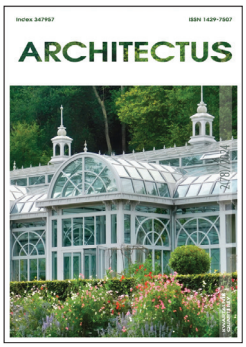

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Haptics and the ideas of brutalist architecture

Abstract

The subject of the research presented in the article is haptics in brutalist architecture. The authors used the concept of extended haptics, including tactile and non-tactile experiences. The research aimed to identify the elements of the haptic aesthetics of brutalism. The authors used a heuristic method. The research material was initially analysed according to the following criteria: properties, spatial relations, material features, surface finish, and embodied experiences. The full research procedure included two stages – the first concerned the theoretical creative assumptions and the second covered the design results. This article describes the research process and the results of the first phase, for which the following observation criteria were used: negation, inspirations, experiments, and ideas. The result of the analyses is a characterization of the pro-haptic ideas of brutalism. The authors distinguished features based on tactile aspects but also on the cooperation of touch with other senses.

Key words: brutalist architecture, haptics, touch in architecture, multi-sensory design

Introduction

Architecture as a design discipline is included in the so-called visual arts, with the reservation that its products, like sculptures or scenography, are three-dimensional spatial shapes. The physicality, tangibility and spatiality of architectural objects, which distinguish these works from flat forms, seem to have no impact on the way of perceiving architecture as a series of two-dimensional images, which has been shaped over the centuries. However, as Juhani Pallasmaa points out, architecture that engages the full human sensory apparatus is most fully constituted in the sense of touch, in which an architectural work not only acquires the dimension of physical presence, materiality and three-dimensionality but also moves the recipient most strongly, activating his holistic structures: corporeality, psyche and spirit [1].

In this paper, the authors' considerations focus on a specific 20th-century architectural trend, known in the history and theory of architecture as brutalism, which seems particularly rich in haptic elements. It is revealed both in expressive, dynamic architectural forms and in small details that encourage exploration by touch (Fig. 1). Brutalist architecture spread all over the world after World War II. It reached the culminating point in the 1960s to fade away in the late 1970s. The genesis of brutalism is a very complex problem and dates back to the interwar period, especially to the turn in Le Corbusier's work. The theoretical assumptions of the trend were defined in the British architectural program called New Brutalism. This doctrine was created by architects Alison and Peter Smithsons and critic and historian Reyner Banham in the 1950s [2]. Precursors of brutalism preferred raw aesthetic and emphasised ethical values of architecture, such as sincerity and truth. In the later stage of its development, the trend underwent changes, resulting largely from the individualism of architects, which reduced its coherence.

In the architectural discourse on brutalism, there is no reflection on the identity and coherence of the haptic language of this architecture. This gap concerns both the issues of intentional pro-haptic design and the presence of haptic components in completed brutalist works. The authors decided to subject both of these aspects to scientific analysis. Moreover, in their research, they do not focus

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Fig. 1. Austin Arts Center in Hartford – texture of corrugated concrete as a tactile element of brutalist buildings, 1963–1964 (photo by W. Niebrzydowski)

Il. 1. Austin Arts Center w Hartford – faktura żłobkowanego betonu jako taktylny element budynków brutalistycznych, 1963–1964 (fot. W. Niebrzydowski)

only on the aspect of physical touch. They use the broadly understood concept of haptics – extended haptics, which includes both direct tactile experiences as well as tactile experiences mediated by other senses.

The main goal of our research is to discover, name and scientifically organize the elements of haptic aesthetics present in the theory of brutalist architecture. A further, long-term goal of the authors is to change the current, ocularcentric research perspective in architecture in favour of a perspective related to extended haptics.

