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Research article

On the Use of Linguistic Concepts in Design

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Abstract

It is conventional to talk about contemporary design norms and practices in linguistic terms, such as in the cases of ‘design language’, ‘pattern language’, and so on. However, the extent to which design is like language is not obvious. Given that observation, my intentions in this paper are to perform an exploratory analysis of the limits of talking about design in terms of its linguistic features. This paper is divided into four parts. The first offers a brief picture of what I take to be the necessary conditions that must be met for something to be properly considered a natural language. In the second part I examine the ways in which design is like language in that design possesses both semanticity and grammaticality. The third part addresses the fundamental question at the heart of this paper: is design literally a natural language, in the sense of satisfying all relevant conditions? To this, I respond in the negative, arguing that design cannot be properly considered a language. Because designed objects are functional, they are necessarily absent the arbitrariness that is integral to natural language. Finally, and given that design is not literally a language, I conclude with a brief discussion of the status of linguistic concepts in design as a productive metaphor.

Keywords: Language; Design; Grammaticality; Semiotics; Functions; Arbitrariness

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Научная статья

Об использовании лингвистических концепций в дизайне

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Аннотация

Принято говорить о современных нормах и практиках дизайна в лингвистических терминах, например, как в случаях “язык дизайна”, “язык паттернов” и т. д. Однако степень сходства дизайна с языком неочевидна. Учитывая это наблюдение, в данной работе я намерен провести исследовательский анализ ограничений, связанных с обсуждением дизайна в терминах его лингвистических особенностей. Статья разделена на четыре части. Первая предлагает краткую картину того, что я считаю необходимыми условиями, которые должны быть соблюдены, чтобы что-то могло рассматриваться как естественный язык. Во второй части я исследую, чем дизайн похож на язык в том смысле, что дизайн обладает как семантичностью, так и грамматичностью. В третьей части рассматривается фундаментальный вопрос, лежащий в основе этой статьи: является ли дизайн в буквальном смысле естественным языком в том смысле, что он удовлетворяет всем соответствующим условиям? На это я отвечаю отрицательно, утверждая, что дизайн нельзя считать языком. Поскольку спроектированные объекты функциональны, в них обязательно отсутствует произвольность, присущая естественному языку. Наконец, учитывая, что дизайн не является языком в буквальном смысле, в заключение я кратко обсуждаю статус лингвистических понятий в дизайне как продуктивной метафоры.

Ключевые слова: Язык; Дизайн; Грамматичность; Семиотика; Функции; Произвольность

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INTRODUCTION

It is conventional to talk about contemporary design norms and practices in linguistic terms, such as in the cases of ‘design language’, ‘pattern language’, and so on. A UX designer, for example, might invoke a ‘design language’ to talk about the standards and norms that help guide the development of a new feature in a mobile phone application. The design language, in this case, works to help guarantee that users of the app can infer how to make use of the new feature considering some set of previously established aesthetic or procedural standards. So too might an urban designer talk about ‘pattern language’ to highlight the ways in which an urban system’s subordinate parts, and the relationships between those parts, contribute to the functioning of the system. ‘Pattern language’ is thus used to make clear the ways by which the designed objects within that system conform to some set of rules governing, if imperfectly, the design and use of that system (cf. Alexander et al., 1977).

However, given all this talk about the ‘language’ or ‘languages’ of design, a question arises: to what extent is a ‘design language’, a ‘pattern language’, or whatever else like the kind of thing to which we normally refer when we talk about ‘language’? That is, to what extent is design akin to the natural languages that human beings possess and employ? Are they genuinely linguistic expressions subject to similar levels of grammatical organisation, or are ‘design language’, ‘pattern language’, and similar expressions metaphors about design that hinge upon some fruitful similarity between natural languages and the language-like but non-linguistic features of design?

This is not immediately obvious. It is also not something—at least as far as I can tell—that is really addressed in the design literature: the limits of the usefulness and legitimacy of talking about design in terms of its linguistic features is rarely questioned. This should give us pause. After all, simply because design bears certain similarities to language does not mean that we should just talk about design in terms of its linguistic features—at least, not without good reason. Considering this observation, my intention in this paper is to perform an exploratory analysis of the limits of talking about design in terms of its linguistic features.

