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Processing visual metaphors: How conceptual network type and cognitive focus shape interpretation

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Abstract. In contemporary multimodal communication, visual metaphors play a critical role in shaping persuasive messages across domains such as advertising, media, and public discourse. However, the cognitive mechanisms that govern their processing are still underexplored, particularly in relation to how structural and attentional factors interact during interpretation. The purpose of this study was to investigate how different types of conceptual integration networks – mirror and three-scope – interact with the cognitive focus of metaphor processing, with special attention to fusion and fusion-replacement types of visual metaphors. The analysis was grounded within the framework of Conceptual Integration Theory, combined with insights from visual metaphor typology and cognitive processing theory. The study revealed that the processing focus – especially comparison for opposition – has a more significant influence on the cognitive complexity of metaphor interpretation than either the type of visual metaphor or the structural type of conceptual network. Notably, when opposition is clearly visualised between conceptual domains, it substantially facilitates metaphor comprehension, even within more complex three-scope blends. This suggests that processing focus can override structural complexity in determining cognitive load. Moreover, the findings showed that visual complexity (e.g., fusion vs. fusion-replacement) does not independently account for interpretative difficulty; instead, it interacts with conceptual structure and relational focus. These insights have practical applications in advertising, environmental communication, and visual design. Understanding how oppositional focus and network type affect metaphor processing can help designers and communicators create visually engaging and cognitively efficient messages that enhance audience engagement and comprehension

Keywords: metaphor; conceptual integration; visual advertising; “comparison for opposition” focus; mirror network; three-scope network; fusion

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Introduction

In an era increasingly dominated by visual communication, the interpretation of visual metaphors has become a central concern for both cognitive science and linguistic research. Despite the ubiquity of such metaphors in advertising, digital media, and political discourse, their cognitive processing mechanisms continue to be underexplored, especially in the modern context. Due to an overload of visual stimuli, understanding how viewers make sense of complex metaphorical images is more relevant than ever. The present study addressed a critical research problem: how visual metaphors are processed cognitively when their interpretation requires the simultaneous activation of multiple conceptual domains, often without verbal support. Specifically, the study sought to identify how conceptual integration mechanisms operate in the processing of visual metaphors and how inferential processes, being guided by relevance and contextual knowledge, contribute to meaning construction.

The analysis of visual metaphors from the perspective of cognitive methodology is a relatively recent and insufficiently explored area within contemporary cognitive studies. Attempts to investigate the visual-conceptual interface and its impact on the cognitive processing of visual metaphors have been undertaken both from the perspective of cognitive linguistics and in an interdisciplinary format. B.J. Phillips & E.F. McQuarrie (2005) suggested that the level of cognitive effort required depends on the degree of complexity in the spatial distribution of source and target elements in a visual metaphor. This line of research was continued by G. Ventalon *et al*. (2020) and G. Ventalon *et al*. (2023), who emphasised that the spatial distribution of visual elements not only defines the type of visual metaphor but also affects the meaning operations required for its interpretation.

From a linguistic standpoint, visual metaphor processing has been studied through the lens of relevance theory and conceptual metaphor theory. N. Kravchenko *et al*. (2024), for instance, focused on the inference of meaning in a visual metaphor as a multicomponent structure, involving the interaction of explicature, contextual assumptions, and implicatures based on ad hoc properties of the visually encoded source. Analogously, F. Yus (2023) analysed the inferential nature of visual metaphor comprehension, highlighting how relevance-guided interpretations emerge through the interaction of weak and strong implicatures. C. Forceville (2020) discussed the problematic aspects of the analysis of visual metaphors in the context of relevance theory, as well as the connection between the relevance-theoretic approach and Blending Theory (2020). In the context of Conceptual Metaphor Theory, non-verbal (visual and multimodal) metaphors were analysed by Ch. Forceville (2024), who proposed guiding principles for their identification and interpretation. These include the requirement for a clearly perceived identity relation between two elements – target and source – in such a way that their mapping yields a relevant, non-reversible interpretation (A IS B ≠ B IS A), with at least one transferred feature (e.g., action, emotion, connotation, or valuation) making conceptual sense. H. Pokojná *et al*. (2025) analysed visual metaphors that are often used in science infographics, proposing a classification of the visual conceptual mappings. On an applied level, L. Bort-Mir & M. Bolognesi (2022), as well as L. Bort-Mir *et al*. (2020), conducted experiments where participants were asked to identify general-level structural metaphors underlying visually presented images, thereby linking specific visual cues to more abstract conceptual schemas. Z. Kövecses (2022) proposed a modified approach to metaphor analysis in CMT by identifying the foci of source meaning and applying this framework to the analysis of visual metaphors.

