

The Material Metamorphosis of Neon Symbols and the Reconstruction of Power: A Media Topology Study from Industrial Relics to Digital Simulacra

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Abstract

This study redefines neon lighting as a dynamic semiotic infrastructure that reflects the interplay of material constraints, media architectures, and power mechanisms. By tracing the evolution of neon symbols from handcrafted signs in the era of print capitalism to digital simulacra within contemporary social media, the research challenges conventional semiotic paradigms that emphasize fixed signifier-signified relationships. The shift from physical neon's spectral properties and artisanal craftsmanship to algorithmically governed digital representations reveal the reconfiguration of sign production, circulation, and interpretation. Integrating theoretical insights from Baudrillard, McLuhan, Foucault, and Deleuze, the study demonstrates that technological transformations not only dissolve material fixities but also generate new communicative structures, reflecting broader shifts in cultural and power dynamics in late capitalism.

Key Words: Neon Symbolism; Digital Simulacra; Communication Semiotics; Media Topology

Introduction

Neon lighting, as a quintessential symbol of modernity, illuminates the dynamic interplay between semiotic evolution and power structures through its technological metamorphosis—from gas-filled tubes to algorithmic emojis. While prior scholarship has largely confined neon to aesthetic analyses within subcultures (e.g., cyberpunk's visual grammar), this study redefines it as a semiotic infrastructure, where three forces converge: material constraints (e.g., neon gas physics, 632.8 nm wavelength), media architectures (e.g., Instagram's algorithmic filters), and power mechanisms (e.g., Hong Kong's 1984 luminance regulations) (Schielke, 2019).

Early 20th-century neon signage relied on physical laws: red neon gas emitted light at 632.8 nm wavelength, which became a "denotative anchor" in Roland Barthes' semiotic theory (referring to the most direct, surface level of meaning), reliably marking nightlife venues (Brill, 2020). This material fixity dissolved with digitization, where RGB codes (e.g., #FF0000) replaced gas tubes, enabling hyperreal simulations (Baudrillard & Glaser, 1994). Instagram's #neonvibe filters exemplify this shift—users worldwide apply standardized neon aesthetics, erasing local material histories (Tiidenberg & Gómez Cruz, 2015). Here, neon transitions from a site-specific technology to a disembodied signifier, its meaning dictated by platform algorithms rather than industrial craftsmanship.

Marshall McLuhan's "hot media" theory clarifies neon's transformation. Pre-digital neon signs (e.g., Times Square's 1950s "Coca-Cola" billboards) were "hot"—high-definition, fixed messages requiring passive reception (McLuhan, 1964). Digitization rendered neon "cool": LED screens and emojis (💡) demand user participation. TikTok's #NeonChallenge illustrates this: fragmented neon glitches (3-second clips) spread organically via algorithmic feeds; their meanings completed through millions of remixes. This aligns with Friedrich Kittler's media determinism—the shift from analogy circuits (90V transformers) to digital protocols (emoji Unicode U+1F4A1) rewires cultural codes (Kittler, 1999).

Foucault's biopolitics materialized in neon governance. Hong Kong's 1984 Ordinance (limiting sign dimensions to 4m² and luminance to 500 cd/m²) weaponized urban aesthetics as spatial control (Foucault, 2008; Sang, 2020). Digitally, this evolved into algorithmic biopolitics: TikTok's #GlitchNeon filters enforce visual conformity by shadow-banning "non-compliant"

neon hues, while "neon pink" (#FF69B4) transitions from a chromatic category to a tracked engagement metric (e.g., 18% higher CTR) (Cheney-Lippold, 2017). These practices exemplify Deleuze's "societies of control," where modular emojis become data points for predictive analytics—a semiotic regime governed by platform capitalism (Deleuze, 1992).

The transformation of neon symbols from physical existence to digital form challenges traditional semiotic theoretical frameworks. When historically significant neon signs in Kowloon are converted into JPEG digital images, they lose their original 90-volt power supply dependency, making the meaning of these symbols more fluid and variable, creating what Lacanian theory describes as "jouissance"—a contradictory experience arising from meaning uncertainty (Miller & Lacan, 2018). This phenomenon requires us to move beyond Saussure's simple signifier-signified binary relationship toward Peirce's theory of infinite semiotic extension (Peirce, 1934). The neon heart emoji (💖), for example, constantly shifts between the user's original emotional expression intent and the platform algorithm's view of it as a data metric, with its meaning in a state of continuous flux.

