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DIGITAL CODE AS AN OBJECT GRAPHIC DESIGN FOR DISSEMINATION AND PROMOTION OF BRAND

Summary. The article reveals the features of the graphic language of coded information by identifying, systematizing, and combining QR-codes and AR-codes at the present stage of graphic design development. The analysis of coded information in different types of graphic design is presented: advertising, environmental, motion, print, packaging, set prop, web, mobile app, art, and illustration graphic design. The role of a graphic designer in the development of digital codes of various types for various fields of application is described. It is proved that the coded information is a trigger between the online and offline worlds. The article also reveals the importance of using coded information for the formation, development, and improvement of the brand.

Keywords: coded information, graphic design, brand, dynamic changes, QR-code, AR-code, digital code, augmented reality.

INTRODUCTION

Visualization technologies are rapidly improving and penetrating human life and society. During a historically short period, humanity has gone from engraving to modern digital technologies. Until recently, coded information was used only by individual brands, but the pandemic has changed the situation. And today, codes have a real purpose, because “contactlessness” has become a necessity.

The dissemination of coded information during the COVID-19 pandemic contributes to new changes. In our times, codes are widely used for contactless registration, payments, ticket purchases, ordering, etc. They are accessible, easy to use, and safe in their properties. Also, codes do not require physical contact and are decoded by the phone camera.

It is impossible to imagine the life of a modern person without visual data. Most companies are transforming to meet the consumers’ needs and preserve their identity, considering that the rapid technological changes in society have made information content a primary resource for brand formation.

In this case, graphic design is the driving force, because the code contains visual elements that form potential customers’ first impression of the

brand and conveys its values. As a result, there is a need to create a simple intuitive design code and its information content. By using coded information, it is possible to create an interactive and intuitive brand. That is why today new trends and innovations are constantly being formed in graphic design, which determined the *relevance of the study*.

In her paper, Teuta Cata studies the effective use of coded information and the optimal areas for its placement¹ but does not consider the compositional properties of the code.

Oleksandra Kolisnyk, Marina Kolosnichenko, and Kalina Pashkevych consider modern graphic design as a phenomenon of social communication.² Meanwhile authors Maria Vorobchuk and Natalia Skliarenko in their article study the principles of design-ing the signals of visual communication of coded information,³ although the structural component of the code is described only in general. QR codes are more effective than information on paper: this was found in a study conducted by Jennifer Fishbein, Kimberly Lau, Stephen Barone⁴ and as a result, it gave impetus to the use of encoded information in graphic design.

In recent research related to the period of the COVID-19 pandemic, the authors Joshua Baugh, Oran emphasize the facilitation of information communication through the design of QR stickers facilitating information communication through the design of QR stickers and posters based on the behavioral principles of expressiveness.⁵

Jiangxin Liu, Tetyana Krotova, Olga Yezhova, and Pashkevich in their work analyze the combination of the elements of traditional Chinese symbolics with modern innovative elements of logo design.⁶

Baugh at al., consider coded information as a promising direction for product packaging.⁷ This article provides a semiotic analysis of QR codes that have been modified by graphic designers, but only a few black-and-white codes are considered.⁸

Iranian photo artist Shirin Neshat created a series of works “Women of Allah” and was one of the first to try to present coded information on the face of a mode.⁹ Due to the mirror reflection, the idea was unreadable, but the photos become widely distributed in Eastern countries.

In recent years, artists and researchers Jingru Jingru at al., have paid considerable attention to decorating and enhancing the aesthetic side of codes with visual features that go beyond a simple standard format.¹⁰

While studying scientific articles, textbooks, and internet resources, an attempt has been made to get acquainted with the problems of using coded information in the design. As a result, it has been found that more research on coded information in graphic design is needed.

Materials. The art of graphic design directs the transmission of a specific message through visual forms of communication. It can be seen in advertising, books, magazines, and online media. Nowadays, there are many types of graphic design that focus on creating a harmonious and effective communication environment.

Coded information and its visual perception are increasingly being studied in graphic design. The use of codes as brand identifiers is becoming an innovative tool that provides information on products or services.

