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ARCHITECTURE – CONTEMPORARY HYBRIDISATION OF THE PROFESSION

ARCHITEKTURA – WSPÓŁCZESNA HYBRYDYZACJA PROFESJI

Abstract

Since the beginning of the 21st century, a process of breaking down barriers can be observed within architecture, in relation to its sister discipline – design. Before our eyes, hybridisation of these two professions is occurring and the way of thinking about buildings and objects is changing. On the one hand, architects adopt digital design and production methods, and on the other, they "rediscover" traditional methods coming from various fields of design or art. The foreshadowing of an increasingly widespread multidisciplinary can be found as early as in the first half of the 20th century, among others in Buckminster Fuller, who postulated the existence of a comprehensive designer, being the synthesis of artist, inventor, mechanic, objective economist and evolutionary strategist. It is close to the ancient Greek concept of ho-tekton, which was used to describe, among others, St. Joseph. Ho-tekton is a master craftsman, an alchemist – metallurgist, working in stone and wood, building houses and sluices, repairing doors and saddles. Therefore, is the turn towards multidisciplinary of the architects something new?

Keywords: design, multidisciplinary, aesthetics, customisation, multimedia, tactility

Streszczenie

Od początku XXI w. w obrębie architektury obserwuje się proces przełamywania barier względem bliźniaczej dyscypliny – designu. Na naszych oczach dokonuje się hybrydyzacja tych zawodów oraz zmiana sposobu myślenia o budynkach i przedmiotach. Architekci z jednej strony adoptują cyfrowe metody projektowo-produkcyjne, a z drugiej odkrywają „na nowo" metody tradycyjne, pochodzące z różnych dziedzin projektowania czy sztuki. Zapowiedź coraz powszechniejszej multidyscyplinarności można odnaleźć już w pierwszej połowie XX w., m.in. u Buckminstera Fuller, który postulował zaistnienie wszechstronnego projektanta, będącego syntezą artysty, wynalazcy, mechanika, obiektywnego ekonomisty i ewolucyjnego stratega. Blisko temu do starogreckiego pojęcia ho-tekton, którym określano m.in. św. Józefa. Ho-tekton to mistrz w rzemiośle, alchemik – metalurg, pracujący w kamieniu i drewnie, budujący domy i śluzy, naprawiający drzwi i siodła. Czyż więc zwrot ku multidyscyplinarności architektów jest czymś nowym?

Słowa kluczowe: design, multidyscyplinarność, estetyka, kastomizacja, multimedialność, taktylność

1. INTRODUCTION

From the beginning of the current century, a continuous process of breaking down the existing barriers in relation to other design disciplines and accompanying skills can be observed within architecture. It is a period in which there is a place for crafts, traditional technology, indi-

