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HOW DESIGNERS THINK. CONCEPTUAL BLENDING IN DESIGN*

Abstract: The article aims at pointing out those areas of design in which a structure of metaphor[1] can be useful and testing out its sufficiency. The basis for reflection are examples of existing design solutions. Decisions made by designers on the future shape, functionality and appearance of an object are rooted in their knowledge about the material world and human needs, but also transfer their ideas regarding the role and purpose of design itself in social life. The presented examples relate to a specific way of thinking common for designers working on a project. The article argues that a designer's way of thinking can be broadly described using a conceptual blending model rather than a metaphor structure which does not always apply. In Polish literature, conceptual blending, translated as *amalgamaty pojęciowe*, refers to linguistics and is mostly used in linguistic research. The article proposes a different translation, *amalgamaty koncepcyjne*, as a broader term which can also be used in visual thinking research, as well as design.

Keywords: design, conceptual blending, metaphor, visual thinking

Introduction

The increasing number of objects surrounding us in everyday life has consequences not only in the economic, ecological and social, but also in the psychological and cognitive dimension of human existence. Things and artifacts

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* First published (with amendments) in Polish in: *Metafory ucieleśnione*, M. Hetmański, A. Zykubek (ed.), Academicon, Lublin 2021, pp. 207-220.

1 G. Lakoff, M. Johnson, *Metafory w naszym życiu*, transl. T. P. Krzeszowski, Warszawa 2010, Aletheia.

invented and constructed by humans expand the area of our physical and cognitive existence in the environment. That is why the way things are designed could reveal a lot of informationand from everyday objectswe are able to extract knowledge about their users. Objects, regardless of the complexity of their construction or the technology used, enable us to perform specific activities, expanding the possibilities of the human body and mind. When communication through images is possible almost instantaneously, the number and speed of transmitted visual images, not only of people but also of objects, grows drastically. Objects in our immediate vicinity, also immortalized in these images, facilitate identification with one's social group or emphasize one's own otherness and distinction– they become attributes carrying various *meanings*. Therefore, when we study objects,what we are really interested in the most is how we perceive them, what they tell us about the culture and the way of thinking of their creators or owners, what meanings we provide to artifacts and what our relations with them are. Hence, there is a need for an interdisciplinary approach to design, for neither knowledge of art history or technology, nor knowledge of sociology or psychology is enough to study the "language of design" and our multidimensional relationships with objects.

When researching design, we face the problem of defining this semantically capacious concept. Polish design researchers and theoreticians, product users and designers themselves bring various concepts and observations to the discourse, not always avoiding ambiguity. Hence, the adoption of a broad definition of design seems to be a compromise necessary to capture all activities related to designing and modifyingthe human environment. Unlike in English, where different genres of design are defined by an added descriptor (e.g., product design, service design), in Polish other words describing different kinds of design coexist (e.g., *wzornictwo* = product design). Thus, in the Polish version of this article it was necessary to mention thatthe term design is used to define: (1) the process of planning, conceptualizing and designing products, services and experiences, and (2) the entirety of creative and intentional practices affecting human functioning in the environment.

The aim of this article is to review several areas of design in which the concept of metaphor may be useful. The key reflections revolve around the *visual language* of objects, which constitutes the medium of designers. When making decisions regarding the future shape, function and appearance of an object, designers reflect their knowledge about reality and human needs, transfertheir understanding of the role and goals of design in social life, and thus convey their own vision of everyday life to users. Design is therefore a form of communication, a specific nonverbal language, in the decoding of which the concept of metaphor, treated as a cognitive tool, can be helpful.

The basis forthis research is the notion of conceptual blending[2] with a comparison to the cognitive theory of metaphor. According to Lakoff and Johnson, the role ofmetaphor is not limited to language only, as it is a structure that constitutes a schematic basis for many mental processes, in particular those acquiring cognition.[3] The paper also shows why and when the cognitive theory of metaphor could be insufficient to describe mental processes crucial in design.