However, only a limited number of studies addressed the analysis of visual metaphors through the lens of Conceptual Integration

Theory (CIT), since research efforts tend to focus on clarifying how images can construct and represent conceptual metaphors previously identified in the literature based on the analysis of linguistic expressions, i.e., such an analysis is performed within the framework of conceptual metaphor theory. Despite the clear paucity of research in this area, the analytical tools offered by conceptual blending represent the best approach for the study of visual metaphorical imagery. This is because the cognitive processing of visual metaphors rarely stays confined to a set of directed mappings from a visually encoded source to a target; rather, it often involves multiple levels of meaning, emergent structures, and intricate associations that can be more accurately captured within the framework of conceptual networks.

Moreover, conceptual integration based on visual metaphors constitutes a bidirectional process, where visual and conceptual elements influence each other at all stages of blend formation. According to N. Kravchenko & O. Zhykharieva (2023), conceptual integration is shaped by such attributes of visual metaphors as colour with its symbolic connotations, colour contrast, shape, the salience of specific details, and their compatibility or incompatibility with each another and with the overall visual message. These visual parameters can prompt the adjustment, enrichment, or narrowing of activated knowledge structures. At the same time, through feedback mechanisms during the blending process, the visual elements themselves may acquire added, emergent meanings.

Notably, in studies of visual metaphors conducted within the framework of CIT, the analysis of visual metaphor tends to replicate the analysis of verbal metaphors, without adequately accounting for the specificities of conceptual integration in both its verbal and visual dimensions. Specifically, factors such as processing focus – a notion specifically developed to analyse visual metaphors – and the type of metaphor visualisation are presumed to influence the cognitive processing of visual metaphor. To the best of our knowledge, these features have not yet been considered by scholars applying the Conceptual Integration Theory to the analysis of visual metaphors. The present study sought to address this gap.

The purpose of this study was to determine how the interaction between types of conceptual integration and cognitive processing focus influences the interpretation of visual metaphors. The objectives of the study were as follows:

1. To identify the processing characteristics of distinct types of visual metaphors (particularly fusion and fusion-replacement) in relation to the structure of conceptual networks (mirror and three-scope).

2. To analyse the role of cognitive focus (e.g., focus on opposition) in determining the complexity of metaphor interpretation.

3. To assess how visual complexity interacts with conceptual structure and attentional focus in the comprehension of metaphorical images.

Materials and Methods

The study focused on conceptual reconstruction of meaning processes in visual metaphors. It employed a qualitative cognitive-interpretive methodology based on Conceptual Integration Theory (CIT) (Fauconnier & Turner, 2002) to analyse two ecological visual metaphors. Two visual metaphors, freely available online, were selected for their rich conceptual and visual complexity and served as the material of analysis. They were analysed in terms of three key parameters: the type of visualisation, the cognitive processing focus, and the type of conceptual network. To ensure methodological consistency, the analysis of each visual metaphor proceeded through a multi-step algorithm, reflecting the cognitive-interpretive framework of Conceptual Integration Theory and its application to visual metaphor:

Step 1. Construction of the Conceptual Integration Network.

The primary method employed at this step was conceptual analysis, guided by CIT's framework of mental spaces, cross-space mappings, vital relations, and types of conceptual networks. This method was chosen due to its capacity for a nuanced description of how meaning is constructed across multiple input spaces in visual metaphors and how emergent meanings arise in the blended space. Each metaphor was examined in terms of input and generic spaces, the organising frame, and the emergent structure in the blend. To apply CIT systematically, the study also employed the structural typology of conceptual networks (simple, mirror, single-scope, double-scope, and multiple-scope) to determine how the organising frame is distributed across inputs. Particular attention was paid to the Mirror Network (Fauconnier & Turner, 2002, p. 122-126; Oakley & Pascual, 2017, p. 430-431), characterised by the presence of a shared organising frame across all input spaces and a single but shared identity, as well as the Multiple-scope (three-scope) Network, which was the focus of the analysis in the practical part of this study.

Step 2. Classification of the visual metaphor type.

