



# ANIMAL CAPITAL

RENDERING LIFE IN BIOPOLITICAL TIMES

NICOLE SHUKIN

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**NICOLE SHUKIN**

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## Automobility: The Animal Capital of Cars, Films, and Abattoirs

*The animal disappears in its suspension.*

—NOËLIE VIALLES, *Animal to Edible*

**The birth of Fordism** is routinely sourced to the year 1913, when Henry Ford “set in motion the first example of assembly-line production in Dearborn, Michigan.”<sup>1</sup> In citing Ford’s Highland Park plant in Dearborn as North America’s “first example of assembly-line production,” the moving lines that the plant materially mimicked are quietly displaced from historical consciousness. For rarely recalled or interrogated is the fact that Ford modeled Highland Park’s auto assembly line on moving lines that had been operating at least since the 1850s in the vertical abattoirs of Cincinnati and Chicago, with deadly efficiency and to deadly effect.<sup>2</sup> Ford, deeply impressed by a tour he took of a Chicago slaughterhouse, particularly with the speed of the moving overhead chains and hooks that kept animal “material” flowing continuously past laborers consigned to stationary and hyper-repetitive piecework, devised a similar system of moving lines for Dearborn but with a crucial mimetic twist: his automated lines sped the assembly of a machine body rather than the disassembly of an animal body. The auto assembly line, so often taken as paradigmatic of capitalist modernity, is thus mimetically premised on the ulterior logistics of animal disassembly that it technologically replicates and advantageously forgets in a telling moment of historical amnesia.

I retrieve Ford's visit to the slaughterhouse as a visceral point of connection between two seemingly unrelated moving lines, one that sparks this chapter's historical examination into the contingency of automobility on both the material and the semiotic logics of animal rendering. What changes when Fordism is revisited as a complex of mimetic relations, when Highland Park is viewed as a copy of a prior animal disassembly line rather than as the original template of mass production, and when capital is read within the more diffuse outlines of an abysmal logic of rendering that precedes and exceeds Fordism proper? How might the mass cultures and mass media associated with Fordism need to be revised in view of their unexamined premises in the recessive and excessive politics of animal capital? In this chapter I probe for signs of animal capital in half-sedimented histories of Fordism in an effort to defamiliarize the compacts of mass production and consumption, the methods of scientific management (with all of their Taylorizing prods and prompts), and the general economy of power that Fordism has come to popularly signify. The familiar view of Fordism changes in every aspect when confronted with a material politics of animal capital it has largely left unscrutinized, and even helped to repress.

Tracking how animal life is put into contradictory circulation as both a carnal and a symbolic currency implicates Fordism in a double logic of rendering overlooked by a long line of critiques that take the human, in the privileged figure of the laborer, as the focal historical subject of industrial capitalism. Even Antonio Gramsci's famous neologism "Fordism"—which brings into political focus not only the social production of "a new type of worker and of man" but shifting nexuses of social persuasion and force beyond those managing class<sup>3</sup>—leaves a metaphorical and material production of animals in place as the ulterior sense of Fordism. Gramsci interrogates industrialism's "victory over man's animality" in a passage in his prison notebooks titled "'Animality' and industrialism," yet "man" remains the primary subject whose nature is physically and symbolically at stake, while the fashioning of modern capitalism's animal subjects is paradoxically displaced from the sign and politics of "animality" (298). The animal sign in one of the key objects of Gramsci's critique—Frederick Winslow Taylor's depiction of the worker as an "intelligent gorilla"<sup>4</sup>—thus remains unchallenged. The

simian encoded in the Taylorist science of labor organizes systems of scientific management around a figure of animal mimesis, that is, around the figure of a gorilla predisposed to the labor of mass production as a species of mechanical aping.<sup>5</sup> In his prison notebooks, Gramsci seizes on Taylor's image of the trained gorilla for the reductive figure of manual labor it poses, however not for the figure of animal nature it presupposes.<sup>6</sup> The figure of the animal as a mimetic automaton capable of copying the same simple physical task over and over again is inadvertently accepted in Gramsci's critique of an American industrialism that strips its labor of skill and intellectual agency, reducing it to the brute repetition of mechanical motions.<sup>7</sup> Entwined in the covert figure of the animal automaton, moreover, is a figure of mimesis; the animal nature of mimesis and the mimetic nature of animals remain pivotal assumptions underpinning modern capitalism's social and economic projects. If industrial capitalism's "new human type" is confronted in critical terminologies of Fordism, its underlying animal prototypes remain largely unproblematized, even unconscious.<sup>8</sup>

Bill Brown suggests that "the task . . . of producing the history which lingers within neglected images, institutions, and objects" is the task of producing a "material unconscious."<sup>9</sup> He evokes Fredric Jameson's theory of literature's political unconscious but contests Jameson's equation of the literary with ideology, proposing instead a new referentiality or a "new materialism" that approaches literature as a "repository" of submerged histories (18, 4).<sup>10</sup> To formulate history as the material unconscious of literature, Brown invokes Walter Benjamin's notion of the mimetic "shock" that illuminates history not as a past chronology of finished events but as unsettled fragments still up for revision, thawing and heaving up different types of debris under the messianic heat of a backward glance that views the past as a series of open rather than reified accounts. As Brown writes, Benjamin holds that alternate, undeveloped histories hang as suspended subimprints of photography and film, awaiting future "developers" who might make them materialize.<sup>11</sup>

In place of the "photographic metaphor" of the Benjaminian optical unconscious, Brown privileges the literary "plate" as a teeming site of repressed, as-yet undeveloped material histories (14). For Brown, the "referential excess" of ostensibly negligible remarks in literary texts

constitutes an unactivated link to “the material everyday,” to a repository of “ephemera that have yet to attain historicity” (5). Flaubert’s seemingly superfluous mention of a barometer in his description of Mme. Aubain’s parlor in “Un coeur simple,” for instance, constitutes more than a move to generate a mimetic reality effect;<sup>12</sup> in Brown’s reading, the barometer is where history unintentionally leaves a sensible trace in the text, where the text retains signs of a material contiguity or brush with history beyond what it consciously sought to capture through its mimetic designs (17). Brown argues, moreover, that the material unconscious is a historical negative that requires “active development” to appear (14). Only when a literary “plate” is bathed in the catalytic solution of an active reading—in a “certain kind of attention, concentration, or inhabitation that is unwilling to understand the seemingly inadvertent as genuinely unmotivated” (14)—can the ostensibly incidental imprints made by history’s material pressure on literary texts be brought to consciousness.

I approach Fordism as a tangle of repressed and unresolved material relationships that can be “developed,” in Brown’s sense, to trouble “the dominant cultural memory” of capitalist modernity (5). Looking back on seemingly unrelated images and institutions heaving in the historical mound of turn-of-the-century North America, this chapter reopens the complex relations of Fordism, resists its reification as a fixed historical image, and provokes a reckoning with its unsettled accounts. Against the perception that Fordism represents a clearly delineable and now defunct stage of modern capitalism, “automobility” names a complex of cultural and economic relationships that are by no means finished and that exceed historical containment in the past. The material-semiotic network of automobility emerges, but does not end, with three early time-motion economies: animal disassembly, automotive assembly, and moving picture production. *Automobility* refers to the “moving” effects of cars and cinema, effects achieved by technologically as well as semiotically mimicking the seamless physiology of animals in motion. Yet it also refers to the unacknowledged material contingencies of car and cinematic culture on animal disassembly, sites where they literally depend on the remains of animal life and are implicated in the carnal business of animal slaughter and rendering. At the same time, industrial



slaughter emerges not only as a space of production through a triangulated reading of automobility's moving lines but also as a space of consumption and spectacle. The network of automobility culturally institutes talismanic tropes of animal life *and* materially drives the displacement and death of historical animals according to the double logic of rendering. The rendered material of automobility's moving lines archives an "unconscious" death wish on animal life that is radically, yet productively, at odds with the fetishistic signs of life articulated through the animal tropes so predominant in time-motion discourses of automobility (starting with the animal studies of Eadweard Muybridge and Étienne-Jules Marey).

Unlike Benjamin and Brown, however, I do not begin with the visual or literary excess unwittingly captured on a photographic or literary "plate" but rather seize on and amplify seemingly incidental linkages connecting the material and symbolic economies of cars, films, and abattoirs. I have already staked out Ford's visit to a Chicago meat-packing plant as one incident around which the relations of Fordism can be reopened to and through an analysis of the animal capital of automobiles and of slaughter. I will also delve into the materiality of film stock production to trace the inconspicuous yet pivotal role that photographic gelatin<sup>13</sup>—derived from the waste of industrial slaughter—has played in the development of moving pictures and mass imagery. Gelatin is among those seemingly negligible but in fact significant points of entry into the material unconscious of culture. In my reading, it marks a "vanishing point" where moving images are both inconspicuously and *viscerally* contingent on mass animal disassembly, in contradiction with cinema's framing semiotic of "animation."<sup>14</sup> To take seriously such seemingly tenuous connections between cars, films, and abattoirs as Ford's visit to a packinghouse or the visceral role of animal gelatin in photographic and film culture demands that one indeed be "unwilling to understand the seemingly inadvertent as genuinely unmotivated."<sup>15</sup>

Because animals have been identified with the unconscious insofar as it is has been conceived, in the Freudian tradition, as a subterranean of primordial drives pacing in "an unaging and undiminishing state," it is especially important to reiterate Brown's formulation of the unconscious

as *material history*.<sup>16</sup> As Brown puts it, one must “understand the unconscious as material history and history as the unconscious, as the necessarily repressed that can be rendered visible in sites of contradiction or incomplete elision.”<sup>17</sup> Reformulating the unconscious as a terrain of recessive and excessive material history becomes paramount when it is a matter of developing counterhegemonic genealogies for animal subjects lavishly accorded mythological and rhetorical existence yet strictly denied historical being. Against an understanding of animals as “perpetual motion machines” that “live *unhistorically*,” I develop the material unconscious of capitalist modernity as the denied, disavowed historicity of animals and of animal rendering.<sup>18</sup>

### **Touring the Vertical Abattoir: Slaughter’s Cinematic Disposition**

While this chapter will implicate cars’ and films’ mimicry of animal life in the industrial economy of slaughter, I begin here by implicating, conversely, the material space of animal disassembly in a logic of spectacle usually identified with cinematic culture. The lineaments of cinema can arguably be glimpsed in the animal disassembly lines of Chicago’s stockyards, where animals were not only produced as meat but also consumed as spectacle. Under the rafters of the vertical abattoir there rolled a moving line that not only served as a technological prototype for automotive and other mass modes of production but also excited new modes of visual consumption.

Animals hoisted onto moving overhead tracks and sped down the disassembly line constituted one of North America’s first “moving pictures.” Such a contention requires that, like Jonathan Crary or Geoffrey Batchen, one excavate for the discursive rather than empirical conditions of visual culture, for the “assemblage” of percolating knowledges and desires that intersected with material practices and technological equipment to put images into motion.<sup>19</sup> *This* moving picture was being consumed on guided tours of Chicago’s Packingtown at the same time that Eadweard Muybridge’s zoopraxiscope, a device that put still photographs into motion under the zoosign of animal life, was beginning to capture attention as a novel mimetic machine bringing Americans closer to the attainment of mass motion picture technologies.

