



The Value Formation of Paper Money: Rejoinder to Kaminska

Journal:	<i>Theory Culture & Society</i>
Manuscript ID	Draft
Manuscript Type:	NC - Notes & Commentary
Key Words:	paper money, notaphily, banknotes
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The Value Formation of Paper Money: Rejoinder to Kaminska

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Abstract

In response to Kaminska's article *The Intrinsic Value of Valuable Paper: On the Infrastructural work of Authentication Devices* we develop three brief points from the perspective of notaphily. First, for centuries, trust in paper money as well as their value was determined by gold coins, but also coins made of metals that were exchangeable for the "piece of paper." Second, the reproducibility problem is much more complex than Kaminska suggests when it comes to paper money. Third, the trust formation depends on both intrinsic value as well as on external infrastructures ((inter)national central banks, governments, the state, legality), socio-culture aspects, primary socialization and the long history and existence of paper money. The question that rises, then is trust-formation in currency in digital age. Overall we argue that there is a need for a more sensitive typology of valuable paper itself and its respective "authentication devices."

We read the recent article *The Intrinsic Value of Valuable Paper: On the Infrastructural Work of Authentication Devices* by Alesandra Kaminska with great interest. As notaphilists and researchers in the field of paper money – a type of research that is not officially recognized under the jurisdiction of academic sciences – it was a genuinely enjoyable experience to read a rare piece that has engaged with paper money (and paper in general) and their "authentication devices". Whereas Kaminska discusses the *intrinsic* devices that secure the authenticity of paper money and thus constitute the general trust in "flimsy, cheap and accessible technology of ... paper" (p. 2), we will identify several omissions and offer corrections and additional information from research on paper money and a notaphilistic perspective. By doing so we suggest that there is a need for a more sensitive typology of valuable paper itself and its respective "authentication devices" in investigations such as Kaminska's. We do admit that such a perspective differs from her take – i.e. material culture, philosophy of technology and media studies – and our comments should be read as points supplementing Kaminska's argument.

"The goal here", Kaminska writes, "is to contribute to a digging into the material sensibilities of valuable papers, to an understanding of how they work in moments when they must prove their authenticity on their own merits." (p. 3) When it comes to paper money, we will problematize this claim. We will argue that authentication devices in the form of primarily security features, material qualities and "ornaments" are not *the* ultimate instruments securing legality, circulation and universal trust in legal tenders, but rather associative ones that need to be conceptualized together with external infrastructures securing values as well as historical contextualization. The intrinsic value of paper money, in her conception, is then determined by the type of paper, inks, threads, holograms, serial numbers and similar features (ibid). We argue that, in the case of paper money, the value of legal tenders in

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3 circulation in most of the cases is determined by its face value (unlike with passports and
4 other valuable documents).¹
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7 First, for centuries, trust in paper money as well as their value was determined by gold coins,
8 but also coins made of metals that were literally exchangeable for the “piece of paper”.
9 Second, the reproducibility problem is much more complex than Kaminska suggests when it
10 comes to paper money. Third, the trust formation depends both on intrinsic values as well as
11 on external infrastructures ((inter)national central banks, governments, the state, legality),
12 socio-cultural aspects, primary socialization and the long history and existence of paper
13 money co-determine. The question that rises, then is trust-formation in currency in digital
14 age.
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17 18 **Swedish heavy coins**

