Research Articles

Spectrum of the Mind: Spiritual Optics in Late Qing and Early Republican China

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Abstract: This paper traces how the spectroscope—a nineteenth-century instrument for identifying chemical elements through their characteristic spectral lines—framed the optical imagination of mental and spiritual light in late Qing and early Republican China. In an era when optical technologies were widely refurnished for spiritual ends, this paper shows how the spectroscope's visual logic first inspired the envisioning of live mental images in late Qing scientific exchanges and science fictions, and how it then shaped the classification of numinous light and the process of inner cultivation in the spiritualist movement in the early Republican decades. Across these steps, the spectroscope served not merely as an optical instrument but as an epistemic model that mediated both the external observation and the internal experience of mental process.

Keywords: spectroscope; spiritualism; numinous light; late Qing and early Republican China

Introduction

> Speaking of the light of various things, each has its bright lines on the spectrum, which differ from one another. Therefore, with the existence of this thing, there arises this colour; with the existence of that thing, there arises that colour. One can identify them according to the bright lines.

> 夫各物之光，其斯必得倫既各有明線，其明線各不同。故有此物，即有此色；有彼物，即有彼色。可視明線而知之。
>
> Jinshi shibie 金石識別 [Identification of Minerals, 1872][1]

The spectroscope, or *fenguang jing* 分光鏡 (lit. light-splitting mirror) in Chinese, had become a paradigmatic instrument for identifying invisible material constituents through visible light by the late nineteenth century. First developed by Gustav Kirchhoff (1824–1887) and Robert Bunsen (1811–1899) for chemical analysis in 1859, its epistemic promise was simple and striking: each chemical element emits a characteristic set of bright lines that persist even in mixtures, enabling a one-to-one correspondence between component and colour with unprecedented sensitivity (Figure 1). The mechanism was first introduced to China through the above quotation in 1872. By connecting "things" (*wu* 物) with "colours" (*se* 色), a Chinese reader would likely discern a philosophical implication from this spectroscopic view. *Se* is the standard Chinese translation for the Buddhist term *rūpa*, the outward forms that constitute the material world. By referring to the most characteristic outer forms, the spectroscope offered a powerful visualization of the invisible nature of an object—a logic that soon migrated from scientific use to the language of spiritualism.

By the turn of the nineteenth century, "spiritualism" had become a global phenomenon encompassing a heterogeneous field of practice—religious cultivation, mediumship, psychical research, and hypnotic healing among them.[2] An important stimulus for this worldwide movement was its co-evolution with new technological forms which equipped spiritualism with new theoretical and operational frameworks. Just as the fantasy of magnetism had inspired mesmerism a century earlier, emergent technologies in optics and electricity were soon given

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1 MacGowan and Hua, trans., *Jinshi shibie*, 10.7b.

2 For representative studies in the European context, see e.g., Oppenheim, *The Other World: Spiritualism and Psychical Research in England, 1850–1914*; Monroe, *Laboratories of Faith: Mesmerism, Spiritism, and Occultism in Modern France*; Noakes, *Physics and Psychics: The Occult and the Sciences in Modern Britain*.

spiritual uses: spirit photography enabled by photographic cameras, mind-reading associated with X-rays, and telepathy linked to radio—among many others.[3]

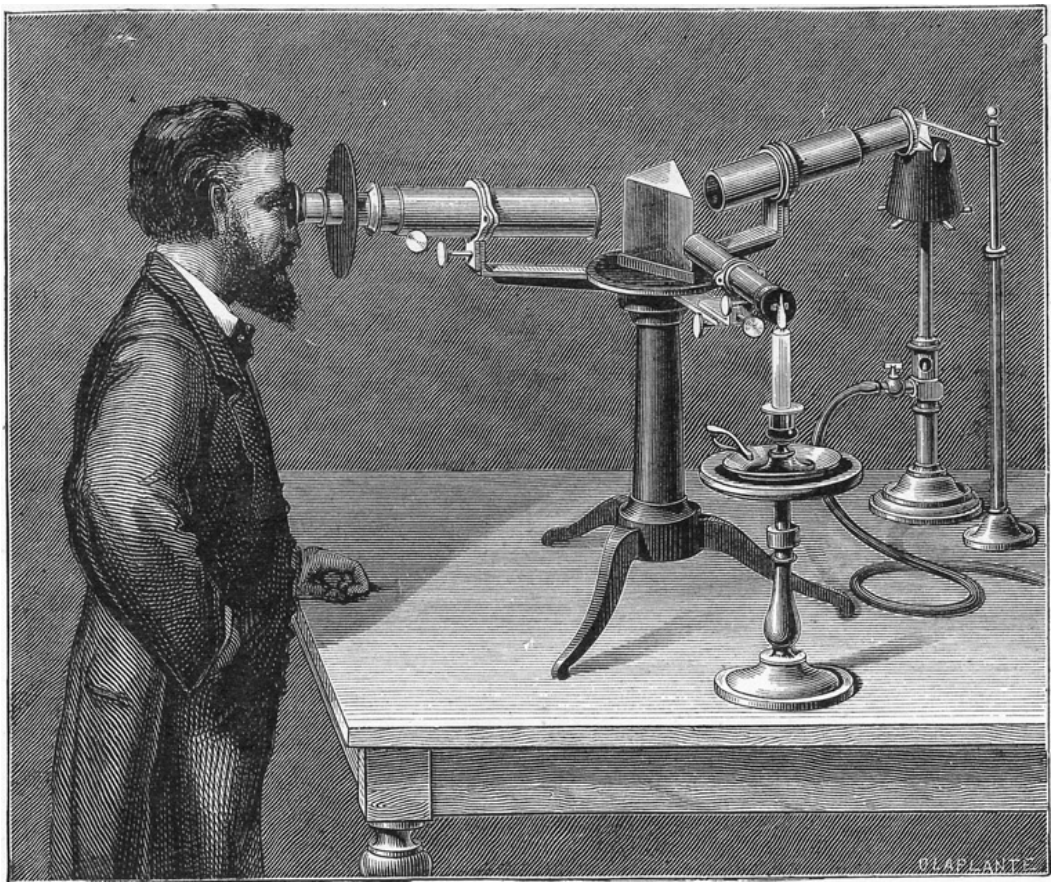

Figure 1: A standard late-nineteenth-century spectroscope (1873). Light from chemical substances (far right) passes through a collimator and projects onto a prism in the center. The prism disperses the image into a spectrum, which is observed in the telescope (left). The candle in the front illuminates a photographic scale in a telescope lens enabling measurements of spectra.[4]

It was against this backdrop that the spectroscope, as an optical instrument for analyzing the component nature, achieved a distinct spiritual significance. In his

[3] For spirit photography, see Geimer, *Inadvertent Images: A History of Photographic Apparitions*; for X-rays, see Grove, "Röntgen's Ghosts: Photography, X-rays, and the Victorian Imagination"; for radio, see Noakes, "Thoughts and Spirits by Wireless: Imagining and Building Psychic Telegraphs in America and Britain, circa 1900–1930."

