

# Psychic Television

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Much of what the old fairy tales promised has been delivered by the latest technology: radio brings distant voices into a room where no one is speaking; even television is becoming thinkable, which, in the midst of the soberest scientific worldview, takes us into the realms of the magic mirror.

—Ernst Bloch, “The Anxiety of the Engineer” (1929)

The occultist can reveal to the engineer the problems of the future; he can change the blind finder of technology into a purposeful inventor. But it is the engineer who can offer the occultist a scientific explanation for human beings’ magical faculties.

—Carl du Prel, *Magic as Natural Science* (1899)

On 8 March 1929, Germany’s state postal agency presented its first wireless television broadcast. The medium-wave transmitter at Berlin-Witzleben relayed a number of moving and still images—a man smoking, a pair of pliers opening and closing, letters of the alphabet—that were received in various parts of the city. The picture quality was poor. Because the transmitted images consisted of just thirty lines, only close-ups were recognizable on the tiny four-square-inch screens. In addition, technical limitations permitted the transmission of only twelve-and-a-half images per second. The images appearing on viewers’ screens therefore flickered considerably. Nonetheless, the first television broadcast in Germany appeared promising.

Three months later, Robert Bosch GmbH, Zeiss Ikon, and the British company Baird Television Ltd. founded Fernseh AG (Television Ltd.). During the following years, this new company, along with its competitor Telefunken, and the state postal agency itself, attempted in vain to establish the television set as a profitable mass product. Early models from this period included devices such as Denes von Mihaly’s *Volksempfänger* (People’s Receiver) and John Logie Baird’s *Televisor*. On 30 September 1929, the British Broadcasting Corporation began the regular transmission of an experimental television program that would be interrupted only by the Second World War. Using the Baird system, a medium-wave transmitter in London

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broadcast five days a week for half an hour. Since both image and sound still had to be relayed on the same frequency, their transmission was at first possible only in alternating, two-minute cycles. In the imagination of contemporary engineers, however, this technical limitation had long since been overcome; they emphasized that, at the same time as the sound film was expanding the previously silent cinema, television offered the prospect of “extending the purely acoustic radio into the optical realm.”<sup>1</sup>

The hybridity of image and sound also characterized the television film *Weekend* (*Wochenende*), recorded towards the end of 1929 and later to become a model for early German television.<sup>2</sup> The film showed two young women, Schura von Finkelstein and Imogen Orkutt, singing a German folk song, “Listen to What’s Coming in from Outside” (*Horch, was kommt von draußen rein*). For the medium of television, the words “Look what’s coming in from outside” would of course have been more appropriate, all the more so as the film strip’s repeated broadcasts took place without any accompanying soundtrack. But the wording of the song’s opening lines deserves to be taken seriously since the focus on what was coming “from outside” into the living room also shaped cultural perceptions of the new medium, often designated “home cinema” (*Heimkino*). In April 1929, the magazine *At Home: A German Family Paper* published an article on “Telecinema in Your Home” (*Dar Fernkino im Haus*), beginning with the words: “Things which we had to run after, now come to us at home.”<sup>3</sup> Also in 1929, in the

1. Walter Reisser, “Bildfunk, Fernsehen, und Tonfilm” (Image-Radio, Television, and Sound Film), *Rundfunkjahrbuch* (Radio Yearbook) 2 (1930): 299. Unless otherwise noted all translations are mine. For a similar point of view, see Hans Bredow, “Vor einer wichtigen Entwicklungsstufe” (On the Verge of an Important Development), *Kameraden des Films: Funk und Schallplatte*, 12. *Beiblatt zum Film-Kurier* (Comrades of Film: Radio and Phonography, 12th Supplement to the Film-Messenger), 1 June 1929, p. 1: “Film and radio both stand on the verge of a new and important stage of their development. While film has hitherto merely transmitted sense-impressions to the eye, now the ear too will play a part in receiving sound-films. . . . In contrast, while [radio] was solely directed toward the ear, in the future television will appeal to the eyes of a previously ‘sound-only’ audience.”

2. On this point, see also Birgit Schneider, “Die kunstseidenen Mädchen: Test- und Leitbilder des frühen Fernsehens” (The Rayon Girls: Early Television Prototypes and Models), in 1929, pp. 54–79.

3. Ernst Steffen, “Das Fernkino im Haus” (Telecinema in Your Home), in *Daheim: Ein deutsches Familienblatt* (At Home: A German Family Paper) 65, no. 23 (1929): 3.

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magazine *Broadcast* Eduard Rhein noted: “the world will be brought to us in our own room.” Rhein, later to found the enormously successful radio and television magazine *Listen* (*Hör zu*), continued euphorically: “Everything that interests us will be made visible on a little screen in our own home. . . . Our wildest dreams are now becoming marvelous reality.”<sup>4</sup>

It was with nearly identical terms, however, that authors such as Ernst Bloch and Eugen Diesel conjured “The Anxiety of the Engineer” and “The Uncanny of the Technical Age” (both dating from 1929). While Bloch compared television’s “latest technology” with the “realms of the magic mirror,”<sup>5</sup> Diesel wrote: “that which was hitherto seen only in dreams or which belonged to the realm of the miraculous, is now available in everyday experience.”<sup>6</sup> In a vague reference to Sigmund Freud’s essay from 1919, the son of the famous inventor defined the uncanny as “a sudden, ghostly appearance” (“U,” p. 239). Apart from a “mechanical uncanny” arising “directly from the machine in itself,” he further described an “uncanny ‘of the second kind,’ . . . dissolving old measures of time and space” (“U,” pp. 241, 243). According to Diesel, in this way “a whole new artificial world” was coming into being, a world “in which nothing could be certain” because material reality appeared only as a ghostly phantom on the screen or magic mirror in the living room (“U,” p. 243).<sup>7</sup>

Television in 1929 was thus regarded as the uncanny (*unheimlich*) occurrence of the supernatural or marvelous in one’s own living room. Evidence for this is not limited to contemporary advertisements depicting television sets as magical crystal balls (fig. 1). In the same year of 1929, the spiritualist *Journal for Psychic Research* printed an article on “Domestic Phenomena” (*Privathäusliche Phänomenik*) next to pieces on “Metaplasma-

4. Eduard Rhein, “Wollen wir fernsehen?” (Do We Want to See Televisually?), *Die Sendung* (Broadcast) 6 (1929): 726. See also Theodor Kappstein’s comment: “The miracle is not just the ‘dearest child of faith,’ as was said in olden times. The miracle is now also the ‘favorite child of technology’” (Theodor H. Kappstein, “Der Zauberer Rundfunk” [Radio the Magician], *Die Sendung* 6 [1929]: 22), as well as Frank Warschauer’s remark: “Of all inventions of our time, wireless television is perhaps not only the most *magical*, but also the most rich in consequences . . . . By this means, a selection of the whole world will be delivered to our homes” (Frank Warschauer, “Rundfunk heute und morgen” [Radio Today and Tomorrow], in *Fazit: Ein Querschnitt durch die deutsche Publizistik* [On Balance: A Cross Section of German Journalism], ed. Ernst Glaeser [1928; Kronberg, 1977], p. 307; emphasis added).