This paper is divided into four parts. The first offers a brief picture of what I take to be the necessary conditions that must be met for something to be properly considered a natural language. In the second part I examine the ways in which design is like language in terms of possessing both semanticity and grammaticality. The third part addresses the fundamental question at the heart of this paper: is design literally a natural language, in the sense of satisfying all relevant conditions? To this, I respond in the negative, arguing that design cannot be properly considered a language. Because designed objects are functional, they are necessarily absent the arbitrariness that is integral to natural language. Finally, and given that design is not literally a language, I conclude with a brief discussion of the status of linguistic concepts in design as a productive metaphor.



LANGUAGE

When philosophers and linguists talk about ‘natural language’, we’re not simply talking about the fact that linguistic signs possess ‘semanticity’: that is, the fact that linguistic signs are tied to certain semantic meanings. After all, semanticity presents quite a low bar. There are lots of semantically rich forms of communication—dogs barking to indicate a threat; politely clapping at a game of golf; throwing a punch in a nightclub—that are nonetheless obviously non-linguistic. We need more precise standards of demarcating natural language from non-language.

The linguist Charles F. Hockett (1958) presents a conventional example of such a standard. In his influential textbook *A Course in Modern Linguistics*, he describes the seven ‘key properties’ that he takes all natural languages to share (pp. 574–580).¹ These are as follows:

1. By ‘duality’, Hockett highlights that linguistic strings are composed of meaningful lexical and morphemic units, which can then be further reduced to meaningless phonetic units.
2. ‘Productivity’ entails that human beings can generate novel utterances with these meaningful lexical and morphemic units, subject to the rules and conventions of the language being spoken.
3. ‘Arbitrariness’ means that there is nothing that guarantees that linguistic signs be like the things they represent. Although linguistic expressions may in some cases be onomatopoeic or be otherwise iconic, there is nothing that *demand*s that linguistic expressions be iconic. Instead, semanticity is merely a matter of convention.
4. ‘Inter-changeability’ points towards the fact that human beings are not bound with respect to the signals that we can send or receive. All speakers of a language can both understand and articulate any given message that is expressible within that language.
5. ‘Specialisation’ entails that the primary function of language is for communication. This is distinct from an utterance or behaviour that communicates without necessarily having a communicative function. Shivering, for instance, communicates that the person shivering is cold even though the function of shivering is to preserve bodily homeostasis.
6. ‘Displacement’ means that, by ordering the parts of language in the right way, we can use language to refer to and discuss things that are not physically present and/or do not exist.

¹ It’s worth noting that these seven key properties are only Hockett’s first pass at furnishing the necessary criteria for language. Moving into the 1960s he would significantly expand this taxonomy, ending up with no fewer than 16 ‘design features’ (the updated version of ‘key properties’) that linguistic systems needed to possess to be considered languages proper (Hockett, 1963). However, considering my relatively modest intentions with this paper, I will not be dealing with the full suite of Hockett’s design features here. However, I *would* like to use this opportunity to make clear that my choice to use ‘key properties’ rather than the later ‘design features’ is intentional. I am deeply unconvinced that natural language undergoes anything like what we might consider a purposive design process, and I have no desire to muddy the waters further by potentially implying that it does by referring to the ‘design features’ of language.



7. Finally, ‘cultural transmission’ means that language is learned in a social setting, as opposed to being something which we possess by instinct or genetic endowment.

With these seven criteria in hand, we can acquire a more precise picture of language: that is, as a specific kind of unplanned but broadly conventional linguistic practices that emerges and develops iteratively, through use, by communities of speakers. Although Hockett’s taxonomy has suffered some criticisms in recent years for sitting poorly with contemporary scholarship in evolutionary linguistics and other domains (for a representative example, see Wacewicz and Żywiczyński, 2015), it nonetheless constitutes the customary, if somewhat contentious, benchmark for discriminating between fully realised human languages and other communication systems. It is also useful because it establishes just how high the standard is for something to be properly considered a natural language.