[4] Noakes, *Physics and Psychics*, 69.

tour de force, *Mapping the Spectrum*, Klaus Hentschel offers a comprehensive account of the instrument's versatile applications and the "visual culture of spectroscopy" they produced.[5] However, his study remains largely confined to scientific contexts, leaving the spectroscope's broader cultural and spiritual resonances to be explored.

In this paper, I offer a preliminary study of one specific thread: how the spectroscope framed an optical imagination of mental and spiritual light in the Chinese context. In an era when emergent optical media were routinely repurposed for spiritualist ends, the spectroscope, as a nature-identifying device, furnished a metaphorical and practical basis for reading mental and spiritual states as optical phenomena. In doing so, it facilitated a technological mediation of the mind that reshaped both external observation and introspective experience. Specifically, I begin the paper by tracing the encounter between new optical devices and the visualization of thought in late Qing scientific exchanges and science fictions in the 1890s–1900s which envisioned the projection of live mental images through a spectroscope. I then turn to the divinatory writings and spiritualist journals from the 1910s to the early 1930s, where the numinous light of spirits was classified into sequentially ordered colour schemes. Finally, I follow these spectral schemes into meditative practice, drawing on first-person testimonies to show how the concentrated mind itself functioned like a spectroscope in introspective feedback. Before delving into this spectroscopic view, however, let me offer a brief historical digression to the longer history of visualizing mental and spiritual activities.

Visualizing the Mind

The correspondence between optical instrument and mental vision did not emerge in a vacuum. It drew on a long indigenous tradition of visualizing inner states which provided the conceptual ground in which new optical technologies could take root. In the Chinese tradition, contemplative practice can be traced back to at

[5] Hentschel, *Mapping the Spectrum: Techniques of Visual Representation in Research and Teaching*, 4.

least the fourth century BCE, when the "Inner Training" (Neiye 內業) chapter of the *Guanzi* 管子 introduced a systematic method of inner cultivation.[6] Between the second and fourth centuries CE, the visual dimension of inner contemplation (*neiguan* 內觀) rose to prominence as Daoist and Buddhist meditative traditions stimulated one another. Practitioners began to conceive of the body as a microcosm, envisioning its indwelling spirits and using hanging illustrations to guide their inward gaze.[7] Such graphic aids matured within the tradition of Internal Alchemy (*neidan* 內丹) from the tenth century onward, culminating in multiple versions of the "Charts for the Cultivation of Perfection" (Xiuzhen tu 修真圖) that survive to the present.[8] Central to these later visual developments was the notion that numinous light could be actively guided through concentration. For instance, the influential early modern treatise *Taiyi jinhua zongzhi* 太乙金華宗旨 [Essential Teachings of the Golden Flower of Supreme Unity] made "turning the light around" its core method. Through sustained inward focus, the practitioner's inner light would gradually condense to achieve spiritual illumination.[9] It was based upon this long tradition of inner illumination that the influx of new optical instruments and scientific knowledge in the late nineteenth century opened up fresh visual possibilities for conceiving the inner workings of the mind.

In 1896, Tan Sitong 譚嗣同 (1865–1898)—a political reformer with a keen interest in the workings of the mind—recalled his visit to John Fryer 傅蘭雅 (1839–1928) in Shanghai earlier that year.[10] Arriving in China as a Protestant missionary, Fryer was already an authority in the translation and introduction of Western science. At Fryer's house, Tan saw a dazzling array of scientific objects, including fossils and a mechanical calculator. Most intriguing, however, was a photo taken by a "new electric method," which was able to show one's organs and tissues, blood

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6 Roth, *Original Tao: Inward Training (Nei-yeh) and the Foundations of Taoist Mysticism*, 99–123.

7 Lee, "Dongtian yu neijing: xiyuan er zhi si shiji Jiangnan Daojiao de neixiang youguan," 174–84.

8 Despeux, *Taoism and Self Knowledge:* The Chart for the Cultivation of Perfection *(Xiuzhen tu)*, 5–38.

9 Cleary, trans., *The Secret of the Golden Flower: The Classic Chinese Book of Life*, 9–11.

10 For the dating of Tan Sitong's visit and his record: Zhang, *Tan Sitong nianpu changbian*, 178–9, 206–7.

and bones. Having been invented just a few months prior, this precious sample of X-ray photography impressed Tan deeply. But, according to Fryer,

> This is not yet remarkable. There is even a new method that can examine one's brain nerves and depict live thoughts within one's mind. Through this, it becomes possible to inspect one's dream and thus generate dreams through a device and according to the device.
>
> 此尚不奇, 更有新法, 能測知人腦氣筋, 繪其人此時心中所思為何事, 由是即可測知所夢為何夢, 由是即可以器造夢, 即照器而夢焉.[11]

In the Western context, this association between X-rays and mental image was hardly accidental. From the outset, the invisible yet penetrating ray was linked with spiritualist phenomena such as telepathy, thought transference, and mind-reading.[12] The "dream-generating machine" may have been fanciful, but scholars treated the prospect of using optical-electrical method for depicting thought as a serious one. Shortly after Röntgen's discovery, the Russian writer Maxim Gorky (1869–1936) speculated that X-rays might reveal thoughts as "black spots, or smokelike spirals" inside the skull. In a more striking report, a faint impression of a child about whom a subject was thinking was said to have appeared on the photographic negative.[13]

Without the optical-electric device at hand, Tan Sitong chose an alternative approach to explore the secret of mental image—introspection. Having realized an equivalence between "the brain as corporeal electricity," and "electricity as the incorporeal brain," Tan offered a vivid inner visualization of his own mental activities:[14]

> I used to introspect in quietness and observe the movement of my brain energy. Its colour is exceedingly white, its radiance brilliant, its fineness

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11 Tan, *Tan Sitong ji*, 497.

