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## IMPERFECTION OF ARCHITECTURE VS TECHNOLOGY

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## NIEDOSKONAŁOŚĆ ARCHITEKTURY A TECHNIKA

### Abstract

Architecture cannot change and improve without technological change. Today's developers fortunately have access to building materials that are developing like never before and increasingly better tools for designing. Also, the ever-changing fashions associated with daily life are influencing architecture to change faster and faster. Audiences are getting bored faster and faster, and all pop culture creators and architects must keep up. Departing from the canons is probably a good way towards novelty. It seems that technology can become a new art. However, only the next few years will tell us whether this will happen. For now, we have to wait and see what comes cheap and whether this is another blind alley of creators.

*Keywords: architecture, decomposition, novelty, technology, change*

### Streszczenie

Architektura nie może zmieniać się i doskonalić bez zmian technologicznych. Współcześni twórcy na szczęście mają dostęp do rozwijających się jak nigdy wcześniej materiałów budowlanych i coraz lepszych narzędzi do projektowania. Także zmieniające się coraz szybciej mody związane z codziennym życiem wpływają na zwiększające się tempo zmian architektury. Odbiorcy nudzą się coraz szybciej i muszą nadążać za tym wszyscy twórcy popkultury oraz architekci. Odejście od kanonów jest chyba dobrą drogą ku nowości. Wydaje się, że technika może stać się nową sztuką. Jednak dopiero kolejne lata pokażą nam, czy tak będzie. Na razie musimy czekać na to, co się stanie i czy nie jest to kolejna ślepa droga twórców.

*Słowa kluczowe: architektura, dekompozycja, nowość, technologia, zmiany*

Architecture is inherently imperfect. However, this doesn't imply it is flawed; rather, it means there's always potential for refinement. The creator usually realizes this after the work has been completed, even though he may have presented himself as someone who could foresee everything. However, architects always strive for perfection, or at least try to convince investors of it. Whether this is true or merely a claim is uncertain, but for the sake of our discussion, we can take it as a given. Such a pursuit has always been hindered by the imperfections

of building materials, and consequently, the imperfections of the structures themselves. After all, the first great monuments were typically built from stone, and later from brick – materials once considered perfect, which, however, would limit not only contemporary creators, depriving them of the possibility of striving for uniqueness and forcing them to abandon the tradition of building. Architects often resist traditional canons, perceiving them as obstacles to artistic development. Yet, for centuries, these very norms defined artistic value. Vitruvius initiated the description of strict orders that were meant to help in creating beautiful forms. For centuries, he compelled creators to imitate one another, justifying it with the following:

The composition of temples depends on symmetry, the principles of which architects should strictly observe. Symmetry arises from proportion, which in Greek is called *analogia*. Proportion is the application of a fixed module in any work, both to the individual parts of the building and to its entirety, from which the law of symmetry derives. No building can have a proper arrangement without symmetry and good proportions, which should be based strictly on the proportions of a well-formed human body.<sup>1</sup>

Even a few hundred years after Vitruvius, Leonardo da Vinci sought the proportions of the perfect human body, trying to find in them the path to perfection. Despite his quest to mathematically define beauty through established canons, Leonardo's creative genius transcended these constraints, resulting in masterpieces that defy simple description. Jan Białostocki wrote:

In the person of Leonardo da Vinci, the organic connection between art and technology, dating back to antiquity, found its most splendid realization. The understanding of nature led, on the one hand, to its imitation, and on the other, to its transformation. Understanding created nature allowed it to be recreated in a painting, while understanding creative nature allowed for imitating the way it functions in mechanisms that so fascinated Leonardo. These mechanisms, which were also the result of reproducing nature's fundamental laws, were nevertheless intended to transform it.<sup>2</sup>

The technology drawn so beautifully by Leonardo in the form of flying machines or war machines struggled to penetrate architecture and art. Yet, the Eiffel Tower, called the "Iron Lady" or the Statue of Liberty are, after all, works that showcase the technical aspect of art and its possibilities.

Material limitations once imposed by traditional construction methods are now a distant memory. Computer technology, assisting with static calculations, visualizations and drafting, is propelling architectural thought into uncharted yet promising territory. In their numerous manifestos, modernists advocated for a departure from tradition and a search for new forms. However, these new forms required new materials and a different approach to design. We can therefore observe the desire to find a new material, not yet named, which would not restrict architects in their pursuit of innovation. Mies van der Rohe claimed: "We do not know problems of form, only problems of construction."<sup>3</sup> This may suggest the need for new methods of building.

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<sup>1</sup> Vitruvius, *O architekturze ksiąg dziesięć*, PWN, Warszawa 1956, p. 43.

<sup>2</sup> J. Białostocki, *Sztuka – Natura – Technika* [in:] *Sztuka a technika*. PWN, Warszawa 1991, p. 11.