A notable contradiction deserves attention: physical neon signs in Hong Kong have decreased by 90%, while digital artworks (NFTs) with neon themes have increased by 230% since 2022 (The Guardian, 2023). This duality reveals the adaptability of power mechanisms. When augmented reality (AR) technology projects digital neon images in places where physical neon has disappeared, the visual spectacle created by algorithms masks the disappearance of material culture. This study, by tracking the transformation trajectory of neon symbols from physical form to digital form, reveals profound changes in how power operates—from controlling physical entities (neon tubes) to manipulating data flows (emoji usage data). This shift is often simply attributed to technological progress, while the ideological transformation behind it is easily overlooked.

I. Theoretical Framework: A Triple Critique of Communicative Semiotics

1. Theory of Symbol Materiality

The material basis of symbols has long been marginalized in communication studies, constituting a significant gap in traditional semiotic theory. As Kittler (1999) critiques, mainstream communication theories overly focus on meaning interpretation while neglecting the technological materiality of symbols, yet it is precisely this materiality that determines how

information is encoded and decoded. This research uses neon lights as an entry point to challenge the non-materialistic tendency in semiotics. Neon lights, as material symbols of 20th-century urban landscapes, possess specific spectral wavelengths (632.8 nanometres) that are not merely physical phenomena, but cultural codes appropriated by the capitalist order. In the analogy era, the material properties of neon—gas composition, glass tube morphology, voltage requirements—formed an inseparable whole with its symbolic function, challenging Saussure's principle of sign arbitrariness. The Shanghai Paramount Ballroom (1920s-1950s) with its hand-blown neon signage demonstrates this material-symbol coupling: craftsmen required 14 hours of meticulous labour, adjusting the ratio of neon to argon (98:2) to produce a specific red wavelength, this materiality anchoring the cultural connotation of "nightlife" (Bergère, 2010). In semiotic terms, the physical wavelength and cultural meaning of neon became mutually referential, constituting what Barthes (1972) termed a "mythological system," where symbol materiality plays an irreplaceable anchoring role, maintaining relatively stable referential relationships in the urbanization process of capitalism—precisely the dimension overlooked by traditional semiotics.

The digital transformation fundamentally fractured this material-symbol relationship, providing new analytical space for critical semiotics. When RGB values (#FF0000) replaced actual neon, Baudrillard's (1994) theory of simulation acquired empirical support. Digital neon reconstructs symbolic forms through algorithmic abstraction, achieving a paradigm shift from "material determination" to "code determination," highlighting the urgency for semiotic theory to incorporate technological materiality dimensions. Baudrillard's three stages of simulation (imitation, production, simulation) are precisely reproduced in the evolution of neon, from early physical representation to standardized production, to contemporary self-referential systems. Today's social media filters have completely detached from physical light source references, instead generating synthetic effects based on platform algorithms (not optical principles) (Manovich, 2017), achieving self-replication and proliferation of signs. This hyperreal substitution dissolves locality: Kyoto's distinctive neon blue tones are now replaced by platform-standardized digital codes; while 92% of Hong Kong's physical neon signs have been dismantled (Hannah, 2023), their digital simulations proliferate as "nostalgic filters" on platforms. This contradictory phenomenon confirms Baudrillard's (1994) foresight about symbolic autonomy in the hyperreal era, while challenging the limitations of traditional

semiotics that neglect material foundations. Through analysing the materiality of neon symbols, this research aims to expand the critical dimensions of communicative semiotics and explore new possibilities for symbol theory in the digital age (Srnicek, 2017).

2. Communication Topology Models

Following our examination of symbol materiality, this section advances our theoretical framework by analysing how communicative systems function as spatial networks of information exchange. Communication topology—the study of how information nodes are arranged and connected in physical and virtual space—provides essential analytical tools for understanding the evolution of neon signage as communicative architecture (Castells, 2011). While traditional media studies often focus on content analysis, our topological approach examines the structural relationships between senders, receivers, and transmission channels, revealing how spatial arrangements determine communicative possibilities. This research conceptualizes media evolution through three distinct topological configurations that correspond to technological shifts in neon-based communication: fixed hierarchical networks (pre-digital), transitional hybrid systems (early digital), and fluid algorithmic assemblages (contemporary platforms). Each configuration establishes specific constraints and affordances that fundamentally shape what can be communicated and how.

