

DIALOGUE BETWEEN THE BODY AND INDUSTRIAL PRODUCT: BODILY PERSPECTIVES

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Abstract. Within the scope of this study, the relationship between the user body and the products produced by the industry will be examined through a body focus. The main motivation of the study is to analyze the body experience of industrial products, create data on this analysis, and obtain these data with written and visual records. With this goal, the design literature will be contributed with a body-oriented perspective in terms of product-user relations, user experience, and product design process. The study, which investigates the analysis of the physical dialogue between the products produced by the industry and the human body, aims to investigate the possibilities of object and body dialogue through object sets determined to be representative. While the first aspect of the research aimed at the study is the analysis of the dialogue of design products with the user body from a body-oriented perspective, the second aspect is the analysis of the body dialogue of industrial products that are in dialogue with the user body. The contributions of both aspects to the study indicate different values in terms of the field literature. While a body-focused analysis offers the opportunity to question, discuss, and reinterpret the field of the user body, analyzing the dialogue established by industrial products with the user body enables new design criteria to be sought and fictionalized in the new design products for the future. Analyzing the dialogue established between the user body and the industrial product with a body focus has the potential to enable the development and change of the dialogue in question, thus enabling the design style, usage practices, and product language of new-generation products. The fact that the body experience of the user is transferred from implicit data to clear and easy-to-read data in product design offers the designer the opportunity to capture and reconstruct the body experience of the object. This possibility is the potential of assigning new body experiences to objects belonging to different purposes and different usage practices through design. Capturing the body experience of the products as a dialogue and presenting it for discussion with data also opens the possibility of reconstructing this experience for interpretation. The study explores how designed objects work with the body, the space, time, and action practices they use in common with the body and reveals these practices with diagrams as a form of dialogue. Moreover, within these diagrams, this study aims to open body and object communication and interaction for discussion within the discipline of industrial design.

Keywords: *Body, buffer zone, industrial product, product design, body object relations.*

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1. Introduction

In industrial design, the body is the primary user of products, and its needs and limitations must be considered in the design process. Products are designed for the body to use, and their usability depends on the physical and cognitive capabilities of the body.

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As part of the interdisciplinary nature of design, ergonomics is concerned with how products can be designed to be comfortable and efficient to use. Ergonomics is a vast field of science where there are several usage ratings. According to Nurmianto (1996), ergonomics is a study of the system in which humans, work facilities, and the environment interact with the main purpose of adjusting the working atmosphere to human beings. However, Tarwaka and Sudiajeng (2004) defined ergonomics as performance or the ability of a human depending on the comparison between the size of the work demands on the large ability of the worker (Panjaitan & Ali, 2019).

Industrial design considers the physical dimensions of the body and how the body moves and interacts with the environment. The experiences of the body shape our understanding of the world, and our understanding of the world shapes our interactions with the body. Products are the enablers, facilitators or agencies for a significant part of these experiences.

Products interact with the body in its sphere of action. With the aim to provide comfort, well-being, functionality, performance, or beauty, product design should consider the relationship between products and the body (Ferraio & Dias, 2014).

Today, all kinds of daily products such as smart phones, personal computers, watches, wearable technologies, home appliances, etc., are also updating the dialogs of products with users, as products and user bodies are in deeper communication. For example, Intelligent Virtual Agents (IVAs) enter with all aspects of the social life of users. IVAs can act as professionals to help users in many ways, which relate from health assistant, virtual interpretation, education and personal training (Randhavane *et al.*, 2019). While the product is doing that kind of action, it communicates with the user body. With the development of natural language as user product relation processing, more and more voice assistants are embedded in smartphones, such as Amazon Alexa, Google Assistant, and Apple Siri (Kim *et al.*, 2020). Although these voice assistants are becoming more human-like in terms of their verbal interaction capabilities, they do not have any visual appearance, they cannot provide non-verbal cues (Gan *et al.*, 2023). On the other hand, Augmented Reality (AR) technology enables a more intuitive interaction between users and products in the real world (Hammady *et al.*, 2021). The spatial interaction is usually more natural and intuitive than voice-only interaction (Schmidt *et al.*, 2019).

Today, we can say that products have developed through their interactions with the body. Not only smartphones, computers or watches, but a large part of everyday objects such as coffee machines, vacuum cleaners or even refrigerators interact with the user body. More generally, such personalized, data-driven tools are capable of adapting to individual rhythms and providing more biologically attuned support in a number of areas including physical and cognitive performance, sleep, clinical therapy, and overall, wellbeing (Abdullah *et al.*, 2017). As another example, in interaction design fields, often considered the interface a tool between the human body and another entity, regardless of whether the entity is another living organism, an object, a machine, or a system (Zannoni, 2022). In today's design perspective, where the dialogues between products and the user's body are getting intense and deep, examining these dialogues with a user body focused research through daily objects can present a different discussion. Should this dialog be updated only through the design of the objects' dialog with users, or can we, as designers, update this dialog by making it visible on the user body?

Today, especially user centered design and interaction design research are currently working on daily objects. These objects are getting smarter day by day, we are in contact with the design literature which makes a theoretical gap visible in the name of the user body. Research has focused on user habits, form and function of objects, users demands and needs and experiences. At this point, as the design focuses on products, there is a gap in the perspective of user bodies. By pointing out this gap, this study theoretically opens this body and product dialogue for discussion.

Design products work and come into contact with the user body as recommended and only as determined. Updating this way of working with research that focuses on the user body, will provide the opportunity to discuss that it is changeable and to redesign daily dialogues. These dialogues with objects give a chance to rethink and design how we will talk to them, how and how much we will be exposed to each other, how we will use them or how they will interact with us.

