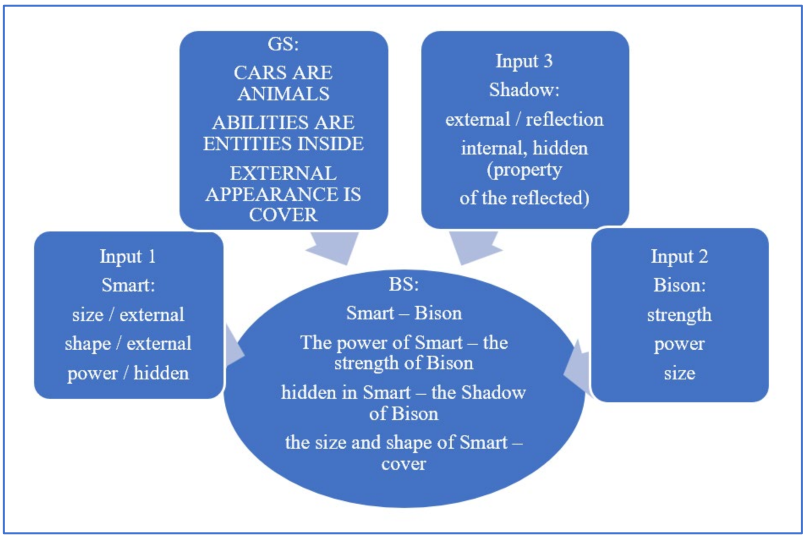

Figure 1. Conceptual integration in Multiple-Scope Networks. Source: Own processing

The integration corresponds to optimality principles. According to the unpacking principle, the depiction in the blend 'Smart car hides the strength of the Bison' unequivocally refers to such elements of the Shadow input as reflecting the hidden quality of the car, to such an element of the Bison input as strength, and to such an element of the Car input as the compactness of the Smart. According to the web principle, the relationship in the blend 'hides the strength of the Bison' is compatible with the strength element from the Bison input, coordinating with the element 'small with a big shadow' from the Car input and the element 'hidden' from the Shadow input. The blend equally satisfies the topology principle: the bison's strength is transferred to the compact car; the shadow projects the car's strength and the bison's strength; as well as the principle of integration – a small car hiding the strength of a powerful animal forms a holistic mental image. According to the relevance principle, the blended space includes elements relevant to the blending goal, i.e., allowing the explanation of the disproportion between the object and its shadow. The Metonymic Tightening occurs with the compression of roles, properties, and possessions, allowing the compression of the Smart to its Identity, hiding the strength of the Bison.

4.2 Visual metaphor analysis using the relevance-theoretical approach

The source (Bison) and the target (Smart Car) are visualized, with the Bison's shadow referring to the Smart Car. When processing the metaphor, the viewer initially hypothesizes about the explicature requiring minimal processing effort: Smart Car is a Bison. The reference assignment of the Bison to the Smart Car is ensured by visualizing the bison's shadow as the shadow of the car and is supported at the metarepresentational level by the conceptual metaphor A Machine Is an Animal. Assigning the shadow to the car aligns with core characteristics of shadow provided in the encyclopedic entry, such as being near the reflected object.

However, the explicature decoding the target and source does not allow for inferring the metaphor's meaning, as the viewer needs to establish the basis for such a comparison of the Smart and the Bison. At this stage of processing, it is possible to infer the ad hoc concept Bison*, selecting from the encyclopedic entry of Bison an ad hoc property such as Strength, which is reinforced in the verbal anchor: "Stronger than you can imagine". Nevertheless, inferring the implicature that the strength of the car is equivalent to the strength of the bison does not yet meet the presumption of optimal relevance due to local-contextual and encyclopedic contextual constraints. In the local (visual) context, the shadow is larger than the car and does not replicate its shape, which aligns with the encyclopedic context – knowledge that the Smart Car is a small vehicle by design. Therefore, further processing in search of implicature here is triggered by a violation of the relevance maxim.