5. Ernst Bloch, “Die Angst des Ingenieurs” (1929), *Gesamtausgabe*, 17 vols. in 18 (Frankfurt am Main, 1985), 9:354; trans. under the title “The Anxiety of the Engineer,” by Andrew Joron, *Literary Essays*, trans. Joron et al. (Stanford, Calif., 1998), p. 310; trans. mod.

6. Eugen Diesel, “Das Unheimliche des technischen Zeitalters” (The Uncanny of the Technical Age), *Zeitwende* (Turning Points) 5 (1929): 241; emphasis added; hereafter abbreviated “U.”

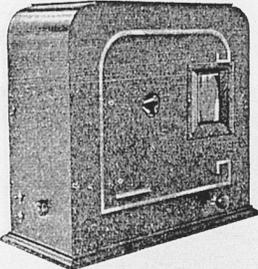
7. Diesel’s text can hence be read as an anticipation of Günther Anders’s culturally conservative remarks on “the world as phantom and matrix” or of Jean Baudrillard’s apocalyptically charged theories of simulation.

*it is here!*



# TELEVISION

*man's strangest dream comes true in your own home.....*



Plew researches . . . extending over a quarter of a century . . . at last bear fruit. A method has been perfected. Clear, steady Television for the home at a price all can afford . . . becomes suddenly practicable. See as you listen . . . the greatest thrill of this new age. Programmes are to be greatly extended . . . get in touch with your dealer today . . . be in the forefront of the most exciting discovery the radio world has known.

<b>P</b>	<b>L</b>	<b>E</b>	<b>W</b>	MODEL NO. 1	<b>10 gns.</b>
				STANDARD MODEL	<b>18 gns.</b>
				LONG RANGE	<b>22 gns.</b>
				<b>TELEVISION</b>	

PLEW TELEVISION LTD., STAFFORD ROAD, WADDON, SURREY. Tel.: FAIRFIELD 5191.

FIGURE 1. Advertisement in *Television* (Sept. 1934).

Phenomena,” “Phenomena of Possession,” and an obituary for Albert von Schrenck-Notzing, a famous German spiritualist and physician who had died in February. After a short digression on occult “clairvoyance” (*Hellsehen*), the author, one retired justice Driessen, outlined various supernatural phenomena, including “nocturnal wall-inscriptions,” “inexplicable light apparitions,” and “knocking sounds.” These manifestations had taken place in Driessen’s own “solidly built 1903 family house,” located not in Berlin-Witzleben, but in Witzhausen, a small town by the river Werra in Hesse. Without explicitly referring to electrical television, the article specified a

“small cupboard bearing family portraits” in a corner of the living room as the “main location” of these phenomena.<sup>8</sup>

The coincidence of texts from 1929 describing occult “domestic phenomena” and the magical properties of the new technology in one’s own home can be related to a more fundamental interrelation of television and clairvoyance. Walter Benjamin understood spiritualism and occultism to be the “backside” (*Kehrseite*) of “technological development.”<sup>9</sup> In contrast, I would like to establish spiritualist research into the psychic television of somnambulist mediums as a necessary but not sufficient condition for the invention and implementation of the technological medium. Spanning a period from the late nineteenth century into the first decades of the twentieth century, television’s gradual emergence in no sense relied exclusively on “factors immanent to the technology,” as suggested by Joseph Hoppe and others.<sup>10</sup> The slow accumulation of technical and physical knowledge, beginning around 1890, accelerating in the 1920s, and enabling the first wireless transmissions of moving pictures in the last years of that decade did not take place in a vacuum that could be separated from its contingent cultural contexts. Instead, occultist studies on psychic “clairvoyance” (*Hellsehen*) and “television” (*Fernsehen*), carried out in the same period by spiritualists who emulated the rules and procedures of science, played a constitutive role for the technological inventions and developments of electrical television.

Placed in a larger theoretical context, such an approach to the archaeology of media at the same time addresses the complex relation between technology and culture by avoiding a simple determinism, which in its focus on a technological a priori threatens to reduce culture to a mere epiphenomenon. The influential media theorist Friedrich Kittler has provided us with important insights into how new information technologies give rise to

8. Amtsgerichtsrat i.R. Geheimrat Drießen, “Privathäusliche Phänomenik” (Domestic Phenomena), *Zeitschrift für psychische Forschung* (Journal for Psychic Research) 5, no. 6 (1929): 181, 179, 180.

9. Walter Benjamin, “Erfahrung und Armut” (Experience and Poverty) (1933), *Gesammelte Schriften*, ed. Rolf Tiedemann and Hermann Schweppenhäuser, 7 vols. in 14 (Frankfurt am Main, 1972–89), 2:1:215.

10.

There is an old and most likely irresolvable dispute—the question of whether technological innovations are a reflection of social or economic needs, or if they are not instead inductively developed from existing technical standards. As regards television at least, and indeed image transmission in general, factors immanent to the technology appear to have been the chief inspiration for thinking on the subject.

(Joseph Hoppe, “Wie das Fernsehen in die Apparate kam” [How Television Became Part of the System], in *TV-Kultur: Das Fernsehen in der Kunst seit 1879* [TV-Culture: Television in Art since 1879], ed. Wulf Herzogenrath et al. [Dresden, 1997], p. 26).

cultural change, yet ultimately he considers “hardware” to be more fundamental than the discourses and imaginations that allow for its emergence and shape its contingent realization and appropriation. According to this view, “literatures or fantasies are . . . irrelevant” for the conception of television.<sup>11</sup> Technology may generate spiritualism but not vice versa. A more circumspect analysis, however, reveals an interdependence of electrical and psychic television as presupposing each other. The archaeology of the medium therefore testifies to a reciprocal interaction between the emergence of a new technology and surrounding cultural discourses—an interaction that defies representation in a simple model of cause and effect but instead approaches the “circular causality” in complex feedback mechanisms.<sup>12</sup> Or, to put it in terms of classical logic: while spiritualism serves as a necessary (but not sufficient) condition for the invention of electrical television, the emerging technology simultaneously fulfills the very same function for spiritualist research on psychic telesight.

