

MARTA PIECZARA

ORCID: 0000-0002-1826-574X

Poznan University of Technology, Poland

PRO-ECOLOGICAL REVOLT – A NEW AVANT-GARDE IN ARCHITECTURE

BUNT PROEKOLOGICZNY – NOWA AWANGARDA W ARCHITEKTURZE

Abstract

According to its definition, the avant-garde includes trends that break away from established patterns and set new directions in response to the epoch's challenges. We are currently witnessing such a situation. Young architects focus on recycled and sustainable materials or even decide to build out of waste in response to the planet's ecological problems. The research applies analysis, research-by-design, and case study methods to discuss the current pro-ecological trend in architecture. As a result, it proves that this trend meets all the criteria of belonging to the avant-garde.

Keywords: avant-garde, building of waste, pro-ecological architecture, reclaimed materials

Streszczenie

Według definicji do awangardy można zaliczyć trendy, które w reakcji na wyzwania epoki odrywają się od ustalonych wzorców i wytyczają nowe kierunki. Aktualnie jesteśmy świadkami takiej sytuacji. W odpowiedzi na problemy ekologiczne planety młodzi architekci stawiają na surowce z recyklingu i materiały zrównoważone, czy wręcz decydują się na budowanie z odpadów. Stosując metody analizy, badań przez projektowanie oraz studium przypadku artykuł omawia aktualny nurt proekologiczny w architekturze. W efekcie badań dowiedziono, że spełnia on wszystkie kryteria przynależności do awangardy.

Słowa kluczowe: architektura proekologiczna, awangarda, budowanie z odpadów, materiały z odzysku

1. INTRODUCTION

According to its popular definition, the concept of the avant-garde includes “new and experimental ideas and methods in art, music, or literature”¹. However, both the term of the avant-garde and its definition are a generalisation. Following the rigour of terminology and history, it can be assessed that such new and experimental trends in aesthetics and poetics often appeared in different regions unrelatedly as a reaction to the changing social, political and economic reality. Cultural differences in the background of their formation inspired the emergence of various trends in art and architecture and complicated their terminology. As Renato Poggioli observed, the term of “avant-garde art belongs almost exclusively to

¹ Oxford English Dictionary, available online: <https://www.lexico.com/> (access: 17.05.2022).

the Neo-Latin languages and cultures”². Nonetheless, some other terms, e.g., “modernism”, “young art”, “abstract art”, “*Neu-Romantik*”, or “decadence”, have also been associated with the concept across the world.

Despite such diversity, the trends that are considered avant-garde have common denominators. Firstly, they possess a dose of provocation and experimentation while not imposing specific criteria of beauty³. Avant-garde art rejects the precise portrayal of nature and reality. On the contrary, it draws attention to the world of dreams and fantasies, unconventionally presenting objects⁴. And so does avant-garde architecture⁵.

In the cultural sense, the avant-garde is a timeless concept and cannot be reduced to a single trend. As Serge Fauchereau wrote, the avant-garde is “something undefined and not definitive”; it “melts and colours the surrounding environment until it finally disappears within”⁶. In that sense, an avant-garde is an approach that includes various tendencies uniting all artistic fields across national borders. This combination is accompanied by the desire to achieve the effect of a total work of art, *Gesamtkunstwerk*, in which various art forms merge into one coherent whole⁷. It is a kind of expression of radicalism, striving to maintain the total coherence of the work, which can also be considered a sort of unreal abstraction.

What else avant-garde tendencies have in common is maintaining intricate relationships with the socio-political movements of a given epoch, from total commitment to complete denial. Despite many formal and stylistic differences, avant-gardes generally shared social and didactic commitments⁸. As an approach, “an avant-gardism of a definite era is everywhere and always”⁹. Its spirit is expressed as a rebellion against historically established canons. While depreciating the traditionalists¹⁰, avant-garde strives for uniqueness, artistic liberty, and “a new way”¹¹. Nowadays, the influences of the avant-garde are still visible in art and architecture. However, most contemporary creators predisposing to the avant-garde selectively explore and copy its elements in an eclectic way¹². This approach, referred to as “post-avant-garde”¹³, is, in fact, the opposite of the true avant-garde.