Conceptual metaphors and conceptual blending in design

The evolution of the designer as a profession related to the development and availability of modern technologies and tools (e.g., synthetically produced materials, 2D and 3D design programs) is changing the design process into increasingly occurring in the human mind. Although knowledge arising from practice is still necessary for design, it is more and more crucial for designers to reflect on everyday life and observe the relationship between people and their surroundings, rather than to work in their workshop. The scope of skills necessary for and required from the designer no longer includes those related to making the product itself, but rather those that are necessary when creating the concept of the product. The design process is based on simulations (performed both in the designer's mind and while testing ideas, as well as in the digital space), the purpose of which is to choose the best way to implement the design's core features. Questions regarding designers' ways of thinking are more and more oftenasked by design researchers. However, this is a difficult issue from the research point of view. One of the significant obstacles that researchers come across is that designers use visual content to a large extent in their work (also during mental processes), and a verbalized message does not fully represent the nonverbal content of the project, it does not fully represent its *meaning*. Visual stimuli give us the ability to receive all the information almost simultaneously, unlike in the case of natural language. Does this, therefore, preclude the use of conceptual metaphor as a schematic base describing the mental actions of the designer? I will try to answer this question using already designed products.

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2 A. Libura translates the term „conceptual blending"as *amalgamaty pojęciowe* (conceptual amalgams). In the Polish translation of *The way we think. Conceptual blending and the mind's hidden complexities*, the term „conceptual blending" has been translated as *mieszanina pojęciowa* (conceptual mixture), which also seems insufficient. It is worth noting that in English the word „conceptual" refers not only to a concept in linguistic terms, but also to an idea, which in the case of researching design, as well as other areas of creativity from the domain of visuality, seems important. In Polish, *pojęciowy* is a much narrower term and refers only to language, while *koncepcyjny* pertains to a concept as an idea.

3 G. Lakoff, M. Johnson, *Metafory w ...*

In *Poetic Observation: What Designers Make of What They See*, Jane Fulton Suri focuses on sensitivity to visual stimuli encountered in everyday life, which is specific for designers.[4] The author notes that, despite individual differences, designers share a certain type of information filtering that results in a specific way *of seeing* the world. By sharing photographs of the internationally recognized designer Gen Suzuki, Fulton Suri gives us access to his notebook of visual inspirations. There we find a collection of photographs depicting objects that are seemingly very distant from each other in terms of category. There are two photos: one of a cup of coffee and one of a snowcovered hill in the Alps. The above description of what is in the photographs does not allow us to see what the depicted objects have in common. However, looking at the images of the objects, we immediately discover a common form: the milk foam floating on the surface of the coffee forms a conical shape, similar to the peak. These photographs are not related to any designer's project, they are a visual note of pictorial analogies in the world, which can become an inspiration in the future. This is what Fulton Suri calls "poetic observation", a unique skill of designers – the kind of sensitivity to visual stimuli that enables themto perceive analogies and contrasts in the environment. Collecting images of various forms seems to be a way to build a workshop base for the designer.

Fig. 1. An illustration by the author

4 J. Fulton Suri, *Poetic Observation: What Designers Make of What They See*, in: *Design Anthropology: Object Culture in the 21st Century*, ed. Clarke J. Alison, London 2018, Bloomsbury Academic, pp. 69-85.

I would like to use Philippe Starck's Juicy Salif as an example of a design in which already existing visual forms underwent manipulation. As a product, it appeared on the market in the late 1980s and gained great popularity. However, it was criticized for the lack of functionality and was seen as an impressive kitchen gadget. Creating a goldplated version of the Juicy Salif was clearly the least functional decision. When in contact with acidic juice, the golden coating darkens, losing its aesthetic value. Criticism, however, did not prevent this artifact from becoming a middleclass object of desire and a status symbol, or being exhibited at the Museum of Modern Art in New York. The story behind the creation of the Juicy Salif is also of interest to us. According to Starck, the idea for the citrus juicer came to him while he was eating calamari at a restaurant and drizzling lemon juice on his dish. And indeed, the similarity of the design form to the shape of a squid is evident. So, how can we apply the structure of a conceptual metaphor to describe this design?

