

Hubert Kowalewski

ORCID: 0000-0002-9939-3849

Department of Modern Languages and Literature,
Maria Curie-Skłodowska University, Lublin, Poland

VITALITY AS A PARAMETER OF VEHICLE SELECTION IN CAUSAL METONYMIES

ABSTRACT

Salience governing the selection of vehicle concepts in metonymies is a complex and multifaceted phenomenon. While no single criterion does justice to this complexity, one factor that significantly contributes to salience is the strength of a contiguity relation. In the case of causal metonymies, the strength of relation can be conveniently evaluated in terms of non-redundancy and non-fungibility prompted by John Mackie's inus framework. The framework stipulates that what we typically consider as a cause of a state of affairs is an insufficient non-redundant part of an unnecessary sufficient scenario leading up the state of affairs. The article adapts and refines the model to propose a useful heuristic for evaluating the strength of causal connections. This, in turn, sheds light on the process of vehicle selection in metonymies, since the stronger causal connection between a concept and the target, the greater the probability that the concept will be selected as a vehicle of a metonymy. Expressions used in the case studies are derived from phonic English and American Sign Language.

Keywords:

conceptual metonymies, causal metonymies, vehicle selection in metonymies, ASL

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1. INTRODUCTION

Causal metonymies have been recognized as an important subclass of conceptual metonymies since the very inception of Conceptual Metaphor Theory. While in *Metaphors We Live By* Lakoff and Johnson (1980) make little effort to

propose a taxonomy of metonymies based on the type of contiguity relation, only one year later Norrick (1981) grouped the relationships CAUSE-EFFECT, PRODUCER-PRODUCT, NATURAL SOURCE-NATURAL PRODUCT, and INSTRUMENT-ACTION under the label of causal relations. Since then causal links have been quoted as an important basis for numerous metonymies by many authors (cf. e.g. Nerlich, Clarke, & Todd 1999; Radden & Kövecses 1999; Bierwiazzonek 2013).

Most authors rely on a fairly vague and intuitive notion of causation. This is quite understandable. Our intuitive understanding of causes and effects in real-life situations serves us well in everyday life. Philosophical conundrums pertaining to the metaphysics of causation are not only daunting,¹ but also appear largely irrelevant for the more straightforward, albeit perhaps simplistic and unrefined, folk conception of causation, which grounds our conceptual metonymies.

The most promising model of the folk conception of causation is based on Talmy's model of force dynamic interactions (Talmy 1988). Talmy's model involves two entities: the agonist and the antagonist. The former exerts force on the latter and if the agonist is the stronger entity in the pair, the antagonist undergoes some sort of change. In the context of causation, the agonist corresponds to the cause and the antagonist to the effect; the change brought about by the agonist is simply the occurrence of the effect. A significant advantage of the model is its coherence with one of the basic tenets of cognitive linguistics: the conviction that human cognition is embodied and motivated by our everyday actions in the world. Interactions with physical objects – pushing, pulling, lifting, turning, etc. – are paradigmatic cases of force exerted by our bodies that cause certain effects in our physical environments. They may serve as starting points for more sophisticated and abstract conceptions of causation developed through metaphorical extensions.

Unfortunately, Talmy's model of force dynamic interactions is rather unhelpful when it comes to the problem of vehicle selection in conceptual metonymies, which is the main research focus of this article. In everyday life, objects and events are effects of many concerted causes. When a causal metonymy is created and employed, why is cause A, rather than causes B, C, or D, used as the vehicle concept? Is this choice purely arbitrary or is it somehow motivated? Suppose that Paul Klee's painting *Death and Fire* ends up in my living room and I occasionally brag about it by saying (1)(a). Undoubtedly, there is the causal metonymy PRODUCER FOR PRODUCT behind (1)(a), since any work of art is causally dependent on its creator. Yet many other factors have contributed to the creation of the painting, let alone the painting

1 See Gallow (2022) for a tentative overview.

ending up in my living room. It is widely agreed that the painting reflects Paul Klee's distress as a result of terminal disease and if this interpretation is correct, the painting depends causally on this factor, too. So why does (1) (b) sounds semantically odd in reference to the painting (at least in fairly standard contexts)?

- (1) (a) I have a Klee in my living room.
 (b) *I have a distress in my living room.

Within Talmy's model of force dynamics interactions, both Paul Klee and his mental distress could be plausibly identified with causes (agonists) contributing to the creation of the painting (the antagonist) by exerting some sort of force, although in the case of the mental distress the force is less "physical" and more abstract. Within the force-dynamics model, it is hard to find a factor that would explain why the force interaction between Paul Klee and the painting makes a better metonymy than the force interaction between the mental distress and the painting. This problem arises because events are typically brought about by multiple causes forming extensive causal scenarios rather than a single force entity that could be conveniently identified as the unique cause. Thus, the solution to the problem of vehicle selection requires isolating the factors that make certain causal "force interactions" more attractive candidates for the creation of metonymies. Talmy's model was not devised for this kind of research problems and therefore it lacks the appropriate theoretical tools.

