Arno Holz vs. Thomas Mann: Modernist Media Fantasies

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(...) the lyrical, medical, technical. It came as a great inspiration.
Thomas Mann, Magic Mountain

I. Magic Play of Optics

The transformation and intensification of human sight was of great concern to aesthetic theorists and experimental psychologists alike at the previous turn of the century. As Alois Riegl wrote in the early 1900s: “the eyes of modern man can see through organic collectives such as the tree, to perceive beneath the bark thousands of independent quivering organisms.” Recognizing that our “eyes move incessantly,” Paul Souriau in his 1889 text Aesthetics of Movement also concludes that “the number of perceptions that our eye provides at one time is so great that we could spend the day describing everything we see in our visual field in one look.” As early as 1860, photographers and scientists recognized the relativity of time and space and quarreled over how to precisely define an Augenblick, just as they would later debate the trajectory of the flight of a bird, bullet, or light. Thomas Skaife was the first person in Germany to define Augenblickliche Photographie and to use a photographic gun. In a short essay, published in Photographisches Archiv, he writes that “what the point is for measure in geometry, Augenblicklichkeit (blink-of-an-eye-ness) in photography is for time. Time is duration with beginning and end, but Augenblicklichkeit is beginning and end without duration” (precisely that which Henri Bergson will later lament in his discussion of “cinematographical consciousness”). The temporality of the instantaneous event is crystallized. In 1860, there are limitations to what the camera eye can do, much to Skaife’s chagrin. He calculates the speed of light (incorrectly!) at 98 thousand miles a second and laments that “augenblickliche” photography can not match this, nor can it match the speed of thought. Skaife thus finds that the expression photographische Augenblicklichkeit is just as “inexact as the words ‘short’ and ‘long.’” Is Augenblicklichkeit one second, three to ten seconds, or as long as is required for the operation of lifting the lens? His conclusion is to take the word literally—“Augenblicklichkeit is as quickly as one can blink or open and close the eye” (130). He scientifically narrows this down even further to delineate the precise time it takes to register a momentary image, a tenth of a second. In advance of Marey’s famous chronophotographic gun, Skaife’s Pistolen-Camera is created to match the quickness of our eye, to take high-speed instantaneous images, augenblickliche Bilder. But series-photography in its final stages was no longer limited to what occurs within “the blink of an eye.” In particular, it was Etienne-Jules Marey and Eadweard Muybridge’s series-photography studies that sought to outwit the drama of the eye itself. In 1882 Marey designed a photographic gun for chronophotography, to take a series of images at set intervals. The gun contained a rotating wheel with slits. When light passed through one of the slits, a portion of the photographic plate was exposed. At the rate of one hundred photographs per second, great accuracy in rendering movement was achieved. There was literally no end to the objects that Marey wished to render “perceptible.” Phenomena that were previously thought to be “optically empty,” the current, air, light, gas, or a magnetic field, were suddenly put under the photographic enlarging lens. Scientists in the late nineteenth century were obsessed with charting out the alternate rhythms and voices of the universe, documenting not only the diaphanous swirl of the soap bubble, the flight of the bird, and the microscopic movements of the fly, but also graphing the voices of spirits in séances (Marey) and the unconscious of the landscape: the hidden life and tempo of nature, the “time” of clouds, trees, plants, and ticks (Jakob von Uexküll). In the context of the developing fields of biology, physics, and physiology, photographic techniques that aimed to slow down or accelerate motion were used to probe
the multiplicity of nature (the human and animal) as well as the malleability of time itself. The eloquent questions that Walter Bloem raises in 1922, when introducing his chapter on “cinematic tricks” in his treatise on the Lichtspiel, here take on new meaning: “On what star was cinematic man born? On a magic constellation where the laws of nature are suspended? Where time is at rest or goes backward, where fixed tables grow out of the ground? Where the desire to glide through the air or to sink into the ground suffices to do it?”

The idea that time itself is a media trick—a popular leitmotif of the 1920s American and European avant-garde—is certainly not without its nineteenth century predecessors. At the previous turn of the century, one had new cause to distinguish between a sensation, an impression, the external world of nature and the inner world of the senses. The Viennese physicist Ernst Mach and his son Ludwig Mach fantasized about using the new media of series-photography to lengthen or to contract time, imagining a magic lantern show of evolution, where the fragile human life span, from the cradle to old age, could be projected in a few seconds on the screen. Another Austrian physicist-psychologist, Otto Wiener, similarly championed a “cinematographic theory” to account for the revised physiology of limited human “observation.” There was a unanimous understanding in the field of psychology that photography and cinema could enhance the human sensorium, giving the eye or ear more to recover from any perceptual field.

Yet viewing the world through the lens of a modern, machine-enhanced optics also precipitated a nervous crisis. To offset this nervousness, themes of romanticism were translated into the technological, communicated through the camera. Paul Souriau in his 1889 treatise The Aesthetics of Movement conjures up an “aesthetic emotion” and a sense of the “sublime” in “the brute forces of nature and machines: a steam engine, a hydraulic wheel, huge waves beating against a cliff, the wind blowing in a storm, the flash of lightning” (100, my emphasis). He argues that what gives us the most profound “aesthetic pleasure” are falling objects and the lightness of the object: “a dandelion seed, a dead leaf, a snowflake falling gently to the ground, a bird gliding down to a stop, an acrobat spiraling down a rope.” Souriau in 1889 was fascinated by the slow and “magic play” of optics, by the “mechanical beauty” of fireworks, as well as the natural “spectacle.” His interest in what had earlier been “spurned as idle entertainment,” but was now considered “first-rate value aesthetically,” such as fireworks and the almost “invisible” floating scattered clouds of a sunset, is telling indeed. The Aesthetics of Movement puts forth the theory that our appreciation deepens for objects that have a slow or falling movement, luminescent light objects, such as the swirling of the “diaphanous sphere” of the soap bubble:

Let us follow it in its growth. At first, it is only a diaphanous sphere, shining like glass; little by little, limpid light pink and green hues appear and condense in colored clouds; then come images with clearer contours, marvelous ocelli, tears, palmettos, streaks of paisley. The colors deepen; whirls of deep blue in copper yellow appear, wild spots of stormy, somber aspect; by now, black spots are scattered here and there, precursors of the end to come, and suddenly, nothing. The bubble has burst, leaving the eye still enchanted by the phantasmagoria. (136)

For Souriau, it was the photographic technology pioneered by Muybridge and Marey that finally allowed us to penetrate this latent power or phantasmagoria of the image, capturing life in its full ephemerality and fluidity. Souriau reminds us that if the goal of technologically-enhanced knowledge production in the late nineteenth century was to recover a stable ground of observation within the distracting din of modernity, the turn-of-the-century researcher turned to media or philosophical toys such as the microscope, the zoetrope, the chronophotographic gun and eventually the bioscope or cinema to magnify or contract, to slow down, or to accelerate movement, respectively, and thus to heighten one’s awareness of exterior and interior events. This history of resisting cinema as narrative synthesis (instead employing film for the purpose of research or analysis) is precisely what defines a unique transitional moment of a fin-de-siècle modernity that remains for us today, largely, an enigma.

Marey’s and Muybridge’s motion studies research on the movement of men, horses, birds, fish, and
microbial creatures was astonishing at a time when the idea of taking a rapid succession of photographs of a moving object was new. The distinctive signature of Marey’s chronophotography studies shattered the linear perspective of the Renaissance, instead embracing the novelty of an Augenblick/movement split and frozen into a series of infinite phases spread out over the surface of time. Marey’s “time writing” as he initially called it (in 1882 he used his photographic method and a white-tipped baton to inscribe his own name in the air) was a new reading of the intricacies of the body. He described the aim of his investigations to be to interpret “the range, velocity, and sequence of the various phases of movement, not only in walking, but also in running and jumping.”

As Marta Braun explains, a detailed study of Marey’s work necessitates a new history of motion pictures, one that examines the tension in an “aestheticization of the visible” that arises in the arena of early cinematic invention. From a scientific perspective, Marey never desired to reproduce or “visualize” what the eye could already see. The camera was used to capture the fleeting and ephemeral, “complicated movements, which no language could ever express.” His notion of mechanical reproducibility involved revealing nature’s dynamic essence, getting beyond the surface illusions tied to our limited apparatus of human sensory perception. As Braun explains, the real and the visible were not synonymous for Marey, who used photography to fashion a “superhuman eye” to film the micro-movements of a fly and overcome the “illusion” of the senses (254-255). His is a depersonalized photography, quite different from the motion studies of Eadweard Muybridge or the animal portraits of Prussian photographer Ottomar Anschütz. Marey’s photography is a profound
meditation on tempo: it treats the body as an elastic variable, in a manner that greatly appealed to the futurists and kineticists. His work offers us an alternative view of cinema, not as Modernist shock, acceleration and velocity, but as an analytical viewing of natural phenomena. Avant-garde filmmakers and theorists, above all in the surrealist tradition (Jean Painlevé), returned to Marey’s vision of cinema to describe the camera in avant-garde film as an “enhanced human eye, an eye with an X-ray gaze, with microscopic and telescopic optics.” In his film theory of the fifties, Peter Weiss holds that this camera can and should embrace the energetic aesthetics of movement, the magic of optics that originally belonged to the eye itself: “So wie das menschliche Auge ständig in Bewegung ist, so soll es die Kamera sein. Die Kamera als gesteigertes menschliches Auge, ein Auge mit Röntgenblick, mit Mikroskop-und Fernrohroptik” (Weiss 165). (Just as the human eye is constantly in movement, this should be the case with the camera. The camera should be an exaggerated human eye, an eye with X-ray gaze, with microscopic and telescopic optics.) Long before Peter Weiss experimented with avant-garde film, the French physiologist Marey sought to use a superhuman eye to slow down or accelerate movement, to heighten our awareness of our kaleidoscopic world. Chronophotographers Marey and Londe were vehement in their opinion that their photographs should not be animated or projected at a speed where they merely reconstruct what could be seen with the naked eye. In 1899, in response to early “animated” pictures or “living” photographs, Marey writes: “But after all, what they show is what our eyes could have seen directly. They have added nothing to the potency of our vision ( . . .) Now, the true characteristic of a scientific method is to compensate for deficiencies in our senses or to correct their errors. In order to do this, chronophotography must therefore abandon the representation of phenomena as we see them . . . Only slow or accelerated motion offer any interest for scientific synthesis.”

What is important to stress here is that widening perception through machine-enhanced senses signals the entry into a new observational age, one that breaks radically with an older Enlightenment model, or the camera-obscura model of vision. In his seminal study Techniques of the Observer, art historian Jonathan Crary has asserted that the camera obscura was without question the most widely used model for explaining human vision in the seventeenth and eighteenth centuries, but it was also a tool embedded in a larger and “denser organization of knowledge and of the observing subject,” i.e. it was “not simply an inert and neutral piece of equipment.” Crary does not discuss this, but it might be productive to also consider the fear among philosophers that other “early modern” media might threaten this model, above all the microscope. The powerful vision enabled by the microscope during the early modern period was certainly seen by John Locke and others as part of a threatening epistemology of “distraction.” This notion of “distraction” is the same as that of a later German tradition (Zerstreuung): visual entertainment that overwhelms the audience and the senses. For the early modern philosopher Locke, the enhanced sensory perception made possible by the recent invention of the microscope upset the equilibrium of understanding and threatened the solid equation between subject and object, the disembodied contemplative viewing that he describes on numerous occasions by reference to the metaphor of the camera obscura. According to Locke’s camera obscura model, the external world is revealed not through direct sensory perception, but mediated through a “mental survey of its ‘clear and distinct’ representation within the room” (Crary, 46). Crary stresses the “somber isolation” of these early Modern meditative scholars within their walled interior chambers. He holds that the enclosedness of the camera obscura operation (the spectator’s distant dark-room relationship to the objects captured by the pinhole device) is the fulfillment of Descartes’ statement: “I will now shut my eyes, I shall stop my ears, I shall disregard my senses.” Yet far from being an early instance of mechanical objectivity, this Cartesian distrust of the senses signifies an earlier moment of proto-science that abruptly severs the cogito from the raw sensory impressions of the body. Whereas the contemplative mode of the camera obscura dovetails nicely with Cartesian metaphysics, the “distraction” of the microscope served to radically disrupt the norms of the prevailing philosophical system. More attention should be paid to these complications spawned by the microscopic eye and enhanced vision/perception, which are central to the complex discourses that seek to define “classical vision.” It is clear that Marey sees the microscopic and chronophotographic gaze as analysis,
contemplation: in short, the amplifying technologies take the place of reason that the camera obscura formerly occupied. Marey thus bypasses the perceived negative qualities of the microscope as articulated in early modern philosophy – distraction and spatial disorientation – qualities Crary has delineated in his work Techniques of the Observer as unique to the destabilizing stereoscopic vision of Holmes and Brewster’s binocular vision of the nineteenth-century. The rhetoric of new beginnings that Crary has outlined in his study of pre-cinematic culture usefully and powerfully locates the roots of cinematic distraction in the optical wonders of the Victorian age; yet I would argue that an alternative history of cinema that acknowledges the scientific origins of cinema as articulated through the legacy of chronophotographer Marey also needs to consider other early modern philosophical toys and pre-cinematic instruments of diversion, distraction and edification, like the microscope. And it also needs to consider the return of “contemplation” or analysis within the “distraction” of the amplified image. As Marey’s “superhuman eye” reminds us, the nineteenth-century “new vision” of modernity embraces cinematic and photographic technologies as a fulfillment of a microscopic gaze that was always held at arm’s length from the classical “camera obscura” model of vision.