When Chicago hosted the World's Columbian Exposition in 1893, Muybridge's zoopraxiscope was among its many exhibits. It was displayed in the exposition's White City alongside other cutting-edge mimetic technologies such as Eastman's portable Kodak camera, flexible film, and Edison's Kinetoscope motion picture camera, all promising spontaneous visual capture of life in motion.<sup>20</sup> Visitors were apt to stray from the attractions of the White City, however, and venture into the bloody outer attraction of the neighboring "bovine city," where an unprecedented technology of animal sacrifice—the moving disassembly line—was also on display.<sup>21</sup> As Louise Carroll Wade notes, over one million people paid a visit to the bovine city, or the Chicago stockyards, in 1893, the year of the exposition.<sup>22</sup> "Guided tours of the yards and packinghouses were 'as popular as a ride in the Ferris wheel and far more interesting'" in the opinion of many visitors.<sup>23</sup> Across the river from Chicago's White City, in dark Packingtown, lay the spectacle of animal disassembly, the material "negative" of the mimetic reproduction of life promised by the new technological media on the other side. The mimetic media were, for a brief historical instant, dangerously contiguous with their material unconscious.<sup>24</sup>

In the time-motion efficiencies on display in the vertical abattoirs of Packingtown, cattle were forced to walk up chutes to an elevated landing so that the gravitational pull of their own bodies would propel them down the disassembly line. Hogs, by contrast, were simply seized by their hind legs and hurtled along by means of an overhead rail. In the description of Durham and Company's disassembly line in Upton Sinclair's *The Jungle* (1905), provisions made in the architecture of mass slaughter for its recreational viewing make a significant appearance. The slaughter of cattle could be viewed "in one great room, like a circus amphitheater, with a gallery for all visitors running over the center."<sup>25</sup> As for "the hog's progress" (37), it could be viewed in

a long, narrow room, with a gallery along it for visitors. At the head there was a great iron wheel, about twenty feet in circumference, with rings here and there along its edge. Upon both sides of this wheel there was a narrow space, into which came the hogs at the end of their journey; in the midst of them stood a great burly Negro, bare-armed and bare-chested. He was resting for a moment, for the wheel had stopped

while men were cleaning up. In a minute or two, however, it began slowly to revolve, and then the men upon each side of it sprang to work. They had chains which they fastened about the leg of the nearest hog, and the other end of the chain they hooked into one of the rings upon the wheel. So, as the wheel turned, a hog was suddenly jerked off his feet and borne aloft. At the same instant the ear was assailed by a most terrifying shriek. . . . The shriek was followed by another, louder and yet more agonizing—for once started upon that journey, the hog never came back; at the top of the wheel he was shunted off upon a trolley, and went sailing down the room. (34–35)

Evidently, Chicago's "great packing machine" capitalized not only on a rapid mass processing of animal material but on a booming interest in viewing the life and death passions of animals and laborers, intertwined ethnographic subjects of industrious capital.<sup>26</sup>

In his analysis of American amusement culture around the turn of the century, Brown suggests that in thrill rides such as the Ferris wheel or roller coaster (modeled on industrial bucket wheels and coal carts), "the pleasure industry merely replicates, while controlling, the physiological trials of modernity."<sup>27</sup> Tours of slaughterhouses, already a popular sideline of Chicago's Packingtown as early as the 1860s, were designed to showcase the tremendous efficiency with which American culture managed its material nature. Slaughterhouse tourism also promised to fascinate and disturb tour-goers with the somatic sights, smells, and sounds—the "physiological trials"—of doomed animals and gore-covered laborers. Brown's understanding of the supplementary economies of work and play in turn-of-the-century North American culture is borne out by the analogy Sinclair uses to convey an effect of the speed with which Packingtown's labor strove to keep pace with the continuous flow of animal bodies: "They worked with furious intensity, literally upon the run—at a pace with which there is nothing to be compared except a football game."<sup>28</sup> Through the riveting view from "the stands," as it were, the disassembly line doubled as spectacle, or sport.

Chicago's stockyards, then, revolved not only around the rationalized reduction of animals to meat and the myriad commodities rendered from animal remains but around a supplementary economy of aesthetic consumption built into the line, with the kill floor doubling

as a “circus amphitheater” where the raw footage of the “slaughtering machine” rushed at a staggering pace past visitors.<sup>29</sup> Moreover, tours of slaughterhouses involved much more than *visual* consumption of the commotion of slaughter. The stockyards were also an overwhelming olfactory and auditory theater, filled with the “sickening stench” of blood and the death cries of animals.<sup>30</sup> “The uproar was appalling, perilous to the eardrums,” writes Sinclair. “There were high squeals and low squeals, grunts, and wails of agony. . . . It was too much for some of the visitors—the men would look at each other, laughing nervously, and the women would stand with hands clenched, and the blood rushing to their faces, and the tears starting in their eyes” (35). A visceral, affective response to the raw footage of the moving disassembly line was part of the gripping experience offered by meatpackers. Rather than an undesirable effect, emotion and tears produced through exposure to the sensorium of slaughter were arguably integral to the spectacle of slaughter. If, according to its own material calculations, the machinery of mass slaughter had managed to capture “everything but the squeal,” thanks to the supplementary business of slaughterhouse touring even the squeal returned as capital.<sup>31</sup> For the affect (nervousness, tears, fascination) produced through exposure to the surplus sights, sounds, and smells of animal death was captured and converted into capital through the business of slaughterhouse tours (tours that Sinclair in turn textually rendered to sensational effect).

That the business of slaughterhouse touring promised significant returns for meatpackers is evinced by the fact that in 1903 Swift and Company published a *Visitor's Reference Book* that it distributed to tour-goers “as a Souvenir of a visit to the plant of Swift & Company at Chicago, Ill., U.S.A., and as a reminder of the modern methods and activities of the American Meat Packing Industry.”<sup>32</sup> The booklet also reveals, however, that touring slaughter was at the same time a risky business, one that meatpackers needed to mimetically manage in order for the affective surplus of animal disassembly to be converted into capital rather than into political agitation of the sort inspired by Sinclair's novel. At its most basic level, the *Visitor's Reference Book* functioned as an advertising pamphlet designed to remind people of Swift and Company's “Arrow S” trademark when they next went to purchase

meat. Among the biopolitical aims pursued through early tours of the stockyards, after all, was that of persuading a nation to desire meat as a regular part of its diet. The affective sights, sounds, and smells generated through what was then, according to its booklet, Swift and Company's slaughter of "twenty-five hundred cattle, seven thousand hogs and seven thousand sheep per day" thus needed to be carefully managed to prevent moments of human-animal identification from triggering metabolic revolt in tour-goers (causing them to sicken rather than salivate at the prospect of meat) or political exception to the rationalized slaughter of animals.

For Swift and Company's illustrated souvenir booklet to perform its deeper function of mimetically managing against the potential for affect to revert into counterproductive forms of metabolic and political revolt, its designers intuitively chose to recapitulate the tour through the eyes of a little white girl no older than six or seven years of age. The booklet, through text and drawings, depicts the path of a white family through the organized "stations" of animal disassembly, moving from Station 1, "Live Hog Pens," to Station 14, "Beef Dressing," capped with a visit to Swift's "Oleomargarine Factory" and canning facility. The little girl is a cursor pointing to and eagerly pulling her family through each station. She inhabits the space of slaughter as if it is second nature to her, as if by virtue of being human the animals are as much her own property as they are Swift and Company's.

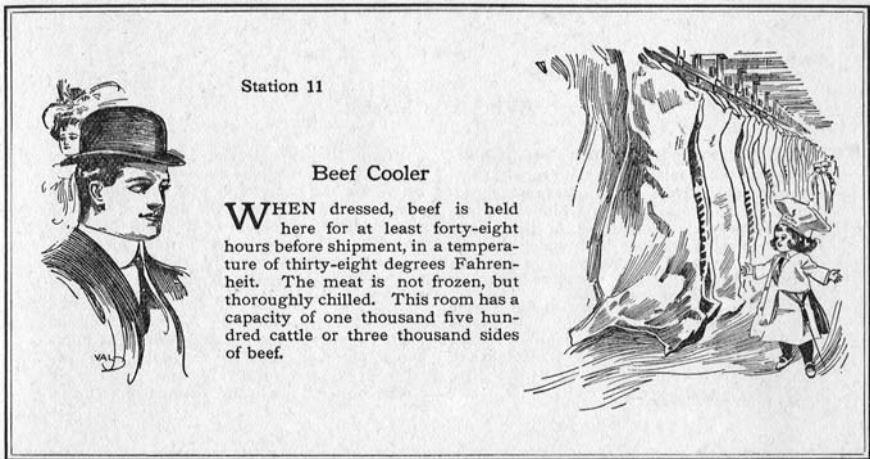
At Station 2, "Beginning Hog Dressing," the little girl is shown sitting genially on a railing that separates her from a hoisting area where hogs are "shackled to the moving wheel," as happy in the presence of what is underway on the other side of the rail as she would be in a park feeding ducks (see Figure 3). In the "Beef Cooler," she gestures expansively at a row of dangling beef carcasses beside which she stands in intimate quarters (see Figure 4). A model citizen who visits sites of national pride and feels utterly secure inside the nation's economic space, she also relays what Lauren Berlant terms "the infantile citizen's faith in the nation."<sup>33</sup> She shows by example—through her utter lack of alarm and her casual, cheery demeanor—that the scene of slaughter is perfectly natural and nonthreatening. As the subject deemed most likely to embody a sensitive (potentially hysterical) response to her



Figure 3. "Beginning Hog Dressing," in Swift and Company Visitor's Reference Book (1903). From the Advertising Ephemera Collection of the Rare Book, Manuscript, and Special Collections Library of Duke University. Database A0340-05, Emergence of Advertising On-line Project, John W. Hartman Center for Sales, Advertising, and Marketing History. <http://scriptorium.lib.duke.edu/ea/>. Reprinted with permission.

environment, the little girl thus functions as an affect meter at each station. Displaying nothing but confidence and curiosity, she communicates that animal disassembly is the furthest thing from traumatic, both for the animals undergoing it and for the humans watching it. In short, she models the proper response to slaughter, one that Swift and Company may at some level have cannily understood becomes more difficult to recognize as pathological or sadistic when embodied by a little girl.

Yet as she is illustrated perched on the railing, with two hogs shackled upside down behind her, the little girl marks, even as she polices, the most precarious site of slippage between the spaces and powers partitioning humans and animals in the slaughterhouse. Though she is almost identical in shape and body mass to the animals strung up behind her, Swift and Company seem to be making the wager that even the subject who, due to her age and gender, is most powerless within a social hierarchy of humans is absolutely powerful in relation to the animals behind her by virtue of her species difference. The certitude of her absolute humanity is truly ensured, however, only by her sparkling



*Figure 4. "Beef Cooler," in Swift and Company Visitor's Reference Book (1903). From the Advertising Ephemera Collection of the Rare Book, Manuscript, and Special Collections Library of Duke University. Database A0340-11, Emergence of Advertising On-line Project, John W. Hartman Center for Sales, Advertising, and Marketing History. <http://scriptorium.lib.duke.edu/ea/>. Reprinted with permission.*

whiteness. It is doubtful that Swift and Company would have risked such a wager—would have dared manage against the dangerous slippage between human and animal in the space of slaughter via the subject whose social powerlessness strongly invites the substitution—with a little colored girl, whose racialization has historically involved mistaking her for an animal. The mutual coding of whiteness and humanness is pivotal to the success of the mimetic management operated by the figure of the little girl.