State of research

As Pallasmaa notes, the topic of haptics in architecture is still poorly understood and hardly enters the scientific discourse. This fact may be surprising in the context of the significant advancement of the sense of touch that has taken place in philosophy. It is worth recalling the positions of 19th and 20th century "philosophers of touch", such as Edmund Husserl [3], José Ortega y Gasset [4], Emmanuel Lévinas [5], Maurice Merleau-Ponty [6]. Interestingly, the consequences of phenomenological philosophical trends can be found in the architectural work of designers such as Steven Holl, Glenn Murcutt, Peter Zumthor, Kengo Kuma, whose works exude extraordinary haptic sensitivity, even sensuality of architectural matter. Thus, a haptic approach is present in contemporary architecture, although it does not find adequate support in the theoretical framework of architecture. Pallasmaa's research indicates that one of the historical determinants that sealed ocularcentrism as a paradigm of architecture was the development of perspective [7]. The result of this discovery was the development of a "painting" approach to architecture, based on perceiving solids as linear compositions. The works of Heinrich Wölfflin attempted to question the painting nature as a principle of architecture, pointing to the existence of "tangible" architecture, related to the sense of touch [8, p. 19]. A clear attempt to return to sensory science, including haptics, was also made by László Moholy-Nagy (space in relation to the body and senses) [9], as well as other representatives of the Bauhaus, such as Walter Gropius, who glorified manual work and tactile learning of the properties of building materials. This approach, however, failed to convince the scientific community, committed to the paradigm that when perceiving architecture we mainly use the sense of sight. This conflict is well illustrated by the words of Jadwiga Sławińska, who in the 1960s stated: *Every architecture is a material reality but at the same time none is, as we do not use touch to perceive it. It can be said that architecture is purely optical because it is perceived through sight* [10, p. 32].

The status of architecture as a visual art was also consolidated by historical research linking art with psychology. The results of this marriage were progressive theories explaining the principles of visual perception [11], [12]. In these works, attention is again drawn to the "painting" optics, expressed in the tendency to write about solids as flat figures. Interestingly, this approach dominates even in Rudolf Arnheim's architectural research [13], although at the same time many haptic formulations appear there, e.g., the density of an object, an observer experiencing compression and extension, vertical direction as overcoming the force of gravity, pressure, intrusion, expansion, flow. Pioneering works in the field of aesthetics [14], [15] are also based on similar visual foundations, almost completely omitting the sense of touch. Even if haptic elements appear in these works, there is no clear indication of touch as a sense responsible for aesthetic experiences.

The authors of this article note the emerging interest in the topic of haptics among contemporary researchers. These studies, which are largely the result of Pallasmaa's pro-haptic manifestos, are usually aimed at "recovering" the sense of touch in academic discussions about art [16] and architecture [17]. Among them, it is worth mentioning the research by Marcin Charciarek, who very accurately captures haptic phenomena ("liquid contour", "eye restlessness", "structural instability", "drilling into matter") [18, pp. 18, 35, 76, 157] and presenting the importance of the so-called "material imagination" [18, p. 115]. These studies, few in number and developing outside the mainstream of aesthetics, do not lead to a change in existing paradigms. Polish interdisciplinary projects "In the Space of Touch" and "In the Culture of Touch" were an attempt to combine scientific voices into a broader discourse [19]. Their effects are philosophical, social and linguistic studies related to the culture-forming role and behavioural significance of touch.

Taking into account the above facts, it should be stated that haptic issues are underestimated in the professional literature on architectural theory. This is evidenced by the deficit of research and the scarcity of scientific publications on these issues. Modern methods and analytical tools used in the field of architectural aesthetics also clearly ennoble vision, focusing on the active, creative role of this sense. Another perceived problem is the poorly developed scientific terminology related to haptic perception.

Methods

In their research, the authors used a heuristic method including new observation techniques. The research field – brutalist architecture – has been re-analysed using a different perspective related to haptic perception. Therefore, elements that had previously been treated marginally or had been left aside from previous research (which resulted from the strongly ocularcentric perspective) were subjected to focused study. The authors intended to capture new, previously undescribed facts about the haptic nature of brutalist architecture and to examine the mechanisms of its impact on the recipient.

The conducted research used the artistic and historical scientific perspective proposed by Marta Smolińska, introducing the concept of extended haptics [20]. Haptics understood in this way include, on the one hand, tactile experiences – real, actual, "fulfilled" tactile acts, and on the other hand – other, non-tactile experiences that engage the sense of touch but do not take place physically and directly (Fig. 2). As Smolińska explains, works of art that through other sensory modalities, such as sight, hearing, kinaesthetic system, taste, and smell, are also haptic: […] *probe the recipient's sense of touch, without necessarily requiring fulfilment in physical contact* [16, pp. 66, 67].