² R. Poggioli, *The Theory of the Avant-garde*, trans. Fitzgerald, G., Harvard University Press, Cambridge 1968, p. 5.

³ U. Eco, *On Beauty. A history of a western idea*, trans. McEwen A., Seeker & Warburg, London 2004, p. 415: “Avant-garde art does not itself pose the problem of Beauty”.

⁴ E. Węclawowicz-Gyurkovich, *Czy architektura musi być piękna?* Czasopismo Techniczne. Architektura, 2007, R. 104, Z. 13, 6–A, p. 152.

⁵ *Ibidem*.

⁶ S. Fauchereau, *Avant-gardes du XXe siècle. Arts et littérature 1905–1930*, Éditions Flammarion, Paris 2010, p. 533.

⁷ A.V. Munch, *The Gesamtkunstwerk in Design and Architecture: From Bayreuth to Bauhaus*, Aarhus Universitetsforlag, Aarhus 2021.

⁸ T. Kozłowski, *Avant-garde and contemporary architecture*, Space & Form, 2020, no. 43.

⁹ S. Fauchereau, op. cit., p. 543.

¹⁰ I.J.A. Kamiński, *Trudny romans z awangardą*, Wydawnictwo Literackie, Lublin 1989, p. 12.

¹¹ T. Kozłowski, op. cit., p. 57.

¹² G. Tyc, *Powinowactwa awangardy z architekturą współczesną*, PhD Thesis, defended on 22 June 2021, Cracow University of Technology, Cracow 2020.

¹³ *Ibidem*.

Based on the literature review, the following criteria for defining a trend as true avant-garde can be identified:

- a) Relationship with the current social, political, and economic reality;
- b) Revolutionary character, opposing the tradition;
- c) Endeavour to find “a new way” – experimentalism;
- d) Global reach;
- e) Combining various fields (e.g., literature, art, architecture);
- f) Seek to create a total work of art – *Gesamtkunstwerk*;
- g) Undefined criteria of beauty.

According to this definition, avant-garde can include those trends that, in response to the era's challenges, break away from established patterns, setting new directions. We are currently witnessing the development of a new trend, mainly concerned with architecture, that seems to fulfil all criteria of true avant-garde. It is the rebellion of young people, young designers, against the carbon footprint of our building activity.

Of all human activity on the Earth, the building sector is by far the dominant one in terms of the total carbon footprint in our society¹⁴. However, climate change's current consequences have increased global awareness of the need for a more significant commitment to environmental protection. As a result, the construction sector has become an essential target for improvement¹⁵. In response, the growing green building movement uses a variety of ways to reduce the carbon footprint of the construction sector. Young designers choose reclaimed or recycled materials, wood, and other ecological materials, and even build from waste. This article will attempt to define this currently observed architectural movement and prove its belonging to the avant-garde.

2. MATERIALS AND METHODS

In line with the aim of the article, which is to describe the newest pro-ecological movement in architecture in the light of its belonging to the contemporary avant-garde, the research engaged the cooperation with young designers. It was carried out as part of a design studio for architecture students at the Poznan University of Technology. Research-by-design method was used during the study. This empirical method is appreciated in the field of architecture due to the possibility of integrating research with didactics. The focus was on the architects' motivations that supported decision-making in the design process. For example, what were the goals of selecting specific building materials? Or, what message should the building's facade convey to the observer? According to the adopted methodology, such information was obtained through regular consultations of the students' projects, which constitute the research material.

The research material includes works elaborated in the Architectural Design of Workplaces studio. It is a compulsory subject for architecture students in the first semester of the second cycle at the Poznan University of Technology. In this course, the students prepare a conceptual design of an industrial plant, being given the liberty to select the topic, location,

¹⁴ C.J. Kibert, *Sustainable construction: green building design and delivery*, (4th edition), John Wiley & Sons, New Jersey 2016.

