



Article

The Role of Semiotic Approaches in the Design and Evolution of Currency

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Abstract

This research investigates the application and advancement of semiotic methodologies in currency design, exploring how symbolic, iconic, and indexical components communicate cultural identity, foster trust, and embody national values. Utilizing Charles Peirce's triadic framework, the study analyzes the interplay between representamen, object, and interpretant through a review of scholarly literature and an examination of global banknotes. The results highlight that symbolic features, such as historical figures, national emblems, and architectural imagery, are vital in preserving cultural narratives and promoting ideals like unity, freedom, and progress. Iconic elements, including depictions of landmarks and natural scenery, enhance visual accessibility and forge emotional connections with users. Indexical features, such as holograms, watermarks, and microtext, serve dual purposes by ensuring security and signaling technological advancement, thereby reinforcing confidence in the currency. The study underscores how these elements collectively create a unified narrative that balances cultural significance with practical functionality. It also addresses challenges posed by globalization and digital financial systems, which influence the tension between local identity and global standardization in currency design. By providing a nuanced understanding of semiotic interactions, this research illustrates banknotes' roles as both economic tools and cultural artifacts, emphasizing their capacity to strengthen national pride and trust while remaining relevant in contemporary financial systems.

Keywords: banknote, cultural heritage, financial iconography, graphic patterns, monetary symbol

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Introduction

Banknotes, as the material embodiment of economic and cultural values, are simultaneously complex objects that combine economic, political, cultural, and aesthetic functions. They function not only as a means of payment but also as a means of communication that reflects national identity, collective memory, and values. Since the beginning of the 21st century, when the rapid development of technology led to a gradual transition to digital payment systems, the symbolic and cultural role of banknotes has acquired new significance (Eichengreen, 2022). The visual design of banknotes is an important means of building trust in the national currency, forming national pride, and consolidating identity (Negri et al., 2021). However, despite this, there is a need for detailed research into the semiotic aspects of currency design, which remain underdeveloped.

Semiotics, as the science of sign systems, opens vast opportunities for analyzing banknotes (Syvash, 2024; Raiymbergenova et al., 2023). The symbolism of national currency is not accidental – every element of it, from portraits of historical figures to color schemes, reflects deep ideological, cultural, and social processes (Salcedo & Gupta, 2021). However, recent studies by Salmon and Baldwin (2014) and Fisher-Høyrem (2022), which focus on the symbolism of banknotes, are often limited to historical or technical aspects, without covering the broader cultural and semiotic context. It creates a gap in understanding how visual elements influence the emotional perception of the audience and form trust in the currency. The topic's relevance is emphasized by the growing role of visual culture in a globalized world, where symbols and images are becoming key communication tools.

Studies by Hymans (2022) and Hadylaya (2023) have shown that the iconography of banknotes can influence the perception of their authenticity and the collective trust in state institutions and a society's cultural identity. Hymans demonstrated how banknotes in European countries serve as "*places of memory*" (*lieux de mémoire*) that imprint national identity in the minds of citizens. At the same time, Hadylaya drew attention to gender representation in currency design, highlighting the lack of equality in depicting men and women on banknotes. Such studies provide valuable material but leave open the question of how semiotic methods can be integrated into the analysis of visual elements. The historical development of currencies also demonstrates their ability to reflect dynamic societal changes. For example, the evolution of the Latvian currency, from the lats to the introduction of the EUR, reflected the transformation of national identity, economic integration, and political shifts (Karaś, 2020). Similarly, a study of symbols on Vietnamese banknotes has shown how they convey patriotism and the power of national unity while

remaining rooted in the country's revolutionary history (Liên, 2022). Such examples illustrate how banknotes can serve as cultural codes that convey a nation's political and social history. Despite the significant body of work in this field, the semiotics of money remains a relatively new area of research. Jakob (2022) emphasizes that academic literature often overlooks the connection between monetary symbols and state governance. At the same time, decisions in the field of currency design, including the choice of symbolism, color scheme, and composition, result from multi-stage processes that bring together artists, politicians, and public organizations (Dahanukar, 2021). It confirms the need for an interdisciplinary approach that includes elements of semiotics, cultural studies, history, and economics.

As banknotes face new challenges, such as the threat of counterfeiting and the decline in their use due to the development of digital technologies, there is a need to rethink their role. A study by Reina (2023) demonstrated how the graphic design of banknotes evolves in response to these challenges, integrating sophisticated security features such as microtext, watermarks, and holograms. However, even such technical improvements need to be analyzed regarding their impact on the aesthetics and symbolism of banknotes.

This study aimed to examine the semiotic aspects of banknote design, focusing on their impact on cultural identity and public trust. The study's objective was to develop an integrative methodology to assess the symbolic load of banknotes and determine how their design could be optimized for more effective communication with the audience.