Metonymy researchers of cognitive denomination often explain the choice to the vehicle concept in the above metonymy by a salience effect. I grant that artists may be more salient relative to their works than the states of mind that had triggered the creation of their works. Yet, as I argue elsewhere (Kowalewski 2017), salience itself is anything but a simple and self-evident notion. Concepts are not salient relative to other concepts in some absolute and objective manner; rather, they are salient for particular speakers in particular situations. Kövecses and Radden (Kövecses & Radden 1998; Radden & Kövecses 1999) parametrize salience in terms of cognitive principles governing the selection of vehicles. While I generally subscribe to this approach, I also believe that some of the principles proposed by the authors orbit around similar parameters and it appears possible to combine some of the lower-level principles into more general higher-level theoretical concepts. One of such concepts is the vitality of the contiguity relation.² However, before I proceed to the main part of my discussion, it may be helpful to take a look at another

2 I propose the notion of vitality in Kowalewski (2019), focusing primarily on the vitality of part-whole relations. Other parameters motivating vehicle selection in conceptual metonymies are proposed in Kowalewski (2017, 2018, 2019).

theoretical problem, which, as I will demonstrate, is closely related to the problem of vehicle selection.

2. CONTINGENT CONTIGUITIES?

In their article on the role of metonymy in phonic English nominals with the *-er* suffix, Panther and Thornburg (2003) propose contingency (i.e. non-necessity) of a relations as a property distinguishing contiguity from hyponymy relations. For the authors, a contingent relation is one that “is not conceptually necessary” (Panther & Thornburg 2003: 280). Thus, in (2)(a) *the piano* is understood as a metonymic reference to the piano player, because the relation between the piano and the piano player is not conceptually necessary, while in (2)(b) *the tulip* is understood as a hyponym of a flower, since tulips are necessarily flowers (since tulips are flowers by definition).

- (2) (a) **The piano** wants a glass of Chardonnay.
 (b) I have to water **the tulips**.

If I understand correctly, the distinction is a relatively minor theoretical point in Panther and Thornburg’s article and it would be unfair to inflate it to a major theoretical difficulty. Its main function is to distinguish metonymic from hyponymic reference, and it appears to be doing the job in the context provided by the authors. Much depends on what specifically Panther and Thornburg have in mind when they write about contingency and necessity; it is, for example, far from clear whether they use the term “conceptual necessity” as equivalent to logical necessity in philosophy. Nonetheless, the claim that contiguities in metonymies are contingent is largely false, especially in the case of causal metonymies. Unfortunately, a detailed discussion on the philosophical conundrums behind the notions of contingency and necessity would require more space than possible on this occasion. Nevertheless, as I will demonstrate in the following sections, the contiguity relations underlying metonymies are usually non-contingent, although perhaps not necessary in a narrow technical sense used in philosophical modal logic.

Let us return to Paul Klee’s painting *Death and Fire*. As already noted, (1)(a) exemplifies the causal metonymy PRODUCER FOR PRODUCT. If Panther and Thornburg’s proposal is to be taken at face value, (1)(a) is metonymic and therefore founded upon the conceptually contingent relationship between Paul Klee and his painting. Contingency can be cashed out in terms of the so-called possible worlds, where a possible world represents a hypothetical possible situation. If the relationship between Paul Klee and *Death and Fire* is indeed contingent, it is possible to imagine (without a logical contradiction) a possible world in which Paul Klee did not paint *Death and Fire*. Barring the

possible world in which *Death and Fire* was never painted at all, this means that there is a possible world in which someone else painted *Death and Fire*. *Pace* Panther and Thornburg, such a world is not conceptually possible.

To see this point, let us try to answer an auxiliary question: what would it mean for someone else to have painted *Death and Fire*? One possible answer is: someone else would have to produce a painting that is formally identical to Klee's painting. Yet this painting would not be, in fact, *Death and Fire* as we know it from our actual world. This is because the causal connection to the author is a highly salient property in our conception of a work of art. An exact copy of an artist's painting is not considered to be identical in all respects to the original painting. Even in a fantastic scenario in which an imaginary device could recreate Klee's painting atom by atom, the copy would not be considered to be the same as the painting by Klee. This is because in our understanding of a work of art *Death and Fire* is the painting created by Paul Klee, and this causal link to the creator, rather than superficial formal similarity, is central to the identity of the object. The importance of the causal connection is even more conspicuous in our extra-linguistic behaviors: the value of the original painting, if only reflected by its price, is much greater than the value of an exact copy, despite the fact that the copy may deliver the same aesthetic impressions and be indistinguishable from the original to a non-expert. Thus, in order for *Death and Fire* to be considered the painting that we know from our actual world, the painting must have been painted by Klee. Therefore, *pace* Panther and Thornburg, the metonymy in (1)(a) is based on a conceptually necessary causal connection.³

3. REDUNDANCY, FUNGIBILITY, AND VITALITY

In (1) both vehicle concepts behind the metonymic expressions are connected with a causal link with the target concepts, but PRODUCER FOR PRODUCT in (1)(a) appears to make a much better metonymy than MENTAL STATE OF THE PRODUCER FOR PRODUCT in (1)(b). Why is it so? I propose that the crucial difference between the two metonymies resides in the strength of the causal connection, which I term **vitality**. In the case of causal metonymies, a convenient heuristic for evaluating the vitality of a cause relative to the effect is to evaluate the degree of redundancy and fungibility (i.e. "replaceability") of the cause in the scenario leading up to the effect.