Next, the metaphor was classified according to the mode of visualisation based on established typologies (Phillips & McQuarrie, 2004; Bünzli & Dillard, 2022). This step helped to determine the degree of visual integration between domains and predicted relative processing complexity. To establish connections between visual structures and conceptually integrated structures, this study applied a method that correlates the type of conceptual network with the type of visual metaphor. To identify the type of visual metaphor, the study adopted methods of visual metaphor classification from B.J. Phillips & E.F. McQuarrie (2004) and F. Bünzli & J.P. Dillard (2022), which distinguished visual metaphors according to the mode of visualisation. The basic three types include (a) Juxtaposition (depicting both the source and the target domains simultaneously); (b) Fusion (integrating the domains into a single visual gestalt); and (c) Replacement (omitting one of the domains and replacing it with the other). Additionally, the study partially drew on the classification of M.O. Peterson (2019), who discussed the possibility of mixed types, an example of which was Replacing fusion (p. 76-79), which combined visualisation elements in fusion metaphors and replacement metaphors.

This typology was applied to correlate visual structure with the conceptual structure of integration networks, thereby offering a more holistic view of metaphor processing. Its use in research methodology was justified by the fact that according to B.J. Phillips & E.F. McQuarrie (2004, pp. 116, 118), the cognitive complexity involved in processing a metaphor was proportional to its visual complexity: juxtaposition metaphors were considered the least demanding cognitively, replacement metaphors the most complex, while fusion metaphors occupied an intermediate position.

Step 3. Determination of the cognitive processing focus.

The third stage involved identifying the type of relational focus guiding the metaphor interpretation. Processing focus (Phillips & McQuarrie, 2004, p. 119) refers to the type of relationship established between the metaphorical elements. In this vein, three types were distinguished: (a) Comparison for similarity, which involves identifying similarities between metaphorical elements, facilitating the inference of additional parallels; (b) Comparison for opposition, which entails contrasting metaphorical elements based on specific features, allowing the interpreter to draw inferences about further differences between the source and target domains; (c) Comparison for connection – this focus is based on establishing associative links between metaphorical elements, which activates broader associative networks connecting the source and target domains.

The present study designed the focus-of-processing analysis method to determine how focus influences the interpretation of metaphor in the conceptual network and to confirm B.J. Phillips & E.F. McQuarrie's (2004, p. 119) suggestion that the type of processing focus influences the degree of cognitive effort required for interpretation: comparison for contrast was considered the least demanding, comparison for connection was considered the most cognitively demanding, and comparison for similarity represented an intermediate level of complexity.

Results and Discussion

Before analysing visual metaphors from a CIT perspective, its components must be presented in greater detail, including the mental spaces involved in integration, the conceptual processes underlying cross-dimensional mappings, vital relationships, and types of conceptual networks. The set of mental spaces forming the integration network includes: (a) two or more input spaces, depending on the type of network, which provide the structural elements for integration; (b) a generic space, which contains abstract structures common to all input spaces and ensures general-level connections between them; (c) a blended space, where selected elements from each input space are projected, resulting in new knowledge structures that are not present in the input domains.

Cross-space mappings involve conceptual processes such as matching and counterpart connections, selective projection from the input spaces, composition, completion, and elaboration (Fauconnier & Turner, 2002, p. 47-48). Composition refers to the stage at which a new conceptual structure is formed in the blended space through the alignment and selective projection of matching elements from the input spaces. Completion is the subsequent phase, during which the initially composed structure is enriched with more elements, drawn from prior knowledge or experience. Elaboration entails further development and specification of the new structure through detail enrichment (adding finer-grain elements to the blended space), expansion (applying the blend to new contexts or situations), and scenario building, among other processes.

Vital relations are conventional conceptual structures that serve as key conceptual connections between elements of the mental spaces. The primary vital relations identified by G. Fauconnier & M. Turner (2002, p. 101) include Cause-Effect, Part-Whole, Time, Space, Change, Identity, Representation, Role, Analogy, Disanalogy, Property, Category, Intentionality, Similarity, and Uniqueness. Types of conceptual networks include the simple, mirror, single-scope, double-scope, and multiple-scope networks. Mirror network proved especially relevant for the present study due to its shared organising structure – a feature typical of visual metaphors with consistent thematic identity. Considering that the two visualised domains – hemispheres – are merged into a single visual gestalt representing a spherical image of the planet Earth, in terms of its visual format, the metaphor can be classified as a fusion, based on the combination of domains (Fig. 1).