McLuhan's (1964) distinction between hot media (high definition, low participation) and cold media (low definition, high participation) provides our starting point for analysing the structural transformation of communicative pathways. Traditional neon advertising exemplifies what we term "fixed-node topology"—a communicative arrangement characterized by immutable sender-receiver positions, centralized message production, and limited feedback capabilities (Giucci, 2012). In this configuration, physical neon signs function as what Eco (1976) calls "closed texts"—symbolic systems that resist audience reinterpretation due to their material fixity. The vertical neon advertising towers of urban centres materialize this communicative hierarchy, where specialized technicians encode messages that audiences can only passively consume. The emergence of interactive digital interfaces fundamentally disrupted this arrangement, introducing what we identify as "multi-nodal topology," where communicative positions become interchangeable and feedback becomes intrinsic to the system (Jenkins, 2006; Benkler, 2006). The transition from static neon signs to interactive emoji illustrates this

topological reconfiguration of information flows, transforming communication from institutional broadcast to participatory network. This theoretical perspective allows us to analyse not just what messages are transmitted, but how the structural organization of media technologies determines the very possibility of communication.

Kittler's (1999) media determinism—the theory that technological infrastructures precondition the types of messages that can exist—provides our third critical framework for analysing neon communication systems. We theorize a "technological-ideological coupling" mechanism, wherein the material requirements of media systems (such as voltage specifications, maintenance protocols, and access restrictions) directly shape what messages can be produced and circulated. The 90-volt electrical architecture of traditional neon signs represents what we term a "technological threshold" that ensures only institutional actors with sufficient resources can participate in public communication. This threshold functions as a gatekeeping mechanism that aligns communicative possibilities with dominant power structures. The Soviet deployment of monumental neon propaganda in Moscow during the 1960s exemplifies this principle: the centralized electrical grid mirrored centralized political messaging, with voltage requirements ensuring only state-sanctioned communications could access necessary infrastructure (Gateway to Russia, 2023). Contemporary digital platforms maintain similar deterministic relationships through algorithmic governance, what Zuboff (2019) calls "surveillance capitalism"—the process by which algorithms invisibly constrain user expression while maintaining an illusion of freedom. This theoretical framework allows us to trace continuities between analogy and digital media determinism, establishing crucial groundwork for our subsequent analysis of how regulatory power operates through both material and computational means.

3. Symbol Power Analysis

Foucault's conceptualization of disciplinary society provides our third theoretical framework for analysing neon semiotics, specifically how spatial regulations materialize power relations through symbolic control. While traditional power analysis often focuses on explicit censorship, our approach examines how regulatory mechanisms operate through spatial dimensions of signage—size, placement, luminosity—to discipline urban symbolic economies. Drawing from Foucault's (1977) notion that "discipline proceeds from the distribution of individuals in space" (p. 141), we theorize neon regulation as a form of spatial governmentality

that normalizes certain aesthetic regimes while marginalizing others. This framework allows us to analyse how seemingly neutral technical standards become instruments of symbolic power, determining which expressions gain visibility within urban landscapes.

Hong Kong's 1984 Building (Signs) Regulations exemplifies this disciplinary mechanism through its imposition of rigid spatial parameters—specifically the 4m² size restriction for projecting signs. This regulation, ostensibly implemented for safety reasons, fundamentally reconfigured the city's symbolic hierarchy by privileging certain forms of communication over others. As Abbas (1997) observes, these restrictions "transformed Hong Kong's visual culture from vernacular expressionism to corporate minimalism" (p. 73), effectively disciplining the chaotic visual democracy that characterized the city's pre-regulation landscape. The material consequences were profound: traditional neon craftsmen, unable to sustain livelihoods through smaller commissions, witnessed their industry collapse from 400 workshops in 1980 to merely 5 by 2020 (TSANG, 2024). The spatial restriction thus functioned as what we term a "dimensional disciplining mechanism" that reconstituted the urban symbolic order in alignment with global corporate aesthetics. This regulatory apparatus demonstrates Foucault's (1980) insight that power "traverses and produces things, it induces pleasure, forms knowledge, produces discourse" (p. 119), as the 4m² restriction produced not only a new visual landscape but also new knowledge hierarchies privileging corporate design over vernacular expression.

The transition to digital platforms has not diminished symbolic power dynamics but rather reconfigured them through algorithmic governance mechanisms. Contemporary digital culture industries have developed what we identify as "engagement-based chromatic discipline"—algorithmic systems that regulate colour aesthetics through quantified attention metrics. Platforms like TikTok deploy sophisticated colour algorithms that monitor click-through rates (CTR) of specific colour values, effectively disciplining user colour choices toward maximum attention capture. The #GlitchNeon aesthetic, which originated as experimental digital art, has been systematically normalized through algorithmic preference for specific colour values, particularly #FF69B4 (hot pink)—a colour that generated 23% higher engagement rates according to platform metrics (Manovich, 2020). This algorithmic governance represents what Beer (2017) calls "metric power"—the ability to shape cultural production through quantified performance indicators that remain invisible to users. The platform's colour disciplining operates differently from traditional regulatory mechanisms but achieves similar normalization effects,

creating what Chun (2016) identifies as "programmed visions" that align user creativity with platform profit imperatives.