Methodology

To achieve the aim of this study, a systematic approach was used to analyze the existing scientific literature, visual materials, and conceptual frameworks related to semiotics and currency design. This comprehensive approach allowed for a detailed understanding of how semiotic methodology can enhance currency design's cultural, symbolic, and communicative aspects. The study, conducted during 2024, examined the interaction between visual elements such as symbols, colors, and typographic styles and their ability to shape national identity, promote trust in currency, and reflect socio-political values.

The theoretical framework of this study integrated key concepts from semiotic analysis, cultural representation, and design methodology. It drew on Charles Peirce's semiotic model, focusing on the triadic relationship between signs, their meanings, and interpreters, and on the theory of cultural symbolism to provide a structured framework for interpreting the visual and symbolic features of currency (Hopes, 1991). This framework was enriched by contemporary research on design methodology,

allowing for a dynamic exploration of how symbolic elements in currency design resonate with diverse audiences. The inclusion criteria favored sources that specifically addressed the intersection of semiotics, design, and cultural identity in monetary systems. Emphasis was placed on peer-reviewed publications, bank reports, European Central Bank (2025), World Bank (2021), and historical records directly relevant to the research objectives. The methodological approach began with a systematic literature review to identify prevailing trends and critical issues in semiotic analysis and currency design. This review included international and national perspectives to ensure a comprehensive understanding of the topic. A systematic search was conducted using Scopus, JSTOR, Google Scholar, and ScienceDirect databases. Keywords included “*semiotics in currency design*,” “*symbolism in banknotes*,” “*cultural identity and money*,” and “*national identity through currency*”. To maintain a contemporary focus, the search prioritized articles published between 2020 and 2024 and included fundamental research that established the theoretical foundations of semiotics.

The materials for this study included a wide range of academic sources, official reports, and visual analysis. Forty-two peer-reviewed articles and monographs were reviewed, offering in-depth studies of semiotics, design theory, and currency symbolism. This diverse body of material provided a comprehensive view of the semiotic dimensions of currency design, reconciling theoretical underpinnings with practical applications in various contexts.

The study of individual national currencies provided further depth, focusing on banknotes issued in different regions, including Europe, Asia, and the Americas. Notable examples analyzed included the EUR (20 euros, 2015), the CHF (10 francs, 2016-2017), the INR (500 rupees, 2016), the VND (200,000 dong, 2006-2022), the JPY (10,000 yen, 2004-2022), CNY (100 yuan, 2015), the CAD (10 dollars, 2018), and the USD (20 dollars, 2004-2017). These currencies were chosen for their innovative designs and cultural significance, as well as for finding unique ways of reflecting socio-political and economic contexts. Including various currencies ensured the global relevance of the findings and provided insight into established and emerging trends in currency design.

Such methodological rigor ensured that the study addressed current trends and issues in currency design and provided a sound theoretical framework for interpreting its findings. The combination of a structured theoretical framework, diverse source material, and targeted methodological approaches created a comprehensive framework for analyzing the semiotic aspects of currency design, yielding both academically valuable and practically applicable insights.

Results

Framework for Semiotic Methodology in Currency Design

The semiotic methodology of currency design involved applying the study of signs, symbols, and meanings to create and analyze currency design. This approach focused on how currency's visual and symbolic elements convey messages about identity, authority, values, and culture. The currency design methodology delved into denotative (literal) and connotative (implied or associated) meaning to create a coherent and meaningful representation that resonates with users. This methodology emphasized the role of currency not simply as a medium of exchange, but as a cultural artifact capable of reflecting and shaping societal values, historical narratives, and national identity. In the modern world, currency design has become a complex, multifaceted task that requires consideration of cultural representation, functional efficiency, and technological innovation. National banknotes are no longer just a means of payment. They have become a form of visual communication that should resonate with citizens and inspire trust on a global level (Macedo, 2023). A semiotic approach to currency design has allowed these aspects to be harmonized, creating simultaneously culturally significant, aesthetically appealing, and technologically innovative banknotes.

Symbolic elements occupy a central place in the semiotic design of currency, as they are key carriers of national values, historical heritage, and cultural identity (Oborska et al., 2025; Radomska et al., 2025; Zahorodniy & Partyn, 2018). Their function goes far beyond the decorative; they serve as a means of visual communication that shapes the nation's perception within and beyond its borders. Depictions of historical figures, prominent architectural monuments, national coats of arms, or symbolic motifs such as abstract representations of freedom or innovation form a unique cultural language of currency that resonates with its users (Auanasova et al., 2019; Maripov & Ismanov, 1994).