Swift and Company thus communicate their supreme confidence in the absolute difference of human and animal by giving the little girl license, in their illustrations, to play on the physical barrier dividing human and animal. Her starched white dress—matched with a white hat of the sort worn by head chefs (demarcating the power of the one who eats from that of the one who is eaten)—further amplifies her humanness as an impenetrable barrier that secures against human-animal slippage in the slaughterhouse. The dress code of the rest of her family likewise bespeaks the affluence and security of an imperturbable white humanity. Her mother wears an elaborate black feather hat; her



father is a tastefully muted figure who usually appears in the background on those pages on which he does appear. An older, bearded figure who could be the little girl's grandfather wears, in his intermittent appearances in the booklet, a top hat. That male figures are backgrounded throughout the booklet, seemingly there only to indulge the curiosity of a girl-child, further displaces recognition of the white masculinity and power consolidated in packinghouse capital.<sup>34</sup>

As well as an index of the tastefulness of the race and class who tour slaughterhouses (not to be mistaken with the races and class who work in them), dress, like whiteness, is a crucial code of humanness working to draw an unbreachable species line between humans and animals in the Swift and Company booklet. Not only does the little girl stand upright next to animals who have been turned on their heads; she is clothed, while they are flayed. She is dressed, while they are "dressed." At Station 13, "Sheep Dressing," her full suit of starched white clothing communicates her power over the sheep bodies toward which she casually points, bodies flayed of their "pelt, or skin" (as the booklet states) in an almost indecent graphic exposure. Whenever a hint of sadism lurks in the scene of a clothed figure of miniaturized power gazing on a shackled and "dressed" animal—whenever the suspended carcass looks almost human—the little girl is shown gazing not at the animal but back at her mother or father, deferring the look to them. Against the hallucinatory resemblance between the flayed body of a large steer and that of a human, the booklet averts her eyes and, by example, those of the public.

The message that tours of slaughter are not disturbing, that there is no reason to be haunted by the sights seen, is reinforced at the end of the souvenir booklet. There Swift and Company state that they are providing it as a "reminder of the sights of the Stock Yards," one enabling visitors "to see those sights again in memory." As its parting words suggest, the booklet was designed to be administered at the end of the tour, *after* the meatpacker had cashed in on an interest in animal death but *before* the affect excited by the spectacle of slaughter could cause upset in its twin economy, which depended on a literal consumption of meat products. Recursively training tour-goers in how they should be affected by and recollect slaughter, Swift and Company managed

against the potential for affect either to provoke renunciation of meat-eating or to form into the prolonged shape of political activism.

In *Parallel Tracks: The Railroad and Silent Cinema*, Lynne Kirby argues that railroads trained audiences for filmic viewing: “As an ideological paradigm, the railroad created a subject invested in the consumption of images and motion—that is, physical displacement—for entertainment.”<sup>35</sup> Slaughterhouse tours in a different way also created a subject invested in “physical displacement—for entertainment,” a subject readied for cinematic experience through the viewing of the moving picture of animal disassembly. In tours, however, physical displacement was itself displaced onto animals and the progress of their breakdown, while human tour-goers were positioned as stationary bodies whose integrity was threatened only vicariously, by virtue of a potential affective identification with the animals. Both in the visual consumption of the rapid sequential logic of the moving line that they encouraged and in their stimulation of affect, slaughterhouse tours arguably also helped to lay the perceptual tracks for cinema. If, as Batchen suggests, it is “the unfolding of space through time that is cinema,” the disassembly line as time-motion technology (and the slaughterhouse tour that paralleled its linear unfolding) realized a cinematic disposition prior to cinema proper.<sup>36</sup> The moving disassembly line mobilized the idea of “time itself as a continuous linear sequence of discrete moments,” while the tour positioned the visitor’s eye as a “tracking camera” (12, 117). The discrete, numbered “stations” strung together into a moving sequence by the pace of slaughter and the eyes of the tour-goer were analogous to the “frames” reeled at high speed past a cinematic audience to produce an ocular semblance of seamless motion. The technological mimicry of both moving lines thus suggests a complicity in their economies, although their material outcomes were radically divergent. The first propelled the dissolution of animal bodies into minute particles and substances; the second moved toward the resolution of image life. Tours of slaughterhouses can thus be read as protocinematic technologies, with this crucial twist.

In her study of modern French abattoirs, Noëlie Vialles suggests that the aesthetic logic shaping tours of disassembly lines is indeed strangely analogous to that framing the consumption of film. As Vialles

writes, tours of slaughterhouses regularly disturb visitors who notice that the tour route “parallels the one-way path of the animals,” the path of no return.<sup>37</sup> This, arguably, is the threatening mimetic identification of human and animal that causes tour-goers in *The Jungle* to laugh nervously. As Sinclair wrote, “Perhaps some glimpse of all this was in the thoughts of our humble-minded Jurgis, as he turned to go on with the rest of the party, and muttered: ‘*Dieve*—but I’m glad I’m not a hog!’”<sup>38</sup> Yet, as Vialles adds, the parallel path of tour-goers and animals is dictated by the time-motion logic of the moving line—“seeing round an abattoir in the opposite direction would be like watching a film backwards; it would mean reconstituting the animal from the starting point of the carcass, and that would be at least equally disturbing.”<sup>39</sup> Tours of slaughterhouses, hints Vialles, follow the same insistent sequential sense as the cinematic reel, a logic that frames the impassive stages of deanimating animal life as an inexorable progression.<sup>40</sup> The submission that packinghouse tours demand to the irreversible direction of the moving line is also the submission on which cinema depends to achieve its mimetic effects. The animated effects accumulating from the time-motion momentum of cinema are ideologically complicit, following Vialles’s suggestion, with the production of an animal carcass. It is in this sense that the disassembled animal can be said to constitute the material negative of cinema’s mimetic effects. Here, in particular, the double entendre of *rendering* describes the contradictory vectors of time-motion ideologies insofar as they simultaneously propel the material breakdown *and* the semiotic reconstitution of animal life across the modern spaces of slaughter and cinema.

Their time-motion organization is not the only point of complicity between the symbolic economies of slaughter and cinema, however. Both moving lines are “moving” in a deeply affective as well as a technological sense. The excitement and communication of affect is where the consumption of the moving picture of animal disassembly exceeds merely visual consumption of image frames and offers a conditioning in the “total” aesthetic experience which, shortly, would also be promised by cinema. The physiological response—the nervousness, laughter, or tears provoked by tours of animal disassembly lines—would also be a feature of cinema-going. Recall, for instance, the legendary

physiological impact of the Lumière Brothers' *L'Arrivée d'un train en gare de la Ciotat* (1895), which caused audiences to instinctively spring out of the way of the train mimetically barreling toward them on the screen.<sup>41</sup> While animal death was generating an aesthetic surplus in the Chicago stockyards and being captured through the business of touring, mimetic technologies such as those represented by the zoopraxiscope and the Kinetoscope were pursuing a semblance of affective, immediate communication under the charismatic sign of animal life. While animals on the disassembly line were being consumed as visceral moving images, cinema was being fetishistically imbued with raw presence through the writings of modern film directors such as Dziga Vertov and Sergei Eisenstein. According to Lippit, Vertov and Eisenstein envisioned a "biology of the cinema" accruing not to cinema's ability to achieve naturalistic effects (which Eisenstein abhorred), but rather to an affective immediacy achieved by the filmic ability to cut and paste parts into a montage whose startling juxtapositions would strike directly upon the viewer's senses.<sup>42</sup> As Bill Brown notes, film theorists such as Tom Gunning, who take up Eisenstein's work to theorize early cinema as a "cinema of attractions," emphasize cinema's powers of "direct stimulation' rather than [its] narrative logic."<sup>43</sup> The interest in cinema's powers to bypass discursive mediation in pursuit of a direct, affective immediacy was renewed later in the twentieth century by Michel Chion, who theorized the rendering of sound in cinema as no "mere imitation" or "replication" but as a visceral impact or sensory impression: "In fist- or sword-fight scenes, the sound does not attempt to reproduce the real noises of the situation, but to render the physical impact of the blow."<sup>44</sup> Cinema's "moving" effects, in this view, are associated with its ostensible ability to short-circuit linguistic, narrative, or discursive mediations and to communicate through "the rapid movement of affect from one entity to another."<sup>45</sup> The intensity of animal death on the disassembly line—the animal sights, smells, and sounds given "immediately" to the visitor's senses—is in this sense also the moving prototype of film as an affective technology. In both cases, however, what is rendered imperceptible are the discursive techniques and the capital investments mediating the animal attractions of slaughter and cinema.

Among other things, the visual-affective consumption of the moving picture of slaughter suggests that the “cinematic mode of production” theorized by Jonathan Beller, rather than historically distinguishing a postindustrial from an industrial era of capitalism (as Beller suggests), already limns Fordist modes of production.<sup>46</sup> Theorizing the cinematic mode of production in relation to a postindustrial “attention economy,” Beller contends that a subject’s “kino-eye,” or film-eye, comes to constitute a “site of production itself.”<sup>47</sup> “Paying attention” to and consuming images functions as a form of social-affective labor within the political economy of the visual formulated by Beller.<sup>48</sup> The productivity of the kino-eye, he argues, consists in suturing together cinematic images, a postindustrial extension of the industrial labor of assembling material units that is necessary to realize images as capital.

For Beller, the cinematic mode of production emerges in the passage from modernity to postmodernity, a passage that many cultural Marxists describe in terms of a progression from formal to real subsumption and from material to immaterial labor.<sup>49</sup> Thinking of a passage or progression from one to the other arguably fails to account, however, for the coexistence of the two in the vertical abattoir and in its double rendering of animal capital. The labor of workers physically toiling on the disassembly line (not to mention the travails of the animals) was already shadowed by that of touring subjects whose interest in recreationally exposing themselves to and curiously consuming the sensorium of slaughter was crucial to its production as spectacle. While the labor of slaughter and the labor of *consuming* slaughter were (and still are) clearly divided along class, racial, and ethnic lines, a kino-eye can nevertheless already be glimpsed working alongside animal disassembly and reconstituting it as a moving image.

If slaughter and cinema were linked by the shared time-motion logics organizing their visual unfolding and by their power to stimulate and capitalize on affect, the rise of cinematic culture was also literally—materially—contingent on mass slaughter. I turn now to develop the repressed material relationship between the rise of the cinematic image and what Akira Mizuta Lippit vaguely terms the “*vanishing*” of animals from modern life.<sup>50</sup> By implicating slaughter in the symbolic economy of cinema and cinema in the ulterior violence of animal disassembly,

I resist Lippit's valorization of cinema as a salvaging apparatus that shelters or encrypts vanishing "animal traits" (196). For if motion pictures repress their resemblance to the protocinematic "moving picture" of animal disassembly, they even more actively render unconscious their material contingency on slaughter.