This understanding of causal vitality is indebted to John Mackie's model of folk conceptualization of causation (cf. Mackie 1980). According to the

³ More technically, a contingent relation holds in some, but not all, possible worlds, and a necessary relation holds in all possible worlds. Due to the importance of the causal link between the a work of art and its creator, in all possible worlds (containing *Death and Fire* identical to *Death and Fire* from "our" world), *Death and Fire* was painted by Paul Klee, which makes the causal link necessary.

author, we typically think about causation in everyday life in terms of inus conditions. The term *inus* is coined as the acronym of *insufficient non-redundant part of unnecessary sufficient* condition. The terms *necessity* and *sufficiency* as used by Mackie should not be confused with metaphysically tinged senses of the terms pertaining to necessary and sufficient features constituting categories in Aristotelian categorization (cf. Taylor 2009: ch. 2); nothing in the inus framework conflicts with prototype-based model of categorization widely accepted in cognitive linguistics. The terms *necessity* and *sufficiency* as used by Mackie are meant to capture the patterns of inference about the flow of causation in everyday life. Thus, in Mackie's definition of the inus condition, "X is a **necessary condition** for Y' will mean that whenever an event of type Y occurs, an event of type X also occurs, and 'X is a **sufficient condition** for Y' will mean that whenever an event of type X occurs, so does an event of type Y" (Mackie 1980: 62; my emphasis). Thus, if P stands for an object or an event causally dependent on something else, the inus condition can be defined more formally as follows:

Then (...) the complex formula '(ABC or DGH or JKL)' represents a condition which is both necessary and sufficient for P: each conjunction, such as 'ABC', represents a condition which is sufficient but not necessary for P. Besides, ABC is a *minimal* sufficient condition: none of its conjuncts is redundant: no part of it, such as AB, is itself sufficient for P. But each single factor, such as A, is neither a necessary nor a sufficient condition for P. Yet it is clearly related to P in an important way: it is an *insufficient* but *non-redundant* part of an *unnecessary* but *sufficient* condition: it will be convenient to call this (using the first letters of the italicized words) an *inus* condition. (Mackie 1980: 62; original emphasis)

For a more concrete illustration, let us borrow a well-known example from Whorf's discussion on the relation between language and thought (cf. Whorf 1944). Suppose there was an explosion in a gasoline storage caused by careless smoking close to what the personnel calls "empty gasoline drums." The gasoline drums contain explosive vapor, but, according to Whorf, the word *empty* suggests the lack of flammable substance and encourages careless behavior on the part of the employees. Imagine, therefore, a scenario in which 1) there are gasoline drums with vapor in the storage, 2) the drums are referred to as empty by the employees, 3) the employees smoke carelessly close to the drums, 4) the storage lacks proper ventilation, 5) the storage lacks a "No smoking!" sign, and 6) the storage walls are painted green (items 4-6 do not appear in Whorf's original discussion). What is the cause of the explosion? First of all, it should be noted that the scenario outlined above is sufficient for the explosion to occur, but it is not necessary, since the explosion could have occurred in a different scenario as well. Thus, the scenario is both sufficient and unnecessary, covering the requirements signaled by

the third and the fourth letters of the term *inus*. Second of all, Mackie argues that when we try to find the causes of the explosion, we try to isolate the element of the scenario that is non-redundant for the explosion, even if it is alone insufficient for the event. Intuitively, careless smoking may come to one's mind as the most immediate and salient cause and it is indeed a non-redundant part of the scenario: if no one had smoked carelessly, the explosion would not have occurred. Yet it is also an insufficient element, since careless smoking would not have led to the explosion if (for example) there had been water in the drums instead of explosive vapor. If Whorf is right, the explosion is also causally dependent on the habit of referring to the drums as empty. The causal link is less immediate, because the speech habit causes careless smoking, which causes the explosion, but it is also an insufficient non-redundant part of the scenario. The color of the walls, on the other hand, does not appear to have causally contributed to the explosion and it does not satisfy the *inus* condition, since it is a redundant part of the scenario. What about lack of proper ventilation and a "No smoking!" sign? The role of these elements is less clear, but perhaps we may conclude that lack of ventilation contributed to the explosion, because the explosion would not have occurred in a properly ventilated room (hence, lack of ventilation is non-redundant in the scenario). Alternatively, we could conclude that the explosion would occur even in a properly ventilated room; hence, lack of ventilation is not among the causes of the explosion and, in terms of the *inus* model, it is redundant in the scenario. Similar argumentation applies to the lack of a "No smoking" signs, but the sign is meant to causally influence the behavior of the personnel, so we would need to focus on whether the sign would prevent careless smoking, rather than the explosion itself. It is worth noting that characterization of a causal network is not limited to specific present causes. If we conclude that the explosion is causally dependent of on the lack of proper ventilation and a "No smoking!" sign, strictly speaking the event is causally dependent not only on the presence of something that facilitates the event, but also on the absence of something that prevents it. This may be a minor point, but it may help us to appreciate the complexity of the overall causal network leading up to an event.

As it stands, the pattern of inference outlined above helps to distinguish events conceptualized as genuine causes (e.g. smoking close to the drums) from non-causal cooccurrences (e.g. the color of the walls). Unfortunately, the analysis is generally quite insensitive to contextual salience of causal connections, i.e. it does not reveal which connections are particularly relevant for particular conceptualizers in particular situations. As already mentioned, salience is a fairly complex and multifaceted notion. It appears that causal salience depends at least on the immediacy of causal connection and the

perspective of the conceptualizer as well. In the explosion scenario, careless smoking is probably a more salient cause of the explosion than speech habits of the personnel, since it is a more immediate cause of the accident. Note, however, that while careless smoking might be a salient cause of the explosion for an insurance agent, lack of ventilation may be more relevant for a building construction expert. Neither of them would probably pay much attention to the speech habits of employees that are, in turn, quite salient to the linguist Whorf.⁴ Such broadly contextual factors need to be taken into account in any comprehensive analysis of salience in metonymies.