Portraits of prominent individuals on banknotes serve several functions. On the one hand, they embody national pride, recalling past generations' achievements and individual figures' contributions to society's development. On the other hand, they serve as a powerful means of education, forming historical memory in citizens (Frewing, 2020). This symbolism is a sign of respect and a message about the values the nation wishes to preserve or promote. In this way, symbolic elements capture the past and shape the idea of the future. Architectural motifs on banknotes are another important symbolic component, often emphasizing the nation's cultural heritage and engineering skills (Cibi & Nagaraj, 2024). Such images include ancient temples, castles, bridges, or modern infrastructure facilities. They symbolize the state's physical strength and development and bridge tradition and modernity. It strengthens national identity, as citizens see these elements reflect their cultural uniqueness. National coats of arms, flags, or abstract symbols also add depth to the symbolic design of currency (Insebayeva & Insebayeva, 2022). They are a code easily recognizable and associated with a specific state. For example, coats of arms with historical signs or animals symbolizing strength, wisdom, or endurance emphasize the country's uniqueness, and they are a calling card of the state, demonstrating its achievements, values, and

identity to the world community. International travel or the use of currency in trade allows foreigners to interact with the cultural codes that are reflected on banknotes, thus enhancing the country's recognition and authority (Shchepanskyi et al., 2025; Kuck, 2020; Patashkova et al., 2021). Such elements are universal in their ability to evoke positive associations even in those unfamiliar with the culture of that state.

An important aspect of symbolic elements is their impact on the emotional connection between citizens and the state (Efremov, 2025b; Tkachuk et al., 2024). A national currency's symbolism helps create a sense of belonging to a collective history and cultural heritage (Negri et al., 2021). Banknotes have become a payment instrument and a symbolic reflection of shared values and ideals. It is essential in times of social change or economic instability, when currency can act as a stabilizing element, reminding them of the heritage and resilience of the nation. Symbolic elements also play a role in strengthening trust in state institutions (Campbell, 2019). Banknotes with sophisticated designs, combining aesthetics and cultural meanings, strengthen the perception of the state as a stable and reliable institution. Symbolism of national achievements and heritage adds legitimacy to the currency and increases trust in the state's economic policies (Nesterenko, 2023; Lavruk et al., 2025). Thus, symbolic elements create multi-layered communication encompassing utilitarian and cultural aspects, making the currency design unique and meaningful.

Iconic elements in currency design complement symbolic components, providing visual accessibility and comprehensibility for many users (Bosley, 2020). They bridge abstract ideals and concrete visual images, creating a material basis for symbolic content. Iconic elements make the design more universal, allowing users to associate images with real objects that are part of their everyday reality or cultural heritage. Images of natural landscapes like mountains, rivers, or forests connect with the country's geographical identity. They emphasize the uniqueness and richness of natural resources, forming a sense of pride among citizens.

Indexical elements in currency design are not limited to performing purely protective functions; they add an important dimension of aesthetic and symbolic value. Components such as watermarks, holograms, microtext, ultraviolet images, and the integration of metal threads demonstrate the state's ability to use advanced technologies, which strengthens the trust of citizens and the international community in its economic stability (Centeno et al., 2019). At the same time, they shape a positive image of the state as technologically advanced and modern.

In addition to technical protection, indexical elements become part of the overall narrative of the currency, reflecting its multi-level symbolism. Their integration often correlates with national achievements in science, engineering, or information technology (Fernández, 2023). The use of microtext, which contains slogans, dates, or national mottos, adds an element of detail that arouses interest in users. Such detailing makes the banknote aesthetically appealing and adds an educational component, recalling cultural or historical aspects of the country. Harmoniously combining functionality and aesthetics in index elements is important for creating a

comprehensive design that works on many levels. Security elements can visually enhance symbolic and iconic components, ensuring an integrated perception of the banknote as a unique cultural product. For example, a watermark can depict a national symbol only visible from a certain angle or light, adding an element of “hidden” art. It enhances security and creates a sense of technological excellence and national pride in users. In a global context, where international currency circulation is an important tool of cultural diplomacy, index elements can enhance a country’s reputation (Cohen, 2018). The technological sophistication and sophistication of the design convey a signal that the state is investing in innovation, underlining its competitiveness on the global stage. Thus, these elements become a security tool and an important aspect of the country’s cultural and economic image.

