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CRITICAL FORUM: ENCODING THE STATE—ON THE BUREAUCRATIC GRAPHOSPHERE

Silicon Cyrillic: On Nullary Writing, or Why Digital Writing is Still Handwriting

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Abstract

This article introduces "nullary writing"—or writing whose function is to operate rather than to represent—as a salute to Simon Franklin's graphospheric analysis of bureaucratic power. With a wave of the proverbial (digital) hand, it argues that contemporary digital systems fulfill operational capacities long embedded in Slavic manuscript traditions. Through handy examples from early tsarist stamps to early computer programming innovations, it demonstrates how handwritten inscriptions and digital writing alike enable modern surveillance continuous with, rather than distinct from, earlier bureaucratic graphospheres.

At 21:00 (UTC+03:00) on September 5, 2020, after a month of massive anti-corruption protests, thousands of arrests, and several deaths among peaceful protestors in Minsk, a curious message appeared on the website of the Belarusian Chamber of Commerce and Industry (BCCI), under the guise of a group calling themselves the Belarus Cyber Partisans. After announcing their intention to conduct a "partisan war" against the Lukashenka regime, it ended with an invitation, "a channel to contact us: 3db34cdb7bef2c8cb690d1318495e45b4c830cf5f303e797832de0ad92d55e1e": an encrypted string of characters that would become the group's first digital signature.

Exploring the "space of the visible word" in *The Russian Graphosphere*, Simon Franklin proposes a triadic taxonomy of writing that offers a starting point for understanding this string of letters and numbers: "primary writing" denotes an object whose "principal purpose [is] to bear written text"; "secondary writing," those objects "created with writing but not for writing" (coins, ceramics, tattoos, textiles); and "tertiary writing," that which appears as writing "applied to an object which already exists for other purposes" (such as graffiti).[1] But if Franklin extends this schema positively, it might also be construed in reverse, backward to zero, rather than forward to four: toward what I call "nullary writing"—writing whose primary power is operational rather than representational. Many examples suggest themselves: handwritten signatures, clickable email addresses, circuit designs, and legal contracts all have obvious implications for any bureaucracy.

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[1] Simon Franklin, *The Russian Graphosphere, 1450–1850* (Cambridge, UK, 2019), 19.

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If Franklin's graphosphere, worthy of theories of writing by Walter Ong or Harold Innis, constitutes a writing ecosystem that "forms and dissolves, reforms and mutates" in encompassing social worlds, then a "bureaucratic graphosphere" might be understood as one that exercises functional power over others through writing operations rather than necessarily making meaning.[2] Here I draw analogy from Harun Farocki's famous sense of "operational images," or a "working image" that "performs work": semiotic marks *do* something rather than *mean* something.[3] The Belarus Cyber Partisans, for example, reached out for their colleagues to do something before they could mean something. The intersection of nullary writing and digital writing—writing through digital signs and codes—hence underlines the contradictory systems of power that buttresses modern corporate states. In short, Franklin's notion of the graphosphere, directed towards the digital bureaucratic battles between the encrypted channels of Belarus Cyber Partisans, or, for example, the signature Vladimir Putin uses to fund fiberoptic drone warfare on Ukraine, offers new insights into what nullary writing might be *doing* across the world today.

Certainly, all manipulation begins with the hand. My argument sees the contemporary corporate state as a contiguous extension of capacities that were always latent in previous ages of bureaucratic writing systems. Digital bureaucratic writing represents not a rupture but rather a fulfillment of the operational capacity long embedded within the graphosphere. This operational dimension challenges conventional western theorizations of writing and print, such as those from historians of Russia like Marshall Poe, who chronicle a steady progression from manuscript to print culture without accounting for what the Slavic tradition reveals: that handwriting—and the broader forms of inscription executed by hand—marks both an unbroken and deeply circuitous pathway to our digital present.[4] Consider all the literal operations performed by hand, even in a digital environment: keystrokes on keyboards, thumbstrokes on touchpads, digital devices unlocked by fingerprint, digitally rendered signatures. None of these handwriting strokes construct meaning themselves, yet all underpin the operations of digital writing today. As I have developed elsewhere, the very notion of digitality draws on that original digit, the finger.[5] Franklin's approach to graphospheres predicts and illuminates the surprising operational priority that digital handwriting maintains today. The fact that handwriting still remains a power operation appears obvious only once seen in the light of graphospheric analysis.

Before the royal hand could grip a pen, it pressed its insignia through stamps: Bernhard Siegert provides a close description of how Spanish kings, some of whom may have been illiterate, constructed their states on a bureaucratic graphosphere of royal stamping practices.[6] The case for the authorizing stamp, an action delivered by hand that permits future processing and nullary writing operations, is clear in the evidence for literacy among servants of the elites surrounding Ivan IV ("the Terrible," 1533–84), where only those who were literate could "affix their hand" (*ruku prilozhiti*) to legal documents.[7] The Slavic tradition

[2] Franklin, *Russian Graphosphere*, 183; Harold A.Innis, *Empire and Communications* (Oxford, 1950); Walter J. Ong, *Orality and Literacy: The Technologizing of the Word* (London, 1982).