For instance, per Hockett’s criteria, the barking of a dog cannot constitute an example of a language. While barking possesses semanticity in that it denotes the presence of something the dog takes to be a threat, and—as a corollary—serves as both a warning to the perceived threat and as an alert to any friendly creatures nearby, we would be hard pressed to claim that it has a feature like Hockett’s ‘displacement’. This is because the barking of dogs is not bound by grammatical structures. Without these structures—without features like tenses, or grammatical subjects and objects, or whatever else—a dog cannot refer to threats that are not physically present. They cannot report upon or tell stories about prior, future, or imagined threats; they can only communicate on the threats that they take to be present in the here-and-now.²

Hockett’s criteria also make clear that other more complicated forms of expression and communication can also fail to meet the criteria to be natural language. Art, for example, is often said to be a language. The reasons for this intuition are clear. Artworks certainly meet several key features as outlined by Hockett: the relationship between signs and their referents can be arbitrary; artistic tropes and history are learnable; they can refer to unreal things; and so on. This is, in part, why it is conventional to take artworks as position-assuming artefacts; we treat them as artefacts with things to say. Nonetheless—and as philosophers like Mary Mothershill (1965), Joseph Margolis (1974), and others have argued—artworks are insufficiently conventional to be properly linguistic. Per Margolis (1974):

[...] works of art are not simply novel expressions of some sort *in a language*; they institute new conventions that are not readily collected as admissible expressions formed from a relatively stable vocabulary and finite grammar. It is one of the firmest contributions of the new linguistics that a so-called natural language [...] must have a finite grammar capable of “generating” (in effect, describing or accounting for the grammatical structure of) an infinite set of eligible or well-formed sentences. Nothing remotely like a finite and common grammar

² Although his motivations are obviously different, cf. Wittgenstein’s (1953) comment in *Philosophical Investigations*: “A dog believes his master is at the door. But can he also believe his master will come the day after tomorrow?” (p. 174).



has ever been plausibly formulated for the various arts—certainly not for the whole of the fine arts, or for any of the arts distinguished by medium, period, school, style, artists, or in any other comparable way. The best that we have been able to do in this regard is to specify the relatively *common properties* of any constellation of works of art that have been thought worth discussing together. (p. 178)

So, while it might be possible to identify a kind of grammaticality or orderliness within artistic signs, this grammaticality stops well short of being an actual grammar. For instance, artworks exhibit neither Hockett's 'duality' nor 'productivity'. Artworks are not constituted by a shared corpus of meaningless atomic units; there are no identifiable 'art phonemes' of which artworks are composed. Duality is thus a non-starter. Furthermore, even if there did exist such entities, the rules and conventions that govern the creation of art objects with these entities have insufficient normative traction to meet Hockett's productivity criterion. The relationships between the constituent parts of an artwork and the whole, and the relationships between artworks, are simply too loose-jointed and lissome for the claim to obtain. This means that, even if artworks were to meet all Hockett's other criteria, art is prevented from meeting the criteria to be considered an expression of natural language.

DESIGN

So, what about design? To begin, it is worth acknowledging that, as in the case of art, it is easy to see why designers talk about design norms and practices in linguistic terms. There are two reasons for this ease. First, designed objects certainly *look* as if they meet some minimal threshold of semanticity. The individual things that constitute a given design system have functions in a way that seems (at least superficially) like the ways that words mean things. Because a) designed objects have certain aesthetic features and technical functions and not others, and b) those features and functions are the consequence of the intentions of some agent or agents, design processes and outputs can readily be situated within the broader context of human meaning-making.

Second, designed objects also possess grammaticality—even more so, arguably, than artistic signs. This is because most designed things only make sense when appropriately embedded and ordered within a broader network of other designed things. Using my laptop computer to write this paper, for instance, requires not only that my computer be in basic working order, but also rests upon a vast concatenation of physical and intellectual infrastructure: a dizzying array of energy and communications networks, universities and research institutes, funding instruments, education and research policies, and so on. For my machine to work in the manner that I need, there also needs to exist a dynamic ecosystem of complementary parts, all working together in the right way. This complementarity is why contemporary designers so readily appeal to linguistic terminology – 'design language', 'pattern language', 'design grammar', and so on – when they talk about design. They are identifying some overarching system that organises and makes coherent the functions, relationships, and qualities of the entities within that system. They are highlighting these things and their respective functions are ordered in some orderly, 'grammatical' way.