¹⁵ A.E. Fenner, C.J Kibert, J. Woo, S. Morque, M. Razkenari, H. Hakim, X. Lu, *The carbon footprint of buildings: A review of methodologies and applications*, Renewable and Sustainable Energy Reviews, 2018, Vol. 94, p. 1150.

and building technology. This freedom is necessary to allow observing what problems truly dominate the minds of young designers. Only by allowing unforced decisions can we look at the birth of a new avant-garde. The research also used a few diplomas and competition works consulted outside the regular design classes.

The effects of the research-by-design were also confronted with case studies, often cited during the design process as examples of good practice. Several architectural projects and realisations from different countries were analysed to supplement the research. The selection criteria for the analysed works were using reclaimed and recycled materials or using waste as a building material. The internet search engine was used to select the case studies.

Due to the empirical nature of the conducted research and analyses, it was decided not to present the results in numbers and percentages (number of projects). The collected material was presented in the form of case studies. Therefore, generalising the results in numerical form would be scientifically incorrect.

3. RESULTS

The results showed that ecological issues related to the construction sector were, in some cases, the main driving force behind the development of an architectural concept. In general, the inspirations most often utilised by young designers included:

- a) urban context and landscape,
- b) function,
- c) aesthetics,
- d) ecology and energy efficiency.

Ecology and energy efficiency are mandatory aspects of any current project, but some young designers consider them a source of architectural value, which they strive to express. Their goals are not limited to ensuring the facility's energy efficiency and using renewable energy sources. They additionally set themselves the task of responding to other environmental problems the world faces. Among them, the carbon footprint problem and pollution caused by construction are critical. The carbon footprint of a building depends mainly on all the carbon dioxide emitted in producing materials it is made of (i.e., their embodied carbon)¹⁶. Moreover, building materials contribute extensively to environmental pollution once discarded at the end of a building's lifecycle.

The results of the research-by-design study showed that young designers do more and more frequently seek an architectural answer primarily to the problem of recycling building materials, especially plastic ones. Therefore, solutions such as using reclaimed or recycled materials, ecological materials (e.g., wood) or building out of waste gain popularity among the students.

3.1. RECLAIMED AND RECYCLED MATERIALS

Following the first principle of sustainable building, i.e., 4R – *Reduce, Reuse, Recycle, Recover waste* – it is ecologically desirable to use reclaimed and recycled materials in new constructions. Reclaimed materials, such as wood or brick, are preferable because they do not

¹⁶ E. Wilhide, *Eco: An Essential Sourcebook for Environmentally Friendly Design and Decoration*, Rizzoli, New York 2003.

require additional processing¹⁷. At the same time, recycling is considered the correct use of metals and plastics. The 4R principle has already gained worldwide popularity, affecting all creative disciplines, including architecture, art, and fashion. Fashion brands advertise goods made of recycled plastics, while creative industries sponsor inventions of various innovative items made of waste. In architecture, using reclaimed or recycled materials is no more a novelty, and the trend has a global reach. In the United States of America, its significance is reflected by the relevant credits assigned in the LEED certification program. Reclaimed and recycled materials are used by both world-famous *starchitects* (e.g., Sir Norman Foster in the project of the Masdar City, Abu Dhabi, UAE) and those who act regionally (e.g., “Kwadrat” Architectural Studio in the underground passage of the Museum of the Second World War in Gdańsk, Poland). Their popularity among young designers is not a surprise; however, a breath of novelty can be felt in their holistic or even radical approach.

An example of this attitude is the project of “Reciklea”, a recycled furniture workshop designed by Alicja Kubicka (Ill. 1). This project addresses the idea of reusing and recycling in both urban and architectural dimensions. In the context of the urban structure, firstly, the project gives a new life to the abandoned old slaughterhouse complex near the city centre of Poznań. The proposed new function is a recycled furniture workshop, which corresponds to the most recent use of the site as a flea market. In addition to the revitalisation of the existing facilities, the project involves the construction of a new workshop building, which would be entirely made of reclaimed and recycled materials. The brick and steel used in the building would be supplied from demolitions, and the metal elements of the main entrance would be recycled metal.