For our purposes, it not necessary to perform a comprehensive analysis of the causal connection between the vehicle and the target in causal metonymies in terms of inus conditions. The take-away message from Mackie's model is that for an event C to count as the cause for an effect E, C must be non-redundant in the scenario leading up to E. Since typically E can be brought about by various scenarios (e.g. the explosion of empty gasoline drums could have been caused by a short circuit in the electric installation instead of smoking), one may also consider whether C is non-redundant only in several scenarios leading up to E or in all conceivable scenarios. If latter is the case, C is not only non-redundant in a scenario, but also non-fungible in all conceivable scenarios, i.e. the causal role performed by the factor cannot be performed by any other factor. Non-redundancy and non-fungibility of a cause relative to an effect contribute to the causal vitality of the causal connection between the cause and the effect.

Globally, however, the vitality of a relation is not the only factor shaping salience of the vehicle relative to the target in metonymies. Other factors include immediacy of contiguity relation, observability, objectivity of construal (in Langacker's (1990) sense), the size of the dominion evoked by the vehicle (in Langacker's (1993) sense), and the already mentioned contextual factors, like expectations and interests of the conceptualizer. A detailed analysis of all these factors is far beyond the scope of this article and a preliminary analysis is presented elsewhere (cf. Kowalewski 2017; 2018; 2019). Sections 4 and 5 are limited to outlining the notion of one vitality on metonymies based on our folk conceptualization of causation.

In general, concepts linked to the target of metonymy by means of a more vital causal relation are conceptualized as more salient and therefore they are more attractive candidates for the vehicle. Associations based on causal connections are more likely to be employed in metonymies than associations based on non-causal cooccurrences and more vital causal connections are likely to be employed than less vital connections. Klee's *Death and*

4 For a discussion of how such contextual factors influence salience of causal connections in the context of scientific explanations, see Hanson (1972).

Fire is causally dependent on both the existence of Paul Klee and Paul Klee's emotional distress caused by his illness, but due to the greater causal vitality of the relation between the creator and his painting, the concept PRODUCER (non-redundant and non-fungible) is a more attractive candidate for the vehicle concept than the concept PRODUCER'S STATE OF MIND (non-redundant and fungible). It is debatable whether non-redundancy and non-fungibility make a causal connection conceptually necessary in a strict technical sense used in philosophical logic, yet this sort of connection is certainly not contingent in any strong sense of this term.

4. DEGREES OF CAUSAL VITALITY

The case studies in this section focus on metonymies from phonic English. This is not to suggest that causal vitality pertains only to phonic English metonymies. Perhaps some languages lack causal metonymies altogether or perhaps the notion of causation is radically different from the one in the West. Nonetheless, I see no *a priori* reason to claim that the factors discussed in this article are inherently limited to one particular language or one particular culture. The brief analysis of signs from American Sign Language (ASL) in Section 5 will demonstrate that the factors are not limited to one particular linguistic modality either. Since conceptual metonymies are believed to be ways of thinking about the world rather than ways of talking about the world, it is hardly surprising that the mechanisms behind conceptual metonymies are not bound to one particular language. In the following subsections I investigate three types of causal connections.⁵

4.1. NON-REDUNDANT CAUSES

Let us begin with a case of the paradigmatic causal metonymy EFFECT FOR CAUSE in (4)(a), where a physiological effect is used to refer to an emotion causing it (the expression borrowed from Kövecses (2000: 123-24)).

- (4) (a) He's a **heart-throb**.
 (b) *He's a **lung-movement**.

The causal scenario underlying this metonymy instantiates "standard" causation, which Mackie originally intended to be captured by means of inus conditions. Thus, there are multiple scenarios that could lead up to the throbbing of the heart, e.g. the same effect could be brought about by stress, and while all of them are sufficient to produce the effect, none of them is

⁵ The discussion does not cover combination of redundant and non-fungible causes and effects, since redundant elements of causal scenarios are non-vital and are not attractive candidates for vehicles, unless other factors enhance their attractiveness.

necessary. Within the scenario at hand (the one in which the romantic fascination does cause the heart throbbing), the emotion is a non-redundant component of the scenario, since had the emotion not occurred, the result would not be brought about. For our purposes, it suffices to conclude that the cause is non-redundant and fungible, since in the causal scenario the emotion could be replaced by some other factor (e.g. stress) and the heart throbbing would still be produced.

Even though non-redundant fungible causes instantiate a relatively low degree of causal vitality, vitality is still capable of restricting the vehicle selection in metonymies. Note, for example, that co-occurrence of events is usually a fairly weak constraint on vehicle selection, *pace* Taylor, who claims that “the essence of metonymy resides in the possibility of establishing connections between entities which co-occur within a given conceptual frame” (Taylor 2009: 125). For example, any person who experiences heart throbbing due to romantic fascination also breathes, yet the co-occurrence between love and breathing does not appear to be a productive contiguity relation leading to metonymic expressions like (4)(b). The association between BREATHING and LOVE is also partly contingent: it is not conceptually necessary for a breathing person to be in love, although arguably it is necessary for a person in love to be breathing.⁶ If the contiguity relation between the vehicle and the target were merely contingent, as Panther and Thornburg argue, the sentence in (4)(b) would be a viable metonymy. In general, it seems that we tend to be interested in contiguities between objects or events motivated by something “stronger” and less contingent than the mere fact that objects or events happen to occur together. Causation, understood as a force-dynamic interaction between a non-redundant element of a causal scenario and the effect, is therefore a more attractive candidate for a metonymy-generating contiguity than a mere non-causal co-occurrence.