12 Natale, "A Cosmology of Invisible Fluids: Wireless, X-Rays, and Psychical Research around 1900," 266.

13 Natale, "A Cosmology of Invisible Fluids," 269–70.

14 Tan, *Tan Sitong ji*, 316–7.

akin to silk, and its form coiling intricately. Its movement, length, quantity, and existence vary constantly, in an unutterable speed. This is like lightning in clouds, without a slight difference. Indeed, the brain is electricity.

吾每於靜中自觀, 見腦氣之動, 其色甚白, 其光燦爛, 其微如絲, 其體紆曲繚繞. 其動決長短多寡有無, 屢變不定, 而疾速不可名言, 如雲中之電, 無幾微之不肖. 信乎腦即電也.[15]

Although arising from pure introspection, the bright, coiling, and lightning-in-cloud-like mental image—reminiscent of Gorky's "smokelike spirals"—bears a clear visual affinity to X-ray photographs. More impressively, Tan reported a striking correspondence between a given thought and its electric image (*dianxiang* 電象): no thought, no image; a different thought, a different image. He therefore argued that "for a certain thought to indicate or alter a particular pattern, there must be a principle of movement with definite correspondences."[16] Though this kind of self-visualization falls far short of a literal "dream-generating machine," the one-to-one mapping captures the theoretical promise behind any effort to produce electricity-generated mental images.

Finding the principle too abstruse, Tan left his exploration here. However, related imaginings continued to develop in Chinese science fictions, a genre that grew into prominence in the final years of the Qing dynasty.[17] In the 1905 novel *Nüwa shi* 女媧石 [Nüwa's Stones], penned by an unknown Chinese student studying abroad in Japan, the protagonist visits a futuristic "brain washing center" and encounters hundreds of "brain illustrations." Told that one's thoughts would always "leave an imprint on the brain nerves," she identifies looming images of money and superiors in officials' brains, and she describes figures of inkbrushes and beauties in male students' brains. Although these illustrations are said to derive from vivisection rather than optical approaches, their logic of mental imprinting closely parallels the X-ray visuality in Western fantasy.[18] A 1909 satirical cartoon

15 Tan, *Tan Sitong ji*, 384.

16 Tan, *Tan Sitong ji*, 385.

17 Jia, *"Xiandai" yu "weizhi": Wanqing kehuan xiaoshuo yanjiu*.

18 Haitian duxiao zi, *Nüwa shi*, 10.193–4.

makes the point even more directly: the brain of prominent officials is shown to contain three images—a copper coin, an official hat, and a concubine (Figure 2). Giving a graphic realization of the *Nüwa shi* episode, the illustration establishes an explicit link between thought-content and brain imaging.

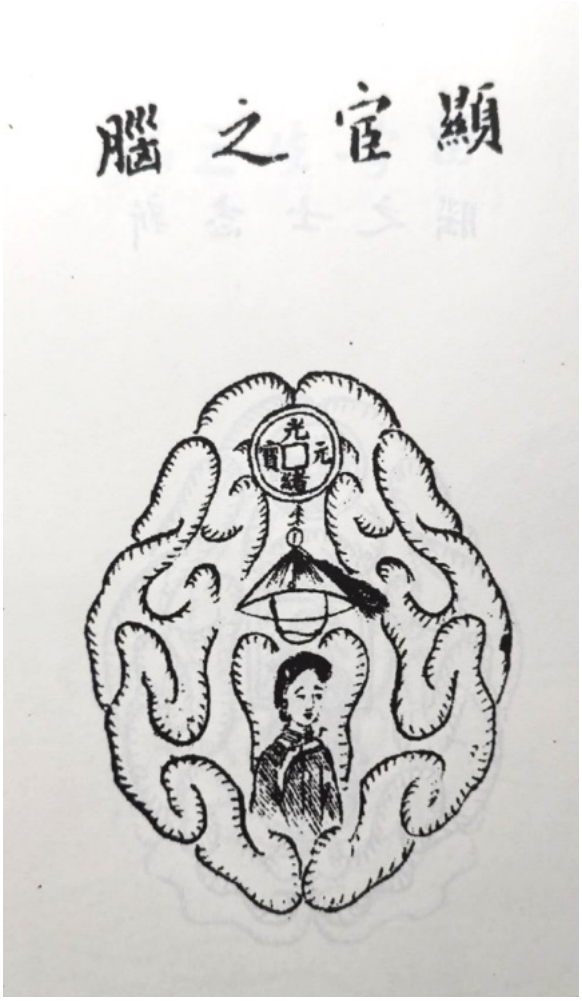

Figure 2: "Brain of Prominent Officials," Wushen quannian huabao 戊申全年畫報 [Illustrated Annual of the Year Wushen] (1909).[19]

If the brain imprints offer a static image for mental activities, a marvelous device developed in the science fiction *Dianguan* 電冠 [Electric Cap] in 1907 made the visualization of real-time thought possible. Translated from the English novelist

[19] Reproduced from Zhang, ed., *Wanqing huabao*, 12: 161–62.

Guy Thorne's (1875–1923), *The Soul Stealer* (1906), at the center of this fiction is an electric cap which collects brain waves, splits its content, and projects thought images live. Specifically, the cap uses a brass helmet to collect the brain's subtle vibrations. These vibrations are routed into a wooden apparatus that converts them into thousands of electric currents. These currents feed an electric-lighting unit which transforms each current into a specific colour of light. The resulting mixture is then sent through the key section of the entire device. This most marvelous spectroscope separates the light—not physically, but semantically—into distinct, live images of thought. Finally, a bioscope-like lens projects the output onto a screen, making it accessible to the audience.[20]

The nineteenth century witnessed continual refinements in spectroscope design, which was not completely unknown to early-twentieth century Chinese readers (Figure 3). In the scientific field, a typical spectroscopic analysis is comprised of two essential aspects: first, a complex phenomenon is optically decomposed into a *sequential array* of measurable signs; second, those signs are manually interpreted based on their *fixed correspondence* with meanings. It is precisely this combination of the two aspects that endows the spectroscope with its unusual refinement and versatility, making it "the king of analysis instruments."[21] While the automatic grouping of thought-light remained imaginary before the computer age, the manual recognition of spectral lines was indeed the standard practice for spectroscopy experts. In this sense, the "electric cap" was not a wild fantasy but rather an apt imagination within the spectroscopic visual culture that integrates the two aspects in an automatic way.[22]

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20 Jiahan, "Dianguan," 21.164–7.