19 According to the author, “falling back on *mystical* phenomena as explanations for paper’s
20 conversion to *legal tender* or document underlines the incredible *feat* that it was to elevate
21 paper as a material that could be accepted by the public as a transactional medium, one that
22 could circulate and move about across space and time, steadily and credibly.” (p. 2
23 emphases added). We think that there is no such thing as the “mystical feat” that underlines
24 the emergence of paper money. The reasons are much more simple, and Kaminska notes
25 them on page 5. Paper money complemented coins as a medium that carries value and that
26 was for two reasons: first, paper is, as the author correctly notes, cheaper to produce.
27 Second, a single piece of paper can, in a very practical sense, carry plenty of value and can be
28 easily transported (in comparison to a heavy “bag of coins”). What remains omitted in her
29 analysis is, however, something more serious than economic and metric reasons that
30 propelled the production of banknotes. Until recently, every banknote (the term “legal
31 tender” appears only in the 20th century) *regardless of its intrinsic value* (embedded security
32 measures, irreproducibility and “ornamentation”) maintained its value and trust because it
33 was backed by metal. Until the gold standard (and other metallic standards) were gradually
34 abolished in the 20th century, every banknote was secured and hence *trusted* because it was
35 immediately exchangeable for coins and/or bullion. Even the first instance of paper money
36 that appeared in Europe, issued in Sweden as Kaminiska notes, was backed by coins
37 containing the first security authentication devices, such as the watermark:
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44 Europe’s earliest modern-style banknotes, available to all and sundry with each note
45 worth a fixed sum, were introduced by the Bank of Stockholm. The bank had been
46 started in 1657 by Johan Palmstruch in close collaboration with the royal government
47 which pocketed half the profits. It was Palmstruch who suggested
48 the *kreditivsedlar* (credit notes) and they provided a welcome alternative to
49 Sweden’s massive copper coins, which were dismayingly heavy and clumsy.
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53 ¹ In the world of collecting and trading, legal tenders with special serial numbers, printing and cutting errors are
54 collected and competed for at auctions. The typology of devices that make legal tenders in circulation
55 intrinsically valuable is determined by the community of collectors, dealers, auction houses and notaphilic
56 experts who often know why a particular piece of paper money has a value *higher* than its face value. A good
57 example is a printing error on the 200 Czech koruna note from 1993, when several sheets were printed and put
58 into circulation with a wrong security thread that read “Republique de Zaire” instead of “Kč 200”. The nominal
59 value of the banknote today is CZK 200, but when the note appears at an auction, the opening price is often in
60 the neighbourhood of CZK 250,000 and can reach hammer prices between CZK 600,000 – 700,000.

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3 Colloquially known as *Palmstruchers*, the notes were printed on thick, white
4 watermarked paper with the word *banco* as the watermark and carried the date, the
5 bank's seal and eight signatures, headed by Palmstruch's, as an assurance of
6 reliability. *They were in stated denominations and payable to the bearer and anybody*
7 *who had one was promised payment by the bank.* (History Today, 2011)
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10 The large, heavy copper coins in use in Sweden at the time were complemented, not
11 replaced, by the first European banknotes. We do not have access to *Palmstruchers* but we
12 would like to demonstrate the simplicity of another Swedish banknote from 1717 (Picture 1).
13 One other example (of many) is Great Britain's currency. The gold standard was abolished
14 there in 1797 with the onset of the Napoleonic wars, then restored in 1821. It was finally
15 terminated on the eve of WWI, in 1914. Even during the era when gold and metallic
16 standards were in place, there were specific historical circumstances whereof paper money
17 was authenticated by local governing bodies – and the notes contained no authentication
18 devices or ornamentation, nor they were backed by metal. Examples include the so-called
19 “emergency money” (Picture 2) or “leprosy currency” (Picture 3), some of which were very
20 simple in their design and lacked security features altogether.
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25 **“It is easier to steal money than to counterfeit it”**

