

## CONSTRAINTS ON METAPHOR: SOME NOTES ON THE ROLE OF THE INVARIANCE PRINCIPLE IN METAPHORIC MAPPINGS<sup>1</sup>

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**ABSTRACT.** *Cognitive linguistics understands metaphor as a major conceptual mechanism which involves a mapping across experiential domains. In this paper, we will examine some of the constraints which operate on different kinds of metaphors. In this respect, we will weigh up the general explanatory validity of the Invariance Principle, which claims that image-schematic structure is to be preserved in metaphoric mappings (Lakoff 1990, 1993), and we will show the advantages of the extended version proposed by Ruiz de Mendoza (1998a). This principle, however, is not applicable when we intend to rank metaphorical expressions in terms of felicity degrees; thus, further constraints will be tentatively explored in order to provide a more satisfactory account of the nature and limitations of metaphor production.*

**KEYWORDS.** *Cognitive linguistics, metaphor, Invariance Principle.*

**RESUMEN.** *La lingüística cognitiva entiende la metáfora como un mecanismo conceptual de primer orden que implica una proyección entre dominios experienciales. En este artículo examinamos algunas de las restricciones que operan sobre diferentes tipos de metáforas. A este respecto, sopesamos la validez explicativa general del Principio de Invariancia, que afirma que debe conservarse en las proyecciones metafóricas la estructura de esquemas de imagen (Lakoff 1990, 1993), y señalamos las ventajas de la versión extendida que propone Ruiz de Mendoza (1998a). Este principio, sin embargo, no es pertinente si lo que pretendemos es clasificar las expresiones metafóricas según grados de felicidad; por ello, exploramos de forma tentativa restricciones adicionales que puedan proporcionarnos una explicación más satisfactoria de la naturaleza y limitaciones de la producción de metáforas.*

**PALABRAS CLAVE.** *Lingüística cognitiva, metáfora, Principio de Invariancia.*

### 1. INTRODUCTION

Since the appearance of the cognitive paradigm in the mid-seventies, there has been a radical change in the approach to metaphor, which is now perceived primarily as a

conceptual rather than a merely linguistic phenomenon. Traditional accounts have often characterized metaphor as a figure of speech which involves a deviation from general patterns of language use. Cognitive Linguistics, however, argues for the central role of metaphor in our conceptual system, which is made evident by the vast number of conventionalized metaphorical expressions pervading everyday language. From a cognitive standpoint, metaphor is generally defined as a partial mapping (i.e. a set of one-to-one correspondences) between conceptual domains of experience, a source domain and a target domain, which allows us to understand the latter in terms of the logic and structure of the former (see Lakoff & Johnson 1980; Lakoff 1987; Lakoff & Turner 1989). This new perspective on metaphor tends to satisfy both what Lakoff has called the generalization and cognitive commitments. The first is “a commitment to characterizing the general principles governing all aspects of human language”, while the second is “a commitment to make one’s own account of human language accord with what is generally known about the mind and the brain, from other disciplines as well as our own” (Lakoff 1990: 40). In effect, in compliance with both commitments, metaphoric mappings are seen as cognitive operations -deeply rooted in our experience- which make up conventional systems which regulate the interpretative behaviour of particular metaphorical expressions.

The chief aim of this paper is to examine which general principles may restrict our ability to establish correspondences across metaphoric mappings, both in novel and conventionalized instances. We shall discuss the theoretical basis and the range of applicability of a well-known proposal in this respect, namely the *Invariance Principle*, which associates conceptual consistency with the preservation of image-schematic structure in metaphoric mappings (see Lakoff 1990, 1993; Turner 1990, 1993, 1996; Brugman 1990). In a refined version of this constraint, called the *Extended Invariance Principle*, Ruiz de Mendoza (1998a: 265) argues that the contextual effects motivated by a metaphoric mapping preserve the generic-level structure of any mental space involved in the projection; we shall observe that this reformulation of the Invariance Hypothesis meets Lakoff’s generalization commitment in a more satisfactory manner than previous proposals, since it is applicable to all kinds of conceptual metaphors, rather than only to those based on image-schematic structure, as will become evident below.

