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Faces of security – digital wallets

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Abstract

This paper is based on my research (*Intaglio*) at the Moholy-Nagy University of Arts and Design, Multimedia-Art Doctoral School. There are two important segments: money (i.e. banknotes) and portraits. Both their transition and their virtualization are playing an important role in our days. The portraits on banknotes serve a security function but also have artistic value. My research is primarily based on previous work experience I gained in security printing being part of a team to develop a vector-based digital drawing software and the effects of the first Banknote Designer Summit (by the IBDA International Banknote Designers Association 2011, Budapest). The conference mainly focused on digitizing the steps of banknote production to decrease time and speed up the banknote designing part with the help of new technologies. The two main subjects of my research are money and art. Their relationship concerning the bonds of tradition and technology development will be examined. The aim of my research is to present the relationship between art (design) and the latest cutting-edge technology and particularly its future development with its extraordinary implications for everyday life. At the beginning I am dealing with the history of money, the trust in money and the authenticity of money to reveal this relationship. This evolution also leads to the process of digitization which involves the necessity of security preparations against trust abuse, forgery, or nowadays more frequently against hacking. I am going to present the final results of the research in a documentary film.

Keywords: face, portrait, fingerprint, security, trust, digital, analogue, technology, biometrics, object, notion, time, science, art, design

Introduction

There is a thing we can exchange for literally anything, a means everyone is looking to get from day to day, an invention or technology that we have been using in various, constantly changing forms for centuries. It is called money. We accept it, we trust its value and authenticity. The motto on the US dollar – “*In God we trust*” – refers to this fact and not to religion. However, today our faith in money is slowly transformed into a belief in ourselves.

There can be several aspects to recognizing and understanding this transition. In this essay I am presenting the trust in money, with the highlight of the facial portrait.

I wish to share my observations, conclusions with my readers relating to portraits originating from my doctoral research project entitled *Intaglio* conducted at Moholy-Nagy University of Art and Design in the subject of the artistic aspects and digitalization of money. I intend to provoke thoughts indirectly regarding the process of the digitalization of money, the prospects of counterfeiting, the future, and the related negative and positive effects. To that end I feel it is necessary to clarify a fundamental concept the meaning of which is currently undergoing profound changes that are worth following. These variants mostly appear in different shades of meaning, differences, and similarities.

Few people know the term *intaglio* even though we all encounter it and use it every day. It used to be the most important and most secure anti-counterfeiting feature on banknotes. When printed, the dense lines create a surface that produces a tactile sensation. It is also called gravure printing, and on banknotes this technology is mostly used to depict portraits, landscapes and other non-recurring image elements. Before photography was invented, it had been used to print illustrations in newspapers. According to Bruno Cerboni Baiardi, a senior professor at the Intaglio Engraver Academy in Italy, it was a common practice that, for example, if a painting was to be presented to an emperor and the painting was in another country and could not be transported, then an intaglio reproduction was delivered. In the renaissance era, Raphael was a pioneer in the use of engravings. It was his favoured method of publishing his pictures. In its period, intaglio was an invention comparable to the Internet and file transfer today. However, when producing banknotes, it took the intaglio engraver many months to create the image.

In an interview with Dr. Béla Egyed, former managing director of the Hungarian Banknote Printing Company, I asked him about the artistic aspects of banknotes and he specifically emphasized the role of intaglio engraving and portraits: “*Facial expressions and mimicry are a distinct genre in the fine arts. For humans it is the easiest to recognize other humans. Intaglio can reproduce even the finest lines. Line depth lends the image a third dimension*” (NÉMET, 2016: 6.).



Figure 1

Part of an intaglio portrait, a work in progress by the engraver of the Austrian Central Bank, Thomas Schmidt

Source: Author's own photo

In order to reduce costs and to streamline the process, intaglio engravings can be produced digitally today, thanks to software development. Throughout history, adoption of all currencies, including banknotes, took time, but these days even this statement is becoming obsolete. As our ways of life is changing, intaglio is also becoming digitalized and mobilised.

Digitalization – thoughts about the transition

Contrary to its digital version, a banknote is an experience in its own right due to the direct tactile sensation. However, the quality and sustainability of its existence today are facing an uncertain future. In reality, regardless of whether we are aware of it or not, we are witnessing the process in which the material currency is transformed into a virtual concept. Using virtual money saves time and money compared to its precursors. The legendary saying of the former US president, Benjamin Franklin, whose intaglio portrait is on the 100-dollar note, befits the situation: “*Time is Money.*”

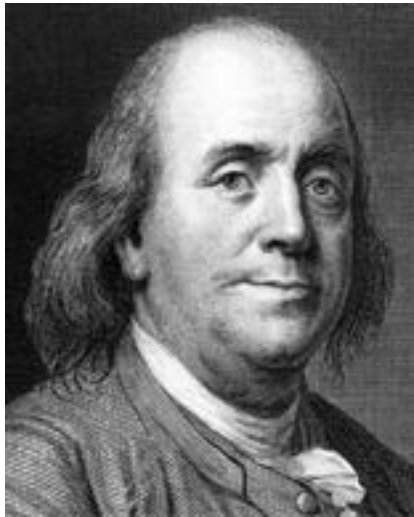


Figure 2

Source: https://en.wikipedia.org/wiki/United_States_one_hundred-dollar_bill (2016. 06. 30.)

Line structures, biometric scanning

The texture of human skin, the fingerprint lines are comparable to intaglio lines in terms of security. These structures are security essentials. Software developers studying digital intaglio drawings attempted to eliminate the artists from the creative process. Similar attempts have already been made in regard to the imagery itself. Portraits have started to disappear from banknotes, a feature, once regarded as the most important security element, which is also a work of art. Would the next step be the end of the banknote? The tracing of intaglio, the artistic portraits based on the recognizability of a face can be translated even

to our modern lives. Instead of portraits of famous people, we could use our own selfies as biometric identifiers, even in financial transactions.

Innovation and digitalization affect not only money, but all industries and technologies (photography, books, cars, pharmaceutical industry, etc.), and even the humans themselves who keep developing these technologies, and focus on the individual. This means that today the portraits of emperors and leaders on coins and banknotes are no longer important. We care more about our own image. Selfishness is spreading and so is the selfie craze. Portraits or faces continue to play a key role in the secure identification of a person, but the process is a bit different. If this is really the way forward, our security will depend on the protection of our own biometric structures, and not on the security design of banknotes. In this way, our wealth and our data will be embodied in ourselves, we will become their carriers. Mobile payments represent a kind of transition as mobile phones are already an integral part of our daily lives, but temporarily tattooed chips also point in this direction. Today, biometric scanning is “advertised” and popularized as a means of increasing our security by a number of companies. Fingerprint scanning and facial recognition programs as well as their digitalized combinations lead us into an algorithmic virtual reality. It is worth considering the dangers this process entails. Criminals have a colourful imagination. The concept of a *counterfeit person* sounds both interesting and has a sci-fi vibe to it as long as you do not experience it yourself.



Figure 3

a) Fingerprint points, b) facial points, c) fingerprint and facial points

Source: The author's own contribution

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