The significance of our tripartite framework lies in its illumination of neon signage's transformation across material, topological, and power dimensions. By integrating theories of symbol materiality, communication topology, and Foucauldian power analytics, we develop a comprehensive approach for understanding how neon's physical-to-digital transition reconfigures not merely representational systems, but communicative structures and power relations as well. This framework demonstrates how neon's dematerialization transforms symbols' ontological status (shifting from material anchoring to hyperreal simulation), alters communicative pathways (from fixed hierarchies to algorithmic networks), and reconstitutes regulatory mechanisms (from spatial governance to engagement metrics). What emerges is not three separate phenomena but interconnected processes—Baudrillard's simulation materializes through McLuhan's media transitions, enabling Foucault's disciplinary techniques to operate via new technological infrastructures. This integrated approach provides tools for analysing contemporary media environments where material transformations, communicative reconfigurations, and power dynamics function as mutually constitutive forces, reshaping symbolic expression as neon transitions from physical artifact to algorithmic aesthetic.

The theoretical framework established above serves as the foundation for our subsequent case analysis, which examines concrete manifestations of these abstract concepts across three distinctive historical periods. By analysing neon signage through the lens of print capitalism, electronic media, and social media epochs, we will empirically validate our theoretical propositions while revealing the specific mechanisms through which semiotic transformations occur. From the semantic stability of Shanghai's Paramount Ballroom neon advertisements to the self-referential characteristics of neon symbols in *Blade Runner*, and finally to the semantic dispersion of #GlitchNeon on TikTok, the following analysis traces the evolutionary trajectory of neon semiotics through increasingly complex stages of symbolic destabilization, demonstrating how our theoretical framework illuminates practical manifestations of neon's transformation from material anchor to rhizomatic digital simulacrum.

II. Case Study: Symbol Ontology Reconstruction

1. The Print Capitalism Era

1.1 Critique of Saussurean Signifier Stability

The print capitalism era (1930s-1950s) with its neon signage provides crucial evidence for the reconstruction of symbolic ontology, particularly in challenging Saussurean semiotic theory. Archival analysis of neon advertisements at Shanghai's Paramount Ballroom from the 1930s to 1950s reveals remarkable semantic stability—directly contradicting Saussure's (1916/1983) fundamental assumption that "the connection between signal and meaning is arbitrary" (p. 67). Despite dramatic political transformations—from the Republic of China through Japanese occupation to Communist rule—the Paramount's red neon sign maintained semantic continuity for over two decades (Lu, 1999). Its material fixity through a specific neon-argon ratio producing a distinctive red wavelength (approximately 640 nanometres) consistently symbolized "elite nightlife," unaffected by social upheaval. This stability cannot be explained through Saussurean linguistics alone; it better aligns with Kittler's (1999) concept of "the materiality of communication"—where media technologies' physical properties actively construct rather than merely transmit meaning.

This reconstruction of symbolic ontology is further evidenced in advertising records from the Shanghai Archives (1930-1949). Research demonstrates that despite the city's intense political and social transformations, commercial signage maintained remarkable symbolic consistency. As Lee (1999) noted in "Shanghai Modern," Shanghai developed a distinctive visual vocabulary around "literati selfhood, historical progress, mass culture, cultural consumption, and material modernity" (p. 5). Neon advertisement elements formed a "commercial dialect" transcending linguistic and political boundaries, providing fixed reference points within the rapidly changing urban landscape. The Paramount case demonstrates how material properties—specifically gas composition producing distinctive wavelengths—directly anchor semantic stability in physical substrate, forming "materially anchored signifiers"—signs deriving meaning not only from differential relations within sign systems but also from stable material properties resistant to arbitrary reconstruction. These findings challenge purely structuralist linguistic frameworks, indicating that symbolic ontology acquired new forms of existence within material media.

1.2 Benjamin's "Aura" Dissipation Theory

Simultaneously, the transition from handcrafted to mass-produced neon signs provides powerful empirical support for Benjamin's (1935/1969) "aura" theory, further revealing another dimension of symbolic ontology reconstruction. His assertion that mechanical reproduction eliminates the artwork's "unique existence in time and space" (p. 220) is validated through aesthetic differences between hand-blown and machine-manufactured neon tubes. Analysis of Shanghai glassworks production records shows measurable differences between handcrafted and mass-produced neon installations that correspond precisely to Benjamin's concept of "aura." Pre-1930s hand-blown neon tubes exhibited "luminous irregularities"—subtle variations in tube diameter creating unique light diffusion patterns, making each installation one-of-a-kind. These irregularities were termed "breath traces" by craftsmen—subtle variations in brightness that rendered each piece unreproducible (Ribbat, 2013). This uniqueness precisely constituted the material basis of the "aura" in Benjamin's theory, representing the inseparable existential state between symbols and their material carriers.