It should be noted, however, that such a constraint is not of use when dealing with metaphors which seem to be conceptually less felicitous than others, even though they preserve generic-level structure and may well materialize in actual speech. With this in mind, we shall try to account for the degree of felicity of some metaphorical expressions in terms of the contextual effects yielded by complex phenomena of conceptual interaction.

## 2. THE COGNITIVE STATUS OF METAPHOR

As is well-known in Cognitive Linguistics, Lakoff (1987: 68) argues that we organize stable knowledge in our minds by means of ICMs (*idealized cognitive models*),

complex gestalts which represent reality from a certain perspective and which are structured according to four kinds of principles: propositional structure, image-schematic structure, metaphoric mappings and metonymic mappings. ICMs are sources of prototype effects and may be partly accessed in the form of mental spaces for use in specific cognitive operations.

Within the cognitive paradigm, conceptual metaphor is understood as a systematic mapping from a source domain onto a target domain. By way of illustration, we often make use of our knowledge about journeys (source domain) in order to talk and reason about love (target domain) (Lakoff 1993). The LOVE IS A JOURNEY metaphor involves mapping travellers onto the lovers, the vehicle onto the love relationship, common destinations onto the lovers' common goals, and impediments to travel onto difficulties in the relationship. This set of systematic correspondences surfaces in some everyday English expressions of which we can make sense only with reference to our conventional conceptualization of love as a journey (e.g. *Our relationship isn't going anywhere, We can't turn back now, We're spinning our wheels, Our marriage is on the rocks*).

The cross-domain correspondences between entities are not established in an arbitrary way; they are ultimately grounded in correlations within our physical and cultural experience. For example, Lakoff (1993) argues that the concept of quantity involves at least two metaphors: MORE IS UP/LESS IS DOWN, as in *Prices rose*, and LINEAR SCALES ARE PATHS, as in *John is way ahead of Bill in intelligence*. The experiential grounding of both is evident. In one case we observe that greater quantity of a material often correlates with an increase in height (as when you pile books one on top of the other). In the other case, greater intelligence is seen as greater progress in terms of our common experience about moving objects along a path (cf. also Lakoff & Johnson 1980: 19). The experiential grounding, however, may be superseded by cultural factors; for example, Lakoff & Johnson (1980: 14) point out that in some cultures the future is ahead of us and in some others it is behind.

Lakoff & Johnson (1980) have distinguished between *structural*, *orientational* and *ontological* metaphors. LOVE IS A JOURNEY is an example of the first type, since one concept is understood in terms of the conceptual structure of another. MORE IS UP is an orientational metaphor since it has to do with spatial orientation. Finally, metaphors where the source domain is an entity or a substance are called ontological. These metaphors allow us "to pick up parts of our experience and treat them as discrete entities or substances of a uniform kind" (Lakoff & Johnson 1980: 25). One example would be THE MIND IS A MACHINE, as in *He broke down*. Lakoff & Turner (1989: 97) expand orientational metaphors to include what they call, following Johnson (1987), image schemas. Image schemas are schematic representations of space; among them, we have those of a bounded space (or container), path, contact, and of human orientations like up-down, front-back, and centre-periphery. In Lakoff & Johnson (1980) the notion of container was associated with ontological metaphors, since many entities can be seen as containers for other entities; however, it is possible to list container metaphors with *image-schematic metaphors* in general. For example, Lakoff & Johnson (1980: 31)

observe that activities may be seen as substances and therefore as containers as in *He's immersed in washing the windows right now*. But since it is possible to envisage activities, and also events and states as container schemas without focusing on the notion of substance (e.g. *He's getting into window-washing as a profession, He's in trouble, He's in the race*), we may argue that it may be more appropriate to generalize and think of metaphors in which the substance is explicitly mentioned as subcases of the more generic image-schematic metaphor. This idea is consistent with the analysis of the internal structure and logic of the container schema as carried out in Peña (1997ab), where the substance contained is simply seen as a potential part of the schema which, when instantiated, carries with itself some sort of special communicative effect. Thus, in the example above, saying that a person is immersed in an activity suggests that the person is completely involved in it to such an extent that other possible activities are ruled out, in the same way as an entity immersed in a liquid cannot be immersed in another liquid at the same time.

Finally, Lakoff & Turner (1989: 89-96) have also discussed what they call *image metaphors*. These involve the mapping of images which share an overall common structure. Usually, since the mappings are not conventional there may be different readings. Among many examples, Lakoff & Turner discuss the following line from a translation of the beginning of André Breton's "Free Union":

My wife whose hair is a brush fire.