Methods. Analytical and structural methods, as well as an integrated approach, are used in the study. Also, a comparative analysis is used as one of the tools of the art history method, and visual methods of cognition are used, which are extremely relevant today.

Scientific novelty: the article presents coded information as an innovative tool for brand transformation, the impact of which can be observed through the following types of graphic design: advertising, environmental, motion, print, packaging, set prop, mobile app, art and illustration graphic design.

The purpose of the study is to divide the coded information by main types of graphic design as tool for brand transformation.

The goal determines the following tasks: 1) to determine the main types of graphic design, where coded information is used; 2) to investigate the use of QR-codes and AR-codes at the current stage of the development of society; 3) find out what the role of a graphic designer is in the creation of a digital code and what tools designers use to increase the recognition and uniqueness of digital codes.

RESULTS OF THE STUDY AND DISCUSSION

A sign of modern art is its desire for innovations. For today, the creation of a work of art, which directly requires the participation of the audience to reproduce the holistic idea of the designer, is relevant. Usually, such works are an imaginary interpretation of the work of art because they provide the opportunity to change the viewer's mind, to supplement the imagination with new images. Instead, the viewer's influence on the art object is reduced to his or her passive assessment.¹¹

Modern understanding of innovations involves the viewer's full interaction with the work of art. The viewer can really influence the work of art and physically transform it, acquiring the role of co-author. The essence of using the innovative tool in the brand transformation is the transition from a passive attitude to active consumer interaction with the art object. Today it is possible to find interactive shop windows and billboards, wall-touchscreens, etc. In this wide list of innovative tools, the use of augmented reality technologies in advertising is a promising direction.

The use of augmented reality technology (AR-code) has become possible due to its close connection with matrix codes (QR-codes), which have become widespread during the COVID-19 pandemic. QR-codes are more than a work of art, they are a powerful digital tool that allows customers to receive various information on a product simply by scanning it with a mobile phone camera. People use matrix codes in their daily life to browse food menus, pay bills, get more information, and so on.

Nowadays coded information is a tool in which not only appearance but also the content are important. That is why brands are looking for new methods and applying augmented reality when decoding code. AR-code (augmented reality code) is a QR-code with a marker for AR.js, which redirects the user to the AR web application or mobile application. AR-codes allow adding an extra dimension to the product, creating interactive content for the real world.

With the advent of QR-codes in augmented reality, the viewer has the opportunity to scan AR-code and interact with the content in one moment. The process is the same for both the QR-code and the AR-code. Both types of coded information are related to the specific place or environment in which they are located.

Coded information as an innovative tool for brand transformation is widely used in such types of graphic design as advertising, environmental,

motion, print, packaging, web, set prop, mobile app, art and illustration graphic design (Fig. 1).

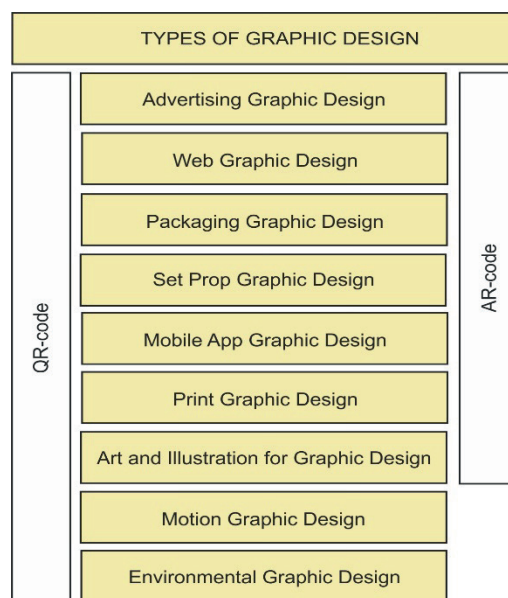


Fig. 1. Types of graphic design, where coded information is used

Coded information is used in the design of magazines, billboards, labels, and packaging. The design conveys a relevant product message, demonstrating a combination of creative and strategic approaches. Advertising Graphic Design is the creation of visual solutions using graphics to advertise a product or service. Brands are interested not only in the aesthetic appearance of the product but also in its profitability (which means that the design should encourage the customer to buy a product or service). For this purpose, brands use innovative tools. That is why in our times many retailers use QR-codes to make shopping more convenient for buyers.