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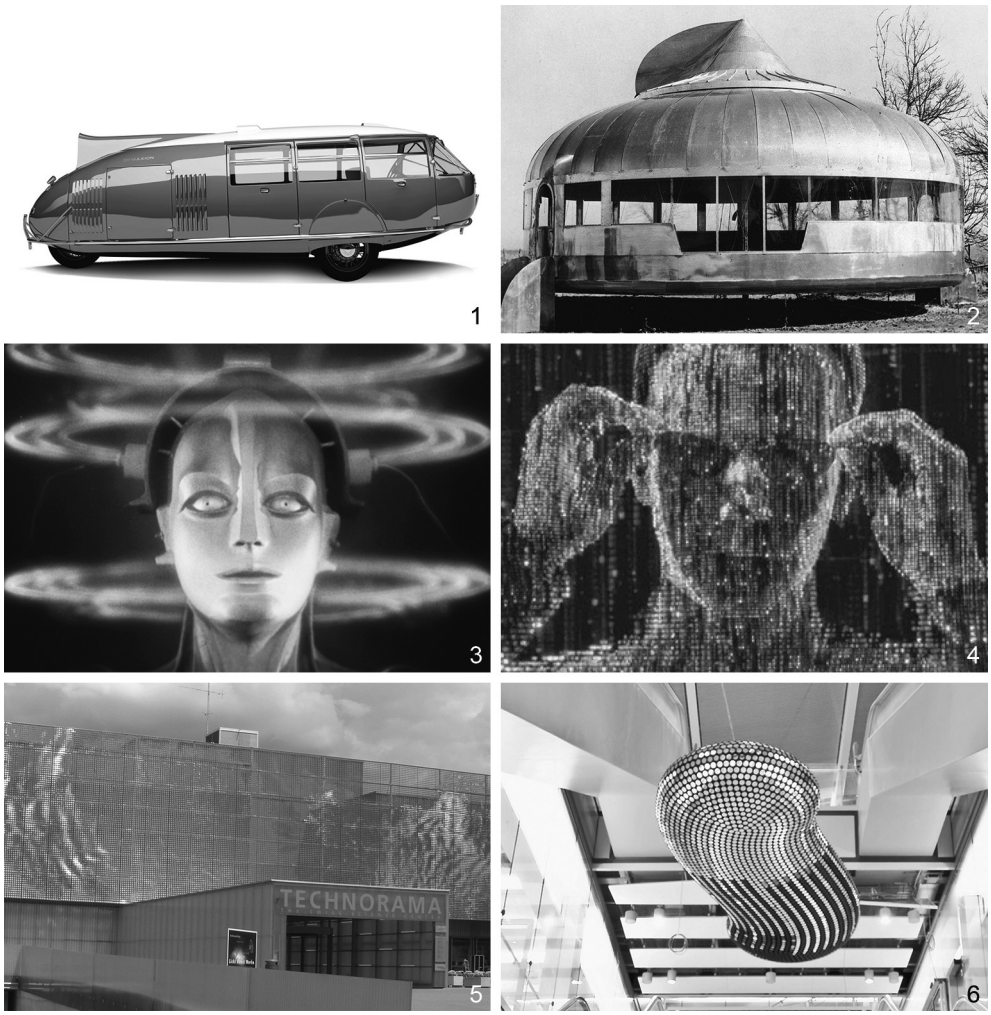


Ill. 1. Buckminster Fuller: *Dymaxion Car,* USA 1938
Ill. 2. Buckminster Fuller: *Dymaxion House*, USA 1930
Ill. 3. Fritz Lang: *Metropolis*, Niemcy, 1927
Ill. 4. Lana + Lilly Wachowski: *Matrix*, USA, 1999
Ill. 5. Ned Kahn: *Technorama*, Wintherthur, Switzerland, 2002
Ill. 6. Troika: *Cloud*, Heathrow Airport, London, UK, 2008

vidual searches, as well as for mass-produced objects in high technologies. There is an increase of interest in experiment and conceptual design – the design perceived as a communication. This breaking of boundaries is progressing especially intensely in relation to the sister discipline – design. Hybridisation of these two professions is occurring before our eyes and the aesthetic transformations that accompany it lead to a change in the way of thinking about buildings and objects, which are increasingly commonly granted the features of interactivity and multimedia. Designers adopt new digital design and production methods coming from various fields of

design, science or art, which causes a kind of convergence in aesthetics. Simultaneously, the fields of architectural design and designing are getting closer to each other, which is accompanied by shaping of the interdisciplinary design practice of architects – designers who move freely within various disciplines. Interestingly, the foreshadowing of currently increasingly widespread multidisciplinary of design can be found as early as almost a hundred years ago in Buckminster Fuller (Ill. 1, 2), who in his time paid special attention to the need of a *comprehensive designer* existing, who appeared as *the synthesis of artist, inventor, mechanic, objective economist and evolutionary strategist*.[2]