Haptic experiences are not only the result of the direct work of the senses, but also the result of the joint work of the overall external and internal human structures [21]. Presenting a wide spectrum of haptic experiences in architecture, the authors points out:

– effects achievable in bodily and sensory contact with space (observations, sensations, physical effects of touch),
– effects related to basic spatial orientation,
– effects of mental processes (concepts, symbols, conceptual structures, context, etc.),
– haptic memory effects (pre-perception, haptic memories),
– effects of haptic imagination (reproductive imagination, productive imagination, processing imagination),
– psychic "touches" (emotions, needs, fears, traumas, etc.),
– spiritual "touches" (idea, personal values, religious values, moral values, etc.).

The scientific approaches mentioned above became the basis for the authors' research in the field of brutalist architecture. The authors used a research procedure involving two-pronged analyses of the research material. This division reflects the relationship between creative intentions and the final aesthetic expression of the work [22]. Hence, the authors decided to observe brutalist architecture divided into theoretical creative assumptions (stage one of research) and their practical results (stage two of research). The analyses conducted in the first stage were subordinated to the discovery of haptic threads in the crystallizing ideas of brutalism, while the analyses conducted in the second stage were aimed at defining the haptic features that are carriers of the aesthetic values of the mature trend.

Both stages of the study consisted first of all in the targeted filtration of research material according to established selection criteria. The authors looked for these criteria among aspects related to architectural aesthetics and achievable through touch (in cooperation with other senses).

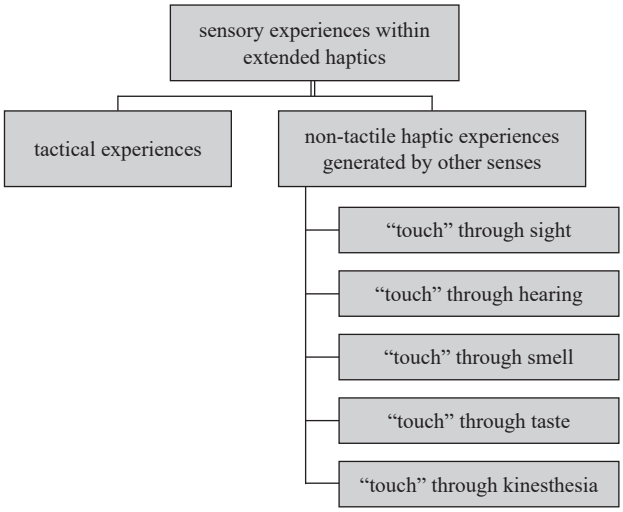

Fig. 2. Types of sensory impressions within extended haptics (elaborated by A. Duniewicz)

Il. 2. Rodzaje wrażeń zmysłowych w aspekcie haptyczności poszerzonej (oprac. A. Duniewicz)

From all the experiences defining haptics in architecture, the research team established the following selection criteria:

– spatial properties,
– spatial relations,
– material features,
– surface finishing,
– embodied spatial experiences.

In the next step, the research material was analysed according to established observation criteria (described later in the article). Based on the established criteria, haptic features specific to the theory of brutalist architecture were identified and described.

In the first part of the study, the authors relied primarily on literature sources, including statements by the precursors of brutalism, as well as studies by architecture critics commenting on the new trend on an ongoing basis or from a time perspective. In the second stage, the authors analysed a wide group of brutalist buildings erected in the years 1950–1980.

This article describes only the first phase of the research. The second phase will be presented in the next article.

Haptic threads in the theory of brutalism

The analyses carried out in the first phase of the research included the study of haptic threads, which are the theoretical foundation of brutalist architecture. The authors stated that, similarly to other, naturally evolving trends in architecture, the formation of brutalism was in fact a multistage process, preceded by such phenomena as contesting existing views, searching for new sources of inspiration, and experimenting with new means of expression. On this basis, the authors formulated the following observation

criteria related to the search for phenomena of haptic provenance:

– negation of the previous haptic aesthetics,
– haptic inspirations,
– haptic experiments,
– haptic ideas.