Thanks to the developing technology, products communicate with the user body in a more intense and deeper way than previous products. Design products process data about the user body more day by day. The products can recognize the voice tone, fingerprint, face and retina of the users. This participation to collect data about the user body usually implies human voice, touch, all kinds of bodily experience and also representation and structures of decision-making.

The user can treat their body as it is defined as a dialog space. Identifying and re-discussing dialogue areas through a user-body-oriented roadmap within this information network will mean discussing and changing our dialogue with objects. This discussion will contribute to today's design literature by presenting a roadmap, where products develop new ways of communicating with the user body.

Based on the assumption that the relationship between the body and products is multi-layered and complex, this study assumes that there is an ongoing dialogue between the body and the products that surround us in daily life. Products are designed to be used by the body, while products can also shape the body, both physically and culturally. And this takes the discussion out of the realm of classical ergonomics. The study presented here proposes a concrete way to show the dialogue between products and the body from a corporeal point of view by mapping and examining the points of contact between the body and products based on body experiences from the lens of the user. Within the framework of this research, how the body establishes a dialogue with products, how the body adapts to products, and the process that occurs when the body is exposed to the products has been discussed in terms of “gains, sanctions, and adaptation” practices.

The final goal here is to determine “what the user's body is exposed to” with the industrial daily objects surrounding us and propose new paths for designing accordingly.

At this point to define the problem following questions can be stated:

- How the dialogue between the body and products emerges and how can such a communication be depicted in a concrete way?
- How can bodily experiences be enabled through products and be recorded and visualized.

In this respect, this study is based on an effort to analyze the body and object dialogue through individual body experience within the periphery of the body area and the boundary of the body area. In line with the research goal determined, it is aimed to examine the user body experience and to record this experience, to reveal the body and object dialogue that expresses this experience.

The study analyzes the physical dialogue of the industrial products with the human body through object sets determined as representatives. By revealing practices of the body and product communication/interaction as a form of dialogue, the ways designed objects work with the body, space, time, and action practices they use in common with the body is put into discussion. In order to make this dialogue visible between the user body and objects, an experiment focused on the users' body and based on their feedback on the objects was designed.

At this point, the problem definition of the study is formulated as follows:

- What does the body experience with objects and within the organization of the objects? How can this be revealed as a form of dialogue and what does the body learn during this dialogue process?

The concept of body in the literature can be summarized under two main approaches; as passive body theories and as active body theories (Sugiyama, 2010). Passive body theories; emerges as the organization of bodies as a social construct. Bodies are organized, aligned, and shaped according to various cultural phenomena as part of the social structure. While bodies become visible in the focus of the socio-cultural structures they are in, they also become “things”. Within the framework of the views that agree under the title of passive body theories in question, the data of the individual's bodily experience is not important, the body is a means of representation of a whole and does not appear singular. Within the scope of passive body theories, what the body represents in the system it is in is at the forefront. Mary Douglas, identifying the body as passive, suggested that society and socio-culture can be analyzed with the symbolic reading of the body (Douglas, 2002). Pierre Bourdieu presents another anthropological contribution to the studies that can be placed under the passive body theory. Bourdieu introduces the concept of “habitus” to look into the body. Within the concept of habitus, the body is a tool to reflect the various tendencies of different classes. At this point, the concept of the body is discussed as a tool that allows the display of cultural capital about individuals, as well as areas where demonstrations of power are displayed to reveal class distinctions between individuals (Bourdieu, 2006).

Bourdieu's habitus theory offers a helpful framework for comprehending how social and cultural variables form the body and how these elements affect our relationships with things. Apart from Bourdieu, Michael Foucault also contributed to this field. For Foucault (2008), bodies are subject to historically produced relations of knowledge and power and are governed by these discourses themselves.

The concept of the body is historically conditioned and it shaped products of varying power/knowledge relations, rather than being a biological field of existence. From this point of view, beyond being excluded from social relations, the biological body is another form of the 'social'. Phenomenological approaches to the body characterize the body as a field of experience. The humanistic disciplines that turn to the medical field of the phenomenological approach, which aim to reveal the human experience, look at the body as an object that provides scientific findings and can be intervened at any time, due to the ontology and epistemology of the positivist paradigm.

This approach ontologically presupposes the body as the 'lived body' to understand a bodily experience. For this, a phenomenological bodily approach is needed in any discipline that studies human beings' including medical anthropology, feminist anthropology, and post-modern anthropology. This need arises within studies dealing

with the concept of the body in medical, political, and religious literature. The neglect of corporeality confronts us as a major theoretical and practical problem of Western social science understanding based on the traditional mind/body separation assumption (Turner, 1992).

Thomas Csordas, another theorist who constructs bodily experience with the concept of 'incarnation/embodied self' (Sugiyama, 2010) from a phenomenological approach, validates the holistic approach of anthropology as a human being both interacting with and shaped by nature and shaping nature. While Csordas (1994) says that no anthropologist has taken seriously the idea that culture is based on the human body, he claims that our corporeality would be a good starting point for reconsidering the nature of culture and our existential situation as cultural beings. According to current technological medicine and classical biology, the body is also constructed as an object. The body is in front of us as a subject who feels and experiences the space and the world around him. From the point of view of anthropology, it is a question of seeing the body as a biological raw material on which culture works, excluding its original participation in the field of culture, and turning the body into a pre-cultural layer.

The point presents the body for examination as a layer rather than examining it only under its own possibility. One of the important studies on body experience belongs to the theorist Maurice Merleau-Ponty. According to Merleau-Ponty (2002); who alludes to the concept of incarnation in his work, preventing the mind and body separation can be studied through the concept of embodiedness. The Phenomenology of Perception, a theory of the body, is also a theory of perception. Merleau-Ponty, in his seminal work Phenomenology of Perception, states that human perception (2002) is always positioned in a certain space and perspective and that our embodied beings create their awareness of their own body through an external experience. After all, all our mental events are also somatic. According to Merleau-Ponty, the body is not only a historical idea, but also a constantly realized set of possibilities, and the said possibilities are limited by historical trends (Butler, 1988).