A key tool in understanding the interactions of these three components is Charles Peirce’s triad model, which allowed us to analyze any design element through three components: representant (form), object (content), and interpretant (user perception) (Hopes, 1991). In the context of currency, this model provides a tool for understanding how each design element evokes relevant associations and emotions in users. For example, a graphic element as a national symbol can evoke a sense of pride or belonging, while its technological component, such as a hologram, builds trust in the currency as a reliable financial instrument (Cooper, 2009; Jakob, 2022). The triad model also made it possible to analyze the design of currency as a form of communication, where each component serves as a means of conveying meaning. Representant encompasses the physical characteristics of banknotes, such as the color palette, textures, and materials used, which are the first level of user interaction with the currency. The object represents the meanings and ideas of these physical components, such as cultural heritage, social values, or technological achievements. The interpretant, in turn, determines how these elements are perceived by users, evoking emotions, associations, or forming a particular understanding. This model allows designers to create banknotes that fulfill utilitarian and symbolic functions. Color schemes and textures can enhance the emotional impact of symbolic images, creating an overall visual balance. Security elements, such as microtext or watermarks, can harmoniously fit into the overall design, reinforcing the technological component and trust in the currency.

Modern currency design also considers changes in how users interact with money, especially in the era of digital payments (World Bank, 2021). As the physical use of banknotes decreases, their design becomes even more important for preserving cultural identity and trust in the state. Symbolism and visual elements on banknotes should be understandable to both citizens and international audiences, even as the use of physical money becomes less widespread (Raiymbergenova et al., 2023; Tkachov & Pryiatelchuk, 2025). Semiotic methodology allows the design to adapt to modern conditions without losing cultural significance. An interdisciplinary approach to currency design also ensures a harmonious cultural, technological, and social combination. The involvement of experts from different fields – from art to

engineering and sociology- allows for the creation of a design that meets the expectations of different user groups. Semiotics is a connecting link that ensures unity between artistic vision, technological functionality, and socio-cultural needs.

To ensure the effectiveness of currency design, it is important to use testing methods that allow users to assess their perceptions of various design elements. For example, public surveys can reveal the extent to which symbolic and iconic elements resonate with a sense of national pride or are associated with positive values (Ariely, 2020). Using focus groups provides an opportunity to qualitatively analyze how users interact with the design and identify weaknesses or ambiguities that need improvement. In addition, A/B testing allows for comparing alternative designs, assessing which best meets the audience's expectations (Quin et al., 2024). Creating a currency design includes several stages, each ensuring functionality, aesthetic appeal, and cultural relevance. The first stage involves analyzing the cultural context to identify key themes and symbols to be represented. It is followed by developing a design using symbolic, iconic, and indexical elements that harmoniously combine into a single narrative. Finally, the design is tested among target groups for feedback and further refinement.

A comparative approach to currency design analysis allows for assessing existing elements and identifying areas for improvement. The design of a particular banknote may reveal insufficient representation of cultural heritage or poor integration of security features into the overall visual style. Semiotic methodology allows us to address these issues by improving the choice of symbols and color schemes or harmoniously combining symbolic and index components.

In a global context, currency design should consider contemporary themes such as environmental sustainability and social responsibility. For example, including images that emphasize biodiversity or the use of recyclable materials can enhance a country's positive image. A semiotic approach allows the design to adapt to these global challenges, ensuring its cultural relevance and compliance with modern standards.

The methodology developed within this approach involves not only the analysis of existing projects but also provides a blueprint for the creation of future currencies. The flexibility of this methodology has ensured its adaptation to each country's unique cultural and political conditions. Thus, semiotic methodology has offered an effective tool for currency design that harmoniously combines cultural, functional, and technological aspects. This approach will allow the creation of currencies that are not only economic instruments, but also powerful cultural markers capable of forming trust, national identity, and connection with the global world.

Semiotic Patterns in Global Currency Design Practices

Building on the insights gained in the previous section, this paper further explores how symbolic, signified, and indexical elements are manifested in global currency design practices. The analysis applied semiotic principles to uncover

currency design's cultural, communicative, and fiduciary functions in different regional and cultural contexts. Drawing on a curated selection of banknotes from different global regions, this section explored the semiotic strategies used to balance cultural relevance with functional and aesthetic requirements. By analyzing these patterns, the study demonstrated the diversity of semiotic frameworks in identifying universal principles and region-specific nuances in currency design. This approach emphasized the role of banknotes as functional tools and cultural artifacts that foster national identity and facilitate global recognition.

All eight banknotes analyzed demonstrated the careful use of symbols deeply connected to the culture, history, or ideology of the nation they represent. These symbols played a key role in creating an emotional connection between the user and the currency, strengthening national identity and trust in state institutions.

The EUR is a prime example of using symbols to create a supranational narrative (Sassatelli, 2021). Its design is based on abstract images such as bridges, gates, and arches, which symbolize unity, cooperation, and connection between the European Union member states and refer directly to the map of the EU itself (Figure 1). An important aspect of this choice is the absence of direct references to specific national symbols, which could cause divisions between different cultural communities. This approach ensures the neutrality of the design, allowing the EUR to function as a symbol of unification while simultaneously emphasizing common European values (Abe, 2022). The bridges on the banknotes also have a metaphorical meaning, emphasizing building connections between different cultures, regions, and people. Regarding the index elements that guarantee the security of banknotes, the analysis of the EUR revealed the use of advanced holographic features, microtext, and security threads integrated into abstract visual elements.