Nowadays, the hybridisation of the professions of architect and designer is reflected among others in aesthetic transformations, which is also associated with the changes in the perception of human body as the current canon of beauty. In general, it can be said in a very simplified way that from the era of ancient Greece until the 18th century, the model of the body and perception of human, adopted in culture and aesthetics, did not change significantly. As is commonly accepted, it was shaped under the influence of Aristotle, who pointed out five basic senses: vision, hearing, smell, taste and touch. However, starting from the 18th century, the body ceased to be a source of beauty recorded in the canons, in favour of a new concept – the mechanism.[3] Siegfried Giedion literally associated the development of modernistic design with 19th century experiments on mechanically moved artificial human limbs, and in turn the already mentioned Buckminster Fuller perceived the objects that he designed in terms of pure prosthetics, according to which the body was a sophisticated electrical mechanism, extended by artificial prostheses. Today, one of the common denominators combining various concepts occurring in architecture, design, science, philosophy and art is the assumption that in the near future the human body will be successively "stripped" of organs, replaced by modern technologies, thereby distinguishing between one's own body and environment, between the terms "mine" and "foreign" will be blurred. For over two decades, one of the fundamental issues raised by architects and designers is the one related to the relationships between a constructed body and a simulated one (Ill. 3, 4). As modern architecture theorist Mark Wigley notes, after the Second World War mechanical eyes, ears, limbs and skin, created thanks to new technologies, gradually gave way to systems that place architecture in electronic space – in which the human body, deprived of its natural character, is just a device attached to digital memory.[4]

In the above context, the issue common to architecture and design is the extent of technique interference, and often basing their emotional, intellectual and, more importantly, aesthetic impact on technical achievements. Following this, several aspects of the progressing hybridisation of the professions can be indicated today, three of which are directly related to technological progress; these are: tactility, multimedia and customisation.

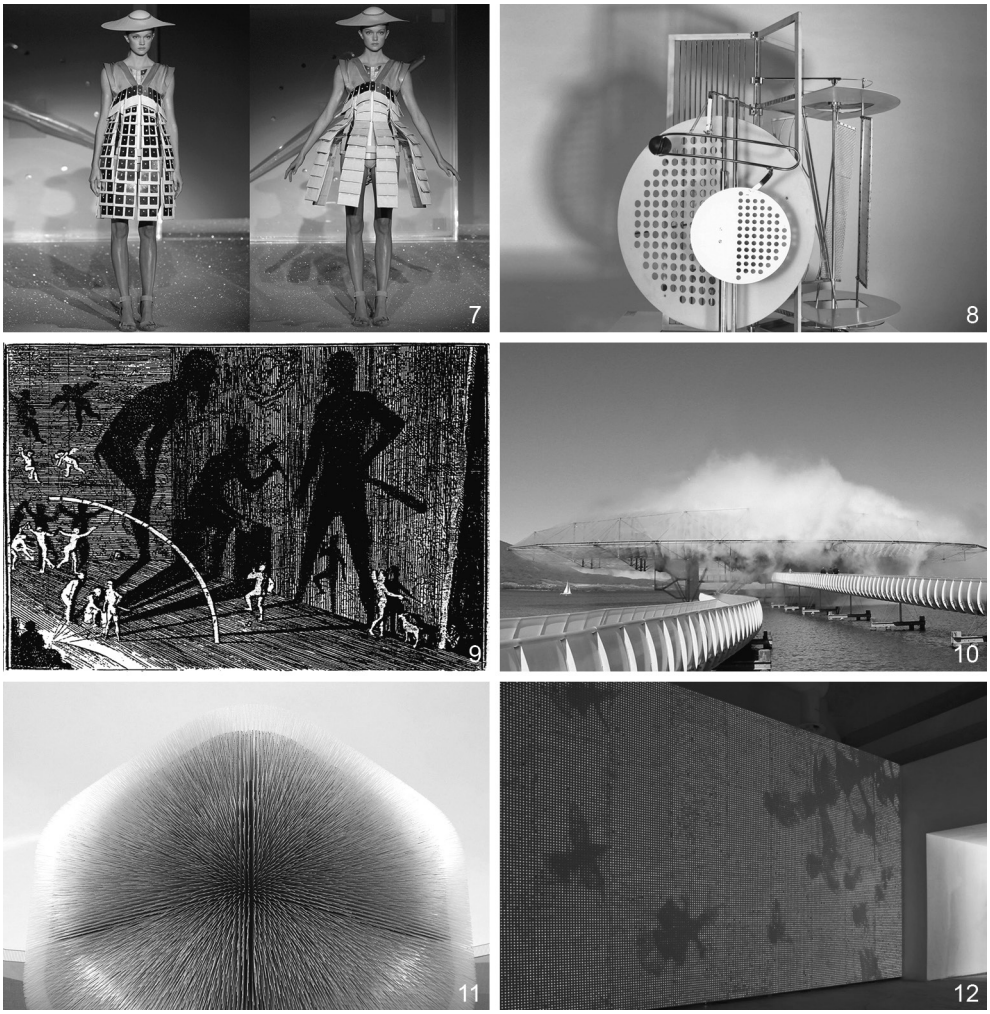
2. ASPECT 1

Contemporary aestheticization of the world allows us to not only see things, but to touch them. Following this, as Jean Baudrillard notes in *Simulacra and Simulations*, the communi-