The notion that the concept of television emerged from a two-directional exchange between occultism and technology immediately gains plausibility when recalling equivalent coinages such as *telegraphy*, *telepathy*, *telephony*, *telekinesis*, or *teleplasty*.<sup>13</sup> Even the German term *Fernsehen* (television or remote viewing), which, according to recent studies, was employed for the first time in Liesegang’s 1891 book *The Phototel: Contributions on the Problem of Electrical Television*, appeared in the same year in Charles Richet’s *Experimental Studies in the Field of Thought Transmission and So-Called Clairvoyance*.<sup>14</sup> The author, a French physician, who would receive the Nobel Prize for medicine in 1913, also wrote novels on demonic possession under the pseudonym of Charles Epheyre. His spiritualist study was published

11. Friedrich Kittler, *Optische Medien* (Berlin, 2002), p. 290.

12. On “circular causality,” see Heinz von Foerster, Margaret Mead, and Hans Lukas Teuber, “A Note by the Editors,” in *Cybernetics: Circular Causal and Feedback Mechanisms in Biological and Social Systems* (New York, 1952), p. xiv.

13. Wolfgang Hagen, whose work on the connection between occultism and the development of radio has been an important point of reference for this article, has recently highlighted the development of the concept of radio in the context of William Crookes’s 1870s experiments into radiation as the “fourth state of matter” (Wolfgang Hagen, “Vom Ort des Radios: Vortrag zur Eröffnung von *Recycling the Future*” [On the Place of Radio: Key Note to the Symposium *Recycling the Future*], Vienna, 4 Dec. 1997, <http://www.whagen.de/vortraege/radort/RADORT.HTM>).

14. See Raphael Eduard Liesegang, *Das Phototel: Beiträge zum Problem des elektrischen Fernsehens* (The Phototel: Contributions on the Problem of Electrical Television) (Düsseldorf, 1891); hereafter abbreviated *P*. On the alleged first use of the term *Fernsehen*, see Siegfried Zielinski, *Audiovisionen: Kino und Fernsehen als Zwischenspiele in der Geschichte* (Audiovisions: Cinema and Television as Historical Interludes) (Reinbek, 1989), p. 26, and Hoppe, “Chronologie,” in *TV-Kultur*, p. 19.

under his own name with a prestigious medical press and examined “psychic actions at a distance” (*psychische Fernwirkungen*) such as “telepathy,” “telaesthesia,” “clairvoyance,”<sup>15</sup> as well as “television.”<sup>16</sup> In numerous, supposedly scientifically verified experiments conducted by Richet, his sensitive clairvoyants were able to transcend space and time, describing remote buildings or objects in such detail that it was as if “they had the room and the objects in question *before their eyes*.”<sup>17</sup> The mediums thus functioned like a psychic equivalent to a technical apparatus for the transmission of images, registered by Paul Nipkow as the electrical telescope at the German Imperial Patent Office in January 1884 and intended “to make visible at any arbitrarily chosen point B an object located at point A.”<sup>18</sup>

Nipkow’s device was based on the segmentation of an image into individual lines, a principle first devised by Alexander Bain in 1843, a Scottish inventor whose model for the transmission of images already contained the idea of scanning two-dimensional surfaces line by line. However, since Bain could not satisfactorily resolve the problems associated with synchronizing sender and receiver, his image telegraph was rarely put to practical use.<sup>19</sup> Forty years later, Nipkow’s “electrical telescope” depended upon a revolving disk with holes arranged in a spiral around its edge. As the disk rotated, light passing through the holes rendered it possible to scan an object point by point and line by line.<sup>20</sup> The spatial contiguity of individual pixels was

15. Albert Freiherr von Schrenck-Notzing, “Translator’s Introduction” (1890), in Charles Richet, *Experimentelle Studien auf dem Gebiete der Gedankenübertragung und des sogenannten Hellsehens* (Experimental Studies in the Field of Thought Transmission and So-Called Clairvoyance) (Stuttgart, 1891), p. 2. See also Richet, “Relation de diverses expériences sur la transmission mentale, la lucidité, et autres phénomènes non explicables par les données scientifiques actuelles,” *Proceedings of the Society for Psychical Research* 5 (1888–89): 18–168 and “Further Experiments in Hypnotic Lucidity or Clairvoyance,” *Proceedings of the Society for Psychical Research* 6 (1889–90): 66–83.

16. “Fernsehen” appears in Richet, *Experimentelle Studien auf dem Gebiete der Gedankenübertragung und des sogenannten Hellsehens*, p. 230. Earlier references are to be found in Carl Kiesewetter, “Fernsehen und Telepathie in der älteren okkultistischen Literatur” (Television and Telepathy in Older Occultist Literature), *Sphinx* 8 (1889): 97–104; Heinrich Bruno Schindler, *Das magische Geistesleben: Ein Beitrag zur Psychologie* (Magical Spirit Life: A Contribution to Psychology) (Breslau, 1857), p. 139; and Eduard Stern, “Fernsehen, Fernhören” (Television, Telehearing), *Archiv für den Thierischen Magnetismus* (Archive for Animal Magnetism) 7, no. 2 (1820): 161–63.

17. Richet, *Experimentelle Studien auf dem Gebiete der Gedankenübertragung und des sogenannten Hellsehens*, p. 227; emphasis added.

18. Quoted in Josef Mühlbauer, *Fernsehen: Das Wunder und das Ungeheuer* (Television: The Miracle and the Monster) (Basel, 1959), p. 15.

19. See Albert Abramson, *The History of Television, 1880 to 1941* (London, 1987), p. 6.

20. For a more detailed description of the Nipkow device, see Hoppe, “Wie das Fernsehen in die Apparate kam,” p. 28, and David E. Fisher and Marshall Jon Fisher, *Tube: The Invention of Television* (New York, 1997), p. 16.

thereby transformed into a temporal sequence of electrical signals to be transmitted by wire before being reassembled into a coherent picture by the receiver.

Prior to being supplanted in the 1930s by Zworykin's and Ardenne's completely electronic tube systems, nearly all of the early electromechanical television devices from the late nineteenth and the early twentieth century relied on selenium. This chemical element, discovered by Berzelius in 1817, owed "its significance to a marvelous property by which its resistance drops considerably under the influence of light."<sup>21</sup> Its photosensitivity was discovered by chance in 1873 during the laying of trans-Atlantic undersea telegraph cables by the British engineer Willoughby Smith and his assistant Joseph May. Two years later Werner von Siemens constructed the first selenium cell, which, like the subsequent photocell, allowed for the "conversion of an optical into an electrical image."<sup>22</sup>

Translating images into signals that can be relayed and reconverted into images—this principle was outlined in comparable form in those spiritualist texts that formulated a theory of psychic television. A number of works in the field of electrical engineering such as Liesegang's *The Phototel* (1891), Benedict Schöffler's *Phototelegraphy and Electrical Television* (1898), and Fritz Lux's *The Electrical Televisor* (1903) described devices, frequently interrelated and based on each another, that depended on the use of selenium and employed mechanical systems, akin to the Nipkow disk, for the scanning and generation of images.<sup>23</sup> At the same time, a theory of occult messages or "dispatches" (*Depeschen*)<sup>24</sup> was being developed in texts like Carl du Prel's *Television and Action at a Distance* (volume 2 of *The Discovery of the Soul by Means of the Secret Sciences* [1895]), Walter Bormann's *The Norns: Inquiries into Television in Space and Time* (1909), and J. Körmann-Alzech's