Figure 1. Ego/Eco
Source: R. Chidambaram (2020)

From the standpoint of the three possible cognitive processing foci, the metaphor most closely aligns with the comparison for opposition type since several elements of the two

visualised domains are clearly differentiated. These differences involve colour schemes, tonal contrasts, and the presence or absence of visual detail, which guide the cognitive processing towards identifying further – potentially conceptual – oppositions between the domains. In terms of the type of conceptual network, the visual image indexes a metaphor processed as a mirror network. This conclusion is supported by the following observations. On the one hand, the metaphor visualises two mental input spaces: Input Space 1 – the Ego-State (Earth after human impact) and Input Space 2 – the Eco-State (Earth in its pristine, pre-anthropogenic condition). On the other hand, both mental spaces share an organising frame – the planet Earth – which is visualised and, accordingly, conceptualised in contrasting states.

The two mental input spaces are connected through key conceptual connections – vital relations of Similarity, Identity, Uniqueness, and Change. Through the visual blending of the two input domains, which depict different states of the Earth, the vital relation of Similarity is compressed into Identity, which is further compressed into Uniqueness. Projections into the blended space preserve attributes from the generic space, which are reflected in each of the Inputs – such as the hemisphere shape, size, and container properties (the outer and inner parts of the Earth), thereby reinforcing the vital relation of Uniqueness associated with a single object, the Earth, within the blend.

The blended structure thus constructed conveys the idea: "Earth is unique; there is only one," yet it emphasises that humanity can transform it into either a planet of life or a planet of death. This new structure is not present in either input space independently but emerges through the juxtaposition of their elements and is subsequently projected back into both mental spaces. The compression of vital relations – Similarity and Analogy – into Identity is achieved through cross-space mapping of elements from one input onto the other and is supported by similar visual correlations: in both input spaces, continents, plants, animals, and other elements are depicted.

However, despite being grounded in analogies and shared elements, Identity splits into two distinct components, as the same elements are visually represented in significantly distinct ways across the two domains. In Input Space 2, continents are brightly coloured, while in Input Space 1, they appear darkened and veiled in soot and smoke. Oceans in Input Space 2 are vivid blues, whereas in Input Space 1, they are dark, blackened, and lifeless. Trees in Input Space 2 are green and thriving, while in Input Space 1 they are dead and charred. Input Space 2 features a multitude of animals and birds, while Input Space 1 shows a near-total absence of fauna – save for the silhouette of a lion resembling a shadow.

Such a splitting of a single identity into two hypostases confirms the classification of the metaphor as belonging to the mirror network type, and invokes, apart from the vital relation of Analogy, the relation of Disanalogy. The possibility of such relations was noted by Fauconnier and Turner, who stated that "Disanalogy is based on Analogy" (Fauconnier & Turner, 2002, p. 99). Through the vital relation of Disanalogy, Input Space 1 dynamically represents the state of the Earth after human intervention, while Input Space 2 represents the Earth before such intervention. Consequently, conceptual oppositions associated with the two input spaces – harmony vs. destruction, life vs. death – are projected into the blended space.

This stage of cognitive processing is preceded by metonymic compression within the blend. Through such compression, the visualised signs of destruction and death – the degradation of life forms, dull and dirty colours – come to stand for the conceptual domains of destruction and death. Conversely, the manifestations of harmony and life – the diversity of life forms, bright colours, etc. – stand for the conceptual domains of life and harmony.

Thus, at the composition stage of the blend, connections between elements from the mental input spaces are mapped into the blended space, even though such links were not explicitly present in the inputs. Specifically, the counterpart connections include mappings such as eco = preservation of the planet's uniqueness (characterised by animals, vegetation, and clean blue colours); ego = destruction of this uniqueness (characterised by degraded life forms and muddy brown hues of filth, waste, and decay).

Both mental input spaces are nevertheless united by the vital relation of Identity (one Earth, but in two different states), which is compressed into the vital relation of the Earth's Uniqueness. The relations established within the blend are then projected back onto the two contrasting states of the Earth before and after anthropogenic intervention, reconstructing both input spaces through the vital relation of Cause and Effect, accompanied by the decompression of the derived mappings: the eco-approach yields a flourishing planet, rich in biodiversity and characterised by green and blue colours; the ego-approach results in a darkened planet, marked by the absence or transformation of life forms and a lifeless muddy-brown colour palette. At the stage of cognitive processing associated with the Completion of the blend, the missing elements of the structure formed during the Composition phase are filled in. The interpreter's experience and background knowledge are activated at this stage through added visual cues – smoke-filled, ruined cities; factory chimneys releasing toxic waste; soot; and smoke. These elements are subjected to cognitive elaboration to complete the frame of human activity, which is associated with the Ego input. As a result, new elements are introduced into the blend, reinforcing the fundamental oppositions encoded within it, such as Eco-harmony vs. Ego-destruction and Eco-life vs. Ego-death. Thus, at the stage of Completion, the interpreter may once again activate the vital relation of Cause and Effect.