2. Concept of body and buffer zone

The body, as a biopolitical issue, is a tool of life that is shaped around society, culture, and identity politics and thus divided into hierarchical categories. At the same time, the body is also a marker of the economic categories and socio-cultural groups to which it belongs as a minority or majority representation. The body, as a representation area where social indicators such as political views, religious beliefs, sexual orientation, socio-political status, and economic status are aligned, is a set of indicators related to the history of human existence. The fact that humans are placed in the first place among all the living creatures of nature carries the human body to the first place in the universe of bodies.

After the position is determined, the basic dialogue that will form the basis for drawing and limiting the dialogue area of the object and body within a frame and obtaining the data in question. Determining the area is important for setting up the work floor. Due to the abundance of variables such as space, object types, and body types, in determining the defined area to be considered as a dialogue area, the study area was thought through in detail, and various body practices were considered as data analyzed sources.

The ground to be determined as the body and object dialogue area is also important in terms of clarifying the methods of the study. To determine a fixed area for body and object relations, it was necessary to examine the concepts of personal space and social distance. According to body area positions revealed by concepts whose boundaries are precisely defined with the Prosemic theory brought to literature by the anthropologist Edward T. Hall (1966); Private area: 0 to 45 cm, Personal area: 45 cm to 1.2 meters, social area: 1.2 meters to 3.6 meters, public areas: 3.6 meters to 7.6 meters are defined body areas. Hall (1966), while defining the body distances, which are convenient to examine and define as codes, defines the relationship between the body and its environment with quantitative values.

The body areas, which were brought to literature, were examined as a dialogue area that was planned to be constructed to create body-oriented data for the study. In order to determine a fixed area for body and object relations, the personal area in the literature and the concepts of the area between the social distance area and the social distance area were examined. The concepts in question refer to the concepts of personal space and public space, which are defined as personal space and intimate space, which have a relatively more place in psychology and anthropology literature compared to other fields including industrial design. However, these quantitatively describe the position of the body in its environment.

Body Buffer Zone

Personal space defines a space and distance between the body and other bodies and includes the inputs of the dialogue that exists among bodies. Therefore, it is not a suitable concept to conduct an accurate analysis of the dialogue between the body and the object, which is the basis of the study.

On the other hand, the concept of the Buffer Zone, a key term in this research, is used to express the optimum environment or conditions necessary for a living thing to continue its life, especially in the fields of biology, psychology, and agriculture. Buffer zone concept; if it is defined on the basis of political geography, the protected area between two or more negative impact areas can be defined as an area that provides peace and prosperity. However, the literature, primarily in the fields of agriculture, biology, and psychology, distinguishes the areas that can be considered incompatible or dangerous for the species. It has been concluded that “the protected area” is used to determine the region that provides the necessary conditions for the survival of the generation among the literature scanned on the concept.

Studies in which the concept of buffer zone and personal space are evaluated together have been encountered. When these are examined, buffer zone is also considered as a roof concept, taking into account the data such as the relations of living things with their environment, survival possibilities, attitudes, and expectations towards the environment, therefore human-human, human-environment dialogues (corresponding to political geography), animal-animal (biology studies), plant-plant (agricultural studies), or different paired versions of these dialogues, as well as human -With object studies (psychology-clinical psychology), it has been concluded that the umbrella is considered as a concept of “distance” or “definition area” in order to analyze various forms of dialogue. In summary, the concept of buffer zone can be defined as the area that provides the appropriate environment for the living creature to survive or to achieve the optimum quality suitable for its lifestyle. In accordance with the scope of the study, in terms of body-object dialogue, the concept of the body buffer zone, as an umbrella term in this

study, is accepted as the distance between the body and its environment, in which the individual feels comfortable. The concept of the buffer zone states that body perception can be expressed in two ways. The approach to the field of psychology briefly states that these two perception expressions are met with the concept of personal space as body-body perception, but the body-object dialogue is also included as the second perception expression within the concept of the buffer zone (Wapner, 1997). In this context, the concept of the buffer zone was decided to be used to analyze the relationship with the objects in the position where the body is surrounded by objects. The concept of the buffer zone was used to define the floor area for the dialogue between the body and the object.

3. Object as an industrial product

Within the scope of the study, the concept of the body was examined under the axis of cultural indicators, staying outside the areas where it is defined as gender, religion, economy, or a sociological element, and an approach in which the body is considered as a biological field and therefore its borders as a living surface.

The study, which stands out from using the equivalents of the concept of the body on the axis of signs, also excludes the cultural, social, or economic codes of the objects that it will examine under the object database. Objects today, where consumption, and production chains are intertwined, have other qualities on bodies/individuals that communicate with objects, extending beyond their structural features such as their physical assets, the area they occupy, and the material they are produced from.

These qualities, which are not visible like physical features, influence decision-making, purchasing behavior, and user behavior and affect the formation of user segments (Foster, 2003). These semiotic features are integrated with the object as cultural, social, and economic indicators. Regardless of its physical existence or physical qualities, the object re-exists as an “object” in the axis of these indicators (Barthes, 2014), and moreover, it is constantly reconstructed. It was necessary to define/frame “the object”, since the environment the body is in has been reified to a great extent, the continuation of daily life practices and the meanings they carry through these things, the human body now organizes its primary adaptation practices towards self-imposing objects rather than natural phenomena (Bilgin, 2011). Objects can be examined under different approaches, from their functionality, form, material choices, price performance analysis, market values, social messages, their position in which they carry cultural values, to the values in which they become an economic intermediary. However, no matter how hard the objects are under various codes, they do not disappear by being converted into mere indicators or pure codes (Bilgin, 2011). And in this study, objects are analyzed as industrial products in relation to the body being positioned outside the axis of the aforementioned indicators.

