Shudders in the Neoliberal Machine
Archaeology of Metro Floating Screen in Contemporary China

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A Blizzard of Images

The moment when travelers delve beneath the surface and enter the subway station in Shanghai, they are immediately *in media res* of the city's media environment. In the long corridor leading up to the vending machines and turnstiles, a series of dazzling billboards—in stark contrast with the dim and austere corridor—fill the journey. Walking past the turnstile and down to the platform, they now enter the place where the competition for attention gets the most intense: Above the head, there hangs a television set that plays both advertisements and train arrival information. In the tunnel, bright billboards light up the otherwise dark and void space. The broadcast announces the exit information and shopping stops where travelers can visit. And free Wi-Fi is available on the train platform via a designated app, again filled with advertisements while tracking users' information for future ad campaigns.

However, what undoubtedly claims victory to such a fierce competition of urban media is the floating screen in the metro tunnel. Against the dark and dull tunnel en route to the next train stop, a short video advertisement

appears outside the windows of the train car, almost as if the screen is floating in the air. What captivates the eyes of the urban rider *en passant* is the visceral experience of encountering such a screen in its sheer technicity, its impeccable visual smoothness animated by the train's rapid movement. The movement of images, in its continuous and almost endless flow, harkens back to what Siegfried Kracauer terms "a blizzard of images."[1] It is at once a technological wonder and almost an assault on the rider, who has no choice but to turn to the advertisement on display. As the engineer in charge of the design says during an interview, "We have beautiful platforms and highly technical, intelligent trains. I think it would be very disappointing if passengers had to experience dark, endless, and boring tunnels."[2]

The assemblage of media technologies—digital billboards, public televisions, and indoor Wi-Fi—in the subterranean spaces of Shanghai embodies the logic of contemporary China's urban media practices. Often labeled as "out-of-home" (OOH) advertising, such media practices attest to the so-called ubiquity and omnipresence of media in everyday urban life that scholars have started to theorize.[3] However, labeling these media forms as such also downplays their distinct medium and site specificities that are integral to their ontological and contextual formations. While the floating screen is not a new technology, its large-scale commercial application and its entanglement with Chinese post-socialist infrastructural development demand our renewed efforts of theorization and historicization.[4]

To examine the floating screen in the Shanghai metro tunnel is to first excavate its rich historical and material formations that delineate a genealogy of global screen cultures, from the nineteenth-century optic toy to the metro zoetrope on the New York City subway. Its history of spatial relocation implicitly rejects the linear trajectory of development that emerges solely within the context of Euro-American capitalist modernity. This essay is more than an archaeology of the screen, but an attempt to highlight and theorize the messy and entangled relationality between media technologies and the logic of Chinese quasi-neoliberal post-socialist modernization and infrastructural development. In terming it "floating screen" instead of "tunnel screen," I want to highlight its spatial uncertainty and infrastructural entanglement that accentuate its paradoxical (im)materiality. Since the first subway line in Shanghai opened in 1993, the city's underground network has sprawled to a whopping length of seven hundred seventy-two kilometers with eighteen lines in operation, making it the world's largest metro system by route length. In viewing a few

documentaries on the Chinese metro systems, I discerned that they all highlight the technological proficiency—utilizing many self-developed, state-of-the-art technologies such as the tunnel boring machine—with which cities built their metro systems.[5] As common in many regions of the global South, such a massive scale of construction of urban infrastructures is always justified by its futurity, an almost utopian "promise of infrastructure" that embodies the potentiality of Chinese post-socialist modernity.[6]