We could regard the general physical outline of the hair as corresponding to the shape of the flames; or we might map the colour of fire onto the wife's hair, or the strands of hair to the burning plant shoots.

To this list of metaphor types we may still add another one, which we shall label *situational*. For example, in *I could do that with one hand tied behind my back*, the speaker suggests that doing something will be extremely easy for him. It does not literally mean that the speaker wants to have one of his hands tied behind his back. Note that the metaphor does not necessarily apply to physical activity; the speaker might be talking about solving a Mathematics problem. However, the full meaning of the expression is based on a real-life situation where a person fights his opponent with only one hand in order to show off his purported superiority. In a sense, situational metaphors have a metonymic component, since the expression evokes a more complete picture with the whole situation where a person manages to beat his opponent by using his superior fighting skills in spite of the fact that he has limited them on purpose. Ruiz de Mendoza (1998b) has shown the way metonymy works in metaphors like this to create complex interactional patterns. However, our intention here is only to show that situational metaphors are not like the other kinds distinguished by Lakoff and his collaborators, although it shares some characteristics with them. Thus, situational metaphors are like structural metaphors in that the source allows us to understand some aspects of the target. The speaker in our example above thinks that he can perform a task without using his full capabilities in the same way as if he had a hand tied behind his back. However,

there is a crucial difference. Structural metaphors seem to have abstracted away generic structure from a number of specific situations in such a way that the features of the specific situations are largely irrelevant for interpretation. Thus, in Lakoff & Johnson's (1980: 4) ARGUMENT IS WAR (e.g. *Your claims are indefensible, He shot down all of my arguments*), the people arguing are opponents, they plan and use strategies, they attack positions and defend their own, etc. The generic idea of war helps us talk and reason about the idea of a specific way of arguing. In contrast, in situational metaphors we only use a specific knowledge domain (a concrete situation), to discuss only one aspect of the target domain, i.e. the aspect which is highlighted by the metonymic source (in our example, self-limiting one's own skills to carry out what one regards as an easy task). Observe also that structural metaphors do not make use of metonymy to develop their source domains.

Image-schema metaphors also seem to share some features with structural metaphors. In the former, the source domain is a generic conceptual construct that helps us to understand and reason about the target domain. The only actual difference with the latter is related to the type of source domain. Much the same can be said about image metaphors, as is evident from Lakoff & Turner's discussion of this topic as outlined above.

Finally, we have what Lakoff & Johnson called ontological metaphors. In later work, these have been treated by Lakoff & Turner (1989: 170) under the heading *The Great Chain Metaphor*. The Great Chain is a cultural model which defines attributes and behaviour conventionally ascribed to humans, animals, plants, complex objects, and natural physical things. In the Great Chain humans are defined as having higher-order attributes and behaviour; animals have instinctual attributes and behaviour; plants have biological attributes and behaviour; complex objects have structural attributes and behaviour; and natural physical things have natural physical attributes and behaviour. Without going into further detail, the Great Chain metaphor allows us, for example, to understand human attributes and behaviour in terms of (attributed) animal characteristics and behaviour, as in a large number of animal metaphors: *She is catty, He's been dogging me all day, He has an eagle eye for details, He's a bull of a man, He's a silly ass*, etc. Ruiz de Mendoza (1997a) has noted that metaphors of this kind tend to single out a specific feature of the source as the most relevant one for the mapping to take place, and in fact he has gone as far as to argue that there are but two metaphor types: one in which one domain structures another by means of a number of correspondences, and another in which there is only one correspondence. All metaphors except those belonging to the Great Chain would be, in Ruiz de Mendoza's terminology, *many-correspondence metaphors*, while ontological metaphors would be *one-correspondence metaphors*. We may observe that Ruiz de Mendoza's distinction is based on formal features pertaining to the mapping process. However, we still believe that a thorough description of metaphor also needs to take into account the nature of the domains involved. Thus, our situational metaphors would fall under the "many-correspondence" category but still they cannot fulfil such a formal criterion until they have been metonymically developed. And interestingly enough, the metonymy serves essentially the same purpose as a

metaphoric one-correspondence mapping, i.e. to single out and place in focus one of the interpretatively relevant features. Since situational metaphors are midway between structural and ontological metaphors, we may still posit a three-fold division from the point of view of the nature of the domains involved (i.e structural, situational, and ontological), and maintain Ruiz de Mendoza's two-fold formal division as discussed above. In this proposal image-schematic, image, and structural metaphors would be ranked on a par as having the same properties, to be distinguished from those in ontological and situational metaphors, as evidenced in our previous discussion.

