

ART GLASS IN ARCHITECTURE AS AN INDICATOR OF MODERNITY, AND ITS CONNECTION WITH THE PAST

SZKŁO ARTYSTYCZNE W ARCHITEKTURZE JAKO WYZNACZNIK NOWOCZESNOSCI I JEGO POWIĄZANIE Z PRZESZŁOŚCIĄ

Abstract

Art glass used in architecture has been a measure of modernity for centuries now. In its original form as stained glass it provided a response to the aesthetic requirements of many periods, from Gothic up to the 20th century, when changes in architecture and art brought about a need to replace stained glass with techniques that would be more in tune with the latest aesthetic trends. At the end of the 20th and the beginning of the 21st century, the environment was right for new forms of expression with art glass to appear. Today, several techniques are known that can be used to create monolithic glazing, meaning one without a lead line being seen in the image that used to be present in stained glass. How much was stained glass inspired by modernity? To what degree in terms of technology and aesthetics is modern art glass related to the past? This is a text about art and its integration into architecture; about inspiration and passion.

Keywords: glass in architecture, art glass, glass facade, glass graphics, screen printing

Streszczenie

Szkło artystyczne stosowane w architekturze od wieków było wyznacznikiem nowoczesności. Pierwotna jego forma witraż odpowiadała zapotrzebowaniom estetycznym wielu epok, od gotyku aż po XX wiek, kiedy to wraz z przemianami dokonującymi się w architekturze i sztuce pojawiła się potrzeba zastąpienia witrażu technikami bardziej przystającymi do najnowszych kanonów estetycznych. Na przełomie XX i XXI wieku zaistniało podatne środowisko do powstania nowych form wypowiedzi w szkłe artystycznym. Dzisiaj można wyodrębnić kilka technik, za pomocą których tworzone są przeszklenia monolityczne tzn. bez linii ołowianej w obrazie, jak to było w witrażu.

Na ile witraż czerpał z nowoczesności? Na ile technologicznie i estetycznie nowoczesne szkło artystyczne powiązane jest z przeszłością? Jest to tekst o sztuce i jej integracji z architekturą, o inspiracji i pasji.

Słowa kluczowe: szkło w architekturze, szkło artystyczne, szklana fasada, grafika na szkłe, sitodruk

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1. INTRODUCTION

The purpose of this paper is to extract, outline and analyse questions that connect tradition with modernity. This is especially difficult in the case of art, which constantly undergoes changes. What today is new and modern, soon becomes the history of art. These dynamics follow the rhythm of new works. Visual arts, such as paintings, graphics and media arts, are utilized in a very dynamic way; the same applies to large art glass designs, despite the fact that the rhythm in which subsequent works are created is much slower.

The pursuit of modernity is a type of disease inherent to visual arts; as if a reference to tradition could not be modern. Artistic elements dug up from the past can be discovered and processed in new ways. This is exactly what the authors of the works discussed below have done. Each of these works contains a reference to the past, be it in the subject matter or in the graphics/painting elements.

The art glass designs that were used as research material for this paper were all created in late 20th and early 21st century. Due to the global nature of artistic phenomena, which also affect art glass, there was no restriction on the area of research.

The relationship between modernity and tradition in the case of art glass is multifaceted. And because this is a short paper, it was reduced to only the basic aspects connected both with stained glass as well as modern execution techniques.

2. STAINED GLASS

When stained glass appeared, it forever changed the face of architecture. Unlike any other technique known previously, it created an opportunity for placement of large images in the architectural space. At the same time, these images provided a surface which brings additional light and creates a filter for the light going into the building. The ability to filter light meant that we could control its intensity and tone. Modulation of light going through the glass gave the chance to create a unique vibe indoors that changes along with the shifts in the position and intensity of the light outside. Art glass was responsible for the appearance of colour in the architectural space, both in the image presented on the glass as well as in the form of colourful shades cast on the floor and walls.

When stained glass burst into churches, it brought about a revolution in the visual perception of building interiors, as well as in how people experienced the liturgy. Colourful glass images showed biblical scenes, and it was important for many members of congregations because until mid-20th century the Mass in the Catholic Church was conducted in Latin. Glass images were used as a presentation medium, but also a medium for much of other content included in the symbolism accompanying the scenes.