What makes the metro floating screen stand out is not only its technical wonder, but also—more importantly—its spatio-temporal encapsulation within contemporary China's rhetoric of economic neoliberalization and modernization. The operative logic of the screen is not based solely on the digital medium, but rather on a symbiotic relationship between the digital screen and the hard material transit infrastructure, between the financial potential of such a novel screen technology and the exorbitant costs of infrastructural development. Such layering of technologies, as Lisa Parks and Nicole Starosielski argue, "not only exposes the path dependencies of infrastructural formations but also reveals how an established node can be used to generate new markets and economic potentials."[7] The floating screen, of course, is one such prime example, as it charges potential advertising companies an exorbitant price of 100,000 RMB (15,000 USD) for a fifteen-second advertisement for seven days in prime locations.[8] The entwined nature of such a media form invites us to excavate the rich lineage of mutuality between the railway and visual culture, exploring the bridges and divides between the analog and the digital, between capitalist modernity in the nineteenth century and Chinese post-socialist modernity post-1977. Moreover, by theorizing the politics of entanglement in contemporary Shanghai's metro tunnel, I argue that the screen's occasional shudders reveal the medium's ontological instability and digital contingencies. These moments of failure gesture toward the Simondonian "margin of indeterminacy" that contests the post-socialist-cum-neoliberal impulse of infrastructural development and financial extraction, through which new forms of mutualities and subjectivities are emerging on the horizon.

Archaeology of an Unstable Medium

The metro floating screen is a haunting return of pre-cinematic devices par excellence. Before the birth of cinema, there had been numerous devices and gadgets that were designed to create an illusion of movement: from Chinese paper lanterns (*zou ma deng*) to the phenakistoscope, from the zoetrope to

flip picture books, these devices all utilize the stroboscopic effect of sampling a moving object at a given frequency to create a persistence of vision. The zoetrope is an optic toy that creates an illusion of movement when the user spins the cylinder and sees through the vertical slit. But such an illusion is always interrupted by jarring black strips in between. The formation of movement paradoxically relies on the blockage of visuality at a certain frequency. Such tensions between continuity and selection, between movement and stillness hence constitute the nature of the zoetrope and have a profound implication on the discursive formation of cinema and of course the floating screen.

The idea of putting a zoetrope in the metro tunnel was first put into practice by artist Bill Brand in New York City in 1980. Installed in the subway tunnel between the DeKalb stop and Manhattan Bridge viewable on the B and Q trains, Brand's art project *Masstransiscope* displays a series of abstract objects moving and transforming in free association. But the work required complex installation: Brand and his team first hung a three-hundred-foot-long abstract painting on the wall and then built another wall carved with two hundred and twenty-eight thin vertical slits between the train track and the painted wall.[9]
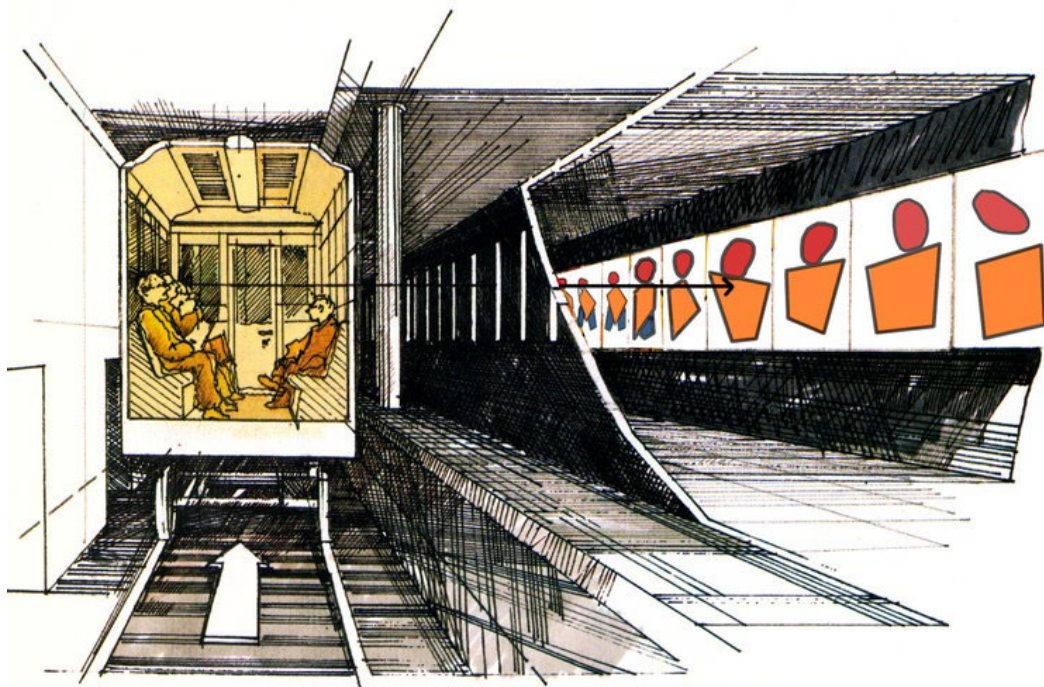