To increase the sales of products, global fashion retailer Zara¹² used a matrix code on its storefronts to allow customers to take advantage of discounts on promotional items (Fig. 2). Another example of a non-standard presentation of information is the project of Victor Petit, an artist, who added in Content-rich Resume his photo with a mouth taped by QR-code.¹³ After scanning the code on the mobile phone, the video with mouth movements begins. If the viewer places a phone in the marked place, the photo starts talking. As a result, the viewer has the

impression that the person is talking face-to-face (Fig. 3).



Fig. 2. Zara shop window design, Spain, 2019¹²



Fig. 3. Advertising of Content-rich Resume, Victor Petit, France, 2014¹³

In recent years, there has been a rapid development of web technologies. Web resources should be user-friendly, multifunctional, and have an attractive design. And Web Graphic Design aims to create a favorable environment for consumer interaction with digital platforms.

L'Oréal, a well-known brand of cosmetics, uses QR-codes in taxis (Fig. 4). They link the matrix code to the store's website, allowing passengers to shop in the car in traffic jams. During New York

Fashion Week, L'Oréal and Glamour turned the taxi fleets into shopping vehicles by using QR-codes at the back of the cabin to send passengers to the online store. According to reports, every third passenger scanned the code, 25% made a purchase, and 90% downloaded the L'Oréal mobile application.¹⁴ Therefore, it is obvious that the use of codes results in increase of sales and demand for products, so more and more brands are making changes to their campaigns and using innovative tools, in particular coded information.

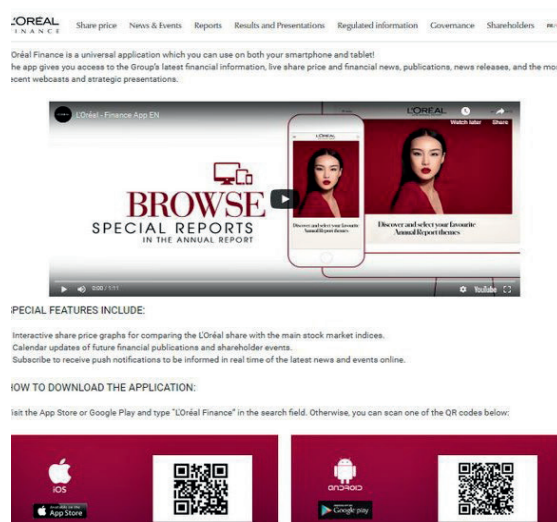


Fig. 4. L'Oréal cosmetics, Glamour, USA, 2017¹⁴

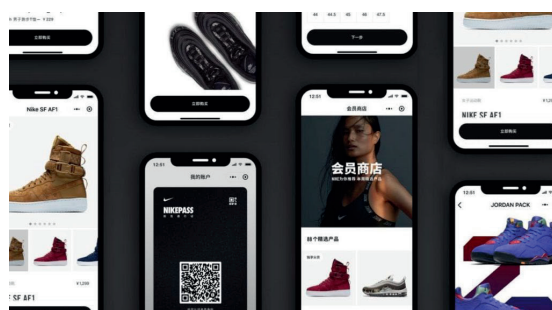


Fig. 5. Nike shoes, WeChat, China, 2019¹⁵

Some companies are going further and using markers of augmented reality in QR-codes called AR-codes. For example, Nike produces custom-made shoes using augmented reality.¹⁵ The company converted QR-codes into AR-codes using augmented reality. They created a variety of exclusive shoe designs for customers, adding an AR-code to each of them. As a result, by scanning the code

on the site, the consumer was able to “try on” shoes in real time using a mobile phone camera (Fig. 5).