At the stage of Elaboration, the blend is dynamically developed into a scenario based on real-world causal relationships within temporal and spatial frameworks. Since the Ego-state of the Earth (after anthropogenic influence) is presented as one possible future trajectory, and the Eco-state, by contrast, is conceptualised in terms of the past (the Earth's primordial state, untouched by humans), then the temporal dimension of the blend acquires a prospective-retrospective axis, framing the metaphor as a reflection on the consequences of human choice. The Eco-state functions as a retrospective ideal – a lost harmony that once characterised the Earth – while the Ego-state is projected forward as a potential consequence of continued anthropogenic degradation. This temporal framing enables the blend to be elaborated into a cautionary scenario: the visual metaphor not only compares but implicitly warns, transforming the opposition between Eco and Ego into a narrative of moral and ecological responsibility. The emergent structure thus encourages the interpreter to engage in counterfactual reasoning and ethical evaluation, activating not only the conceptual opposition but also affective responses tied to fear, guilt, and hope. The metaphor becomes an implicit argument: the preservation of Earth's uniqueness depends on the predominance of Eco-oriented actions over Ego-driven exploitation.

Thus, the analysed visual metaphor is processed within the mirror network of conceptual integration. In such a network, one Identity is split into two opposing states, represented in the blend as the Uniqueness of the Earth. The analysis showed that the features of conceptual processing are determined, firstly, by the way in which the visual domains are organised into a single gestalt of the Earth, forming a fusion metaphor, and secondly, by the focus of processing "Comparison for opposition", with the opposition of visual elements within each domain.

To confirm these findings, the study considered another visual fusion metaphor, which

is analogous to the one analysed in terms of the focus of cognitive processing and the way the domains are visualised but differs in the type of conceptual network (Fig. 2).

Figure 2. Save the Rhino:
Nothing we do will ever bring them back
Source: 34 Of the most influential… (n.d.)

From the standpoint of a visual domain, the metaphor operates as a fusion, where elements from two distinct entities – a rhinoceros and a zebra – are combined, highlighting a contrast between them. This contrast-based comparison points to conceptual processing via a Mirror Network, characterised by a counterfactual relationship: an image of a single, exotic animal is cognitively separated into a zebra and a rhinoceros. The metaphor visually draws on two conceptual domains: the source (rhinoceros) and the target (zebra). A key visual detail – such as the device attaching the horn to the zebra – belongs to the target domain.

However, within the conceptual integration process, this attachment functions as a third, mediating input, enabling reconciliation between the divergent zebra and rhinoceros frames. That is, at the conceptual level, the mirror network is transformed into a three-scope one. The conceptual domain Zebra contributes to the blend the elements such as its body and striped appearance, while from the domain Rhinoceros the horn is projected with a metonymic compression of the horn into the rhinoceros. The Attachment itself symbolises artificial linkage between the two conceptual frames.

The primary incongruity arises from the horn's presence in the rhinoceros frame and absence in the zebra frame. Cognitive coherence is achieved by metonymically compressing the Attachment into the concept of "artificiality," and decompressing this into the interpretive conclusion that the creation of a rhinoceros is merely an artificial construct. Key integration relations – such as Part-Whole – are compressed into a Disanalogy framed by Cause-Effect: the horn's presence does not transform a zebra into a rhinoceros. Through Completion, the integration conveys the futility of replicating a species, and through Elaboration, the meaning expands toward a narrative about wildlife conservation and the protection of endangered animals.

Although this metaphor uses a three-input conceptual integration model, it stays cognitively straightforward. As in the previous analysis of visual metaphor, processing difficulty is more influenced by the type of cognitive focus than by the metaphor's structural format. Here, the focus is on opposition, which tends to demand less cognitive effort than foci based on similarity or associative connection. While the replacing fusion form suggests moderate complexity, the overall processing ease reinforces the idea that focus type is more pivotal than metaphor type in determining interpretive load.