[2] G. Flachberg, P. Weibel (eds.), *Disappearing Architecture*, Birkhauser, Basel 2005, p. 178.

[3] K. C. Bloomer, Ch. W. Moore, *Body, Memory and Architecture*, Yale University Press, New Haven and London 1977, p. 15.

[4] M. Wigley, *Architektura protez: uwagi do prehistorii świata wirtualnego* [in:] A. Budak, *Co to jest architektura?*, Bunkier Sztuki, Kraków 2002, p. 197.



Ill. 7. Hussein Chalayan: *One Hundred & Eleven Collection*, 2007
Ill. 8. László Moholy-Nagy: *Light-Space Modulator 2*, USA, 1930
Ill. 9. Vision of Plato's Cave according to: Samuel van Hoogstraten: *The shadow dance*, 1675
Ill. 10. Diller + Scofidio: *Blur Building*, Yverdon-les bains, Switzerland, 2002
Ill. 11. Heatherwick Studio, UK Pavilion, Shanghai, China, 2010
Ill. 12. Ron Arad: *Lo-Rez-Dolores-Tabula-Rassa*, Milan, 2003

cation itself acquires the characteristics of tactility. The term *tactility itself* (Latin for *Tactilis* – palpable, *Tactus – touch*) comes from a psychological term *tactile* describing the sensations felt by the sense of touch. As early as in the mid-70s, Marshall McLuhan, describing the sense of vision in a world dominated by images, noticed that the operation of the sense of touch includes the interaction of all senses.[5] Following this assumption, architecture and

[5] A. Gwóźdź (ed.), *Technologie mediów,* Universitas, Kraków 2001, p. 68.

design acquire the features of a "skin", capable of receiving stimuli from the environment, thus becoming "performative". Similarly to the performance action, the recipient's attention is directed to the very process of becoming, and not to the final effect, which is illustrated among others by the following cases: architectural – *Technorama* (Ill. 5), design – *Cloud* (Ill. 6) or a fashion collection – *One Hundred and Eleven* (Ill. 7). In the first example, Ned Kahn created a facade that consists of thousands of aluminium panels that move in the wind, revealing a complicated pattern of air currents and turbulence. In the second one, the idea of which is based on the metaphor of the cloud, the Troika design group proposed an installation made of about 5,000 small, electromechanical black and silver plates that are moved by an electronic system.[6] In turn, in the third one, Hussein Chalayan in cooperation with Swarovski presented wardrobe, the operation of which is based on mechanical elements sewn into clothing that move in the form of mechanical "explosions and implosions". These works are connected by a common functional and spatial model, according to which it is possible to assign features of the programmable, electronic skin to the constructed object, which makes it dynamic and changeable – a kind of system in constant motion. However, in historical context, one can find in these works the contemporary development of the search of László Moholy-Nagy, whose kinetic sculptures (Ill. 8) focused on causing movement in order to achieve the effect of changeability. As Moholy-Nagy wrote in 1927, *Contemporary optics and acoustics, used as means of artistic shaping, can enrich [the sphere of experience] and serve people that are open to the present*.[7]