The inferential processing of the metaphor involves two interpretative hypotheses related to the search for relevance (with the first loosening "The power of the Smart is the Bison's strength" held in working memory) – to align the source with target. The first implicit premise, associated with the entry Car, utilizes the contextual assumption that power is attributed to what is "inside" the car (the engine), and, accordingly, "strength" may not correspond to its visible form, i.e., it might be invisible. Here, the second loosening occurs, deriving the ad hoc concept Strength* (invisible in the car). The second hypothesis, associated with the first, relates to the entry Shadow, treating this concept as a third loosening based on selecting from the encyclopedic entry such a non-core characteristic as invisible, hidden (cf. with the linguistic metaphor "to be in the shadow" as 'to be in a position of being unnoticed'). The ad hoc concept Shadow* (reflection of the invisible, hidden in the Smart) is inferred. The implicit assumption associated with the additional ad hoc concept Shadow* relates to the target as "reflecting the hidden strength in the Smart." The weak implicature is checked for relevance to the conceptual metaphor ABILITIES ARE ENTITIES INSIDE. In constructing both hypotheses about the implicit content of the metaphor, the ad hoc characteristics of Bison* (powerful and strong) are still retained in working memory. The ad hoc concept Shadow* allows for inferring the emergent property of the metaphor – the small car hides the strength of the bison, supported by the conceptual metaphor APPEARANCE IS COVER.

Thus, the inferential transition occurs as the process of the mutual alignment of the explicature (Smart is Bison), contextual implications, strong implicature, and two weak implicatures. The source properties inferred through the ad hoc concepts Bison* (strength), Strength* (invisible), and Shadow* (reflection of the invisible/strength) are metaphorically applicable to the target, becoming implicit assumptions for a strong implicature corresponding to the emergent properties of the metaphor: a

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small Smart hides the strength of a bison. This interpretation is optimally relevant, stopping metaphor processing.

The stages involved in the metaphor processing include:
1. The decoding of the explicature Smart is Bison and its verification through the metarepresentation CARS ARE ANIMALS.
2. The inference of the strong implicature based on the ad hoc concept Bison* (Strength).
3. The utilization of local context regarding the mismatch in size and shape of the shadow compared to the reflected object – Smart, and the encyclopedic context (Smart is a small car).
4. The inference of the weak implicature based on the ad hoc concept Strength* (invisible in the car) and verification of its relevance through the metarepresentation APPEARANCE IS COVER.
5. The inference of the weak implicature based on the ad hoc concept Shadow* (hidden strength in the Smart), checked at the metarepresentational level by the conceptual metaphor ABILITIES ARE ENTITIES INSIDE.
6. The inference of the optimally relevant implicature, i.e. the emergent property of the metaphor: the small Smart hides the strength of a bison, and the verification of its relevance through the metarepresentation APPEARANCE IS COVER.

4.3 Integrative analysis combining tools from Relevance Theory, Conceptual Blending, and Conceptual Metaphor Theory

The integrative analysis of the visual metaphor, combining methods from Relevance Theory, Conceptual Blending, and Conceptual Metaphor Theory, involves six stages.
1. The decoding of the explicature "Smart is Bison" requiring minimal processing effort based on visualizing the bison's shadow as the shadow of the car. Testing the inference through the metarepresentation – conceptual metaphor CARS ARE ANIMALS and contextual assumption, based on the verbal anchor.
2. Continuing the processing with the search for a basis relevant for comparison. Inferring the ad hoc concept Bison* from Input 1, selecting from the encyclopedic entry of Bison the ad hoc property Strength*, which, to align with Input 2 "Smart", in turn, becomes the ad hoc concept Strength*, with the selection from its encyclopedic entry of the non-core ad hoc property "invisible", referring to what is inside. The relevance of this property is determined by three contextual assumptions associated with Input 3 (Smart Car): **encyclopedic**, including (a) power is attributed to what is "inside" the car (the engine), and, accordingly, "strength" may not correspond to its visible form; (b) the Smart Car is a small vehicle by design; and **local-contextual**, incorporating (c) the shadow is larger than the car and does not replicate its shape, marked by in the local (visual) context. The alignment of the ad hoc

property "invisible" with the elements of the input Smart (size and shape) generates weak implicatures: the size and shape of the car – visible, the power – invisible.