The next niche in graphic design is Packaging, which is a full-fledged marketing tool that allows reflecting the individuality of the brand and instantly draws consumer attention to the company. Each bottle, box, bag, container, jar, or canister allows telling the story of the brand.

With the growth of digital marketing, brands are beginning to use innovative tools and integrate the online and offline worlds together.¹⁶ For example, the world-famous Coca-Cola, which started with the traditional product labels and printed advertising, now uses QR-codes on its product labels to attract more customers to its online services (Fig. 6).

The Leo Burnett Ukraine agency has also moved forward using augmented reality. This idea was implemented by code. Each Barni sweets package contained a card with an AR-code, scanning which, it was possible to see prehistoric dinosaurs through a mobile phone camera and place them in a house or street in real time (Fig. 7). In this way, the Barni brand sold more than 4 million packages of delicacies with dinocards in Ukraine,¹⁷ Georgia, and Moldova in just 3 months (April-June 2021).

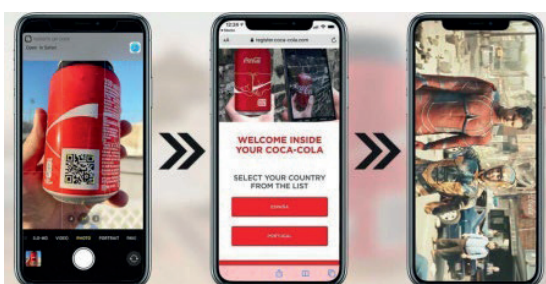
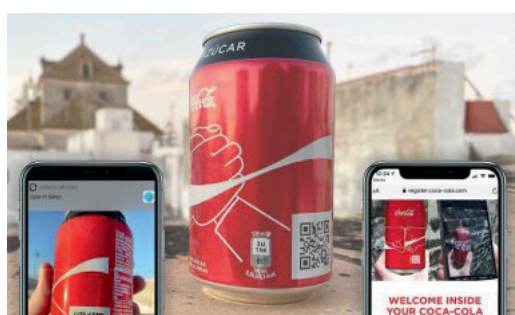


Fig. 6. Coca-Cola drink, Canmuseum, Germany, 2014¹⁶



Fig. 7. Barni sweets, Leo Burnett Ukraine, 2021¹⁷

Coded information is rapidly penetrating all spheres of our lives, therefore, such direction as Set prop Graphic Design becomes more and more relevant. Graphic designers of clothing are responsible for all textile functions: from concept to completion. And designers work in this niche in the same way as others – they start with a simple concept and work on creating the final product.

The Diesel brand uses QR-codes to identify its products. In this way, it protects consumers from fake denim fabric.¹⁸ So, the consumer can check the authenticity of Diesel jeans before buying (Fig. 8).

Advertising the new Klarna app, fashion designer Fran Hereira presented the models on the podium only in a bathrobe and with a QR-code. When viewers scan the code, it shows the outfit of the model (Fig. 9). In her statement, Fran Hereira said that “Klarna is obsessed with the idea of making shopping smooth”. The Klarna service “Buy now, pay later” was launched in Australia in January this year, but, according to the company, already has about 400,000 users.¹⁹



Fig. 8. Diesel jeans, Certilogo, Italy, 2018¹⁸



Fig. 9. Klarna Fashion Show, Fran Hereira, Australia, 2020¹⁹

Mobile app Graphic Design plays an important role in the development of app design, which is an important factor in determining the success of business in the modern world. For example, Lingibli is an app developed to learn a foreign language using QR-codes.²⁰ With its help, it is possible to print codes and stick them on objects, which can facilitate the rapid and efficient learning of basic words. Scanning matrix codes by a mobile phone, the user hears the pronunciation of the word and examples of its use (Fig. 10).