26 Kaminska is correct when she says that one of the purposes of authentication devices of
27 paper money – which are “implanted” and carefully designed by external authorities –
28 render “trustfulness ... authority and value ... through logic of ‘irreproducibility’” (p. 4). This
29 surely holds, but it comes as a surprise when Kaminska counter-intuitively says that the
30 reproducibility of paper money from the onset of the industrial revolution should have been
31 a simple act. She is indeed right in saying that when there is a large volume of the same legal
32 tender in circulation, the problem that comes to the fore is “a register of reproduction
33 concerned with restricting the circulation of knowledge regarding the techniques, materials,
34 and methodologies used in the process [of production]” (p.5). Whereas reproduction of
35 paper money during and after the industrial revolution was comparatively “easier”,²
36 reproducing paper money nowadays – i.e. counterfeiting at the highest quality – is
37 *impossible* unless one is professional counterfeiter. Also, we also cannot ignore the expense
38 associated with professional counterfeiting that often, when production costs are translated
39 into single item, exceed the face value of the banknote. The recognition of professionally
40 counterfeited money is extremely difficult and only highly experienced collectors and/or
41 tellers *may* possess the “tacit knowledge” (Collins 2011) and particular “experiential
42 sensorium”, i.e. certain phenomenological and cognitive skills – what Collins call “somatic
43 tacit knowledge” (2011: 2, 11, 51, 86, 99-117), learned through repeated regular interaction
44 with an artifact (paper money) over years and decades³ via which they might raise doubts
45 about legality that would then need to be further investigated.
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54 ² Even in the 19th century some security measures were rather sophisticated and difficult to reproduce. An
55 example is the paper used for the production of the US dollar that allegedly contained material from the wings
56 of an unspecified Ecuadorian butterfly. This speculation persists till today – i.e. even experts do not know
57 whether or not current US dollars in circulation still contain this material.

58 ³ Polanyi (1966) famously uses the example of bike riding – he who can do it, cannot explain it. A similar
59 principle applies to long-term experts, collectors and tellers. Kaminska touches upon this principle implicitly
60 and incompletely (p. 6-7).

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3 We don't know about other official valuable documents, but as paper money experts we
4 disagree with Kaminska's statement when it comes to the reproduction of paper money:
5 "The same basic problem of the 18th century still exists in the digital present: advances in
6 new technologies of copying and printing, as well as accessibility to high-quality consumer
7 color scanners and printers, have made paper copying easier than ever..." (p. 6). The reality
8 when it comes to paper money is exactly the opposite. First, the major world paper money
9 contain "EURion constellation" technology which prevents their photocopying. It is simply a
10 built-in structure of graphic patterns that alert and block functions of photocopiers and
11 software such as Adobe Photoshop. Moreover, professional counterfeits and counterfeiting
12 groups are tracked by *The Central Bank Counterfeit Deterrence Group*, a group of 32 national
13 banks that "investigate[s] the common emerging threats to the security of banknotes,
14 and...propose[s] solutions for implementation by issuing authorities." (CBCDG, nd)
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19 Second, Kaminsky, citing Van Rensse, seems to claim that an ink jet printer would be capable
20 of counterfeiting. We believe that if the printer would print such a note (see above), it would
21 be revealed in the first attempted exchange. Moreover, if one does manage to print a note,
22 the EURion constellation is capable of matching the note with the particular machine on
23 which it was printed. The Electronic Frontier Foundation says that "*all* major manufacturers
24 of color laser printers entered a secret agreement with governments to ensure that the
25 output of those printers is forensically traceable" (EFF 2015, emphasis original). However,
26 some "Manufacturers have not publicly described how the tracking codes work or what
27 information is coded." (European Parliament 2007). Such technologies unknown operate as
28 "delegitimation devices" as they basically will not allow the scanning, printing and editing in
29 various programmes of legal tender. Our argument goes exactly the opposite direction:
30 amateur counterfeiting is hardly possible (and if it happens it is both easily traceable and
31 disclosable); professional counterfeiting is a highly sophisticated endeavour that only
32 experienced individuals may recognize.⁴ Given that counterfeiting as well as legal production
33 of paper money is very costly, technologically highly sophisticated, wrapped up in secrecy
34 and deliberately partial information we dare to claim, with a pinch of irony, that it is easier
35 to steal valid paper money than to counterfeit them.
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41 **Trust Formation**

