

DEVELOPING DESIGN AND CRITICAL THINKING SKILLS IN THE CONTEXT OF PHILOSOPHY*

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Abstract. Critical thinking is a fundamental component in the establishment of scientific truth. Conversely, design thinking has emerged as a popular methodology in contemporary contexts to enhance creativity, innovation and problem-solving capabilities. Scientists posit that design thinking can support critical thinking; however, there is an absence of empirical studies examining the relationship between these two models of thinking. This is primarily due to the lack of a detailed articulation of their common conceptual framework and the perception that they are independent of each other's concepts. This study aims to address this issue by comparing the relationship between thought design and various properties of critical thinking, integrating their theoretical foundations into a philosophical context. The philosophical analysis of practical significance demonstrates that these apparent disparate ways of thinking have common features, but also diverge in significant ways. A detailed comparison of these two modes of thought suggests that thought design methods have the potential to support and complement traditional critical thinking practices, and that thought design structures can be modified to more explicitly include critical thinking.

Keywords: design thinking, critical thinking, philosophy, integrate design and critical thinking skills.

Introduction

The study of design thinking and critical thinking skills is significant because it enhances problem-solving skills, drives innovation, and enhances decision-making

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in different fields. It also aids in defining how design thinking and critical thinking can be utilized for a methodical approach to complex societal problems. Innovation and creativity through design thinking help to develop creative solutions for various problems faced by humanity, and critical thinking improves the decision-making process based on logic and objectivity by effectively evaluating information. To address global issues such as climate change, social inequality, globalization, migration, and the growing influence of artificial intelligence, it is necessary to employ critical and constructive thinking. The innovative design company IDEO's President, Tim Brown, helped popularize design thinking as a way of solving problems. He outlines in his book the fundamental components of design thinking, such as empathy, creativity, and problem solving that elicit a profound response from individuals [1].

There are scientific studies that examine the application practices and design-thinking concept, with the founders being Bruce Archer, Nigel Cross, Bryan R. Lawson, and others. The Theory of Design, proposed by Bruce Archer, believes that design encompasses human experience, quality, and understanding, which reveal the essence of caring for human life by evaluating and adapting its environment to meet material and spiritual needs [2]. Design thinking recognizes that the care of man is a fundamental aspect of human existence that has meaning, purpose, and value. Since the 1990s, design has undergone a rethinking. Thanks to Donald A. Schön and Nigel Cross' work, the concept of reflection and reflective practices conceived, attempting to explain the origins of individual and group creative thinking and innovation, as well as the factors that made it possible. Nigel Cross shared his own interpretation of design thinking patterns, emphasizing the significance of how designers formulate problems, generate solutions, and use cognitive strategies [3].

Bryan R. Lawson investigated design thinking in depth and shared key concepts that highlight the differences between scientific and design thinking in definitions and solutions to problems, as well as the primary characteristics of creativity and intuition from analytical methods when creating innovative solutions [4]. The use of design-thinking and critical thinking skills in different areas of scientific research is crucial for resolving both simple and complex problems without a doubt. The key idea of design-thinking is to care for humans, as such a thought process is aimed at understanding the ontological essence of humans. In his work *Being and Time*, Heidegger establishes a connection between the concept of "care" and the concept of "Dasein", asserting that "being-in-the-world" is fundamentally characterized as "a form of care", and that "Existence" is in its very essence, "a state of care" [5].

Thus, the comprehensive development and introduction of design thinking skills in science and education helps to strengthen a human-centric approach when quality problem solving is required. The modern society is in urgent need of constructive forms of communication that contribute to the improvement of social relations through the skill of critical comprehension of social processes. Critical thinking helps to construct an objective picture of the world, where principles such as analysis, synthesis, expert evaluation of information and innovative decision-making are fundamental. Socrates once said: "Know yourself" [6]. This seemingly simple but deeply philosophical thought emphasizes the importance of self-knowledge and reflection, which underlie both design thinking and critical thinking. In conditions of rapid technological development, constant social and economic transformations, the ability to look at tasks outside the box, evaluate argu-

ments objectively and form rational, but at the same time innovative solutions becomes one of the key factors of personal and professional success.

