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FAÇADE GRAPHICS IN ACADEMIC ARCHITECTURE WITH THE MISSION OF CREATING MESSAGES

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Purpose: The purpose of the study is to determine the importance of academic centres for local marketing activities. Academic centres are often used as a showpiece for a town or region, connecting the town with the European academic community, contribute to a town's development. It is common for academic centres to be supported by the town or region to ensure modern research facilities or libraries are being built. Cutting-edge technologies are used in such buildings, including façade graphics. One of the main aims of this study is to establish the significance and scope of the information and messaging included in façade graphics in the context of social integration and identification.

Design/methodology/approach: The material was analysed and grouped according to separate topics to be further examined: demonstration of innovative solutions; demonstration of environmental policies; references to history and heritage; emphasising the multi-cultural character of the building.

Findings: The research defines new meanings of academic buildings and the facade graphics used there. The scientific material examined indicates the significant role of higher education facilities in social communication and creating the identification of the place.

Research limitations/implications: The below research is of preliminary character. It might be continued in order to look at other aspects. More visual elements as well as means of expression and image structures might be added, which are related to the effectiveness of the message being created.

Practical implications: The article showcases the possibilities provided by façade graphics as far as producing social messaging is concerned, which might be used to create or reinforce social integration or marketing activities.

Social implications: The article discusses two aspects of the role that art and façade graphics play in architecture as one of the local marketing tools. It examines the influence of the messaging contained in images linked to social identification.

Originality/value: The article may provide investors, architects, artists and decision-makers with inspiration. The research has demonstrated a broad reach of façade graphics and that it can be used in regional marketing.

Keywords: glass façade; façade graphics; communication in architecture; building brand of region; contemporary architecture.

Category of the paper: Research paper.

1. Introduction

The objective of the research is to determine the marketing potential of higher education buildings and the role of university architecture and façade graphics in creating the image and building the brand of a region. The issue shall be analysed based on example academic buildings and complexes, where the glass façade is covered with graphics. Based on example academic buildings, the author analysed the features that enable measuring the importance of art linked with architecture. Each of the buildings was examined in terms of its usefulness for shaping social awareness; all in connection with creating the image of a region as well as building its brand.

A look at the coexistence between architecture and art brings up several questions. To what extent can the content and graphic shapes included in a glass façade be used to create social identity? To what extent can university architecture be used to create the image and build the brand of a region? The analysis included 13 different buildings. The material has been divided into separate topics to be further examined: demonstration of innovative solutions (abstract components linked to state-of-the-art technology, geometric patterns); demonstration of environmental policies (organic images, organic textures, plant motifs); references to history and heritage (figurative motifs); emphasising the multi-cultural character of the building (lettering motifs).

Selection criterion for the buildings referenced in the paper:

- Each of the buildings is an example of either higher or secondary education.
- Buildings were selected whose glass façade was covered with graphics.
- All of the buildings have been put up in the last three decades.
- The research focuses on buildings in Europe.
- Most the buildings have been examined in situ.

The research material includes documentation in the form of photographs, observation notes, sketches, measurements, analyses.

In earlier research it was observed that the messaging in buildings with façade graphics is not created in a direct way, but rather based on the relationship between the image and the building's form and function. A semantic link results in a metaphorical message (Lipowicz-Budzyńska, 2023), which is present in the urban space within the context of the town and estate and the context of the architectural space.

For each of the referenced buildings, the predominant factors that take part in creating the information were taken into consideration:

- Those related to façade graphics: form, size of the composition, meaning, colour.
- Those related to the building's form: shape, function, scale of the building.

2. Façade graphics in modern academic architecture in the social and environmental context

The referenced material and the projects described below provide an insight into the diversity of the styles and forms used in the buildings. Each of the listed examples has different objectives, relationship with the surroundings, or form of expression, and utilises different artistic means, which can be used in marketing.

Image on glass, through its scale and properties is seen in three contexts: the urban context, the building's façade, and from the interior (Lipowicz-Budzyńska, 2019). Messaging intended for the users and the surroundings may be utilised in the process of building or reinforcing social identity. Façade graphics spotlight high social status; are consistent with the latest trends in innovation and environment protection; and showcase the unique history, cultural heritage, and multicultural character of a building. These aspects make façade graphics useful in marketing activities.