Negation of the anti-haptic nature of modernist architecture

Brutalism, although by some researchers is included in the late phase of modernism [23], in many points is a denial of aesthetic values characteristic of the International Style. Precursors and then representatives of the brutalist trend often contested modernist ideas, questioning their validity and consistency with the new needs and the image of the modern world. They pointed to the utopian nature of modernist ideas, as well as the divergence between theory and practice. As the author's research has shown, the anti-haptic nature of modernism was also the subject of criticism. The most important features of modernism negated by brutalist architects included abstract forms and the devaluation of the meaning of the material, alienation and universality of forms, timelessness and machine perfection, dematerialization and the obsession of lightness.

Modernist buildings exhibited simplified, rectangular shapes, as well as smooth white plaster and glass. Real building materials and construction elements were generally hidden behind them. This problem was noticed in the interwar period by Auguste Perret, Frank Lloyd Wright, and Hugo Häring, whose works are perceived as anticipating the brutalist trend. Brutalist architects shared the opinions of the precursors of the trend and dissociated themselves from the aesthetics of smooth, monochromatic surfaces devoid of tactile attributes, where the plane remains neutral and mute, reduced only to the role of filling the contour.

Fascination with the machine and its products led the modernists to the apotheosis of perfection. Its emanation were flawless, smooth surfaces of buildings. The buildings were to be eternal, inviolable symbols of the new era. However, in this way, they became alien to ordinary people for whom ageing and passing are immanent components of life and reality. Brutalist architects saw this aspect clearly and gave their trend an existential character. Signs of ageing and patination of buildings and their elements were of interest to English architects and artists associated with New Brutalism.

Fig. 3. Sachio Otani, Kyoto International Conference Center, 1963–1966 (photo by S. Smith)

Il. 3. Sachio Otani, Międzynarodowe Centrum Konferencyjne w Kioto, 1963–1966 (fot. S. Smith)

A characteristic solution in modernism was the use of intangible solids and large glazing that made the building feel weightless. The transparency of the buildings, almost devoid of load-bearing elements allowing the free flow of air and sunlight was a manifestation of new construction and material possibilities [10, p. 51]. The legitimacy of these anti-haptic experiments of modernism was undermined by brutalist architects who saw the need to return to such values as physicality, weight and materiality. These features became so dominant over time that Banham stated that brutalism was "the architecture of massive plasticity and coarse surfaces" [24, p. 47].

Haptic inspiration of brutalist architects

The inspiration of the pioneers of the brutalist trend came from very different sources. However, the two major factors should be pointed out when it comes to the development of the haptic aspect of the new trend. The first was vernacular architecture, which naturally grew out of the most fundamental values in architecture. Traditional buildings were also the most connected to people's daily lives and interacted directly with all human senses. The second factor was avant-garde post-war art, seeking new means of expression in painting, photography and sculpture. Particularly important for contacts between architects and artists was the Independent Group formed in London in 1952 [25].

An example of vernacular architecture are the French fishermen's huts, with which Le Corbusier became fascinated in the interwar years [26]. Residents identify with the huts and perceive them with all their senses (the coarseness of natural materials, interiors permeated with the smell of fish, the sound of waves coming through the window, and the wind felt when repairing nets in the arcade of the house). Le Corbusier wanted architecture consistent with reality, raw, authentic and appealing to the feelings of users. A similar fascination with vernacular architecture can be seen in other brutalist architects, who were often inspired by the traditional buildings of the regions they came from. A clear example is Japanese brutalism and the works of such architects as Kenzo Tange or Sachio Otani (Fig. 3) [27].

Paradoxically, flat forms of art became a valuable source of inspiration for the pro-haptic ideas of the brutalists. Researchers of the Smithsons' work do not accidentally note the habit of creating scrapbooks by architects [28, p. 64]. The unobvious juxtapositions of flat images found their way into later compositions of solids and textures. The architects were also fascinated by the possibilities of photography, as evidenced by their collaboration with photographer Nigel Henderson. The result of this cooperation was the exhibition "Parallel of Life and Art"

(with a telling subtitle "New Visual Order"). The composition of the posters forced the visitors to move from place to place. The kinaesthetic sense of the observer, activated in this way, supported the perception and understanding of the exhibition.