The purpose of this abstract is to explore how philosophy can help develop these essential skills. Today, when design thinking is widely used in the field of business, technology and organizational development, its connection with the philosophical tradition remains insufficiently developed. Some researchers believe that such methods, being focused on practical activities, are less applicable to purely theoretical reasoning [7]. However, this point of view seems to be overly narrowing. On the contrary, philosophy, striving to comprehend the fundamental principles of being, cognition and morality, can enrich design thinking with a deep methodological base and expand the possibilities of critical evaluation of its results.

The relevance of this research becomes especially evident when considering the increased need for skills to overcome the complexity of the modern world. An interdisciplinary approach combining philosophical reflection with the tools of design thinking and critical analysis can significantly enhance both the theoretical and practical value of these approaches. The most significant issues addressed in this article are the following:

1. How are design thinking and critical thinking related?
2. How can philosophical approaches contribute to their development and deepening?
3. What aspects of these skills have not been sufficiently studied in the scientific community?

The answers to these questions will help to form a holistic view of how philosophy can act as a theoretical support for the development and application of design thinking, strengthening the role of critical analysis. Such an interdisciplinary synthesis will not only enrich the scientific discussion, but will also prove to be practically useful, contributing to a more effective solution to urgent problems. This will allow us to trace their evolution, identify key figures and ideas that laid the foundation for further reflection, and prepare the ground for a more detailed consideration of the philosophical context and modern methodological approaches.

Research methodology

The article explains how philosophical methods, such as logical argumentation and the Socratic method, enhance critical thinking by teaching us to analyze assumptions, question solutions, and avoid logical fallacies. It also highlights the impact of philosophical reflection on design thinking, which involves empathy, creativity, and ethical awareness. This study used a comparative analysis method to identify common patterns and characteristics of design thinking skills and critical thinking in the context of philosophical knowledge.

Historical overview of the concepts of design thinking and critical thinking and philosophical approaches to understanding thinking

Design thinking began to take shape in the middle of the 20th century. In 1969, Herbert Simon, in his book *The Sciences of the Artificial*, introduced the idea that the

design process is a form of thinking aimed at transforming existing conditions into preferred ones [8]. However, by considering design thinking solely as a transformative tool, one may miss its potential in stimulating innovative thinking and solving complex problems. It is important to emphasize that the historical context of the formation of design thinking was closely linked to the development of industrial design, architecture, engineering and interdisciplinary cooperation. In the post-war period, when industrial growth required new solutions, designers increasingly turned to a systematic approach and the integration of human needs with technological capabilities. At the same time, ideas began to emerge in the academic environment about the need for a deeper methodological basis for design, considering not only the functional or aesthetic side of the product, but also the social and psychological context of its use.

Against this background, the idea has evolved that design is not just a craft focused on the appearance of objects, but a holistic process that includes analysis, idea generation, experimentation and reflection. The emergence of design thinking as a concept can be seen as an attempt to give this process a methodological formalization that includes empathy, a systematic vision of problems and an end-user orientation. Over time, the design thinking approach began to be applied not only to physical artifacts, but also to services, business models, social systems, and educational programs, forming an interdisciplinary field where an anthropocentric attitude to tasks comes to the fore. Critical thinking has deep roots in philosophy. The Socratic method of dialectical questioning, known as the Socratic method, stimulated critical reflection and introspection. In modern times, philosophers such as Immanuel Kant emphasized the importance of the critique of reason to achieve true knowledge [9]. However, Kant's excessive rationalism may ignore the emotional and intuitive aspects of human thinking, which are also important in the process of cognition.

Historically, critical thinking has developed at the intersection of philosophical analysis and formal logic [10]. It gradually penetrated the sphere of natural sciences, becoming an integral part of the scientific method. Philosophers and thinkers have sought to understand how we can reasonably distinguish true knowledge from false, reliable arguments from sophisms. Over time, this desire resulted in the emergence of various methodological tools for testing hypotheses, interpreting data and evaluating arguments. Although critical thinking is often associated with rational analysis, with the development of psychology and cognitive sciences it has become obvious that human thinking cannot be reduced solely to logical operations. Emotions, intuitions, and unconscious processes also play a key role in decision-making and belief formation, which expands the boundaries of critical thinking beyond pure rationalism.