Figure 1: Illustration of *Masstransiscope*

When riders see the artwork through the train window, they witness the magical moment of objects moving and transforming in sync with the movement of the train. The train's movement animates the painting roughly in the same way as the zoetrope, except that the cylindrical toy is flattened and enlarged to be installed in the metro tunnel. An experimental filmmaker himself, Brand clearly envisions his artwork in homage to pre-cinematic optic toys. He further challenges and reimagines the habitual mode of the cinematic experience of an immobile spectator sitting in a dark movie theater. In an interview given after *Masstransiscope*'s renovation, Brand remarked that "it's the reversal of a normal film process... Here the film sits still, and you pass by it."[10]

The symbiotic relationship between technologies of speed and vision can be traced back to the late nineteenth century at the onset of industrial modernity. Wolfgang Schivelbusch's foundational study, *The Railway Journey*, links the phenomenological experience of riding the train to that of seeing a panorama. The blurring of the landscape when the train moves at a high speed, Schivelbusch argues, "destroy[s] the close relationship between the traveler and the traveled space."[11] Railway travel annihilates the "traditional space-time continuum" and results in a loss of geographical certainty; but in the meantime, it also creates a "panoramatization" of the world that offers riders ever-changing imageries of the European landscape.[12] What is unique about the "panoramic perception" is its ontological dependence on the industrial machine that underpins such vision. Furthermore, the image that the rider sees from the train is blurry by nature, which transforms the geographical certainty associated with traditional modes of transportation and folds into the discursive formation of the floating screen in contemporary China.

In twenty-first-century Shanghai, the classic optical toy and the cumbersome installation in the NYC subway have transformed into lightweight and high-technology LED panels installed in the metro tunnels. The screen technology now reaches its full maturity and mass dissemination in contemporary China, installed in the subway tunnels of more than eight cities. The technology is spearheaded by KinDin Media Technology (*jingdian chuanmei keji*), a Beijing based company that specializes in tourism e-commerce.[13] In a short documentary published by the company, LED technology specialist Jackie Zhu (Zhu Chunpeng), explains how roughly 400-800 LED panels are mounted in a 200-800-meter-long tunnel just to display a fifteen-second short video.[14] The mechanism behind such a display is not a long continuous scroll—the

cost of building an eight-hundred-meter LED screen is simply unimaginable—but a series of thin, vertical LED panels that flash in a frequency in accordance with the current speed of the train. A speed monitor is set up right before the train passes through, and the faster the train moves, the slower the panel refreshes itself (and vice versa) to make sure that the images one sees are smooth and without any black strips between frames. The stroboscopic effect is again evoked here to match the speed of the train, the length of the gap between each LED panel, and the visual frequency of the panel itself.
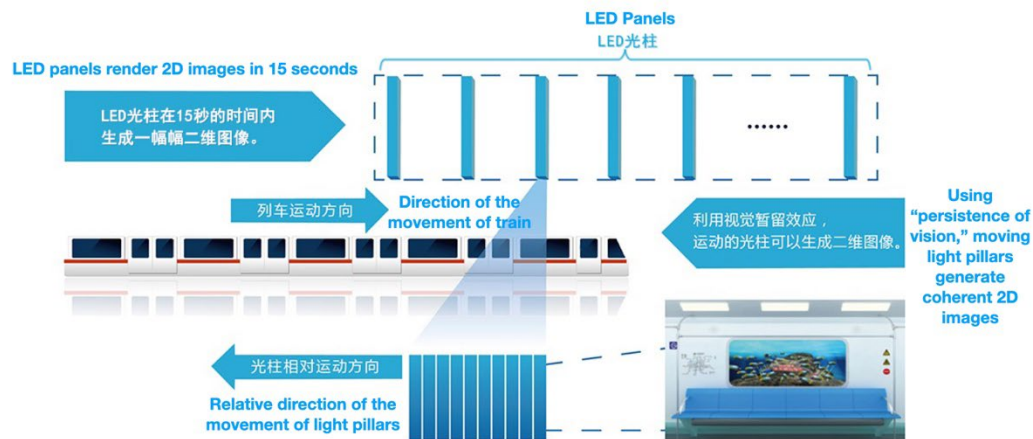