2.1. Demonstration of innovative solutions

A. Abstract components linked to state-of-the-art technology

Digital Innovations Centre (ZDI) in Würzburg, Germant [Henne Sch'nau Architekten; Completed: 2018; screen printing, argon glass] is a typical example of cooperation between the municipality and the university in creating innovative spaces that showcase the region. The project is a continuation of CUBITY "Plus Energy and Modular Future Student Living", a multi-stage research project. Its purpose is to provide a stimulating environment, which will enable implementation and further development of innovative IT ideas. The building provides an optimally designed space for start-up companies. The original external shape of the building has been visually enriched using graphics with minimalist articulation (Figure 1). The building, 9.50 metres high, is set on a square plan with the edge length of 16 m, and is finished off with a flat roof. The lower part of the external layer consists of a post-and-beam facade with threelayer glazing, the very high storey is surrounded by semi-transparent multi-wall panels made of polycarbonate. A dark grid is printed over them, in which several graphic elements are visible: a large paper plane on the western side, parts of folding instructions on the northern and eastern sides of the elevation, and large letters indicating the address on the southern side. The graphics make up a unique message, and with a reference to the airport that used to operate in the building's vicinity, and a metaphorical reference to ambitious objectives accomplished by those working inside, the graphics show the function of the building perfectly.



Figure 1. The Digital Innovation Centre (ZDI), the northern and eastern façades, Würzburg, Germany (Henne Sch'nau Architekten, 2018); A — the view of the northern and eastern part of the building, source: photos by author.

Sensor City (Figure 2A) [IBI Group; Completed: 2017; graphic area: 825 m², screen printing, laminated glass (Sensor City Liverpool, 2017)], which is the result of cooperation between the University of Liverpool and Liverpool John Moores University, and is one of the four flagship academic zones, has been designed and erected as a technology centre to support the innovative business community. The importance of the building is emphasised by the glass façade that displays computer chips representing state-of-the-art technology and data transfer. Its aesthetics are dominated by decorative graphics (Figure 2B), which utilise a three-colour palette: white, black and yellow — the last one is a reference to gold, a highly valued material in electronics. The glass has been designed with both day and night viewing in mind. This results in a changed appearance of the elevation, depending on the time of day. The building has been named one of the most popular in Liverpool (Sensor City Liverpool, 2022).



Figure 2. A building demonstrating the city's pro-innovation policy; A — Sensor-city building (IBI Group, 2017), Liverpool, UK; B — Glazing detail; source: photos by author.

2.2. Geometric patterns

Another important example of academic architecture, which is one of the key points in the town, is the Student Learning Centre, a part of Toronto Metropolitan University, Toronto, Canada [Zeidler, Snøhetta; Completed: 2014; graphic area: 14,400 m², digital printing (TMU, 2024)]. The building was inspired by historical stoas and Agoras meeting spaces in Ancient Greece, where learning was part of the social processes. The centre has been placed on eight storeys of open space adopted for meetings, studying and exchanging ideas. The project was designed to provide environment that encourages users to interact, and also offers spaces for research; a place that students can make their own (Sheldon & Tracy Levy Student Learning Centre, 2024). Upon its opening, the building immediately became a landmark of the campus and a popular space, open from 7am until midnight everyday. There are graphics on the building (Figure 3A) in the form of irregular shapes of various sizes, either fully or partly filled with enamel (Figure 3A). Most of the graphics are constituted by arrangements encircled with lines of different widths and their insides not filled. The form of these elements is a reference to clouds, as they too fully or partially obstruct the sunlight filtering into the building (Sheldon & Tracy Levy Student Learning Centre, 2024), and thus improving user comfort. The shapes are meant to be consistent with the body of the building. A pattern consisting of multiple elements provides visual unity to the façade, losing the rectangular divisions of the panels. Both the size and form of the building as well as the graphics on the glazing constitute a prominent artistic element. They are key for the style of the building and its standing out from the surrounding development.