By now we are all too familiar with the clichés of the “new” media revolution of the late nineteenth century – what had previously been “invisible to our eyes” or ears was abruptly and suddenly illuminted through grand spectacles, the ghostly lines of the X-ray, the transmissions of the telegraph and telephony, the high-speed information of instantaneous photography. This utopic discourse on nineteenth-century new media discoveries reaches its apex in the 1920s, when Walter Benjamin credits a new cinematic perception to nineteenth-century media discoveries, the temporal enlarging of series-photography, “the fraction of a second when a person steps out,” and microscopy enlargements of “cellular tissue.” Benjamin appropriates the terminology of film and photography theorists László Moholy-Nagy and Rudolf Arnheim to celebrate a Modernist technique of opening up a “new nature” through a “second technology” that does not estrange man from objects, but instead reconciles man with the machine. Expanding our awareness of time and space through tricks of imaging, including slow motion and close-up analysis is what Benjamin terms, in the surrealist tradition, the “optical unconscious”:

For it is another nature that speaks to the camera than to the eye: other in the sense that a space informed by human consciousness gives way to a space informed by the unconscious. Whereas it is a commonplace that, for example, we have some idea what is involved in the act of walking, if only in general terms, we have no idea at all what happens during the fraction of a second when a person steps out. Photography, with its devices of slow motion (Zeitlupe) and enlargement, reveals the secret. It is through photography that we first discover the existence of this optical unconscious, just as we discover the instinctual unconscious through psychoanalysis. Details of structure, cellular tissue, with which technology and medicine are normally concerned – all this is in its origins more native to the camera than the atmospheric landscape or the soulful portrait. Yet at the same time photography reveals in this material the physiognomic aspects of visual worlds which dwell in the smallest things, meaningful yet covert enough to find a hiding place in waking dreams, but which, enlarged and capable of formulation, make the difference between technology and magic visible as a thoroughly historical variable.

Although early scientific films and magic lantern sequences were sometimes dramatized in order to anthropomorphize microbes and the inner life and struggle of the diseases of the body, Benjamin’s media fantasy picks up on precisely the opposite impulse – cleared out, empty streets (Atget), Karl Blossfeldt’s enlarged plants that now resemble steel, metal, August Saunder’s portraits of itinerary artists that are no longer about the individual, but the anonymous, larger structure of class. The harsh outlines of aura that line the aristocratic portrait (the princely face) are abolished and in their place we find a new face of the collective, contingent and unposed; the newly discovered faces of the natural world are set alongside the surrealist cataloguing of unremarked, anonymous items that had been “cast adrift.” Fleeting information is now transformed into deep experience.
This is what Benjamin elsewhere terms the “anonymous physiognomy” of Russian film. Photographic and cinematic enlargements – magnification in space, close-up and magnification in time, slow-motion – carve out a surrealist space of the fantastic embedded within the natural world of cellular tissue, plants and animals, human physiognomy and physiology. Perhaps it is worth recalling here that the German term Zeitlupe, which Benjamin places in a larger context of photography and pre-cinema, was first coined by German technician Hans Lehmann in 1917 to speak of a “new apparatus” that he argued was analogous to the optical instrument of the magnifying glass. The German technician differentiates between two groups of scientific apparatus, those used for reproduction and demonstration purposes and those used for scientific research. The gramophone, phonograph, photography and cinematography clearly belong to the first set. The microscope and telescope, tools that enhance natural perception, belong to the second group. Yet the two categories intertwine when we enter Benjamin’s arena of the optical unconscious, for as Lehmann writes, the camera can also be used to enlarge our visual sense, when it firmly preserves movement phases, which are too rapid for “our unarmed eyes” (unsere unbewaffneten Augen) (427). “Slow motion” is articulated as a filmic technique of amplifying the image. The “time magnifying lens” tackles the fourth dimension, time, enlarging the movement of an object (428). Just as series-photography or Momentphotographie is described as just another exaggeration of movement and the Augenblick, Lehmann also argues that Reynaud’s praxinoscope device should be seen as a precursor to slow motion (428). It is precisely in this spirit that Benjamin embraces “slow-motion” (not “time-lapse”) and its history in his 1931 essay on photography. As Tom Gunning and others have noted, Benjamin in his statement on the “optical unconscious” poignantly describes the pre-cinematic moment of series-photography, the interior event of time itself, “the fraction of a second when a person steps out.” With slow motion and series photography, no longer are spectators left wondering about the projection of the ghost. In the revised modernist moment of the phantasmagoria, as Benjamin explains, the “secret” is revealed. This formula of the “optical unconscious” thus provides us with an alternate reading of the history of cinema as a series-photography-inspired adventure in optics and medical measurement: just as the microscope expands and animates spaces previously deemed un-observable, high-speed instantaneous photography and its final articulation, cinema and slow motion, were used at the previous turn of the century to illuminate and mobilize microscopic units of time. Cinema was born of this transitional moment, when the art of magnification met the magic play of optics. “New media” thinkers of the late nineteenth/early twentieth-century, from Souriau to the German Bauhaus, delight in emphasizing this trajectory. As late as the fifties, the Marxist author and avant-garde filmmaker Peter Weiss is tempted to speak poetically of the “new ways of seeing” that emerge at the end of the nineteenth-century, a visual revolution that is linked to the technology of chronophotography:


(The amazing visual revolution begins at the turn-of-the-century. The pictorial arts discover new ways of seeing. Naturalism culminates in the discovery of photography, in the possibility to freeze the moment (Augenblick) in absolute exactness. Impressionism smashes external reality into small, shimmering shards. In 1881 Thomas Eakins photographs various phases of an occurrence on one and the same gelatin plate and is able to capture a pole vault and the gallop of a horse in full development of movement. The time dimension is set free, the still-standing image has its own dynamic life.)
Weiss makes a grand, sweeping claim, tracing the avant-garde fascination with new optical worlds back to early photographic developments, such as Thomas Eakins’ multiple exposures of his students, captured with an elaborate two-disk shutter. He follows in the footsteps of numerous film experimenters and media theorists, including Paul Valéry, Moholy-Nagy, and Rudolf Arnheim, who precede him in describing series-photography – the use of high-speed instantaneous photography to set the “still image” free by showing a series of stages of an event such as a pole vault or a gallop of a horse either on one gelatin plate or in a series of successive images – as a departure point for the so-called “new vision” of modernity that recycles Schlegel’s Romantic fragment, now revised to stand in for microscopic penetration of time and space. In the notes to his 1956 book on avant-garde film Weiss writes: “Man will nicht nur das Außen abfotografieren, man will es gestalten, man will eine neue optische Welt schaffen” (151). (One doesn’t want to photograph only the exterior, one must shape, create a new optical world). This cinematic discovery of a new kind of interiority is postulated as another function beyond the epistemological scope of realism. For Weiss the interiority of film is a world of “dreams” and “inner occurences,” of “fragments” (151). In the 1920s, French film theorist Jean Epstein also describes the non-mimetic function of motion pictures as a “psychoanalysis by cinema”:

I recommend this pleasant experience of psychoanalysis by cinema, so much more precise than the Freudian school (. . .) Why compel the sensitive emulsion simply to duplicate the function of our own retina? Why not grasp eagerly at an almost unique opportunity to set a scene from a focus other than our own line of sight?

Prior to the publication of Benjamin’s essays on film and photography, Jean Epstein’s rewriting of Zola’s famous definition of naturalism already detects a “new nature” that is opened up by the lens:

Here the machine aesthetic (. . .) created its masterpiece. The click of a shutter produces a photogenie which was previously unknown. People talked of nature seen through a temperament, or of temperament seen through nature. But now there is a lens, a diaphragm, a dark room, an optical system. The artist is reduced to pressing a button. And his intentions come to grief on the hazards. The harmony of interlocking mechanisms: this is the temperament. And nature is different too. This eye, remember, sees waves invisible to us, and the screen’s creative passion contains what no other has ever had before: its proper share of ultra-violet.

Epstein argues that the “lens reveals the new (hidden) nature of things,” what the “human eye cannot discover” (1981, 13). Moholy-Nagy in 1925 rephrases Epstein’s theory: “The photograph is not simply a means of discovering reality, because nature seen through the camera is different from nature seen with the human eye. The camera influences our way of seeing and creates a ‘new vision.’” In his essay on photography and in the first and second versions of the “Artwork” essay, Benjamin offers a view virtually identical to Epstein’s and Moholy-Nagy’s: “Clearly, it is another nature which speaks to the camera as compared to the eye.” (So wird handgreiflich, daß es eine andere Natur ist, die zu der Kamera als die zum Auge spricht.) His “optical unconscious” is a repackaging of the “new vision” of Moholy-Nagy and the “photogenie” of Epstein. The observing instruments of magnification, the microscope and cinema, are employed by the avant-garde to lay claim to a “new” vision of modernity and a technologically transformed, quasi-prosthetic knowledge.

II. Obsessed with Optics: German Naturalism

It is precisely this claim to a new vision and enhanced perception that ties Paul Souriau’s obscure treatise, which mobilizes series-photography as a model for an aesthetics of movement, to Arno Holz and Johannes Schlaf’s obscure novellas of German naturalism. Writing at a time when the language
used to describe technologically-enhanced “perception” suddenly became more refined, these fin-de-siècle authors inquire into the euphoria and dangers of “modernizing vision,” as human sight is transformed into techné. Appearing precisely in the same year as Souriau’s aesthetic treatise, Arno Holz and Johannes Schlaf’s 1889 volume of descriptive prose, *Papa Hamlet* (penned under the Norwegian pseudonym Bjarne Holmsen) inaugurated a new naturalist form of note-taking in the German tradition.27 Obsessed with optics, light and shadow, and bodily perception, their work was hailed by critics as an extension of contemporary and popular artist movements: pointillism, impressionism, miniaturism. Gerhart Hauptmann, one of the youngest members of the German naturalist movement based in Berlin, however characteristically lamented that Holz and Schlaf “examined” everything “under a magnifying lens.” He urged the authors to translate the study of optical and auditory phenomena into more traditional literary conventions, the theater. The immediate result: a hybrid novella-drama, *Die Papierne Passion*, published in 1890. Only Holz and Schlaf’s naturalist orthography of heightened time-space here overwhelms the reader with an onslaught of ellipses “describing” images and sounds, sensations and impressions. If Hauptmann sought to bracket off the turn-of-the-century time-space “study” of optics as “scene,” the formal result in the Holz-Schlaf hybrid novella-drama was nothing but an exaggeration of temporal and spatial minutiae.

In his earliest theoretical writings published in student magazines, Holz not surprisingly voiced his contempt for realism, which, he insisted, did not penetrate the “kaleidoscopic” nature of urban life. “Realism” itself was impossibly outmoded for Holz. In his memoirs he writes that whereas realism examines events from a distance, using only the “telescope,” the heightened description of German naturalism again aimed to employ a “microscope” to obtain an intimate, close-up portrayal. Explaining the setting in which the novellas of *Papa Hamlet* and *Neue Gleise* (published in 1889 and 1892, respectively) were conceived, he reminisces:

Wir hatten uns hingesetzt, jede Überlieferung von uns abgetan und unsere Sinne nur noch auf das konzentriert, was wir als Wirklichkeit empfanden. So war man in der Literatur noch nie vorgegangen. Ganze ROMANE nach dem Leben, ganze SERIEN von solchen hatte man schon geschrieben. Aber einen einzelnen Stiefelabsatz zu studieren, hatte man noch immer unter seiner Würde gehalten. Man kannte zwar schon das Fernrohr, aber noch nicht das Mikroskop.28

(We sat down, cleared away all distractions, and concentrated our senses only on that which we perceived as reality. This had never before been carried out in literature. One had written entire NOVELS or SERIES after life. But to study a single heel of a boot; this was considered beneath the author. One knew the telescope, but not the microscope.)

Van Gogh’s *A Pair of Boots* (1887) is perhaps an immediate point of reference. The exposure of the upturned heel and undersole de-emphasizes the boots’ “pairness” or “serial” quality, instead foregrounding the unconscious and previously invisible underworld of the material. Similarly, Holz and Schlaf’s naturalist optics illuminate dirt, termites, shadows, optical and auditory minutiae that flicker and flutter about the “misery chamber” of proletarian existence. The authors celebrate a heightened perception made possible by a self-conscious representation of light and shadow. The fleeting phantasmagoria of the soap bubble that Paul Souriau describes could be a scene from Holz and Schlaf’s novella “Ein Tod” (“A Death”). The subject is once again ephemeral, transitory nature:

Die lange Nachtwache, der scharfe Carboldunst, der das ganze, enge, schwüle Zimmer füllte, das feine Ticken der Taschenuhr drüben vom Sophatische her, das leise, unermüdliche Brühen und Blaffen, mit dem sich das Öl in der kleinen, tiefuntergeschraubten Lampe verzehrte, sein eigenes Blut, das ihm in den Ohren summte und zwischendurch wie fernes, dünnles Glockengeläute klang: das alles betäubte ihn! ( . . . ) Die glitzernde Flüssigkeit in dem halbvollen Glase neben ihm, die er vergeblich zu fixieren suchte, war jetzt in einen orangefarbenen Lichtklecks verschwommen, der allmählich ins Bläuliche überging. Schließlich war’s nur noch ein braunroter Funke, der
The long vigil, the acrid carbolic fumes that filled the cramped oppressive room, the faint ticking of the pocket watch on the table by the sofa, the never-ceasing soft bubbling and sputtering of the small oil lamp, turned down low, as the oil was slowly consumed, his own blood that pulsed in his ears and rang at times like the pealing of distant bells: all this numbed his senses! (. . .) The glittering liquid in the half full glass next to him, which he in vain tried to fix his gaze upon, now dissolved into an orange colored light blob, which gradually turned blue. Finally, it was only a rustic red spark which remained, then even this was extinguished. Now everything appeared black! The glass, the bed, the lamp, the entire room . . .