The application of glass for the creation of figurative images of biblical scenes had metaphysical significance. To technologically control this unique and mystical material requires vast knowledge and experience. Any oversights related to relaxation of glass during thermal treatment lead to the creation of micro-strains, and eventual destruction follows. The methods of glass production and treatment developed over centuries were handed over as part of the student-master relationship. The secrets of the production and treatment of coloured glass were closely guarded, and those who failed to keep them often had to pay with their life.

Despite the fact that the technique itself has not changed radically over the ages, we can pinpoint several key inventions, improvements and discoveries in the field of material science that occurred during the technique's evolution.

New materials and technologies affected how stained glass was being developed. One thing though remained constant: namely, the structure of the image, which is put together from bits of glass and then set within an outline made of lead. This bearing element, which constitutes a fabric from which stained glass is woven, determines the nature of the image, and has significant artistic consequences. The lead strip viewed against the light becomes a black line, and gives the image a specific character, not seen anywhere else in art. This line provides a graphical framework, unifying the image artistically, and giving it some order. Without exposing the line too much, the aim is to ensure proper intensity of the image². The lead framework stabilises the image, removing spontaneity and making it into a graphical element.

3. MONOLITHIC ART GLASS AND NEW POSSIBILITIES

In mid-20th century, these traits of stained glass defined further technological and formal research, and were also the reason for the growing need to free the image on glass from the domination of this lead line, and giving it a more subtle and spontaneous character.

The appearance, and then popularisation, of façade systems provided a new stimulus for technological research. It was now necessary to develop techniques which could be used to create large-scale images; for instance, images that would cover an entire façade of a building.

Other limitations of stained glass were related to the fact that it was not being fully exposed within the structures of a building. Stained glass is meant to be viewed *against the light*. Therefore in daytime it chiefly works inside the building, but at night, when the interior is lit, it can be seen from the outside. Techniques were required that would enable creation of images on façade glass which could be viewed from both the inside as well as outside of the building – a double-sided layer meant to be presented *with the light* and *against the light*.

Modern forms of art glass began to appear in architecture in late 20th century, in the form of experiments, both technological and structural. Initially, they were created at stained glass studios and modern glass workshops. By experimenting and combining various techniques, the studios often developed their own methods for making two-dimensional images on glass, and they achieved optimum effects that were adapted to individual needs of each work. Over time, however, as devices for printing on glass appeared and were developed, the production of art glass moved away from workshops, and into glass manufacturing companies.

Looking at the latest methods of art glass making, one is inclined to ask: **To what extent is modern art glass related to the past in terms of technology and aesthetics?**

The conclusion after analysing each of the techniques that can be used to build a monolithic image in a visual way – that is without the divisions caused by lead outlines that are used in stained glass – is that these relations are in fact very close. All these creative methods are characterised by limited artistic capabilities and require specific conditions to be met during

² In late 16th and early 17th century *chromatic and monochromatic stained glass* was created. Paint layer was often made with the use of several patina hues. Sometimes, *grisaille* paintings were used. They are single-colour paintings made using several shades of grey and brown. An often applied procedure was to enhance a monochromatic image with silver compounds which dye glass yellow.

the creative process. Each of the below methods of making monolithic art glass was created at a different time and has a separate story. They all, however, enable creation of large-scale glass surfaces and their placement within a façade system. Most of them derive from techniques that have for many years been associated with stained glass.

One example could be manual methods used for working on glass, which have been applied in stained glass for centuries and are currently used for large-size glass surfaces. These techniques have been enhanced by the addition of spraying techniques, and methods involving thick layers of pigmentation material, for instance, with the use of a palette knife.³

High-temperature techniques of fusing and slumping, which occur inside special electric or gas-fired kilns, are derived from glass casting, which has been used for centuries in glass-works, and was developed from an ancient methods of glass forming, known today as sand casting.

The screen printing method was transferred from workshops, where it had been used for decades, and is now one of the top methods for the creation of large-scale glass surfaces.

Also, features that are related to vividness and the subject of the image put on glass have a link with the tradition. For various reasons, artists frequently decide to use historic photographs and tell a story about the past. There have been cases where murals or paintings from the past have been incorporated into façades. Contemporary art glass, especially that in church settings, has a place for stories and legends connected with the lives of saints. Sometimes *witnesses* – a name given to reflections of façades from earlier buildings – are incorporated into the glazing of new buildings. Authors of images on glass use features that have also been present in stained glass, such as floral motifs; symbols and signs; as well as letter graphics.