The cognitive nature of metaphor manifests itself in describing what is abstract and unknown by means of what is material and known.[5] However, a metaphor is not based on complete replacement of one element with another, but rather on a selection of features transferred from one element to another. So, when we say:

"Juicy Salif looks like a squid",

we mean that the juicer is shaped like a squid. The feature that we focus on is the visual form, i.e., where the similarity of the object to a squid is manifested. However, without mental access to an image of the Juicy Salif, even with an extensive linguistic description available, we would not truly discover how exactly the Juicy Salif is similar to a squid. The already mentioned basic difference between communication in design and communication in natural language is that designers operate mainly with visual and haptic content, not with words and their meanings. Thus, noticing the similarity in form between a squid and the Juicy Salif does not require knowing the word "squid" or its meaning, butan ability to compare the imagerepresentation of a squid with the image-representation of the object discussed. We could metaphorically describe designers' activities as follows: they treat meanings/concepts as objects that they combine in various configurations in the search of optimal solutions. In the example above, the squid form becomes a trait item that is transferred from one object to another. There is no additional meaning hidden in the form of a squid, as it is used under the influence of a situational association. Can we treat this sha-

5 M. Starakiewicz, *Model i metafora. Komunikacja wizualna w humanistyce*, Kraków 2019, Korporacja Ha!art, p.25.

red shape as conceptual metaphor, then? Without knowing the designer's story about the inspiration that contributed to the creation of the object, would we compare the shape of the Juicy Salif to a squid in the first place? In juxtaposing a squid with Starck's project, we will not find any analogy or function, neither in the substance, nor in the context in which they occur. Therefore, the juxtaposition of the two does not contribute to our knowledge of the properties of any of them, apart from their shape, and here we get to discover one through the other. The juxtaposition mentioned above does not make us learn ambiguous or abstract content through a known form and material, although the design undoubtedly constitutes a new creative ensemble.

A significant deficiency in the use of the conceptual metaphor model in relation to mental operations occurring in the designer's mind, evident in the example above, is that conceptual metaphor[6] is based on two conceptual domains – source and target[7] (Libura, 2007). In the example, we have not yet mentioned the third element, which also seems to play an important role in the emergence of the Juicy Salif concept. It is the context of the situation: the moment of eating the squid and squeezing lemon juice. The latter was placed in the design as a function of the designed object. Again, we are dealing with a conceptaction treated as an objectaction that can be transferred into a different context and appear not as a shape this time, but as a function. Thus, a conceptual metaphor model that is based on two conceptual domains is insufficient.

An alternative model describing designers' mental processes that is worth considering has been presented by Gilles Fauconnier and Mark Turner in *The way we think. Conceptual blending and the mind's hidden complexities*. The authors, in search for a description of mental processes common to creators in various fields (from fine arts, through literature, to science), developed the idea of a conceptual blending. The researchers point out that the most basic and common mental processes that are formed in humans from an early age are a difficult subject to study because they are unconscious and "have the speed of light".[8] They describe the creation of conceptual blending as one of the basic and key mental operations. This process could be described as merging elements coming from several mental spaces into a new whole element. Mental spaces, on the other hand, are "small conceptual packages constructed as we think and talk, for purposes of local understanding and action".[9]

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6 G. Lakoff, M. Johnson, *Metafory w naszym życiu*, transl. T. P. Krzeszowski, Warszawa 2010, Aletheia.

7 A. Libura, *Amalgamaty kognitywne w sztuce*, Kraków 2007, Universitas, p. 17.

8 G. Fauconnier, M. Turner, *The way we think. Conceptual blending and the mind's hidden complexities*. New York 2002, Basic Books, p. 15.