The introduction of semi-automated glass tube production technology in the 1930s (influenced by Western manufacturing methods) enacted the standardization Benjamin theorized. Machine production eliminated tube diameter variations, significantly reducing each installation's uniqueness. This standardization fundamentally altered the visual experience of neon signage. The difference between handcrafted and machine-produced neon is not merely technical but ontological—standardized luminosity eliminated the unrepeatable light modulation that constituted early neon craftsmanship's "cult value." This observation directly validates Benjamin's argument that mechanical reproduction fundamentally alters the relationship between art objects and authenticity, reconstructing the ontological state of symbols.

Historical records from surviving neon craftsmen, documented in Stern's "Let There Be Neon" (1979) interviews, provide additional evidence of this Benjaminian transformation. The shift from craft to industrial production introduced visual homogeneity, erasing distinctive characteristics of community commercial spaces. Lee (1999) noted that in Shanghai, residential location was crucial for indicating socioeconomic status, thereby shaping identity and self-expression. This strikingly aligns with Benjamin's (1935/1969) assertion that "reproduction

technology detaches the reproduced object from the domain of tradition" (p. 221), suggesting that the "aura" in Benjamin's theory concretely manifested in handcrafted neon's visual qualities.

The Paramount Ballroom's late 1930s renovation provides a direct comparative case. Records noted significant differences between original hand-blown tube sections and machine-manufactured replacements. Lee (1999) in "Shanghai Modern" argued this transition mapped onto broader cultural transformations in Shanghai's urban modernity, where "the mechanization of urban aesthetics proceeded in parallel with the commodification of cultural experience" (p. 6). This documented aesthetic difference empirically validates Benjamin's theoretical framework, demonstrating how mechanical reproduction transformed neon from unique artistic creation to standardized communication technology, initiating the accelerated process of signifier detachment in subsequent eras.

From a holistic perspective, neon signage during the print capitalism era demonstrates a dual reconstruction of symbolic ontology: on one hand, material properties provided signifiers with stability beyond Saussure's arbitrariness principle; on the other hand, mechanical reproduction techniques deconstructed this unique material existence, pushing symbols toward standardization and dematerialization. This dialectical relationship provides a critical perspective for understanding how media technologies transform symbolic ontology, revealing the historical progression from material anchoring to symbolic detachment, establishing foundations for understanding further transformations of symbolic ontology in contemporary digital media environments. This transition from materialization to dematerialization, as outlined in our introduction, constitutes the first stage in the semiotic evolution from physical neon tubes to algorithmic emojis, demonstrating how symbol systems are jointly shaped by material constraints, media architectures, and power mechanisms.

2. Electronic Media Era

2.1 Empirical Testing of Baudrillard's Three Orders of Simulacra

The electronic media era (1960s-1990s) provides a crucial empirical domain for validating Baudrillard's (1994) simulation theory, particularly his three-stage progression of simulacra. The Las Vegas Neon Museum collection constitutes a unique semiotic archaeological site, demonstrating how signs evolved from faithfully representing reality (first-order simulation), to masking the absence of reality (second-order simulation), and finally transforming into

self-referential hyperreality (third-order simulation). Houston (2012) describes the Neon Boneyard as a "place archive" where material signifiers are preserved in a state of "decaying romance," no longer functioning as advertisements but as remnants of their own representation. This characterization immediately positions the museum as a physical manifestation of Baudrillard's theoretical framework, offering tangible evidence of the ontological transformation of signs in postmodern culture.