21. Christoph Ries, *Sehende Maschinen: Eine kurze Abhandlung über die geheimnisvollen Eigenschaften der lichtempfindlichen Stoffe und die staunenswerten Leistungen der sehenden Maschinen* (Seeing Machines: A Short Treatise on the Mysterious Properties of Photosensitive Elements and the Astonishing Achievements of Seeing Machines) (Diessen, 1916), p. 38. See also Ries, *Die elektrischen Eigenschaften und die Bedeutung des Selens für die Elektrotechnik* (Electrical Qualities of Selenium and Its Significance for Electrical Engineering) (Berlin, 1914). For a more detailed analysis of Ries's treatise on "seeing machines," see Bernhard Dotzler, "Die Schaltbarkeit der Welt," in 1929, p. 312.

22. H. E. Hollmann, "Fernseher von einst und jetzt" (Television, Then and Now), *Helios* 35 (1929): 54.

23. See P; Benedict Schöffler, *Die Phototelegraphie und das Elektrische Fernsehen* (Phototelegraphy and Electrical Television) (Vienna, 1898); and Fritz Lux, *Der elektrische Fernseher* (The Electrical Televisor) (Ludwigshafen, 1903).

24. Walter Bormann, *Die Nornen: Forschungen über Fernsehen in Raum und Zeit* (The Norns: Inquiries into Television in Space and Time) (Leipzig, 1909), p. xiv; hereafter abbreviated N.

*Telepathy, Thought Transmission, Thought Reading, Cumberland, Svengalis, Television, Action at a Distance, Ghosts of Living Persons, Second Sight* (volume 4 of *Marvels and Secrets from throughout the Ages Revealed* [1904]).<sup>25</sup> Just as in electrical television, the signals of these occult broadcasts were “transformed by the terminal station [*Endstation*] into perceptible images [*anschauliche Bilder*].”<sup>26</sup> Walter Bormann similarly describes “subjective visions,” in which “the telepathically affected *receiver converts the message into a perceptible image*” (*N*, p. 98; emphasis added).

Du Prel’s treatise on the *Discovery of the Soul* defines “television” as “a viewing of images” (*ein bildliches Schauen*) (*ES*, 2:1).<sup>27</sup> Moreover, in contrast to many spiritualist authors, he distinguishes between “clairvoyance” (*Helsehen*) and “television” (*Fernsehen*), according to the distance between sender and receiver. Whereas clairvoyance only takes place “at close range,” television allows “distances of many miles” to be overcome.<sup>28</sup> In the latter case, “a perceptible image” (*ein anschauliches Bild*) enters the mind of the somnambulist medium and reveals “the finest details,” corresponding “precisely to reality” (*ES*, 2:79, 5).<sup>29</sup> Of course, du Prel adds, it is not a matter of “seeing in the physiological sense” when “one sees an event taking place at a distance of many miles” (*ES*, 2:1). “Telesight” (*Ferngesicht*) is thus not based “on peripheral stimulation of the optic nerves” but arises from “brain intuitions” (*Gehirnvorstellungen*), which are then transformed into “images existing in space” and projected towards the exterior (*ES*, 2:1).<sup>30</sup> According to du Prel, the brain cannot actively create this “telesight.” Instead, it can

25. See *N*; Carl Du Prel, *Die Entdeckung der Seele durch die Geheimwissenschaften*, 2 vols. (Leipzig, 1894–95), hereafter abbreviated *ES*; and J. Körmann-Alzech, *Telepathie, Gedankenübertragung, Gedankenlesen, Cumberland, Die Svengalis, Fernsehen, Fernwirken, Gespenster lebender Personen, Das zweite Gesicht*, vol. 4 of *Offenbarung der Wunder und Geheimnisse aller Zeiten* (Leipzig, 1904).

26. Du Prel, “Das Fernsehen in Zeit und Raum” (Television in Time and Space), *Sphinx* 14 (1892): 9.

27. The text is based on *ibid.*

28.

This close-range clairvoyance should be distinguished from “spatial television” over distances of many miles, and also from “temporal television.” In other words, clairvoyance is based on a process unique to itself, whereas spatial and temporal television appear both to be based on a separate and entirely different process. [*ES*, 1:163]

29. In a similar vein, Bormann wrote: “everything called up by the visionary medium presents itself directly to the eye, in motion and in full color” (*N*, p. 130).

30. The outward projection of internally received mental images is already described in Schopenhauer’s *Versuch über das Geistersehen* (Essay on Spirit Seeing) (1853), which refers to texts by Justinus Kerner, as well as to Kant’s *Träume eines Geistersehers* (Dreams of a Spirit Seer) (1766). Schopenhauer and Kant were often quoted by du Prel, who understood television to be a “function of the transcendental subject”; see du Prel, “Fernsehen als Funktion des transzendentalen Subjekts,” *Sphinx* 15 (1893): 200–209, 305–16.

only “passively receive such impressions, which are then transformed into perceptible images, by way of the brain’s normal functioning” (ES, 2:2; emphasis added).

In an effort to designate the material medium carrying these wireless transmissions, physical researchers referred to various categories borrowed from the natural sciences. Cesare Lombroso invoked the concept of radioactivity, which had emerged subsequent to the discoveries by Becquerel and Marie Curie in 1896. William Crookes considered X-rays, first observed by Roentgen in 1895 and not integrated into the electromagnetic wave spectrum until 1912, as the medium underlying the “transmission of . . . images from one mind to another, without the agency of the recognised organs of sense.”<sup>31</sup> Hellenbach named the “ether” and Carl du Prel the “od” as the bearer of wirelessly transmitted messages.<sup>32</sup>

In particular, the belief in an all-pervasive “ether,” a material yet weightless substance, appears to have gained renewed scientific respectability at the end of the nineteenth century. After discovering the electromagnetic wave spectrum in the years 1887–88, Heinrich Hertz stated: “It is thus certain that all space of which we have knowledge is not empty, but rather is filled with ether, a substance capable of propagating waves.”<sup>33</sup> He was not alone in adhering to this assumption. Among English physicists, particularly among the followers of Maxwell, Hertz’s proof that “there are electrical or magnetic waves which radiate in the same way as light waves” was also taken to confirm the mysterious medium’s reality.<sup>34</sup> This belief was retained even after Einstein formulated his special theory of relativity, which in 1905 stringently refuted the existence of ether and therefore at first met with substantial opposition.<sup>35</sup> The category of ether, oscillating across the bor-

31. William Crookes, “Address by the President,” *Proceedings of the Society for Psychical Research* 12 (1896–97): 348. On this point, see also Hagen, “Der Okkultismus der Avantgarde um 1900” (The Occultism of the Avant-Garde around 1900), in *Konfigurationen: Zwischen Kunst und Medien* (Configurations: Between Art and Media), ed. Sigrid Shade and Georg Christoph Tholen (Munich, 1999), p. 351.