9 Ibidem, p. 40.

It seems that the most complete understanding of this process in relation to the Juicy Salif could be provided by a visual representation.

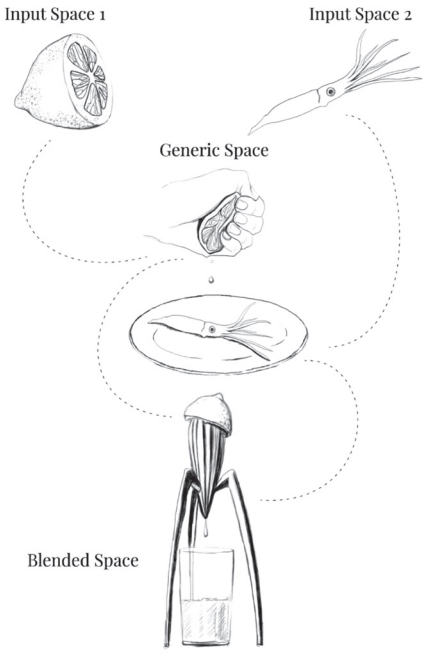

Fig. 2. An illustration by the author

The result of conceptual blending is created by identifying and transferring related elements from different input spaces, combining them in the generic space (blending) and selectively melting the output structures into a concept. It seems that such a model of mental processes describes the process of conceptualization in design more accurately. In the conceptual blendingprocess that has taken the material form of the Juicy Salif, all the elements coming from the mental spaces remain accessible, which means that we are able to trace the transfer of individual common elements from the input spaces to the output spaces. Thus, in an illustrative way, we can see the designer's way of thinking, unlike in the case of the metaphor model, in which the projection of distinguished elements proceeds only from the source conceptual space to the target one.

When we take a closer look at the mental process of creating and the form of the Juicy Salif, we can see the materialization of at least a few abstract concepts, presented in the table below.

abstract	material
luxury	gold-plated surface
distinction	unusual shape of the object (different from common objects of a similar function)
tradition	traditional production method – polished metal casting
modernity/novelty	spaceshiplike shape of the object

Fig. 3. A table by the author

Certainly, a more indepth analysis of the design would allow us to find many other materialized abstract concepts. Although some of the listed juxtapositions could also be represented using the model of metaphor (or metonymy) proposed by Lakoff and Johnson, the model of conceptual blending does not exclude the existence of visual metaphors and can be used to describe thought processes accompanying design in a much more understandable and universal way. Moreover, understanding and identifying metaphors seems to be more culturally and individually differentiated (through differences and language skills) than identifying input and output spaces in conceptual blending.

Due to its connection to almost every area of modern society life, design always exists in a specific context. The importance of context in design was emphasized by the esteemed design theoretician, Viktor Papanek:

> "The telesic content of a design must reflect the times and conditions that have given rise to it, and must fit in with the general human socioeconomic order in which it is to operate."[10]

Therefore, it is not groundless to say that the degree of understanding the "language of things"[11] also depends on the viewer and the context. To illustrate the practice of transferring selected properties of mental structures or features of objectsactions to other objectsactions, I would like to present

10 V. Papanek, *Design for the real World*, Toronto/ New York/ London 1973, Bantam Books, p. 34.
11 D. Sudjic, *Język rzeczy. Dizajn i luksus, moda i sztuka. W jaki sposób przedmioty nas uwodzą?*, Kraków 2013, Karakter.