[3] Volker Pantenburg, "Working images: Harun Farocki and the operational image," in Jens Eder and Charlotte Klonk, eds., *Image Operations: Visual Media and Political Conflict* (Manchester, 2017), 49–62.

[4] Marshall T. Poe, *A History of Communications: Media and Society from the Evolution of Speech to the Internet* (Cambridge, UK, 2011).

[5] Benjamin Peters, "Digital," in Benjamin Peters, ed., *Digital Keywords: A Vocabulary of Information Society and Culture* (Princeton, 2016), 93–108.

[6] Bernhard Siegert, *Passage des Digitalen: Zeichenpraktiken der neuzeitlichen Wissenschaften 1500–1900* (Berlin, 2003).

[7] Charles J. Halperin, "Three 'Hands' and Literacy in Muscovy during the Reign of Ivan IV," *Canadian-American Slavic Studies* 51, no. 1 (January 2017): 29–63.

demonstrates that the hand made the word matter, that handwriting's inscription was—and remains—fundamentally digital, driven by digits, fingers, and indices, long before it could be understood through frameworks more common among western theorists.

In this context, I would suggest that the operational capacity of digital writing, and counterintuitively digital *hand*writing, marks not an extension but a foundational completion of Franklin's typology: digital writing such as the Belarus Cyber Partisans' address code is an operationally original form of writing. Devoid of meaning, its purpose *precedes* other writing systems. Such nullary writing is not writing for writing's sake; rather, it is writing for the sake of a writing system, or *Aufschreibesystem* in Friedrich Kittler's terms (perhaps, I would wager, a *sistema poniatii* or *sistema pis'ma* in Russian).[8] Non-digital examples might include the tsar's stamp authorizing a guild publisher to print copies from the royal press, a copyright contract clarifying ownership rights to a creative work, or a student's name at the top of an assignment. Each specifies and enables an authorizing relationship. Digital examples from the Slavic world might include ransomware code operating within Russian-speaking cyber forums, PGP (Pretty Good Privacy) public keys facilitating encrypted communications, or the algorithmic traces that govern international financial transactions among émigrés.

These various examples represent forms of writing that are necessary yet effectively unreadable for the purpose of making meaning. They exist as addresses, indices, and traces pointing to other sites, their significance residing in their operational function rather than their semantic content: a student's name on a test may "mean" something, but the name is *there* to authorize a relationship between student and examiner. Without such nullary writing, I posit, bureaucratic graphospheres may well not exist as such. Nullary writing functionally enables, operates, and then negotiates with other semiotic writing systems. My signal contention holds that Franklin's graphospheric approach predicts better than other western media theories how the handiwork of Cyrillic nullary writing might anticipate contemporary regimes of digital surveillance.

Consider a few recent examples of digital nullary handwriting across the longer history of Slavic graphospheres. In 1913, arguably the first act of digital humanities began with a presentation given by Andrei Markov to the Academy of Sciences in St. Petersburg. Markov's paper (an obvious example of primary writing) concerned the relative hidden genius of Aleksandr Pushkin's writing style; to analyze it, Markov first engaged in nullary writing, or the work of tallying, by hand, the vowel-consonant structure for Pushkin's novel-in-verse *Eugene Onegin* (1825–32). These handwritten marks, quantifying patterns letter by letter, were themselves not meant to be read; in fact, they render Pushkin's text unreadable in any conventional sense. Rather, they were meant to unlock a hidden structural order buried within the consonant-vowel letter variations, and thus, Markov hoped, demonstrate Pushkin's brilliance.[9] His handwritten tallies formed, spelled out, and enabled tables, codices, and other matrices whose operations were authored by nothing less than the alphabet on the page, but whose *meaning* awaited mathematical interpretation. Only then could Markov communicate his hands-on meaning of Pushkin's national genius. In other words, nullary handwriting of digital operations and calculations preceded Markov's primary writing.

Consider another example: in the early 1950s, in the outskirts of Kyiv, the computer programming pioneer and algebraist Kateryna Yushchenko midwifed into being a digital operation that made computer software the powerful and trivially complex form of digital writing that it is today. She did so largely by hand: working often at her kitchen

[8] Friedrich Kittler, *Aufschreibesysteme 1800/1900* (Munich, 1985).