Figure 3. Toronto Metropolitan University, The Student Learning Centre, Toronto, Canada (Zeidler, Snøhetta, 2014); A — view of the building body, B — close-up view, source: By Richard Eriksson from Toronto, Canada - Ryerson Student Learning Centre, CC BY 2.0, https://commons.wikimedia.org/w/ index.php?curid=110175571, B – Façade from up close.

CityLabs 2.0 [Sheppard Robson Bruntwood, in partnership with Manchester Science Partnerships, Central Manchester Foundation Trust; Completed: 2021; graphic area: 3500 m², digital print, laminated glass (CityLabs 2.0, Manchester, 2022)] is a collaboration between Manchester University NHS Foundation Trust (MFT) — the largest NHS Trust in the UK — and the Manchester Science Partnerships (MSP). The building offers grade-A office area as well as state-of-the-art lab facilities. The space will enable biomedical companies to pursue development and working on new health products together with the academic community. The building is fully glazed (Figure 4A) and covered with digital print, with a pattern composed of 8 similar circular elements (Figure 4B). The pattern also protects against sunlight and helps prevent excessive heat inside the building. CityLabs 2.0 is the second building in the complex. CityLabs 1.0 was built in 2015. The CityLabs campus is now an important landmark in the city and a world's leading innovation centre for health and precision medicine.



Figure 4. A building demonstrating the city's pro-innovation policy; CityLabs 2.0 building (Sheppard Robson Bruntwood, Manchester Science Partnerships and Central Manchester Foundation Trust, 2021), Manchester, UK; A — view of the building body, B — close-up view, source: photos by author.

2.3. Demonstration of environmental policies

One of the methods for marketing a region is to present progressive policies in key strategic areas around the town. One of such areas is environment protection. Environmental aspects may be invoked using organic images, organic textures, as well as plant or other nature-related motifs.

A. Organic images

Organic graphics may be found on the following buildings: The Spine in Liverpool, the United Kingdom, or Inholland University in Rotterdam, the Netherlands.

The Spine building, used as the seat for the Royal College of Physicians in Liverpool, UK [AHR, Completed: 2021; graphic area: 9400 m², digital print (Kucharek, 2022)] is a landmark in the city (Figure 5A). It has gained this status not only thanks to its height, but also unique graphics that make it stand out among other high-rise buildings found in the

Liverpool's 'Knowledge District'. The building expresses the popular wellness trend that focuses on well-being and ensuring users' health. The glazing graphics are based on the Voronoi diagrams (Figure 5B). Similar pattern already exists in nature, e.g. on the skin of fruit, giraffes or humans. The glazing provides protection against sunlight and overheating in the rooms, improving user comfort. With the graphics the façade is covered with enamel in 25% from the northern side, 32% to the east and west, and 39% on the southern wall of the building. Referencing nature in the graphics is symbolic. It reflects the environmentally-friendly policies implemented in the town and region.

Another example is found in the Inholland University building in Rotterdam, the Netherlands [Erick van Egeraat; Stage II completed: 2008; graphic area: 15,000 m² (entire stage II glazing area), digital print]. The building was completed in two stages. Extending the building has resulted in a complex with a loose structure that now reaches as far as the halls of residence on the opposite side of the quarter. Each of the stages involved adding graphics on the façade in the form of screen print on glass. The extension included a building that became home to the student support centre, library, student canteen, as well as the computer and copying centre. At stage two, the main building was extended by the addition of a three-storey block with a rectangular cuboid shape (Figure 5C). The façade is composed of horizontally-oriented rectangular panes. The surface of the glazing is covered with a yellow screen print layer. The image was created by processing, multiplying and gentle displacement of an organic pattern with a structure resembling a leaf.



Figure 5. The façade contains quotes from nature being a manifestation of the pro-ecological policy of the local authorities; A — The Spine building The Royal College of Physicians (AHR, 2021), Liverpool, UK, B — Inholland University, Rotterdam, the Netherlands (Erick van Egeraat, 2008); view from the north-eastern side; buildings belonging to the second extension stage, source: photos by author.