Figure 1. Front and Back of the EUR 20 Banknote of 2015

Source: compiled by the author based on European Central Bank (2024).

While the EUR used abstraction to convey shared ideals, other currencies, such as the VND, took the opposite approach, focusing on specific historical and cultural images. The Vietnamese banknote depicts Ho Chi Minh (Figure 2), a key figure in national history who symbolizes unity, the struggle for independence, and the revolutionary spirit. The most prominent symbolic feature of the VND 200,000 banknote is the depiction of Ha Long Bay (Figure 3), one of Vietnam's most famous natural attractions and a UNESCO (2023) World Heritage Site. Ha Long Bay is deeply rooted in Vietnamese culture and history, symbolizing the country's natural beauty, cultural pride, and the harmonious connection between humanity and nature.



Figure 2. Front of the VND 200,000 Banknote of 2006-2022

Source: compiled by the author based on 200,000 Đồng (2024).

With this depiction, the banknote served as a medium of exchange and a cultural artifact that reinforced national identity and pride. From an indexical perspective, the banknote featured color-changing ink, watermarks, and security threads that perfectly integrated with the design. While primarily functional, these features visually complement the themes of balance and sustainability, reinforcing cultural identity and trust in the currency's authenticity.



Figure 3. Back of the VND 200,000 Banknote of 2006-2022

Source: compiled by the author based on 200,000 Đồng (2024).

CNY also integrated elements of national pride, cultural heritage, and political symbolism into its design. The CNY 100 note carefully used symbols, signs, and protective elements that formed China's national identity. The note's obverse features a portrait of Mao Zedong, a key symbol of modern China (Figure 4). His image not only commemorates one of the country's most influential leaders but also emphasizes political stability and continuity, linking the present to the founding of the People's Republic of China. In addition, Mao's image serves as a tool of cohesion that strengthens national pride (Hymans, 2022).



Figure 4. Front of the CNY 100 Banknote of 2015

Source: compiled by the author based on 100 Yuan Enhanced Security (2024).

The banknote design contains complex guilloche patterns, which perform a decorative function and symbolize the harmony and order characteristic of the Chinese state ideology. Red and gold are also no coincidence - these shades are rooted in Chinese culture, associated with happiness, prosperity, and wealth (Gao & Yezhova, 2023). The banknote obverse depicts the Great Hall of the People in Beijing, symbolizing state authority and centralized power (Figure 4). This architectural object also has cultural value, as its style combines elements of traditional Chinese architecture with modern forms, reflecting the connection between history and the present.

The innovativeness of the CNY 100 banknote is manifested in complex security elements, such as paint that changes color depending on the angle of view, holographic threads, microtext, and tactile markings for people with visual impairments. These technological solutions enhance the currency's credibility and confirm its compliance

with modern standards. Compared to other currencies, such as the EUR, which uses abstract motifs, the CNY demonstrates a powerful combination of political symbolism and cultural identity.

Like the VND and CNY, the INR synthesized history, culture, and national values using key symbols, such as the portrait of Mahatma Gandhi and depictions of architectural landmarks such as the Red Fort. Gandhi, as the personification of the struggle for independence and a supporter of peaceful resistance, is a historical figure and an ideological symbol of India. His image is associated with the principles of non-violence, justice, and national unity, which remain core values of modern India. The choice of Gandhi's portrait (Figure 5) for the banknote strengthened the collective memory of the struggle for independence, while emphasizing those ideals that still shape the country's identity (Cibi & Nagaraj, 2024).



Figure 5. Front and Back of the INR 500 Banknote of 2016

Source: compiled by the author based on 500 Rupees (2024).

As one of India's most recognizable historical structures, the Red Fort personified the grandeur and richness of its cultural past (Figure 5). Its depiction on the INR evokes a sense of pride in the country's centuries-old history, reminding users of the richness and diversity of Indian culture. The color scheme used in the design of the INR also had symbolic meaning. Warm tones such as yellow, orange, and red reflect optimism, energy, and prosperity. These colors are closely associated with Indian religious and cultural traditions, which lend a special emotional color to using the INR (Chaudhary et al., 2021). At the same time, the brightness of the colors makes the banknote easily recognizable and convenient to use. Also, index elements on the INR, such as hidden images, tactile markings for the visually impaired, and microprinting, increase usability and security.