4.2. NON-REDUNDANT AND NON-FUNGIBLE CAUSES

The metonymy EFFECT FOR CAUSE in (4)(a) relies on “standard” non-redundant fungible causes, which amounts to a fair degree of causal vitality. Yet some causal connections display an even greater degree of vitality. One example of this sort is the metonymy PRODUCER FOR PRODUCT in (1). As already

⁶ Whether the relation is indeed conceptually necessary depends heavily on the type of necessity advocated by Panther and Thornburg. If the authors’ conceptual necessity is in fact a logical necessity, the relation is not necessary, since it is possible to imagine without a logical contradiction a creature who is in love, even though he or she is not breathing (e.g. an angel). If the necessity discussed by the authors is natural necessity, i.e. necessity dictated by presently known laws of physics, the relation is necessary, since non-breathing creature capable of love are ruled out by these laws.

mentioned in Section 2, in Western culture the causal connection between the creator and the work of art is central to the conception of the work of art. An exact copy of Paul Klee's *Death and Fire* may be formally identical to the original painting and offer identical aesthetic experiences, but it is not equivalent to the original painting due to the lack of causal connection to Paul Klee. Intuitively, this causal connection is "stronger" and less contingent than the connection between romantic fascination and heart throbbing in (4). The difference lies in that the Paul Klee is not only a non-redundant, but also a non-fungible element in the causal scenario leading to the creation of *Death and Fire*. There are various possible scenarios that could have led to the painting: Paul Klee could have created it at various stages of his life, the painting may have or may not have resulted from emotional distress related to Klee's illness and if the painting resulted from Klee's emotional distress, the distress may have been caused by Klee's friend's illness rather than his own. Paul Klee is a non-redundant element of all of the relevant scenarios and he also cannot be "replaced" by any other painter. In a possible world where a painting formally identical to *Death and Fire* were created by someone else than Klee, the painting would not be the *Death and Fire* that we know from our actual world, just like a perfect copy of the painting is not considered Klee's painting.

This "non-replaceability" of the author amounts to enhanced causal vitality of the relation between the producer and the product in this context. While in principle the concept DISTRESS, used as the vehicle of metonymy in (1)(b), is also causally related to the creation of the painting in our actual world, it is a less vital cause, since it is fungible: in a possible world where the painting was inspired by something else than Klee's distress, *Death and Fire* could still be considered identical to the painting in our actual world. This is because in Western culture the causal connection to the creator is generally considered to be more crucial for the identity of a work of art than any putative motives for creating the work. For our purposes, it is enough to conclude that the enhanced causal vitality in PAINTER FOR PAINTING in (1)(a) is a more attractive candidate for a vehicle concept than DISTRESS FOR PAINTING in (1)(b) due to the non-fungibility of the former. Just like in the case of non-redundant fungible causes discussed in Section 4.1, this causal relation is non-contingent.

4.3. NON-REDUNDANT AND NON-FUNGIBLE EFFECTS

A highly vital causal connection also holds in scenarios with non-redundant and non-fungible effects (rather than causes), found frequently in the so-called event-schema metonymies (Kövecses & Radden 1998; Dirven 1999; Panther & Thornburg 2003; Schönefeld 2005; Bierwiazzonek 2013: chap. 3).

In event schema metonymies, the causal connections between various elements of complex events may motivate the words for various elements of the process.

One example of this sort is the verb *to liquefy*. The process of liquefaction is understood primarily in terms of the intended effect (producing liquid) rather than any causal details leading up to the effect. Thus, condensing a gas by means of low temperature or high pressure, as well as melting a solid substance, both count as liquefaction if a liquid is the end product of the process. The causes leading up to the end product are non-redundant and fungible, just like in the case of “standard causation” discussed in Section 4.1. Note, however, that even though any particular cause in the process is indeed “replaceable” (e.g. high pressure could be replaced by low temperature in the condensation of a gas), the end product is in fact non-redundant and non-fungible. Less technically speaking, successful liquefaction must produce a liquid and cannot produce anything else instead of liquid.⁷ Thus, in cases like this the degree of causal vitality is comparable to the degree of vitality of non-redundant and non-fungible causes discussed in Section 4.2. The main difference is that in *to liquefy* it is the effect that is highly vital relative to the cause rather than the other way around.

Non-redundant and non-fungible effects are perhaps the most evident counter-evidence for the claim that contiguities motivating metonymies are contingent. Even when the technicalities of the discussion on redundancy, fungibility, causal scenarios, and inus conditions are left aside, it would be weird to claim that a liquid is only contingently related to the process of liquefaction. In fact, the relation seems to be necessary, although perhaps only under a fairly loose and non-technical understanding of necessity, in that 1) a liquid is the intended end product of the process, 2) the process is designed specifically with a liquid as the end product in mind, and 3) instances of liquefaction that do not result in a liquid are considered unsuccessful. For this reason, the relation does not appear to be contingent in the way proposed by Panther and Thornburg.