3.1. HISTORIC PHOTOGRAPHS

Facade designs often incorporate iconographic material in the form of compiled historic photographs. They look like they are a random collection of portraits and scenes. The images do not constitute a cause-and-effect sequence, and instead are only loosely connected.

One example of such use of photographs is the building that houses the Netherlands Institute of Sound and Vision in Hilversum.⁴ This cube-shaped building is covered with photographic material transferred onto the glass façade in the form of imprints. The photographs were taken from the archive of the museum housed in the building's basement. The photographs show scenes from TV programmes made by the Dutch television. The photograph imprints have been covered with an enamel layer which is responsible for the colourful set of streaks on the façade. Viewed from afar, mainly the colourful image is seen (Ill. 1a), but once you move closer to within 5–10 m, you begin to discern the imprint on glass (Ill. 1b).

The other provided example of the use of photographs in a façade that are not connected by meaning is the library building of the Eberswalde Technical School.⁵ Its modern, three-storey structure is covered with glass strips used interchangeably with decorative concrete (Ill. 2a). The entirety of the façade was covered with an image created by screen

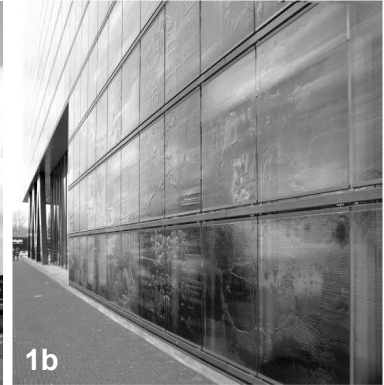
³ Both these methods are related to the appearance of specialist enamel media, which enabled producing required effects.

⁴ Project: Neutelings Riedijk Architects. Completed: 2006.

⁵ Project: Pracownia Herzog & de Meuron. Completed: 1999.



1a



1b



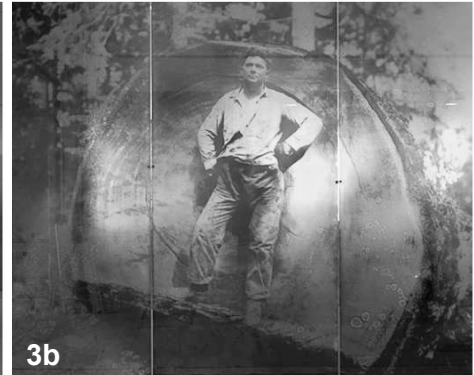
2a



2b



3a



3b

- III. 1. Building of the Netherlands Institute for Sound and Vision, Hilversum, the Netherlands: a) building from the north, b) view of glazing from the north, source: photo by the author
- III. 2. Building of the Library of the Eberswalde Technical School, Eberswalde, Germany: a) building from the street side, b) wall from the courtyard side, source: photo by the author
- III. 3. Fragment of Traveling Light installation, Tacoma Airport, Seattle, USA: a) glazing corner with the image of a cut tree section, b) work entitled Manly Man depicting a worker against a felled tree, source: photo by Spike Mafford, <https://lindabeaumont.com/portfolio/traveling-light/> (access: 05.05.2016)

printing. The photograph used on the façade was taken from the *Newspaper Photos* project completed in 1981–1991⁶ by photographer Thomas Ruff. The project consisted of 2,500 photographs, which the photographer stored and archived [6]. Seventeen selected reprints were placed on the façade. Each of the chosen photographs was duplicated in a line 66 times.⁷ The horizontal strips obtained in this way go around the building, making it more varied visually. It looks as if the building was composed of stacked up layers. The duplication removed the meaning from each of the images, rendering them only compositional features (Ill. 2b).