The COVID-19 pandemic, which took place around the world in early 2020, has forced the designers to rethink the presentation of new collections to the public. The innovative project “Afterworld: The Age of Tomorrow” is presented in the form of a game, a virtual world, which can be entered by decoding the code developed by Balenciaga, the Spanish fashion house (Fig. 11). Customers can see the Autumn-Winter 2021–2022 collection using the augmented reality function. In such a way, two worlds (the real one and the digital one) are connected.²¹



Fig. 10. Lingibli app for learning foreign languages, Milan Schnörrer and Raphael Kellner, Bratislava, Slovakia, 2015²⁰

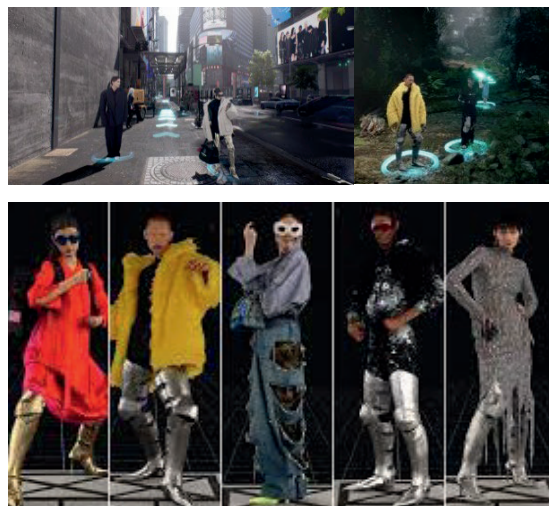


Fig. 11. The virtual game Afterworld: The Age of Tomorrow, Balenciaga, San Sebastian, Spain, 2021²¹

Print Graphic Design is commonly used in the design of business cards, posters, flyers, banners, etc. Like other types of graphic design, it aims to deliver a specific message about the brand.

In 2009, Mytoys.de, an online toy store, ran an open-air campaign, during which they created QR-codes from Lego bricks (Fig. 12). When scanning QR-codes, the users were sent to the online store. As a result, LEGO sales increased by 49% in the store.²²

Another company decided to “animate” a photo using augmented reality technologies (AR-code).²³

By scanning the photo in the book, it is possible to watch the video displayed on the photo book page (Fig. 13).



Fig. 12. QR-code developed from the elements of the game Lego, Hamburg, Germany, 2009²²

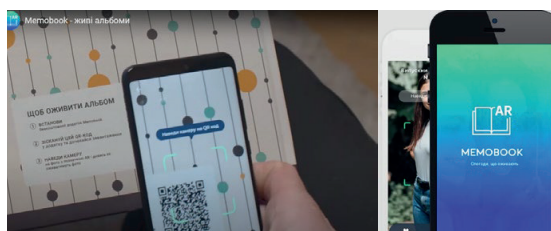


Fig. 13. Photo books with augmented reality, Sergii Sych, Ukraine, 2020²³

Art and Illustration Graphic Design is commonly used in magazines, books, posters, games, and animations. Designers create compositions from ready-made elements or create new forms, styles, and models. On the other hand, illustrators create original works of art, which can take any form, from fine art to book illustrations. So, graphics and illustration are two different areas that are often combined to achieve one goal.

A balanced combination of illustrative graphics has been developed by the MTS company.²⁴ It provided each of its VIP clients with an innovative calendar, which provided free bonuses from the MTS brand in each month of the year (Fig. 14). The Ambient

Media portal²⁵ has released an interactive work of art that “tells stories” (Fig. 15).



Fig. 14. QR Calendar, MTS, Arnab Biswas, 2012²⁴

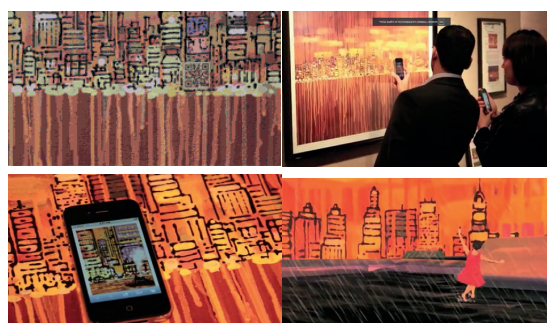


Fig. 15. Interactive paintings with AR-codes, Tony Taj, Seattle, USA, 2016²⁵

Motion Graphic Design means constantly moving graphics. Designers use specialized software to create everything, from cartoons to animated graphics in social networks.²⁶ QR-codes are one of the directions of development, and some Chinese bicycle giants like MOBIKE & OFO animate their QR-codes (Fig. 16).