4. The concept of dialogue

Within the scope of the study, dialogue as a term is used as the expression of the communication aimed to be examined between the body and the object (industrial product). The main reason in such a discussion is that it has been conveyed as an effort to reach a result through mutual conversation in the sense of “following the thought”. Between the user body and the design object, there is an experiential process that can be pointed as mutual cooperation. This process includes a set of use-based actions and an

effort to reach the result. In other words, the object meets the purpose of use. This point takes place in the study area of the design literature to discuss the designer as the person responsible for expressing the possibilities of the object and discussing these possibilities. The concept of dialogue in the study is the general title where the movements, practices, and experiences in this experiential process are discussed.

Dialogue is not the act of examining static masses. It expresses the purpose of examining a unity (user body and design product) that interacts, works collaboratively in instant or scattered time periods, based on certain selection and convenience principles, through usage practices. For this reason, “the dialogue” emerged to discuss body and object communication as events, experiences, and open processes. The usage practices, contact, and interaction styles that are meant to be expressed through dialogue are the body-related experiences and actions that continue throughout the product's usage cycle between the product and the user's body.

5. Methods and methodology

The main motivation of the study is to capture the dialogue of the object, which is limited to the body and industrial product, and present it to the discussion by revealing it as academic data.

By dividing the dialogues of the objects with the body into routines and subroutines according to their forms of action, their usage practices, a common dialogue area has been constructed according to the similarity of the interaction established by the object and the body. This common dialogue area has been divided into four main groups as; “the whole with the body”, “the continuation of the body”, “functioning with the body”, and “independent of the body movement”, and these dialogue areas denote the object and the body dialogue forms. Representative objects gathered under these areas in the study are refrigerator, washing machine, dishwasher, coffee machine, oven, cabinet, fork, pen, walking stick, tennis racket, wristwatch, toothbrush, shoes, table, armchair, toilet bowl, dentist chair, sunbed, bathtub, chair, bed, vacuum cleaner, iron, blender, treadmill, mixer, skateboard, lamp, air conditioner, sewing machine, and umbrella. There are 32 representative objects grouped under 4 main dialogue areas in total in the study. In each main dialogue area there are 8 objects. (Figure 1).

These four main dialogue areas are created in relation to the forms of dialogue between the object and the body. An experiment is designed to collect data to test these dialogue areas. In order to define the body, how the user/person expresses his/her own body is considered. For this purpose, pain icons used to express the body in medical literature were examined. These icons are discussed in order to express users' own body parts. 16 body parts are shown with selected icons. These parts are determined as head-neck, nose, leg, foot, skin, mouth, hand, eye, hip, muscle, bone, arm, ear, shoulder, back and hair. The icons of the body parts are given on the left of the experiment page for the users participating in the experiment to express their body experiences (Figure 2). They were asked to match with the representative objects they thought were related to these body parts and given on the right of the page. This study, considers the body as a physical space, a living outer surface, constructs the body as an accessible and expressible surface area by clarifying it as much as possible.

| | Main dialogue areas | Representative objects |
|---|---------------------------------|---|
| 1 | In the continuation of the body | Fork, Walking stick, Umbrella, Tennis racket, Pen, Wristwatch, Toothbrush, Shoes |
| 2 | Whole with body | Table, Armchair, Chair, Bed Toilet Seat, Dental Chair, Bathtub, Sunbed |
| 3 | Functioning with the body | Vacuum Cleaner, Iron, Treadmill, Bicycle, Mixer, Blender, Sewing Machine, Skateboard |
| 4 | Independent of body movement | Coffee machine, Oven, Fridge, Washing machine, Lamp, Air Conditioner, Dishwasher, Cabinet |

Figure 1. Main dialogue areas and Representative objects

The main point in defining the body parts is to be able to make an analysis in which the body itself becomes a road map. Objects are accepted as entities that can reach and create paths to the body parts. The main point in defining the body parts is to be able to make an analysis in which the body itself, thus, the more paths there are from the object to the body, the more accessible the body becomes. Body mapping aims to divide the parts that make up the body and mark them as body parts. With the object that is supposed to be related or communicating. It is analyzed how many body parts the object reaches. The results of the analysis were visualized with spider diagrams, and it was tested whether the objects were suitable for grouping under the default groups. The study is based on the idea that body maps can be obtained by matching the relevant body parts by multiple matching with representative objects. The experiment, which was revealed by the body mapping method, determined representative objects and it has emerged to analyze, visualize, and use the dialogue of the determined body parts with diagrams based on this dialogue. The dialogue between the experiment and the body and the industrial object was visualized as academic data and opened for examination. This analysis is defined as a physical living space with certain boundaries. It aims to present a discussion about the design literature by making it visible through the objects that are involved in the action or working with the body as the implementer of the action within the boundaries determined by the body positioned. The experiment was run on the online test platform. In the experiment, the number of body parts was specified as 16, and the number of representative objects was 32 (Figure 2). On the online platform where the study took place, 16 questions, one for each body part, were visualized and answered as multiple choice by 33 expert users. Multiple questions about the prepared question set about 32 representative objects, and body mapping methods were used by taking optional markings (Figure 3).

The main argument of the study based on object and body matching is to test the group belonging to representative objects, which are divided into four groups according to the form of dialogue with the body. Within the scope of the study, the concept of the body buffer zone and the dialogue between the body and objects are analyzed. With this analysis, objects that expand or contract the space around the user's body are discussed. Objects that establish the closest dialogue with the body are the objects that communicate

most with the user's body. These objects create the narrowest space for the body buffer zone.