### **The Rendered Material of Film Stock**

For modern moving pictures to do more than trope animal mobility—that is, for cinema's animated effects to *literally* develop—they required the tangible supports of photographic and film stocks. It is here, in the material convolutions of film stock, that a transfer of life from animal body to technological media passes virtually without notice. To confront the animation effects of modern cinema with their carnal conditions and effects, one needs to tease out the animal ingredients of film stock via a material history of photographic gelatin. In 1873, a gelatin emulsion coating of "animal origin" was first widely adapted to photographic uses.<sup>51</sup> Gelatin—aka "animal glue"—is a protein extracted from the skin, bones, and connective tissues of cattle, sheep, and pigs. As Samuel E. Sheppard wrote in *Gelatin in Photography* (1923): "As is commonly known, gelatin and its humbler relative, glue, are products of animal origin, the result of the action of hot water or steam upon certain tissues and structures of the body. . . . The actual material consists of the leavings of tanneries and slaughter-houses—i.e., trimmings, so-called skips, ears, cheek-pieces, pates, fleshings, etc."<sup>52</sup> The suturing tissue of animal bodies is exchanged for what Sheppard calls the "physiological and biochemical unity" of image life in the duplicit, material-symbolic rendering of animals that helped to leverage cinema into historical existence (25). In the material convolutions of photographic and film stocks, in the viscosity of their "negative gelatin emulsions," resides an opaque politics of rendering (17). If we recall Marx's use of the visceral metaphor of "mere jelly" to describe the abstract measure of exchange value (see chapter 1), gelatin can be excavated as one site where the production of capitalist culture can be seen to always also involve the rendering of nature.<sup>53</sup>

The coating of choice for photographic and film stocks today as it was at the turn of the century, gelatin binds light-sensitive agents to a base so that images can materialize.<sup>54</sup> In 1884, when the word *film* was put into commercial circulation by George Eastman of the Eastman Dry Plate Company (soon to become the Eastman Kodak Company), the word “referred only to the gelatin coating upon the paper.”<sup>55</sup> Turn-of-the-century dialogues between Eastman and Thomas Edison led to the incessant finessing of film stocks capable of yielding specific visual effects (sharpness, high definition, transparency) to corroborate the immediacy and vitality of moving pictures. Even today, the Kodak corporation acknowledges that it is gelatin that is the veritable “Image Recorder.”<sup>56</sup>

Yet the manufacture of gelatin emulsions is shrouded in secrecy, historically involving a retreat into the darkroom to develop the writing with light that photography and film appear to magically execute. In an enigmatic bit of information proffered under the heading “Emulsion, the Image Recorder” on Kodak’s Web page, the photochemical necessity of preparing sensitive gelatin emulsions in “total darkness” helps to obscure the already mystifying material conditions of image culture: “At this point, the remaining manufacturing steps must be performed in total darkness. Gelatin is dissolved in pure distilled water, and then solutions of potassium iodide and potassium bromide are carefully mixed with it. Silver nitrate solution is added to this heated mixture, and the desired light-sensitive silver halide . . . salts are precipitated as fine crystals.”<sup>57</sup> The incidental reliance on animal remains that Kodak fails to acknowledge in the cloaked science of gelatin manufacture is a fly in the ointment of the company’s emulsion mystique, a repressed debt that can, nevertheless, through the active “attention” Brown theorizes, be disinterred to reopen a material politics of modern cinema.<sup>58</sup> For modern cinema’s mobilization and massification of image life is not only conditioned on time-motion sciences that take animals as organic metaphors of technological mobility; it is also materially contingent on what Sheppard referred to as “the leavings of tanneries and slaughter-houses.”<sup>59</sup>

A study of photographic and film stocks shows that prior to the invention of gelatin emulsions in the 1870s, the development of image

life already relied heavily on albumen coatings derived from egg whites and animal blood. With the industrialization and popularization of image production pronounced by Eastman's emulsion-coating machines, his affordable portable cameras, and his film development services, however, the relation of film's mimetic effects to a material politics of animal protein changed both quantitatively and qualitatively. As Shepard writes, "In 1884 the first machine for coating gelatino-bromide emulsion paper was built by Walker and Eastman, and the production of these papers was begun on a large scale" (18). In 1888, when the Kodak camera was introduced to the public, Eastman machines were busy coating "about six thousand feet of negative film a day" with photographic gelatin.<sup>60</sup> It was film that Eastman Kodak also promised to develop for its customers—"You press the button, we do the rest"<sup>61</sup>—encouraging miraculous rather than material knowledge around the popular production of images. By 1911, "in addition to its regular snapshot film, Kodak was manufacturing over eighty million feet of motion-picture stock annually."<sup>62</sup> By the latter half of the twentieth century, the great "emulsion empires"—those of Kodak and Fuji Film—would measure their raw stock less in footages or mileages than in global lengths: "During a single five-day work week . . . workers at a Kodak film plant are able to coat enough 35 mm film to circle the globe."<sup>63</sup> Yet the material means of cinema were simultaneously being rendered invisible beneath the moving image's fetishistic effect of immediacy.

It was not just film manufacturers who began ingeniously capitalizing on the remains of animal life flowing from industrialized slaughter around the turn of the century; North American entrepreneurs were widely experimenting with ways to incorporate the surplus of slaughter into material compounds capable of passing as genuine animal articles. An innovative mimetic material known as hemacite—a mix of animal blood and sawdust compressed under high pressure to form a virtually indestructible substance—imitated ebony and other precious substances without the prohibitive cost, rendered as it was from industrial waste products.<sup>64</sup> Celluloid, though not composed of the "leavings" of slaughter, was among the efflorescence of synthetic materials being engineered to embody "a versatility and uniformity unknown to natural material," allowing them to be "molded into any desired form"



through mass modes of production.<sup>65</sup> Originally marketed by the Celluloid Manufacturing Company in the 1870s as a material capable of imitating ivory, tortoiseshell, coral, and amber, celluloid substituted for the look and feel of elephant tusks and other exotic parts of organic wildlife in luxury items such as hair combs, hand mirrors, and brooches.<sup>66</sup> What Jeffrey Mickle calls celluloid's "power of mimicry" enabled it, as the Celluloid Manufacturing Company stated in an early advertising pamphlet, to assume "a thousand forms" and to pass as authentic so peerlessly as to "defy detection."<sup>67</sup>

Beyond touting celluloid's mimetic power to pass as counterfeit for ivory or tortoiseshell, its manufacturers also argued a case for substituting celluloid for natural materials on affective grounds of wildlife conservation. The Celluloid Manufacturing Company declared that just "as petroleum came to the relief of the whale . . . [so] has celluloid given the elephant, the tortoise, and the coral insect a respite in their native haunts; and it will be no longer necessary to ransack the earth in pursuit of substances which are constantly growing scarcer."<sup>68</sup> As Mickle notes, ivory was "the material [that celluloid] most imitated."<sup>69</sup> In a Du Pont salesman's handbook from 1919, the extinction of "great herds of elephants" was thus invoked in the marketing cause of celluloid (17). A logic of imitation persuasively articulated with a logic of wildlife conservation around the mimetic management of celluloid's artificiality. As Mickle remarks, "Comments such as those of Du Pont served primarily to associate celluloid with ideas of luxury and rarity, to suggest that the American housewife enjoyed comforts formerly available only in a sultan's harem. No evidence suggested a scarcity of ivory during the early twentieth century" (17).

In his search for a flexible film base that could replace cumbersome glass plates and liberate photography as a mass amateur pursuit, George Eastman saw more than just this mimetic potential in celluloid. In 1889, Eastman replaced glass plate and paper supports with thin, rollable strips of transparent nitrocellulose plastic, or celluloid film, supplying one of the missing material conditions of mass motion picture technology. Thomas Edison collaborated closely with Eastman in designing the Kinetoscope motion picture camera around the new rollable film, radically advancing the technological mimicry of continuous

movement sought by early cinematographers. If a discourse of wildlife conservation buttressed celluloid's material bid to existence prior to its filmic adaptation, it would be articulated even more prominently to and through cultural discourses of photography and film, which pronounced a conservationist ideology in their call to shoot animals with a camera rather than with a gun (to go "Big Game Hunting with a Kodak").<sup>70</sup> Étienne-Jules Marey's "chronophotographic gun," whose sequential filmic cartridges allowed him to shoot animal and bird studies in a manner that replaced the taking of life with its mimetic capture, explicitly heralded the substitution of the camera for the gun.<sup>71</sup> Immuring wildlife on film was widely framed as a conservationist act; over a century later, the valorization of celluloid's conservationist logic still informs the cinematic theory of Lippit, who rearticulates film as a "virtual shelter for displaced animals."<sup>72</sup>

Yet when Lippit proclaims that cinema preserves "the traces of an incorporated animality" (187), he celebrates film's sympathetic features at the cost of overlooking its pathological relationship to animal life. For onto a base of celluloid first pitched as a conservationist alternative to endangered animal tusks, horns, and shells, Eastman applied a second substance, a gelatin emulsion encrypting cinema's contradictory contingency on animal disassembly, one pivotal to its mimetic power to develop lifelike images. In the translucent physiology of modern film stock—in its celluloid base and its see-through gelatin coating—it is possible to discern the "two-layered" mimesis through which modern cinema simultaneously encrypts a sympathetic and a pathological relationship to animal life.<sup>73</sup> Film thus marks a site where a contradictory logic of rendering is daringly, yet inconspicuously, flush.

With one notable exception, the materiality of film stock rarely erupted into historical consciousness to disturb the images it supported in increasingly global quantities. In "the great emulsion debacle of 1882" (when the Eastman Dry Plate Company was still selling emulsion-coated glass plates rather than flexible film), Eastman was almost ruined by a series of fogging, overexposing plates.<sup>74</sup> The failure of Eastman plates to properly develop images was traced back to the batch of gelatin from which their emulsion coating had been rendered. Through this early fiasco, Eastman discovered "that impurities in the gelatin itself

can either promote increased sensitization or even complete desensitization” of image life, which compelled him to pursue “an absolutely uniform manufacturing standard” and to monitor for the undappled consistency of animal matter used in the production of photographic gelatin.<sup>75</sup> Emulsion formulas became closely guarded corporate secrets with the growing realization that advances in light-sensitive emulsions could significantly increase film speed and hence an image’s fetishistic effect of mimetic immediacy.

In 1925, Dr. Samuel Sheppard, at the time an emulsion scientist working for Kodak, traced organic impurities in photographic gelatin back to the particularities of a cow’s diet. Sheppard discovered that cattle who had eaten mustard seed yielded better film speeds, because a sulfuric substance in mustard oil accentuated the light sensitivity of silver halide crystals suspended in an emulsion. Sheppard’s findings suggested that the failure of Eastman’s plates in 1882 had been due not to the *presence* of an impurity in the gelatin but rather to the *absence* of an impurity: mustard seed had been missing in the diets of the animals from which the gelatin was rendered. The head of Kodak’s research laboratory, Dr. C. E. Kenneth Mees, later recounted Sheppard’s emulsion breakthrough to a lecture audience: “Twenty years ago we found out that if cows didn’t like mustard there wouldn’t be any movies at all.”<sup>76</sup>

In New York’s University of Rochester Library, holder of the George Eastman Archives, only one slim folder of documents makes reference to gelatin production.<sup>77</sup> In one document in the file entitled “Gelatin Is Simple Stuff” (an article from all appearances commissioned by Kodak for a broader audience), an anonymous writer states: “It was generally believed that gelatin’s role in the photographic process was wholly passive. It merely sat there, quietly clutching billions of bits of silver halide.”<sup>78</sup> In the flurry of research prompted by the 1882 “debacle,” however, and following from Sheppard’s discovery of the photochemical agency of allyl mustard oil, “gelatin graduated from a passive to an active part in the creation of photographic emulsions.”<sup>79</sup> The same document reports that “in its pure state this allyl mustard oil was not of any value as a sensitizer; it was only as an impurity, an accidental, that it achieved its value.”<sup>80</sup> In other words, sulfur sensitizers in mustard

were of use to Eastman only if they had been metabolized by an animal and were lodged as accidental trace elements in its physiological tissue; in animal biology lay the irrational key to the technological success of filmic mimesis. In the photochemical parable of the mustard seed it is briefly acknowledged that the development of mass images turns on a “sensible trace” of animal life, a contingency haunting Eastman’s emulsion empire and therefore becoming subject to intense biopolitical controls.<sup>81</sup> “The problem,” continued the anonymous writer, “was solved by setting up to manufacture gelatin; if Kodak controlled its making, its quality could be controlled, too.”<sup>82</sup>