The fluidity of consciousness, the flow of one’s blood, the mutation of light: an organicism invades and inhabits the image. For Benjamin, the interest of art nouveau in the organic is indicative of a society that is trying to come to terms with technological dominion over nature. In the naturalist novella the organic frames the psychological drama of the characters and also gives rise to a cyclical conception of time in opposition to the linear time of the machine. The organic is exaggeration and amplification; the play of sunlight, a drama of heightened optics and sensory perception, the recovery of the “lost time” of the body and nature. The naturalist narrator is a nervous “I/eye,” obsessed with the tiniest optical movements: a blue bottle fly disturbed by the light, diminishing dots in a reflection of light in a glass, the glittering rays of the path of the sun, objects illuminated as light crosses a room.

Literary critics and naturalists Gerhart Hauptmann and Adalbert von Hanstein were threatened by the enhanced optics limned into this naturalism. These authors strongly criticized “consequential naturalism” for its tendency to fall into “distracting” minutiae and chaotic note-taking and recording of sense data. Hauptmann in 1889 in an unpublished letter emphasizes the wealth of detail in the naturalist novella and the resulting danger of unclassified “immediate nearness”:


Hauptmann argues that the Holz-Schlaf naturalist novella needs a labeling of the dramatis personae as in the theater, a separation of voice from scene description. He suggests that the authors frame the chaotic conversation (the unmediated direct speech), arguing for the dramatic presentation of scene, object, and dialogue in order to move beyond blind cataloguing, what he sees as too many “mice,” “singing birds,” and “light spots.” The verdict of critic Adalbert von Hanstein’s analysis of Holz and Schlaf’s Sekundenstil prose follows a similar logic, finding in the naturalist novella a magnified art form. Hanstein’s analysis of Holz and Schlauf takes us back to the subject matter of his
earlier history of science criticism of the physicist, natural scientist, and architect, Robert Hooke. In both Hooke’s sixty observations collected in his *Mikrographia, or some physiological descriptions of minute bodies made by magnifying glasses* (1667) and Holz and Schlaf’s *Papa Hamlet*, Hanstein finds a problem of identification, a pedantic exaggeration of time-space. The naturalists lose their scientific touch by reveling in copious details and thus fail to produce an *Urform* or a *Typus*, the representative form, which, as Lorraine Daston and Peter Galison have argued, powered the scientific drive of the lexica. In 1886 Hanstein writes that he is disappointed to see in Hooke’s “observations” a chaotic random approach. He holds that Hooke’s “superficial” analysis fails to correctly classify or “unify” the organisms:

(What is missing in this analysis is planning and order. In colorful sequences, with little coherence, he describes the most diverse things, which he only classifies superficially according to their external characteristics, whether or not they belong to the plant, mineral or animal kingdoms. Nowhere does he search for an inner contiguity of the observed, nowhere do we find an attempt to comprehend the plant or animal organisms as a unity.)

Hanstein laments that Hooke’s analysis is unfocused: it reaches far and wide, from the colors of metal to urine, from diamonds to “semen, hair, fleas, lice etc. etc.” (14). The author complains that Hooke focuses only on the surface of the object he examines under the microscope, thus failing to differentiate between the external and the internal anatomy of an organism. It is Hooke’s amazing discovery of the pore or cell that is most useful for botany, argues Hanstein, as it offers a glimpse into what Nehemia Grew will identify as the “inner body” of an organism. Unlike Hooke, who presents only “a plethora of observations” (Hanstein, 36) but no overview, Grew is able to identify and unify systematically the various components of the body, such as epidermis and circulatory system. In 1900, when he coins the term *Sekundenstil* to describe Holz and Schlaf’s ekphrastic prose, Hanstein again has the opportunity to attack the lack of an overall structure evident in a microscopic examination, only it is not natural science that serves as the subject of analysis, but “consequential” literary naturalism.

After a bitter end to his collaboration with Holz and following the publication of their second set of novellas in 1891, the collaborator Johannes Schlaf turned away from this close-up world of naturalist detail in order to pursue the mysteries of the *All*, the infinite life of the stars (a not so subtle critique of the “optical unconscious” of his collaborator’s naturalist philosophy). Meditating on Schlaf’s post-naturalist pseudo-scientific interest in the visual, Franz Kafka’s travel diaries recall his visit with Max Brod to Schlaf’s studio in Weimar. Kafka in 1912 is keenly disappointed to find Schlaf mumbling about telescopes, sun spots, and astronomy. The eyes of Schlaf appear “nervous and sick” as he speaks of his geocentric system: “Literature, criticism, painting” – nothing animates Schlaf as much as the optical instruments of his own apartment, as Kafka writes: “Nur die Augen zucken nervös und krank. Spricht hauptsächlich von Astronomie und seinem geozentrischen System. Alles andere, Literatur, Kritik, Malerei, hängt nur noch so an ihm, weil er es nicht abwirft.” (Yet the eyes tick nervous and sick. Speaks primarily of astronomy and his geocentric system. Everything else, literature, art, painting, hangs on him, simply because he does not throw it away.)

Certainly an enhanced optics and a keen interest in perception (*Wahrnehmung*) and the observer set Holz and Schlaf’s novellas apart from other naturalist prose, even within the German tradition. The goal of their collaborative writing, as well as their later work, was to overcome the “language of paper” and create a “living, open scene.” Such tendencies are only exaggerated in their later *fin-de-siècle* oeuvre when Schlaf became obsessed with astronomy and religion and Holz, in his epic poems and
expressionist plays, became obsessed with literary and non-literary technologies of reproduction.

Holz as poet and literary critic was a crowning jewel of German and Austrian Jugendstil. Around 1900 his epic poem, Phantasus, and his theory of a “new lyric” were published in all three art nouveau illustrated magazines, Ver Sacrum (Vienna), Pan (Berlin), and Jugend (Munich). He corresponded with important art nouveau artists and publishers, and wrote a semi-autobiographical account of artists in the Berlin secession, Sonnenfinsternis. Holz collected Japanese paper, drafted architectural plans for an arcade in Berlin, invented mechanical children’s toys, and also dreamt of editing an illustrated history of Berlin. He was perhaps most esteemed for his “middle-axis” lyric (a unique typographic form of Jugendstil: lyric that turns around an imaginary central axis), which celebrated the magnification of everyday detail, advocating a “close-up” ornamental vision. One of his poetry students, Paul Ernst, not surprisingly reads this ornamental vision back into earlier writings, around 1900 describing Holz and Schlaf’s “consequential naturalism” as Momentphotographie, high-speed instantaneous photography. Before the term “slow motion” was coined in Germany, the term “series-photography” and the neologism Sekundenstil were used interchangeably to describe Holz and Schlaf’s fascination with an aesthetics of movement that emphasized the contingency of awareness of the speed with which images succeeded one another. It was Adalbert von Hanstein, the historian who wrote his dissertation on Grew and Hooke and the use of microscopy in botany, who first coined the term Sekundenstil in 1900. Hanstein made use of his background in microscopy and the history of science to experiment with a technical language that could also account for aesthetic transformation, pinpointing within a temporal matrix (a second by second portrayal, Sekundenstil) what Holz himself had already theorized in terms of space (with the microscope). What Hanstein terms the Holz-Schlaf “miniaturism” proleptically describes the cinematic technique of slow motion, perfected only some years later.

Yet whereas Holz himself enthusiastically embraced the microscope as the model for his “studies,” he also argued vehemently that his literature, drama and lyric did not involve a photographic or cinematographic mode of perception, writing in a letter in 1889 to Max Trippenbach “So eine Blindheit! Wie kann ein ‘Hirn’ ‘photographieren’!?34 (What blindness! How can a brain photograph!?)” If we are to consider the common view that numerous fin-de-siècle literati held of proto-cinema and early cinema around 1900, as a public sphere of nervous distraction, penny entertainment, and low-culture fairground attraction, it is not surprising that Holz aligned himself with an alternative conception of cinema as scientific optics and an aesthetics of movement, just as he had also embraced auditory techné and a “phonographic” method as a means of “Overcoming the Language of Paper.” Here we can draw a parallel to Swedish author August Strindberg, who preferred the phrase “brain graphophone” over the metaphor “brain cinema” to describe the flow of memories in a dying man’s brain.35 Whatever the medium, Holz and Strindberg sought to breathe a “new vision” of scientific innovation and pre-cinematic invention into the wonder of turn-of-the-century literary aesthetics.

In his 1899 theoretical treatise, Revolution der Lyrik, Holz in a flamboyant gesture compares the new mobility of his middle-axis Phantasus epic poetry to the variety theater dance form of Loïe Fuller, an American kaleidoscope dancer whose performances received rapt attention from philosophers and artists, including Rodin, Yeats, and Mallarmé. Her swirling aesthetic outlined, for Holz, a new “psychology of movement” that poetry should also strive to emulate. Fuller’s “serpentine dancing” certainly embodied a new lyrical mobility of modernity that was part and parcel of a cinematic age. Transforming herself from snake into sun and moon with the sweep of a flowing garment illuminated by a magic lantern, Fuller employed the fluid lines of her aesthetics of movement on the variety theater stage to depict nature as ongoing mobility, continuous transformation or trick. Just as Sekundenstil in naturalism aimed to capture a heightened record of nature’s phases and faces, just as series-photography and Secessionist art nouveau lithographs sought to capture the flow of birds in flight or ships at sea, Fuller sought to capture the pathos and changes, voices and seasons, of nature itself:

Da kam Loïe Fuller und erfand den Serpentintanz. Die Freude, die Trauer, den Traum, die Nacht, die Sehnsucht, den Himmel, das Meer, die Flammen, die Sterne – sie tanzt Alles! Und die seelische Wirkung, durch eine suggestive Musik noch gesteigert, ist eine elementare (. . .) ist ein neues
getreten – das Licht – und diese vereinigt sind nun dabei, eine Kunst zu erschaffen, die man bis dahin noch nicht einmal geahnt hat. Mit sogenannten Beleuchtungseffekten hatte allerdings auch schon das Ballet gearbeitet, aber sie waren hier nur ganz äußerlich gewesen, nur gewissermassen Unterstreichungen. Erst jetzt, erst seit Loïe Fuller, ist das Licht Hauptmittel. Und eine Kunst scheint bereits denkbar, die nur noch aus Tönen und Lichtern allein besteht!\(^{36}\)

(Loïe Fuller arrived and invented the serpentine dance. Joy, sorrow, dreaming, night, longing, the heavens, seas, flames, stars – she can dance it all! And the spiritual effect, heightened through suggestive music, is amazing ( . . ) something new has appeared – light – and together with other elements it creates an art that no one had fathomed existed until this point. Ballet had already used so-called light effects, but here they would be superfluous, mere accents. Only now, only since Loïe Fuller, has light become a primary medium. An art appears to be on the horizon, which would consist of sound and light alone!)

Holz fawns over Fuller’s flowing form, her multi-media “mood picture” that utilizes the light effects of the magic lantern. Yet only after the halcyon days of Expressionist film (two years prior to his death) can this poet finally sing the praises of the most famous twentieth-century art of lighting, “living pictures.” For the UFA magazine in 1926, Holz served as one of two authors endorsing the film medium. His remarks are not type-set but presented in their true “literary,” handwritten form: “Dem Film gehört bereits die Gegenwart, und es wird ihm auch die Zukunft gehören. Was allerdings nicht auschließt, daß außer ihm und neben ihm auch noch verschiedenes Andere existieren wird.”\(^{37}\) (Film belongs to the present and will also belong to the future. Of course this does not rule out that besides film and outside of film various others will also exist.) In 1936, Nazi director Carl Fröhlich filmed Arno Holz and Oskar Jerschke’s 1904 collaborative play *Traumulus*, which featured Emil Jannings. As early as 1920, F.W. Murnau also purchased the rights to Arno Holz and Oskar Jerschke’s 1911 play, *Büxl*, for the film company Decla Bioscop. But it was not “literary film” that was Holz’s passion. Rather, Holz loved montage and the ability of film to contain the world, as his wife recalls:


(The cinema was particularly attractive to my husband. We were present at every premiere. When the tears rolled during the tragic scenes, he would lovingly pat my hand and say: “It’s only a film.” He loved the visuality of film, its possibility to make the most wonderful believable, to travel in rapid sequence through the most disparate landscapes – from the highest mountains to the ocean floor. In opposition to the stage, which belongs to the word, film appeared to him to be pure art for the eyes. When the sound film came, he was a vocal critic. Silent film brought forth several masterpieces in the twenties in Sweden, America, and Germany. Then Russia presented “Battleship Potemkin.” This work of Eisenstein in its amazing naturalism and its mobility evoked the admiration of the poet. To the question of a critic – “Which film made the greatest impression on you in the year 1926” – he replied: “Battleship Potemkin!”)
In his late epic poetry, it is as if Holz interiorizes the sight-seeing aesthetic of early cinema, “its possibility to make the most wonderful believable,” presenting the spectator with a series of rapid views, a techno-world at a glance. Consider Holz’s veritable spoof of the Victorian “age of invention” or “age of the machine,” Die Blechschmiede. Holz’s poem is a vast compendium of the numerous optical and auditory technologies that lead up to cinema. A cursory glance at Holz’s poem gives us a whimsical history of the long “invention century”: monumental machines, architectural feats, and new techniques (both real and imagined) in audio-visual information gathering. Holz’s epic poem, completed in the early twenties, Die Blechschmiede, or “Großes, lyrisch-dramatisch drastisches, musikalisch-malerisches plastisches, phantastisches, orgiastisches Ton-, Bild- und Wortmysterium” (Grand, lyrical-dramatic, drastic, musical-painterly plastic, fantastic, orgiastic, sound-image-and word mystery) with four cerebral “intermission acts,” treats the bridging of long distances, a “telephone contact” (217), following the first public demonstration of the telephone in 1876, a Zauberokular, magical enlarging lens (217), and a gigantic telescope that allows viewers to see across the globe (223). Among the main “characters” of his poem are the skyscraper (its revolutionary design perfected in the 1880s), an iron monster that breathes steam (the first steam train was exported to Europe in 1830), and the Unsichtbare or invisible “fourth dimension” (Röntgen’s X-ray, first demonstrated for the public in 1896) (180). In this work, wherein Holz satirizes Kaiser Wilhelm II and his birthday “Siegesalle” parade after he returns from a trip to the orient on December 1, 1898 (118) – this section of the poem consists of a montage of quotes taken from the Berliner Lokal-Anzeiger – Holz also dismisses Emile Zola and gives us fleeting glimpses into his own German naturalist literary history. He even parodies a heightened optical approach to “reproducing” the “world”, which he hyperbolically labels a “peinlichst, genaust, buntphotographisch, kameraobskurahaft, reiztelegraphisch” (most painful, most exact, color-photographic, camera-obscura-like, stimulatingly telegraphic) (245) aesthetic.