Strangely, and despite how apparently useful linguistic concepts are when applied to design, the textual corpus suggests that this is a relatively recent development. Indeed, as far as I can tell the tendency to use language metaphors to talk about design practices and objects very much began in the middle of the 20th century: a consequence of the general design discourse that emerged during the various Modernist movements of the early 20th century. Using Google n-gram data as a crude proxy for general use, the term ‘design language’ is basically absent from the corpus before and during the 1950s, the odd exception aside (Watkins (1946) is one such example). However, this changed in the early 1960s: the use of ‘design language’ within that corpus increased many hundred-fold between 1961 and 1986. ‘Pattern language’ is even easier to track, with the term having been coined by architect Christopher Alexander in 1968 and popularised in his book *A Pattern Language* (1977). ‘Design grammar’, meanwhile—the least popular of these options—first appeared in the 1950s and became established by the middle of the 1980s.

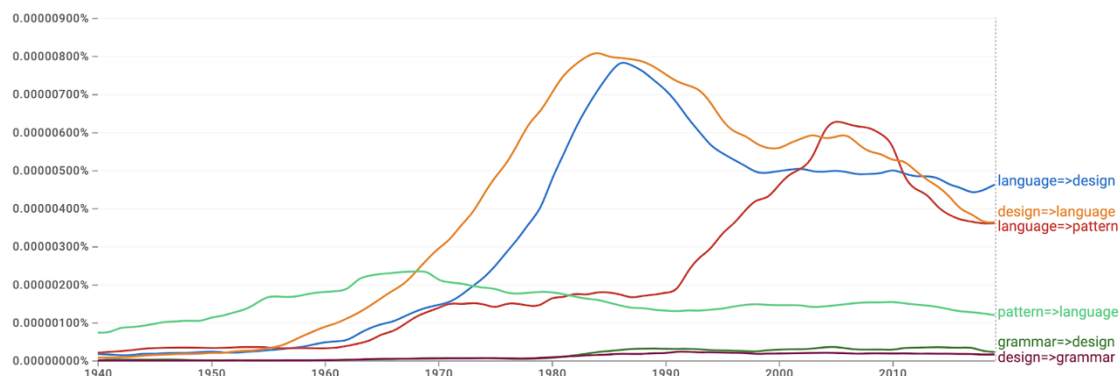


Figure 1. Google Ngram data showing changes in the number of dependency relations between ‘language’ and ‘design’, ‘language’ and ‘pattern’, and ‘design’ and ‘grammar’ between 1940 and 2019. These dependency relations capture constructions like “a design language”, “the language of design”, “language in design”, and so on. The relatively flat value for ‘pattern=>language’ suggests to me that this dependency relation has little to do with the 1977 publication of *A Pattern Language*, and more to do with work in other disciplines, like linguistics, interested in linguistic patterns.

While I have little interest in offering a complete historical account of why language metaphors struck such a chord with designers in the 20th century, it’s probably the case that designers in this period were at least partly influenced by the systems theories of figures such as biologist Ludwig von Bertalanffy (1976) and architect and futurist R. Buckminster Fuller. It is these theorists we have the most to thank for our present understanding of design as taking place within a networked ecosystem of complementary parts, both natural and artificial. To quote Fred Turner (2008) in his monograph *From Counterculture to Cyberculture*: “[Fuller] saw the material world as the reflection of an otherwise intangible system of rules. [...] Fuller linked that system of rules not only to the natural world, but also to the world of industry” (p. 56).

Complementarity, in conjunction with semantivity, is what makes design seem like a linguistic enterprise. It is both meaningful and orderly in a way that languages seem



meaningful and orderly. Consequently, there is probably something *useful* about speaking about design in linguistic terms: it helps to capture some facts of the matter about design that might otherwise escape our notice. To quote a representative sentiment from the design literature:

Design bears certain similarities to language. There is the domain of *semantics* and that of *syntax*. There are syntactic rules (grammars) about how things go together, and there are semantic rules about the interpretation or evaluation of these assemblies. A design must meet the requirements of both the syntax and the semantics of a “design language” (Coyne and Snodgrass, 1995, p. 40).