21 Huang, "Fenguangjing de moli," 20.

22 Specifically, the novel mentions that an ordinary thought can generate "3,000 to 4,000" different currents. This is precisely the scale a conventional prism-chain spectroscope could resolve in the late-nineteenth century when mapping the absorption lines of the solar spectrum. For instance, the most influential printed map of the time by Louis Thollon (1890) includes 3,448 lines. Jiahan, "Dianguan," 21.166; Hentschel, *Mapping the Spectrum*, 80–81, 137–9.

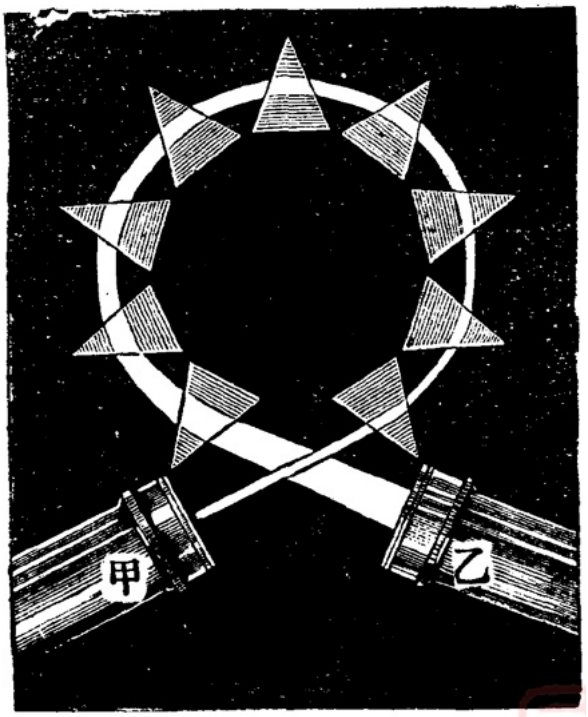

Figure 3: Schematic illustration of an astronomical spectroscope, which uses a chain of nine prisms to expand the width of the spectrum for more refined analysis.[23]

More intriguingly, the projected images do more than depict thought—they also adjudicate the mental quality. According to the *Dianguan*, the "form, power, and vividness" of a screen image correspond to the thinker's "strength of intellect." In one test, a bishop's focused envisioning yielded a vivid, richly detailed scene of Jerusalem, thus testifying to his faithfulness. In another test, a lover's sincere reverie renders his beloved as a radiant, angelic figure, and this is directly compared to a spectroscope's cleansing of impurities to preserve the true colours.[24] In other words, a concentrated mind can produce mental images that functionally mirror a spectroscope's visual output. A decade earlier, Tan Sitong—stymied by technical limits—had to rely on introspection to probe the thought-image correspondence. Ten years on, the dream was finally "realized" after much optical ingenuity, yet a sincere and concentrated mind could attain the same visual effect. From *Renxue* to the "electric cap," the looping of mind and technology reveals an isomorphism

[23] Wu, Zuixin zhongxue jiaokeshu: guangxue, 88.

[24] Jiahan, "Dianguan," 11.94, 22.171, 24.180.

between introspective view and spectroscopic imaging that is essential for understanding the visual aspect of spiritual cultivation in early Republican China.

Displaying the Numinous Light

If the late-Qing discourse established a structural analogy between spectroscopic imaging and introspective vision, the following decades (1910s–early 1930s) carried this analogy into a systematic framework for classifying spiritual states. As a response to the psychic movements worldwide, practices of hypnotism and more mystic forms of spiritualist cultivation witnessed a surge in the early Republican era.[26] Inspired by new optical technologies, both theoretical essays and divinatory writings discussed extensively the visual mechanism of supernatural phenomena, the invisible realm, and spirit photography.[27] Instead of being immersed in metaphysical talks, many of these elaborations took on a scientific appearance and worked closely with optical knowledge. In 1918, for instance, the leading spiritualist journal *Lingxue congzhi* 靈學叢誌 [Collected Records on Spiritualist Studies] included a series of divinatory writings on light which rewrote optics through a dazzling number of self-invented, single-character terms. In an archaistic style reminiscent of the early character book, *Erya* 爾雅, the essays offered a systematic introduction to optical principles—from the reflection and refraction of light to the imaging of spherical mirrors and lens.[28] A few months later, another

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[26] See e.g., Bao, *Fiery Cinema: The Emergence of an Affective Medium in China, 1915–1945*, 91–149; Zheng, *Biandong shehui xia de xinyang fenhua: Shanghai lingxue hui yanjiu*, 52–77; Chang, *Jingshen de fudiao: jindai zhongguo de cuimianshu yu dazhong kexue*, 119–89.

[27] Hsu, "Jing yu qianzhi: shilun Zhongguo xueshi wenlei zhong xiandai shijue jingyan de qiyuan," 147–54; Chen, "Photographing the Invisible: Immortal Spirit Photography and China's En(light)enment."