5. CAUSAL METONYMIES IN AMERICAN SIGN LANGUAGE (ASL)

Conceptual Metaphor Theory has proved to be a highly useful tool in sign language studies. There is a considerable body of research on metaphors and metonymies in American Sign Language (e.g. Taub 2000; 2001; Wilcox 2004; 2000), sign languages of Hispanophone countries (e.g. Jarque 2005; Wilcox, Wilcox, & Jarque 2006; Martínez & Morón Usandivaras 2013), and

⁷ A caveat has to be made, however, for certain less typical uses of the word *to liquefy*, including metaphorical senses and cases of unsuccessful liquefaction, when a liquid is an intended, but not an actual product.

Polish Sign Language (PJM) (Kosecki 2012; Kosecki 2013; Czajkowska-Kisil & Linde-Usienkiewicz 2017). There is no reason to believe that conceptual metaphors and metonymies are absent from other sign languages. There is also little reason to assume that metonymic construals in sign languages are radically different from metonymic construals in phonic languages. While the gestural modality and the tendency to “think with images” (acknowledged by native speakers of sign languages) may influence the specifics of how metaphors and metonymies are used, it does not seem likely that the Deaf entertain highly exotic conceptions of parthood, causality and other contiguity relation incomprehensible to speakers of phonic languages. By the same token, the problem of vehicle selection in sign-linguistic metonymies mirrors the equivalent problem in phonic linguistic metonymies. Vehicle selection in sign-linguistic causal metonymies is also governed by salience and vitality is an important factor contributing to salience.

It has been widely recognized that many signs rely on an interplay between iconicity, metaphor, and metonymy (cf. Martínez & Morón Usandivaras 2013; Taub 2001; Wilcox, Wilcox, & Jarque 2006). For example, the ASL sign for DOG (Figure 1) evokes the gesture of attracting dog’s attention. The link from the phonological form to the concept involves both the iconic imitation of the gesture and the metonymic profile shift from the gesture⁸ to the concept DOG. Since the role of iconicity in sign languages is a complex subject matter, and a comprehensive analysis is beyond the scope of this article, in the following case studies I will leave the iconic component largely outside the purview of the discussion and focus on the semantic import of causal metonymies.

Non-redundant causes. The ASL sign for DOG is based on a metonymy exploiting the non-redundant fungible cause, as the gesture evoked by the sign causally depends on the animal denoted by the sign. This causal dependence is fairly intuitive: it makes sense to think that the gesture of attracting attention is caused, among other things, by the presence of the dog whose attention is to be attracted. In the scenario under discussion, the presence of the dog is non-redundant (if the dog were absent, the gesture would not be produced), yet it is fungible (since the gesture could be used to attract a different animal). Just like in the case of the metonymy in (4)(a), the gesture also co-occurs with gesturer’s breathing, but since breathing is not causally dependent on the presence of the dog, it is a poor candidate for the vehicle concept in the metonymy. More technically, the connection between the

8 I follow Langacker (e.g. 1987: sec. 2.2.) in postulating that the phonological form is conceptual in nature and it is not identical with the physical manifestation produced during a speech event. Although Langacker’s discussion focuses on phonological forms in phonic languages, all arguments are valid for phonological forms in sign languages as well.

gesture for attracting dog's attention is more causally vital than the gesture suggesting the breathing, which makes it a better metonymic vehicle.

Figure 1.
The ASL sign for
DOG



Non-redundant and non-fungible causes. A perhaps less obvious causal dependence is involved in the ASL sign for TO HEAR (Figure 2). The sign involves an indexical gesture, but of course it is impossible to “point” to the process of hearing. Instead, the sign points to acoustic organs facilitating hearing and the organs are metonymically associated with the process. The relation between acoustic organs and hearing involves a disposition. A disposition for a process is not identical with the process, but it is one of the conditions making the process possible. Thus, being disposed to hearing a sound is not the same as hearing the sound; minimally, the sound needs to exist in the form of sound waves in order to be heard by someone. Needless to say, hearing organs, evoked in the ASL sign for TO HEAR, are an essential part of the complex disposition to hearing.

Figure 2.
The ASL sign for
TO HEAR



The metonymy HEARING ORGANS FOR HEARING is plausibly analyzed as an elaboration of the higher level metonymy POTENTIALITY FOR ACTUALITY (cf. e.g. Radden and Thornburg 1999). Such an analysis is compatible with the analysis in terms of causality, as POTENTIALITY FOR ACTUALITY is analyzable as an elaboration of a yet more general metonymy CAUSE FOR EFFECT. Any potentiality for an actual event or a state of affairs is a part of a causal network leading up to this state of affairs. This point can be illustrated more concretely by HEARING ORGANS FOR HEARING. As already mentioned, there are multiple scenarios leading up to hearing of a sound, if only because different sounds can be heard on different occasions and under different conditions. The disposition for hearing is an essential part of all of the scenarios and cannot be replaced by anything else in any of the scenario. Hence, it is non-redundant and non-fungible.