Ill. 1. Reciklea, designed by Alicja Kubicka, Poznan University of Technology 2015 (project’s visualization – courtesy of the author of the project).

The holistic approach to using reclaimed and recycled materials has come close to the idea of the total work of art. Designers from different parts of the world who share this commitment strive to achieve the “wholeness” effect. The fact that a building is made entirely out of reused materials is intentionally exposed. An excellent example of such a design is the Circular Pavilion in Paris (Ill. 2), the name of which refers not to its form but to the principles of the circular economy. The pavilion was realised in 2015 for the United Nations Climate Change Conference in Paris. The authors describe it as “an architectural experiment on the reuse of construction materials”¹⁸. The elements of its wooden structure were leftovers

¹⁷ *Ibidem*.

¹⁸ Encore Heureux Architects, *Pavillon Circulaire. Pavilion demonstrating the possibilities of material*

from another construction site, and the insulation came from the restoration of a supermarket. All furnishings, furniture and lighting were reclaimed. Same as the design's most outstanding feature, which is its cladding. The facades are made of 180 wooden doors removed from a low-cost housing building in Paris after its renovation¹⁹.



III. 2. The Circular Pavilion, designed by Encore Heureux Architects, Paris 2015. Photo by Cyrus Cornut. Source: <http://encoreheureux.org/projets/pavillon-circulaire/?lang=en> (access: 24.05.2022).

The study case from Paris and the student's work described above are two of numerous examples of how a commitment to minimising carbon dioxide emissions while protecting natural resources and energy inspires architects to seek new ways of using reclaimed or recycled building materials. Moreover, their design goal is not beauty itself, shaped according to predefined rules, but a total work of art, *Gesamtkunstwerk*, where various art forms merge into one coherent whole.

3.2. ARCHITECTURE FROM WASTE

The radical attitude toward using reclaimed building materials introduces another trend which has recently gained global reach: building out of waste. This trend connects environmentally engaged representatives of all creative disciplines, including art, architecture, and design. They share the goal of reducing the harmful effects of construction on the planet while using the waste generated by humanity. Architects involved in this trend often start the design process by researching which types of waste are the most abundant in a given region and the most challenging to recycle.

reuse, available online through: <http://encoreheureux.org/projets/pavillon-circulaire/?lang=en> (access: 24.05.2022).

¹⁹ *Ibidem*.

This way of thinking prompted architects from the SHAU studio to create the Taman Bima Microlibrary project in Bandung, Indonesia (Ill. 3). The building is a light construction with a façade made of used ice cream buckets²⁰. Two types of buckets were available – white and transparent – which allowed the designers to achieve a graphical pattern. It encrypts a message by Mayor Ridwan Kamil, “buku adalah jendela dunia”²¹, meaning that “a book is a window to the world”.



Ill. 3. Taman Bima Microlibrary, designed by SHAU, Bandung, Indonesia 2016. Photo by Cemal Emden, Aga Khan Trust for Culture. Source: <https://www.akdn.org/architecture/project/taman-bima-microlibrary> (access: 25.05.2022).

Taman Bima Microlibrary project is a prime example of upcycling. As a trend in design, upcycling consists of reusing discarded objects or materials in such a way that the final product is of higher quality and value than the original. The idea of upcycling has recently gained enormous popularity among young architects. When choosing a material for upcycling, designers often consider what waste is the biggest problem in a given location or globally. Generally, it is plastic waste in many cases, as exemplified by the microlibrary project. Hence the popularity of upcycling plastic as a façade material. Plastic objects can be used in their ordinary form, e.g., the use of semi-transparent baskets to achieve the effect of a sheer façade in the project of Naju Art Museum, designed by Hyunje Joo²². Or, as an ingredient of new building materials, e.g., PET bottles cast into the concrete wall of the Vorarlberg Museum in Bregenz, Austria, designed by Cukrowicz Nachbaur Architekten²³. Both methods are experimental by their nature and are of great interest to young designers.