However—and despite the fruitful similarities between language and design in terms of structure and semanticity—the comparison can only take us so far. Consider again Hockett’s seven key properties of natural language: ‘duality’, ‘productivity’, ‘arbitrariness’, ‘inter-changeability’, ‘specialisation’, ‘displacement’, and ‘cultural transmission’. While it’s undeniably the case that designed objects meet some of these criteria (cultural transmission, productivity, and inter-changeability, for instance), and *potentially* the case that designed objects meet, whether partially or in full, other criteria (I could imagine, though would not necessarily endorse, non-silly arguments in favour of design possessing duality, displacement, and specialisation), designed objects do not meet the arbitrariness criterion: that is, they do not meet the requirement/claim that there is nothing that guarantees that linguistic signs be like the things they represent.

ARBITRARINESS

Hockett was by no means the first person to highlight the fact that language signs are arbitrary. It is certainly a cornerstone of the semiotic theories of the early 20th century, such as in the cases of the ‘semiology’ of Ferdinand de Saussure or the ‘semiotics’ of Charles Sanders Peirce. De Saussure in his *Course in General Linguistics*, for example, argued that the arbitrariness of the linguistic sign was nothing less than the first principle of his semiotics. He writes:

The bond between the signifier and the signified is arbitrary. [...] The idea of “sister” is not linked by any inner relationship to the succession of sounds *s-ö-r* which serves as its signifier in French that it could be represented equally by just any other sequence is proved by differences among languages and by the very existence of different languages: the signified “ox” has as its signifier *b-ö-f* on one side of the border and *o-k-s* (*Ochs*) on the other (de Saussure, 2011, pp. 67–68).

However, he argues, we should not confuse ‘arbitrariness’ for thinking that language then is some linguistic free-for-all, governed only by the whims and fancies of its speakers. Instead, he wants to highlight that there is nothing beyond convention that ties a sign to what it signifies. “The word *arbitrary*”, he claims, “should not imply that the choice of the signifier is left entirely to the speaker [...]; [instead,] I mean that it is unmotivated, i.e. arbitrary in that it actually has no natural connection with the signified” (Saussure, 2011, pp. 68–69). Or, as he writes later in the book, “Because the sign is



arbitrary, it follows no law other than that of tradition, and because it is based on tradition, it is arbitrary” (p. 74).

Peirce’s position on linguistic signs is similar, if more complex. This is because his sign theory is an attempt to furnish a much more general picture of reference, signification, representation, and meaning than the psychological picture of semiotics offered by de Saussure. Peirce was not just interested in linguistic signs, but signs of all kinds: the way that words mean things, yes, but also the systems of reference that underpin the meaningfulness of non-linguistic signs like photographs, animal tracks, and the like. Peirce’s commitments are motivated by the assumption that while language can be and often is a constitutive part of our semiotic systems, there is nothing necessarily linguistic about semiosis. Instead, he argues, semiosis takes place in *all* mental activities – all thoughts – regardless of whether those mental activities (driving a car, assembling a piece of flat-pack furniture, cooking a meal) are linguistic or not. As he puts it, “The only thought, then, which can possibly be cognized is thought in signs. But thought which cannot be cognized does not exist. All thought, therefore, must necessarily be in signs” (Peirce, 1868, p. 111).

Peirce divides the sign into three kinds: ‘icons’, ‘indices’, and ‘symbols.’ Put simply, an ‘icon’ is a sign that derives its significance from looking like the thing that it signifies. For instance, a vector image of a bicycle is an icon of an actual bicycle. An index, meanwhile, is tied to what it signifies by causation rather than appearance. A weathervane is an index for wind direction because it is a causal consequence of the wind blowing one way and not another. Finally, symbols are those signs that have no relationship to what they refer; they are arbitrary. Words, Peirce (1894/1998) thinks, are signs of exactly this sort:

Any ordinary word, as “give,” “bird,” “marriage,” is an example of a symbol. It is *applicable to whatever may be found to realise the idea connected with the word*; it does not, in itself, identify those things. It does not show us a bird, nor enact before our eyes a giving or a marriage, but supposes that we are able to imagine those things, and have associated the word with them (p. 9).³

Designed objects though, are not arbitrary or symbolic like words. The reason why chairs possess certain common features is not a purely arbitrary expression. They do not follow “no law other than tradition”. Instead, when we think about any designed thing, integral to what it *means* is what it *does*. It is at least in part a consequence of its ‘proper function’: that is, the job for which the object was designed (cf. Krampen 1995, p. 522).⁴

Consider a chair. Chairs are objects designed to properly fulfil the function of sitting; they offer people a place to plonk down their bottoms and rest their weary legs.