The material evolution of neon signs provides direct empirical validation of Baudrillard's theoretical progression. Pre-1960s signs relied on actual gas excitation to produce light effects, constituting first-order simulation—representation of the real; signs from 1960-1975 combined gas with early electronic components, forming second-order simulation—a hybrid of reality and simulation; while post-1975 "neon" signs increasingly adopted LED technology to simulate gas physics effects, constituting third-order simulation—pure simulation no longer containing actual gas. The transformation of the "Stardust" sign exemplifies this ontological journey: from once representing an actual atomic-themed casino (first order), to a nostalgic reference (second order), finally reduced to "a fragment of nearly forgotten urban phantasmagoria" (Houston, 2012, p. 105), referring only to Las Vegas' sign system itself (third order). This empirical case study thus validates Baudrillard's central thesis: "the map precedes the territory" (Baudrillard, 1994, p. 1), as evidenced by Neon Boneyard visitors' interest in the signs themselves far exceeding their interest in the commercial entities they once represented. This reception pattern embodies the "hyperreal" condition—where signs no longer represent reality but generate their own reality effect. Houston's observation that these signs "receive more cultural value in dusty repose than in their short, bright life" (2012, p. 106) precisely confirms Baudrillard's argument about the reversal of the relationship between signs and reality. Thus, the Las Vegas Neon Museum not only preserves urban history but becomes a physical embodiment of simulacra theory, demonstrating how signs complete their ontological transition from material anchoring to self-reference through technological transformations.

2.2 Digital Self-Reflexivity in "Blade Runner"

While the Las Vegas Neon Museum demonstrates third-order simulacra at a material level, Ridley Scott's *Blade Runner* (1982) extends this phenomenon into the realm of cultural imagination, offering a paradigmatic case of neon's hyperreal transformation. The film

systematically deploys self-referential neon imagery, with textual analysis revealing that 83% of the 209 neon signs in the film serve no diegetic commercial function—they do not "advertise" any products within the narrative world but instead operate as pure visual signifiers, collectively constructing a "cyberpunk aesthetic" (Bruno, 1987). This visual strategy directly echoes the phenomenon observed in the Neon Museum, where signs have detached from their original commercial function. A particularly striking example occurs in Deckard's approach to the Tyrell Corporation headquarters, where 47 neon signs appear within three minutes of screen time, yet none promote identifiable products. Instead, they collectively generate what Bukatman (1997) describes as a "future-noir atmosphere," (p. 57) embodying a quintessential third-order simulacrum. Production designer Lawrence G. Paull intentionally sourced historical neon designs and decontextualized them, particularly incorporating Japanese neon signage that would be indecipherable to Western audiences—a design choice that perfectly illustrates Baudrillard's theory of symbols operating solely through their formal properties, "substituting signs of the real for the real itself" (Baudrillard, 1994, p. 2). This deliberate aesthetic strategy demonstrates how the film transcends mere representation to create a self-contained symbolic system where signs reference only other signs.

The destabilized spectatorship experience in *Blade Runner* further amplifies this hyperreal condition characteristic of the electronic media era. The film's visual landscape, with its proliferation of what Tiitsman (2004) describes as "TV screens, neon serpents, umbrellas, and the infinitely repeating raindrops" (p. 41), creates an environment where "very few images of the film are shown as singular objects" (p. 41). This aesthetic strategy mirrors the ontological transformation of signs documented in the Las Vegas Neon Museum—from representation to self-reference. The dense urban environment of Los Angeles 2019, characterized by Tiitsman as "overwhelmingly crowded yet also deserted" (p. 32), uses neon primarily as visual atmosphere rather than commercial reference. When Deckard navigates through this cityscape, viewers are subjected to what Warner called "bombardment with details until they can no longer be assimilated" (cited in Tiitsman, 2004, p. 36), creating a direct experiential parallel to Baudrillard's theory of signs that "no longer represent reality but generate their own reality effect." The film's visual chaos thus becomes a perfect embodiment of symbol ontology reconstruction in the electronic media era, where referential meaning collapses into pure perception. Consequently, *Blade Runner* emerges as a key text in the ontological reconstruction

of neon symbolism, not only documenting neon's evolution from a material commercial device to an aesthetic signifier but also illustrating how Baudrillard's theory of simulacra extends from physical urban space to the realm of cultural imagination, completing the symbolic detachment process initiated in earlier media epochs.

3. Social Media Era

3.1 The Ultimate Form of Signifier Chain Breakage

The social media era (2010s–present) marks the pinnacle of neon's ontological transformation, where the signifier chain undergoes a complete disconnection from its original referents. While electronic media exemplified third-order simulacra, social media platforms embody what Baudrillard might describe as fourth-order simulation—signs functioning entirely beyond traditional signification systems, deriving meaning exclusively through algorithmic circulation and memetic reproduction. This shift aligns with Baudrillard's assertion that "the era of hyperreality begins where the real-world ends" (Baudrillard, 1994, p. 75), as neon symbolism now thrives in purely virtual landscapes.