[28] See "Guixian Wang Hui shu guang" 鬼仙王惠述光 [Ghost Immortal Wang Hui's Discourse on Light], "Guixian Zeng Yuan shu guang xu" 鬼仙曾原述光續 [Ghost Immortal Zeng Yuan's Discourse on Light, Continued], "Biyan guixian guang jie" 碧眼鬼仙光解 [The Green-Eyed Ghost Immortal's Exposition on Light], "Biyan guixian guang jie xu" 碧眼鬼仙光解續 [The Green-Eyed Ghost Immortal's Exposition on Light, Continued], and "Biyan guixian guang jie zaixu" 碧眼鬼仙

two divinatory writings from the same journal associated the convergence and divergence of light by spherical mirrors and lenses with the good and bad retribution for intentional and unintentional deeds.[29]

Compared to these symbolic connections, the spectroscopic view touched upon a much deeper epistemological basis in the spiritualist movement. Again, its significance could be observed from the two aspects of sequential display and fixed correspondence. Regarding the former aspect, the most important inspiration came from the full range of solar spectrum. Huang Ko-wu has discussed the spiritualist inclination of Yan Fu 嚴復 (1854–1921)—the influential translator of evolution theory and Western political thought—who paid special attention to the "incredible realms" beyond human perception in his later years.[30] When arguing for the existence of spirits, his scientific analogy was precisely drawn from the solar spectrum, where the rays "before blue" and "after red"—though invisible—had no less an effect on the earth.[31]

In the divinatory writings of *Lingxue congzhi*, the link between invisible light and the spiritual realm received further elaborations. In explaining the invisibility of the immortal's numinous light, an essay attributed to the Master of Continuous Flourishing (Changsheng zi 常勝子) offered a detailed account of the differing physical properties across the solar spectrum: within the visible range, yellow light has the strongest visual impact, and the invisible infrared and ultraviolet—manifested through their functions—possess the greatest "heating power" and "chemical power," respectively. These uneven distributions, already known in the late Qing (Figure 4), offered the exact space to reconcile invisibility and existence.[32]

光解再續 [The Green-Eyed Ghost Immortal's Exposition on Light, Further Continued], in *Lingxue congzhi* 1, no. 10, 1–8.

29 "Zeng Yuan linghun zengsun fulun" 曾原靈魂增損附論 [Zeng Yuan's Supplementary Discourse on the Increase and Decrease of the Soul], and "Wang Hui linghun zengsun zhilun" 王惠靈魂增損直論 [Wang Hui's Direct Discourse on the Increase and Decrease of the Soul], in *Lingxue congzhi* 2, no. 3, 30–31, 39–40.

30 Huang, "Minguo chunian Shanghai de lingxue yanjiu: yi 'Shanghai lingxue hui' weili," 127–8.

31 Yan Fu's correspondence to Hou Yi 侯毅 (February 23, 1918) in Yan, *Yan Fu quanji*, 8: 408.

32 "Changshengzi guang shuo" 常勝子光說 [Changshengzi's Discourse on Light], in *Lingxue congzhi* 1, no. 7, 19–20; Fryer, "Guangxue Tushuo," 14: 9a.

Another essay from the same volume develops the idea further. Having suggested that demons are not formless but just invisible to humans, it attributes the spirit directly to the realms of ultraviolet and infrared:

> The light of the demon is too weak, hence it is dark; the light of the divine is too strong, hence it is bright. One sees the black, the white, and that is all. If it goes darker than black, or brighter than white, then even black and white disappear. As for the blueish darkness and the golden brightness, they lie beyond the boundary of purple and red rays, while the range of human vision is confined in between. There is no wonder for their invisibility.
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> 鬼之光過弱, 故闇然也; 神之光過强, 故皦然也, 見其黑, 見其白而已. 黑而更下, 黑且無之; 白而尤高, 白亦絕矣. 黑之藍, 白之金, 界乎紫赤二線之外; 人目光限於紫赤之間, 其不睹宜也.[33]

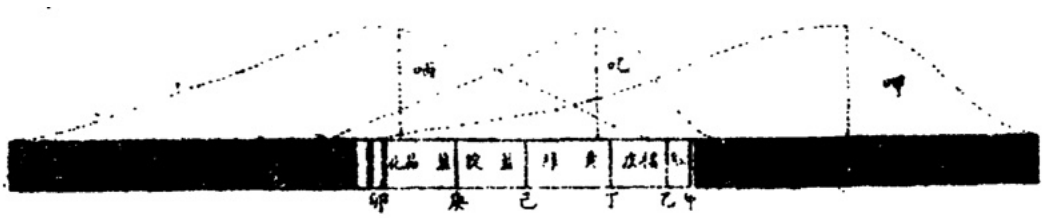

Figure 4: The solar spectrum and its effects. From right to left, the spectrum goes from invisible infrared to visible colours to invisible ultraviolet. The three curves above, marked as jia 呷, yi 叱, and bing 吶, indicate the distribution of heat, light, and chemical effects, respectively.[34]

In her analysis of spirit photography, Menglan Chen has demonstrated a dialectic of visibility in the portrayal of such numinous light.[35] The demonic ultraviolet, lying outside the "range of human vision" but sensitive to the photographic film, adds an apt footnote for the feasibility of this practice. As we will see in the following discussions, although the numinous light may as well fall into the visible section,

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33 "Biyan guixian shuo gui" 碧眼鬼仙說鬼 [The Green-Eyed Ghost Immortal's Discourse on Ghost], in *Lingxue congzhi* 1, no. 7, 5–6.

34 Fryer, "Guangxue Tushuo," 6b.

35 Chen, "Photographing the Invisible."

this broadened spectrum offered the very epistemological basis for thinking about an imperceptible being in a scientific manner.

The second relevance of the spectroscopic view concerns fixed correspondence, which was most typically established between a spirit's nature and its numinous light. According to *Lingxue congzhi*, the connection is straightforward—whether for human or non-humans, the level of accomplishments (*gongye* 功業) determines the colour and form of light. One can infer the accomplishment from the light, and vice versa.[36] The symbolic connection between colour and cultivation was not itself new. One may recall the "Country of Great People" in Li Ruzhen's 李汝珍 (1763–1830) fantasy novel, *Jinghua yuan* 鏡花緣 [Flowers in the Mirror], where everyone's feet are covered by a colourful cloud. Differentiated among five-colour, yellow, other colours, or black, the cloud reflects the morality of its master.[37] What makes the *Lingxue congzhi* essay stand out is instead how it develops the idea into an extensive list of correspondence where each stage of accomplishment is connected to a specific colour and form of light:

> The lowest is deep black, without halo. Slightly above, it turns blue, with a hint of halo; its beam is dazzling, almost piercing to the eyes. Further up, it becomes gray; the halo is more distinct, and the beam diminishes. Above that is green, with more complete halo, and almost devoid of beam. What follow up are yellow, red, and purple colours, while the most complete excels with white halo. Also known as the golden light, this is the highest colour.
>
> 最下者深黑色, 無彩; 稍上則藍色, 略具彩, 其芒甚焰, 幾射人目; 更上則爲灰色, 其彩較具, 芒更減矣; 再上爲綠, 其彩略備於前, 芒幾無之; 次上爲黃, 紅, 紫諸色, 而最具足者, 白彩爲勝. 白彩亦曰金光, 此最上色也.[38]

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36 "Guixian Zeng Yuan shu guang" 鬼仙曾原述光 [Ghost Immortal Zeng Yuan's Discourse on Light], in *Lingxue congzhi* 2, no. 7, 17–18.