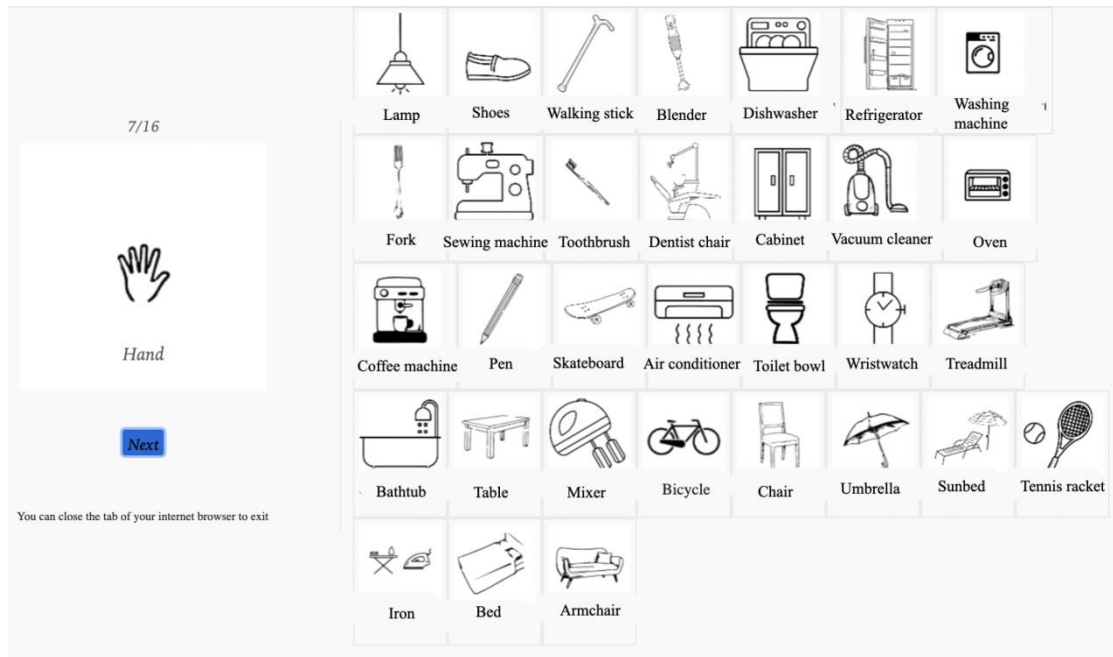


Figure 2. Online test platform

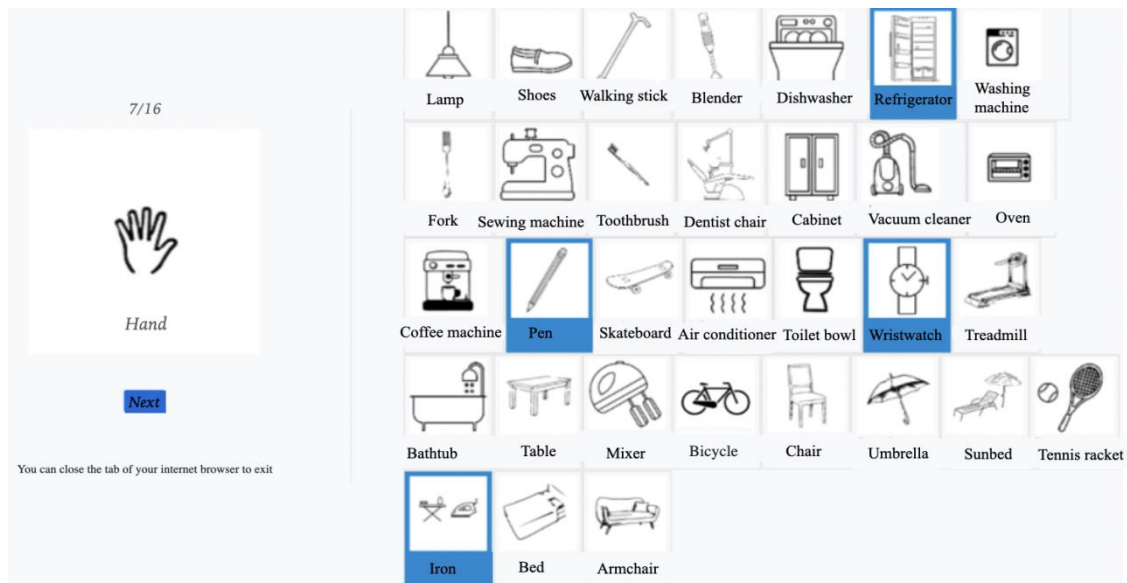


Figure 3. Online test platform - selected version

The objects that have the most limited dialogue with the body are the objects that have the least dialogue. These objects are the objects that offer the largest space for the body buffer zone. In the study, the body buffer zone is presented for discussion as a body and object dialogue area. The aim of the study is to define representative objects in terms of their dialogue with the body and to develop a theoretical analysis of the object groups to which these representative objects belong. The main motivation of the experiment is

to discuss the physical form of the dialogue that the objects establish with the user's body, its duration, the nature of the action, the way the user manages the auction process with the object within the survival practices, how he maintains the usage practices and the body experience of the object as academic data.

Dialogue diagrams drawn separately for each representative object are compared and the body buffer zone on behalf of the body and the body-object dialogue are discussed with a theoretical approach.

6. Findings

The results of the conducted experiment provided the four main body dialogue groups. The four main dialogue areas (Figure 1) determined during the experiment were interpreted with spider diagrams by processing the data revealed by the users on body parts and selected products.