32. See N, p. 97: “To explain this, Lombroso drew on the concept of radioactivity, just as Hellenbach had used the ether and du Prel the od.” The “od” was considered by Karl von Reichenbach to be a force that pervades all nature, manifesting itself in persons of sensitive temperament; see, for instance, Karl Freiherr von Reichenbach, *Letters on Od and Magnetism* (1852): *Published for the First Time in English, with Extracts from His Other Works, so as to Make a Complete Presentation of the Odic Theory*, trans. and ed. F. D. O’Byrne (London, 1926).

33. Heinrich Hertz, *Ueber die Beziehungen zwischen Licht und Elektrizität* (On the Relations between Light and Electricity) (Bonn, 1889), p. 5.

34. *Ibid.*, p. 15. On Hertz’s discovery, see Oliver Lodge, *The Work of Hertz and Some of His Successors: Being the Substance of a Lecture Delivered at the Royal Institution on Friday Evening, 1 June 1894* (New York, 1894).

35. See Stanley Goldberg, “In Defense of Ether: The British Response to Einstein’s Special Theory of Relativity, 1905–1911,” *Historical Studies in the Physical Sciences* 2 (1970): 89–125. For a 1924 account of electromagnetic waves, which still took recourse to the “world-ether hypothesis,” see Albert Neuburger, *Die Wunder der Fernmeldetechnik: Über Telegraphie und Telephonie zum*

derlines between occultism and physics, thus continued to serve as “scientific” authentication for a variety of theories that described occult mental rays—or for the postulation of “od-vibrations” connecting transmitter and receiver by a “psycho-magnetic band” (*N*, p. x).

Yet it was not only the notion of “ether waves” that linked representations of psychic and technical television. In addition, spiritualist texts introduced the concepts of “sympathy” or “psycho-physical attunement” between transmitter and receiver to address the often difficult synchronization of image-scanner and image-generator (*N*, p. xiv). Electrical television could only produce a clear picture if sender and receiver were precisely tuned to each other, a problem that August Karolus circumvented by mounting two Nipkow disks on a single axis when demonstrating his television system at the University of Leipzig in 1924.<sup>36</sup> In parallel fashion, spiritualist texts indicated that occult television could only take place if a strong “personal involvement” joined the somnambulist medium with the transmitting psyche. Such an involvement might occur at the death of a close relative or at the moment of an accident, bringing about a synchronous “oscillation” (*Schwingung*) of sending and receiving souls and thereby providing the basis for occult television (*N*, p. xiv).

In the work of physicists and electrical engineers, references to occult and psychical research remained—with occasional exceptions—mostly implicit. Within spiritualism, however, technical and physical concepts were aggressively appropriated in order to confirm and legitimize the possibility of psychic actions at a distance. In 1896, Marconi’s first successful experiments with wireless telegraphy from 1896 were immediately cited as establishing the possibility of telepathy and thought transmission. The spiritualist researcher Körmann-Alzech put it succinctly: “Since Marconi invented telegraphy without wires, even the most determined opponents of telepathy must allow for its possibility.”<sup>37</sup> In similar terms, Bormann represented the “teleaesthetic band” between transmitter and receiver as “corresponding to wireless telegraphy” (*N*, pp. xiii–xiv; see also p. 114).<sup>38</sup>

Yet as early as 1895—that is, one year before Marconi’s first successful experiments with wireless telegraphy—a model for the wireless transmission of electrical signals can be found in spiritualist texts. In his *The Discovery of the Soul*, Carl du Prel wrote:

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*Rundfunk* (The Marvels of Telecommunication: From Telegraphy and Telephony to Radio) (Leipzig, 1924), p. 123.

36. On this point, see Hoppe, “Wie das Fernsehen in die Apparate kam,” p. 31.

37. Körmann-Alzech, *Offenbarung der Wunder und Geheimnisse aller Zeiten*, p. 3.

38. On the interrelation of telegraphy and occultism, see also Richard Noakes, “Telegraphy Is an Occult Art: Cromwell Fleetwood Varley and the Diffusion of Electricity to the Other World,” *British Journal of the History of Science* 32, no. 4 (1999): 421–59.

Natural science is already on the verge of providing a proof for the possibility of such an action at a distance, a proof based on the transmission of electricity through space *without connecting wires*. It is obvious that this works by means of the wave movements in the ether. The fact that this wave motion gets through to its target in the case of human action at a distance, has at present no other explanation than that the human agent is also capable of telecommunication. [ES, 2:281]

Du Prel thus refers to scientific knowledge before its successful technological implementation. But spiritualist theories of thought transmission also appear to have functioned as a cultural blueprint for electrical wireless transmissions. Thus in his 1892 article "Some Possibilities of Electricity," William Crookes, a chemist, physicist, and occultist, had already pointed out that Hertz's discovery of previously unknown electromagnetic waves might render possible the wireless transmission of Morse signals:

Whether vibrations of the ether, longer than those which affect us as light, may not be constantly at work around us, we have, until lately, never seriously enquired. But the researches of Lodge in England and of Hertz in Germany give us an almost infinite range of ethereal vibrations or electrical rays . . . Here is unfolded for us a new and astonishing world—one which it is hard to conceive should contain no possibilities of transmitting and receiving intelligence.

Rays of light will not pierce through a wall . . . But the electrical vibrations of a yard or more in wave-length . . . will easily pierce such mediums . . . Here, then is revealed the bewildering possibility of telegraphy without wires, posts, cables or any of our present costly appliances. Granted a few reasonable postulates, the whole thing comes well within the realms of possible fulfillment.<sup>39</sup>

According to Crookes, the necessary preconditions for wireless telegraphy included an apparatus to create electrical waves of the desired frequency, sensitive receivers which could be tuned to a particular wavelength, as well as some method of concentrating electromagnetic waves at a target point in order to facilitate their reception.

The question of whether the first wireless transmission of electrical signals was actually achieved by Marconi in 1896 or whether this had already been accomplished in 1894 by the English physicist and spiritualist Oliver

39. Crookes, "Some Possibilities of Electricity," *Fortnightly Review*, n.s. 51 (Feb. 1892): 174. This essay by Crookes has frequently been remarked upon; see, for instance, Hugh G. J. Aitken, *Syntonity and Spark: The Origins of Radio* (New York, 1976), p. 111.