42 Extrinsic infrastructures that we discuss in this final play an equal if not more important role
43 in constituting and maintaining legal tenders as "mutable mobiles" (cf Latour 1987: 227).
44 Even if the shape, aesthetics and security features do not change and are "immutable",
45 inflations and deflations can affect the value of legal tender in a matter of hours without
46 necessarily changing its authentic devices. There are many such historical and
47 contemporary examples: Weimar Germany, post-WWII Hungary, Yugoslavia, Zimbabwe and
48 Venezuela. When it comes to legal tenders, i.e. paper money currently in circulation, the
49 same principle applies. The trust in and value of paper money is nowadays backed by the
50 international monetary systems that originated at the Bretton Woods Conference of 1944.
51 The conference set up an "international system of trust" in paper money, even after the
52 golden standard was abolished in the US in 1971. All money created since then is fiat money,
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57 ⁴ When it comes to banknotes that are *not* in circulation – collectibles –, the quality of some counterfeits is
58 sometimes *so* good that human cognition and tacit knowledge is not sufficient for their recognition and
59 techniques such as non-invasive spectroscopy must be used to disclose whether they are counterfeits or not–
60 see Bicchieri et al, forthcoming.

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3 backed by legality determined by the state and/or government. Even if authentication
4 devices as identified by Kaminsky do hold their significance, she is in fact correct when she
5 says that “flimsy papers could circulate as valuable not because of their material qualities
6 but thanks to abstract beliefs and a shared collective and individual trust in the underlying
7 system” (p. 2). To be more precise, intrinsic authentication devices and extrinsic
8 infrastructures in their irreducible combinations account for the simple fact that we trust in
9 paper money. The other important trust formation feature is something we call “routine