Figure 2: Mechanism of the metro floating screen

If the blurry landscape one sees through the train window embodies the limit of human perception, then the floating screen capitalizes on the "persistence of vision" and transforms such limitation into impeccable visual smoothness. In other words, the new (post-)industrial vision is made possible not only by technologies of speed but also by the digital medium that finesses the thin line between rapid movement and human perception. While Brand's metro zoetrope was first seen as an art project that experiments with movement, spectatorship, and urban space, the floating screen that began to proliferate since the 2010s in China has become a commercial and technological experiment on an even larger scale. The floating screen is not only one of the most expensive forms of commercial advertising in underground spaces but also a techno-utopian vision of the media city, where urban infrastructures are entwined with new forms of media technologies. But such a vision has never been perfect. Just like its precursor, the floating screen often has its

visual smoothness interrupted by jarring black strips between frames. The technology's occasional glitches and shudders thus shed new light on the discourse of the digital and the cultural politics of media infrastructure in an age of massive infrastructural development and economic neoliberalization.

Theorizing Entanglement, or the Longue Durée of Capital and Vision

In some ways, the history of the screen has always been tied to the socio-economic conditions in which the screen is produced. The nature of the zoetrope and, later, of cinema, is characterized by the dialectics of movement and stillness: the long scroll of drawing inside the cylinder is completely illegible and blurry when in motion; only when one sees through the vertical—which fragments movement and disrupts continuity—does one recognize the object in full animation. Movement, in other words, entails a drive for recognition and rational management wherein motion is divided into manageable units. Moreover, such a division of continuous motion into frames is also a division of temporality. If continuous movement is synonymous with the perception of time as a continuum, then the division of motion also subjects time to divisible units.

Capitalist modernity emerges, as Mary Ann Doane argues, precisely through such a process of rationalization and standardization of time and motion, or what Walter Benjamin calls "the homogenous, empty time."[15] Starting with the wide availability of the pocket watch in the 1890s, Doane points to a few decisive aspects that contribute to the standardization of time and the emergence of modernity: the wide diffusion of the pocket watch, railway schedules, and telegraph communication. Time thus "becomes uniform, homogenous, irreversible, and divisible into verifiable units."[16] Though it comes a few decades before the birth of cinema, the zoetrope becomes an embodiment of capitalist modernity that manifests the modern man's will of knowing and management.

However, the homogenous and empty time also clashes with the contingencies of modernity—mechanical failure, Benjamin's shock experience, photography and cinema's accidental recordings, the zoetrope's shuddering images—where pure rationality and the organizing logic of modernity are challenged. If cinema's mechanical nature boasts the capacity of perfect recording and mimetic realism, then what Kracauer is interested in, remediated through the words of Miriam Hansen, is "the possibilities of masochistic self-abandonment and dissociation, in the cinema's ability to

subject the view, in an institutionally bounded form of play, to encounters with contingency, lack of control, and otherness."[17] In other words, indexicality and contingency leave us open to an encounter with the contingent failure of modernity, a "flow of life" that is beyond the Enlightenment's valorization of pure rationality.[18]