3. ASPECT 2

Multimedia – another aspect of contemporary aesthetics is associated with broad, philosophical (vide Plato's Cave, Ill. 9) understanding of virtuality, or rather the "transfer" of virtuality into the real world. This "transfer" (defined in the 90s for the purposes of architectural theory as "eversion" by Marcos Nowak) is a challenge for many architects and designers who are looking for answers on how to apply it artistically. The activity of architects and designers who design in this way is not limited to just designing the physical object, but often leads to the creation of hybrids existing at the intersection between real and virtual. The blurring of boundaries and the mutual interpenetration of real and virtual is accompanied by the concept of "blur", to which 4 connotations are assigned. The first connotation, linguistic, can be translated as smudgy, indistinct, muffled, unspecified. According to the second connotation, the "Blur" command is a popular function in graphic programs. Thirdly, the images described as *Blurred* are ones with typical damage caused by mechanical error in reproduction or projection technology. But "blur" can also be understood as *de-emphasis*), which was expressed in the *Blur Building* in Switzerland designed by the duo of Diller&Scofidio (Ill. 10). According to the authors' statement, *Blur is anti-spectacle. Contrary to immersive environments that strive for high-definition visual fidelity with ever-greater technical virtuosity, Blur is decidedly low-definition: there is nothing to see but our dependence on vision itself (...) Blur is a habitable medium – one*

[6] Troika (C. Freyer, S. Noel, E. Rucki), *Digital by Design,* Thames & Hudson, London 2008, p. 138.
[7] L. Moholy-Nagy, *Malerei, Fotorafie, Film,* Muenchen 1927, p. 41 [in:] R. W. Kluszczyński, *Społeczeństwo informacyjne. Cyberkultura. Sztuka Multimediów*, Rabid, Kraków 2001, p. 110.

that is spaceless, form less, featureless, depthless, scaleless, mass less, surfaceless, and dimensioneless.[8]

We get an equally interesting interpretation of the concept of *blur* at the British Pavilion at EXPO 2010 in Shanghai (Ill. 11), which is a suggestive interpretation of Plato's Cave. This building, also referred to as *Seed Cathedral,* was built from 60,000 transparent fibre optic rods that bring sunlight inside during the day and at night project the light coming from inside the pavilion to the outside. In the basic intention of the architects from Heatherwick Studio, architecture was to be a pure manifestation of the exhibition content, i.e. 60,000 seeds from the Millennium Seed Bank of United Kingdom, which were placed in individual rods.[9] We can find a similar aesthetic situation in Ron Arad's work – *Lo-Rez-Dolores-Tabula-Rasa* (Ill. 12) made for the Corian company, which was presented at the Italian Pavilion at the 9th Architecture Biennale in Venice in 2004. The 8 x 4 m wall made of Corian was "packed" with over 27,000 optical fibres, which allowed it to transform into a low-resolution screen. As the author of this work describes himself, the Corian screen is a marriage of tangible light and ephemeral images put through the "arteries of light" – optical fibres.[10]

According to the theoretician of media and architecture, Derrick de Kerckhove, architectural designs, as well as designing, according to which the city, building and object are subjected to the principle of a multimedia spectacle, are a reflection of McLuhan's search that led to the creation of the theory of superiority of communication in culture.[11] We can even say, after Ewa Rewers, that the space around us is designed and organised so that a person from a passer-by becomes a viewer, and *the essence of this multimedia is a constant transition from the real world to the world of mirror and screen appearance*.[12]

4. ASPECT 3

The next, third aspect is *customisation*, consisting in adapting the product to the personalised needs of the customer and the so-called mass customisation, which is defined as *the use of flexible computer-aided manufacturing systems to produce custom output* (this concept is present in industry, marketing, management etc.).[13] Defined in 2001 by Tseng&Jiao as *producing goods and services to meet individual customer's needs with near mass production efficiency*,[14] mass customisation is for many designers a new boundary, marked by modern design and production capabilities.

In aesthetic terms, mass customisation can be treated as a modern digital extension of the concept *The Open Work of Art*, according to which the artist does not create a closed work

[8] E. Diller, R. Scofidio, *Architecture as a Habitalbe Medium* [in:] G. Flachberg, P. Weibel (eds.), *op. cit.*, pp. 188–189.
[9] www.heatherwick.com (access: 5.11.2019).
[10] www.lo-rez-dolores-tabula-rasa.com (access: 7.02.2006)
[11] Ch. Dewolney, *Wprowadzenie* [in:] D. de Kerkhove, *Powłoka kultury*, MIKOM, Warszawa 2001.
[12] E. Rewers, *Ekran Miejski* [in:] A. Zeidler-Janiszewska, *Pisanie miasta – czytanie miasta*, Wydawnictwo Fundacji Humaniora, Poznań 1997, p. 50.
[13] https://en.wikipedia.org/wiki/Mass_customization (access: 5.11.2019).
[14] M. M. Tseng, J. Jiao, Mass Customization [in:] Handbook of Industrial Engineering, Technology and Operation Management, Wiley, New York 2001, p. 685.