The Smithsons became interested in haptic solutions, especially the textural aspect while collaborating with sculptor Eduardo Paolozzi. His works moved the viewer with their heaviness, crudeness and rough surfaces, which, when approached, turned out to be composed of various smaller objects. To make his sculptures, Paolozzi used some found objects of everyday use such as gears, cutlery, electric switches, fragments of toys and other objects of mass production. Cast in bronze (rarely in concrete) they provoked touching and examining the complex structure of their surface. Jean Dubuffet's paintings also drew the Smithsons' attention to the textural aspect of art. He preferred spontaneously applying a thick layer of paint (or other materials, e.g. asphalt, mud) and smearing it to obtain an uneven, expressive texture. He believed that in this way the artist is able […] *to imprint the most immediate traces that he may have of his thoughts and rhythms and impulses coursing through his arteries and running along the length of his nerve endings* [29, p. 35].

Haptic experiments

Precursors of brutalist architecture checked their inspirations and emerging ideas through specific architectural and artistic experiments. These works became milestones and set directions for further development of the trend.

Le Corbusier's turn towards sincere and true architecture resulted in massive, heavy houses made of stone, wood and brick, i.e., Maison de Mme de Mandrot in Le Pradet (1931), the holiday house Le Sextant in Les Mathes (1935), and Petite Maison de Week-end in Boulogne-sur-Seine (1935). These buildings reflected the architect's belief in the need to reject abstraction and the absolute domination of sight. They had rough textures showing how the building was erected by local craftsmen. Such materiality, immediacy, and contact with ordinary materials became the attributes of brutalist architecture in the post-war period.

The Smithsons, together with Henderson and Paolozzi, moving from art to architecture, created a semi-architectural work – the installation "Patio and Pavilion" (1956) for the London exhibition "This is Tomorrow". The wooden shed they designed, surrounded by a sandy yard, was a reference to the archetype of the human habitat as a space that evokes the greatest emotions of users and is closest to their senses. The Smithsons emphasized that this type of architectural roots will also be important in the future [30]. This work shows the Smithsons' belief in the great importance of sincerity of material and construction. The shed's primitively shaped structure was completely exposed and the boards were left unfinished. The authors wrote about their installation: *We were concerned with the seeing of materials for what they were: the woodiness of wood, the sandiness of sand. With this came a distaste of the simulated* (after: [31, p. 201]). The interest in vernacular architecture visible in "Patio and Pavilion" but also in the publications and works of other brutalist architects shows that they noticed the role of senses other than the sense of sight.

Haptic elements in the doctrine of brutalism

In the doctrine of New Brutalism created by the Smithsons, four basic ideas can be distinguished, namely the idea of Sincerity, the idea of As Found, the idea of Image, and the idea of Linking Life and Architecture [32]. During the development of the brutalist trend, these ideas were largely continued and haptic aspects, undoubtedly present in the doctrine of New Brutalism, were even strengthened.

The idea of Sincerity was derived from such values as truth and directness. It concerned the honest display of building materials, load-bearing structure, and technical elements. According to the creators of New Brutalism, each material was supposed to show only what it is. Materials were to be used as found, i.e., without finishing and aestheticization, just like found objects in the works of avant-garde artists. The structure was to be not only visible in the form of the building but also to determine its character. The architects wanted the form of the building to show how it was constructed and with what materials. In addition, they wanted to show how the building works and therefore they exhibited installations and technical elements (Fig. 4). In the later phase of brutalist architecture, however, there was a departure from certain assumptions of the idea of Sincerity, including the surface treatment of materials (especially concrete), as well as the sophisticated shaping of structural and technical elements. In fact, these changes increased the haptic expression of the buildings. For example, mechanical treatment of concrete surfaces (such as hammering) increased their roughness and exposed the aggregate used to make them. On the other hand, aestheticizing the shapes

Fig. 4. Ewa Dziekońska and Marek Dziekoński, Museum of "Panorama Racławicka" in Wrocław – exposed air exhaust chimney reflecting the principle of emphasizing technical elements, 1966–1970 (photo by W. Niebrzydowski)

Il. 4. Ewa Dziekońska i Marek Dziekoński, Muzeum "Panoramy Racławickiej" we Wrocławiu – wyeksponowana czerpnia wentylacyjna jako odzwierciedlenie zasady podkreślania elementów technicznych, 1966–1970 (fot. W. Niebrzydowski)

of structural elements was often related to the reflection of the flow of forces in the structure, which additionally stimulated the kinaesthetic sense of the observer.