Philosophy has been exploring the nature of thinking for centuries. Socrates, through his dialogues, sought the truth through questions and critical discussion. Immanuel Kant in the Critique of Pure Reason analyzed the limits and possibilities of human cognition, emphasizing the need for a critical approach to understanding the world [9, P.191]. However, his approach can be perceived as overly rationalistic, ignoring the emotional and intuitive aspects of human thinking. In the expanded philosophical field, along with Kantian rationalism, there are many alternative schools offering different views on how people interpret reality.

Thus, the phenomenology of Edmund Husserl strives for the direct description of experience, avoiding preliminary theories, whereas the pragmatism of William James

focuses on the practical value of ideas for solving real problems. Existentialists such as Jean-Paul Sartre and Martin Heidegger focus on individual experience, free will, and emotionally intense personal experience. Each philosophical approach to understanding thinking expands in its own way the range of tools available for analysis: rational arguments, empirical observations, intuitive comprehension, linguistic analysis, cultural and historical context, and much more. Thus, philosophy provides a rich “toolkit” for understanding how we think, know the world, form values and build meaning. This variety of approaches can be used to gain a deeper understanding of both design thinking and critical thinking, opening new perspectives for their integration.

Karl Popper developed the idea of falsifiability, arguing that scientific theories should be open to refutation, which is the basis of critical thinking [11]. However, his emphasis on falsifiability may limit the recognition of the value of theories that are difficult to empirically test, but which still provide meaningful insights. This emphasizes that in the philosophical analysis of thinking, it is important to understand the boundaries of the scientific method and look for ways to consider complexities and ambiguities, without reducing thought to narrowly defined verification criteria.

The relationship between design thinking and critical thinking and integrating these approaches

Design thinking and critical thinking, although they differ in their approaches, complement each other. Design thinking focuses on creating innovative user-centered solutions through empathy and creativity. Critical thinking provides an analytical framework for evaluating and reflecting on these decisions. Combining these approaches makes it possible to create solutions that are not only innovative, but also justified [12]. However, excessive emphasis on the analytical approach can suppress creativity, which emphasizes the need for a balance between these two types of thinking. An important point is that the harmonious integration of these approaches contributes to the formation of a more holistic mindset. Design thinking stimulates radical empathy and creative search, allowing you to “free yourself” from traditional frameworks and find non-trivial solutions. Critical thinking, in turn, helps to evaluate the ideas found, identify their weaknesses, logical inconsistencies, and analyze the expected consequences. The combination of these two approaches can be illustrated by examples of the development of new educational programs or social initiatives. First, using design thinking, the team identifies problems, conducts interviews with target groups, and creates prototypes of solutions. Critical analysts then evaluate these prototypes, verify the validity of the assumptions, the relevance of the data, and the logic of the argument. The result is solutions that are not only inspired by deep empathy and bold creativity, but also grounded in rational analysis, which increases the chances of their successful implementation.

Theory remains abstract if it is not supported by practice, and vice versa - practical exercises without understanding the theoretical foundations can be reduced to a mechanical repetition of actions. There is also a problem of cultural and organizational barriers: not all professional environments are ready for experiments, for the use of non-traditional methods of analysis and design of solutions. In addition, there is a risk of turning design thinking or critical thinking into a set of clichés or buzzwords

that are not supported by real changes in the methodology of work. Without adequate integration into training programs or corporate trainings, without developing skills of reflection, self-criticism and dialogue, any attempts to implement these approaches may remain superficial. This indicates the need for a comprehensive education reform, including multidisciplinary approach, the involvement of real-world cases, stimulating discussion, feedback and constant adaptation of methods to changing social, technological and economic conditions.