One caveat in the analysis is auditory hallucination, when the sensation of hearing arises without any external stimulus, but it is not fatal to the analysis. The exact way of handling this caveat depends on whether an episode of auditory hallucination is considered to be an episode of hearing. If hallucinating is considered to an instance of non-prototypical hearing, it could be perhaps argued that the hallucination could arise even in a creature without hearing organs. While such a scenario appears highly exotic and may not be in fact possible, it does not pose a significant problem for the analysis of causal vitality in terms of non-redundancy and non-fungi-

bility. In such a case, the non-redundancy of hearing organs is limited to prototypical scenarios of hearing and enjoys slightly lower causal vitality than a part non-redundant in all possible scenarios. If hallucinating is not considered an instance of hearing, hearing organs are a non-redundant part of all scenarios of hearing. Under either interpretation, the causal vitality of hearing organs relative to an event of hearing is much greater than the causal vitality of (for example) patting on the leg relative to the dog discussed in the previous section. High causal vitality, in turn, makes the hearing organs a fairly attractive candidate for a metonymic vehicle.

Non-redundant and non-fungible effects. A similar degree of causal vitality can be found in the ASL sign for TO CLEAN (Figure 3).⁹ Since the infinitival form of verbal sign (TO CLEAN) is identical to the adjectival sign (CLEAN), the word-formation process is analogous to morphological conversion based in event-schema metonymies (cf. Section 4.3). More specifically, the pattern of conversion is similar to that in the verb *to powder* derived from the noun *powder*, although it is far from clear whether in ASL the verb is derived from the adjective or the other way around. For the purpose of the discussion, I will assume that the adjectival sense gives rise to the verbal sense, although, *mutatis mutandis*, the key elements of the analysis are the same if the direction of conversion is reversed.

Figure 3.
The ASL sign for
TO CLEAN



9 The sign for TO CLEAN may differ from the one in Figure 3 depending on the details of entire utterance. Thus, the gesture used discussed in the article should be viewed as one possible way of expressing the concept with alternative synonymous variants, which may be preferred in different contexts.

It is highly counterintuitive to propose that the relation between the process of cleaning and the state of being clean is merely contingent. The ASL sign for TO CLEAN relies on the metonymy EFFECT FOR ACTION in the way already discussed in Section 4.3: the action of cleaning is defined primarily in terms of making something clean. Any scenario that counts as cleaning obligatorily involves becoming clean as the intended final result; if the end result is not the state of being clean or if something else is the resultant state, the process of cleaning is at best unsuccessful. Thus, the state of being clean is a non-redundant and non-fungible effect of the whole process, which amount to a high degree of causal vitality.

6. CONCLUSION

The strength of the contiguity connection, termed *vitality* throughout this article, appears to be an important factor constraining vehicle selection in metonymies. In the case of causal contiguities, vitality can be cashed out in terms of non-redundancy and non-fungibility of a cause or an effect in a causal scenario leading up to the effect. In other words, the connection of a cause to an effect is stronger when the cause cannot be removed from the causal scenario (or otherwise the effect is not brought about) and it is stronger still when the role performed by the cause cannot be performed by anything else.

An in-depth discussion on whether contiguity relations in metonymies are contingent or necessary would require specifying the type of contingency and necessity relevant for the subject matter. It seems, however, that a more fruitful approach is to analyze contiguity relation in terms of gradable vitality, dependent on non-redundancy and non-fungibility of one participant relative to the other, rather than in terms of a binary distinction between contingency and necessity. In general, all other things being equal, more vital contiguities are better bases for metonymies and purely contingent relations make poor metonymies. Yet high vitality does not necessarily amount to necessity understood in terms of philosophical logic. Metonymies are typically motivated by relations stronger than accidental co-occurrence and the strength of the connection is frequently located somewhere on the spectrum between pure contingency and fully-fledged necessity.

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POLISH SUMMARY

Na mechanizm wyboru pojęcia-wehikułu w metonimiach pojęciowych wpływa wiele czynników. Językoznawcy kognitywni zwracają uwagę na istotność tzw. wyróżnienia (ang. *salience*) – lepszymi kandydatami na wehikuł w metonimii są pojęcia, które z pojęciem docelowym łączy wyróżniona relacja styczności. Choć nie sposób nie zgodzić się z tą opinią, pewien niedosyt pozostawia samo pojęcie wyróżnienia – co sprawia, że niektóre relacje styczności są bardziej wyróżnione niż inne?

Na wyróżnienie składa się co najmniej kilka czynników, między innymi bezpośredniość, obserwowalność referenta pojęcia-wehikułu i wielkość dominium pojęcia pojęcia-wehikułu (por. Autor). Jednym z czynników jest również żywotność relacji odpowiadająca intuicyjnie rozumianej sile powiązania między dwoma pojęciami. Dwoma parametrami żywotności jest niezbędność i niewymiennność jednego z elementów relacji względem drugiego elementu. W przypadku metonimii opartych na relacjach przyczynowo-skutkowych, żywotna przyczyna to przyczyna, której usunięcie ze scenariusza przyczynowo-skutkowego prowadzącego do jakiegoś efektu sprawia, że nie efekt ten nie pojawia się – jest to więc przyczyna niezbędna. Wyższy stopień żywotności wykazują przyczyny, które są nie tylko niezbędne w danym scenariuszu, lecz ich roli nie mogłaby pełnić żadna inna przyczyna. Oznacza to, że „wymienienie” takiej przyczyny na inną sprawiłoby, że efekt, do którego prowadzi scenariusz nie pojawiłby się – jest to więc przyczyna niewymienna.