Eastman would indeed put Sheppard’s discovery to work to gain Kodak an emulsion edge by extending the corporation’s control over the life and death of animal stock. In 1930 Eastman purchased the American Glue Company, a rendering plant that had been in operation in Peabody, Massachusetts (the “tannery city”), since 1808. He renamed it the Eastman Gelatine Corporation and began materially managing livestock and its rendered remains exclusively for Kodak quality. Tightened micropolitical control over the raw diet as well as the cooked hides and bones of animals allowed Eastman to manage organic impurities in photographic gelatin, signaling the almost maniacal mastery over animal physiology that made the mimetics of photography and film possible.<sup>83</sup> By 1939, between his two facilities at Kodak Park in Rochester, New York, and Peabody, Massachusetts, Eastman was able to manufacture nearly all of the gelatin Kodak needed. “And it was gelatin made to specification; for by this time the key to gelatin’s character had been found. Gelatin could be made so that the essential ‘impurities’ were present in precisely the right amount.”<sup>84</sup> In its new appreciation of gelatin’s critical role in image development, the Eastman Gelatine Corporation skimmed only the most refined “stuff” off the rendering vat for its manufacture of sensitive photographic emulsions, allotting B-grade gelatin to food and pharmaceutical markets and no longer even bothering with animal glue. North America’s appetite for filmic images had spurred a reprioritization of rendered material, one concretely reflected in Eastman’s purchase of the Peabody plant, his regearing of the facility toward the manufacture of photographic

gelatin, and his sale of the glue-making side of the business. By simultaneously fetishizing animals as naturally photogenic figures in motion (as in the protocinematic studies of Marey and Muybridge) *and* as the emulsion industry's most photosensitive substance (nature had seemingly designed animal physiology "with the photographic process in mind"),<sup>85</sup> modernity accommodates a wildly disjunctive discourse on animal life. The kind of animal sign rendered through this disjuncture is at least double: disembodied signifier of seamless motion *and* mere material processed in staggering quantities at accelerating speeds through the abattoirs and reduction plants of the West.

The degree of biopolitical control requisite for managing the animal "accidental" of mass image culture is brought into even greater relief when Kodak's material unconscious—that is, the image industry's repressed contingency on animal rendering—is seen to have encompassed a traffic in animal remains from all over the world. In the gelatin documents that sit inconspicuously in the Eastman archives, another article gives surprising insight into Eastman Kodak's heterogeneous global sources of animal bones, horns, and hides, revealing a transnational traffic dating back to the 1880s and flourishing up until the Second World War. In "Commentary on Dry Gelatine Raw Stocks in Storage" (1969), a report that from all appearances was intended solely for an internal corporate audience, we can glimpse the global heterogeneity of animal material that Eastman Kodak collected to render into gelatin. The report shows that the corporation organized its imported "dry stock" into taxonomical types in an effort to distinguish gelatin rendered from Chinese water buffalo from "Type IV (X) material" (sacred cattle dying a natural death on the Indian subcontinent) and "Type III material" (South American livestock).<sup>86</sup> Rendering a global heterogeneity of animal matter into homogeneous types capable of feeding the precision manufacture of photosensitive gelatin required navigating geopolitical difference as well as controlling physiological variabilities of animal matter. Rendering a global traffic in animal remains immaterial to image culture ("You press the button, we do the rest") entailed not only reducing animals from all over the world to the abstract substance of the sign of photographic and cinematic exchange (to "mere

jelly”) but also rendering the volatile geopolitics of a transnational traffic in animal remains historically “unconscious” to the popular culture of film.

As “Commentary on Dry Gelatine Raw Stocks in Storage” inadvertently exposes, gelatin indexes complex geopolitical histories in which the mimetic power of mass images is imbricated in volatile global flows of raw material. Although demand for Eastman Kodak photography and film stock spiked during the Second World War (driven by new military interests in aerial photography and propagandist film), information relayed by the “Commentary on Dry Gelatine Raw Stocks” in the Eastman archives shows that the war also seriously disrupted the global supplies of raw stock feeding Kodak’s emulsion empire:

The Japanese invasion of Southeast Asia completely disrupted the collection of Water Buffalo hides. . . . (The lack of shipping and also the submarine activity effectively prevented any substantial quantities of cattle bones picked up in India from reaching Europe—and even if such shipments had been possible, they would have been to no avail, since Germany occupied the areas in Belgium and France where the acidulating plants are located.) Likewise, very little Type III material got through to us from South America (2).

As the document reports, supply of “Type III material” further dried up when the “Peron military dictatorship took over the Argentine government in 1944, and an embargo on raw bone exports was put into effect” (3). Indeed, in the seemingly mundane historical inventory of dry gelatin stock is inscribed a loaded catalog of “political upheavals,” giving us a glimpse into the material histories within which modern mass imagery was imbricated:

“Hoof-and-mouth” disease, temporary embargoes, the closing of the Suez Canal in 1967 after the 6-Day Arab-Israeli war, squeezing of the Grist Osseine supply temporarily by the Calcutta “ring” or the Brussels “club,” long-shoreman and shipping strikes, the India-China war, the India-Pakistan war, political upheavals in South America—all these and other factors influenced the supply picture from time to time, but we always were able to work around any particular problem with the help of our inventories (5).

Both the first and second world wars confronted Eastman Kodak with its vulnerable reliance upon foreign sources of gelatin, motivating Eastman to secure domestic supply and production of rendered material. The Eastman Gelatine Corporation became pivotal to Kodak's ability to continue and even accelerate its manufacture of film amidst global crisis.

One last item among the meager file of documents referring to gelatin in the Eastman archives—*A Handbook for the Men and Women of Eastman Gelatine Corporation* (1945)—allows the biopolitics of gelatin production to be developed from another angle. In this instance, automobility involved Taylorizing the worker into an “intelligent gorilla” of mass production, into a subject as scrutinized and standardized as the animal “accidental” of image culture that he or she helped to manufacture. In its handbook, “the Corporation” laid out the system of wages, benefit and insurance plans, and codes of conduct for its more than 350 employees.<sup>87</sup> This information is spelled out under the kindly gaze of “the Kodak family” father, Eastman, whose photo-portrait appears on the handbook's first page. Eastman's benevolence is reinforced with the information that the corporation supplemented employees' regular pay with annual wage dividends based on the value of its common stock, “paid in recognition of the contribution which loyal, steady, and efficient workers make to the success of the Corporation” (9). Like Ford with his wage of five dollars a day, Eastman generously afforded his laborers the ability to participate to some degree in the conspicuous consumption of the mass commodities they helped to produce, possibly even the purchase of pocket Kodaks that would allow them to better enjoy the week's worth of vacation time allotted employees of Eastman Gelatine each year.

The enticements of belonging to Eastman's family of trained gorillas were tempered, however, by “A Few Helpful Rules.” The handbook emphasizes that the company had little tolerance for “Tardiness” and that it expected “Neatness.” Under the heading “Personal Conduct,” the training of its labor force took on a less persuasionary and more forceful aspect: “Everyone is expected to refrain from improper language and to avoid horseplay of any kind. To interfere with or disturb another in his or her work without reason is cause for discipline” (35). Again, an

undertone of severity and surveillance laced the benevolent discourse of the corporation when it came to “Registering Your Time”: “By registering your times of entering and leaving work on your time-clock card, you help to make sure that your pay will be correctly made out” (34). Yet as Marx first clearly discerned, there is an “extra” time of labor concealed in the wage relationship that is critical to the creation of surplus value. If one kind of surplus was being rendered at Eastman Gelatine by skimming extra value off of animal remains, the more classical surplus rendered from capital’s workforce was skimmed off in the form of extra labor time. The employee time-clock card that is of such a piece with Fordism is a condensed figure of this concealed surplus mechanism of capital, an instrument of seemingly objective time accounting that renders invisible the differential between necessary and extra labor time so crucial to corporate profit margins. Industrial capitalisms’ economies of motion and scale chase an increasing reduction of necessary labor time (through the “speed-ups” of moving lines that Sinclair described so acutely in *The Jungle*), bringing the time of labor under even more minute measure. Hence the warning extended by the *Eastman Gelatine Corporation* in its *Employee Handbook*: “Failure to punch your clock card cannot be excused except for some very good reason” (34).

It was not just the time of labor that was carefully clocked as an ostensibly objective value; monitoring the behavior and cleanliness of the corporation’s workers was integral to the “purity” of the gelatin manufactured at Peabody. As the handbook explained to employees, “Gelatine is one of the most important raw materials used in the manufacture of photographic films, papers, and plates. . . . The gelatine used for this purpose must be of exceptionally high quality since the slightest impurity may affect the sensitivity of the emulsion” (6). At the Eastman Gelatine facility, the handbook stated, “good housekeeping is expected of everyone” to prevent material specks and motes from marring filmic emulsions and the mimetic magic of images (34). The handbook closes with a prohibition that calls to be read as an ironic summation of the invisibility demanded of the material nature and labor of mass visual culture: “No one is permitted to take pictures on Eastman Gelatine property without permission” (35).



### Automobiles: Recreating Animals

Having theorized the protocinematic spectacle of animal disassembly and the “material unconscious” of film, I now turn to trace how the animal capital of cars is triangulated with that of slaughter and cinema. If Ford modeled his Highland Park plant in Dearborn, Michigan, on the moving lines of Chicago’s vertical abattoirs, filmic and automotive productions in turn closely referenced each other’s technological advances across the twentieth century. As Kristin Ross notes in the context of her study of modern French cinema, “the two technologies reinforced each other. Their shared qualities—movement, image, mechanization, standardization—made movies and cars the key commodity-vehicles of a complete transformation in European consumption patterns and cultural habits.”<sup>88</sup> It is seldom recalled, moreover, that early Ford factories were themselves sites of cinematic as well as automotive production. In 1914, “Henry Ford established a Motion Picture Department in his Dearborn, Michigan automobile plant,” writes Andrew Loewen, producing short films on a wide range of subjects including developments in industrial technology, history, warfare, and of course “the workings of Ford factories themselves.”<sup>89</sup> In contrast to Beller’s suggestion that the mode of cinematic production emerged *after* Fordism, Loewen splices automotive and cinematic modes of production in his theorization of the simultaneity of “auto-cinematic production,” one that seeks to account for “the historical and operative inextricability of industrial automotive and cinematic social production” posed by Ford’s Motion Picture Department (4). “In a departure from Beller’s periodization and in marked contrast to theorists of immaterial labor more generally,” writes Loewen, “cinema’s birth inside the factory testifies to the emergence of intensive (subjective) labor within the extensive outlines of the Fordist paradigm” (5).