When looking at the metro floating screen, one can hardly miss its materiality despite it being a full-fledged "digital" medium. While scholars traditionally associate the digital with the waning of indexicality and materiality, the floating screen's ontological entanglement with the transit infrastructure heightens its materiality and socio-economic operations. On the one hand, there is an inevitable gap between each LED panel for the sake of costs—it is simply too expensive to build an almost one-kilometer-long LED panel. The logic of rational management and economy of scale is again evoked. The gap in between operates as a lacuna that, in its unfilled-ness, exemplifies the capitalistic logic of abstraction and efficiency. On the other hand, the screen strives for perfect representation precisely by operating at the threshold of perception and making its materiality invisible through technologies of speed monitors and digital finesse. The medium's operative tension between visibility and invisibility hence invites us to complicate the trajectory of the "digital" as that of declining medium and site specificities and to consider the theoretical potentials of media technologies in post-socialist modernity.

It is with such an idea in mind that we turn to the gap between each panel not as an ideal of post-socialist technological perfection but as a form of human-machine entanglement, or what Gilbert Simondon calls a "margin of indeterminacy." In *On the Mode of Existence of Technical Objects*, Simondon picks up one of the classic questions in Marxist critique, that of alienation, and argues that alienation is produced not only when the worker is alienated from his means of production, but also at the physiological and psychological levels, when "the machine no longer prolongs the corporeal schema, neither for workers, not for those who possess the machines."[19] In other words, Simondon moves beyond a base-superstructure model of critique and argues that true collectivity is made possible through an inter-individual coupling between humans and machines. The ideal Simondonian machine is not a perfect automated machine that replaces the human but that of a human-machine co-becoming that leaves open a margin of indeterminacy. The gap thus gestures toward an open and incomplete machine, which remains open

to information and subsequently to further transformative interactions with a milieu.[20]

Such a process of co-becoming also echoes Anna Tsing's argument about "entanglement" as a mode of relationality against the capitalist logic of accumulation and extraction.[21] Entanglement, as Tsing argues in the context of the global circulation of matsutake mushrooms, highlights the often-messy relationality between foragers and consumers, between the matsutake mushroom and the larger ecosystem where it thrives. The mushroom is both a quintessential commodity in the capitalist economy and an important nodal point in the gift economy through which relationships are forged. Such a paradoxical relationality perhaps allows us to consider entanglement as an alternative mode of mutuality between media and infrastructure, between the speculative nature of the screen economy and its possibility of technical co-becoming.

Figure 3: Black strips between each frame

In that regard, the ontological instability of the floating screen offers a new way of thinking about the screen and the cultural politics of such infrastructural entanglement. The image of Huang Xiaoming—a famous Chinese movie star—holding a bottle of yogurt on the screen is at once auratic and iconoclastic: auratic in the sense that the image one sees in the dark tunnel is dazzling, memorable, and ephemeral; yet the intermittent flashes of black strips across Huang's face reveal the ontological instability of the medium and are at odds with the technological maturity and perfection it

claims. The frequent appearances of black strips on screen become the failure of the digital that comes to haunt and disrupt the post-socialist-cum-neo-liberal logic of rational management, efficiency, and techno-bureaucratic imagination. But in the meantime, these moments of failure are precisely points of entry through which we can reimagine the potentiality of media encounters in contemporary China. The infrastructure emerges as a critical site of inquiry through which the relationalities between the technology's past and future, between the screen and its spatial and economic foundations are constantly negotiated and rewritten. In other words, if the floating screen exemplifies the developmental logic of Chinese post-socialist modernization, then the cultural politics and potentialities of media technologies as such lie precisely in their local- and site-specific contestations. It is only at these margins of indeterminacy that the potentialities of living in the neoliberal machinery of infrastructural development and financial extraction emerge.