Lodge is therefore of lesser importance in analyzing the relation between occult and technical television.<sup>40</sup> In fact Lodge closely collaborated with Crookes and conducted, alongside his studies in physics, research into “sympathetic communication between places as distant as India . . . and England.”<sup>41</sup> Accordingly his texts, apparatuses, and experiments highlight with unusual clarity the mutual interaction between occultism and the natural sciences that characterized the cultural construction of new technological media in the late nineteenth century. Both Lodge, an acknowledged physicist at the center of Maxwellian electrodynamics, and Crookes, possibly the most important British chemist of his time, served for several years as presidents of the spiritualist *Society for Psychical Research*, which in the United States counted William James among its members. Both scientists developed their theories in close connection with their occultist studies.<sup>42</sup> In the same article in which he outlined a research program for the realization of wireless telegraphy, Crookes also referred to experiments with telepathy and thought transmission:

In some parts of the human brain may lurk an organ capable of transmitting and receiving other electrical rays of wave-lengths hitherto undetected by instrumental means. These may be instrumental in transmitting thought from one brain to another. In such a way the recognised cases of thought transference and the many instances of “coincidence” would be explicable.<sup>43</sup>

However, the role of spiritualist theory within the “invention” of modern communication technologies was not restricted to describing invisible psychic “organs,” thereby engendering the insight into the possibility of functionally equivalent technical devices. Even in terms of material components, byproducts of occult research played a constitutive role in the emergence of radio and television. Thus in 1879 Crookes developed the Crookes tube—an early cathode-ray tube intended to prove that radiation was the fourth state of matter.<sup>44</sup> In 1897, Ferdinand Braun transformed Crookes’s tube

40. On Lodge’s 1894 experiments, see Hagen, “Vom Ort des Radios.”

41. Oliver Lodge, “On the Difficulty of Making Crucial Experiments as to the Source of the Extra or Unusual Intelligence Manifested in Trance Speech, Automatic Writing, and Other States of Apparent Mental Inactivity,” *Proceedings of the Society for Psychical Research* 10 (1894): 18.

42. On Crookes’s spiritualist experiments, see Crookes, “Notes of Séances with D. D. Home,” *Proceedings of the Society for Psychical Research* 6 (1889–90): 98–127 as well as “Address by the President.” See also Crookes, *Researches in the Phenomena of Spiritualism* (London, 1874) and *Psychic Force and Modern Spiritualism* (London, 1871). These texts have been republished as *Crookes and the Spirit World: A Collection of Writings by or Concerning the Work of Sir William Crookes, O.M., F.R.S., in the Field of Psychical Research*, ed. M. R. Barrington (New York, 1972).

43. Crookes, “Some Possibilities of Electricity,” p. 176.

44. See Crookes, *On Radiant Matter: A Lecture Delivered to the British Association for the Advancement of Science, at Sheffield, Friday, August 22, 1879* (Philadelphia, 1879), pp. 3–5.

into a measuring instrument,<sup>45</sup> while in 1906 his assistants Dieckmann and Glage registered the first patent to use this “Braunian tube” as an “image writer” (*Bildschreiber*). Also in 1906, Lieben and Lee De Forest developed the triode, which was likewise based on a vacuum tube and first employed in image telegraphy and radio for the purpose of amplifying electrical signals before and after their transmission by wire or electromagnetic waves.<sup>46</sup> On the level of the material apparatus, one indispensable precondition of technical television—the possibility of amplifying electric signals—can thereby be traced back to an electrical device invented by Crookes, who himself explicitly pointed to the “connexion” between his spiritualist research and his work in the natural sciences.<sup>47</sup> Furthermore, spiritualist theory anticipated this principle of amplification on the discursive level as early as 1894, when du Prel asserted: “by its very nature, television would be made easier if the od-radiation were artificially *amplified* (*verstärkt*)” (*ES*, 1:172).

In drawing attention to such texts as Liesegang’s *Contributions on the Problem of Electrical Television* (1891), Kerstin Bergmann and Siegfried Zielinski have noted: “everything which in the twentieth century evolved into the media system we have grown accustomed to had already been outlined by the end of the nineteenth century.”<sup>48</sup> Yet this conclusion on the archaeology of television should include more than electrical engineering, physics, and science fiction novels like Albert Robida’s *The Twentieth Century*, which in 1883 described television-like devices to be used for live transmissions of wars and political assemblies.<sup>49</sup> In addition, the theories and conceptions of electrical television also presupposed the contemporary spiritualist re-

45. See Ferdinand Braun, “Über ein Verfahren zur Demonstration und zum Studium des zeitlichen Verlaufs variabler Ströme” (On a Method for the Recording and Study of the Temporal Sequence of Alternating Currents), *Annalen der Physik und Chemie* (Annals of Physics and Chemistry) 60 (1897): 552–59.

46. See, for example, Hollmann’s statement, “Only with the improvement in amplification technology, however, was image telegraphy able to become a technology suitable for practical applications” (Hollmann, “Fernseher von einst und jetzt,” p. 55).

47. See Crookes, “Address by the President,” p. 338: “Is there any connexion between my old-standing interest in psychical problems and such original work as I may have been able to do in other branches of science? I think there is such a connexion.”

48. Kerstin Bergmann and Siegfried Zielinski, “‘Sehende Maschinen’: Einige Miniaturen zur Archäologie des Fernsehens” (“Seeing Machines”: Sketches in the Archaeology of Television), in *Televisionen* (Televisions), ed. Stefan Münker and Alexander Roesler (Frankfurt am Main, 1999), p. 33.

49. See Albert Robida, *Le Vingtième Siècle* (Paris, 1883). On the role of literary “functional utopias,” see also Monika Elsner, Thomas Müller, and Peter Michael Spangenberg, “Der lange Weg eines schnellen Mediums: Zur Frühgeschichte des deutschen Fernsehens” (The Long Journey of a Fast Medium: On the Early History of German Television), in *Die Anfänge des deutschen Fernsehens: Kritische Annäherungen an die Entwicklung bis 1945* (The Beginnings of German Television: Critical Approaches to Development before 1945), ed. William Uricchio (Tübingen, 1991), pp. 153–206, esp. p. 158.

search into psychic telesight that was linked to the emerging technology in a relation of reciprocal and constitutive exchange. Often taking place unbeknownst to individual researchers, this exchange encompassed discursive figures, concepts, theories, as well as technical components that were constructed in accordance with these theories. Hence a determinist approach to the history of television could only strive in vain to locate its “origin” in one single domain of knowledge, be it electrical engineering, physics, or occultism. Instead, it is the interaction between these ostensibly strictly separated spheres that marks not so much the “invention” as the gradual emergence of the medium known as television.