The biopolitical times of animal capital theorized in this book also cut across and complicate clear period distinctions within the history of capitalism, inasmuch as carnal and symbolic economies of rendering can be seen to operate concurrently in Fordist as well as post-Fordist eras. Just as it is important to discern forms of “intensive (subjective) labor” already at work in Fordist culture, however, it is also crucial to confront a dematerialized image of post-Fordist culture with capital’s

continuing contingency on the material bodies of labor and nature. In this section I suggest that the ubiquitous practice of metaphorizing cars as animal can be counted among the more powerful dematerializing forces of (neo)liberal culture and interrogated for the disavowal it enables of the escalating social and ecological costs of mobility. Through an analysis of a 2002 Saturn Vue campaign I suggest, moreover, that the rendering of animals marks a productive site of discursive continuity rather than discontinuity across Fordist and post-Fordist eras. For while the time-motion logics organizing assembly line production have been revised if not wholly dislodged by post Fordist systems of flexible production, what has stayed in place and indeed intensified is the mimetic productivity of animal signs deployed to manage capital's volatile material relations.

While automobiles were certainly fetishized as animal in early Fordist culture, animal metaphors proliferated in market discourses of the second half of the twentieth century as capital was increasingly diverted into the symbolic as well as the material production of cars. Massive investment of capital in the semiotics of advertising and branding is considered one of the key markers of post-Fordism and a sign of the paradigmatic shift in emphasis from material to symbolic economies within the history of capitalism. To give one concrete example of this shift in capital investment, according to *AdAge* the General Motors (GM) corporation spent \$609 million in measured media in the first quarter of 2002 alone.<sup>90</sup> In the same year, one of GM's subsidiaries, the Saturn corporation, launched a \$35 million ad campaign introducing its new sports utility vehicle (SUV), the Vue. In what follows, I track the animal capital of cars across the twentieth century to GM's Saturn "experiment" in the 1980s and to the post-Fordist culture of production that Saturn introduced within North America.<sup>91</sup> GM spawned Saturn in an attempt to compete with Japanese imports and to create an American answer to a "just-in-time" model of production (Toyotism) that sheds the material stockpiles, serial logic, and standardized mass units of Fordism in favor of maximum weightlessness, flexibility, and niche production. The popular sense promoted by Saturn that just-in-time production is *less material* in its conditions and effects than Fordist production is epitomized by its 2002 Vue campaign, one presenting a

series of ecological dioramas in which the SUV emerges as a species of wildlife. As I have noted, rendering automobiles animal is a ubiquitous gesture in car culture, but its potent ecological articulation in the Saturn campaign can be read as symptomatic of intensifying contradictions in the current era between a dematerialized image of neoliberal culture that automobiles help to ideologically drive and all too material signs of their ecological and social deprecations. As the Saturn campaign illustrates, animal signs have become key to managing the material contradictions of neoliberal culture at the level of mimesis.

A 2002 television ad for the Volvo Cross Country gives an initial glimpse into the mimetic value or capital of animals in car advertising. The ad, opening with a shot of the Cross Country as it speeds north, at dusk, toward an exotic arctic house, focuses on a female driver with a man asleep in the passenger seat beside her. The woman-car hybrid is the only body moving on the road. Suddenly, a herd of caribou erupt out of the dusk and stream across the highway, a latitude transecting the longitude of the car's movement directly within the cross-hairs of the driver's field of vision. The car comes to a stop: time and motion are for an instant suspended in a magical pause as the scene transacts a mimetic identification between the migratory animal collective and the Cross Country. The car and the caribou commune, it appears, by means of their common emotional sensors and innate powers of "affective computing."<sup>92</sup> The female driver, moreover, is essential to the consolidation of the mimetic moment: woman's biological wiring ostensibly attunes her to the mysterious unianimality of car, caribou, and driver. The male passenger, representing the rational consciousness of culture, remains oblivious to the magnetic call of the wild roused in the Cross Country and in his wife. After a second of still sensing, the caribou disappear into the night, the Cross Country resumes full speed heading north, and a sparse, parting text flashes on the screen: "Volvo for life."

The aesthetic interest generated by crossing animal and automobile (not to mention woman) at this biopolitical intersection is profoundly at odds with cars' ecological exploits and impacts. It is not just the repressed historical contingency of automotive assembly on animal disassembly that materially contradicts the fetishistic crossing of automobile and animal in the Volvo ad but the violent displacements of

wildlife and their habitats that has occurred as cars, roads, and fossil fuel extraction have carved ever more deeply into animal territories over the course of the twentieth century.

Michael Taussig's analysis of the famous RCA Victor logo "His Master's Voice," in which a dog is shown listening quizzically to a sound reproduction emanating from the "ear trumpet" of an early phonograph, helps to illuminate the pivotal role of the animal in bending mimesis to market ends.<sup>93</sup> Taussig contends that in testing the mimetic power of the phonograph against the natural faculties of an animal, the RCA Victor logo cleverly plays on the dual connotations of "fidelity." "Everything," writes Taussig, "turns on the double meaning of fidelity (being *accurate* and being *loyal*), and on what is considered to be a mimetically astute being" (213).<sup>94</sup> As opposed to the car and the caribou in the Volvo ad, at stake in the RCA Victor logo is the testing of a canine's discerning sensors against the sound fidelity of the phonographic reproduction, a reproduction so convincing that the dog is led to believe that his master must be present inside the machine. As Taussig discerns, moreover, "Where politics most directly enters is in the image's attempt to combine fidelity of mimetic reproduction with fidelity to His Master's Voice," according to the twin connotations of fidelity as the machinic measure of a quality reproduction and as affective obedience, or faithfulness (223). In this drama of fidelity, a technological reproduction so true to life that it passes for original is tested on an animal's sensory and soulful faculties, with both complimentary and comic results: the dumb animal is bewildered, tricked by the perfect projection of his master's voice. The animal is simultaneously granted a natural talent for sniffing out the difference between the presence of an original and the imposture of a copy *and* discriminately put back in its place when its senses are outwitted by a masterful machine. The covenant between dog and master becomes an obedience lesson not only in recognizing the superior mimetic powers of machines but also in responding with affective loyalty to the market that calls to us through the powerful mimetic tool of the RCA Victor logo itself.

While the mimetically capacious machine invariably emerges from this biological test as superior, automobile discourses will obsessively repeat their challenge to an animal figure that is indispensable to the

mimesis of the market. As Taussig puts it, “The technology of reproduction triumphs over the dog but needs the dog’s validation” (213). The drama of fidelity reappears at the intersection of Cross Country and caribou in the Volvo ad, where the car passes the biological test posed by the caribou crossing its path. It is also rearticulated, with a difference, in the Saturn Vue campaign. Before turning to the Saturn campaign, however, let me first trace what amounts to a highly cursory beeline through a complex century of automotive culture in order to provide something of a connecting thread between Ford’s visit to the slaughterhouse, with which this chapter opened, and Saturn’s deployment of animal signs in the current era.

According to James Flink, Ford “longed to rid the world of unsanitary and inefficient horses and cows” and thus set to work to replace the horse, long the organic standard of physical transport.<sup>95</sup> Impressed by the moving disassembly lines of Packingtown and the time-motion studies of Muybridge and Taylor, Ford devised a mode of mass production that would indeed usher in a “horseless age.”<sup>96</sup> Jonathan Crary explicitly links the time-motion studies of Eadweard Muybridge to the physical displacement of animal traction by new locomotive powers: “The horse, which had been for thousands of years the primary mode of vehicular movement in human societies, is symbolically dismantled into quantified and lifeless units of time and movement.”<sup>97</sup> In 1908, the Ford Motor Company presented to the public its first mass-assembled vehicle, the Model T. Ford models effectively displaced their “unsanitary” originals even as they retained, in the metaphor of horsepower, “the traces of an incorporated animality.”<sup>98</sup> As Lippit puts it, the horsepower engine is an “equine crypt.”<sup>99</sup> By mid-century, the cars manufactured by the Ford corporation would begin to be explicitly marketed as substitute animals. With the release of the Ford Mustang and the pony class of vehicles in the 1960s, the mimetics of the Ford corporation began to challenge wild rather than domestic animals as ultimate models of seamless mobility and effortless speed. Indeed, in the 1970s and 1980s, Ford launched a wild animal series with the Ford Mercury Bobcat (1978), Lynx (1980), and Cougar (1983).

Although Ford’s modeling of the automotive assembly line on the disassembly of animals in the abattoir gave him a logistical head start

on mass production, in 1927 GM gained an aesthetic advantage over Ford under the presidency of Alfred Sloan. Sloan established the first Art and Color Department in the automotive industry, hired Harley Earl as its head, and turned styling into an economic priority (rather than a superficial flourish) of automobile manufacture. In GM's Art and Color Department, as in Ford's Motion Picture Department, it is again possible to see the immaterial or symbolic labor usually identified with post-Fordism already inseparably entwined with assembly line production. Earl's previous work on Hollywood film sets allowed him to bring "celluloid lessons" to bear on automotive sheet metal.<sup>100</sup> Under Earl, an aesthetic of organicism carried the mimetic capabilities of the automobile head and shoulders over the assembled look of Ford's Model T. Earl was known for producing full-size model cars out of clay to achieve effects of streamlining and organic curvature that could conceal the component make-up of mass-assembled vehicles.

The mimetic trajectory that led the Ford Motor Company to its Bobcat, Lynx, and Cougar series of the 1980s (and later to its current breed of wild off-road SUV) was one that the GM corporation also followed, often with an edge on ostentatious styling. GM pushed its streamlining aesthetics to the aerospace- and fish-inspired "finned" vehicles of the 1950s. The OPEC (Organization of Oil-Exporting Countries) embargo and the energy crisis of the 1970s forced GM to review its overblown aesthetic agenda, however, and to consider the manufacture of subcompact and energy-efficient cars. This historical bee line cannot begin to do justice to the complexity of the OPEC embargo and other events in the 1970s, a decade viewed by many as the historical turning point from modernity to postmodernity. For the purposes of this chapter, however, it can be seen to have led to GM's decision, in 1985, to spawn the Saturn Corporation with the aim, among other things, of surviving within a highly competitive global economy.

The Saturn Corporation is popularly viewed as a rogue division of General Motors determined to disassociate itself from its lumbering parent company by pioneering a flexible, post-Fordist culture of automobility that the rest of GM would be wise to model. Saturn has been touted as a model of the "networked organization" that is "set up to achieve heterogeneous objectives of multiple stakeholders rather than

to simply conform to the single goal of the American firm that seeks to maximize shareholder value.”<sup>101</sup> Among the motives inspiring the Saturn project were the rapid loss, over the course of the 1970s and 1980s, of GM’s domestic market to quality Japanese imports, its growing realization that among those choosing imports over cars of dubious quality “made in America” was an increasingly affluent constituency repelled by the masculinist brand cultures of companies like GM (namely, professional women), and its even more compelling insight that to continue making exponential profits the auto industry needed to avert losses of time and money caused by nagging labor disputes. GM’s Saturn “experiment” refers, above all, to a model of labor-management relations incubated at the Saturn “learning laboratory” in Spring Hill, Tennessee, one whose inscription as a pedagogical rather than an economic project is indicative of automobility’s increasingly mimetic means.<sup>102</sup>