<sup>3</sup> M. van der Rohe, *Blok*, March 1924.

Although now considered familiar, Deconstructivism once sought radical uniqueness. However, the lack of technical capabilities meant that it first appeared as beautiful images, and the architects were able to construct such forms only after some time. The beginning of this modern expressionism was marked by Zaha Hadid's victory in the architectural competition for the design of the Peak Club in Hong Kong in 1982. The concept of the architecture was captured in the images of the competition entry, which seem to break apart into fragments of plans. The innovative vision was based on an exploding isometric presentation. The design was so ground-breaking that it was impossible to create technical drawings, making its realization unattainable. The present era forgets the ideas of the modernists, and new creators are emerging. The group of creators, Coop Himmelb(l)au, seeks to challenge the traditions of figurative architecture in an uncompromising way. Once again, we can quote Białostocki here: "It is easier to adapt materials to old forms than to outline new programs suited to the social needs of a society suddenly better equipped in terms of materials."<sup>4</sup> Coop Himmelb(l)au are creators of unique architecture. Their manifesto from the 1980s encourages us to embrace the new:

We are tired of seeing Palladio and all the other masks of history. And that's because we don't want to exclude anything uncomfortable from architecture. We want architecture that has more. Architecture that bleeds, that exhausts, that whirls, and even breaks. Architecture that lights up, stings, rips, and tears under stress.<sup>5</sup>

The architects, fascinated by their own words, are becoming increasingly arrogant: "Architecture has to be cavernous, fiery, smooth, hard, angular, brutal, round, delicate, colourful, obscene, lustful, dreamy, attracting, repelling, wet, dry, and throbbing. Alive or dead. If cold, then cold as a block of ice. If hot, then hot as a blazing wing. Architecture must blaze."<sup>6</sup> One may disagree with them, but their architecture is modern and high tech. What failed in the Pick Hong Kong project can be seen in their works.

As Białostocki noted:

Nature presented not only artistic challenges but also technical obstacles for artists to overcome. Where, back then, were the boundaries between iron casting, metalworking, and bronze sculpture? Today, we see the first as industry, the second as craft, and the third as art. At that time, it was all one *techne*, and Hephaestus, making Achilles' shield at Thetis' request, was both a blacksmith and a sculptor. In the 17<sup>th</sup> century, in Velázquez's depiction, he became definitively a craftsman: naked, with an apron tied around his waist, hardened by the forge's fire, contrasted with Apollo, the god of poetry. For the Baroque artist, these were two distinct, though converging, worlds. For the ancients, Hephaestus and Daedalus, blacksmith and sculptor, worked in the same workshop, representing the idea of *techne*. Art and technology were one and the same.<sup>7</sup>

In today's architecture, art and technology are inseparable.

Nowadays, architecture and technology can be united. What seems commonplace today – "the architecture of flying beams" – had to be invented at some point. Advances in building

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<sup>4</sup> P. Francastel, *Sztuka a technika w XIX i XX w.*, PWN, Warszawa 1966, p. 121.

<sup>5</sup> J.C. Dubost, J.F. Gonthier, *Architecture for the future*, Terrail, Paris 1996. p. 116.

<sup>6</sup> *Ibidem*.

<sup>7</sup> J. Białostocki, *op. cit.*, p. 12.

materials technology have proven crucial for shaping modern architectural masterpieces. As architecture shifts from modern aesthetics, its instability and fragmented forms are no longer surprising. Technology has long crept into the world of art. In 1917, Marcel Duchamp, signing as R. Mutt, transformed a purely technical object, a porcelain urinal, into *Fountain*. This piece was meant to introduce a new perspective on art, and consequently on architecture. As usual, architecture had difficulty embracing novelty and breaking free from the habits of the audience and its unchanging function. Technology had to come to the architects' aid. Architecture is abandoning symmetry and repetition, embracing untamed, fluid geometric forms. At the time of its creation, Duchamp's work was not well received by critics. Today, despite the omnipresence of unusual architectural forms, the newest architecture is still perceived in varying ways. The creators from Coop Himmelb(l)au try to shock the world and deny everything we remember, much like Duchamp did. Wolf Prix does something similar with the very definition of architecture, which he redefines to shock: "Architecture is YES!". Białostocki writes:

Among traditional arts, architecture has perhaps benefited the most from technology. The utopian visions of glass houses, once imagined by Bruno Taut and Żeromski, have long become a reality in America, Japan, and even in Europe. Organic forms that appeared in the architecture of younger Saarinen or Jørn Utzon introduced extraordinary phenomena into construction. The process of building and the character of the building have undergone significant transformations, which also largely determine its artistic forms. The potential technical possibilities ignite the imagination of creators, who in turn provoke new solutions.<sup>8</sup>