Iconic elements play a key role in enhancing banknotes' cultural and emotional appeal, ensuring their ability to display realistic, recognizable images that deeply connect to national identity (Julliard et al., 2024). These elements bridge the functional

role of currency as a medium of exchange and its role as a vehicle for cultural and social narratives.

The CHF 10 banknote exemplifies the complex interplay of symbolic, iconic and indexical elements embodying Switzerland's cultural, technological, and environmental values. The design reflected the nation's identity and commitment to innovation, precision, and sustainability. The obverse of the banknote prominently depicts a hand with a wand, symbolizing precision, harmony, and direction (Figure 6). This image is a powerful metaphor for Switzerland's role as a nation orchestrating innovation and cultural integration. The hand draws attention to a globe marked with meridians and parallels, symbolizing global interconnectedness and Switzerland's significant presence on the international stage. This symbolic image reinforces the idea of Switzerland as a global player in diplomacy, technology, and culture (Coulmas, 2021).



Figure 6. Front and Back of the CHF 10 Banknote of 2016-2017

Source: compiled by the author based on 10 Francs 9th series (2024).

The geometric patterns around the hand and the globe emphasize structure and order, key elements of the Swiss identity. The hatching and grids allude to the precision for which Switzerland is known, especially in watchmaking and mechanical engineering industries. The vibrant color palette, dominated by warm yellows and oranges, simultaneously encourages and symbolizes optimism, energy, and creativity. These colors harmonize with the themes of innovation and cultural leadership represented by the hand and the globe.

The banknote's reverse shifts the focus to Switzerland's engineering and technological prowess, showing detailed depictions of mechanisms and mechanical components (Figure 6). These iconic elements point to Switzerland's role as a leader in mechanical innovation, particularly in watchmaking, a cultural and economic hallmark of the nation. The overlapping cogs and gears also symbolize the interconnectedness and precision of Swiss society, reflecting its efficient governance and organized approach to challenges. The use of complex geometric lines throughout

the design reinforces the theme of precision and order. These index marks are in keeping with the country's reputation for precision, particularly in areas such as architecture, engineering, and manufacturing. The color of a cool blue for the tunnel contrasts with the warm tones on the obverse, creating a visual balance reflecting Switzerland's dual focus on innovation and sustainability.

The JPY 10,000 note demonstrates the integration of cultural and technological aspects in its design, befitting its role as a symbol of national identity. This currency, like the CHF, emphasizes precision, innovation, and cultural heritage, but implements these principles through its own historical and aesthetic context. The central element is a portrait of Yukichi Fukuzawa (Figure 7), a prominent Japanese thinker of the Meiji era who contributed to the country's modernization. His inclusion in the design of the JPY symbolizes the intellectual development and ideas of openness to the world that became the basis for the transformation of Japanese society in the 19th century (Hauk, 2023). The floral motifs and decorative patterns surrounding Fukuzawa's portrait had a symbolic connection to Japanese art and aesthetics. These elements echo traditional Japanese design principles, such as balance, which reflects the nation's cultural sophistication, and attention to detail.



Figure 7. Front and Back of the JPY 10,000 Banknote of 2004-2022

Source: compiled by the author based on 10,000 Yen (2024).

The banknote's reverse featured a phoenix, a mythical bird deeply rooted in Asian traditions that symbolized renewal, prosperity, and longevity (Figure 7). The phoenix is intricately designed to represent Japan's resilience and ability to adapt and

thrive through historical challenges, responding to the broader cultural symbolism of rebirth and growth.

These examples demonstrated how iconic elements transform banknotes from simple instruments of financial transactions into visual mirrors of cultural narratives. In the context of globalization, such designs serve as representatives of national cultures on the international stage, showcasing the richness and uniqueness of each country through its currency (Salcedo and Gupta, 2021).

The analysis of currencies in the context of the semiotic basis of design also included the CAD and USD. The CAD 10 note features Viola Desmond (Figure 8), symbolizing Canada's commitment to social justice and inclusion. Desmond, a symbol of civil rights, represents the country's historical efforts to combat racial discrimination and promote equality (Hadylaya, 2023). Including imagery associated with the Canadian Museum for Human Rights further reinforces the themes of diversity, progress, and the universal value of human rights. Nature motifs and detailed illustrations highlight Canada's deep connection to its multicultural and ecological heritage, emphasizing harmony and collective identity.



Figure 8. Front and Back of the CAD 10 Banknote of 2018

Source: compiled by the author based on 10 Dollars (2024)

The USD bill depicts Andrew Jackson, whose legacy embodies leadership and political power themes, albeit controversial regarding his policies (Figure 9). The depiction of Jackson next to the White House emphasized the centrality of political legacy and institutional stability to American identity.