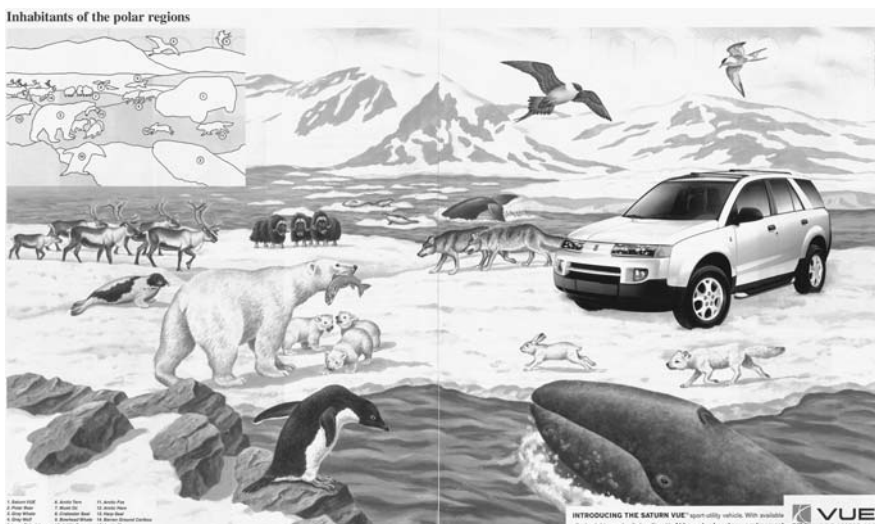
Alongside its new participatory relationship to labor, the culture of Saturn also promotes the sense that its post-Fordist production of automobiles is no longer contingent on the material exploitation of nature. Massive stockpiles feeding the “volume production of standardized commodities” in Fordist culture are dispersed through a network of suppliers so that, rather than being stored in monolithic warehouses and tying the manufacturer down with weighty inventories, resources and parts can instead be ordered for the just-in-time production of customized vehicles.<sup>103</sup> These parts then pass through a cluster of self-directed work teams (heavily aided by electronics technologies) capable of assembling a range of computer-rendered models that are, finally, shipped out to customers through a web of retailers. Here, materials are summoned, sutured, and dispersed with the speed and seeming ease of technological communication. Yet this deterritorialized production scenario arguably entails an even greater command over material resources than that demanded by the Fordist assembly line. The fetishistic effect of immediacy and immateriality excited by a rhetoric of postindustrial production—so that a car’s computer-rendered image appears to constitute its moment of production—displaces recognition of the intensifying material demands automobility places on people, resources, and environments globally.

The postindustrial image of a custom-designed automobile that appears to have a manifest rather than manufactured existence is epitomized by the Saturn Vue campaign I have been approaching. The Vue—"at home in almost any environment"—is just one SUV among many that serve to powerfully naturalize the cultural ideology and material technologies of neoliberalism that they represent. The tagline of Toyota SUVs is "You Belong Outside"; Ford SUVs, such as the Explorer, celebrate "No Boundaries." Before it changed its tagline to "Shift" in September of 2002 (fusing automotive gears and digitized cursors into a single function key of mobility), Nissan's Xterra was animalistically rather than fossil fuel "Driven." Yet an even more unabashed mimicry of automobile and animal emerged with the Vue ads. Two decades after GM created Saturn with the aim of manufacturing energy-efficient vehicles, the vision of the subcompact fell to the wayside as Saturn trumpeted the arrival of its SUV.<sup>104</sup>

The particular print ad from the Saturn campaign analyzed here, "Inhabitants of the Polar Region," is a two-page spread that enacts, even in its sprawling occupation of media space, the Vue's imperial promise of an unlimited traversal of terrestrial space (see Figure 5).<sup>105</sup> Organized as an interactive educational exercise, "Inhabitants of the Polar Region" invites readers to cross-reference three visual components: an illustrated animal panorama, a black and white numbered cut-out in the upper left-hand corner, and the taxonomic key of animal names in the lower left-hand corner. By cross-referencing all three, consumers are engaged in a learning game that involves the identification of wildlife species, including the Vue, which is the first species listed on the taxonomic key. Corporate pedagogy teaches natural history to consumers of the twenty-first century. The aura of early childhood evoked by its pedagogical address underscores the strategy used by the ad to manage automobility's economy of power: *mimetic* management of the relation of nature and culture. After all, children, like animals and "primitives," have been constructed as natural mimics who learn by copying.<sup>106</sup>

The taxonomic system of classification mimicked by the ad presents a synchronic cross-section of a state of nature, of naturally occurring biodiversity. As a synchronic slice, the ad presents a timeless "still," a





*Figure 5. The advertisement “Inhabitants of the Polar Regions” (2002) appeared in a \$35 million marketing campaign for the Saturn Vue SUV promoted by the Saturn Corporation, a division of General Motors.*

representative range of animal life outside of contingent historical forces such as human management and exploitation. The Vue is not depicted in motion, as a moving picture, but as a still life object. If the ad puts time under suspension by inviting viewers to relive childhood as a period of primal, timeless schooling in mimetic identification, it also suspends motion. It is tempting to read Saturn’s still life as a naturalist rendition of just-in-time production in which the time-motion economies of Fordist moving lines have been replaced by a post-Fordist instantaneity of conception and execution that oddly resembles a static state. The ad, in this reading, holds up nature as a mirror image of post-Fordist production space, with its rhizomatic network of independent contractors, self-directed teams, and participatory involvement of labor and nature. The ad could be read as posing bioregion and biodiversity as the ecological equivalents of the “networked organization,” with different animal species representing its “multiple stakeholders.” However, while “Inhabitants of the Polar Region” can be critiqued for its suggestion that a postindustrial economy has its natural counterpart in ecology, there is more going on in the ad. At stake in the Vue text is

not only the naturalization of an economic reality conceived as external to the space of representation but the management of mimesis as itself a site of post-Fordist production.

In positioning the Vue within a painterly diorama in which time and motion seem suspended, the vehicle appears to be intent only on the mimetic movement of becoming like the animals around it. Yet what at first glance looks like a flat painterly plane upon which animals and automobile are rendered equivalent can be seen, on closer inspection, to be a differentiated topography containing at least two grades of mimetic fidelity. A close look at the lower left-hand corner of the Saturn ad (discernible only as a faint smudge above the legend in this reproduction of the image) reveals that the animal illustration has been signed by the hand of "K. Pendleton." The mimetic technology adequate to the representation of animal life, in other words, is the relatively rude naturalism of hand-drawn art. The Vue, on the other hand, asserts its difference through the enhanced mimetic technology it introduces into the visual ecology: the Vue is a computer-rendered image whose supernatural mimetic fidelity makes the hand-drawn images of the animals appear naïve in comparison. The taxonomic discourse of species identity that equalizes the Vue and polar species is simultaneously disavowed by the ad's use of an "advanced" representational technology for the car body in comparison with the one used to render the animals. A discourse of technological progress encoded in the digital sharpness of the Vue subtly distinguishes it from the surrounding wildlife with whom it at first seems to coexist. The wildlife is, in effect, demoted in the ecological hierarchy by the heightened representational fidelity of the SUV.

As in the RCA Victor logo analyzed by Taussig, the Vue ad's differentiation of levels of mimetic fidelity also naturalizes a relationship of mastery between culture and nature. The animals are demoted not just through the appearance of a body with superior fidelity but also by virtue of a narrative of time implied in the "evolution" of mimesis. The ad's ecological diorama positions wildlife as a predecessor of the Vue, consigning all but the Saturn "animal" to a frozen past, even to extinction (that several of the animals listed on the taxonomic key are endangered predicts their imminent "pastness"). Despite the valorization

of the animal as an organic metaphor of automobility, or rather because of it, animals are consigned to being originals necessarily predating, and never matching up to, the second nature of capital. The anachronistic effect and nostalgic affect produced by the ad's imitation of a primary school textbook serves to reinforce the solo currency of the SUV body, whose cutting-edge verisimilitude projects it alone as a presence in the present. An evolutionary narrative of survival of the fittest is thus retooled along a trajectory of mimetic prowess. There is what Johannes Fabian calls a "denial of coevalness" insinuated within what at first looks like a synchronic tableau of coexisting wildlife.<sup>107</sup>

Moreover, the SUV performs its perfect autonomy. There are no tread marks showing the path from factory to wilderness, nor is there any need, it would seem, of a human operator. Yet the darkly tinted windshield at the same time makes it impossible to determine whether there is in fact a human subject inside the vehicle. As in the case of Foucault's reading of Bentham's Panopticon, the inability to confirm either the presence or the absence of a human operator introduces into the scene an aspect of surveillance that also contradicts the animal immanence claimed by the *Vue*. If the *Vue* is included in the list of animals composing the taxonomic key, its tinted windshields contradictorily hint at an invisible human presence—an imperial eye—overseeing the animal panorama. An ecotouristic gaze hides behind the windshield (and less subtly in the name *Vue*) to locate the sovereign act of consumption within the capitalist ecology.

Different color codings operate like molting coats in the Saturn campaign, allowing the *Vue* to coordinate with any environment. In a companion ad, a red *Vue* mimetically blends in with "creatures of the evergreen forest." This is niche marketing at its most literal. And, as in "Inhabitants of the Polar Region," in other ads in the campaign animal and automobile are again mimetically identified *and* distinguished along the lines of the different rendering technologies used to depict them (pictorial naturalism versus digital supernaturalism) and the hierarchy encoded in that difference.

Yet the controlled mimesis that intimately juxtaposes animal and automobile to calibrate their sameness and difference also holds the potential of igniting recognition of automobility's material contradic-

tions. While roadkill is perhaps most emblematic of the violence at material intersections of animal and automobile, car culture materially displaces animals in far more systematic ways as well, through the infrastructure of roads and highways that transect animal habitat and through the incalculable costs of fossil fuel extraction. Moreover, if automobiles emerge, in part, out of a desire to replace the animal traction of the horse, across the twentieth and early twenty-first centuries they have also worked to outmimic animal life and to symbolically occupy the place of animal life. However, while the *Vue* campaign generates enormous affective energy by posing species and SUV in ecological intimacy, it cannot guarantee its ability to mimetically master the political volatility of their proximity.

### **Speculation and Specie**

American stock market offices opened up and gathered momentum amid the noise, stench, and animal traffic of Chicago's stockyards. For nearly a century, speculative and specie value—virtual and carnal capital—shared the common designation of “stock.”<sup>108</sup> By the 1970s, however, the period in which Fredric Jameson relates the rise of postmodernist culture to increasingly spectral flows of global capital, the animal trade at the Chicago stockyards was closed down.<sup>109</sup> Animals had become the too-literal, and faintly embarrassing, biological substance of the increasingly virtual sign of “stock.” More and more remote from their animal correlates in material history, stock markets at the turn of the twenty-first century now appear to conduct sheerly ethereal global trades in fictitious capital.

In “Recollecting the Slaughterhouse,” Dorothee Brantz traces the rise and demise of centralized public abattoirs in the West, both those founded in Chicago in 1865 and those built in Paris in the 1860s at the bidding of Baron Georges-Eugène Haussmann. In Brantz's diagnosis, the “post-industrial age witnessed the demise of the modern mass-slaughterhouse because it did not fit into the image of the so-called postmodern city.”<sup>110</sup> Since the evacuation of slaughter from urban space in the early 1970s, “meat-market districts in New York and Chicago have been transformed into trendy hangout areas and loft neighborhoods,

reinventing the slaughterhouse as an aestheticized space for consumption and entertainment” (122). Continues Brantz, “Just last year [2000], Les Abattoirs, a museum for contemporary art, opened in Toulouse, France, on the premises of a 19th-century slaughterhouse” (122).