3.2. HISTORIC PHOTOGRAPHS IN DELIVERY OF A MESSAGE

The reason for using historic photographs is often the desire to tell a story or create a message. An example of this would be the installation set up in the circulation space of the Tacoma airport in Seattle, USA. A series of glazing layers creates a system of glass walls that separate the circulation space. The set of works is entitled *Traveling Light* and its artistic aspect was developed by an Australian artist, Linda Beaumont. Reprints of photographs dating from 1920–1945 were put on the corridor's glass panels.⁸ Large-image negatives on glass panels were used to create the installation. The photographs show cross-sections of Douglas Firs (Ill. 3a) that used to grow in the area, as well as workers felling the trees (Ill. 3b). The displayed reprints were enlarged to life-size dimensions. Properly prepared, cropped and composed photographs were sorted and then put on glass as prints. The main subject is nature as one of the aspects of settlement history on the North-West coast of North America. The iconographic material has compositional and decorative significance. The three-metre [5] life-size cross-sections constitute an important graphical feature that sets the rhythm, as well as visually shortens and tidies up the space of the corridor.

3.3. REPRINTS OF PAINTINGS

Since the arrival of high-quality digital printing it has been possible to recreate and duplicate the works of dead artists on glass. Setting a printed painting in a new context results in it taking on a new meaning. The effect is magnified for the viewer by the changed scale of the objects. One work that has brought back murals from the past is the western façade of Harlem Hospital Centre in New York. Fragments of three murals by Vertis Hayes⁹ from 1936 have been printed on the glass façade at the request of Harlem Hospital Centre.¹⁰ The works are part of a bigger series¹¹, which was revealed in 2012, and then restored and transferred to a new medical pavilion, which is now known as the *Mural Pavilion*. The images show romanticised genre scenes connected with the professional activity of African Americans (Ill. 4). The vast

⁶ <https://www.medienkunstnetz.de/works/newspaper-photos/> (access: 17.10.2015).

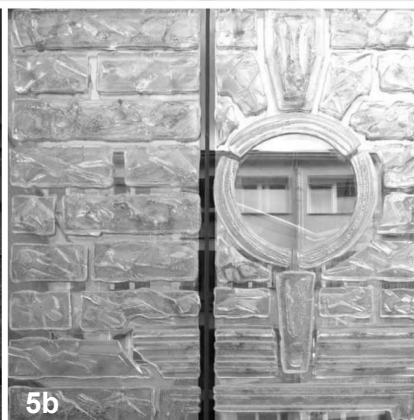
⁷ <https://www.herzogdemeuron.com/index/focus/263-FOCUS/VIDEO.html> (access: 19.10.2015).

⁸ Photographs made by brothers Dariusz and Clark Kinsey. <http://www.americansforthearts.org/by-program/networks-and-councils/public-art-network/public-art-year-in-review-database/traveling-light> (access: 15.12.2015).

⁹ Scenes are part of the series *Pursuit of Happiness, Harlem Hospital*. [2].

¹⁰ <http://www.nytimes.com/2012/09/17/arts/design/murals-at-harlem-hospital-get-a-new-life.html> (access: 05.05.2016).

¹¹ Six artists were involved in the project.



- III. 4. The facade of the Harlem Hospital building at dusk, New York, USA: source: photo: Paul Warhol, [http://www.hok.com/design/type/healthcare/harlem-hospital-center – major-modernization](http://www.hok.com/design/type/healthcare/harlem-hospital-center-major-modernization) (access: 08.27.2018)
- III. 5. Fragment of the facade, view from ul. Krawiecka, Justin Center, Wrocław, a) glazing structure, b) detail, source: photo by the author
- III. 6. One of the motifs of the glazing of the chapel of St. Agata, Lennestadt, Germany: a) image of a girl personifying St. Agata reflected on glass, b) entrance to the chapel, source: from the artist Thierry Boissel's collection

print enhances the minimalist façade visually, and has become a landmark artistic feature, seen from a long distance. The fact that the murals have been restored in an enlarged version and put on the building, emphasises how significant they are for the hospital and the local community. The work pays tribute to the authors of the original murals, and shows support for equal rights and the fight against racism.

3.4. VISUAL RECREATION OF A FAÇADE FRAGMENT

Using monolithic art glass techniques, a part of a historically important façade that no longer exists can be brought back to life. One of the purposes of putting an image on a glass façade is to visually recreate parts of an architectural structure that has already disappeared. The need to create a witness or memorial occurs usually in the case of civic buildings which had been important for the locale and the community, but which cannot be recreated in their original form. The Justin Centre¹² building in Wrocław has got a tight structure, and houses flats, a hotel and service outlets. It was built along the outline of the pre-war main post office building. Its designer is Tomasz Urbanowicz. On the back of the current building, the façade which includes one of the entrances to the pre-war building has been copied (Ill. 5a). Glass elements constitute a recreation of the hewn stones that were present in the no longer existing façade. The outline of the former post office's façade is filled with convex glass elements, which were made using the kiln casting technique. The art glass layer enriches the façade with artistic features and visual effects related to the impact of (sun)light (Ill. 5b). Thanks to the use of relief glass, a partition with subtle graphics was created that changes depending on lighting conditions.