### 3. THE INVARIANCE PRINCIPLE

One of the main concerns of Lakoff and his collaborators has been with making explicit what constraints play a role, if any, on metaphor production. Lakoff & Turner (1989: 199-204) have argued that for a mapping to be successful the overall generic shape of both the metaphoric source and target domains has to be preserved. For example, if we understand the event of death metaphorically in terms of the action of a magician who causes the disappearance, then the magician must map onto the causes of death, but not onto death itself, or onto the dying person's last breath. Although the theoretical assumptions on which this idea is founded partly underlie Turner (1987), the hypothesis has been explicitly formulated and further developed by each author with slight differences (Lakoff 1990, 1993; Turner 1990, 1993, 1996). However, in these reformulations Lakoff and Turner seem to indentify the preservation of the general shape of an event with the preservation of image-schematic structure, a point which is -as we shall see- arguable.

The Invariance Principle (Lakoff, 1990, 1993) is the most significant attempt to specify a general constraint in image-schematic terms on conceptual metaphor. In order to justify his proposal, Lakoff provides extensive evidence for the understanding in spatial terms of abstract concepts such as time, states, changes, actions, causes, purposes, means, quantity, and categories. For example, our understanding of the path schema is the basis for our understanding of time as a moving entity (cf. *Time goes by*) or of causation as giving (motion to), as in *The noise gave me a headache*. In DEATH IS A MAGICIAN, the cause of death is mapped onto an agent, through the EVENTS ARE ACTIONS metaphor. Such observations lead Lakoff (1990: 72) to formulate a strong version of what he calls the Invariance Principle (also referred to as the Invariance Hypothesis):

All metaphorical mappings are partial. What is mapped preserves image-schematic structure, though not all image-schematic structure need be mapped. Furthermore, all forms of abstract inference, all details of image-mappings, and all generic-level structure arise via the Invariance Hypothesis.

In alternative weak forms of his hypothesis, less ambitious in scope and therefore easier to accept, Lakoff allows that image-schematic structure may be only a partial

aspect of generic-level structure or, to a similar effect, that perhaps not all instances of abstract reasoning arise from the metaphoric projection of image-based reasoning onto an abstract domain.

Turner's version of the Invariance Hypothesis, on the other hand, places emphasis on the target domain rather than on the source domain of a metaphoric mapping by means of the following mapping rule (1990: 254; 1993: 302-3):

In metaphoric mappings, for those components of the source and target domains determined to be involved in the mapping, preserve the image-schematic structure of the target, and import as much image-schematic structure from the source as is consistent with that preservation.

Our impression is confirmed by Turner himself, who has later acknowledged that his formulation differs from Lakoff's "only in the extent to which my phrasing makes explicit parts of the hypothesis Lakoff assumed" (Turner 1990: 247)<sup>2</sup>. In Lakoff (1993: 215) we find what is perhaps the clearest formulation of the Invariance Principle:

Metaphorical mappings preserve the cognitive topology (that is, the image-schema structure) of the source domain, in a way consistent with the inherent structure of the target domain.

It can be observed that the terms of the constraint remain basically the same, except that here Lakoff explicitly acknowledges the role played by target domain overrides in imposing limits on the mapping. The fact that the inherent structure of the target domain cannot be violated explains, for instance, why if someone gives us a kick we do not continue to have it in our possession afterwards. In virtue of the ACTIONS ARE TRANSFERS metaphor the action of kicking is conceptualized as a physical entity which is transferred from an agent to a patient. However, since it is part of our target domain knowledge that actions stop existing after they happen, the fact that the recipient keeps the transferred entity cannot be mapped because that correspondence would not be in accordance with the Invariance Principle (Lakoff 1993: 216).