The interrelation of occult and technical telesight also comes to the fore in the appropriation of a highly influential treatise by the philosopher Ernst Kapp, who in 1877 defined technology as “organ projection.” Kapp’s anthropocentric theory, still living on in Marshall McLuhan’s notion of media as “an extension of man,” was originally taken up in both electrical engineering and occultism. Liesegang opens his *Contributions on the Problem of Electrical Television* with a reference to Kapp’s *Outlines of a Philosophy of Technology*, according to which “almost all tools, machines, etc. are unconscious copies that imitate parts of the human being” (*P*, p. iii).<sup>50</sup> Liesegang, for whom the Morse telegraph corresponded to the human sense of touch and the telephone to the ear, thus understood his “instrument for the telegraphing of lens-produced images” as “imitating the sense of sight” (*P*, pp. 1, iv). In this context, Liesegang not only quotes Crookes but, alongside the model of the human eye, he also invokes the “archetype” (*Muster*) of the fairy tale’s “magic mirror”—a figure that, in addition to shaping the technology’s cultural reception in the late 1920s, already surfaces in most of the early writings on television from the late nineteenth century: “Mirrors in which we can see distant objects can be found in the fairy tales of all countries. Faust saw Helena in such a mirror. The mirrors of Amamterasu, Dschemschid, Agrippa and Nostradamus all had the same marvelous property” (*P*, pp. 111, 89).

The double model for imagining technical television—the human eye *and* the magic mirror—can also be observed in Fritz Lux’s *The Electrical Televisor* (1903). Lux at first refers to “(nature’s) marvelous and perfectly realized creations” before he goes on to describe his apparatus as the technological projection of a magical process:

50. See also Ernst Kapp, *Grundlinien einer Philosophie der Technik* (Outlines of a Philosophy of Technology) (Braunschweig, 1877). Already in 1853 Carus had written: “The hammer is the extended arm and fist . . . . The achromatic lens is an imitation of the eye’s lens . . . . Telegraph currents are analogous to nerve currents” (quoted in *P*, p. iii).

In very many inventions of recent years we see the realization of thoughts and ideas which have often occupied the human mind for centuries. In the phonograph we can see Münchhausen's post-horn, from which could be heard the sound of beautiful melodies and songs played long ago. Likewise in television we can see the fairy tale's magic mirror, the gift of a good fairy, which enables us to observe the deeds of people faraway.<sup>51</sup>

The engineers Liesegang and Lux understood their inventions as ways to make these tales into reality but did not go more deeply into television's magical models. The spiritualist du Prel, in contrast, explained mirror magic and "medieval crystal ball gazing" as corresponding to psychic television, which by his own account takes place as the outward projection of internally received images: "The crux of the matter is this: under the influence of narcotic substances or due to the exhaustion of the optical nerves when looking at a reflective surface, a condition arises in which auto-suggestion or external suggestion can bring about television, thereby projecting the image onto the mirror's surface" (*ES*, 2:206).<sup>52</sup>

Du Prel did not, however, consider the magical process of psychic television supernatural; rather, he thought it operated in accordance with natural laws as yet unknown to contemporary physics. Thus it is not altogether surprising that he also refers back to the principle of organ projection cited by Liesegang, additionally calling for the construction of technical devices that imitate occult human capabilities. In the first volume of his treatise on *Magic as a Natural Science* (1899), du Prel writes:

In his *Philosophy of Technology*, Kapp demonstrates beautifully that our mechanical devices are merely unconscious copies that imitate organisms or parts of organisms. The camera obscura, for example, can be understood as a copy of the eye. This "organ projection," as he calls it, is

51. Lux, *Der elektrische Fernseher*, pp. 6, 3.

52. See also the statement: "Such visions in mirrors and crystals cannot be objective, but must rather be simply projections from the organs of vision" (*ES*, 2:194), as well as Anonymous, "Recent Experiments in Crystal-Vision," *Proceedings of the Society for Psychological Research* (1889): 486–521. For a theory of mirror magic within the explanation of psychic television, see also Heinrich Jürgens, *Anleitung zum bewußten Hellsehen* (Instructions for Conscious Clairvoyance) (Freiburg, 1932), p. 19. Here, Jürgens also turns to technological analogies for the purpose of elucidating telepathic occurrences: "In this way we are all living magic mirrors. But to put it in terms of modern technology, we are all also *walking radios*. We have inside us a *transmitter* and we have inside us a *receiver*. Unbeknownst to ourselves, we are thus constantly receiving thought-pictures created by our fellow human beings" (p. 43; emphasis added.) On the use of radio as an explanation for mental telepathy, see also Upton Sinclair, *Mental Radio: Does It Work, and How?* (London, 1930).

of great philosophical and scientific interest . . . The philosophical engineer won't waste his time on random speculations on aviation, but will instead say that nature has solved the problem in the wings of insects and birds and that . . . the human mind must seek out the organ projection of the wing.<sup>53</sup>

Yet, because magic is “nothing but unknown natural science,” the principle of organ projection undergoes an “entirely unforeseen expansion” in du Prel's book (*MN*, 1:14). Although occult human faculties such as telepathy or television may be “designated as magical, as long as the process is not clear to us,” they are in fact based on natural processes. Hence, he claims, it should also be possible to project these magical capabilities as “technological copies” (*MN*, 1:15, 16).

According to du Prel, examples of such technical devices that imitate magical processes are already at hand: wireless telegraphy is a projection of telepathy; the X-ray apparatus corresponds to clairvoyance. For du Prel, the productiveness of any future collaboration between occultism and the natural sciences is therefore obvious: “In place of their perpetual division, natural scientists and occultists should complement each other. Researchers in the natural sciences should translate occult functions into technologies, while the occultist converts technical functions into psychic ones.” Du Prel would also integrate physiology, psychology, and anatomy into this program of how technology and spiritualism should mutually advance each other: “Engineers, physiologists, anatomists, psychologists, and occultists are . . . by nature reliant on each other. The occultist can reveal to the engineer the problems of the future; he can change the blind finder of technology into a purposeful inventor. But it is the engineer who can offer the occultist a scientific explanation for human beings' magical faculties” (*MN*, 1:18).

Of course, this wishful fantasy of a “purposeful” inventor attempts to negate the contingency that marks the cultural construction of a new medium. Thus du Prel scripts a teleological narrative onto a gradual emergence of knowledge that is in fact both contingent and dependent on cultural imaginations.<sup>54</sup> Even today this teleology underlies numerous works on the history of technology, which retrospectively reconstruct a medium's “pre-history” from the vantage point of a cultural realization and appropriation

53. Prel, *Die Magie als Naturwissenschaft* (Magic as Natural Science), 2 vols. (Jena, 1899), p. 13; hereafter abbreviated *MN*.