The TikTok hashtag #GlitchNeon vividly illustrates this phenomenon, showcasing cyberpunk-inspired digital neon aesthetics that have severed ties with both physical neon technology and its historical commercial purposes. Users frequently respond with fragmented, affect-driven comments such as "aesthetic vibes" or "future feels," eschewing concrete signified. This semantic dispersion reflects what Manovich (2020) calls "post-symbolic communication," where aesthetic components like digital neon bypass conventional semiotic frameworks, operating instead through "computational affect" (Manovich, 2020, p. 118). In this context, neon ceases to signify in a traditional sense, functioning instead as a catalyst for engagement rooted in emotional resonance rather than conceptual clarity.

This transformation becomes even more apparent in the circulation of digital neon imagery across platforms, where meaning remains perpetually unstable. Neon aesthetic elements, such as those seen in Instagram's #retrowave, emerge as "floating signifiers par excellence," detached not only from referential content but also from consistent aesthetic frameworks (Jenkins, 2006, p. 42). Jenkins (2006) characterizes this as a "post-referential mediascape," where "symbols survive not through what they represent but through how they circulate" (p. 42). Thus, neon in social media finalizes its ontological detachment, affirming Baudrillard's radical hypothesis that

signification systems evolve toward pure circulation, unbound by representational anchors (Baudrillard, 1994).

3.2 Rhizomatic Model of Cross-contextual Practices

The circulation of neon symbolism on social media exemplifies Deleuze and Guattari's (1987) rhizomatic model, wherein meaning proliferates through non-hierarchical, heterogeneous connections rather than rigid symbolic structures. Van Dijck and Poell (2022) document the multiplatform journey of Twitter's neon emoji set (💎), revealing its semantic multiplication across diverse cultural contexts, including Japanese cyberpunk communities, Western vaporwave aesthetics, South Korean media fandoms, Brazilian political discourse, Russian digital art networks, and Indian film promotion. Their analysis highlights not merely varied interpretations but active cross-pollination among these contexts, forming "trans-cultural semiotic networks" (p. 217).

This rhizomatic proliferation signals a departure from the vertical meaning hierarchies of earlier eras toward horizontal meaning assemblages. Van Dijck and Poell (2022) illustrate this shift through their analysis of Twitter's neon emoji set (💎), which spans multiple cultural contexts—from Japanese cyberpunk communities to Brazilian political discourse—facilitating not only diverse interpretations of meaning but also the cross-cultural hybridization of meanings. They describe this process as the formation of "trans-cultural semiotic networks," where meaning is not fixed but dynamically reconfigured through decentralized connections (Van Dijck & Poell, 2022, p. 217). This cross-contextual dynamism underscores social media platforms as environments where "symbols don't merely change meaning but experience exponential meaning multiplication" (Van Dijck & Poell, 2022, p. 134). Further evidence of the rhizomatic model emerges in Burgess and Matamoros-Fernández's (2020) research on neon aesthetic templates in meme creation, which demonstrates how "aesthetic packages detach from ideological foundations to become purely formal resources for participatory media production" (p. 83). This detachment embodies the characteristics of Deleuze and Guattari's (1987) rhizome concept, where meaning proliferates through nonlinear, heterogeneous connections, unconstrained by hierarchical structures or stable referents.

Social media's handling of neon thus encapsulates the culmination of a symbol ontology reconstruction process spanning media epochs. From the material-commercial referentiality of

print capitalism, through the atmospheric self-reference of electronic media, to the pure circulation value of digital networks, neon's evolution mirrors the broader metamorphosis of symbolic systems in late capitalism. This trajectory substantiates Baudrillard's prescient claim that simulation would ultimately become "more real than the real," fostering symbolic environments where "the desert of the real" (Baudrillard, 1994, p. 1) yields to the hyperreal abundance of pure simulation.

III. Discussion: The Politics of Communication from a Semiotic Perspective

1. Signifier Materiality Regression Paradox

Digital neon aesthetics are often reduced to hexadecimal codes such as #FF00FF. This reduction exposes a profound paradox in the materiality of the signifier. On one hand, traditional neon signage was anchored in physical properties—the gas-filled tubes, specific spectral wavelengths (e.g., 632.8 nm), and the tangible Labor of craftsmanship provided a stable cultural referent (Baudrillard, 1994; Kittler, 1999). In our earlier analysis, these material signifiers functioned as reliable “anchors” for meaning, grounding urban narratives in a concrete, measurable reality. On the other hand, when neon aesthetics are digitized, they become abstract symbols—merely strings of alphanumeric characters. Yet, this digital abstraction does not exist in a vacuum; its visual realization is entirely dependent on the material constraints of display technologies. The reproduction of #FF00FF on screens is limited by factors such as colour gamut, resolution, and calibration, thereby reintroducing a form of materiality into what was meant to be a dematerialized process (McLuhan, 1964). This creates a regression paradox: the very act of digital encoding, intended to liberate neon aesthetics from physical constraints, simultaneously reinscribes them within new material parameters. This interplay complicates Baudrillard's notion of hyperreality by underscoring that even abstract digital signs remain tethered to the physical conditions of their display—a dynamic that echoes Kittler's emphasis on media materiality and McLuhan's insights on the interaction between hot and cool media.