10 stereotype”. The trust in paper money is also co-determined by other features: their long
11 history/existence; paper money is often considered “the money”, whereas coins are “small
12 change”. Trust in paper money is also shaped by primary socialization whereof children are
13 not taught to question whether or not the banks that outsource printing to state controlled
14 printers can fulfil their “promise to the bearer/payee” and whether the bank has enough
15 assets. These are important socio-cultural aspects forming trust in paper money that,
16 moreover, are transmitted from one generation to the next.
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21 Overall, even if Kaminska’s argument is powerful, our preceding commentary suggests that
22 not only there is a need for deeper and broader sensibilities when examining valuable
23 papers and how value gets shaped, but there is also another contemporary set of issues that
24 arise. An important trust-related question that we face in the present conjuncture relates to
25 cryptocurrencies (e.g. BitCoin, Litecoin, Gridcoin, Auroracoin, Ether, Dash, Monero) and new
26 methods of payment (e.g. Apple Pay, PayPal, WeTransfer, OFX, TransferWise, XE or simple
27 credit card payments, wire and other forms of payments without actually using physical
28 banknotes). On the one hand, there is the mantra “cash is king”; on the other, cash, as it
29 were, seems to be disappearing from our daily lives. For example, in spite of the recent
30 issuance of new Swedish korona banknotes (and a rather nice one, at that), if one were to
31 visit Sweden, one would barely encounter them (it is actually an official policy to eliminate
32 physical cash in the near future). This is a bit ironic in the context of this essay as, as both
33 Kaminska and we have noted, Sweden was the first issuer of paper money. Facebook has
34 serious plans and have already taken the first major steps to introduce its own global digital
35 currency, Libra, backed by assets of two dozen companies including Visa, Spotify and Lyft
36 among others. The world’s largest social network clearly aims to transform global financial