Upon closer scrutiny, the entire work can also be read as an elaborate description of the history of cinema, now unfolding as a Walpurgisnacht amusement: a spectacle of “primitive, burlesque pictures” (194). The audience cries out “wir wollen uns amüsieren!” (We want to amuse ourselves!), and shortly thereafter the director tells us that the picture, “farbig-lebendig” (life-like and in color) appears, “lingers for a moment, phantasmagorically” and then disappears, like Souriau’s soap bubble (159). The Modernist media fantasy that Holz outlines is one that unequivocally embraces “intermediality,” weaving in and out of different technologies, quoting the newspaper and variety theater catalogues in one and the same breath. Combining literature with other sound and image media, as the subtitle indicates (the poem is marketed as a sound, image, and word mystery) is a primary fantasy of the text. If Holz is here parodying his own technologically inspired writing style, his text is nonetheless filled with a profound nostalgia for a time when the X-ray was hailed as the “miracle camera” and “the new light.” It represents a utopic compendium of the hopes and dreams that nourish new media in the late nineteenth and early twentieth centuries. The unabashed enthusiasm for such media age knowledge culminates in the poem’s search for modern scientific knowledge pioneered by Darwin and Haeckel. Holz’s poem culminates in what resembles a natural science film, a “Struggle-for-Life Entwicklung” that charts evolution in quick-moving images from the Urschleim to the dinosaur and anthropoids (Holz, 228-292).

Early in the epic poem a middle-aged man takes a pointer (Zeigestock) from an impresario and gestures to a transparent screen where “larger than life” quick-changing pictures depicting a colored portrait of “Germany’s favorite work” of caricaturist Wilhelm Busch appear “die schnell wechselnd auftauchenden Bilder mit erstaunlichst-fabelhaftest-elegantst improvisierten, extemporierten, wie ‘geschmierten’ Zweizeilern begrüßend” (quickly changing appearing images, greeted by the most surprisingly-legendlike-elegantly-improvised, extemporized, almost ‘scribbled’ couplets) (90). It is as if the impresario is the “barker” and what is seen is the Wanderkino cinema of attractions. At a later point the transparent screen metamorphoses into a combined magic lantern and diorama, complete with a microscope or magical enlarging lens (which in the poem illuminate microscopic detail such as “snow flees”) and a “wind machine.” The word Holz uses to describe this fantastic “fogey”
presentation is “triorama.” A small excerpt from the poem must serve as a brief introduction to the Fuller-inspired form of his middle-axis lyric. Holz’s asides, uttered by an “author” or “director,” usher in the swiftly moving stream of consciousness as well as the slow, frozen moment of simultaneity. His epic poetry is built upon a series of “whiles” ushering in a plethora of parallel occurrences:

Während sich jetzt
als
letztes
abschließendes,
auftrotzendes, aufbegehrendes, aufprotzendes,
Triumphschaustück
des
ganzen
wandellebigen,
wandelwebigen, wandelschwebigen
Trioramas (221)

While now
as
last,
final,
hanging-on, rebelling, cheering
Triumphalshow
of the
entire
changing-living
changing-weaving, changing-heaving
Triorama

Again what we glimpse through the triorama’s magical enlarging lens, as the critic who introduces another edition of Holz’s collected work has noted, is a time-lapse film of evolution, the “Struggle for Life”-Entwicklung. An encyclopedic epic struggle from primal slime to the brontosaurus is captured in the “weaving” of the dizzying poetry. And then the words break off. It seems Holz has finished his “fantastic” and “impressionist” film history. But nothing is that simple in his lyrical labyrinth with its multiple asides, “whiles,” baroque bells and whistles. In the last lines of the intermission act, an “informed one” (Bescheidener) tries to elucidate the situation. A manager of a coffee shop says “Was? Das war Walpurgisnacht? Die hätt ich anders mir gedacht!” (Huh? That was Walpurgisnacht? Boy, not what I thought!) (351). Evocative of the myriad mishaps and calamities of early cinema, the informed one tells the audience to stay calm “Während die schlecht geölten Räder der Drehmaschinerie/noch misstönig knirren, knarren, knatschen und knietschen:/Geduld, Geduld, wenns Herz auch bricht/(. . .) die blauen Vorhangswolken fliehn/ich hör es deutlich trilin, es wird schon noch was kommen” (while the badly oiled wheels of the turning machine are still clicking, clacking, popping and cracking: Patience, Patience (. . .) the blue clouds of the curtains are raised, I hear it clearly trilling, something is still to come! (355-569).

III. Mann’s Media Hierarchies

In 1929 the relatively obscure author Arno Holz and the eminent literary figure, Thomas Mann, were both nominated for the Nobel Prize for Literature. It was Holz’s fifth nomination, and as the 1929 competition was drawing to a close Mann became increasingly irate. He telephoned Gerhart Hauptmann (Holz’s longtime rival) to lament that it would be “unheard of,” to have Holz represent the
Germans. At the “very least,” he recommended that the award go to Ricarda Huch, a female novelist, philosopher and historian. Other authors were no doubt busily telephoning as well, such as Oskar Loerke, who had vigorously opposed Holz’s nomination three years earlier in 1926. In his New Year’s Eve diary entry, Loerke unabashedly writes: “Telephoned with Stucken and Fulda (also from Scholz) because of the push that Walter von Molo is making for Holz. Wants to use the academy (literary academy) to get the Nobel Prize through. I am enraged. These feeble-minded elaborations: Phantasus-Blechschmiede. Obviously this puts art in a bad place, when the likes of this is pawned off as art.” In a letter to Hauptmann, Mann famously asserts that he would find the bestowal of the prize on Holz “absurd and scandalous.” He surmises that “all of Europe would be in complete confusion, turned on its head” if Holz were to receive the award. Over seventy-five years after Holz’s death, these comments continue to haunt and provoke. A sudden end to our story: Holz dies on 26 October 1929, a day too early for the Nobel Prize. As the award cannot be bestowed on the deceased, it is presented to the “second choice,” Thomas Mann.

Today Holz is forgotten, while Mann’s Magic Mountain is heralded as a grand staging of “intermedial conflicts at the turn of the century.” Certainly if we learned anything from our brief encounter with German naturalism it is that Holz’s career, as opposed to Thomas Mann’s, was far more directly engaged with the hybridity and chaotic “wonder years” of modern media – the 1890s, the aesthetics of movement, the Secession, and science. Using the language of natural science, Holz even claimed to be part of a living and developing organism, not part of any particular literary movement. He spent decades pasting small slips of paper of verse hand-written in pencil into a gigantic edition of Phantasus, another example of his Wunderpapierkorb or “miracle waste paper basket” poetry. Yet in the final analysis, the high-modernist turning machines and media of Mann’s classic novel are easier to approach, perhaps because what Mann ceaselessly strives to create in Magic Mountain isn’t intermediality, but media hierarchies, playing technologies off one another in order to align them with larger discourse networks. Despite their common interest in nineteenth-century new media and the eclectic electric attractions of the Wanderkino period, Thomas Mann and Arno Holz articulate very different media fantasies of Modernism. Mann’s depiction of the frightening fairground effect that the X-ray and cinema imparts in his 1924 novel tells us that visual technologies shape our understanding of the world through a sensationalist Umbildung, by “distracting” and leaping into our space and field of vision. His protagonist, Hans, wavers and waffles under the technological spell of the “magic mountain.” While the various new technological implements, from the thermometer and barometer to the X-ray, serve to measure and “read” the outer and inner-world, their effect on the protagonist is significantly to “distract” him, to keep him mesmerized and in a certain sense, mute, like the empty but “great personality” of the Dutchman, Mynheer Peeperkorn, whom Mann describes as gesticulating and pontificating in silence under the deafening, thunderous roar of the waterfall:

Und plötzlich begann er zu sprechen. Der wunderliche Mann! Es war unmöglich, daß er seine eigene Stimme hörte, geschweige daß die anderen eine Silbe hätte verstehen können von dem, was er verlauten ließ, ohne daß er es verlautete. Er aber erhob den Zeige finger, streckte, den Becher in der Rechten, den linken Arm aus, die flache Hand schräg erhoben, und man sah, wie sein Königsantlitz sich redend bewegte, sein Mund Worte formte, die tonlos bleiben, als würden sie in luftlearem Raum gesprochen. Niemand dachte anders, als daß er sein nutzloses Tun, das man mit betretenem Lächeln betrachtete, sogleich wieder einstellen werde – aber er führt fort, sie hunter bannenden, Aufmerksamkeit erzwingenden Kulturgebärden seiner Linken in das alles verschlingende Getöse hinein zu äußern, indem er die kleinen, müden und blassen, gewaltsam aufgerissenen Augen untergespannten Stirnfalten abwechselnd auf einen und der anderen seiner Zuhörer richtete, so daß der eben Angeredete gezwungen war, mit hochgezogenen Brauen ihm zuzucken und offenen Mundes die holle Hand an die Ohrmuschel zu legen, als ob die Heillosigkeit der Sache irgend hätte bessern können.
(And suddenly he began to speak. What a strange man! It was impossible to hear his own voice, let alone for anyone else to understand a single syllable of what he expressed without expressing it. Holding his goblet in his right hand, he lifted one forefinger, stretched his left arm out, the palm raised at an angle – and his mouth formed words that remained soundless, as if spoken in an airless room. They all assumed that he would immediately cease this pointless activity, to which they responded with disconcerted smiles; but he went on holding forth in the all-devouring din. His left hand made compelling, riveting, cultured gestures that demanded their attention; his little, weary, pale eyes were violently (gewaltsam) opened wide under the raised creases of his brow; and he directed his gaze now at one member of his audience, now at another, so that each of them was forced to nod with mouth open and eyebrows raised and to hold one hand up to an ear, as if that would somehow improve a hopeless situation.)

It is sound, music, that shatters the violent silence of the empty rhetoric of death. And Hans Castorp as audiophile is especially attuned to the tenor and tremors of the magic mountain, even the whistling of the lung, a “reality effect” that profoundly punctuates his first dazed days in the sanatorium. In Mann scholarship, not enough attention has been paid to the truly pivotal technological experience of the novel, the earth-shattering experience of playing phonographic records, after which Hans is gradually filled with a longing to leave the surreal time of the sanatorium. The auditory technology surpasses the clever optical toys or artifices previously displayed in the parlor room:


(An ingenious toy, then, on the line of the stereoscopic viewer, the tubelike kaleidoscope, and the cinematographic drum? Yes indeed – and then again, not at all like them. First, it was not an optical contrivance that the guests found one evening in the music room – some of them greeting it by clasping their hands over their heads, others by folding them reverently with heads bowed – it was an acoustic instrument; and second, there was no comparison to those little attractions (Attraktionen) in value, status, and rank. This was no childish, monotonous peep show, of which they were all tired and with which no one bothered after his first three weeks here. It was an overflowing cornucopia of artistic pleasure, of delights for the soul from merry to somber. It was a musical apparatus. It was a gramophone.) (626-627)

In this environment of “frozen” time where X-ray photographs are carried around in pockets, each body is doomed to join the ranks of the “frozen,” and to bobsled down the mountain. Music changes all this. Fathomed through the new medium of technologically reproduced music, life and death take on luminous colors. Hans finally “felt, understood, and enjoyed,” “sitting there with folded hands” in a reverent position near the artistic machine (593/636, translation modified). The gramophone is clearly a new kind of “ghostly thing” (589/633), for within the isolation of the four walls of the salon, Hans is “alone with the wonders of his apparatus – with the lush achievements of this little truncated coffin of fiddlewood, this small, dull-black temple with its doors flung wide, before which he would sit in an armchair, hands folded, head on one shoulder, mouth open, letting the fullness of harmony spill over him” (589/633).
Whereas a lack of applause confounds the audience at the Bioscope cinema in Davos Platz (the embarrassingly silent pontification of the “great Dutchman” in a certain sense mirrors the mute bankrupt aesthetic experience of the silent cinema), the reception of the gramophone in Zauberberg is one of complete and utter amazement: “They listened, mouths open and smiling. They could not believe their ears . . .” Then the turntable stopped all on its own. It was over. Heartfelt applause” (585/628). The “talking machine,” as it was often dubbed in the late nineteenth-century, is unambiguously christened the “latest triumph of art” in the novel, and by comparing the first Schallplatte listening experience to a “distant” mediated viewing of a painting, Mann tells a tale that is quite different from the obscene close-up penetration of photography or the pre-cinematic experiments in the parlor. Mann articulates a clear hierarchy among reproductive machines. He writes: “if we may drawn a simile from the visual field, it was as though one were to look at a painting through the wrong end of an opera-glass, seeing it remote (entrückt) and diminutive (verkleinert), though with all its luminous precision of drawing and colour” (585/628). The diminution of perspective marks the reproduced music as the perfect juxtaposition to the shocking stereoscopic views or the amplification of the optical illusions presented in the peep-show devices. But later we learn that there are certain records that produce a more accurate semblance of the medium of the voice: “They called for more and got it: a human voice came from the cabinet, a male voice, both gentle and forceful, accompanied by an orchestra, a celebrated Italian baritone – and now there could be no talk of any deterioration (Verschlechterung) or distancing (Entfernung). The splendid vocal organ swelled to its full natural range and power . . .” (586/629, translation modified).