The idea of Sincerity (combined with a fascination with vernacular architecture) also influenced the glorification of craftsmanship. It was supposed to humanize brutalist architecture and was a departure from the modernist aesthetics of the machine. Craft methods allowed to achieve individual effects that increased the artistic value of the building. The principle of showing the method of erection in the façades of the building was often used. Architectural honesty also required leaving uncamouflaged defects and inaccuracies on surfaces, which led to "imperfectionism" (Fig. 5). Some architects (including Le Corbusier and Vilanova Artigas) also highly valued the effects of the ageing of materials, i.e., the patina covering them. *One of the charms of exposed concrete (and another excellent reason why it should never be rendered or painted) is that it tends to improve with age. As the years pass, the Surface of a structure in visual concrete acquires a living patina which gives it added liveliness and expression* [33, p. 64].

Fig. 5. Marcel Breuer, Becton Engineering and Applied Sciences Center in New Haven – defects of concrete texture as an example of preconceived imperfectionism, 1969–1970 (photo by W. Niebrzydowski)

Il. 5. Marcel Breuer, Becton Engineering and Applied Sciences Center w New Haven – usterki betonowej faktury jako przykład założonego imperfekcjonizmu, 1969–1970 (fot. W. Niebrzydowski)

Fig. 6. Norman Engleback, Hayward Gallery in London – extremely complex and extraordinary architectural form, 1964–1968 (photo by W. Niebrzydowski)

Il. 6. Norman Engleback, Hayward Gallery w Londynie – skrajnie złożona i wyrafinowana forma architektoniczna, 1964–1968 (fot. W. Niebrzydowski)

The basis of the As Found idea was the objective reception of reality. John Voelcker emphasized the specific role of the architect, who becomes […] *a kind of resonator that builds in response to a complicated poly-incidence of conditions* [34, p. 184]. He rejects all preconceived solutions and always starts his project from scratch, analysing the design situation in all its complexity. According to these assumptions, architects created […] *a unique solution for a unique situation* [2, p. 72]. This approach to architectural design distinguished brutalism from modernism, which preferred universal solutions and the unification of forms.

The idea of As Found, therefore, went beyond the material and construction aspect. It ordered architects to see all things and phenomena as they really are. Every, even the most common object or place had a meaning. In the creative process of an architect, ordinary, trivial things could be used, which, reinterpreted by the designer, became valuable and important. These principles led the brutalists to the apotheosis of the ordinariness. This was expressed, e.g., in the use of prosaic, readily available materials, such as concrete, brick, wood, stone, and sheet metal. In the initial phase of brutalism, it also influenced the simplicity of forms. However, in this aspect, changes took place very quickly and with the ongoing development of the trend, the forms of buildings became more and more complex and even extraordinary (Fig. 6).

The idea of As Found contributed to noticing various aspects of the context, and thanks to it, references to the local climate, culture, way of life and architectural tradition appeared in brutalism. The architects used, albeit in a processed way, solutions familiar to users, facilitating the understanding of complex brutalist buildings. The spectrum of these solutions, the materials used, the designed forms and elements became much wider than in modernism, which influenced the stimulation of various senses. Thanks to this diversity, the sense of sight also came into stronger cooperation with the senses of touch and kinaesthesia, because the process of perception required the use of peripheral vision. Pallasmaa argues that the true essence of life experience is formed by unconscious haptic imagery and unfocused peripheral vision [1, p. 13]. This is because focused vision confronts us with the world, while peripheral vision immerses us in its body.

The idea of Image defined the role of the architectural form and referred to the problem of human perception of the building. It concerned all kinds of human mental reactions in contact with architecture, including, among others feelings, associations, and stimulation to specific behaviours and actions. According to Banham, "memorability" was one of the most important features of Brutalist architecture [2, p. 359]. The image created in the mind of the recipient did not have to satisfy or give him pleasure but it should move him. For the brutalists, image was not

an aesthetic category and they did not use concepts such as beauty or ugliness.