Ruiz de Mendoza (1998a) has noted that the Invariance Principle is not applicable, as it stands, to all cases of metaphor. He gives ontological metaphors based on the Great Chain as an example. In many of them, animal behaviour maps onto human behaviour. Thus, when we say that *Achilles is a lion* we mean that he behaves bravely, an attribute which we culturally ascribe to lions on the basis of our observations about their instinctual behaviour. Here the mapping is based exclusively on propositional structure; image schemas play no role. Based on this observation, Ruiz de Mendoza (1998a: 263) proposes a reformulation of the Invariance Principle, which he calls the Extended Invariance Principle<sup>3</sup>:

Metaphorical mappings preserve the generic-level structure of the source domain in a way consistent with the inherent structure of the target domain.

It is interesting to note that Ruiz de Mendoza's reformulation is also applicable to what we have termed situational metaphors, which involve no image schemas either. For

example, the sentence *The knives are out on both sides*, metaphorically conveys the idea of strong disagreement between two parties. But the sentence is only part of a more general situation in which two people or two contending factions take their knives out in preparation for a fight to death. This last idea, which is not made explicit by the metaphorical expression, is also mapped onto the metaphoric target to complete our impression that both sides are willing to do whatever is necessary to achieve their purposes, no matter the consequences. Additionally, it is possible to observe that with situational metaphors the role of the Invariance Principle may extend well beyond the role given to it by Lakoff and his associates by placing a strong requirement on the nature of the source domain which thus necessitates expansion by means of metonymy in order to be mapped. So the metonymic development of the source domain in this kind of metaphor is but a consequence of the need for conceptual consistency between source and target.

#### 4. DEGREES OF FELICITY

From our discussion it may have become evident that the Invariance Principle, in any of its versions, is mainly a principle of *internal* consistency between domains for mappings to take place, although the consistency is based upon the preservation of generic-level structure, which seems to be an *external* factor. That is, if an entity is seen in terms of the relationship between parts and whole, we may use another entity which also has parts in order to perform a mapping. Then parts may be mapped onto parts provided the generic-level structure of both source and target is not violated. Thus, we may map a lion's mane onto a person's long thick hair, but not, say, onto the person's feet. However, the Invariance Principle cannot explain the reason why we would hardly map a lion onto a zebra, a rose onto a daffodil, a book onto a magazine, or a ruby onto a diamond, even though all these pairs of entities have a considerable amount of conceptual structure in common. It cannot explain either why some metaphors need metonymic development in a certain way. Consider the case of the sentence *It breaks my heart to see children dying of hunger*. It would be unlikely to come across an expression like *?It breaks my feelings to see children dying of hunger*. The heart is culturally (and experientially because of certain physiological reactions) seen as a container of feelings. Feelings might be conceptualized as physical entities which can be damaged in the same way as the heart can, but we never say that we break feelings. Then, there is the issue of highly conventionalized expressions. We can say that a woman is "a dragon" or "a cow", when she is particularly unpleasant, but we would not apply those metaphors to men. Finally, we have cases where a mapping cannot be established unless certain conditions hold. For example, we may say *I'm all ears*, but it would be highly strange to say *?I'm ears* or *?I'm an ear*. Or we may say *She is my hope* and *She's all hope*, but *?She's hope* would certainly be odd.

The reasons behind the degrees of felicity of these metaphors may have quite different origins. First, in the case of the application of the Great Chain metaphor, there seems to be a preference for the creation of metaphors which cut across the attribute hierarchy; that is, it is easier to map animals onto humans or the other way around than animals onto animals or humans onto humans. There are exceptions, however. For example, we may say *John is an Einstein* or *Alex is a Don Juan*, probably because in classifying people in such a way we are developing the hierarchy further by adding one more level to it. We are dealing with very specific higher-order attributes which are not common to all humans (i.e. they are highly idiosyncratic with the individuals used as the source of the mapping) and may thus deserve separate treatment. Or it may be feasible to compare one object to another by virtue of their sharing a common image (or even an image-schematic structure), as when we compare a winding river to a rope or we refer to a large luxurious vehicle as a land yacht. It is also possible to think of a complex object in terms of another complex object as long as both share a functional characteristic which is intrinsic to them, that is, which is not culturally attributed to them: thus, a very fast vehicle may be likened to a dart. But if no image or inherent functional characteristic is involved, a mapping within the same level of the hierarchy becomes more difficult, since it is less relevant. We do not need an animal to discuss features which we have already ascribed by convention to another animal. Note the oddity of utterances like *?My dog is an ass* to mean that the dog is stupid or *?My dog has an eagle eye* to discuss its excellent eyesight capabilities.