The utopic fantasy of technology in the novel is introduced through the realm of the acoustic. Hans finds the X-ray merely “interesting,” whereas the gramophone stimulates “tense interest,” organizes, orders (“Hans Castorp sichtete das, ordnete das, übergab es, einsam hantierend”) (588/631). The music program of the record collection clearly has Hans busy as a bee. By seizing control of the inventory of the record library, Hans sets himself apart from the other patients. It was “like them” (other patients), states the narrator, to leave things in a mess: “They left everything behind just as it was – the open box of needles, albums and disks strewn about. How like them. He pretended to join them, but quietly left the crowd on the stairs, came back to the music room, closed the doors, and stayed there half the night, hard at work” (587/630). The auditory experience of the gramophone leads to a project of individualized Apollonian Bildung, education ideally consumed within a private sphere. Hans alone is the key-keeper to this device. Jealousy arises and Hans thinks: “Public property? Flaccid curiosity has no right to property, no strength for ownership. ‘Let me do that,’ he had said between clenched teeth ...” (587/630). In fact, as Michael Chanan writes in Repeated Takes, Hans as audiophile is so wrapped up in this private experience of listening to the gramophone that he even dreams of the thing.50 Obsessed by the mechanics of the acoustic cavity, Hans asks how it could be possible that the vibrating sound cavity could produce such a wealth and volume of sound. In the dream the oscillation is almost like “breathing.” Did Mann know that in the twenties the gramophone was also used in medical research as a tool to explore the fullness of life, recording and even amplifying the heartbeat (Figure 2)? In his day dream it is also the gramophone, not the spectral photograph, that is described in fin-de-siècle fantasy terms as “invisible” (588/631). When the “invisible person” sings, Hans rejoices. Our hero is indeed awakened by the “invisible harmonic lovers” (unsichtbar-wohllautende(n) Liebespärchen) of the operatic (589, my translation).
In another “vision” or dream at the end of the “Research” chapter, a female figure reaches out to Hans. Books push down on his chest, impending his own breathing and Hans suddenly sees the “image of life” (Bild des Lebens) beckoning, her blue veins visible and organic essence overpowering. He reaches out for her arm and receives a kiss. The body is yet another mechanical mystery and its secrets (like those of the vibrating membrane of the “magic box”) are not fully divulged. Hans fantasizes about the fullness of harmony and of life, the pounding of the heart, but he is also haunted by the skeletal outline or spectrality of the eroticized body. It is only in the gramophone rendering of Radames and Aida that the “factual future” of the horror of the skeleton, “another set of bones,” is transformed into art, into a fascinating victory of the “sublime.” And indeed, in a day dream, the gramophone sounds of the sublime are mirrored in the organic rustlings of nature: “Insects humming in the hot summer air above the grasses.” An almost stereographic fullness haunts the dream-like resonance, recalling what Sir David Brewster in his 1856 treatise on The Stereoscope, Its History, Theory, and Construction refers to as “in relievo” or in third dimension, instead of the flat visual perception of paintings/drawings, “in plano.” The gramophone vibrations serve to threaten the superficiality of visuality that is imparted in the text through the X-ray image. Here we should also recall that prior to the 1920s the X-ray that revealed “human physiology at its Modernist core” was also flat in more ways than one; as Lisa Cartwright writes, it was significantly devoid of three-dimensionality and voice.

The X-ray might be an instrument or technology that showcases or foretells the future, one’s own death, but Mann’s novel tells us that the reliable way to unlock physiological and anatomical secrets of life and death is to first turn to books and field studies, to diagram and to collect species within the privacy of one’s own study (research chapter) or the folds of the sleeping bag, not to flaunt objects, or put them on public display. It is first in the “Research” chapter, devoted to expensive scientific books, where we discover that the flushed, hot, feeling Hans has is also attributed to a secret stirring of intellect: “Hans Castorp was certain his body was generating increased warmth because of the mental excitement and turmoil that kept him sitting in his lounge chair until very late every sparkling, frosty
night. Indeed, the books (Lektüre) he was reading with such fascination suggested much the same explanation” (250/268). If Mann's brief meditation on the X-ray focuses primarily on showmanship and fetish, on magical exhibition qualities, the gramophone, in contrast, is described as a true “coffin” for private consumption, like reading, which is in no sense obsolete in this culture of the rest-cure. Winthrop-Young writes that Mann scholarship has yet to pinpoint which books on biology, physiology, and anatomy the master raided (Winthrop-Young 41), but the diaries clearly give us the keys to unlocking Mann’s science bibliomania. Mann reads, for example, Jakob von Uexküll’s Theoretische Biologie.\(^54\) He also writes in his diaries that he is reading Oskar Hertwig’s Allgemeine Biologie and On Sunday, August 1, 1920 he asks himself why the stomach does not digest itself. Mann: “We do not even know why the stomach does not digest itself. The usual explanation, namely that the living protoplasm possesses a specific resistance to the gastric juices, rings hollow when we confront the mystery of life” (Diaries 102/457). In addition to books, Hans as amateur biologist, botanist and astronomer also turns to the magnifying glass, microscope and the telescope, yet at times it turns out that these “work tools” are only slightly better than the X-ray when it comes to documenting the existence of life: “Sperm . . . was visible only under a microscope,” but “even the most powerful magnification did not suffice to determine its genesis or allow it to be seen as anything but a homogeneous body – for the sperm of one animal looked like that of every other” (259/277). The famous tricks of the “optical unconscious,” magnification and diminution, only take us so far in this orchestrated symphony of technology of Mann’s Modernism, where all instruments compete for a final accolade. And books and scientific instruments finally pale in comparison to the superlative media event of the gramophone. And it becomes clear, while reading the novel and the diaries, that Mann, even if he is intrigued by the medical, has a very different, almost sinful, passion for the lyrical and musical: “Evenings, and after lunch as well, have played the Gramophone, for which I have an almost sinful passion (für die ich eine etwas ins Lasterhafte abbiegende Leidenschaft habe), and to which I have assigned an important role in The Magic Mountain.” The “superlative Gramophone” (. . .) put to continuous use,” is “a new theme for The Magic Mountain, a rich find both for its intellectual possibilities and its narrative value” (Diaries 84/436).

While he is composing the X-ray scene, Mann is haunted by this second technology. The X-ray has to compete with the gramophone, as we read in his diary entry dated Friday March 26, 1920: “Later I read aloud the X-ray scene from The Magic Mountain. Then Gramophone music. The reading seemed to make no particular impression, which deepened my sense of tiredness” (93/406-407). Also while telephoning on March 23, 1920, Mann notes that there is another technological voice in the background: “After lunch telephoned Richter in Feldafing to let him now I would come tomorrow. (Heard the Gramophone in the background)” (92/404-405). Those familiar with Mann’s diaries will note that the X-ray scene in the novel also recalls Mann’s own biography. For while he is writing the chapter that is called in German “Mein Gott, Ich sehe!” (My God, I see!), Mann visits the X-ray laboratory of a friend. Here his own hand is showcased on the screen. At the time that Mann resumes his research on modern medical culture after a long hiatus, an aura of sickness shrouds his entire family. As he notes with concern in his diary, everyone in his family has fallen ill with a cold or a lung disorder, even the family dog.\(^55\) For Mann, this is a time of heightened awareness of the body, in particular Katia’s, whose sickness or stay in Switzerland in a sanatorium (the doctor’s “threaten” that she will probably have to stay “oben” in the sanatorium six months, as Mann writes to his brother Heinrich in February 1912), served as inspiration for the novel.\(^56\) His wife Katia is again pregnant and suffering from severe nausea. Mann describes the pregnancy as if it were an illness. A baby boy is delivered on April 21, 1919, a day after Mann writes in his diary: “After an interruption of four years I have begun to work on The Magic Mountain again.” (50/205, Mann’s emphasis). In these private notes, Mann reveals how his own fantasies fuel the sensual content of his novel: Friday, March 12, 1920: “After supper, I sat at Katia’s bedside. She had me massage her body, ribs, and breasts, so that I became greatly aroused. The Magic Mountain will be the most sensual book I have written, though in a cool style” (89/396). Soon thereafter, Katia is subjected to a series of X-ray sessions. She falls ill with a sinus infection. Mann is at the same time obsessively writing the “Sudden Enlightenment” section.
Although it was his wife Katia who as a Pringsheim had studied physics with Wilhelm Conrad Röntgen at the University of Munich, Mann is now eager to experience the technology for himself. He makes inquiries to a Dr. Boehm, whom he had met earlier at a party. The doctor “showcases” the technology for Mann on February 24, 1920. “Fine sunny day. Went on making physiological notes for The Magic Mountain. Went walking. Rested a while after luncheon on the balcony. Then to the hospital on the left bank of the Isar (Ziemssenstrasse), where I was taken to Boehm, whom I had met at a party at Ceoni’s. Was outfitted with a white hospital smock and taken into the X-ray laboratory, where I watched while a resident and his assistant took various pictures of lungs and one of a knee joint, both men and women. The doctor also showed me a series of photographic plates (diseased lungs and a stomach ulcer). Let me see the bones of my hand on the screen. Invited me to come whenever I wish to watch. X-rays are scheduled for four o’clock every day, except Saturdays and Sundays” (86/385). On another occasion, Mann interrogates a doctor on a house call, who visits with X-ray plates of Katia’s sinuses. Mann, like Hans Castorp and Arno Holz, is interested in biology and the image, but somehow these scientific images hover just beyond his realm of expertise. Even after Dr. Boehm shows him his own skeletal hand, Mann is quite anxious about the chapter on the X-ray: “Wrote a page of the ‘X-ray’ in some uncertainty, for I have not experienced all of it” (91/401).

The skeletal hand that is illuminated in the novel is perhaps also a reference to the “miracle” of Frau Röntgen’s own hand of 1896, the first example of the “new photography” that was the fruit of the “wonder camera.” Frau Röntgen’s isolated hand appears aloof and commands attention, with its wedding ring clearly enunciated (Figure 3). With Wilhelm Conrad Röntgen’s accidental scientific discovery, the female hand became almost overnight a popular test object and fetish object par excellence. As Lisa Cartwright writes, “the hand is symbolically mutilated and then venerated as an icon of timeless feminine beauty ( . . .) the female body, like the fetish image, is ownable” (115). And this hand is followed by others. In February 1896 another “contribution to the new photography” is published in the popular science journal, Nature. It again represents a “human hand photographed by means of the Röntgen rays” (Figure 4). The scientist writes: “The ring and wire, which were naturally in contact with the flesh of the fingers, appear in the illustration as if suspended in the air.” This hovering, ethereal quality of the hand is so mesmerizing that scientific demonstrators use such X-ray spectacles to entertain large audiences as a separate act preceding or following early moving pictures. Yet soon these showmen complain of a new disease; their skin suffers under the damaging rays.

In Mann’s novel the long-term spectral photography effect or artifact of the X-ray is not at all tied
to true intellect, or a “knowing” or “learning” device, but to an obsessive exhibitionist Schaulust comparable to those passers-by described by Rainer Maria Rilke who gawk at the morgue. The X-ray experience of Hans Castorp is a frightening fairground “seeing,” like the laser telepathy of Caligari’s cabinet that is contained in the “knowing” of a quack-doctor’s chamber. The narrator points out that it was hard to say whether this X-ray chamber was a photographic studio, a dark room, or an inventor’s workshop and technological witches’ kitchen. A parlance of showmanship is used to situate the X-ray anachronistically back in the late nineteenth century, where it was exhibited as one machine among many, as an electric attraction: “‘Eyes open!’ he said. ‘Let the exorcism (Beschwörung) begin.’ Hans Castorp obeyed at once. They heard a switch thrown. A motor started, its angry hum mounting higher and higher, but suddenly reduced again to a drone at the flip of another switch. The floor vibrated steadily. The little red light, a long vertical slit, stared at them, silent and threatening” (200/214). The X-ray along with the cinema are described in the novel as the tools of lower-class showmanship. A merely “interesting” object for public display, as it may be for Hans, it remains only that. Although Hans is suspicious of psychoanalysis (“that's disgusting”), he at first has high hopes for its partner technology, the “invisible portrait” revealed through X-rays. Yet as Settembrini warns, the photographic plate (and spectral-analysis), much like psychoanalysis, is subject to error; it is not an “objective” record of life events. Before the plot is far advanced, the “fetish” character of the “interior snapshot” or “the portrait of Clavdia’s interior (Innenporträt), without a face” (320/343) is established. The X-ray is an “insider” language, an erotic “identification card” (222/238). When the uncle views the headless portrait as an outsider, it nearly sends him into shock:

Mann is wrapped up in the erotic identification, but he does not entertain the wider social possibilities that X-ray technology might bring, even if the setting of the novel, the outbreak of the Great War, could have been cause for Mann to imagine a decisive turning point in X-ray imaging. Prior to WWI new film was developed which made it easier to use X-ray analysis in medicine. By the time of WWII, the X-ray, as a US advertisement for war bonds tells us, was thought of as Bildung, as part of a process of reeducating and reinventing modern man through the eyes of modern medicine (Figure 5). Mann’s text of course couldn’t be further from this wartime hype.
Even the doctor, at the end of the tale, actually dismisses his earlier Röntgen analysis, finding in the most recent picture of our protagonist nothing but emptiness: “We have here your latest photo. Let us hold the wizardry (Zauber) up to the light. You see, even the worst grouser and crepehanger, as the Kaiser likes to say, won’t find much to object to there. . . . the physician sees himself compelled to explore new causes” (574/617). The photography of the so-called professional or physician, in the end, is no less amateur than that of his patients, only Settembrini warned Hans of this long ago, when winded and excited, Hans turned to him and in a stream of consciousness statement about his own health stated: “So far it’s merely a matter of acoustical observation (Wahrnehmungen), and we won’t have any real diagnostic certainly until I’m on my feet again and they X-ray me and take an interior snapshot and then we’ll know for sure (positiv Bescheid wissen)” (180/193). The insider joke is that the diagnosis will be positively settled, once a negative image is taken, an X-ray. Settembrini fears the worse: “Do you think so? Did you know photographic plates often show spots that are assumed to be cavities when they are mere shadows, and that sometimes when something is there, it doesn’t show
any spots at all? Madonna, the photographic plate! There was a young numismatist here who was feverish, and since he was feverish one could clearly make out cavities on his photographic plate. They even claimed to have heard them! He was treated for phthisis – and died. The autopsy revealed there was nothing wrong with his lungs and that he had died of some coccus infection or other.” Hans, aghast: “You don’t even believe in exact science. Does your plate show spots?” (181/193, Mann’s emphasis).63