³ While most semioticians follow in Peirce’s footsteps on the fundamentally symbolic nature of linguistic signs, this is not universally held to be the case. Pharies (1985), for example, argues forcefully against this view.

⁴ ‘Function’ is a contested word in philosophy of technology and engineering, but I take the ‘proper function’ of an object to denote the intended use of that object as fixed by a designer. For a picture of my full position please see Wittingslow (in press).



This is the ‘signified’ bit of a chair sign. But what about the signifier? How does the chair communicate that it is an object for sitting? Were the chair an example of a strictly symbolic or arbitrary sign, a chair could only communicate its appropriateness for sitting by mere association and convention. However, that’s not what happens in this case. Instead, the chair signifies that it is an object with the function of offering a place to sit by making clear that it furnishes a flat surface of an appropriate height and capable of comfortably bearing the appropriate weight. The relationship between the signified and its signifier—between the function of the chair and the way the chair object appears to us—is thus an example of an *index* rather than a symbol. The way the chair appears is a causal consequence of its function as an object upon which to sit.

Of course, not all the features of a given chair are going to be tied up in its function (though several famous Modernists argued that they should be). Features like colour and historical style are likely to be symbolic to greater or lesser degrees; the fact that a chair is Art Nouveau rather than Art Deco, for instance, is primarily a cosmetic difference rather than a functional one. Regardless, of all the features that a given chair might possess, the ones that are integral to ascribing chair-ness are indexical rather than symbolic. Being indexical rather than symbolic, the relationship between signified and signifiers when it comes to design objects is not arbitrary. Being non-arbitrary, design cannot constitute an example of a language.

CONCLUSION

In summary, I think it’s clear that design is not and cannot be a language. Even if design were to fulfil all other criteria (and I’m not at all convinced that it can), it straightforwardly fails the arbitrariness criterion. And yet, there’s also clearly something useful about talking about design in this way. Given that, how should we best think of the use of linguistic concepts in design?

I am of the view that we should not shy away from the use of linguistic concepts in design, albeit with the caveat that they constitute a form of metaphor. A metaphor – “an affair between a predicate with a past and an object that yields while protesting”, in the words of Nelson Goodman (1976, p. 69) – is an example of a necessarily false claim that nonetheless tells us something true about its subject. The power of a metaphorical statement like Shakespeare’s “Juliet is the sun” does not derive from Juliet (the primary subject of the metaphor) literally being like the sun (the secondary subject of the metaphor) but instead works because Juliet is, in most respects, rather *unlike* the sun.

For this metaphor to function, for example, we cannot simply apply all secondary subject predicates to the primary subject willy-nilly. Instead, we need to ascertain those predicates that we could reasonably assign to both the primary and secondary subjects: predicates such as ‘is bright’, ‘is life-giving’, and so on. It is on these grounds that metaphors are meaningful. However, there are also sun predicates that should obviously not be applied to Juliet. Some, such as ‘is the G-type main-sequence star at the heart of our solar system’, or ‘is the site of a massive ongoing fusion reaction’ are clearly inapt.

This phenomenon is generalisable to all metaphors. There are always going to be predicates that, while apt for the secondary subject, are inapt for the primary subject. And



indeed, there *must* exist a mismatch of predicates between the primary and secondary subject: after all, were they all in alignment, the primary and secondary subjects would share an identity relationship rather than a metaphorical relationship. Nonetheless, we take this mismatch to be fruitful because it can highlight certain predicates applicable to the primary subject that might otherwise not be obvious.⁵ This offers one way of thinking about the use of linguistic concepts in design: one that makes clear that, while linguistic concepts are useful in the way that other metaphors are useful, the fact that they are necessarily false means that they are limited in their scope and applicability.

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⁵ This account is, of course, an egregious simplification of the current state-of-the-art when it comes to philosophical scholarship on metaphors. However, given that a precise account of how metaphors function is unnecessary for this paper, I hope that you will forgive my brevity and crudeness.



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