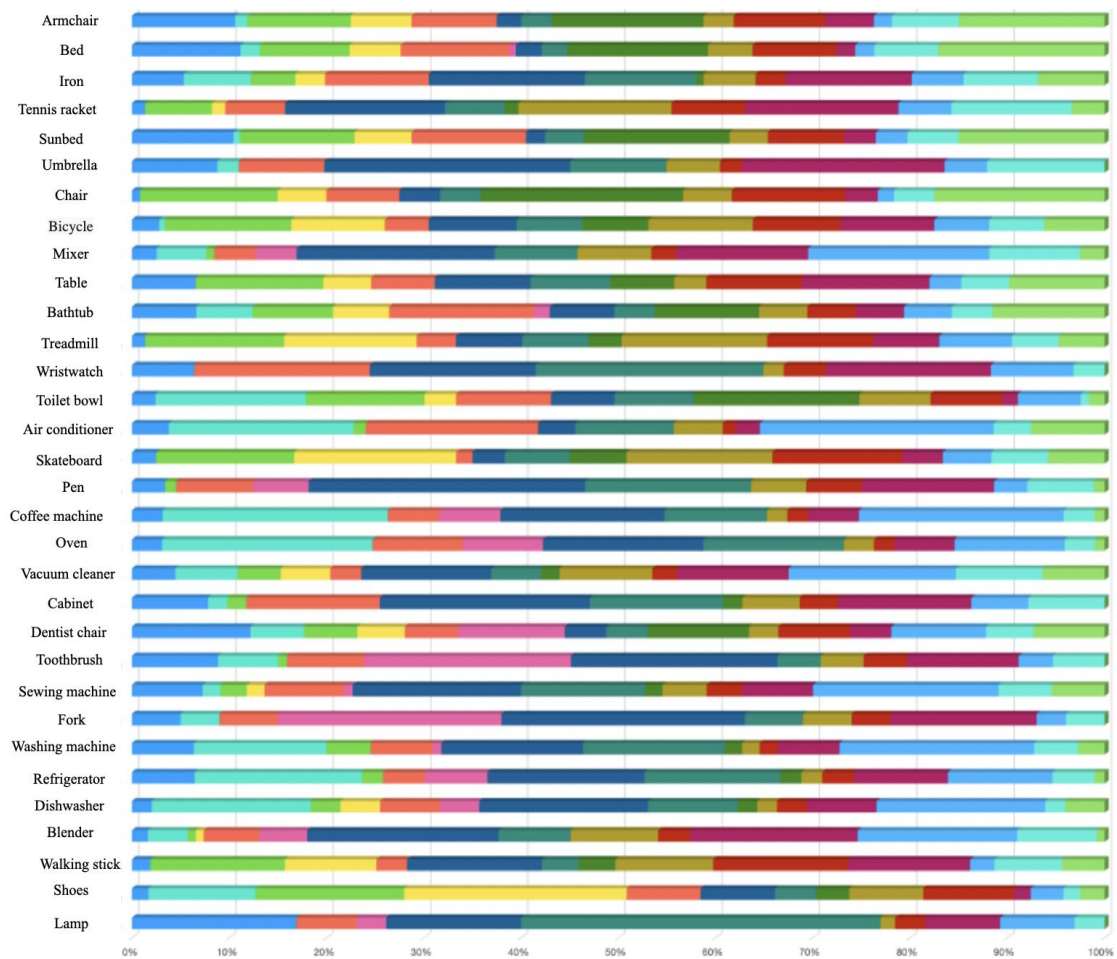


Figure 4. Bar graph of representative objects and color coded body parts

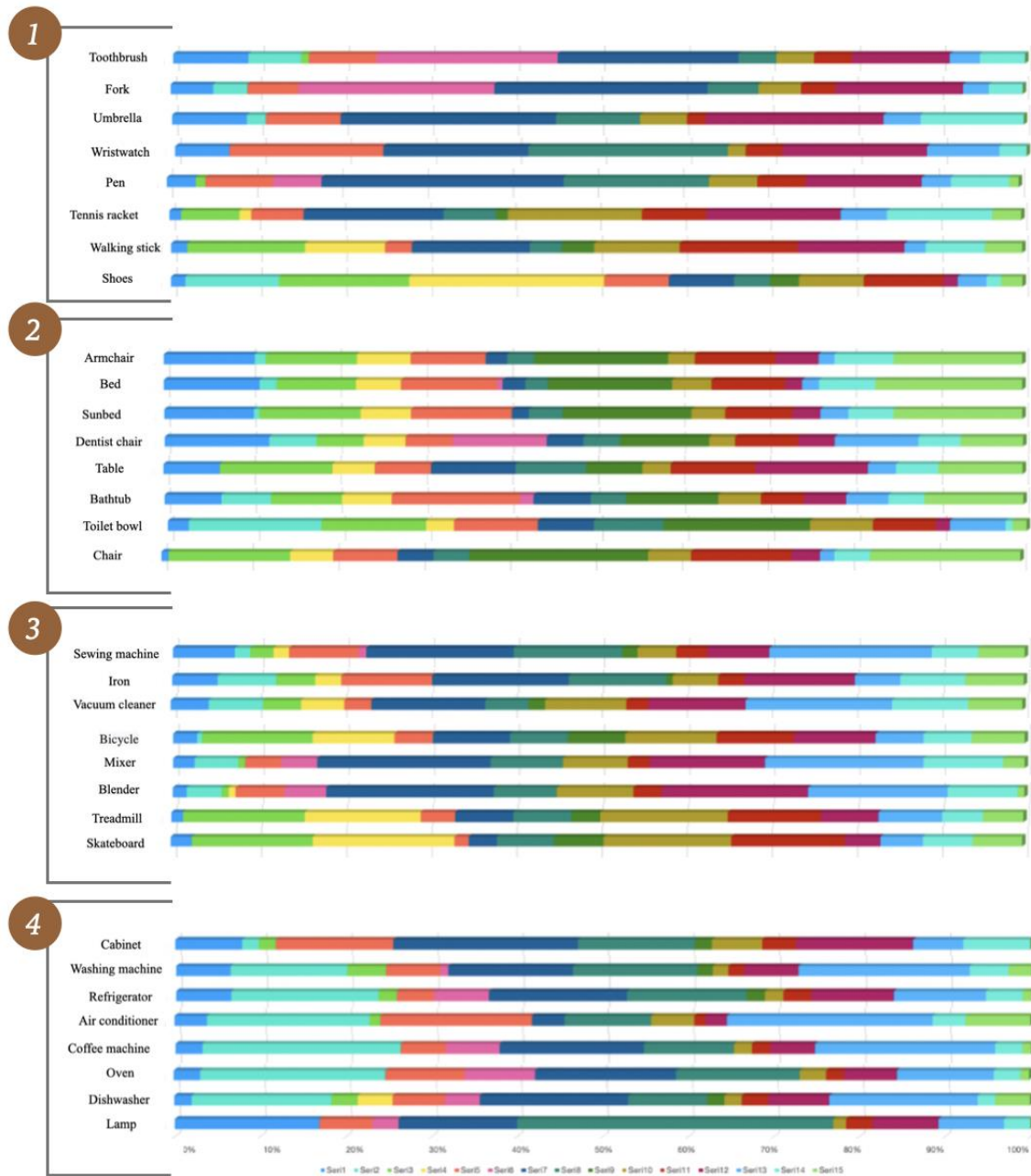


Figure 5. Bar graphs of categorized main dialogue areas

The obtained data were first analyzed graphically (Figure 4). The obtained diagrams were superimposed, and the idea that the user body and design product dialogue, which is the main argument of the study, could be examined in four main groups, was made visible with the data. Each color code given in the charts represents a selected body part for the representative object. Consistency in the color codes on the graph made the groups appear more clearly. The main dialogue areas were brought together with graphics by examining the color codes showing representative objects and selected body parts (Figure 5). It is possible to examine representative objects together with other representative objects in the group which they belong to. According to the data obtained as seen in the graphs, the dialogue between the body and the product can be reduced to groups that are