Fig. 16. Animated advertising of bicycle rental using QR-code, MOBIKE & OFO, China, 2017²⁶

Environmental Graphic Design is a multidisciplinary practice in various fields. Environmental Graphic Design has formed statistical parts of



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Fig. 17. Environmental graphic design: *a* – Hard drive, Western Digital, USA, 201827;
b – Genesis jeans, Unspun, Hong Kong, USA, 2019²⁸

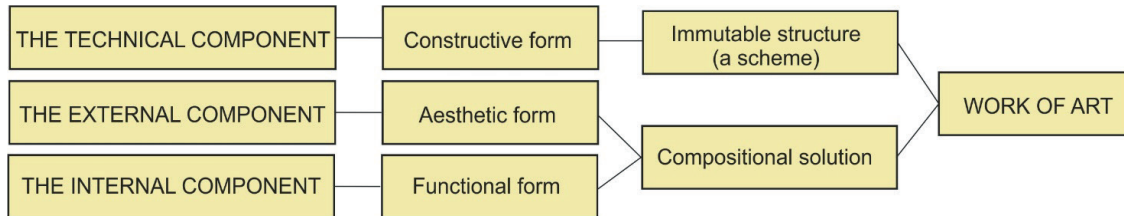


Fig. 18. The main components in the designing of the design code

printing. Western Digital uses QR-codes²⁷ to dispose of old hard drives (Fig. 17, a). The main purpose of the code on the label is to provide customers with an easier opportunity to digitally connect to a physical product. Unspun, a digital clothing brand, has launched the production of eco-friendly jeans. They are designed using Smart Stitch threads from Resortec, which simplifies their recycling.²⁸ All jeans have QR-code that discloses the information on how to properly care for fabric and indicates the addresses of recyclers (Fig. 17, b).

The peculiarity of developing the design of coded information in graphic design is determined by the principles of its creation. Encoded information is popular in various areas of graphic design because it is easy to use for the consumer and facilitates communication between producers and consumers of goods, services, advertising, etc. It also allows you to transfer an unlimited amount of information in digital form, with the help of interactive programs.

After analyzing the samples of QR codes and AR codes presented in the article, we can conclude that they not only add value to product sales, but also have artistic value. After all, the design code by its structure includes external, internal and technical components (Fig. 18).

The technical component assumes an unchanged structure. This is the program structure of the code that forms its constructive form. It is immutable, because it is a scheme, a code structure with thought-out technological features of manufacturing installation and operation. This form has an unchanging structure and is the first component when creating design code.

The external component of the code is formed with the help of the artistic decision of the designer. Its meaning is represented by a visual image of the code, where the consumer acts as a viewer, and the graphic designer is the creator of the aesthetic form. It changes the appearance of the code so that the consumer pays attention to it as a complete art object.

The internal component is a database that is generated every time the information is updated. This forms the inner part of the code, which carries the functional form, which is visually represented by the information component. This component can be seen only by decoding the code.

As a result of the designer's clear and thoughtful work, the constructive form is based on a functional approach to the structuring of the geometric elements of the code, and the aesthetic and functional

forms will be combined in a single compositional solution. Their interaction enables the graphic designer to develop a complete design code. The modification of each of the components provides a change and forms a new internal or external content of the code, which allows the graphic designer to create a unique work of art every time.

Having studied coded information in various types of graphic design, we can conclude that the designer's role in the development of coded information is to create an intuitive graphic object in which a digital code is present. A graphic designer creates a concept and develops a code so that a person, deciphering it, feels dynamic changes and becomes part of a design project. As a result, the consumer receives a positive experience of working with a digital tool of graphic design – coded information, and the designer – an exclusive design product.