B. Organic textures

An example of organic texture used in a façade can be found in the library belonging to the Folkwang Universität der Künste in Essen, Germany [Max Dudler Architekten; Completed: 2011; 600 glass sheets, digital print (Folkwang Bibliothek, 2024)]. A print was applied on the elevation to protect the book collections against excessive light penetration. The façade is

composed of 600 panels of various forms with digital printing displaying stone textures. In order to achieve a realistic effect, 300 stone panels were used in the project. Photographs of the stone panels in the scale of 1:1, showing all the details, have been prepared with the help from Stefan Mueller (Folkwang Bibliothek, 2024). A realistic effect of a stone wall has been achieved (Figure 6A). The façade provides sunlight protection against the UV radiation. The impression of a natural stone cladding fits extremely well with the surrounding historical architecture of the University; it adds grandeur to the modern orthogonal body of the building. The modern architecture of the library is a feature that adds splendour not only to the university but indeed the entire town.



Figure 6. The façade contains quotes from nature being a manifestation of the pro-ecological policy of the local authorities; A — Bibliothek — Folkwang Universität der Künste, Essen, Germany (Max Dudler Architekten, 2011), source: photo by author, B — Institute for Medical Systems Biology, der Humboldt-Universität, Berlin, Germany (Staab Architekten, 2018), source: Małgorzata Klimowicz

The building of the Institute for Medical Systems Biology, Humboldt-Universität [Staab Architekten; Completed: 2018; print (Berlin Institute b, 2024)] provides yet another example. The building is L-shaped, and is largely covered with a glass façade with organically shaped graphics printed over it (Figure 6B). Vertical organic strips protect the interior against excessive sunlight protection and against rooms overheating. The graphics are designed in such a way so as to make them the most transparent at the height of 1.6 m, where a typical adult would normally look. The arrangement of vertical strips is a reference to the building's purpose. It visually shortens the building, and the rhythm of the graphics adds grandeur to the building. It has become a prominent feature of the entire campus that spreads across the north-western part of town.

C. Plant motifs, references to nature

An example of a glass elevation covered with an organic print showing plant motifs is seen in the building of the Utrecht University Library in Utrecht, the Netherlands [Wiel Arets Architects studio; Completed: 2004; screen print using two colours: black and white (Utrecht University Library, 2024)]. Two separate areas can be pointed out in the library building's elevation: one made of black concrete panels and the other of glass covered with screen print (Figure 7A). The link between the two materials is the papyrus motif referencing the building's purpose. It has been impressed in the concrete slabs as a relief (Pell, 2016), and placed on glass in the form of screen print. Linearly multiplied glass and concrete panels on the elevation make up horizontal rectangular geometric arrangements to add variety to the simple shape of the building. The geometric shape of the flat forms contrasts with the organic motif on the glazing. From afar, it is hard to recognise what the print on the glass shows, and it is seen as bright smudges. Only when one moves closer, can the plant motif in the image be identified. In parts of the elevation, glass panels have been placed inside vertically opened frames. Mobile components have been added to the static monumental body of the building in the form of large panels that can be opened. It is a vital feature, which adds variety to the elevation and improves the artistic expression of the building.



Figure 7. The façade contains quotes from nature being a manifestation of the pro-ecological policy of the local authorities; A — Utrecht University Library, Utrecht, the Netherlands (Wiel Arets Architects, 2001), B — Institute for Hospital Pharmaceuticals, Basel, Switzerland (Herzog & de Meuron studio, 1998), source: photos by author.

Institute for Hospital Pharmaceuticals in Basel, Switzerland [Herzog & de Meuron studio; Completed: 1998; graphic area: 1545 m², screen print] is housed in a complex of buildings with an elaborate modern form, contrasting with the historical surroundings built in 17th to late 20th centuries. The building is shaped in a way that creates semi-closed yards, with an atrium in the centre of each. On the street side, a rectangular cuboid block has been put up that conceals the entire complex and matches the placement of other buildings. In most part, the façade has been covered with printed glass (Figure 7B). The printed glass on the elevation makes the building stand out among the historical buildings around it. The colour of the glazing is a reference to the building's purpose, it underlines its link with the plant world: herbal medicine. The green elevation matches the colour of ivy that grows on part of the elevation. A strong interaction occurs especially in contact with green colour.

Removing the glass surface from the face of the wall adds space to the building. Interference phenomena occurring between the two layers change as the observer moves, and the elevation looks animate, pulsating, which encourages passers-by to visually interact with the façade. The building is located along one of the main streets and has a prominent place in the town's scenery.

