

Graphic Data and Encoding Techniques

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Annotatsiya: Grafik dizayn — bu axborotni kodlash jarayonidir. Grafik dizaynning muvaffaqiyatli yoki muvaffaqiyatsiz bo'lishi axborotni uzatish samaradorligiga, ya'ni axborotni kodlash sifati bilan chambarchas bog'liq. Ushbu maqolada kognitiv (idrok) nuqtai nazardan "bilimlarni bog'lash" (knowledge coupling) tushunchasi ilgari surilgan hamda inson miyasi va tashqi bilimlar (ya'ni, yashirin bilimlar va aniq ifodalangan bilimlar) o'rtasidagi moslikka erishish samarali axborot uzatishni (ya'ni ideal muloqotni) ta'minlay olishi mumkinligi ta'kidlangan. Yakunda esa, maqolada logotip dizayni misolida tahlil qilish orqali muvaffaqiyatli grafik dizayn ishlarida bilimlarni bog'lash mavjudligi isbotlab berilgan.

Kalit so'zlar: Grafik dizayn, dizayn, kodlash, dekodlash, Gelstat qobiliyat, axborot.

Introduction. Graphic design is a form of modeling activity that conveys information and emotions to the public through visual means. It possesses three fundamental characteristics: informativeness, artistry, and economic efficiency. As a type of applied art, its most essential feature is the function of communication, as it must be able to transmit clear and targeted information. Graphic design is a two-dimensional (2D) design practice, primarily associated with the layout of elements such as graphics, symbols, color, and text. This process includes decisions regarding font design, the selection of illustrations and photographs, and overall composition. At its core, graphic design serves functions such as communication, direction, or persuasion.

A graphic design work is a form of visual artistic language that reflects and reconstructs a subjective psychological state, thereby resembling other forms of art. Through visual mass media, precise information is delivered to the viewer's consciousness. The brain perceives this information in diverse ways, associates it with prior experience and knowledge, and ultimately constructs a general understanding through the power of imagination. Thus, the cycle of communication and information exchange is completed — this is the process of information transmission.

This process is essentially a coding process, in which the visual elements of the design carry informational content. However, the audience's ability to understand this message constitutes the decoding process. When a balance (or correspondence) is achieved between coding and decoding, the graphic design is considered successful. In other words, this results in knowledge coupling. From this perspective, ensuring a meaningful connection between coding and perceptual decoding in graphic design is a key research direction for achieving the harmony between science and art. The information embedded in a graphic design work exists on three levels:

1. Functional information (primary information)
2. Aesthetic information
3. Cultural information

Among these, the informational function takes precedence. For example, a product label conveys specific information about the product's features; illustrations and symbols communicate identifying information; advertisements or posters in stores are designed to attract attention, make product information memorable, and ultimately stimulate sales. Aesthetic and cultural information, meanwhile, reflect the artistic value of graphic design and serve as necessary tools to engage the audience. From a cognitive perspective, the graphic design process consists of two sequential stages: encoding (by the designer) and decoding (by the audience). Initially, the designer engages in the coding process, integrating visual elements based on specific design principles and rules. Subsequently, the audience engages in the decoding process, interpreting and understanding the visual message. According to cognitive psychology, considering the compatibility between encoding and decoding from the very beginning is the key to creating an effective graphic design. From the standpoint of information transmission, graphic design is not merely visual decoration, but a means of communication, acting as a mediator of information exchange. To prevent overburdening viewers with excessive visual load, design must strike a careful balance between anthropological, behavioral, commercial, and creative factors. By encoding messages using appropriate elements of the visual design language, it is possible to develop a design that is effective, engaging, and informative.

In graphic design, elements such as graphics, symbols, color, and text can be utilized as the core components of the visual design language. These elements form the unique code of information and must adhere to the laws of vision and perception. In this way, individual elements are integrated into a system of visual symbols that carry specific connotations and meanings, thus requiring a certain set of grammatical rules.

In the process of information exchange, the language of graphic design plays a crucial role in conveying thoughts and consciousness. It can influence the viewer's psychology through visual and intellectual language structures that express both thoughts and emotions. Furthermore, utilizing the human Gestalt capacity, it enables semantic enrichment and the deepening of ideas. The human process of receiving information consists of several perceptual stages that are dependent on individual cognition. This process begins with sensory perception, continues through acceptance, and extends to memory retention. Modern perceptual science has become a fundamental field of knowledge in studying how people receive and process information. Professor Qing-Quan Chen, an academician of the Chinese Academy of Engineering, describes our era through the BINC formula, which stands for Biotechnology, Information Technology, Nanotechnology, and Cognition Technology. Among these four major areas, cognitive science, information technology, and artificial intelligence are receiving increasing attention in the 21st century. The relationship between art and science is becoming ever closer. Cognitive science is an interdisciplinary field that integrates knowledge from philosophy, psychology, linguistics, anthropology, neuroscience, and computer science.

Design is the science of visual experience, and the formation of design thinking is influenced by two key factors. The first consists of physiological elements, which are the uniform physical reactions that occur in the human visual perception process. The second includes emotional elements, which are unstable and vary greatly among individuals—such as personal emotions, values, taste, and experience.

In the design process, it is essential to fully comprehend the essence of design and

understand how perception influences it, thereby developing a scientific approach to thinking. The process of graphic design is a complex creative activity that comprehensively integrates practical, artistic, and economic aspects. Unlike a purely subjective artistic expression, a piece of graphic design must meet three fundamental characteristics and account for various factors defined by the target audience.

Simply put, the success of a graphic design work depends on its acceptance and approval by the audience, which in turn relies on how well it aligns with the audience's perception. First and foremost, an effective graphic design must conform to the perceptual principles of its intended audience. From the perspective of perceptual science, a well-crafted graphic design should be able to attract attention, evoke physiological responses through the visual system, align with the experiences and knowledge that people have accumulated through everyday life and education, and finally, after a cognitive process, resonate with the viewer—thus fulfilling its purpose of transmitting information effectively.

Conclusion. The primary function of graphic design as an applied art is to convey information. From a perceptual standpoint, this is effectively achieved through the theory of knowledge coupling, which serves as a powerful tool and method for realizing ideal communication in graphic design. This article confirms, through case analysis, the effectiveness of applying the knowledge coupling theory in successful design practices. Graphic design is a goal-oriented creative process aimed at a specific target audience. There exists a correspondence between the audience's perception and the process of encoding information within a graphic design work. This dual alignment largely determines the success or failure of a design. Furthermore, the attributes of integration and alignment confirm that the design is tailored for a particular audience. Therefore, research on knowledge coupling must also involve an in-depth examination of the information encoding process within a given context.

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