3. The projection of the ad hoc properties of the selected concepts into the blend as structures for integration. From the input Bison, the structural elements such as size, strength, and power (visible) are mapped, whereas, from the input Smart, size, shape (visible, external), and power (hidden, invisible) are projected. Establishing matching for mappings in the Blend Composition: power of Smart – strength of Bison; hidden in Smart – Bison; power of Smart (invisible) – strength of Bison (visible).

4. Checking mappings for relevance using metarepresentations of the generic space and contextual constraints. The mappings are successfully tested by the conceptual metaphor ABILITIES ARE ENTITIES INSIDE, but do not match the presumption of optimal relevance, conflicting with the input Shadow. In terms of the principle of relevance, the conflict is explained by contextual constraints, i.e. the available encyclopedic information that the shadow should reflect the object, and its mismatch with the local visual context, namely the size of the shadow and its discrepancy with the shape of the reflected object, since the shadow represents not the car but the bison. The context processing directs the refinement of the blend to obtain the most relevant information. Resolving the uncertainty and confirming the existing assumptions is achieved through the inference of the secondary ad hoc concept Shadow* with the ad hoc property "reflection of the invisible, hidden" (supported by linguistic context, as in language metaphors like "shadow economy", "shadow side of personality", etc.). Expectations of relevance direct the interpreter's attention to certain aspects of the blend, stimulating the establishment of correspondences between (a) the previously inferred ad hoc concepts Bison* (strength) and Strength* (hidden), (b) the mappings performed through their ad hoc properties – Power of Smart – Strength of Bison; Hidden in Smart – Bison; Power of Smart (invisible) – Strength of Bison (visible), and (c) the ad hoc concept Shadow* with the ad hoc property "reflection of the invisible, hidden". The result of this interaction is the inference of a strong implicature: 'The car's appearance is a cover, hiding its strength projected by the shadow'. This inference is supported in the generic space by the conceptual metaphors ABILITIES ARE ENTITIES INSIDE and APPEARANCE IS COVER.

5. In the Completion stage of the blend, additional ad hoc properties are selected from the encyclopedic entry of Bison, such as speed (runs faster than a horse), which are core but not encoded by the verbal and visual code of the metaphor. The new ad hoc concept Bison* (speed) creates an implicature that is projected into the blend, filling the structure of the Smart frame with the mapping "Speed of Smart" – "Speed of Bison". A new structure emerges in the blend: the Smart car is faster than other cars whose power is measured in horsepower.

6. The elaboration of the blend, as its extension is possible through the selection of core ad hoc characteristics from the encyclopedic entry of Smart, such as high maneuverability, fuel efficiency, etc. The implicature from the new ad hoc concept Smart* develops the emergent structure "hides strength within" with new elements: a small car combines power, maneuverability, and economy.

4. Conclusions

The hybrid method for analyzing visual metaphor integrates approaches from Relevance Theory, Conceptual Blending Theory, and Conceptual Metaphor Theory. Metarepresentations used for processing metaphors in Relevance Theory as structures "held" for the process of verifying implications and associations include conceptual metaphors, which simultaneously constitute categorization-based structures of the metaphor's generic space. Primary ad hoc concepts, adapted to the goal, form the first group of mappings in the blend's Composition. If such processing is insufficient to align with contextual assumptions of local (visual details) and encyclopedic contexts, secondary ad hoc concepts are inferred based on non-core ad hoc properties from the encyclopedic entries of the input concepts. The non-primary ad hoc properties of the inputs are projected into the blend, providing structures and elements for another group of mappings in its Composition, ensuring metaphorical alignment with contextual constraints. The groups of mappings are evaluated for relevance by metarepresentations, which, in the conceptual integration network, form the structures of the generic space. At the stage of Blend Completion, missing elements are added to the blend, based on the inference of additional non-core ad hoc properties of input concepts. These properties are not encoded verbally or visually but are derived from the previous knowledge of the interpreters and project implicatures into the blend, matching structures from other inputs. New mappings in Completion may create emergent properties of the metaphor. At the stage of Elaboration, contexts related to new conceptual domains are processed.

List of abbreviations

CIT – Conceptual Integration Theory

CMT – Conceptual Metaphor Theory

RT – Relevance Theory

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