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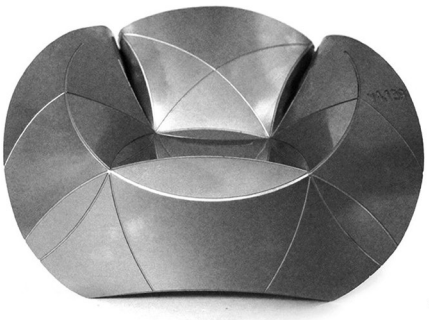

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Ill. 13. Oliver Vogt + Hermann Weizenegger: *Sinterchair*, Germany, 2001
Ill. 14. Greg Lynn: *Embryological House*, USA, 1997–2001
Ill. 15. Massimiliano Fuksas: *Fiera di Milano*, Italy, 2003–2005
Ill. 16. Joris Laarman: *Asimov Chair*, The Netherlands, 2010
Ill. 17. Albrecht Dürer: *Perspective Machine, "De symmetria partium in rectis formis humanorum corporum"* 1538

of art, but builds an opportunity for context and interpretation. In products subjected to mass customisation, the mechanism of an open work is that the recipient is forced to perform the theoretical, intellectual cooperation with the author, and thus his interaction with the work is enabled, which obtains its final shape after entering the parameters set not only by the creator, but also the future user.

An interesting example of a *customised* object is *Sinterchair*, project of the Oliver Vogt + Hermann Weizenegger duo (Ill. 13). In the ideological layer, the project was based on the idea

of translating the coral structure into the structure of a chair. For this purpose, the technology of Selective Laser Sintering was used, produced under the 3D-Systems brand, previously used exclusively in the aerospace and automotive industries to create prototypes. Each chair is manufactured individually, according to the customer's guidelines, which, entered as data into the software controlling the production process, differentiate the basic form of the chair. As a result, after 24 hours, the "tailor-made" final product leaves the production line.

The architectural equivalent of the customised chair is the unusual design of Greg Lynn – *Embryological House* (Ill. 14). In this project, the author explores the possibilities of "customised prefabrication" of a house based on data/guidelines provided by future users. According to this assumption, the architect first prepares working drawings defining the "essence" of the house, on the basis of them the computer generates any mutations in the form of the house, which are the result of parameters such as: context of the place, customer demands, or simply the whim of the architect.[15]

Another interesting example of the use of mass customisation in architecture is the arcade designed by Massimiliano Fuksas for the trade complex in Milan (Ill. 15). The curvilinear roofing, based on the idea of a sail, was built from 100 thousand unique glass panes connected by 26,000 non-identical knots.[16]

An analogous method can be found in robotised production *Asimov Chair*, which was created by Joris Laarman (Ill. 16). Prototypical *Asimov Chair* refers with its name to the creator of classical science-fiction literature – Isaac Asimov. It is entirely made using robots that control and perform the process of bending aluminium sheets, which is analogous to origami folding. One of the key elements of the production process was to develop a language for instructions that could describe hundreds of folds into one diagram, readable by robots. The designer's final goal, however, was to create a small production line, operated by robots, which could be developed anywhere in the world.[17]

It can be said that the instanced objects "grow" and "develop" according to their own, individual principles. The designer indicates the initial form, which can be defined as a frame, open to entering parameters into it that modify it through the use of a computer program, depending on the user's needs or terrain conditions. Buildings and objects designed in this way cannot be reduced to a typological pattern, because each subsequent object is different. Although their organisation is permanent, the form is dependent on the context given by the user-customer.