As a result, the philosophical context, historical review and analysis of the relationship between design thinking and critical thinking demonstrate that we are dealing with dynamic, interacting concepts that require a careful and flexible approach to their development. The development of these skills can be significantly enhanced through the purposeful integration of theory, practice, philosophical analysis and specific tools, which will eventually contribute to deeper, creative and critically verified activities in various spheres of society. Moving on to the next section, which presents modern techniques and approaches to the development of these skills, we will be able to take a closer look at practical tools already being implemented in various educational, business and social practices, as well as assess their effectiveness, limitations and prospects for improvement.

Design thinking is a human-oriented approach to problem solving aimed at creating innovative solutions that meet the needs of users. This method includes several key stages: empathy, problem identification, idea generation, prototyping and testing [8]. However, following these steps without considering the specifics of the context can lead to template solutions that do not consider the unique features of each situation. At the same time, it is worth noting that design thinking, having been originally developed in the context of technology startups and product design, is now actively adapting to various fields of activity. In education, its application allows teachers and students to jointly formulate tasks, work out solutions and critically evaluate results, going beyond the traditional pedagogical paradigm.

Modern methods of developing design thinking are actively used in business, education and the social sphere. Design thinking changes the decision-making process in a company, the product promotion strategy, and communication with the client [13]. However, over-focusing on customer needs can lead to ignoring broader social and environmental aspects, which limits the sustainability of the solutions offered. It is important to understand that design thinking should not be limited only to the needs of a specific target audience or short-term market trends. In the context of sustainable development and corporate social responsibility, the need to integrate eco-social priorities into design processes comes to the fore. Organizations should apply the principles of “responsible design thinking”, considering the long-term consequences of the solutions being developed for society and the environment. Thus, the development of design thinking in modern practice involves achieving a balance between meeting the urgent needs of users, economic efficiency and sustainability, as well as the formation of an ethical and responsible innovation culture.

Critical thinking is a fundamental component of philosophical analysis. It includes the ability to question generally accepted truths, analyze arguments, and formulate reasoned conclusions [14]. However, excessive emphasis on critical thinking in philosophy can lead to excessive skepticism and paralysis of analysis, which prevents the con-

structive development of new ideas. To achieve balance, it is important to understand that critical thinking in the philosophical field should not be reduced to destructive criticism only. Instead, it can be used as a tool to enrich discussions, identify hidden premises, and deepen understanding of complex issues. The history of philosophy is full of examples when a critical approach has helped not only to refute established dogmas, but also to form new paradigms. For example, Modern philosophy, based on a critical analysis of medieval scholastic teachings, opened the way to the development of the scientific method and the formation of modern rationalism. Thus, critical thinking plays a role not only in the “destruction” of ideas, but also in their “creation” through careful analysis, systematization and generation of more grounded theories.

We believe that integrating design thinking and critical thinking into philosophical research can enrich both methodology and results. Design thinking brings creativity and human orientation, which makes it possible to develop more inclusive and applicable theories. However, without critical thinking, these theories may not be well founded. The combined application of these approaches can lead to a deeper and more comprehensive understanding of philosophical issues.

In this sense, the integration of methods can be a cyclical process. First, the researcher, using design thinking, identifies and formulates a problem based on the real needs and experiences of the people with whom philosophy interacts. Next, ideas are generated that allow us to deduce new principles or concepts. At the next stage, critical thinking takes over: the researcher carefully analyzes the formulated ideas, subjects them to logical verification, evaluates internal consistency and empirical applicability. If contradictions or unaccounted-for aspects are identified, the process returns to the stage of design thinking, where additional work is carried out with the context, collecting new information and updating theoretical postulates. Thus, this integration acts not just as a combination of two methods, but as their dynamic interaction. As a result, the research process becomes like a spiral, where each new iteration raises the level of understanding, corrects early mistakes and makes it possible to form deeper, more flexible and adaptive philosophical concepts. Such an approach can not only refresh academic interest in philosophy, but also make philosophical research more practical, open to interdisciplinary dialogues and relevant to solving real problems of humanity.

Conclusion

Design thinking and critical thinking, although they differ in their approaches, complement each other. Design thinking focuses on creating innovative user-centered solutions through empathy and creativity. Critical thinking provides an analytical framework for evaluating and reflecting on these decisions. Combining these approaches allows you to create solutions that are not only innovative, but also justified.