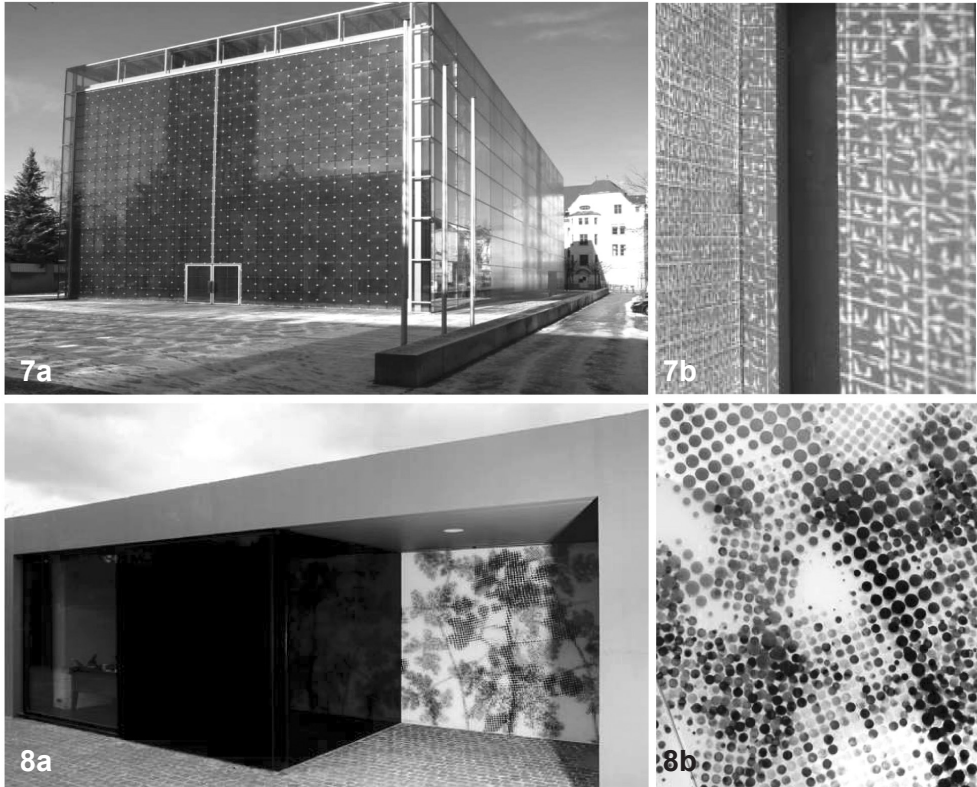
3.5. REFERENCES TO LEGENDS AND THE LIVES OF SAINTS

The subject of glazing designs in churches are the lives of saints. An example of a contemporary look at the life of a medieval martyr, in this case St Agatha, can be found in a chapel inside a church built in the early 20th century in the German town of Lennestadt. The chapel dedicated to the church's patron saint is located at the back of the nave. The chapel walls were made entirely of glass using the slumping technique. The work is an articulate interpretation of the story of the 16-year-old martyr who lived and died in the 3rd century. This story from the early part of the first millennium has been modernised by the artist Thierry Boissel. Saint Agatha is represented by a teenage girl (Ill. 6a). Her silhouette was placed right at the entrance to the chapel. With an inviting gesture, she welcomes a group of people of different ages (Ill. 6b). The figures are life-size, and have been embossed on glass. The contemporary character of the scene brings the saint closer to us, and in view of recent reports about persecution of Christians, this story from a distant past becomes very real also in our world today.

3.6. USING LETTER GRAPHICS

Lettering signs are an important part of the history of various cultures. Ornamental letters are used in glazing designs that emphasise functional connection with literature or science.

¹² Project: Marek Skorupski with "ARCH-E" Biuro Projektowe. Completed: 2010, <https://architektura.muratorplus.pl/innowacje-w-architekturze/projekt/198/>.