whole with the body, independent of the body function, functioning with the body, and summarized under the following headings of the body.

The data belonging to the representative object made visible with the graphics were transferred to spider diagrams, which is the main data analysis method of the study so that body parts can also be visible as data (Figure 6). In addition, data were transferred to spider diagrams for each representative object one by one. All the spider diagrams were obtained by superimposing and the diagrams of the main dialog areas of the study were revealed.

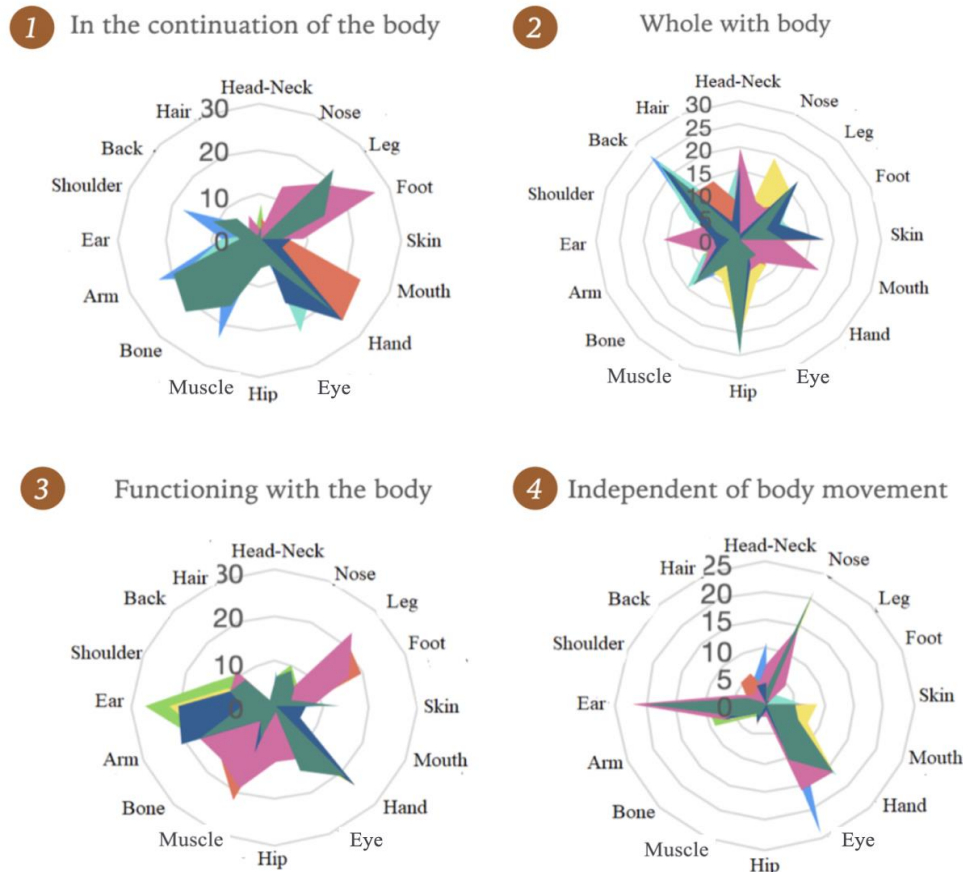


Figure 6. Spider diagrams of main dialogue areas

7. Discussion

The main purpose and motivation of the research is to reveal the existing dialogue between the user body and the design product through the body perspective. The hypothesis of working with the experiment designed for this purpose is that the body dialogue of the design products is suitable for examining under four basic groups. The results of the conducted experiment provided the four main body dialogue groups, which is the main argument of the study.