Figure 9. Front of the USD 20 Banknote of 2002-2017
Source: compiled by the author based on 20 20-dollar Federal Reserve Notes; Colored (2024).

Unlike CAD, which relies heavily on inclusivity and social progress, the USD prioritizes the narrative of historical governance and the spread of democratic ideals, albeit through a lens that reflects the complexity of its historical figures (Taheri and Yaqouti, 2021).

Table 1 summarizes the main symbolic themes identified across regions. These symbolic variants are adapted to the socio-political narratives of each region, aligning them with the wider cultural and historical context.

Table 1. Regional Symbolic Themes in Currency Design

Region	Primary themes	Examples
Europe	Unity, inclusivity, neutrality	Abstract bridges, architectural forms
Asia	National pride, historical legacy	Famous figures (Ho Chi Minh, Mahatma Gandhi, etc.)
Americas	Political heritage, economic power	National leaders, historical events

Source: compiled by the author.

An analysis of the semiotic basis of currency design highlighted how currencies serve as cultural artifacts, embedding symbolic, sign, and indexical elements to convey national identity, historical narratives, and cultural values. Currency design is deeply context-dependent, reflecting each nation’s unique historical, political, and cultural circumstances. Furthermore, it demonstrated how semiotic elements serve functional purposes and facilitate emotional connections, fostering trust and collective identity in their users.

Discussions

The results of this study highlighted the intricate interplay between symbolic, iconic, and indexical elements in currency design, showcasing their role in communicating cultural identity, fostering trust, and reflecting national values. These findings underscore the semiotic dimensions of currency design and their broader relevance to cultural studies, economic practices, and the evolving role of physical currency in an increasingly digitized world. The discussion elaborates on the implications of these findings, connects them to relevant research, and explores avenues for further study to bridge theoretical understanding with practical applications.

Integrating Charles Peirce's triadic model provided a comprehensive and adaptable framework for analyzing the multifaceted meanings embedded in currency design. By focusing on representamen (form), object (content), and interpretant (user perception), the study demonstrated how banknotes serve not only as economic instruments but also as powerful cultural artifacts. These artifacts anchor users to their national identity and shared heritage, reinforcing collective memory and state representation. It aligns closely with Frewing's (2020) observations on the role of money as a medium for historical continuity and C. Jakob's (2022) analysis highlighting its function in cultural diplomacy. Together, these findings emphasize the vital role that well-crafted currency designs play in domestic and international spheres, blending cultural resonance with economic functionality.

Symbolic elements such as portraits, architectural motifs, and national emblems play a dual function in preserving historical narratives and promoting values like freedom, unity, and innovation (Efremov, 2025a; Maripov, 1994). Including notable cultural figures on banknotes reinforces historical awareness while fostering a sense of pride and continuity. It reinforces the idea that symbolic elements are not merely decorative but serve as cultural narrative and diplomatic instruments, connecting internal audiences with their heritage and external audiences with a country's unique identity. Jakob (2022) similarly identified the strategic use of national symbols to promote political legitimacy and societal cohesion, supporting this study's findings.

Hymans (2022) argues that overemphasizing symbolic and iconic elements in contexts where cash use is declining may limit their relevance, especially in highly digitized economies. His critique raises valid concerns, suggesting that prioritizing functionality and ease of use could overshadow cultural narratives in such economies. It underscores the necessity for future research to adapt semiotic methodologies to balance symbolic and functional priorities, particularly in regions transitioning toward digital currencies.

Indexical elements such as holograms, watermarks, and other security features played a dual role, ensuring functionality while contributing to the narrative coherence of currency designs. By integrating advanced technological features, banknotes communicate a message of innovation and reliability. However, Ciecierski (2021) challenged the assumption that indexical elements are seamlessly integrated into a cohesive semiotic narrative, arguing that these features often function independently, evaluated primarily on technical efficacy rather than cultural symbolism. It suggests a potential area for further inquiry into how these elements can better align with the overall design narrative.

The global standardization of currency design, driven by technological demands and international trade, presents another challenge. While this study emphasized the adaptability of semiotic principles to diverse cultural contexts, Goltz et al. (2024) contend that such standardization often dilutes local cultural narratives in favor of uniform design. His argument raises critical questions about balancing global uniformity with local specificity in currency design. Future research could explore

how semiotic methodologies can address this tension by incorporating localized cultural elements within globally standardized frameworks.

Despite these differing perspectives, the findings of this study affirm the enduring relevance of physical currency as a cultural artifact, even in the context of growing digitalization. Preserving cultural identity through currency design remains vital as digital currencies gain traction (Savchuk et al., 2023; Chystokletov et al., 2025). It emphasizes the importance of integrating cultural narratives into digital financial systems to ensure continuity in national representation.