37 services, if not monetary and banking systems. Whereas Libra remains highly controversial,
38 another digital currency, Ven, backed by the social network Hub Culture, is traded on the
39 LMAX Exchange.
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46 Even though it is unlikely that fiat money will disappear from circulation and “migrate” into a
47 virtual cyberworld, we cannot completely rule out this option. The trust formation then
48 becomes similar to the early days of paper money – what will be the intrinsic and extrinsic
49 devices that will “authenticate” them? When value carried by tangible paper money will be –
50 and already is being – transmuted into zeros and ones, will this double typology shaping
51 trust still hold or is there a need to come up with different categories of trust that will
52 encompass intangible value?
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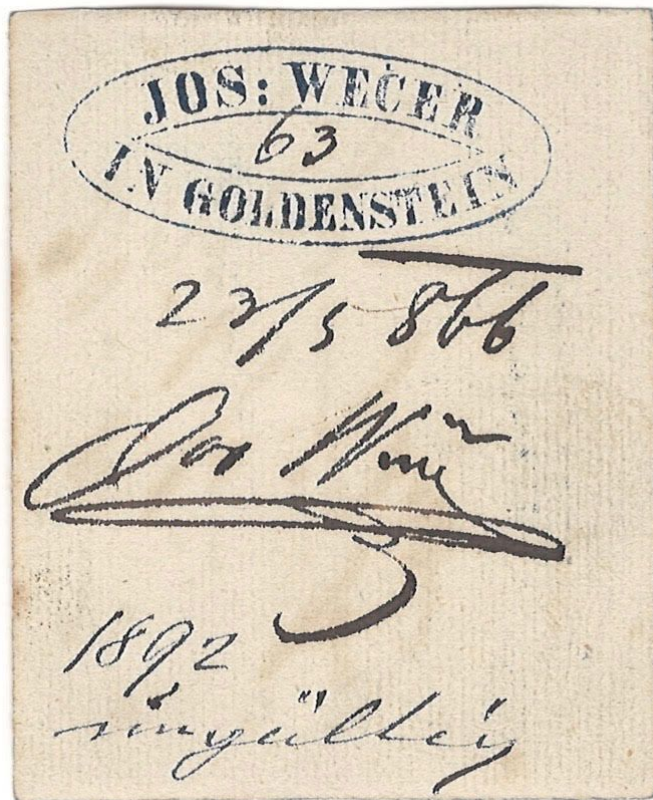
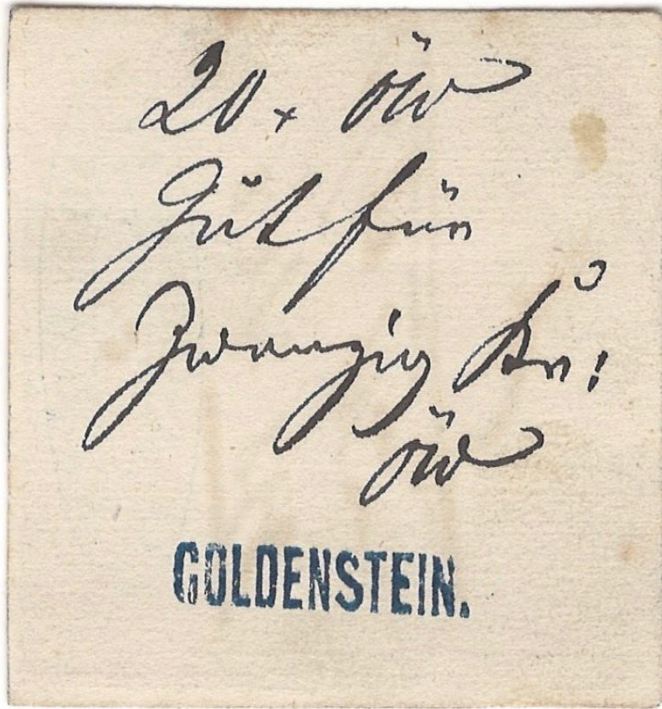
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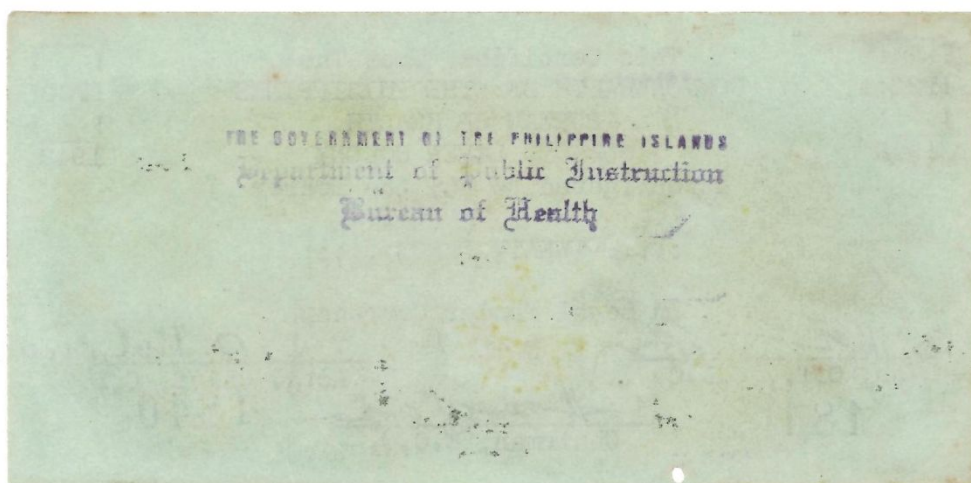
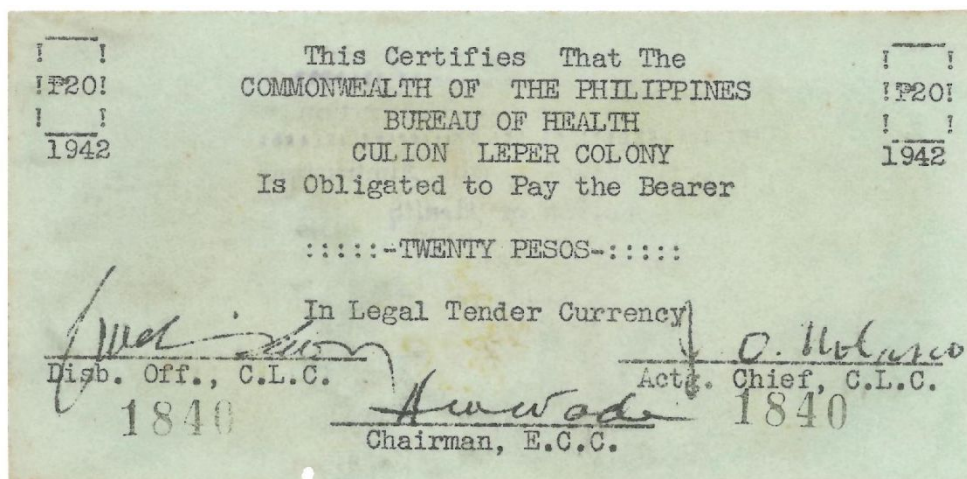


Picture 1: There are no ornaments and very fragile security features – additionally inserted embossed seals on the back side and three signatures that would be difficult, but not impossible, to reproduce. The phrase on the top of the front side *Tijo Dahler Silfrverment* refers to 10 halers of silver and clearly indicated that the paper was backed up by silver (Source: private collection, catalogue number SCWPM (a) A64a).



view

Picture 2: Hand-written and stamped by the issuer Wečer, this emergency note was in circulation in Austro-Hungarian town of Goldstein (now Branná in the Czech Republic) from 1866 that until 1892, which, for a note that lacks security measures and ornaments altogether, is an fascinatingly long period (Source: private collection, not catalogized).



Picture 3: Leprosy Colony, Culion, The Philippines, 20 Pesos, 1942. Again, a note with no security measures, no ornament and no backing by metal. In circulation in Culion Leprosy Colony January-December 1942 (source: private collection, catalogue number SCWPM (b) S247)