Can we make the dialogue visible through diagrams? How much are an iron and a sewing machine the same object when viewed from the body side within a dialogue? How this visibility can be passed onto the designer so that he/she can use such data in his/her

design process with minimum evaporation of detail. So, the dialogue between the body and the industrial product is suitable for discussion from different perspectives with the data obtained as a result of this study.

Some of the resulting diagrams also make it open to interpretation of how different objects using the same body parts in the same proportions are different in terms of body experience. From the diagrams obtained, the ironing and sewing machines are different products that gave very similar results in terms of body experience (Figure 7).

While presenting the results of the data obtained for discussion, it is possible to state that body parts such as head-neck, skin, hand, eye, back and muscle are used in close proportions for both products in the body and product dialogue. This point allows us to capture the similarity of the dialogue established with the body by two different products designed for different purposes and with different forms of use. Examining this dialog allows rethinking the sewing machine and the iron. The fact that the data on the body dialogues of both objects are similar gave the opportunity to catch the question of what the designer can say about the product.

It will give the designer the opportunity to catch the question of what can be said. At this point, while the dialogue makes the iron and the sewing machine similar in terms of body dialogue, it becomes possible to discuss how both products express this similarity in both products.

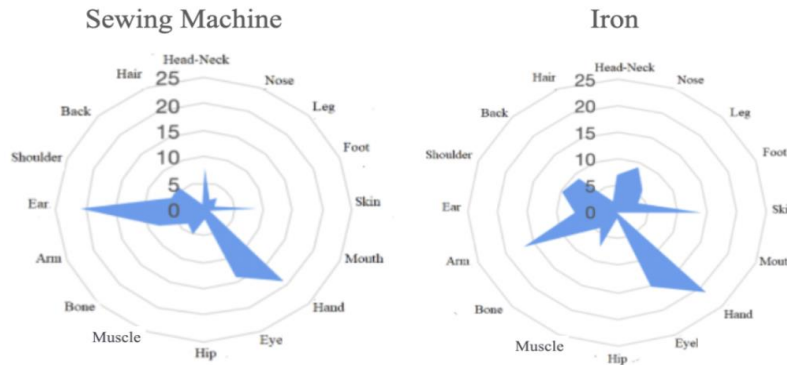


Figure 7. Spider diagrams of sewing machine and Iron

There are also alternative products with the same purpose of use. When considering the usage practices of alternative products, it is seen that portable sewing machines, which are called hand sewing machines, are ironed. While hand sewing machines work with a principle like an iron, they are used to sew the fabric with one hand by taking support from a surface. Ironing is used for ironing with one hand by supporting it with a fabric surface, like the ironing action used. At this point, the usage practices of two fundamentally different objects are available to transform into each other (Figure 8). Similarly, as an alternative to iron, press irons are like the sewing machine in terms of usage practice.

These irons have a working style in which the fabric is placed between them and ironed by hand, are used as a working principle that may refer to the sewing machine with similar hand and eye coordination (Figure 9).



Figure 8. Example of different type of sewing machines and Iron



Figure 9. Similar hand-eye coordination of iron and sewing machine

In addition, body dialogue diagrams obtained from the dishwasher, washing machine, and coffee machine can be given as another example (Figure 10). At this point, the study provides the opportunity to rethink the products through the diagrams obtained according to the dialogue forms of the products with the body. If the product whose dialogue diagrams are given with the body is redesigned in such a way that these diagram data remain constant, how new is the product obtained in terms of body experience? The main question here is the change of form when the body dialogue remains the same in the design product.



Figure 10. Dialogue diagrams of dishwasher, coffee machine and washing machine

Is regeneration familiar in terms of body experience? When this situation is considered in terms of the dialogue to be established between a brand-new product and the body, the size of the newly designed product. This raises the question of whether dialogue can be considered an element of adaptation. If products that create a familiar and

experienced body dialogue, in a way like buffer zones, can increase body adaptation to new products, this is the area where a dialog-oriented design perspective can be theoretically discussed.

Looking at the discipline of design from this perspective and discussing products from it also offers the opportunity to ask questions about the future of design objects and design practices. Although the products that offer body experience do not suggest similar usage practices, they are similar in terms of the dialogue they establish with the user body. Industrial products as design objects have the potential to change the dialogue they establish with the body. If the product has the potential to offer new usage possibilities by directing the body that experiences the product, the analysis and interpretation of the body-object dialogue will contribute to this potential.

8. Conclusion

If the dialogue between the objects asked by the research and the body points to our practice of using objects, the question of whether grouping these practices into four main groups would allow us to change the way we use objects was discussed in the conclusion part of the study. The outputs of the research are open to interpretation and discussion through three different focuses. Data that can be discussed were obtained from the focus on industrial products, user body, and design discipline. Industrial design is a discipline that allows objects within these groups to move between groups related to different histories, periods, and technologies. With this view, the designer is also open to interpreting the body buffer zone as the person who can enable the circulation of the object between the groups that are determined and expressed.

In line with technology, production possibilities, usage practices, user needs and market demands, the designer will be able to develop and change the dialogue forms of objects with the body or can be updated in line with their expectations. Ever-developing technology and the discipline of industrial design can make it possible for products with different working principles and different uses that meet the same need to circulate among these groups. This possibility is the potential of assigning new body experiences to objects belonging to different purposes and different usage practices through design. Capturing the body experience of the products as a dialogue and presenting it for discussion with data, also opens the possibility of reconstructing this experience to interpretation. In addition, it is possible to change the diagram axes for design practice. It is possible to reduce or increase the effect of the axes of product experience on body parts through design. The fact that the body experience is transferred from implicit data to clear and easy-to-read data offers the designer the opportunity to capture and reconstruct the body experience of the object. The usability of diagrams as body experience charts and guidelines also points to the possibility of gaining new perspectives on the design practice and the designer of these roadmap / guidelines.

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