Advanced security features safeguard against counterfeiting and symbolize technological progress and state reliability. While Bowler et al. (2023) critique the semiotic coherence of these features, their role in enhancing public trust and reflecting state innovation remains significant. This balance between cultural significance and technological functionality underscores the multifaceted role of currency design in modern economies.

Building on these findings, future research could explore applying semiotic principles to digital currencies and virtual payment systems. As central banks move toward implementing digital currencies, preserving physical banknotes' communicative and cultural functions in digital formats poses a unique challenge. Research could investigate how symbolic and iconic elements can be effectively translated into digital interfaces, ensuring they retain their narrative and cultural significance.

Cross-cultural analyses also offer fertile ground for further inquiry. While this study examined a curated selection of global currencies, expanding the scope to include currencies from underrepresented regions could reveal additional semiotic strategies and further validate the proposed framework. Such comparisons could uncover variations in how cultural and national values are represented in currency design across different socio-political and economic contexts.

User-centered design methodologies, such as focus groups and A/B testing, present another promising avenue for exploration. Empirical data on user perceptions and interactions with banknotes could provide valuable insights for refining semiotic methodologies and enhancing their practical applicability. Understanding how different audiences perceive symbolic, iconic, and indexical elements can help designers create more effective and resonant currency designs.

The findings of this study contribute significantly to the field of semiotics by demonstrating the multifaceted role of symbolic, iconic, and indexical elements in currency design. By combining theoretical insights with practical applications, this research highlights the potential of semiotic methodologies to enrich the cultural, communicative, and functional aspects of banknotes. Including diverse perspectives underscores the complexity of currency design and the need for ongoing dialogue and adaptation.

Moreover, this study's holistic approach allows a nuanced understanding of the dynamic relationship between symbolic, iconic, and indexical elements. It reveals how

these components interact to form a coherent and compelling design narrative, bridging the gap between cultural representation and functional requirements. This integrated perspective is particularly relevant in addressing the challenges of digital transformation and globalization in currency systems.

As the currency landscape continues to evolve, these findings offer valuable guidance for designers, policymakers, and researchers, ensuring that currencies remain meaningful and relevant in an increasingly interconnected and digitalized world.

Conclusions

This study examined the application and development of semiotic methodology in currency design, emphasizing the interplay of symbolic, iconic, and indexical elements in communicating cultural identity, fostering trust, and reflecting national values. The findings revealed that currency transcends its role as a medium of economic exchange, serving as a powerful cultural artifact that encapsulates historical narratives, societal values, and technological advancements.

By applying Charles Peirce's triadic model, the study illustrated how representamen, object, and interpretant interact to create meaningful and cohesive currency designs. Symbolic elements, such as portraits, national emblems, and architectural motifs, emerged essential for promoting national pride, reinforcing cultural identity, and enhancing state institutions' perceived legitimacy and stability. These elements serve as instruments of both domestic cohesion and international cultural diplomacy. Iconic components, including depictions of landscapes and cultural landmarks, were shown to provide visual accessibility and relatability, linking abstract national ideals to tangible cultural expressions. These elements resonate broadly, fostering emotional ties with users by emphasizing their connection to national heritage. Indexical features, such as watermarks, holograms, and microtext, demonstrated their dual role in safeguarding security and symbolizing technological progress, thus bolstering public trust in the currency.

The research demonstrated that the cohesive integration of symbolic, iconic, and indexical elements creates currency designs that are both visually compelling and functionally robust. These designs effectively address contemporary challenges such as globalization, digitization, and the increasing demand for sustainability. By weaving cultural narratives with advanced technological features, currency can fulfill its dual role as a medium of exchange and a cultural artifact. However, the study also identified certain limitations, such as its focus on physical currency and the limited sample that did not fully encompass the diversity of global currencies. Expanding the scope to include digital currency design and analyzing semiotic strategies in underrepresented regions could provide a more comprehensive understanding of how these principles can be universally applied.

Practical recommendations emphasize the importance of user-centered approaches, including incorporating feedback through surveys, focus groups, and A/B

testing. These methods help designers assess how various design elements resonate with diverse audiences and ensure cultural relevance. Additionally, integrating sustainability and social equality into currency designs can align them with global priorities, enhancing their social and cultural impact while addressing modern expectations for responsible design. Highlighting environmental initiatives or using sustainable materials could further underscore a nation's commitment to global challenges.

In conclusion, this study demonstrated semiotic methodologies' critical role in crafting culturally resonant, functional, and secure currency designs. These findings provide valuable insights for designers, policymakers, and researchers by striking a balance between cultural specificity and contemporary demands. Applying semiotic principles will ensure that currencies remain meaningful, effective, and adaptable artifacts in both physical and digital contexts as the financial landscape evolves.

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