Notes

1   Siegfried Kracauer, *The Mass Ornaments: Weimar Essays*, trans. Thomas Y. Levin (Cambridge: Harvard University Press, 1995), 58.
2   KinDin Meida, "Discovery China Tunnel Advertisement.mpg," 2 February 2011, video, https://www.youtube.com/watch?v=Df2RHvwdt5M. Accessed January 15, 2024
3   Works in that regard include Chris Berry, Janet Harbord, and Rachel Moore, eds. *Public Space, Media Space* (New York: Palgrave Macmillan, 2013); Nick Couldry and Anna McCarthy, eds. *MediaSpace: Place, Scale and Culture in a Media Age* (London: Routledge, 2004); Scott McQuire, *The Media City: Media, Architecture and Urban Space* (New York: SAGE Publications, 2008).
4   Thomas Lamarre has briefly discussed the floating screen and its relationship to animation in the Japanese context. See Lamarre, *The Anime Machine: A Media Theory of Animation* (Minneapolis: University of Minnesota Press, 2009).
5   中国城轨 (Chinese Metros, 2019), *China Central Television*, https://www.bilibili.com/video/BV1yb41187PC?from=search&seid=90201114054993 57006; 伟大工程:上海地铁 (Magnificent Projects: Shanghai Metro, 2016), 上海纪实频道 (*Shanghai Documentary Channel*), https://www.bilibili.com/video/BV1Us411q75B?from=search&seid=15486442135157 077477. Accessed January 15, 2024.
6   Nikhil Anand, Akhil Gupta, and Hannah Appel, "Introduction: Temporality, Politics, and the Promise of Infrastructure," in *The Promise of Infrastructure*, eds. Nikhil Anand, Akhil Gupta, and Hannah Appel (Durham: Duke University Press, 2018), 1–38.
7   Lisa Parks and Nicole Starosielski eds., *Signal Traffic: Critical Studies of Media Infrastructures* (Champaign: University of Illinois Press, 2015), 3.
8   These numbers reflect 2018 price points. For more information, see KinDin Media

(*jingdian chuanmei*)'s company website:
https://web.archive.org/web/20220516060108/http://kindinmedia.com/cn/chanpiny
ufuwu/pinpaiyingxiao/. Accessed January 15, 2024.

9   mtainfo, "Reinstalling Masstransiscope," 29 August 2013, video,
     https://www.youtube.com/watch?v=c-_eHFXqxpQ. Accessed January 15, 2024.

10   mtainfo, "Reinstalling Masstransiscope."

11   Wolfgang Schivelbusch, *The Railway Journey: The Industrialization of Time and Space in the Nineteenth Century* (Berkeley: University of California Press, 2014), 53.

12   Schivelbusch, *The Railway Journey*, 61–64.

13   Based on KinDin Media Technology's own website description. Website archived on April 15, 2019 by Baidu.
     https://baike.baidu.com/reference/19292493/83ef7ISSAXfPxhZi2RQfEQABz2KUAQ2v
     hspvtLIWtaa1eyVLnJVFBsEel-cOs_C_vHJuaMCnz8yTy_31yOO8pSS5IFx0CMkeK7q7.
     Accessed January 15, 2024.

14   KinDin Media, "Discovery."

15   Mary Ann Doane. *The Emergence of Cinematic Time: Modernity, Contingency, the Archive* (Cambridge: Harvard University Press, 2002); Walter Benjamin, "Theses on the Philosophy of History," *Illuminations: Essays and Reflections*, ed. Hannah Arendt, trans. Harry Zohn (New York: Shocken Books, 2007), 261.

16   Doane, *The Emergence of Cinematic Time*, 6.

17   Miriam Hansen, Introduction to *Theory of Film: The Redemption of Physical Reality*, Siegfried Kracauer (Princeton: Princeton University Press, 1997), xxi.

18   Siegfried Kracauer, *Theory of Film: The Redemption of Physical Reality* (Princeton: Princeton University Press, 1997), 71–74.

19   Gilbert Simondon, *On the Mode of Existence of Technical Objects*, trans. Cecile Malaspina and John Rogove (Minneapolis: University of Minnesota Press, 2016), 133.

20   On Simondon and the commuter train network, see Michael Fisch, *An Anthropology of the Machine: Tokyo's Commuter Train Network* (Chicago: The University of Chicago Press, 2018).

21   Anna Tsing, *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins* (Princeton: Princeton University Press, 2021). See also Tsing, "Unruly Edges: Mushrooms as Companion Species: For Donna Haraway," *Environmental Humanities* 1, no. 1 (2012): 141–154.

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