2.4. Historical references — emphasising the function

A. Figurative motifs

An important part of creating social identity is to highlight the sense of common history. The article references two buildings: the first one is linked to recent history, and the second one contains two contemporary elements as well as historical information.

The Jacques Herzog and Pierre de Meuron studio frequently utilises façade graphics, experimenting with the screen-printing technique and its applications in architecture. This can be seen as a continuation of architects' interest in photography — its nature and materiality (Ursprung, 2016). One of the experimental designs can be found in the Eberswalde Technical School Library [Herzog & de Meuron studio; Completed: 1999; graphic area: 509 m², screen print]. The building has been situated next to 19th century architecture, surrounded by an old park site. A rectangular cuboid building with a framed structure has been inserted into the historical fabric of the complex. A modern, three-storey block contrasts with the ancient surroundings. The designers' intention was to make a reference, with the exterior, to the style of storage containers (Figure 8A). To make the prints, photographs from the Newspaper Photos series were used, compiled in 1981–1991 (Newspaper Photos, 2024) by photographer Thomas Ruff. The photographs (Figure 8B) are taken from German newspapers and magazines. During the course of the project, 2500 photographs were collected, which the artist archived, dividing them according to the subject (Fenster und Tueren, 2024). Copies of 17 selected images were placed on the elevation. The prints were arranged in 17 rows and multiplied 66 times. The building is clearly visible in a small town that Eberswalde is, particularly against the backdrop of all the historic buildings.



Figure 8. The Eberswalde Technical School Library in Eberswalde, Germany (Herzog & de Meuron, 1999): A — view of the building body, B — close-up view, source: photos by author.

2.5. Highlighting the multicultural character of a building

The main function of façade graphics is information, linked to the building's purpose. Façade may display other content, challenging or inviting a certain social group. An example can be found in the façade of the Cottbus University Library [Herzog & de Meuron Architects; completed: 2004; graphic area: 5800 m², screen printing (Herzog & de Meuron 2005)]. The building is fully glazed. The elevation is made up of two layers (Edwards, 2011) of glass, placed at a distance from each other, on which lettering graphics have been placed (Figure 9A). The shape of the graphics comes from overlapping of letters from alphabets of different linguistic groups (Laube, Widrig, 2016). Put together, the letters create an abstract form made up of linearly arranged shapes. The graphics represent a contemporary interpretation of lettering graphics (Figure 9B). The form of the image is related to the building's shape. The image provides a distinctive graphical feature identifying the building. It is linked with the building's purpose, and the openness of the scientific community to international contacts. It shows the universal character of the book collection housed inside the library, and extends an invitation to the global community. This aspect highlighted in the façade elevates the town's status, and makes it a prominent spot in the region and the whole of Europe.



Figure 9. The Cottbus Technical University Library, Cottbus, Germany (Herzog & de Meuron, 2004), A — building view from a distance, B — close-up view, source: photos by author.

The next example combines an active louvre system with graphics on glass. It is the Ørestad College building in Copenhagen, Denmark [3XN Architects; Completed: 2007]. The louvre system is one of those that cooperate with other systems to ensure energy efficiency of the building. With the coloured louvres, the lighting can be freely set to any level using the electronic sensor system integrated with the heating. The system controls sunlight protection (Care et al., 2015). Glass panels dominate both outside and inside. They have a compositional role, drawing attention away from the vertical lines on the building (Figure 10A). The moving elements, with varying degrees of transparency, stress the rhythm and add colour to the elevation (Figure 10B) and the interior.



Figure 10. Ørestad College, Copenhagen, Denmark (3XN Architects, 2007): A — View of the façade from the outside; B — Details of the glass coating, source: Maarten Helle.

Table 1.

Type of messaging / Features affecting how the message is formed; the building-image relationship.