The analysis conducted within the framework of conceptual integration theory, considering the specifics of visual blending, suggests that the focus of cognitive processing may play a more decisive role in simplifying or complicating the integration process than the type of domain visualisation itself. This conclusion is based on the fact that interpreting the metaphor and inferring its meaning did not require significant cognitive effort, as the contrasting elements were clearly visualised, establishing the processing focus as comparison for opposition. As noted in the methodological section, this focus implies minimal complexity compared to the other two focuses – comparison for similarity and comparison for connection.

At the same time, from the standpoint of visualisation, the metaphor implements a fusion structure, a type generally associated with moderate cognitive load, which is greater than that required for processing a comparison metaphor. However, despite this, the metaphor was perceived as easy to process, thanks to the clear visual implications: the ego-approach should be replaced by the eco-approach to prevent the degradation and death of the planet. This enables the assumption that it is, in fact, the focus of processing that plays a decisive role.

The present study introduced a novel approach to analysing visual metaphors by systematically correlating the type of conceptual integration network with the focus of cognitive processing – a methodological and theoretical intersection that, to the best of our knowledge, has not been explicitly explored in prior research. While earlier studies have addressed various dimensions of visual metaphor, none have examined the specific interaction between network type and processing focus as the determinant of processing complexity. For instance, B.J. Phillips & E.F. McQuarrie (2004) explored how visual structure and type of comparison (similarity, opposition, connection) affect rhetorical impact, noting that opposition is the least cognitively demanding. However, the researchers did not apply Conceptual Integration Theory to explain how such comparisons function within integration networks. M. van Mulken *et al*. (2010; 2014) studied the correlation between the complexity of visual metaphors in advertising and their understanding and evaluation without resorting to the explanatory tools of the CIT. In terms of visual blending, J.M. Cunha & A. Cardoso (2019) emphasised the significance of a conceptual framework for creating visual blends. At the same time, in most studies, visual conceptual blending is performed as a description of the components of a visual blend and the way they are visually combined without considering the conceptual foundations of visual integration (Chilton *et al.*, 2019).

Among the studies that attempt to analyse visual metaphors from the standpoint of CIT, it is worth mentioning the study by T. Oakley & E. Pascual (2017), who examined conceptual blending in both verbal and visual metaphors in advertising, emphasising how different types of conceptual networks influence metaphor processing. At the same time, the researchers were primarily interested in mapping mechanisms and conceptual compression, without explicitly modelling processing focus or comparing processing effort across different network types. A. Tseronis & Ch. Forceville (2017) emphasised the persuasive potential of visual metaphors in multimodal argumentation but focused on pragmatic functions and not on internal cognitive effort or integration mechanics. In the same vein, Y. Zhao & H. Lin (2019) explored visual metaphors as an indirect method of persuasion in print advertising. D. Niño & G. Serventi (2014) proposed a systematic approach to the analysis of visual metaphors, with an emphasis on the classification of visual metaphors rather than on the cognitive processing in different types of networks, accounting for the type of visualisation and the focus of processing.

While previous literature provides robust classifications of visual metaphor types and preliminary explorations of CIT in multimodal contexts, the present study offered a fresh perspective on how conceptual blending can function not only in linguistic but also in visual contexts. By correlating visual metaphor types with conceptual network structures and processing foci, the study offered a comprehensive framework that accounts for both visual and cognitive dimensions of metaphor processing.

Conclusions

The study showed that processing focus is a stronger determinant of the level of processing complexity of visual metaphors than other parameters affecting their processing. Analysis of metaphors of two visual types – fusion and replacing fusion – showed that the focus of

comparison for opposition may be more influential than the type of domain visualisation, since such a focus significantly reduces cognitive effort in understanding the metaphor. Analysis of metaphors in terms of types of integration conceptual networks demonstrated that even though three-scope integrations are cognitively more demanding than mirror networks, the processing focus in both visual metaphors, namely comparison for opposition, plays a decisive role in facilitating integration processes in different types of networks. The present study was the first to demonstrate that visual complexity alone (e.g., fusion vs. replacement) does not fully account for cognitive complexity; it must be interpreted in conjunction with conceptual structure and relational focus.

The study confirmed that the process of interpreting visual metaphors is formed not only by the structural characteristics of the conceptual network, but also mainly depends on the cognitive focus, which determines the way the elements of the metaphor are compared. It was found that the type of conceptual network, whether mirror or three-sector, affects the cognitive load, but it is the focus of comparison by opposition that greatly facilitates the integration of content, regardless of the visual complexity of the image. This approach opens new possibilities for more accurate modelling of the mechanisms of understanding visual metaphors by combining structural and procedural parameters. Further research may focus on expanding the typology of visual metaphors and cognitive focuses, as well as on the implementation of these models in interdisciplinary fields.