This conversation on diagnosis indicates that Mann’s Modernist preoccupation with regimes of sight and visual machinery does not necessarily place vision in the service of “theoria,” rather, it mocks the belief that a new vision, even the X-ray, could be a means of gathering systematic knowledge. Sara Danius has asserted that vision is privileged in the text and that the X-ray was “still relatively new” when Mann conceived The Magic Mountain.64 I strongly disagree. Consider, as a point of comparison, a text on the X-ray actually written in 1896, “X-Strahlen Fantasien.” In the Berlin serial Die freie Bühne an article by Egon Stoll appeared anticipating tele-vision, “fernsehen.” In highly poetic terms, Stoll writes of a cybernetic X-ray “eye”—an antenna that could aid us in our everyday attempt to “feel out” reality. Even though we might be tempted in the future to use X-rays as eyes (one advantage would be that we would no longer have to look through “key holes”), he finally notes that the “impractical X-eye” would cause us to stumble and would only point to the idea of the “fourth dimension.”65 Yet his article ends with an incredible fantasy about the possibility of a distant seeing through “invisible photography” (unsichtbare Photographie):

Aber was wohl möglich wäre: wenn es gelänge, die Beziehungen zwischen Lichtätherschwingungen und elektrischen Wellen soweit an das Tageslicht zu ziehen, dass man die eine Form der Energie in die andere umsetzen könnte! Erst dann könnte man von einer wirklich Teleskopie, einem Fernsehen sprechen. Die kurzwelligen Lichtstrahlen, welche sich durch ihre chemische Wirkung auszeichnen und die Reproduktion auf einer empfindlichen Platte ermöglichen, würden dann in elektrische Wellenbewegung umgesetzt durch Vermittelung des Telegraphendrathes, tausende von Meilen durchlaufen und dann wieder in Lichtwellen rückübersetzt, uns das Bild einer Person oder Situation in der treuesten Wiedergabe zeigen. Wir könnten dann mit jedemand nur auf große Entfernung per Telephon sprechen, wir könnten ihn auch sehen (. . .) Welch eine Utopie, wird man sagen!” (295)

(Yet what amazing possibilities, if we were able to spark a connection between light waves and electric waves, so that we could replace one form of energy with another! Then and only then could we speak of a true telescoping, a television (distant seeing, Fernsehen)! The shortwave light rays, which stand out through their chemical effect and make possible reproduction on a highly-sensitive plate, could be transformed into electric wave movements with the aid of telegraph wires, and run thousands of miles and again translated back into light waves, show us the image of a person or situation in faithful reproduction. Then we could not only speak with someone over great distance by telephone; we could also see him (. . .) what a utopia, people will say.)

X-ray fever has hit. The idea that solid obstacles are no longer insurmountable and can be overcome fills Stoll with no small degree of glee. Earlier in the article he writes: “Hindernisse, wirkliche und warhaftige Hindernisse verschwinden einfach vor der magischen durchdringenden Gewalt der X-Strahlen!” (obstacles, true and realistic obstacles simply disappear before the magical penetrating violence of the X-Rays!) (292). The long-term possibilities the X-ray allows one to imagine are amazing, proclaims Stoll: “In short, the future belongs without a doubt to Röntgen and his X-Rays.” (Kurz, die Zukunft gehört zweifellos Röntgen und seinen X-Strahlen) (293). Stoll already envisions the scene of the sanatorium where the doctor examines patients not with a stethoscope, but with the technological arm of “invisible photography”: “der Arzt nimmt seine Crookessche Röhre zur Hand, modifizirt die Intensität der Strahlen so, dass sie die Thoraxwand zwar durchdringen, vor der Lunge aber ‘Halt’ machen; nach Entwicklung der Platte wird sich dann zeigen, ob das Bild der Lunge hellere
Flecken aufweist, oder nicht, und dann wird der Heilkünstler seine Diagnose stellen” (The doctor takes up his Crooke tube, modifies the intensity of the rays accordingly, so that they penetrate the wall of the thorax, but ‘halt’ before the lung; after development the plate will then show us if the picture of the lung has or has not registered light or dark spots, and then the healing artist will voice his diagnosis) (293). Stoll ticks off a long list of medical advantages that the X-ray could offer (the treatment of cavities, gunshot wounds, ulcers), and then the author turns to other advantages of invisible photography, advantages that lie outside the field of medicine. With the aid of X-ray analysis, thieves who swallow their goods could be caught red-handed. And what if an X-ray could be grafted onto a human eye? He recognizes that this isn’t possible, but asks the question all the same.

Mann doesn’t reproduce this utopic language of the late nineteenth century media fantasy, using “invisible photography” to conquer long distances in anticipation of tele-vision; nor does he dream of the X-ray’s forensic possibilities or war time potential. Instead he emphasizes the novelty, the fetish factor and rhetoric of death that was used in the popular press to shroud not only the spectral photography “portrait” but also the daguerreotypes and zinkographs of the nineteenth-century. As we read in an 1849 article in Godey’s Lady’s Book, urban daguerreotypists are “busy at work in catching ‘the shadow’ ere the ‘substance fade.’” The technique is by mid-century already a tried and true way to capture and contain the mass consumer. This is precisely the point. Just prior to World War One (the setting of Mann’s novel) the X-ray isn’t exactly commonplace, but it is certainly no longer a “new technology” and neither is the cinema. Both are born in Germany around 1895 (the Wintergarten Program or six-second looped circus act performances are projected by the Brothers Max and Emil Skladanowsky in Berlin using a bioscope projector in November, 1895). Certainly, it is the spectator reaction to these technologies and the contextualizing of these technologies in an isolated small town sanatorium environment (the magic mountain, a place where time stops or stutters) that re-establishes their novelty, their early wonder and authenticity, and their potential entertainment or distraction. In other words, what Mann continually presents us with in his text are images of a “displaced first encounter” with media. And it is in the cinema scene where the technological chronology, Mann’s Modernist hymn of the lyrical, medical, technical, is most profoundly disrupted and interrupted, as time itself is split into pre and post-war media production. Contemplation and visual distraction remain for Mann two separate poles and in the novel the experience of film as optical entertainment also turns out to be a jarring, somewhat frightening, up-close experience, an entertaining series of episodes:

(The despot died beneath the knife, his mouth opened for a bellow that no one heard. They now saw pictures from all over the world: the top-hatted president of the French republic reviewing a long cordon, then sitting in his landau to reply to a welcoming speech; the viceroy of India at the wedding of a rajah; the German crown prince on a barracks drill field in Potsdam. They observed the life and customs of an aboriginal village in New Mecklenburg, a cockfight in Borneo, naked savages blowing on nose flutes, the capture of wild elephants, a ceremony at the Siamese royal court, a street of brothels in Japan with geishas sitting caged behind wooden lattices. They watched Samoyeds bundled in furs driving sleds pulled by reindeer across the snowy wastes of northern Asia, Russian pilgrims praying at Hebron, a Persian criminal being bastinadoed. They were present at each event – space was negated, time turned back, “then and there” transformed by music into a skittering, phantasmagoric “here and now.” A young Moroccan woman dressed in striped silk and harnessed with chains, bangles, and rings, her swelling breasts half-bared, was suddenly brought nearer until she was life-size. Her nostrils were flared wide, her eyes full of animal life, her features vivacious; she laughed, showing her white teeth, held up one hand – the nails seemed lighter than her skin – to shield her eyes, and waved at the audience with the other. People stared in bewilderment at the face of this charming specter, who seemed to see them and yet did not, who was not at all affected by their gaze, and whose laughter and waves were not meant for the present, but belonged to the then and there of home – it would have been pointless to respond. And so, as noted, their delight was mixed with a sense of helplessness. Then the phantom vanished. A bright void filled the screen, the word Finis was projected on it, this cycle of entertainments was over, and the people left the theater in silence as a new audience pushed its way in, eager to enjoy the same cycle of events.) (311-312, translation modified)

Finis is Mann’s not so subtle signpost that these visual technologies freeze time, speak of a parceled past or ominous future, not the present, thus evoking Henri Bergson's well-known criticism of the ordinary conceptual thinking of the “cinematograph” (this is not to say that Bergson was attacking the apparatus outright – around 1913 he publicly endorsed the use of film to forward intellectual, scientific and philosophical inquiry). The same feeling is produced by the X-ray print one carries around listlessly in the pocket, although it offers a few surprises, for example the shock during a “second sight” seance when the X-ray photograph of Clavdia is zapped back onto Hans’s lap. But the surprise is only possible because of Mann’s carefully scripted use of film and photography as part of a Modernist play on temporality that circumscribes the entire novel and reaches its most intense peak in the bioscope presentation.

If Mann’s references to “parlor devices” and attraction-based technologies actually outline a rough chronology of early cinematic invention (with the glaring omission of series-photography and the magic lantern) – stereoscope (Sir Charles Wheatstone 1831), kaleidoscope (Sir David Brewster, 1814), zoetrope/phenakistoscope (Joseph Plateau 1833), panopticon (museum of amusements, 1820s), X-ray (Wilhelm Röntgen, 1896), culminating in the cinema (1895), magnesium color photography à la Lumière and dark room developing (1900), and finally the fancy fin-de-siècle phonograph – the Davos cinema scene works in the novel within this chronology as an anachronism. In the program of the Bioscope theater Mann first describes the plot of a post-war sensationalist feature film of the twenties, Ernst Lubitsch’s Sumurun (Arabian Nights, 1920), a film with Pola Negri as erotic dancer that Mann saw in the “Lichtspieltheater” on Sendlinger Tor on September 20, 1920. The film is described in Zauberberg as a “rousing tale of love and murder in the court of an Oriental potentate,” a tale full of “naked bodies, despotic lust, and abject servility,” a film “produced with a sympathetic understanding of its international audience” (290-291/311). [Movie Clip 1, Movie Clip 2]. In the final sequence of this film, the sheik is murdered and opens his mouth for a deadly scream
Then a reel-change occurs and Mann switches gears, now reeling off images that are classically bound to the form and thematic repertoire of the late attractions-based cinema. He famously describes a woman who steps up to the camera, soliciting, in true “cinema of attractions” fashion, the attention of the spectator. Several pre-war non-fiction films or travelogues are enumerated in this scene. Here the reader is reminded that in opposition to Peter Altenberg and other fin-de-siècle Modernists who championed the coming of the cinema as a revolutionary way to bring art to the masses, Mann in a seminal essay on film asserted that the cinema was not art, but rather “crudely sensational” effects of life. The “tears flow in the darkness” writes Mann. Yet the author in the 1920s writes that he enjoys the love stories, tricks, travelogues (Reisebilder), newsreel or Wochenschau pictures and also the “wildness” (wilde Welt) that he sees on the screen (387). And this is precisely what Hans experiences in the bioscope theater. The film program that follows Sumurun first highlights travels of Eastern and Western royalty. This is followed by sightseeing images “from the entire world,” heavy on Eastern loci. In essence Settembrini’s earlier warning about the “dangers of the East” (sloppy sense of time schedules) is given full narrative closure not only in Sumurun, yet another tale of the dangers of Bagdad, but also in these filmic images of “wildness,” of the slanty-eyed or wide-eyed “other,” savages full of “animal life” (voll tierischen Lebens). “Primitive” cinema is used to showcase primitives, to display artifacts of native culture. Mann finds in the performance of silent cinema, “primitive implausibility” (primitive Unwahrhaftigkeit). These pre and post-war moments of film production offer distracting and brazen depictions of orientalism and the body.
Film, like the X-ray, is about sensationalism and the body, orientalism and an exoticized other. In Mann’s text the cinema does not mark “fullness.” It ushers in an almost shameful encounter with the loss of the German colonies in Africa and the South Seas, which was legally confirmed by the Treatise of Versailles. Lubitsch's Orientalism and the travelogues that follow this main melodramatic feature film, including the story of the Japanese prostitutes and the short feature on the German Colony or Protectorate Neu Mecklenburg, invite a contemplation of imperialist dreams that were rendered bankrupt after the Great War. The cinema scene is a sensuous layering of pre and post-war films that focus on colonialism, exoticism and the body. Post-war Orientalist pulp, injected back into the scene, is meant to play off the pre-war scenarios of imperialist “imaginary travel”; Mann’s post-war readers applaud phantoms.