5. RECAPITULATION

It is widely believed that contemporary buildings and objects, becoming more complex than ever before, are simultaneously becoming similar to each other. These changes apply equally to both architecture and design, and what is more, they cause the two fields to get closer to each other, as well as an unprecedented transfer of information and mutual inspirations between them. These changes are, among other things, a direct result of the digital

[15] M. Dery, *Soft House: Home Grown*, Artbyte, 2000, November-December, http://www.artbyte.com/mag/nov_dec_00/lynn_content.shtml (access: 17.05.2018).

[16] D. Moffitt, Milan Trade Fair, ArchitectureWeek, 2006, 29 November, http://www.architectureweek.com/2006/1129/design_1-1.html (access: 5.11.2019).

[17] https://www.jorislaarman.com/work/asimov/ (access: 5.11.2019).

revolution, which opened new areas of exploration for architecture and design, helped break existing stereotypes and principles governing the design. However, it must be remembered that these differences are not only associated with clean technology. The changes relate not only to the design process and design tool, but also, perhaps above all, the approach to the basic principles governing architecture and design. A departure from the traditionally understood concepts of functions, form, principles of usage ergonomics and production processes occurs in favour of interest in flexibility, self-organisation, prototyping.

Hence, the similarities between the buildings and objects presented go far beyond the issue of forms and sources of inspiration itself. They illustrate a fundamental change in the way of thinking, according to which designers create only the frames of the work, assuming that the user can fill them with his own context. One can refer to the thought formulated by the philosopher Gilles Deleuze here, according to which the question is still valid today: is the observer/user/interactor, contemplating the images that surround him, present in a world of truth, or rather appearance? Appearance, which has a Platonic lineage, *is not a degraded copy, it contains positive power that negates both the original and the copy, the model and reproduction*,[18] and thus enabling authentic communication. Virtual reality has become the carrier for the latest images, which offers experiencing them in-depth, analogous to that offered to recipients by Renaissance kaleidoscopes, dioramas and perspectives, or the Albrecht Durer perspective machine (Ill. 17), which revolutionised the perception in those times.

Nowadays, architectural design and designing is increasingly associated with questions about mutual relationships and behaviour, less and less often with questions about a building and an object in itself. These changes are currently accompanied by two voices. One of them is related to the fascination with new technologies and computing capabilities. However, this is accompanied by fundamental questions: *What if the computer becomes a designer?* or *What if we teach the machine how to select the best solutions and evolve them into a design?*. On the other hand, there are opinions according to which the digital production processes do not constitute the only development path for contemporary design and architecture. As a result of the popularisation of rapid 3D prototyping technology and the development of languages that help translate the design into a process, as well as low labour costs in China, modern designers have the ability to prototype their own products on an ongoing basis, thereby reducing the distance between experimental design and its everyday application. One can say that designing for the future has become a dogma, which is synonymous with prototyping that future. However, simulating the future is connected with the risk of falsifying it for a prosaic reason – lack of data and unpredictability of scenarios. The scenarios themselves, testing the visions of the future, are thus the prototypes of it, which may not necessarily work in practice.[19] The design assumption based on unlimited trust in digital techniques can simultaneously become a trap, because it turns out that due to the availability and budget associated with these technologies, many designers do not have access to them. An alternative for designers not having appropriate resources or laboratories are small, handmade objects – forms of "digital craft".

It can be assumed that architecture and design belong to the professions – icons of the modern world. It is also obvious that both these professions are now getting closer to each other, or even interpenetrating, in different fields. These are areas related to aesthetics, trans-

[18] M. Jakubowska, *Teoria kina Gillesa Deleuze*, Rabid, Kraków 2003, pp. 70–71.
[19] Troika, *op. cit*., p. 266.

formation of design and production methods, as well as the subsequent perception of buildings and the principles of usage of the objects, and the very way of practising the profession. As stated in the introduction, the foreshadowing of increasingly widespread multidisciplinary can be found as early in the first half of the twentieth century, among others in the works of Buckminster Fuller, who postulated the existence of a comprehensive designer, the concept of which is close to the ancient Greek ho-tekton, which was used to describe, among others, St. Joseph. Ho-tekton is a master craftsman, an alchemist – metallurgist, working in stone and wood, building houses and sluices, repairing doors and saddles. Therefore, is the turn towards multidisciplinary of the architects really something new?

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