Przykładem metonimii opartej na relacji przyczynowo-skutkowej, w której przyczyna jest niezbędna jest CIEPŁO ZA GNIEW ujawniająca się w wyrażeniu *zagotować się z gniewu*. Subiektywne uczucie ciepła jest jednym ze skutków gniewu, a więc gniew jest w tym konkretnym scenariuszu niezbędną przyczyną pojawienia się uczucia ciepła. Przyczyna ta jest jednak wymienna, ponieważ przyczyną subiektywnie odczuwanego ciepła może być również inny czynnik (np. wysiłek fizyczny). Przyczyny niezbędne i wy-

mienne wykazują większą żywotność przyczynowo-skutkową niż zjawiska, które współwystępują ze skutkami w sposób przygodny; na przykład osoba odczuwająca gniew może znajdować się w pozycji siedzącej, lecz pojęcie POZYCJA SIEDZĄCA nie jest atrakcyjnym wehikułem, o czym świadczyć może brak konwencjonalnego wyrażenia w rodzaju *siedzieć z gniewu.

Przykładem metonimii opartej na relacji przyczynowo-skutkowej, w której przyczyna jest niezbędna i niewymienna jest TWÓRCA ZA PRODUKT ujawniająca się w wyrażeniu *W moich salonie wisi Klee*, którym mówiący stwierdza, że w jego lub jej salonie znajduje się obraz autorstwa Paula Klee. Paul Klee jest przyczyną niezbędną istnienia obrazu, ponieważ gdyby malarz nigdy nie istniał, obraz nigdy by nie powstał. Paul Klee jest również przyczyną niewymienną, ponieważ jedynie on mógłby namalować swój obraz. Uznajmy na potrzeby dyskusji, że obrazem tym jest *Śmierć i ogień*. Możliwy jest wprawdzie świat, w którym obraz wyglądający dokładnie tak jak *Śmierć i ogień* wyszedłby spod pędzla innego artysty, lecz taki obraz nie byłby obrazem znanym nam w naszym faktycznym świecie. Dzieje się tak dlatego, że w kulturze zachodniej istotnym elementem tożsamości dzieła sztuki jest jego przyczynowo-skutkowe powiązanie z twórcą. Świadczy o tym na przykład to, że znakomita pod względem formalnym kopia *Śmierci i ognia*, która dostarcza dokładnie takich samych wrażeń estetycznych jak oryginalne płótno i mogłoby być odróżnione od oryginału jedynie przez eksperta nie jest uznawane za równoważne oryginałowi (o czy świadczy choćby niższa cena kopii względem oryginalnego obrazu). Różnica między kopią a oryginałem nie sprowadza się do formalnych różnic między tymi obrazami lecz do faktu, że tylko jeden z nich został stworzony przez Paula Klee. Oznacza to, że w scenariuszu przyczynowo-skutkowym prowadzącym do powstania *Śmierci i ognia* Paul Klee jest zarówno niezbędnym, jak i niewymiennym elementem tego scenariusza.

W niektórych przypadkach niezbędność i niewymiennność mogą cechować nie przyczyny, lecz efekty. Przykładem jest czasownik *sproszkować* powstały na bazie tzw. metonimii schematu wydarzeniowego (ang. *event schema metonymy*) SKUTEK ZA PROCES, w której efekt końcowy daje nazwę całemu procesowi. W tym przypadku relacja przyczynowo-skutkowa pomiędzy procesem proszkowania a proszkiem jest wysoce żywotna, pomimo tego że w zasadzie każda przyczyna w scenariuszu przyczynowo-skutkowym może być „wymieniona” na jakąś inną przyczynę (np. zamiast sproszkować tabletkę rozgniatając ją łyżką, mogę sproszkować kieliszek uderzając go młotkiem). Niezmienny pozostaje jednak efekt – każdy udany proces proszkowania musi doprowadzić do powstania proszku, a nie czego innego. Oznacza to, że proszek jest niezbędnym i niewymiennym skutkiem procesu proszkowania. Choć w tym przypadku niezbędność i niewymiennność dotyczą skutków, a nie

przyczyn, własności te nadal sprawiają, że relacja przyczynowo skutkowa jest wysoce żywotna.

Rola żywotności w mechanizmie wyboru pojęcia-wehikułu pokazuje, że przygodne relacje styczności nie są zazwyczaj atrakcyjnymi wehikułami. Jeśli pominiemy wpływ innych czynników wpływających na wybór wehikułu, takich jak wspomniane już bezpośrednio, obserwowalność i zakres dominium, podczas wybierania pojęcia-wehikułu, użytkownicy preferują bardziej żywotne, czyli „silniejsze”, relacje styczności. Należy zwrócić uwagę, że „siła” relacji nie musi zawsze oznaczać konieczności relacji. Przygodność i konieczność są kategoriami binarnymi i choćby z tego powodu nie nadają się do opisu stopniowalnej żywotności relacji. Przygodność można by wprawdzie utożsamić z zerową żywotnością relacji, a konieczność z maksymalną żywotnością, należy jednak podkreślić, że relacje styczności charakteryzują się różnym stopniem żywotności, a nie żywotnością „zerową” lub „maksymalną”. Rozważniejsze zdaje się więc zaproponowanie stopniowalnej skali żywotności, a „siłę” relacji styczności lokować należałoby gdzieś pomiędzy ekstremami określanymi przez przygodność i konieczność.

Wpływ żywotności relacji na proces wyboru wehikułu ujawnia się nie tylko w wyrażeniach metonimicznych występujących w językach foniczny, lecz również wyrażeniach w językach migowych. Artykuł dowodzi tego to w krótkich analizach trzech znaków z Amerykańskiego Języka Migowego (ang. *American Sign Language – ASL*).