In Mann’s novel of the twenties, the “sightseeing” encounter with early film and X-ray photography fails as a utopic “new vision” of modernity, just as psychoanalysis fails as an illuminating “intimate photography” (photographie intime) or “interior portrait” (“interior view” (Innenporträt, Innenaufnahme, Innenansicht, portrait intérieur)). It is yet another bulky “discourse network” of 1900 that Mann’s figures must move through, along with the heavy calligraphy of the Berghof bills. Like the flat and transparent X-ray images, which in the novel strip characters of agency, film in The Magic Mountain offers a fragmented, fractured vision of a failed colonial empire, not the “fullness” of time that Mann dreams of in his diaries. Early film is troped as a site of spectacle but also scopophilia, loss and mourning, one that is severed from science and a biological “image of life,” what Holz terms a “Struggle-for-Life”-Entwicklung. Hans’s search for an organic totality or Bild des Lebens (image of life) does not lead to the lascivious lebende Bilder of imperial Germany, although Mann composed the two chapters on biology and film at approximately the same time (1921), while reading the work of Jakob von Uexküll, a scientist and photographer who used film theory to elucidate biology, in particular mobilizing slow motion and time-lapse techniques to analyze and theorize animal perception. A few years after writing the “film episode,” however, Mann did in fact link the two languages of “instruction,” science and film. In an article entitled “Der Film, die demokratische Macht,” published in 1923, Mann speaks of a cinematic recording of a surgical operation that he saw in Madrid. Mann writes that Professor Rothe’s operation on the brain and appendix is “glanzvoll!” “brilliant!” In this same article Mann also writes (surprise, surprise!) that he is not too fond of the “film drama;” rather, he is more enamored with the imaginary travel of the film theater, the view, making the distant or Fern im immediate. His examples of exotic “distant” views in 1923 are in fact the same travelogues highlighted in the novel: an Indian marriage ceremony, a New Mecklenburg village, scenes from Russia, Persia, Samoa, etc. But it is in the scientific film, the operation, that Mann finds in 1923 the most “noble use” of the cinematograph, “Welch Lehrmittel!” (What an instructional tool!). Only instead of the scientific or organic, all that remains of this dream of cinema in the novel is the spectrality of the exotic. In The Magic Mountain the “whiff of spookiness” (202/216) that lurks in the X-ray chamber and frames the fragments of the human body is forever mirrored in the eerie darkness and absence of actors in the film theater. The most redeeming aspect of the bioscope program in the novel is the promise that the variety theater film can be “transformed by music into a skittering, phantasmagoric ‘here and now’” (292/312) (a phrase that Mann also repeats word for word again in his 1923 essay on film as a democratic power). Yet the “trivial music” that frames the living pictures is a far cry from the ornate overtures of the Polyhymnia.

In his diaries and short essays, Mann did toy with the idea that The Magic Mountain was the most filmic of all of his texts. On Thursday May 19, 1921 Mann writes in his diary: “After breakfast in the garden, into town for a motion picture preview on Sonnenstrasse. I was in a receptive mood, finding much I honestly liked in the first and longer film. What captivated me in a philosophical sense was the simultaneity of things, of differing aspects of life, the sense of ‘meanwhile.’ There ought to be a film made with the title ‘The Fullness of Time’” (Was mich philosophisch fesselte, war die Gleichzeitigkeit der Dinge, des geteilten Lebens, des ‘Unterdessen.’ Ein Film wäre zu entwerfen mit dem Titel ‘Die Fülle der Zeit’) (114/518). While writing the final sections of the text, his philosophical interest in time, perhaps the most important aesthetic concern of the novel, was itself peaked by an exposure to
technologies such as the cinema. In his essay “Über den Film,” the author again considers the multilayered attractions of Magic Mountain as a type of film stock or material: “Ein hervorragender Berliner Unternehmer hat tatsächlich eine Weile daran gedacht, den ‘Zauberberg’ auf die Leinwand zu bringen, was mich nicht einmal wundert. Kühn angegriffen, könnte das ein merkwürdiges Schaustück werden, eine phantastische Enzyklopädie, mit hundert Abschweifungen in alle Welt, und die um ein episches Zentrum Visionen aller Gebiete, der Natur, des Sports, der Medizin und Lebensforschung, der politischen Geschichte usw. ordnen würde” (390). This visual encyclopedia of Magic Mountain as Mann reels it off again recalls an eclectic variety theater or early cinema program. However, it is precisely this “variety theater” understanding of film that fails as a complete representation of the “fullness of life” in the novel. In fact, variety theater images are used repeatedly by Mann to suggest an artificial and unsatisfying image of life. Once the hero compares a patient in a tuberculosis sanatorium to a “wax figurine he once saw in a panopticon . . . there was a mechanism in her breast that made her breathe.”

The panopticon and the picture of the breathing wax figurine is another hidden reference to Germany’s pre-cinema history, again reminding the reader of film’s first decade when it was a collection of amusements and mirages, an enhanced cabinet of curiosities.

In Magic Mountain we discover that it is in the consolation effected by the gramophone, not the voyeurism of the visual or cinema, that Hans finds a “fullness” of harmony that is analogous to a syncopated “image” of life and death, something he fails to piece together in the earlier stages of the novel. For Mann in the gramophone scene education can be transposed into a different key, the humming media of modernity. The Magic Mountain is the first German novel to disentangle Bild from Bildung, while also challenging the more avant-garde confidence in a “new vision.” In keeping with the “media hierarchy” that Mann has carefully constructed, it is the “invisible” gramophone, not the film or the X-ray, that is the true coffin for the future. Hans, in the novel (like Mann at home) is listening to the death-scenes of Valentin (Gounod’s Faust) and Aida and Radames, entombed in the pyramid in the final scene in Verdi’s Aida. The gramophone also “records” Schubert’s Lindenbaum and even in its absence accompanies Hans and the reader into the trenches of the First World War. Just as the gramophone in Mann’s novel offers a “consolatory” form, the auditory, rather than the voyeuristic distractions of the visual, the “Linden-tree” is the true signpost of a “taking stock,” a media record of Hans’s consciousness. The readers of the novel are forced to witness and record Hans’s own intellectual experience. “Does anyone believe that our ordinary hero, after a certain number of years of hermetic and pedagogic enhancement, had penetrated deeply enough into the life of the intellect and the spirit for him to be conscious of the “significance” (Bedeutsamkeit) of this object and his love for it? We assert, we record, that he has. To him the song meant a whole world, a world which he must have loved . . .” (598, Mann’s emphasis/641, translation modified). If the X-ray image or skeleton is the fetish or “vulgar horror,” the Lied is what fleshes out the body. It is a restorative, a panacea. Finally for Hans (without the aid of Settembrini) the two poles of human existence achieve a full and dialectical harmony. Settembrini’s notions of the lyrical and technological merge, thereby framing the “medical” and giving it new meaning. It is the gramophone that allows Hans to aestheticize and judge death. Preserved on the photographic plate, death is a faint attraction, whereas the whirling jetty of the gramophone record, death is knowledge and contemplation.

As we move from the X-ray presentation to the gramophone performance, Hans’s relationship to techné changes. The mystical “sight” of the X-ray in the novel simply cannot be complete until it competes with “second sight” and the technology of the gramophone during the experiment of the séance. The supernatural scene of the séance rehearses the darkness and uneasiness of the X-ray chamber. The telepathy experiment is a variety theater event restaged, a process now facilitated by music. Certainly Mann knew that in the late nineteenth and early twentieth century “neocultism” flourished and X-rays were often part of the performance. As we read in an 1897 treatise entitled Magic: Stage Illusions and Scientific Diversions: “X rays, after becoming the indispensable coadjutors of surgeons, and even of physicians, are now competing with the most noted mediums in the domain of the marvelous.” Operators used X-rays to force unusually “coy” spirits to cooperate. Only in Mann’s Zauberberg, the X-ray is tired of competing. Whereas the X-ray suddenly appears as a memento in the
first séance that Hans attends, it is conspicuously absent from the second séance. It is not the “X-ray” here that is the pivotal technology used to “facilitate” the luminous experiment, it is the gramophone, coupled to our protagonist, that sets the mood. And again, it is Mann’s own biography that fuels this media fantasy. Mann keeps a record of the séances of the parapsychologist Dr. Albert Freiherrn von Schrenck-Notzing in Munich from December 1922 until January 1923. In *Okkulte Erlebnisse*, also published in 1924, the author describes his first séance. In particular, Mann is fascinated by the role of the medium and the media or recording devices that are used to frame and record the event. Present at the séance is a musical device, a *Spieldose* (the bland musical program is also augmented by a *Ziehorgel*). Without music, we learn that Willy the medium cannot operate. This music box clatters and chatters alongside typewriters and other recording devices. But the lab is also filled with visual technologies, a photographic studio, and in Mann’s memoire there is yet another meditation on a hand that is showcased through media technology – here it is the memory of an ectoplasm hand preserved in plaster. Yet is this a true laboratory of testing, this scene of the paranormal? The question remains: which media tell the truth and which media are *Betrug*, deception? (*Okkulte* 34). Again the visual is shrouded in doubt. Without the inspiration of acoustics the medium cannot function. Despite the machinery and experiments, this lab is propelled by the subjectivity of the “all too human.” As witness and agent of this “all too human,” Mann is invited to hold the hands of the medium, a scene of intrigue that is replicated in the novel when Hans is also invited to “control” the virginal child prodigy, Elly Brand. Yes, Hans also has an increasingly important role to play on his techno-terrain. No longer the subject or object of the “technological arm” (as Crook’s tube was described at the previous turn-of-the-century), already in the gramophone scene he wields the arm of the record player with new precision. Our hero is no longer a mere patient, but an operator or scientific demonstrator and Mann’s narration emphasizes the importance of the newly established hierarchy.

![Figure 10: The Spectacle of the Operator](Hopkins, Magic: Stage Illusions and Scientific Diversions, 1897)
Hans finally takes the place of Dr. Behrens, and in the seance “speaks up” somewhat uncharacteristically. Hans chooses the music during the séance (Faust, “Valentin’s Prayer”) and no one dares stop the apparatus after the record runs out: “Aber niemand stoppte den Apparat” (625/670). The new agency Hans has gained via the gramophone is a signpost for a revitalized and media-conceived Bildung. Hans is not only invited to control the “medium,” with hands folded, he also becomes the medium, the reproductive machine. Hans is no longer on the periphery of the sanatorium attractions and diversions. He has to discard the books on old technology (e.g., his Ocean Steamships), as well as discard the family album of photographs and all photographs in general, before he can step up to the “plate” in the novel. And it is not the photographic, but the gramophonic “Platte” with its cryptic script that is most important for Hans’s subject formation. I believe there are grave errors in conceiving of his formation as photographic development or Entwicklung, as critics have recently asserted, for Entwicklung implies that Hans already contains the innate blueprint for his own bourgeois Bildung. Yet Mann’s time-romance is constructed quite differently. If the photographic plate and the auditory plate both record the past, their relationship to the future is not the same. In photographic representation, the relationship is one of Entwicklung: something already present, dormant, unfolds, and develops. There is no promise for the future embalmed in the photographic gaze; rather this gaze is a reminder of our own transience. In the attraction of the gramophone record, however, as Adorno and Mann both note in the thirties, there is in the form itself a spiraling forward, an onward circular motion that anticipates eternity. Adorno praises the form of the phonograph record as the reconfiguration of writing: “It is covered with curves, a delicately scribbled, utterly illegible writing, which here and there forms more plastic figures for reasons that remain obscure to the layman upon listening.” In its spiral structure “the form of the phonograph record finds its true meaning (...) the scriptal spiral that disappears in the center, in the opening of the middle, but in return survives in time.”

In its spiral structure “the form of the phonograph record finds its true meaning (...) the scriptal spiral that disappears in the center, in the opening of the middle, but in return survives in time.”

Mann’s media hierarchy, with the phonograph situated at the very top, thus resonates with Adorno’s conclusion in “The Form of the Phonograph Record,” that the gramophone has absorbed all other technologies in a final burst of artistic invention. Whether or not they offer transcendence or merely a foreboding formulation of the traffic of technology itself, phonograph records are figured by both authors as “the black seals on the missives that are rushing towards us from all sides in the traffic with technology; missives whose formulations capture the sounds of creation, the first and last sounds, judgment upon life and message about that which may come thereafter” (Adorno, 61).

In the supernatural world, Hans is akin to a telephone operator who hears and speaks the poetry of the past, while anticipating the future. This intertwining of message and medium continues as Hans plummets into the war trenches. There he recalls the waving branches that whispered a message; the loving words of media fantasies.

The inscriptions on the Linden tree now come to resemble the very lines carved into the gramophone, the communication code of music. Hans becomes the “medium” and the uncanny “message” that is forever whispered into his wartime ear.

Notes


3 Thomas Skaife, “Augenblickliche Photographie, die Pistolen-Camera, und eine neue Art von Fassung für positive Glasbilder,” *Photographisches Archiv* (Vol 1, 1860): 130-133, 130; my translation.

4 Walter Bloem, *Seele des Lichtspiels: Ein Bekenntnis zum Film* (Zürich: Grethlein, 1922), 53; my
translation.

5 See Otto Wiener’s *Die Erweiterung unserer Sinne* (Akademische Antrittsvorlesung gehalten am 19, Mai 1900) (Leipzig: Verlag von Johann Ambrosius Barth, 1900). In addition to championing a “cinematographical theory” to account for the “heightened knowledge” (*Erkenntnis*) and “enriched experience” (*reiche Erfahrung*) of technological modernity, Wiener also speaks of an “electrical sense” (*einen elektrischen Sinn*) that is cultivated through the use of electrical apparatus. *Physik und Kulturentwicklung* (Leipzig und Berlin: Verlag und Druck von B.G. Teubner, 1919) is a cultural history of the microscope, the telescope, telegraph, the x-ray, high-speed photography, slow motion (using the new term proposed by German technician H. Lehmann: *Zeitlupe* or *Zeitmikroskop*), etc. Wiener here writes that the new German museum of technology in Munich will prove that “technology has risen” and now serves the higher aim of *Kultur* (91).


7 The unique contribution of Marey to the field of cinema has been described lucidly by Marta Braun in *Picturing Time: The Work of Etienne-Jules Marey* (Chicago: Univ. of Chicago Press, 1992), 150-198.


9 Also see Scott Curtis, “Cell Life, Physiological Time, and Microcinematography, or The Chicken that Ate Manhattan,” *Cinema & Cie: International Film Studies Journal*, No 3 (Fall 2003): 58-65. As Curtis explains, the story of microcinematography also begins with Marey.