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Conflict of Interest

The authors of this study declare no conflict of interest.

References

[1] 34 Of the most influential animal ads of all time. (n.d.). Retrieved from https://inyminy.com/35-influential-animal-ads-time/.

[2] Bort-Mir, L., Bolognesi, M., & Ghaffaryan, S. (2020). Cross-cultural interpretation of filmic metaphors: A think-aloud experiment. *Intercultural Pragmatics*, 17(4), 389-416. doi: 10.1515/ip-2020-4001.

[3] Bort-Mir, L., & Bolognesi, M. (2022). Reliability in the identification of metaphors in (filmic) multimodal communication. *Multimodal Communication*, 11(3), 187-201. doi: 10.1515/mc-2021-0022.

[4] Bünzli, F., & Dillard, J.P. (2022). The persuasive effects of verbal anchoring and visual complexity. *Journal of Visual Literacy*, 41(1), 46-64. doi: 10.1080/1051144X.2022.2053817.

[5] Chidambaram, R. (2020). *Ego-system awareness to eco-system consciousness*. Retrieved from https://surl.lt/suctcb.

[6] Chilton, L.B., Petridis, S., & Agrawala, M. (2019). Visiblends: A flexible workflow for visual blends. In *Proceedings of the 2019 CHI conference on human factors in computing systems* (pp. 1-14). Glasgow. doi: 10.1145/3290605.3300402.

[7] Cunha, J.M., & Cardoso, A. (2019). From conceptual blending to visual blending and back. In T.R. Besold, P. Gervas, E. Gius & S. Schulz (Eds.), *Computational creativity meets digital literary studies* (pp. 92-93). Wadern in Saarland: Dagstuhl Reports.

[8] Fauconnier, G., & Turner, M. (2002). *The way we think. Conceptual blending and the mind's hidden complexities*. New York: Basic Books.

[9] Forceville, C. (2020). *Visual and multimodal communication: Applying the relevance principle*. New York: Oxford University Press. doi: 10.1093/oso/9780190845230.001.0001.

[10] Forceville, Ch. (2024). Identifying and interpreting visual and multimodal metaphor in commercials and feature films. *Metaphor and Symbol*, 39(1), 40-54. doi: 10.1080/10926488.2023.2271544.

[11] Kövecses, Z. (2022). Visual metaphor in extended conceptual metaphor theory. In R. Benczes & V. Szelid (Eds.), *Visual metaphors* (pp. 15-32). Amsterdam: John Benjamins Publishing Company. doi: 10.1075/bct.124.02kov.

[12] Kravchenko, N., Prokopchuk, M., Muntian, O., Zvereva, M., & Kozachuk, A. (2024). Visual metaphor analysis: A relevance theory approach. *Amazonia Investiga*, 13(80), 233-241. doi: 10.34069/AI/2024.80.08.19.

[13] Kravchenko, N., & Zhykharieva, O. (2023). Visual metaphor in advertising discourse: The problem of interaction of the approaches of conceptual blending, visual grammar and the theory of relevance. In *Philological education and science: Transformation and modern development vectors: Scientific monograph* (pp. 238-258). Riga: Baltija Publishing. doi: 10.30525/978-9934-26-283-8-10.

[14] van Mulken, M., le Pair, R., & Forceville, C. (2010). The impact of perceived complexity, deviation and comprehension on the appreciation of visual metaphor in advertising across three European countries. *Journal of Pragmatics*, 42(12), 3418-3430. doi: 10.1016/j.pragma.2010.04.030.

[15] van Mulken, M., van Hooft, A., & Nederstigt, U. (2014). Finding the tipping point: Visual metaphor and conceptual complexity in advertising. *Journal of Advertising*, 43(4), 333-343. doi: 10.1080/00913367.2014.920283.

[16] Niño, D., & Serventi, G. (2014). Cognitive type and visual metaphorical expression. *Cognitive Semiotics*, 5(1-2), 367-392. doi: 10.1515/cogsem.2013.5.12.367.

[17] Oakley, T., & Pascual, E. (2017). Conceptual blending theory. In B. Dancygier (Ed.), *The Cambridge handbook of cognitive linguistics* (pp. 423-448). Cambridge: Cambridge University Press. doi: 10.1017/9781316339732.027.