Brutalist architects rejected the abstract forms of interwar modernism, as they recognized that only objects characterized by reality have a distinct image. They doubted that almost intangible, translucent buildings with enigmatic forms would be remembered by their users. A strong form, with clear contours, silhouette and mass, affects a person much more intensely. Therefore, as Christian Norberg-Schulz puts it, it was important to give the building a holistic, physical presence [35, p. 211]. Heavy and dynamic brutalist buildings appealed to many senses, including the kinaesthetic sense of the users (Fig. 7).

The idea of Linking Life and Architecture points to the humanistic foundations of the brutalist trend. The architects recognized the importance of the relationship between man and space, as well as the need to create favourable conditions for establishing social contacts. They emphasized the importance of basic spatial relationships – proximity, continuity and limitation, as well as the basic elements of space – place, direction and zone. They treated buildings not as static objects but as systems of spatial connections that can be recognized in movement. Therefore, the circulation of people became a determinant of projects, and the articulation of communication elements confirmed it (Fig. 8). Many buildings were integrated with

Fig. 7. Alison Smithson and Peter Smithson, Robin Hood Gardens Residential Estate in London – heavy concrete forms, 1969–1972 (photo by W. Niebrzydowski)

Il. 7. Alison Smithson i Peter Smithson, zespół mieszkaniowy Robin Hood Gardens w Londynie – ciężkie betonowe formy, 1969–1972 (fot. W. Niebrzydowski)

Fig. 8. Denys Lasdun, Institute of Education – University of London – articulation of communication elements, 1975–1979 (photo by W. Niebrzydowski)

Il. 8. Denys Lasdun, Institute of Education – University of London – artykulacja elementów komunikacyjnych, 1975–1979 (fot. W. Niebrzydowski)

the neighbourhood in terms of communication, and the strongly accented communication spaces embodied the links between the buildings and the urban environment. In order to understand the brutalist building, the user had to move around, carefully observe and look for spatial and compositional relationships between its parts. And these relationships were often based on innovative, non-geometric ordering systems, for example, on the principle of articulating functions in the form of a building. To provoke the observer to move, the architects increased his emotions and curiosity by introducing surprising spatial solutions, complicated and disorienting communication systems, scale disturbances, and even solutions that evoke a sense of danger.

Conclusions

The analyses conducted by the authors allowed them to discover strong haptic elements present in the theoretical foundations of brutalism.

Although in the statements of brutalist architects, there are no literal declarations or calls to use touch as an architectural medium, it has been found that pro-haptic threads appear in fact at all stages leading to the crystallization of a new style. The following should be mentioned:

1) contesting the anti-haptic aesthetics of modernism,

2) pro-haptic inspirations,

3) haptic experiments bringing out specific spatial and material values,

4) developing guidelines and doctrines defining the haptic values of brutalism.

Re. 1.

Taking into account the polemic with the modernist approach to haptics, we can point to the critical attitude of brutalist architects towards the following features of modernism:

– devaluation of the meaning of the material,

– abstractness of forms and their alienation,

– striving for timeless perfection,

– striving for dematerialization and lightness.

Re. 2.

When looking for inspiration for their ideas, brutalist architects used the following pro-haptic motifs:

– vernacular architecture – authentic, raw, real architecture "fused" with man and related to his bodily needs,

– movement and kinaesthesia as a way of viewing a work of art, constructing a holistic image from many interconnected fragments,

– experiencing the structure and texture of the work with the human body, discovering the rhythm of the artist's movements, traces of his tools and hand, noticing the haptic beauty of everyday objects.

Re. 3.

In terms of experiments, haptic threads can be found in the following phenomena:

– a return to the massiveness of buildings, the weight of materials, the use of these features as attributes of "reality",

– emphasizing roughness, imperfections, simple technologies,

– reaching for the habitat archetype as the architecture closest to humans,

– bringing out the true nature of the material ("the woodiness of wood, the sandiness of sand") and rejection of imitations.

Re. 4.