54. On the decisive role of cultural imagination within the history of technology, see *The Technological Imagination: Theories and Fictions*, ed. Teresa De Laurentis, Andreas Huyssen, and Kathleen M. Woodward (Madison, Wis., 1980).

that could easily have assumed quite different forms. Nonetheless, du Prel's text can also be read as an astonishing meta-reflection on that mutual interaction in which spiritualism and technology partially constitute each other, thereby leading to the reciprocal engendering of technical and psychic television. Du Prel's imagining of an engineer trained in occultism and projecting a device that imitates the occult faculty of tele-sight thereby reveals with exceptional clarity to what extent the conception and construction of a technological medium may depend on seemingly marginal cultural contexts.

According to du Prel, such an engineer could have invented the wireless telegraph even before the discovery of the electromagnetic-wave spectrum: "Our engineer, well-versed in these matters and convinced that physical processes lie behind all magical capabilities, would have confronted the problem of wireless telegraphy and purposefully revealed the physical processes behind telepathy, even before the discovery of Hertz-waves" (*MN*, 1:22). Moreover, an engineer proceeding from spiritualism would not have been limited to constructing a wireless telegraph: "His study of the occult would have taken him yet another step further. Specifically, telepathy frequently manifests itself in conjunction with acoustic phenomena. For instance, a subject in a state of considerable mental agitation who cries out a name may be *heard* by the physically remote addressee, who simultaneously *sees* the sender's phantom image as a telepathically transmitted hallucination" (*MN*, 1:22).

In du Prel's account, the alliance between technological and occult research could not only create an explanation for this magical process but also function as if it were a blueprint for a technical copy supplanting the "psychic lever" (*psychischer Hebel*) of suggestion by means of a material apparatus:

For the engineer, the explanation of this phenomenon as caused by a psychic force is not sufficient. He would conceive of the subject's psychic excitation simply as a *lever* for unleashing a force that acts at a distance; but this force itself is of a physical nature. For exactly this reason he would tell himself that this natural pattern must also be imitable . . . . *Drawing on occultism*, our engineer would in this way apply himself to the creation of an apparatus which would allow us . . . to see as well as hear a theatrical production in our own living room. [*MN*, 1:23; emphasis added]

Here, in a text from 1899—thirty years before the first television broadcasts—du Prel imagines an apparatus for wireless image and sound transmissions into the domestic sphere. Thus, there are two modes of responding to du Prel's question: "How can we become televisionary?" ("Wie können

wir fernsehend werden?“ [MN, 2:293]). First, autosuggestion, which engenders psychic television but occurs only at moments of great “personal involvement,” can be replaced by the “lever of external suggestion” (MN, 2:306).<sup>55</sup> Second, this lever of external suggestion will in the future itself be supplanted by the switch of a technical device: “The magnetizer (that is, hypnotist) will hereafter be replaced by an apparatus; the magnetic capability will be projected as technology” (MN, 1:15).

Apart from the omnipresent categories of magic, du Prel’s fantasy of projecting psychic organs as technical devices additionally introduces the figure of “hypnotic suggestion,” which dominated medical and psychological representations of early cinema.<sup>56</sup> A spellbinding, irresistible influence was similarly ascribed to television during the 1950s, when the technology indeed became a mass medium, often labeled as the “hypnotist in your own living room.”<sup>57</sup> Conversely, fifty years earlier, du Prel had already conceived of the television set as replacing the hypnotist, thereby testifying to how closely television’s cultural invention and reception are connected to each other.

Furthermore, we can conclude that the technological television projects of the late nineteenth century, dismissed by Arthur Korn in the 1920s as unrealizable and “fantastical,”<sup>58</sup> were inextricably linked to the cultural fantasies that also pervaded the contemporary spiritualist theories of psychic telegraph. The successful wireless transmission of moving images in 1929 is therefore by no means the implementation of a medium without discursive precedent, which would have generated itself from its own technical parameters.<sup>59</sup> Instead, television gradually emerged from a surreptitious exchange

55. See also MN, 2:295: “In external suggestion, we possess a lever for releasing magic forces.”

56. On early representations of cinema as a hypnotic medium, see Andriopoulos, *Besessene Körper: Hypnose, Körperschaften, und die Erfindung des Kinos* (Munich, 2000), p. 99; trans. Peter Jensen, under the title *Possessed: Hypnotic Crimes, Corporate Fiction, Hypnotism, and the Invention of Cinema* (Chicago, forthcoming).

57. Anonymous, “Neuer Fernsehstart in Deutschland” (A New Launch of Television in Germany), *Rundfunk und Fernsehen* (Radio and Television) 7 (1950): 10; see also Anonymous, “Fernsehen: Appell ans Unterbewußtsein” (Television: Appeal to the Subconscious), *Der Spiegel*, 2 Apr. 1958, pp. 61–63.

58. “Aside from these copy-telegraphs . . . , there were (in the 1890s) a great number of fantastical television projects based on the use of selenium, which had been discovered in the year 1873. In fact, only the English scientist Bidwell made serious experiments in broadcasting pictures using selenium compounds” (Arthur Korn, “Die Bildtelegraphie und das Problem des elektrischen Fernsehens” [Image Telegraphy and the Problem of Electrical Television], in *Deutsche Beiträge zur Internationalen Tagung der Fernmeldetechniker Como 1927* [German Contributions to the International Congress of Telecommunications Technologists, Como, 1927], ed. P. Craemer and A. Franke [Berlin, 1927], p. 51; emphasis added).

59. The opposite view is held by Friedrich Kittler: “Television means . . . to subject all the complexities of the image to high tech . . . Literatures or fantasies are therefore irrelevant. In contrast to film, television could not be dreamed of before its development . . . . Television was no wish of so-called man, but a civilian byproduct of mostly military electronics” (Kittler, *Optische Medien*, p. 290).

across the permeable boundaries of such clearly demarcated spheres as electrical engineering, the natural sciences, and occultism. The texts, experiments, and technical devices of researchers like Crookes or Lodge merely provide us with an unusually clear glimpse of these often half-hidden borrowings, which did not unfold as “purposefully” as du Prel might have wished. Despite the cultural contingencies that undermine any teleological history of occult and technical television, or even because of these accidental coincidences, du Prel’s metacommentary on the interrelation of occultism and technology may serve as an apt conclusion for this essay. After all, du Prel succinctly captures spiritualism as an epistemic condition for the emergence of electric television. The interaction between occultism, the natural sciences, and technology points, however, to a mutually constitutive relationship in which psychic and technical television render each other imaginable. Thus spiritualism, too, has no claim to any primacy as an all-encompassing origin: “But, alas, no such engineer, well-versed in occultism, has been found . . . Valuable time was lost because it was thought that occultism had nothing to do with technology, whereas in truth it contains the very philosophy of technology” (*MN*, 1:23).