However, excessive emphasis on the analytical approach can suppress creativity, which emphasizes the need for a balance between these two types of thinking. Philosophy plays a key role in the development of both design thinking and critical thinking. Philosophical methods such as Socratic dialogue stimulate critical reflection and introspection, which contributes to the development of critical thinking. In addition, philosophy encourages the exploration of new ideas and concepts, which contributes to the development of creativity necessary for design thinking. Thus, philosophical

approaches create the basis for the development of both types of thinking, contributing to their integration and mutual enrichment.

Despite significant attention to design thinking and critical thinking, some aspects remain insufficiently studied. For example, the interaction between these two types of thinking and their combined application in different contexts require further research. In addition, the influence of cultural and social factors on the development and application of these skills also needs to be studied in more depth. Understanding these aspects will make it possible to integrate design thinking and critical thinking more effectively into educational programs and professional practices.

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Философия контекстінде дизайн және сыни ойлау дағдыларын дамыту

Аңдатпа. Сыни тұрғыдан ойлау ғылыми ақиқатты анықтаудың негізгі құрамдас бөлігі саналады. Ал дизайн-ойлау шығармашылық, инновация және мәселелерді шешу мүмкіндіктерін арттыру үшін заманауи контексте танымал әдіснама ретінде қалыптасты. Ғалымдар дизайн-ойлау сыни ойлауға деуі болады деп тұжырымдайды; дегенмен ойлаудың осы қос моделі арасындағы өзара байланысты зерттейтін эмпирикалық

зерттеулер жокқа тән. Бұл, ең алдымен, олардың ортақ концептуалды негізінің егжей-тегжейлі түсіндірілмеуі мен олардың тұжырымдамаларының бір-бірінен тәуелсіз екендігін қабылдаумен байланысты. Аталған зерттеу дизайн-ойлау мен сыни ойлаудың түрлі қасиеттері арасындағы байланысты салыстыру, олардың теориялық негіздерін философиялық контекстінде біріктіру арқылы осы мәселені шешуге бағытталған. Практикалық мәнді философиялық талдау бір-бірінен айырмашылығы бар ойлау тәсілдерінің ортақ белгілері барлығын, бірақ алшақтықтың да елеулі екенін де көрсетеді. Ойлаудың осы екі түрін жан-жақты салыстыру дизайн-ойлау әдістерінің дәстүрлі сыни ойлау тәжірибесін қолдау және толықтыру әлеуеті бар екенін, сондай-ақ сыни ойлауды неғұрлым анық қамту үшін дизайн-ойлаудың құрылымдарын өзгертуге болатынын дәйектейді.

Түйін сөздер: дизайн-ойлау, сыни ойлау, философия, дизайн және сыни ойлау дағдыларының интеграциясы.

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Развитие навыков дизайна и критического мышления в контексте философии

Аннотация. Критическое мышление является основополагающим компонентом в установлении научной истины. С другой стороны, дизайн-мышление стало популярной методологией в современных контекстах для повышения креативности, инноваций и возможностей решения проблем. Ученые утверждают, что дизайн-мышление может поддерживать критическое мышление; однако отсутствуют эмпирические исследования, изучающие взаимосвязь между этими двумя моделями мышления. Это в первую очередь связано с отсутствием подробного изложения их общей концептуальной основы и восприятием того, что они независимы от концепций друг друга. Данное исследование направлено на решение этой проблемы путем сравнения взаимосвязи между дизайном мышления и различными свойствами критического мышления, интегрируя их теоретические основы в философский контекст. Философский анализ практической значимости показывает, что эти явно разрозненные способы мышления имеют общие черты, но также существенно расходятся. Подробное сравнение этих двух режимов мышления предполагает, что методы дизайна мышления имеют потенциал для поддержки и дополнения традиционных практик критического мышления, и что структуры дизайна мышления могут быть изменены для более явного включения критического мышления.

Ключевые слова: дизайн-мышление, критическое мышление, философия, интеграция навыков дизайна и критического мышления.

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