37 Li, *Jinghua yuan*, 14.58.

38 "Guixian Zeng Yuan shu guang," 18. For a fine distinction among light (*guang* 光), beam (*mang* 芒), and halo (*cai* 彩) as well as their relevance to morality in spirit photography, see Chen, "Photographing the Invisible."

Despite the elisions in the latter half, the quotation is no doubt aligning each spiritual stage with a clearly defined visual pattern of numinous light. One can find a similar system from an earlier essay in the same volume. This system divides light into nine levels and assigns each a specific hue and aura (Table 1). With the golden or purple light ranked at a special position, these deviations from the solar spectrum betray a Daoist influence. Yet in the latter tradition, the extensive list of colours—like in the "nine colours of numinous light" (*jiuse baoguang* 九色寶光)—barely implied any hierarchical difference.[39] By aligning each spiritual stage with a specific light pattern and ordering them into a sequence of substantial difference, the divinatory essays created a typical spectroscopic display for the numinous light of myriad spirits.

Within the field of spiritualism, this spectral schema did not remain purely symbolic. Relevant literature contains direct accounts of using spectroscopic apparatus to identify numinous light and check the corresponding state. In the initial volume (1920) of another spiritualist journal *Lingxue yaozhi* 靈學要誌 [Key Records on Spiritualist Studies], the "Anecdote" section reports a Western spectroscope "specifically designed for inspecting human aura." Judging from the intensity and clarity of light above one's head, the apparatus is able to determine one's intelligence and health without error.[40] Although the direct source of this report is difficult to verify, Western experiments on the "human aura" were indeed flourishing at the time. A volume on spiritual techniques published in 1919, for example, includes a short passage introducing Walter Kilner's (1847–1920) *The Human Atmosphere* (1911), a representative work on the topic in the English world. The passage describes a "luminous atmosphere" enveloping the human body. The variations in these atmospheres correlate to the individual's mental capacity and health. Though in the original work the aura is observed through specially prepared

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39 *Shangqing taishang kaitian longqiao jing*, DZ 1354, 3.5b–6a. *Lingxue congzhi* also includes a divinatory essay which follows this tradition and introduces nine-colour lights in a non-hierarchical way. See "Ciyou zhenren yan guang you jiuzhong shuo" 慈佑眞人驗光有九種說 [True Man Ciyou's Testimony on the Nine Categories of Light], in *Lingxue congzhi* 1, no. 5, 24.

40 Xiaocang and Jingchen, *Niansi zhong jingshen qishu*, 231–2.

coloured screens, and the spectroscope is merely used to calibrate the screens' hues, its operative logic clearly resembles the description found in *Lingxue yaozhi*.[41]

Table 1: Nine Levels of Numinous Light, Attributed to the Moon Fairy[42]

Level of Light	Colour of Light	Pattern of Aura
1 (highest)	no light	no aura
2	gold	white whit
3	yellow	middle colour
4	vivid red	deep red dew
5	bluish green	green halo
6	azure	blue spray
7	purple	dark purple spray
8	dark	gray spray
9 (lowest)	black	faint beam

41 "Xiren lingxue jizai" 西人靈學記載 [Records of Spiritualist Studies by Westerners], in *Lingxue yaozhi*, "Yiwen" 軼聞 [Anecdotes], 10; Kilner, *The Human Atmosphere, or the Aura Made Visible by the Aid of Chemical Screens*, 66–69, 110–2.

42 Summarized from "*Mingyue xianzi guang shu*" 明月仙子光述 [Elaboration of Light by the Fairy of Bright Moon], in *Lingxue congzhi* 1, no. 7, 8.

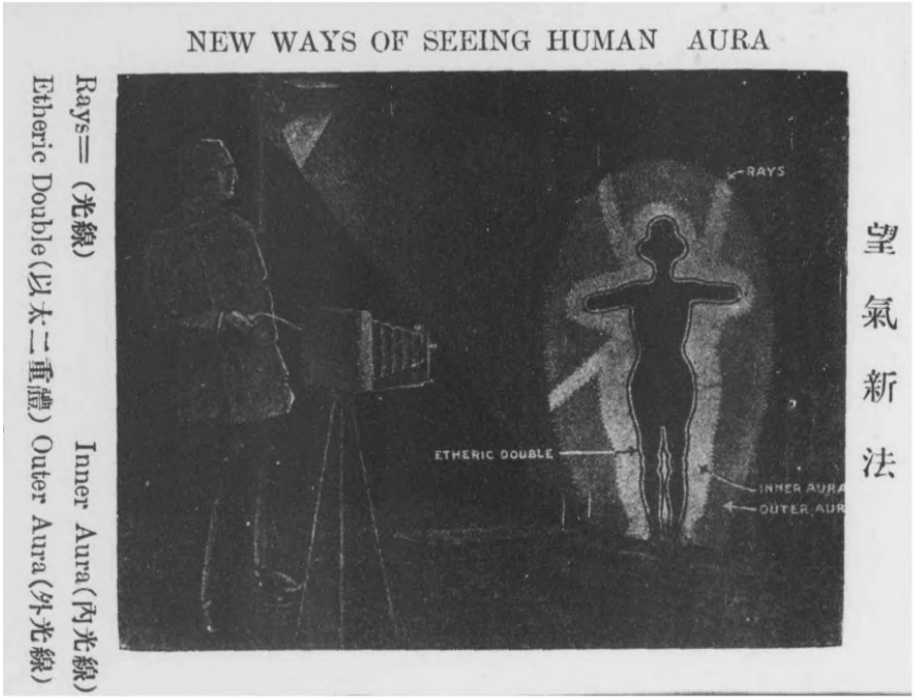

Figure 5: Visual demonstration of the "etheric double," the "inner aura," and the "outer aura" around human body.[45]