The UFA Theatre built in Dresden for GmbH may be a perfect expression of "YES!" architecture and present new solutions. The project was developed between 1993–1998. The entire concept can be seen as a huge crystal-like element, a monumental sculpture with an expressive form, reminiscent of Hans Scharoun's dreamlike drawings – grand in its size and shape. Prix describes the building as "designed like a music video, abolishing central perspective."<sup>9</sup> The unusual forms of the cinema-theatre aim to bring new vitality to the city centre and joy to visitors from afar. The entire body of work by Wolf Prix and Helmut Swiczinsky is associated with deconstructivist architecture but also with technology. The architects describe their design process as intuitive, though that's not entirely the case. While intuition plays a key role, it is supplemented by computers, building material specialists, and specialized construction teams, without whom such works couldn't be created.

Technology creates contemporary architecture. The interplay with viewers and flying beams remains attractive to both architects and audiences. When visiting Vienna, you won't find "normal" buildings or tenements. Once controversial, the term "concrete architecture" no longer intimidates the average observer. The grey, textured surfaces of concrete, coupled with its technical precision, have evolved into a form of artistic expression. Perhaps this is possible thanks to Duchamp and his bicycle wheels or bottle racks? The changing attitude of users may not necessarily be a good omen for professional creators aiming to continue building this kind of architecture. The term "concrete architecture" is gradually becoming more important. Rough edges and rough-hewn wooden forms are now replaced by the technical smoothness of surfaces. The works of Coop Himmelb(l)au can exemplify this evolving

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<sup>8</sup> *Ibidem*, pp. 16–17.

<sup>9</sup> P. Jodidio, *Architektura dzisiaj*, Taschen, Köln 2003, pp. 44–45.

approach to new architectural creation driven by technological advances. Although their designs always seemed modern, it was an aesthetic rather than technical novelty. They were perceived as avant-garde, standing somewhat apart from mainstream architectural movements, yet they created a new vision of ordinary building materials, forcing unprepared viewers to rethink them. The contemporary commercial success and recognition of concrete as a friendly material are beginning to influence the general public's acceptance. Of course, this didn't happen without technology. Computers help architects prepare designs, and formwork makers can shape them freely with digital cutters. The beautiful roughness has been replaced by near-perfect smoothness. While the material loses some of its expression, more and more viewers are starting to tolerate or even like it. In 1966, Juliusz Goryński predicted the state of contemporary architecture. He foresaw that the new approach to the aesthetic reception of the, common today, optically unstable forms of buildings would be possible after the appearance and acceptance of a building material that would give the viewer a sense of safety. Goryński emphasized that:

The awareness of the material nature and practical purpose of a structure evokes feelings of unease in people if the architectural composition does not confirm the physical stability of the structure and its safety in use. Experience seems to confirm that this simultaneously affects its aesthetic evaluation. This means that buildings whose composition provokes concern about their safety are not considered beautiful or aesthetically satisfying.<sup>10</sup>

We now know that modern structures will stand strong and stable.

“Technology, which has become a new nature, can also become a new art. We would then return to the starting point, but from a different perspective. After all, as we said, in the beginning, in Greece, there was *techne*. But back then, nature was still completely untouched.”<sup>11</sup> *Techne* was presented as the ability to act according to rules, a skill, and a strategy. Art was a kind of craft. Painting was just as important as pottery. Only poetry was superior, as it could do without rules, being created through inspiration. Contemporary architecture should perhaps be an art, even poetry. It must combine durability, utility, and beauty as was once believed. Today, beauty is being replaced by technology, and for now, it seems we cannot change this. We need to get accustomed to this change and anticipate the next breakthrough, as creators continue their pursuit of perfection.

## References

- [1] Białostocki J., *Sztuka – Natura – Technika* [in:] *Sztuka a technika*, PWN, Warszawa 1991.
- [2] Dubost J.C., Gonthier J.F., *Architecture for the future*, Terrail, Paris 1996.
- [3] Francastel, P., *Sztuka a technika w XIX i XX w.*, PWN Warszawa 1966.
- [4] Goryński J., *Urbanizacja, urbanistyka i architektura*, PWN, Warszawa 1966.
- [5] Jodidio P., *Architektura dzisiaj*, Taschen, Köln 2003.
- [6] Lampugnani V.M., *Architektur muß brennen*, Institut für Gebäudelehre und Entwerfen, Graz 1980.
- [7] van der Rohe M., *Blok*, March 1924.
- [8] Vitruvius, *O architekturze ksiąg dziesięć*, PWN, Warszawa 1956.

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<sup>10</sup> J. Goryński, *Urbanizacja, urbanistyka i architektura*. PWN, Warszawa 1996, p. 133.

<sup>11</sup> J. Białostocki, *op. cit.*, p. 17.

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