²⁰ SHAU Architects, *Microlibrary-Taman Bima*, project description, available online through: <https://www.shau.nl/en/project/53> (access: 25.05.2022).

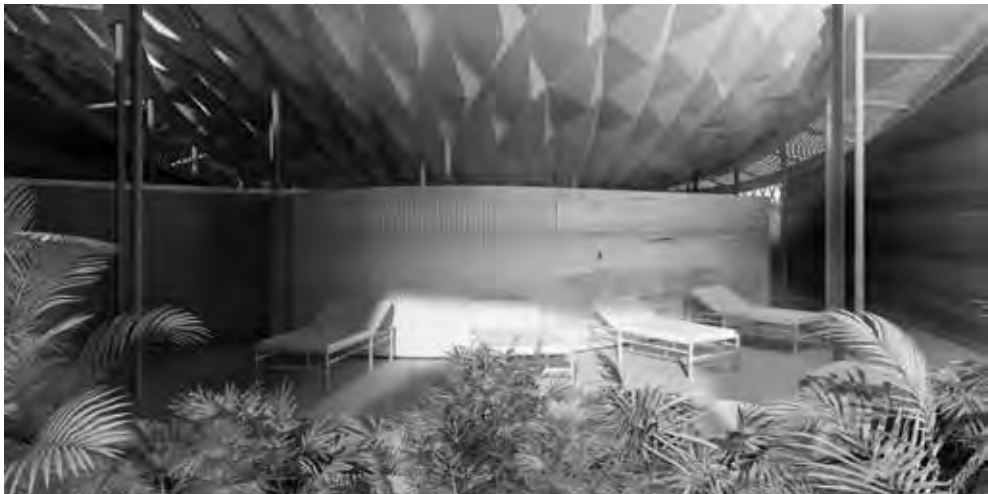
²¹ *Ibidem*.

²² J. Hyunje, *Naju Art Museum*, project description, available online through: <https://joohyunje.com/2021/06/01/614/> (access: 25.05.2022).

²³ Cukrowicz Nachbaur Architekten, *Vorarlberg Museum Bregenz*, project presentation, available online through: <https://www.cn-architekten.at/en/projekt/state-museum-vorarlberg-bregenz> (access: 25.05.2022).

Architecture students at the Poznan University of Technology eagerly reach for similar solutions. One of the exciting ideas was using recycled plastic waste collected from the sea to create a kinetic façade which would look like fish scales and could be animated by the wind. Or the concept of using PET bottles to reduce the mass of concrete walls.

The success that the idea of building out of waste has among young people also explains the extreme popularity of Kaira Loooroo competitions for architecture students. One of its central assumptions is the use of waste, the disposal of which is the greatest challenge for the local community, e.g., car tyres or polypropylene bags. Car tyres were used in different design proposals prepared by the students of the Poznan University of Technology for the Kaira Loooroo competition. The usual assumption was to fill them with soil and thus create a thick outer wall. Nonetheless, other ideas also emerged. An interesting recent example is the work of the students Aleksandra Pytka from the Poznan University of Technology (PUT) and Natalia Dembińska from the Lodz University of Technology (TUL). In their design of the Children's House in Africa, they have created a parametric roof made of polypropylene bags, stretched on a wooden frame, and formed in the shape of kites (Ill. 4).



Ill. 4. Children's House in Africa, designed by Aleksandra Pytka (Poznan University of Technology) and Natalia Dembińska (Lodz University of Technology) for Kaira Loooroo Architecture Competition, 2022 (project's visualization – courtesy of the authors of the project).

The experimental nature is a critical aspect linking those mentioned above and similar projects. Moreover, their authors strive to achieve the effect of a total work of art, *Gesamtkunstwerk*, combining various fields of art in each project. Another significant common feature is that specific principles of composition do not determine beauty. The beauty of those works seems to come from their pro-ecological commitment.