In 1931, a new monograph *Xinling guang* 心靈光 [Psychic Light] offered a more systematic introduction to the human aura. Dividing "psychic light" into the innermost "etheric double," the more distant "inner rays," and the outermost "outer rays," the work not only set out detailed observation procedures but also compared the phenomena to traditional spiritual practices such as *qi*-reading (Figure 5). In particular, the work concluded by emphasizing that anyone wishing to study this subject should first prepare a spectroscope to measure the optical conditions accurately, reconfirming the technological basis of human aura.[46] Two years later, the point became more straightforward in *Rendian shu* 人電術 [Techniques in Human Electricity]. In this work, the aura is interpreted as a radiance of "human electricity." Varying among red-yellow, azure, black, and white colours according to one's mental status, it is invisible to the human eye and can

[45] Dilü, *Xinling guang,* frontispiece.

[46] Dilü, *Xinling guang*, 3–8, 36–37.

only be identified through an "extremely exquisite spectroscope."[47] From the display of colours to the application of the instrument, the visual experience of the spectroscope had been fully incorporated into indigenous works on spiritual cultivation by this time.

Introspecting the Spiritual Stage

Thus far, our discussion of the numinous light operated primarily on a descriptive level. In what sense, then, did this ordered display of aura inform the actual practice of spiritual cultivation? If there existed a structural correspondence between "spectroscopic imaging" and "introspective view," a natural channel for such visual manifestations would be concentrated meditation. Regarding the cultivation of numinous light, a divinatory essay from *Lingxue congzhi* in 1919 offers a detailed account. The text explains that so long as one remains in the meditative state of "forgetting neither, forcing neither" (*wuwang wuzhu* 勿忘勿助) and enters the condition of "the celestial mind's grotto opening" (*tianxin dongqi* 天心洞啟) in which the "true pneuma of Heaven and Earth" flows freely, numinous light will naturally appear.[49] As reviewed in Section Two, here the concentrated cultivation of numinous light and the vocabulary it used drew directly on the Daoist tradition of inner luminosity. More evocative is the text's description of the progressive expansion of numinous light in step with one's cultivation: "At first it is extremely fine—hence 'the mind of the Way is but subtle'—what the alchemical texts call the 'millet-grain morning star.' As it grows fuller, it becomes a crescent moon, and as it waxes toward fullness, the bright moon fills the horizon." Alongside this expansion is a shift of the light tone from black to white. In the first revolution, only a faint trace of white appears. From the second revolution onward, white steadily expands as black recedes. By the ninth and final revolution, the full moon shines

47 Tian'an jushi, *Rendian shu*, 9–11.

49 "Mingyue xianzi lingguang lingneng xiangyin shuo yi" 明月仙子靈光靈能相因說一 [On the Mutual Causation of Numinous Light and Numinous Power by the Bright Moon Deity, Part One], in *Lingxue congzhi* 2, no. 1, 9.

in pure white.[50] If the earlier gradation of numinous light merely offers a static classification according to the level of accomplishment, here the spectrum is further integrated into a dynamic sequence of cultivation stages—dividing the process into distinct and visible phases.



Figure 6a (left): Illustration of the spiritual line in Stage 1, or the "spiritual cloud."[51]
Figure 6b (middle): Illustration of the spiritual line in Stage 3, or the "spiritual chain."[52]
Figure 6c (right): Illustration of the spiritual line in Stage 8, or the "spiritual bread."[53]

Following a similar logic, the 1924 monograph Lingming fa 靈明法 [Techniques in Spiritual Luminance] developed the optical sequence into a more comprehensive system of spiritualist cultivation. Condensed from Kihara Kibutsu's 木原鬼仏 three-volume lecture notes, the work presents Kihara's method—essentially a meditation practice focused on mind concentration and body control.[54] Proposing that everyone is born with a "spiritual line" (lingxian 靈線) in their mind, the work divides spiritual cultivation into ten stages, each associated with a specific colour and a specific pattern of the spiritual line illustrated in print. For instance, at the initial stage—or the "infrared realm"—the line appears like a messy cloud (Figure 6a). This corresponds to an ignorant mind completely out of cultivation. At subsequent stages, one will get into the red, orange, yellow realms and so on. The messy line gradually unfolds and wraps around into more perfect shapes—for example, a chain with sharp edges in the "orange realm" of Stage 3 (Figure 6b), or

50 "Mingyue xianzi lingguang," 9–10.

51 Li, trans., *Lingming fa*, 14

52 Li, *Lingming fa*, 16.

53 Li, *Lingming fa*, 21.

54 Reimei gyōdō honbu, ed., *Reimeihō kōju hiroku*.

a round, bread-like contour in "violet realm" of Stage 8 (Figure 6c)—and will finally complete into a radiating full circle at "white light realm" in Stage 10. Correspondingly, the subject will resolve confusions, step into the spiritual world, and achieve a perfect mind.

These sequential correspondences, summarized in Table 2, unfold according strictly to the order of the solar spectrum.[58] Referred to as the "spectrum of spiritual luminance" (*reimei subekutoru* 霊明スベクトル) in the original Japanese work, the author explicitly admits that his colour realms are modeled upon the solar spectrum, which—ranging from the infrared to the ultraviolet—finally join into the perfect stage of white light.[59] Here, the juxtaposition of visual pattern *and* colour sequence for reflecting spiritual stage highlights an intimate connection between the spectroscopic view and a staged approach of cultivation. Combining the "colour"-"thing" correspondence with the vision-mind, this spiritual spectrum—more elaborated than any of the previous cases—divided the cultivation process into a series of clearly defined and indexable phases.

Regrettably, in *Lingming fa*, the author does not specify how one is to observe these patterns of spiritual lines to advance the cultivation process in actual practice. Nevertheless, contemporary works documenting the actual progress of spiritualist cultivation offered informative clues. When discussing the spectroscopic examination of numinous light, we have encountered the 1933 monograph *Rendian shu*, which presents a meditative method of "human electricity" not fundamentally different from Kihara's approach. Common at the time, the work concludes with several "testimonies" on the method's efficacy—purportedly contributed by outside practitioners.