[9] David Link, "Traces of the Mouth: Andrei Andreevich Markov's Mathematization of Writing," *History of Science* 44, no. 3 (2006): 321–48.

table with a pencil in hand and children underfoot, she developed an operation that she called *nepriamaia addressatsiia* (indirect addressing) that allowed a linear digital computer to process, or read, digital computer programming of any degree of complexity. Such indirect addressing—called "the pointer" in English after it was independently developed a decade later at Stanford—offered a form of indexical writing that allowed programming to refer to memory stored elsewhere, and so move from a linear series of 0s and 1s to the potentially infinitely complex hierarchical stack of references that we call software today. Indirect addressing has no meaning itself, but by enabling internal reference within a writing system, software can function practically as a writing system. Much as footnotes allow memory to be referenced in different publications, indirect addressing allows software to store memory elsewhere.

The graphosphere surrounding Yushchenko's invention of indirect addressing brimmed with bureaucratic demands: Yushchenko, who survived World War II in Central Asia and later became the first doctor in computer programming in Europe, was employed from 1953 as a programmer in the computing center run by the Soviet scientist Sergei Lebedev. Together they worked on programming the first digital stored memory computer in Europe to solve urgent, top secret, and complex Cold War problems involving fluid dynamics, turbulence, ballistics, and low-orbit trajectories. Working in such a bureaucratic graphosphere, her visible words were paper, pencil, chalkboard calculations, and the hardware limitations of linear processing. Yushchenko and her team of women coders empowered, by hand and then by hardware, modern computer software, a form of digital writing that—while often invisible and hidden from view—nonetheless determines what is possible in our digital era. Critically, this code was written by hand before it was programmed into the MESM computer between 1952 and 1955, and before her publications on indirect addressing were published in 1955. Although Yushchenko's innovations were not widely adopted until western programmers discovered the same techniques a decade later, her career reflects how a prime example of digital nullary writing—software—began (and soon after ended) with the handwritten work of Slavic women coders.

In the current moment of oligarchic ascendancy, ethnonationalist retrenchment, and multipolar geopolitical instability, it is a modest but urgent reminder that all this begins with the stroke of a hand. It is my contention that contemporary political formations draw on the operational capacity of nullary writing, a capacity underlined by Franklin's graphospheric histories and analyses. In a corporate state, both "public" (state) actors and "private" (corporate) actors collapse into digital writing not necessarily for communication or record-keeping, but as instruments of operational power, for or against bureaucracies: to return to my first example, the Belarus Cyber Partisans' encrypted communication channel address marks a form of writing whose operations precede other forms of writing. So too do authorizing stamps of Muscovy's tsars, the contracts that bind signatories to their scribbles, and the fingerprints of an iPhone's Touch ID. Algorithmic trading systems that move global capital in micro-decisions at the speed of electricity, or surveillance advertising regimes that track populations for their clicks, meanwhile, are further examples of the contemporary primacy of nullary writing regimes.

What distinguishes the contemporary moment is not the existence of operational writing—as Franklin's typology makes clear, this has long been present in bureaucratic systems—but rather that entangled organizational forms such as analysts, corporate executives, and their boards have built world systems that profit from merged systems of automatic digital nullary writing. The power these systems amass is without obvious precedent: at Trump's inauguration, for example, five tech CEOs were present whose personal wealth totaled over a trillion dollars. Yet, in a way that Franklin's graphospheric analysis best anticipates, these nullary writing systems are not the lumbering abstractions of

advertisers' discourse ("the cloud," "the stack"), but the legacy of centuries of hands-on writing practices.

The lessons of Franklin's graphosphere for the digital age are several, and scholars might begin with a far more capacious survey of the material cultures of writing at work today. The multinational digital nullary systems that survey and co-opt our lives depend on uneven networks of power, but also on our own keystrokes, slips, and nervous tics of hands; the nullary nature of digital writing critically acknowledges the operational power of clicking, dragging, dropping, scrolling, and other forms of digital gesturing. The unscrupulous design of digital writing systems reflects sleight of hand back on its user, who must become proficient in the mundane legerdemain of swiping to scroll, pinching to zoom, tapping to select and, like the photo-military systems that inspired so much of the digital age, pointing and shooting. Yet that mundanity also provides cover for how, in spelling out our lives by hand into nullary writing, the digital writing systems we use also use us: they survey us, algorithmically shape our swipes, and drive our attention with the next hit of dopamine. Heavy-handed, they rarely permit the user to read, respond, or resist; as hackers know well, the terms of resistance are the terms by which the writing system operates. Large language models (LLMs) today suggest the triumph of operational writing: artificial intelligence speaks *as if* it has meaning but remains functionally operational, from first to last. These recursive nullary writing systems lie at the intersection of surveillance economies and the bureaucratic graphosphere: digital platforms are owned by commercial entities but contracted out by states for governmental control; algorithmic environments are bought and sold to manipulate politics and the market; and both state secrets and public data are privatized for corporate collection. In these and so many other cases anticipated in silicon Cyrillic, the capacity to read and write digital traces serves as an *a priori* mechanism for the operation of power in today's world.

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