4. DISCUSSION

The results obtained through research-by-design and case study methods show that diverse current trends in architecture, art and design have a common background: environmental

awareness. The ecological situation of Earth, with all its consequences for man's future, has a profound effect on current social, political, and economic reality. The fact that the construction sector has a significant contribution to the situation that has arisen²⁴ motivates young designers to break with unecological tradition, revolt against the precedent, and seek a new way of building. Their reaction can be named radical, which philosophically brings it closer to the prototypes of the avant-garde from the beginning of the 20th century²⁵.

Seeking a new, more ecological way to build promotes experimentalism. Designers committed to ecology experiment with new technologies and uncommon materials to reduce the environmental impact of their activity. They use materials with a lesser embodied energy factor, e.g., wood, reclaimed or recycled materials, and, more recently, they opt for building out of waste. Since the problem is global, the answer is global as well. The pro-ecological movement in architecture has a worldwide reach, which complies with the definition of the avant-garde²⁶.

Using sustainable materials (e.g., wood), reclaimed or recycled ones, and building out of waste all aim to reduce the harmful environmental impact of the construction sector. Many architects specify such materials as an addition to their designs, sometimes as a decoration. The main difference between the regular use of these materials and the trends discussed above is that the latter seek to achieve a total work of art, *Gesamtkunstwerk*. This radical approach combines all forms of art to create a coherent whole²⁷ and connects various design fields, including architecture, interior design, and applied and beautiful arts.

Just as avant-gardes of the beginning of the 20th century, the pro-ecological movement does not impose specific criteria of beauty²⁸. Rather than specific composition, classical or abstract, it values sustainability the most. The beauty of ecological architecture stems from its environmental neutrality. Like avant-garde art, it opts for unconventional forms and gives attention to dreams²⁹, the most important of which is complete compliance with the natural environment.

5. CONCLUSIONS

The trends discussed above, the first focused on reclaimed and recycled materials and the other devoted to building out of waste, are recent paradigms of sustainable architecture. Both trends fulfil all the criteria of true avant-garde, and so does the pro-ecological movement to which they belong:

- a) It maintains a close relationship with the current social, political, and economic reality, being a response to the ecological problems of the planet.
- b) It has a revolutionary character, opposing the tradition of its architectural predecessors, who did not hesitate to use expensive and rare materials (e.g., endangered tree species or unique stones, whose intercontinental transport contributes to carbon dioxide emissions).

²⁴ C.J. Kibert, *op. cit.*

²⁵ S. Fauchereau, *op. cit.*; A.V. Munch, *op. cit.*

²⁶ S. Fauchereau, *op. cit.*, p. 533.

²⁷ A.V. Munch, *op. cit.*

²⁸ U. Eco, *op. cit.*

²⁹ E. Węclawowicz-Gyurkovich, *op. cit.*

- c) Endeavour to find “a new way” is felt behind the experimentalism, which is innate in the trends discussed above.
- d) Pro-ecological movement in architecture is undoubtedly global – trends belonging to this movement are born independently of each other in different regions of the world.
- e) It combines various creative fields, mainly architecture, interior design, and applied and beautiful arts.
- f) It seeks to create a total work of art – *Gesamtkunstwerk* – in which all the above fields merge into one coherent whole.
- g) It does not define the criteria of beauty, which comes out unexpectedly as a result of experimentation and environmental commitment.

In the final analysis, the pro-ecological movement in architecture contains diverse trends which develop simultaneously in different regions in response to the current reality. Apart from the above-listed common elements, they are also characterised by the fact that they imperceptibly melt within the surrounding milieu, colouring it until they are completely absorbed. Their apparent discretion and the fact that they seem to be a momentary whim or fantasy make us hardly notice the millennium change that is taking place. Same as after the avant-gardes of the 20th century, there will be no turning back after this change is realised.

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Author's Note:

Marta Pieczara, PhD, Arch.

Obtained her master's degree in architecture and planning at Cracow University of Technology, Poland. From 2007 to 2011, she was an assistant at EPFL, Switzerland, obtaining a PhD degree in 2012. Since 2014 she has been a tutor of architecture at the Poznan University of Technology. Besides her academic interest, she gained professional experience as an architect in Poland and the USA.

marta.pieczara@put.poznan.pl