- Ill. 7. The Church Heart of Jesus, Munich, Germany: a) southern facade, b) glazing detail, source: photo by the author
- Ill. 8. Decorative wall covering, private house, Zurich: a) view of the entrance part, b) glazing detail, source: photo by Raffaella Sirtoli, <http://beleschenko.com> (access: 15.06.2019)

Over half of these designs are composed of façade glass. Quotes and lettering symbols are put on glazing surfaces. The example provided below is one of the unique designs that confirm a strong relationship with history. In the gate on the southern façade of the Church of the Sacred Heart of Jesus in Munich¹³, there is a monumental glazing design (Ill. 7a) that refers to religious symbolism. It was created by the artist Alexander Beleschenko. Square modules form an image of the cross. A quotation from the Passion according to John 18–20 [4] in cuneiform writing has been put on the glazing [3], with the stylus sign replaced by a graphical representation of a nail (Ill. 7b). The fact that the image is made up of geometrical modules tidies up the spatial arrangement of the building. The square appears multiple times as the smallest compositional element in which all of the letters are enclosed; it manifests itself in the division of the Georgian bars and modules. The glazing's composition is based on the symbolism of the image, which can be considered both in relation to the building's compositional arrangement as well as the surface of the glazing itself. An important aspect of

¹³ Project: Allmann Sattler Wappner Architekten, completed: 2000; http://www.allmannsattlerwappner.de/projekte/pdf/Herz_Jesu_Kirche_de.pdf (access: 10.08.2015).

the glazing are its multifaceted metaphors. One of the artistic procedures was to create a code in which the use of a nail, as the main feature that creates the cuneiform writing, becomes symbolical and metaphysical.

3.7. USING FLORAL MOTIFS

Floral motifs have been part of the architectural space for centuries. They have been artistically enriching buildings, both as small details or murals. Often, they have acted either as the main or additional element of stained glass. This also refers to contemporary stained glass. One example of a smaller-scale project is a part of the façade of a modern residential building in Zurich¹⁴, developed artistically by Alexander Beleschenko. Glass panels were put in the exposed part of the building. They make up the wall that crowns the entrance arcade (Ill. 8a). The image set on glass underlines the modern character of the façade and introduces new compositional values, colour, and texture. The duplicated floral motif accentuates the entrance to the building. Creating the image from a raster enabled the author to achieve simple graphical effect with a screen-printing-like structure (Ill. 8b). This colourful glazing is the contemporary version of an ornament and enlivens the minimalist monochromatic façade of the building.

4. SUMMARY

The analysis of the material gathered for this paper proved that there is a close link between modern art glass and the tradition/past. This link refers both to the applied methods of execution as well as the subject matter of works.

It was observed that many of the currently used techniques to create large-size glazing are directly related to techniques used in the past. Some of them are based on already known tools, and when the right media appeared they could be used immediately to transfer images onto glass. Some of them were recalled from the past when new technical equipment appeared.

It was observed that contemporary glass designs often use historic materials or photographs. When the image is being put on a façade, the building's shape is then very simple, cuboid. It looks like its main purpose is the presentation of the image.

Graphical features and quoted photographs are frequently used as an element that creates a tight texture. The image that forms the façade is disciplined through divisions set by particular graphical features or photographs. Such division can result from using linear duplications, which creates a pattern of stripes in the façade. It was observed that images incorporate geometrical shapes, such as squares or rectangles, which refer to the divisions present in the façade and the building's shape.

A common phenomenon that can be observed in flat art glass are the telling of stories from a distant past, or messages based on past occurrences and events. One popular subject matter, which does refer to tradition, are floral ornaments and lettering motifs.

Quoting of graphical elements from the past is accompanied by procedures typical of contemporary art. It was observed in the presented research material that procedures connected with modern art, such as multiplication, image cropping and scale manipulation, are now being

¹⁴ No data available on the author of this architectural project or its completion date.

used. Multiplication is used to make the image less realistic, and set a rhythm for the façade (Ill. 2). The aim of changing image scale is usually to make a reference to the scale of space in which the image is to be presented, but also the desire to establish a closer relationship with the viewer (Ill. 3), emphasise the importance of the message (Ill. 4) and change the identity of the image (Ill. 8).

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