10 Peter Weiss, “Anhang” (1956), *Avantgarde Film*, German trans. Beat Mazenauer (Frankfurt am Main: Suhrkamp, 1995), 165. Weiss also traces the history of “living” or moving pictures back to Marey’s physiological station in Paris and his chronophotographic study, “La marche de l’homme.” For Weiss, Marey’s image of a subject dressed in white walking in front of a black hangar was a “visionary attempt to integrate man and landscape into a unified composition” (13; my translation).

11 Etienne-Jules Marey, preface to *La photographie animée*, Charles-Louis Trutat (Paris: Gauthier-Villars, 1899), ix; my translation. For a detailed discussion of how a zoetrope and slow-motion and high-speed analysis could be used to service Marey’s scientific ideal of capturing “invisible” phases of motion, see his “La chronophotographie: Nouvelle méthode pour analyser le mouvement dans les sciences physiques et naturelles,” *Revenue Générale des Sciences* 2 (1891): 689-719 (Translated into German by A. von Heydebreck as *Die Chronophotographie* (Berlin: Mayer und Müller, 1893)). In this treatise, Marey also celebrates Ernst Mach’s earlier media fantasy of utilizing chronophotography and a magic lantern or *phenakistoskop* to project early time-lapse pictures: the evolutionary stages of the growth of an animal or embryo, or even “curious” images of human aging (from the earliest days of childhood to old age).


13 Crary, following Richard Rorty, links Locke with Descartes in order to describe an observer that is
“fundamentally different from anything in Greek and medieval thought” (43). To be “in camera” according to these philosophers is to employ an “inner eye” of reason and judgment. The camera obscura model values perception of mind over perception of vision (42-45).

14 In his convolute on the collector and in the “Artwork Essay,” Benjamin makes a useful distinction that I would like to employ here between Sammlung (collection, but the word also means contemplation) and distracted and scattered Zerstreuung, both a state of cinematic spectatorship and also a state that objects are in before being ordered. The terms are highly polysemous for Benjamin. He also uses the term Sammlung to illustrate how vision operates – light rays coalescing or collecting on the retina. Benjamin proposes a dialectical relationship between the two (terms). In his Arcades Project Benjamin writes that the collector is “touched” by the chaos, the state in which things already exist in the world. He has to “struggle against” and at the same time work within this distraction or chaos: “Vielleicht läßt sich das verborgenste Motiv des Sammelnden so umschreiben: er nimmt den Kampf gegen die Zerstreuung auf. Der große Sammler wird ganz ursprünglich von der Verworrenheit, von der Zerstreutheit angeregt, in dem die Dinge sich in der Welt vorfinden” (279). Walter Benjamin, “Der Sammler,” in Das Passagen-Werk ed. Rolf Tiedemann (Frankfurt a.M.: Suhrkamp, 1982): 269-280.


18 Lehmann asserts: “Analogue der Wirkung der optischen Instrumente, der Lupe oder des Mikroskopes, welche die drei räumlichen Dimensionen körperlicher Objekte vergrößern, kann man mit der Zeitlupe auch die vierte physikalische Dimension, nämlich die Zeit, innerhalb welcher ein Objekt eine Bewegung ausführt, vergrößern” (428, his emphasis).

19 See n. 15.

20 In his lucid essay, “Never Seen this Picture Before: Muybridge in Multiplicity,” published in the Stanford catalogue Time Stands Still: Muybridge and the Instantaneous Photography Movement, ed. Phillip Prodger (Stanford Cantor Center: Oxford University Press, 2003): 222-257, Tom Gunning writes that it was the series-photographer “Muybridge, who more than any other figure, introduced what Walter Benjamin, decades later, termed ‘the optical unconscious’” (224). However, one could perhaps argue that E. J. Marey’s chronophotography was an even more fitting model. Mary Ann Doane also draws an analogy between Marey’s interest in expanding the senses and Walter Benjamin’s “optical unconscious” in her text, The Emergence of Cinematic Time: Modernity, Contingency, and the Archive (Cambridge: Harvard University Press, 2002), 133. Perhaps it is significant in this regard that Marey’s scientific exploration of the infinitesimal is part of the cultural history present in Benjamin’s convolute on photography in his Passagenwerk (Y 7a.I: Benjamin quoting Roland Viliers, Petite
histoire du cinema (Passagenwerk, 839)). In this text Benjamin does not reference Muybridge’s work.

21 The date of Eakins’ multiple exposures was actually summer 1884. On Eakins’ photographic studies and his collaboration and frustration with Muybridge see the introductory essay by Anita Ventura Mozley in Muybridge’s Complete Human and Animal Locomotion (1887) (New York: Dover Publications, 1979), vii-xxxviii.


24 László Moholy-Nagy, Painting, Photography, Film (1925) (Bauhaus Book) (London: Lund Humphries, 1969). Gisela Freund, the historian and photographer who inspired Benjamin, as late as 1980 falls back on Moholy-Nagy’s discovery of the new angles and perspectives made available through photography in order to describe the “new eyes” that man has acquired to view his surroundings. See Freund, Photography and Society (Boston: David R. Godine, 1980), 198.


27 Born in East Prussia in 1863, epic poet, German naturalist, and theorist Arno Holz was a prolific writer whose work brought him short-lived fame but no fortune. In an especially unproductive period from 1890 to 1900, Holz turned to handicraft, and fell back on the art of “basteln” to earn his living. He invented several children’s toys, including a mechanical mouse, a medieval toy castle, and a patented drafting and construction kit (“Zeichenbauten-Erziehungsbauspiel für Kinder”). Georg Lukács wrote in his dissertation on the history of modern drama that Holz, also a naturalist poet and prose writer, stayed simply an inventor, an “extraordinary experimenter,” a “formal talent” who failed to realize his own technique. Holz’ collaborator, Johannes Schlaf, is perhaps best known for his historical dramas. See Georg Lukács, Die Entwicklungsgeschichte des modernen Dramas, in Georg Lukács Werke, ed. Frank Benseler (Darmstadt: Luchterhand, 1981).


29 Bjarne P. Holmsen (Pseud.), Papa Hamlet (Leipzig: Carl Reissner, 1889), 153; my translation, orthography as in original.

30 Gerhart Hauptmann, “Brief an Arno Holz and Johannes Schlaf,” (12.2.89) Arno-Holz-Archiv
(Zentral und Landesbibliothek Berlin); my translation, orthography as in original. In 1889 when Hauptmann writes this letter, a strange mix of philosophers and scientists are conducting séances at the College de France. The list includes eminent figures Henri Bergson and Etienne-Jules Marey. This scientific study of mental suggestion, telepathy, and levitation, as Marta Braun writes in *Picturing Time*, attests to an “incongruent meshing of science and pseudoscience,” which was one of the “more common threads linking the preeminent philosophers, scientists, and artists of the nineteenth century” (Braun, *Picturing Time*, 279, 417 n. 39).


40 See the chapter “Röntgens Entdeckung und die wissenschaftliche Zeitschriften,” in Otto Glasser, *Wilhelm Conrad Röntgen und die Geschichte der Röntgenstrahlen* (Berlin: Springer Verlag, 1931), 186.

41 Archaic microscopic creatures are magnified to “megascopic,” “macroscopic,” “gigantic,” even “ultramicroscopic” proportions: “thousandfold,” “tenthyousandfold,” and “hundredthousandfold” (237).


This special edition and jazz recordings of Holz’ epic poetry are housed in the Arno Holz Collection, Zentral und Landesbibliothek Berlin.


It is important to read Hans’ own reading experience correctly. Unlike the lending library system – borrowing books from the library down in the Platz or reading booklets on topics such as physical love and debauchery, books that make the rounds at the Berghof – Hans orders his own books and even the ordering itself is a solitary event. Suddenly he puts down *Ocean Steamships* and instead takes up “textbooks from a field of study in which young Hans Castorp had taken a sudden interest. These were books on anatomy, physiology, and biology, written in various languages – German, French, and English – and sent him one day by the local bookdealer; evidently he had ordered them, on his own and without a word to anyone, while taking a walk down in the Platz alone” (269). Reading does not die out during the course of the novel. Consider the “Ehrenhandel” protocol document (translated from Polish) that Hans reads towards the end of the novel in its entirety at the “good Russian table.” Mann also reproduces the entire document for our own reading pleasure (630-632).


A veterinarian informs Mann on Thursday, December 25, 1919, the first day of Christmas, that his
dog Bauschan has a “festerling lung infection” (Diaries, 78).


58 Mann, Diaries: “Wrote further on the X-ray laboratory scene (Röntgen-Laboratoriums-Szene) (. . .) Katia suffering from a sinus cold; Hermanns came to see her in the morning. I had him explain the X-ray plates (Röntgenbilder)” (Diaries, 90/400). Later, on May 5th 1920, “Katia went to Rieder to have her lungs X-rayed (K. bei Rieder zur photogr. Aufnahme ihrer Lunge)” (Diaries, 96/432).

59 “Schrieb eine Seite ‘Durchleuchtung,’ in einiger Unsicherheit, da ich es nicht gesehen.”

60 See Cartwright, Screening the Body, 115.


62 Compare also, 171: “Es hat ja auch die Durchleuchtung und photographische Aufnahme noch gar nicht stattgefunden, die erst den Sachverhalt objektiv klarstellen wird, und wer weiß, ob da etwas Nennenswertes zutage kommt (. ..).”

63 As José van Dijck writes “by 1924, the year in which The Magic Mountain was published, radiologists still acknowledged a 33 percent difference in interpretation among specialists in the X-ray-based diagnosis of consumption.” See his chapter “X-Ray Vision in Thomas Mann’s The Magic Mountain,” in The Transparent Body: A Cultural Analysis of Medical Imagining (Seattle: University of Washington Press, 2005), 87.


66 Thomas Sprecher writes that in 1910 there were already twenty-seven X-ray apparatuses in use in Davos. See Sprecher, 91.

67 See n. 77 on Bergson.

68 The parlor devices are first introduced early in the text as optische Gegenstände (optical devices) and at later points in the narrative are labeled “toys,” while the musical box of the gramophone is classified as an “instrument.” Van Dijck has argued that Röntgen’s device resembles the more contemporary invention of the gramophone in the sense that both represent lung power, the “physical content of the torso is transformed into something visible or audible” (88). The problem with this interpretation is that using technical and medical tricks of imagining to steal a glance at one’s future as a skeleton does not evoke the lyrical fullness of the gramophone. The leap from “toy” to “instrument” in the novel, I argue, is a significant one.
On this later cinematographic source, see Christoph Schmidt, “Gejagte Vorgänge voll Pracht und Nacktheit: Eine unbekannte kinematographische Quelle zu Thomas Manns Roman ‘Der Zauberberg,’” *Wirkendes Wort* 1 (March/April 1988): 1-5 and Jürgen Kolbe, *Heller Zauber: Thomas Mann in München (1894-1933)*, (Berlin: Siedler Verlag, 1987), 379-381. The actualities and travelogues are an important part of the program that have been neglected in Mann scholarship.

Six months after seeing *Sumurun*, Mann completes his “Kino-Episode,” which was also published in 1926 in a special series of signed, limited edition texts under the title *Kino*. For a brief account of the Bioskop movie theater operating in Davos in May and June 1912, see Ernest Prodolliet, *Das Abenteuer Kino: der Film im Schaffen von Hugo von Hofmannsthal, Thomas Mann und Alfred Döblin* (Universitätsverlag: Freiburg, 1991), 45-47.


Mann, “Über den Film,” 386. For a theory of film as ethnography that takes into consideration the primacy of “to-be-looked-at-ness,” see Rey Chow, *Primitive Passions: Visuality, Sexuality, Ethnography, and Contemporary Chinese Cinema* (New York: Columbia University Press, 1995), 176-202. Also valuable are Fatimah Tobing-Rony’s thoughts on race, the picturesque and the travelogue in *The Third Eye: Race, Cinema, and Ethnographic Spectacle* (Durham, Duke Univ. Press, 1996): 77-98. I would like to thank Tobias Nagl for introducing me to this text.

Mann notes: “I have been reading here and there in Uexküll’s *Theoretische Biologie.*” In his next entry dated Friday, March 4th he comments that “The cinema episode in *The Magic Mountain* is taking shape” (*Diaries*, 112/Tagebücher, 488-489)).

The theme of winter sports in Davos also proved to be an exciting subject for German travelogues produced around 1910, the magical setting of the novel. “Davos im Winter” was the title of a German film made by a Freiburg-based company in 1910. Film industry pioneer Oskar Messter also produced an actuality on bobsled racing in Davos in 1910. Herbert Birett, *Das Filmangebot in Deutschland: 1895-1911* (München: Filmbuchverlag Winterberg, 1991).

Thomas Mann, “Der Film, die demokratische Macht” (1923), reprinted in Thomas Sprecher, *Davos im Zauberberg: Thomas Manns Roman und sein Schauplatz* (München: Wilhelm Fink Verlag, 1996), 271. Numerous intellectuals praised the potential of film for scientific research, including Henri Bergson. In an interview, Bergson stated that his colleague Francois-Franck, with the aid of cinematography, was able to observe the phases of cellular division. Bergson also finds that even if the

78 Mann, *Zauberberg*, 115; my translation. Woods leaves out the location of the “mechanical work” or waxwork device – “in her breast” – and also translates panopticon as “sideshow” (123).

79 Geoffrey Winthrop-Young has argued that after the “research” chapter, Hans stops reading altogether, thus spelling out the final Bildungserlebnis of German literature. As stated in this essay, I disagree; reading is not effaced, but Hans in the novel does learn to embrace a new Bildung based on the auditory body. See Winthrop-Young, 41-43.


83 Mann’s arrogant demand that one read the book twice emerges as the final media fantasy of the text: conversations are echoed, lines are repeated and a “second sight” is immanent.