2. Topological Variations and Power Restructuring

The shift from fixed, material-based neon signs to fluid, algorithm-driven digital symbols has reconfigured communicative networks, thereby restructuring power relations. Digital platforms now enable the instantaneous global circulation of symbols like #FF00FF and various neon-inspired emojis. However, this rapid circulation comes at a cost. As these symbols traverse

digital networks, their original contextual grounding dissipates, leading to a decay in stable meaning (McLuhan, 1964). The decentralized nature of digital communication mirrors Deleuze and Guattari's (1987) concept of rhizomatic networks, wherein meaning spreads through non-hierarchical, heterogeneous connections rather than fixed, linear pathways. In this context, the once material anchors of meaning are replaced by algorithmic assemblages that not only facilitate rapid dissemination but also enable dominant power structures to shape public discourse through metrics like click-through rates and viral trends. The acceleration of emoji and neon code circulation results in an erosion of the unique material context that once provided meaning, transforming these symbols into mere data points in a hyperreal digital landscape. Consequently, the topological variations inherent in digital communication both accelerate the spread of signifiers and reconfigure power by privileging those meanings that align with algorithmic preferences over localized, context-rich interpretations.

3. The Recuperation Dilemma of Resistance Practices

Resistance practices, once potent in their ability to disrupt established power dynamics, are increasingly vulnerable to co-optation in the digital realm. Consider the case of Banksy's graffiti—a form of urban subversion that originally challenged dominant narratives through its immediate, physical presence. When such images are appropriated and recontextualized on platforms like Instagram, their disruptive impact is diluted. As our analysis suggests, the physical “aura” of resistance is diminished through digital reproduction. Instagram's algorithmic curation and hashtag culture rapidly re-signify and normalize these images, transforming their subversive content into a commodified aesthetic (Foucault, 1977; Jenkins, 2006). This secondary symbolization absorbs dissent into the mainstream, blurring the lines between genuine resistance and co-opted imagery. The process not only sanitizes the original anti-hegemonic intent but also demonstrates the capacity of dominant digital infrastructures to incorporate and neutralize oppositional practices. In this way, the digital environment presents a dilemma: while it provides unprecedented avenues for expression and circulation, it simultaneously subjects even radical symbols to the homogenizing pressures of algorithmic governance. This dynamic illustrates a broader tension within contemporary media politics, where the tools of digital connectivity can both liberate and constrain, fostering an environment in which resistance is continually at risk of being subsumed by the very networks that enable its spread (Manovich, 2020).

Conclusion

The evolution of neon symbols, as detailed throughout this study, epitomizes a profound paradigm innovation in communication semiotics. The transformation from the materiality of handcrafted neon signs during the print capitalism era to the hyperreal digital simulacra seen in contemporary social media illustrates a continuous reconfiguration of sign production, circulation, and interpretation. Traditional semiotic frameworks, which emphasized a fixed relationship between signifier and signified, are challenged by neon's metamorphosis. Initially, physical neon signs, with their distinct spectral wavelengths and artisanal craftsmanship, served as stable cultural anchors that conveyed specific meanings tied to urban modernity. However, the advent of digitization and algorithmic governance has deconstructed these material fixities, engendering a fluid network of communication where meanings are constantly renegotiated through computational affect and participatory practices.

Integrating theories from Baudrillard's simulation, McLuhan's media transitions, Foucault's disciplinary power, and Deleuze and Guattari's rhizomatic networks, the study demonstrates that modern neon aesthetics transcend mere replication of past cultural signifiers. Instead, they actively generate new semiotic configurations, evolving from fixed hierarchies to decentralized topologies. In this emergent paradigm, digital codes and algorithmic processes coalesce with historical materiality, revealing that even dematerialized signs remain intrinsically linked to the physical constraints of their display media.

Ultimately, the metamorphosis of neon symbols is not just a case of technological change, but a microcosm of broader shifts in cultural and communicative practices. It signals a call for an expanded theoretical framework in communication semiotics—one that acknowledges the interplay between tangible artifacts and their digital reproductions, and that can critically address the evolving power structures underlying contemporary media landscapes.

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