58 Li, *Lingming fa*, 14–24.

59 Reimei gyōdō honbu, *Reimeihō kōju hiroku*, 1: 85; Li, *Lingming fa*, 24.

Table 2: Ten Stages of Cultivation in *Techniques in Spiritual Luminance*[60]

Stage	Realm Colour	Shape of Spiritual Line	Indication
1	infrared	messy cloud	uncultivated people
2	red	rippled chain	entangled with selfish desires
3	orange	edged chain	having a puzzled mind
4	yellow	raw silk	specious cultivation
5	green	rounder than stage 4, with loosing ends	inconsistent cultivation
6	azure	enclosed like a gearwheel	no longer confused
7	blue	smoother than stage 6, with protrusions	on the track to spiritual luminance
8	violet	contour of round bread	complete yet imperfect cultivation
9	ultraviolet	circle	free development
10	white light	illuminating circle	perfect luminance

The first testimony provides a detailed account of a practitioner's progress over the initial ten weeks, organized week by week, with particular attention to the gradual transformation of the introspective scene. After several days of well-controlled concentration, the numinous light first appears in eyes in the second week:

> With my eyes closed, a yellow radiance emerged from the darkness, which soon shifted into a blue-green hue. I thought to myself: "Indeed, my efforts have not been in vain. This cool sensation and this radiance must be the effects of human electricity manifesting after the unification of the mind."

[60] Summarized from Li, *Lingming fa*, 14–24.

> 在合閉的眼中, 從暗裡有顯現一種黃色光彩, 這光彩不多時轉過青藍色的彩狀. 我心中暗想: 究竟沒有冤枉用功的了, 這涼爽和光彩的情形, 諒必都是得到統一精神後, 人電發顯的效力啊.[61]

Based on the discussions above, the internal manifestation of numinous light under a concentrated mind does not appear that special. However, what deserves attention in Qian's report is the immediate connection drawn between this introspective imagery and the efficacy of "human electricity." In other words, the introspective vision serves as real-time feedback on the practitioner's cultivation status. It is precisely in this sense that the appearance and development of the introspective scene function to verify and promote progress in practice. For example, by the third week—as long as the mind is concentrated—a natural light appears before the eyes, "looking somewhat bluish." By the sixth week, the spiritual vigor is further enhanced; correspondingly, the light also differs from before, "appearing slightly rounder and with purple gradually turning white." By the seventh week, the practitioner can readily summon the image: "Thinking of the manifestation of human electricity brings immediate efficacy, and the light in the eyes appears in an instant. Shining brilliantly and radiantly, it is whiter than mercury and rounder than before, like the full moon of mid-August." From this point, the practice shifts from quiet sitting to application—entering a new phase where one can "generate electricity with finger movements."[62]

In the testimony, the progression of cultivation stages—whether in the colour transition from yellow to blue, from purple to white, or in the increasing roundness and eventual radiance of the light—resonates closely with Kihara's spectrum. Yet at this moment, the colours and forms are no longer mere illustrations in books, but vivid scenes directly experienced by the practitioner. From a scientific perspective, the emergence of such internal visions may be well explained as "phosphene effects" caused by blood flow stimulating the optic nerve.[63] However,

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61 Qian Gongzhen 錢貢珍, "Shige xingqi de xiuyang jingguo qingxing" 十個星期的修養經過情形 [The Course of Ten Week's Cultivation], in Tian'an jushi, *Rendian shu*, 68.

62 Tian'an jushi, *Rendian shu*, 70–73.

63 By the time of *Rendian shu*, the mechanism had been known to Chinese readers. See Bergson, *Xinli*, 86.

this demystifying explanation does not erase the special phenomenological significance of those introspective visions. Through a concentrated mind, practitioners access a form of introspection that renders the stages of spiritual cultivation no longer mere doctrinal divisions but clear, distinguishable, and verifiable visual effects in practice. Correspondingly, the sequentially arranged colours cease to be a simple index for the cultivation process but instead become optical signals facilitating immediate response. It is in this sense that practitioners' subjective amazement and faith in these introspective images hold a special significance. The "most marvelous spectroscope" did not exist in the technological world; it resided in the mind of each meditative practitioner. Illuminated by this "spectroscope of the mind," one could finally draw a definite connection between the spiritual stage and the colour pattern.

Conclusion

In this paper, I have traced how the spectroscope framed the Chinese envisioning of mind and spirit in the late Qing and early Republican era. Beginning with the structural correspondence between spectroscopic imaging and introspective visualization, I first showed how new optical devices furnished a one-to-one mapping of mental content onto visual pattern. I then showed how journals of the 1910s–early 1930s extended this logic into the spiritualist realm, transforming colour symbolism into a sequential order of spiritual attainment. Finally, I turned to meditative practice, demonstrating that these spectral correspondences served not merely as theoretical schemas but as real-time feedback for practitioners in cultivation. Across these steps, the spectroscope functioned as more than a physical instrument: it offered an epistemic model for decomposing complex phenomena into sequentially arrayed, individually identifiable signs.

The spiritual appropriation of optical technology, as the global background of our story suggests, was by no means unique to China. From Kilner's aura experiments in England to Kihara's spectrum of "spiritual luminance" in Japan, a transnational convergence can be observed for the spiritualist use of the

spectroscope. What distinguished the Chinese case was the depth of the indigenous tradition onto which these optical imports were grafted. The long history of inner contemplation cultivated a rich vocabulary of inner luminosity for directing visual attention inward.

In his Berlin Lectures of 1999, Friedrich Kittler famously proposed two examples of the technological mediation of the mind: the wax tablet and the Greek soul, and film and the modern soul. 64 The spectroscope and the Chinese spiritualist mind offer an apt addition: a case in which a nineteenth-century optical instrument came to structure the most intimate form of self-knowledge. Scholars of modern Chinese history have long emphasized the role of new technology in material and institutional modernization. 65 The present case suggests that technology also actively mediated the internal structure of mental experience—a dual framing that transformed the outer and the inner worlds at once.

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Abbreviation

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64 Kittler, *Optical Media: Berlin Lectures 1999*, 34–35.

65 See e.g., Elman, *On Their Own Terms: Science in China, 1550–1900*, 355–95.

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