another example cited by Jane Fulton Suri. In heralready cited text, the author describes a thought process occurring in the mind of a designer tasked with designing a banking service.[12] In an interview, designer Annette Diefenthaler describes her observations regarding differences in adopted sales strategies in an Eastern European country (where the service was to be introduced) and Western countries. The designer notices that the way of displaying goods at stalls and in stores in the former is extremely simple and orderly. Goods are sorted by category (e.g., black shoes, blue jeans) and a display is not accompanied by any eyecatchingdesignsthat couldprovide a pleasant aesthetic experience, unlike in Western European countries. This experience, as the designer describes it, allowed her to understand that simplicity and effective use of time should be a priority in adapting the banking service to the needs of users. Hence, the service was changed in a manner consistent with the adopted assumptions: time spent by a customer in the bank branch was reduced to a minimum by simplifying the procedure and customer service. These measures had the intended effect. Here again, the feature of the service (simplicity) was transferred from one context to another. Although manifested in a different way in the input space, simplicity was echoed and adequately merged with the service design in the final result – its meaning emerged from the input space.

Summary

In their work, designers use pictorial representations of things and encode their vision of everyday life in the image/appearance of objects or physical (pictorial) representations of abstract concepts. Reception of visual information is almost instantaneous, as an image provides us with access to a lot of information at the same time, unlike natural language. Thus, the metaphor structure used in the cognitive approach, although useful in some cases, is insufficient to describe mental processes that occur during the composition of image structures. First, while describing design as a conceptual metaphor, we deal with selective transfer of elements from the source conceptual domain to the target domain, and this process always occurs in this exact direction. In the case of design, as well as other areas of visual creativity, creators rarely limit themselves to projecting only one element of a selected structure onto another structure, andthe "borrowed elements" are not always cognitive in the same sense that a metaphor is: i.e., they do not always make it possible for us to learn abstract concepts by means of material or more familiar ones. The structure of an object image usually consists of many elements – some determine the

12 J. Fulton Suri, *Poetic Observation: What Designers Make*..., pp. 74-77.

function, other onesconstitute the substance from which the object is made, the task of yet other ones is only to increase visual attractiveness. And although the ability to see connections between individual elements depends on the recipient in the case of both a conceptual metaphor and conceptual blending,only the structure of conceptual blending allows us to understand the "direction" ofa designer's thinking. While using the conceptual blending model, we can see the elements that were selected in the input spaces and merged into the new design, even though their material manifestation may be different. Moreover, using the conceptual blending model, we can also describe structures bearing metaphor features. Therefore, conceptual blending seems to be a much more universal model of mental processes and provide an alternative to the conceptual metaphor model.

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JAK MYŚLĄ DESIGNERZY. AMALGAMATY KONCEPCYJNE W DESIGNIE (streszczenie)

Celem niniejszego tekstu jest określenie tych obszarów designu, w których badaniu przydatna może być struktura metafory (Lakoff, Johnson 2010) oraz w jakim zakresie może być ona niewystarczająca. Bazę dla rozważań stanowią przykłady rozwiązań zastosowanych przez designerów. Projektanci podejmując decyzje dotyczące przyszłego kształtu, funkcji i wyglądu przedmiotu opierają się na swojej wiedzy na temat rzeczywistości, ludzkich potrzeb i przekazują użytkownikom to, jak rozumieją rolę i cele designu w życiu społecznym, a tym samym swoją wizję codzienności. Na podstawie omawianych przykładów, tekst odnosi się do specyficznego rodzaju myślenia podczas pracy nad projektem, charakterystycznego dla designerów. Rozważania prowadzą do tezy, iż w sposób myślenia designerów pełniej opisuje model *conceptual blending* (Fauconnier, Turner 2002) niż struktura metafory, która nie zawsze może być zastosowana. W literaturze polskiej *conceptual blending*, tłumaczone jako „amalgamaty pojęciowe", najczęściej pojawia się w odniesieniu do badań lingwistycznych. Artykuł proponuje tłumaczenie „amalgamaty koncepcyjne", jako poszerzającego znaczenie terminu i mającego zastosowanie również w badaniu myślenia wizualnego, w tym designu.

Słowa kluczowe: design, amalgamaty kognitywne, metafora, mieszaniny pojęciowe

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