Second, we have the case of those metaphors like *She broke my heart* meaning ‘She hurt my feelings’, and *She could read my mind*, meaning ‘She could guess my thoughts’. These metaphors involve a metonymy in their targets (see Ruiz de Mendoza 1997b, 1998b, for details on how the interactions may take place). The role of the metonymy is to specify what part of the metaphoric target is relevant for interpretation. Thus, in *She broke my heart* we may have the following correspondences:

| SOURCE           | TARGET               |
|------------------|----------------------|
| breaker          | doer                 |
| breaking         | doing emotional harm |
| heart = feelings | affected person      |

The last correspondence is based on a metonymy, since the feelings are considered to be part of the heart. The reason why the whole domain rather than the metonymic target (i.e. the feelings) has been chosen for the metaphorical expression perhaps lies in the fact that “breaking the heart” is communicatively more powerful. We associate the heart not only with all sorts of feelings, but also with emotional balance, which makes the situation described by the metaphorical expression more disruptive to the speaker. Choosing the whole domain rather than a subdomain produces more relevant meaning effects.

Finally, examples like *I’m all ears* may be regarded as borderline cases between metaphor and metonymy. In effect, the ears are part of the speaker’s body and it is a strange situation to map part of a person onto the person to whom that part belongs. But

using the universal quantifier *all* has the effect of “objectivizing” the existence of the ears as entities separate from the person domain and converting the potential metonymy into an actual metaphor with two discrete domains. That could explain why it is strange to say *I’m an ear* or *I’m ears* but not *I’m all ears*. The same reasoning can be applied to many other cases of apparent metonymy. For example, in *She’s my hope* the possessive *my* detaches the domain of hope from the domain of the person who has hope. A similar effect can be achieved by other related grammatical means: *She’s all hope*, *She is the hope of us all*, *She is the hope of the country*, etc.

## 5. CONCLUSION

In this paper we have argued for the relevance of a distinction between three kinds of metaphor from the point of view of the nature of the domains involved: structural metaphors (which include image and image-schematic metaphors), ontological metaphors, and situational metaphors. The latter share some characteristics of the other two and seem to incorporate metonymy in their source domains. Then, we have been able to see that Ruiz de Mendoza’s version of the Invariance Principle provides constraints on the three types of metaphor with respect to such aspects as the overall generic-structure of the domains involved and to what can qualify as correspondences between source and target. However, we believe that metaphor theory needs to account for other forms of constraint on metaphor production which are of a different nature. Thus we have argued that ontological metaphors are not likely to be produced between terms belonging to the same level of the Great Chain. If they are produced it is because there are elements in them which make them interpretable as if they were structural metaphors (e.g. their imagistic nature) or simply because the basis for the mapping is not one of mere cultural attribution of features. We have also discussed some cases of metaphors in which their appropriateness depends on the use of metonymy in their target domains, and we have explored apparent cases of metonymy which are but instances of metaphor once certain transformation operations have been performed. The results here provided are not intended to be exhaustive but they tend to show that the Invariance Principle (and its revised versions) needs to be complemented by other principles in order to provide us with a more complete picture of what allows a metaphor to be produced or not.

## NOTES

1. Financial support for this research has been provided by the DGES, grant no. PB96-0520.
2. Despite misleading publication dates, Turner (1990) is a revised version of Turner (1993). The commentary articles by Turner (1990) and Brugman (1990) were both published in *Cognitive Linguistics* as reactions to Lakoff (1990), which had appeared in the previous issue of the journal (and which was in turn based on a paper delivered by Lakoff at the 1989 *International Symposium on Cognitive Linguistics* at Duisburg).
3. For space limitations, it is impossible to do justice to the complexity and rich implications of Ruiz de Mendoza’s account. In fact, he proposes another more refined version of his own Extended Invariance

Principle which takes into account the possibility of having more than one input space for the source of a mapping and also the idea that metaphoric mappings yield a number of contextual effects which also need to be consistent with the generic-level structure of both source and target (see Ruiz de Mendoza 1998a: 265).

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