CONCLUSIONS

Coded information is a work of art and a powerful digital tool that allows customers to receive a variety of information on a product or service by simply scanning it with their smartphones.

The significance of the use of QR-codes and AR-codes at the present stage of development is studied. It is proved that the close interaction of coded information and graphic design allows creating a “door” between the physical and digital worlds. It gives access to any information without direct contact with another person. Also, the use of coded information by leading brands in such types of graphic design as advertising, environmental, web, motion, print, packaging, set prop, mobile app, art and illustration is revealed.

Coded information is perceived visually, and graphic design solves the problems of presenting an aesthetic and intuitive design product to the consumer: in addition to the visual image and text in graphic design, innovative methods are used. This allows using coded information as a new tool

for brand transformation, as a component that increases the value of the product on the market.

The codes contribute to the dissemination of information and allow the embedding of various data (i.e., files of any type, videos, URLs, pages, social network accounts, etc.). By using QR-codes and AR-codes, brands can improve the quality of customer service by providing them with additional information on the product they are trying to promote. It is proved that in graphic design it can be applied in the following niches: advertising, environmental, web, motion, print, packaging, set prop, mobile app, art and illustration graphic design. Almost all types of graphic design use both matrix codes and augmented reality tools, except the following niches: Environmental Graphic Design and Motion Graphic Design. Such niches currently use only QR-codes but given the rapid global development of innovative technologies and a society that is ready to bring them into their lives, they will also use AR-codes in time.

The analysis is carried out and the systematization of the types of graphic design is made, which allows considering the coded information as a tool for brand transformation. The code is dynamic, so the coded information is always relevant, because it can be changed without losing functionality and change of appearance.

By implementing digital tools of graphic design, namely coded information, the designer creates a positive experience for consumers. The viewer gets to know design objects not only with the help of thought, but also with the help of feelings, which are manifested only in the process of interaction with the design. Man focuses his attention on the digital code in order to find out “what’s in the middle?” and after decoding it becomes part of the design project, understands the concept of the project. In this way, dynamic changes occur and the idea of the graphic designer is realized. After all, its role is to create a complete “work of art”, where each element of the design is important in its formation. As a result, by following the basic components when

designing a design code, you can turn a standard matrix code into a work of art.

The use of coded information by brands turns each consumer into a co-author because it requires interaction with it. It is easy to use, aesthetic, and accessible to everyone. Companies use augmented reality technologies in their codes, which is a trigger between the offline and online worlds. That is why coded information in graphic design does not lose its relevance and is rapidly evolving and penetrating everyday life.

The conducted analysis showed that the design of digital codes has reached a level where some types of codes have become an object of art and are developed using various techniques, methods and design techniques. The perspective of further research is the study of the code as a structural set consisting of parts that are similar to itself, the study of the principles and compositional features of coded information from the point of view of design.

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KODUOTA INFORMACIJA KAIP INOVATYVI PREKIŲ TRANSFORMACIJOS PRIEMONĖ

Santrauka

Straipsnyje atskleidžiamos užkoduotos informacijos grafinės kalbos ypatybės, identifikuojant, sisteminant ir derinant QR kodus ir AR kodus dabartiniame grafinio dizaino kūrimo etape. Pateikiama užkoduotos informacijos analizė įvairiuose grafinio dizaino tipuose: reklamos, aplinkos, judesio, spaudos, pakuotės, komplektacijos rekvizito, interneto, mobiliosios programėlės, meno ir iliustracijų grafinio dizaino. Apibūdinamas grafikos dizainerio vaidmuo kuriant įvairių tipų skaitmeninius kodus įvairioms taikymo sritims. Įrodyta, kad užkoduota informacija yra trigeris tarp internetinio ir neprisijungusio pasaulių. Taip pat atskleidžiama užkoduotos informacijos panaudojimo svarba formuojant, plėtojant ir tobulinant prekės ženklą.

Reikšminiai žodžiai: užkoduota informacija, grafinis dizainas, prekės ženklas, dinamiški pokyčiai, QR kodas, AR kodas, skaitmeninis kodas, papildyta realybė.

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