[18] Peterson, M.O. (2019). Aspects of visual metaphor: An operational typology of visual rhetoric for research in advertising. *International Journal of Advertising: The Review of Marketing Communications*, 38(1), 67-96. doi: 10.1080/02650487.2018.1447760.

[19] Phillips, B.J., & McQuarrie, E.F. (2004). Beyond visual metaphor: A new typology of visual rhetoric in advertising. *Marketing Theory*, 4(1-2), 113-136. doi: 10.1177/1470593104044089.

[20] Pokojná, H., Isenberg, T., Bruckner, S., Kozlíková, B., & Garrison, L. (2025). The language of infographics: Toward understanding conceptual metaphor use in scientific storytelling. *IEEE Transactions on Visualization and Computer Graphics*, 31(1), 371-381. doi: 10.1109/TVCG.2024.3456327.

[21] Tseronis, A., & Forceville, Ch. (2017). Argumentation and rhetoric in visual and multimodal communication. In A. Tseronis & C. Forceville (Eds.), *Multimodal argumentation and rhetoric in media genres* (pp. 1-24). Amsterdam: John Benjamins. doi: 10.1075/aic.14.01tse.

[22] Ventalon, G., Erjavec, G., & Tijus, C. (2020). Processing visual metaphors in advertising: An exploratory study of cognitive abilities. *Journal of Cognitive Psychology*, 32(8), 816-826. doi: 10.1080/20445911.2020.1817038.

[23] Ventalon, G., Erjavec, G., & Tijus, C. (2023). A review of processing and analysing visual metaphors in psychology. *European Review of Applied Psychology*, 73(4), article number 100836. doi: 10.1016/j.erap.2022.100836.

[24] Yus, F. (2023). Finding relevance in smartphone advertising. *Internet Pragmatics*, 6(1), 1-41. doi: 10.1075/ip.00084.yu.

[25] Zhao, Y., & Lin, H. (2019). A review of the effect of visual metaphor on advertising response. In *Advances in economics, business and management research*. *4th International conference on economy, judicature, administration and humanitarian projects (JAHP 2019)* (pp. 29-34). Dordrecht: Atlantis Press. doi: 10.2991/jahp-19.2019.7.

Обробка візуальних метафор: як тип концептуальної мережі та когнітивний фокус формують інтерпретацію

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Анотація. У сучасній мультимодальній комунікації візуальні метафори відіграють вирішальну роль у формуванні переконливих повідомлень у таких сферах, як реклама, медіа та публічний дискурс. Однак когнітивні механізми, що керують їх обробкою, залишаються недостатньо вивченими, особливо стосовно того, як структурні фактори та чинники, що спрямовують фокус уваги, взаємодіють під час інтерпретації. Метою цього дослідження було вивчити, як різні типи мереж концептуальної інтеграції – дзеркальні та трисферні – взаємодіють з когнітивним фокусом обробки метафор, з особливою увагою до типів візуальних метафор типу злиття та злиття з елементами заміщення. Аналіз ґрунтувався на підходах концептуальної інтеграції, залучаючи типологію візуальних метафор та теорії їх когнітивної обробки. Дослідження показало, що фокус обробки – особливо «порівняння для опозиції» – має більш значний вплив на ускладнення процесу когнітивної інтерпретації метафори, ніж тип візуальної метафори чи структурний тип концептуальної мережі. За умови чіткої візуалізації опозиції між концептуальними доменами суттєво полегшується розуміння метафори, що стосується як відносно нескладних дзеркальних мереж, так і складних трисферних поєднань. Це свідчить про те, що у визначенні когнітивного навантаження фокус обробки має більше значення, аніж структурна складність метафори. Більше того, результати дослідження показали, що візуальна складність (наприклад, злиття vs. злиття-заміщення) сама по собі не пояснює складність інтерпретації; натомість вона взаємодіє з концептуальною структурою та фокусною спрямованістю. Результати дослідження можуть бути практично застосовані в рекламі, екологічній комунікації та візуальному дизайні. Усвідомлення того, як опозиційна спрямованість та тип мережі впливають на обробку метафор, може допомогти дизайнерам створювати візуально привабливі та когнітивно ефективні повідомлення, які покращують залучення та розуміння аудиторії

Ключові слова: метафора; концептуальна інтеграція; візуальна реклама; фокус «порівняння для опозиції»; дзеркальна мережа; трисферна мережа; злиття