Item		Message				Façade graphics							II.
	Object	Demonstration of innovative solutions	Demonstration of environmental policies	References to history and heritage	Highlighting the multicultural character	Form	Size	Compos.	Meaning	Colour	Building's form	Building's function	Graphical features — soci awareness
1	Digital Innovation Centre, Würzburg, Germany	Х				Х	Х	Х	Х		Х	Х	Х
2	Sensor City building, Liverpool, UK	Х				Х	Х	Х	Х	Х	Х	Х	Х
3	Toronto Metropolitan University, Toronto, Canada	Х				Х		Х			Х		
4	CityLabs 2.0, 2021, Manchester, UK	Х				Х		Х					-
5	The Royal College of Physicians, Liverpool		Х			Х	Х	Х	Х			Х	Х
6	Inholland University, Rotterdam, the Netherlands		Х			Х		Х		Х			Х
7	Bibliothek, Folkwang Universität der Künste, Essen, Germany		Х			Х	Х	Х	Х	Х			Х
8	Institute for Medical Systems Biology, der Humboldt-Universität, Berlin, Germany		Х				х	Х					
9	University Library, Utrecht, the Netherlands		Х			Х	Х	Х	Х	Х		Х	Х
10	Institute for Hospital Pharmaceuticals, Basel, Switzerland		Х						Х	Х		Х	
11	Eberswalde Technical School Library, Germany			Х		Х	Х	Х	Х			Х	Х
12	Cottbus Technical University Library, Germany			Х	Х	Х	Х	Х	Х		Х	Х	Х
13	Ørestad College, Copenhagen, Denmark				Х	Х	Х	Х	Х	Х		Х	
a													

Source: own study.

3. Summary

The above research shows the significant role of art in the perception and identification of architecture. The analyses confirm the role of façade graphics in creating the message and identification of the place. This is particularly evident in higher education facilities. These facilities are implemented with the use of the latest technologies, including the use of façade graphics. The examples cited in the article confirm the significant impact of the image and the formation of characteristic objects associated with both the function of the object and its location. Thanks to properly selected means of expression and significant articulation, façade graphics can be used in branding, i.e. in creating a visual identification system of the brand, which expresses its identity by means of various features, such as name, logo, colours, characteristic features of services. Academic centers are often used as a showcase of the city and the region, connecting the city with the European academic community. Through long-term connection of students and graduates with the university and through international contacts, universities are an excellent channel for the promotion of the city and the region.

Each of the buildings has a slightly different way of delivering the message and interacting with the viewer. Academic buildings have a unique role in developing social integration.

The conducted analysis has shown the following features to be essential factors in creating the image: form, composition, and the way in which the imagery relates to the function (Table 1). In the majority of cases the building's form is very simple, orthogonal, and emphasises the minimalist approach of the authors. It seems to act as the background over which the graphics are displayed. The only exception is the Cottbus building, where the form and graphics are linked to shapes. Significant visual impact and direct contact that the viewer has with the graphics mean that the glass façade is a great medium to create messages and can be applied in both forming and strengthening social identity.

In some of the above examples, the message is built in a direct way, using the means used in the image (Table 1), such as: form, size, composition, meaning, colour. Examples have been observed in which the above measures have been fully used: examples 2, 7, 9, 13 (Table 1). Objects that use the direct message created in the façade have been distinguished. In these objects, colour is used to strengthen articulation, it does not take part in creating the message: examples 1, 5, 11, 12 (Table 1). In the research material, objects have been observed in which the message is created indirectly as a result of the interaction between form, function and image elements such as colour and texture: examples 3, 4, 6, 8,10 (Table 1).

In the research material referenced in the article, various strategies for using façade graphics in the creation of regional marketing were noted. It was observed that the façade may carry content which supports generating or enhancing social integration. The information contained in a façade, or a direct message created with the use of a metaphor is linked to the following aspects (Table 1):

- Demonstration of innovative solutions has a significant potential in terms of integration and marketing.
- Highlighting the green policies of the municipality or region in the façade is vital for marketing. It produces an image of a region, linked with the use of the latest trends of caring for the environment and being open to environmentally-friendly solutions and technologies.
- Historical references build and enhance social integration and raise social awareness; they may be used for creating a brand for the region.
- Highlighting the multicultural character of the building emphasises the location's and the region's openness to international contacts, and may encourage to develop new relations in various branches of economy.

The research corroborates the important role of façade graphics in creating the image for a region and conducting its marketing activities.

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