Brutalist ideas were based on values strongly related to haptics:

– clarity and integrity of form – glorification of the building process, a special focus on the sense of materiality, plasticity and gravity,

– sincerity – truth and directness of the material, structure and technical elements,

– bodily experience of materials as they are, the apotheosis of their ordinariness, commonness without the need for aestheticization,

– the relationship between architecture and life, symbolically exemplified by movement (understood as the dynamics of solids but also the movement of users).

The results of the authors' research lead to the conclusion that the foundations of brutalist haptic aesthetics developed to a large extent through opposition to the anti-haptic language of modernism. This is indicated by a number of counter-values promoted by brutalists, such as:

– materiality and heaviness instead of dematerialization and lightness,

– the sculptural nature of the forms and the spatiality of the façades instead of the painterly nature of the forms and the flatness of the façades,

– surface roughness instead of surface smoothness,

– sincerity and truth instead of artificial perfection,

– transience instead of timelessness,

– emphasizing the different properties of materials instead of unifying the character of the materials,

– the importance of a place and diversity (uniqueness) instead of alienation and universality,

– active, bodily experience of space by man instead of passive observation.

The author's studies of the theoretical assumptions of brutalism also revealed threads drawn from earlier historical epochs. These include, among others:

– cult of craftsmanship and ordinariness (propagated, among others, by the Arts and Crafts movement),

– dynamism of forms (characteristic, among others, of baroque),

– expression of static forces in the structure of the building (also visible in expressionism, futurism and constructivism),

– aesthetics of the ruin (also present in the Romantic era).

Summary

As research has shown, the aesthetics of the new trend was shaped in opposition to the anti-haptic nature of the International Style. Haptic threads were also noticed, being a creative transposition or continuation of features taken from other eras and historical styles, such as baroque, romanticism, expressionism, futurism, and constructivism. Taking into account the scale and intensity of haptic phenomena discovered in the study, it should be said that brutalism in architecture is an extremely haptic trend. Its aesthetics was based on a strong, encoded by the architects

suggestion of experiencing with the body, tactile sensations and moving the haptic imagination. This imagination is inseparably intertwined with movement (the movement of the observer and the "movement" of solids) as well as with metaphorically understood time (the viewer as a participant in the construction process and a witness to the life and ageing of the building).

The conducted research complements and enriches the hitherto dominant research approach, referring only to visual aesthetics. The result of this scientific work is not so much the discovery of completely new factors shaping the aesthetics of brutalism but proving the haptic provenance of phenomena considered by many researchers to be visual. Clarification of these facts seems to restore the proper hierarchy and the role of the senses present in the experience of architecture. It also serves a deeper understanding of the mechanisms of human cognition.

In the authors' opinion, further research is necessary to organize the areas of architectural theory closely related to haptic aesthetics. Using the procedure proposed by the research team, analogous studies of other architectural trends can be performed. This method also seems appropriate for comparative analyses, differentiating particular trends.

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Streszczenie

Haptyczność a idee architektury brutalistycznej

Przedmiotem badań przedstawionych w artykule są wątki haptyczne w architekturze brutalistycznej. Autorzy posłużyli się koncepcją haptyczności poszerzonej, obejmującą doświadczenia taktylne oraz nietaktylne. Celem badań była identyfikacja elementów haptycznej estetyki brutalizmu. Autorzy zastosowali metodę heurystyczną. Materiał badawczy poddano wstępnej analizie według następujących kryteriów: właściwości, relacji przestrzennych, cech materiału, wykończenia powierzchni, wrażeń ucieleśnionych. Pełna procedura obejmowała dwa etapy – pierwszy dotyczył teoretycznych założeń twórczych, drugi obejmował rezultaty projektowe. W artykule opisano proces badawczy i wyniki pierwszej fazy, w której zastosowano następujące kryteria obserwacji: negację, inspiracje, eksperymenty, idee. Wynikiem analiz jest charakterystyka prohaptycznych idei brutalizmu. Autorzy wyróżnili cechy oparte na taktylności, ale także na współpracy dotyku z innymi zmysłami.

Słowa kluczowe: architektura brutalistyczna, haptyczność, dotyk w architekturze, projektowanie multisensoryczne