Among the more notable postmodern rehabilitations of slaughter space traced by Brantz is that of Paris’s La Villette abattoir, recently transformed into “a ‘polyvalent cultural complex’ that houses a science museum, festival space, and la Cité de la Musique” (123). Upon viewing an outdoor screening of a movie at the old abattoir, Brantz was struck by the superimposition of moving images on premises formerly devoted to animal disassembly. “Watching the film projected onto the former cattle market . . . was an eerie experience,” she writes (123). Trying to capture a sense of the radical cultural shift La Villette undergoes as its former traffic in animal life and death is replaced with a spectral traffic in images and entertainment, Brantz declares that “the park of La Villette is not just architecture turned against itself. It is life turned on its head” (123). These are, resonantly enough, the terms in which Marx described the fetishism of the commodity, which “stands on its head, and evolves out of its wooden brain grotesque ideas, far more wonderful than if it were to begin dancing of its own free will.”<sup>111</sup>

Yet in her recollection of the historical premises of postindustrial culture, Brantz inadvertently reinforces the hegemonic sense that postindustrial traffics in images and entertainment are no longer a material matter of life and death as opposed to the “deadly spectacle” and “carnivore feast” they historically replace (118). Through a cross-examination of the protocinematic consumption of slaughter, the carnal composition of filmstock, and the mimetic powers of automobiles, this chapter has sought to complicate the equation of industrial capitalism with materiality and postindustrial capitalism with immateriality, as well as to challenge the idea that the former is now “history.” Given the heightened immateriality effects surrounding the production and consumption of neoliberal culture in an era of globalization, the carnal conditions and effects of capital more than ever need to be historically “developed,” in Bill Brown’s sense. Such an effect of immateriality was excited, among other things, by Kodak’s announcement in 2004 that it was extricating itself from the material business of making film due to

the digitization of image production. It is also an effect, as I suggested in my reading of the Saturn Vue campaign, of a discourse of post-Fordism that encourages the idea that automobiles spontaneously manifest in the space of just-in-time production.

At the beginning of this chapter I remarked that critiques that have taken humans (and in the Marxian tradition, workers) as the focal subjects of material history leave a whole biopolitical terrain of animal signs and substances—massively productive for cultures of capital—unexamined. Yet any biopolitical organization of human populations in the service of reproducing capital arguably presupposes a related organization of animal populations. As James O'Connor puts it, in reverse terms, the “history of nature . . . is in some small or large part the history of labor.”<sup>112</sup> In the Fordist histories reopened by this chapter, the politics of labor and of nature are indeed inseparable. Fordizing and Taylorizing discourses intent on reducing workers to “the body part” best able to efficiently perform a piecemeal motion over and over again on the assembly or disassembly line presuppose the possibility of producing nature as a homogeneous and uninterrupted flow of material.<sup>113</sup> Yet, especially when this material is animal, such homogeneity is never absolute or guaranteed. As Vialles notes in the context of the abattoir:

Job fragmentation is fully effective only in connection with material that is perfectly regular and always the same. Here, though, the regularity is only ever approximate; the suspended body retains traces of the unique life that once animated it: illnesses it may have had, accidents it may have suffered, various anomalies that may characterize it. The contingency and individuality of the biological sphere resist the formal rigour of technical organization.<sup>114</sup>

Automotive and meatpacking plants mark two sites where nature and labor have been most rigorously produced as parallel subjects of modern capitalism’s time-motion economies but also where “the contingency and individuality” of laboring bodies has continuously erupted in protest. In the 1930s, sit-down strikes protesting speed-ups in assembly lines were devised in specific response to the time-motion logics structuring the work (and play) of mass culture. The violence used to break sit-down strikes in order to keep the Fordist lines running gives

us a glimpse into the associated force required to feed a continuous stream of animal or other material onto the moving tracks of capital. In the second half of the twentieth century, wildcat strikes have emerged to protest a post-Fordist organization of labor through “disorganized” or spontaneous walk-outs of workers, simultaneously disrupting the workplace and subverting the legal framework that contains striking within union-management protocols. The identification of workers with the wildcat in impromptu walk-outs not only disrupts production and subverts a logic of union representation that many feel is compromised by unions’ close ties with management in the post-Fordist era; it also breaks a mimetic monopoly on animal signs by hegemonic discourses of advertising and branding. Labor’s identification with the wildcat in an unauthorized strike is dramatically different from the controlled mimesis at work, for instance, in the Cougar, Lynx, and Bobcat series marketed by Ford in the late 1970s and early 1980s.

However, while the histories of capitalist labor and nature are invariably entangled, when it comes to developing material histories of protest, human labor and animal nature are also incommensurable. Their incommensurability lies in the difference between human subjects of history, whose protests are inscribed within the horizontal possibility of representational politics (even when, as in wildcat strikes, labor chooses to preempt representational politics and engage in micro-politics), and animal subjects, whose protest is either mediated through a system of anthropocentric representations or remains utterly unintelligible. Even more than the most unintelligible figures of human life and precarity—subaltern women<sup>115</sup>—animals suffer the double binds of representation: they are either excluded from the symbolic order on the grounds of species difference, or anthropomorphically rendered within it.

Gayatri Spivak suggests that the “physiological inscription” posed by Bhubaneswari Bhaduri (a young Indian woman who hanged herself in 1926) becomes a “subaltern rewriting of the social text” only in its “distanced decipherment by another.”<sup>116</sup> So, too, do animal signs of protest require “decipherment” if they are to politically disturb “the dominant cultural memory” of capitalist modernity and postmodernity.<sup>117</sup> This winds me back, finally, to Bill Brown’s theory of the “material

unconscious.” Brown contends, if you’ll recall, that literary texts retain marks of a material everyday, seemingly negligible or excessive marks that constitute traces or tips of undeveloped histories. While such marks signal entry points into material histories suppressed by hegemonic accounts, they are at the mercy of future acts of decipherment that alone can “develop” them and bring them to historicity.

Signs of animal protest awaiting counterhegemonic production are strewn all over the social texts of modernity, as yet unactivated links to repressed histories of animal capital. For instance, in his study of a Banff taxidermist by the name of Norman Luxton, Mark Simpson retrieves a letter in whose irritation is inadvertently etched the historical materiality of animal life that the taxidermist aims to put under suspension. In this case, the “physiological inscription” of animals’ own rotting bodies protests the goal of producing animals as undying currencies:

In a letter dated 4 June 1910, John Ambrose, a taxidermic colleague of Luxton’s working in Winnipeg, writes to express his outrage about the condition of a shipment that has recently arrived: “I received the Sheep heads last Monday in a very bad condition, putrid, rotten and the majority full of maggots. It was a disgusting job to clean them and I think, they should not have been shipped in such a condition.”<sup>118</sup>

More than the taxidermist bargained for, such a somatic assault is, as Simpson suggests, “one way in which flayed animals come to undo their butchers” (98).

Animal signs capable of protesting and competing with those metaphorically and materially rendered in service to cultures of capital are not found, then, but produced, as in Simpson’s analytic production of a carnal disturbance in the business of taxidermy. While this chapter has developed particular histories of animal capital in relation to the triangulated economies of slaughter, cinema, and the automobile, I can only point to the importance of also developing histories of animal agency. For the rendering of animal capital is surely first contested by animals themselves, who neither “live *unhistorically*” nor live with the historical passivity regularly attributed to them.<sup>119</sup>



ideologies of external and universal nature,” argues Castree, “there is the risk of reverting to a monism centered on the labor process—the production of nature—which tends to exaggerate the transformative powers of capitalism” (20).

93. Negri, “Constitution of Time,” 41.

94. Bruno Latour elaborates a complex political philosophy around the possibility of a “collective” democratically composed of both humans and nonhumans (*Politics of Nature: How to Bring the Sciences into Democracy*, trans. Catherine Porter [Cambridge, Mass.: Harvard University Press, 2004], 82). Although Latour does not, to my mind, adequately acknowledge power asymmetries between humans and nonhumans within the heterogeneous assemblages he evokes (particularly when he privileges laboratories as spaces mediating the voices of nonhumans), he does provocatively illuminate the limits I have been arguing in relation to the work of Negri when he declares: “While the revolutionary examples have their charm, still, the constitutional upheavals of the past concerned humans alone! Now, today’s counterrevolutionary upheavals also concern nonhumans” (60).

95. See David L. Meeker, ed., *Essential Rendering: All about the Animal By-Products Industry* (Arlington, Va.: National Renderers Association, 2006). The rendering industry’s commitment to biosecurity in response to public health concerns has its historical precedents. The U.S. Food and Drug Administration was created, in large part, in response to the public agitation stirred by Upton Sinclair’s disturbing representation, in *The Jungle* (1905), of the unknowns that fall into the rendering vat and end up in the sausages.

96. Andrew Ross, “The Ecology of Images,” in *The Chicago Gangster Theory of Life: Nature’s Debt to Society* (London: Verso, 1994), 165.

97. Negri, “Constitution of Time,” 105.

98. O’Connor, “Misadventures of Capitalist Nature,” 133.

99. *Ibid.*, 136.

## 2. Automobility

1. David Harvey, *The Condition of Postmodernity: An Inquiry into the Origins of Cultural Change* (Cambridge, Mass.: Blackwell, 1990), 28. James Flink likewise claims that “the Ford Motor Company innovated modern mass-production techniques at its now Highland Park plant” (*The Automobile Age* [Cambridge, Mass.: MIT Press, 1988], 37).

2. “It is uncertain where or when the overhead assembly line origi-

nated," writes Louise Carroll Wade, "but many Cincinnati and Chicago plants had them by the late 1850s" (*Chicago's Pride: The Stockyards, Packingtown, and Environs in the Nineteenth Century* [Urbana: University of Illinois Press, 1987], 62).

3. Antonio Gramsci, *Selections from the Prison Notebooks*, ed. and trans. Quintin Hoare and Geoffrey Nowell Smith (New York: International, 1971), 235.

4. Frederick Winslow Taylor, *Principles of Scientific Management* (New York: Harper and Brothers, 1914), 40.

5. Taylor proposed to improve the inefficient motions of pig iron handlers in Pennsylvania steel mills, stating: "This work is so crude and elementary in its nature that the writer firmly believes that it would be possible to train an intelligent gorilla so as to become a more efficient pig-iron handler than any man can be" (*Scientific Management*, 40).

6. The sign of the monkey is at the same time racially overdetermined (as I examine in detail in chapter 4), suggesting that Taylorism also perpetuated a biological discourse of race.

7. Gramsci takes up Taylor's comment on the "intelligent gorilla" as the most condensed expression of the effort "to develop the worker's mechanical side to the maximum, to sever the old psychophysical nexus of skilled professional work in which the intelligence, initiative, and imagination were required to play some role, and thus to reduce the operations of production solely to the physical aspect" (*Prison Notebooks*, 214, 216).

8. Gramsci, *Prison Notebooks*, 169.

9. Bill Brown, *The Material Unconscious: American Amusement, Stephen Crane, and the Economics of Play* (Chicago: University of Chicago Press, 1996), 5.

10. In another recent reconsideration of Fredric Jameson's theory of the political unconscious, Lawrence Buell theorizes "the environmental unconscious" (*Writing for an Endangered World: Literature, Culture, and Environment in the United States and Beyond* [Cambridge, Mass.: Harvard University Press, 2001], 18). Like Brown, Buell privileges literature as a site of access to material history while arguing that material history needs to be considered more broadly as environmental history. Thus, for Buell, the environmental unconscious constitutes a literary subtext that inscribes culture's inescapable "embeddedness in spatio-physical context" (24).

11. Brown, *Material Unconscious*, 13, 14.

12. As Brown notes, "The (structuralist) Barthes of 'The Reality Effect' (1968)" reads Flaubert's barometer "as a superfluous notation, a diegetically

and symbolically nonfunctional detail of the sort that realism deploys in the effort not to denote a specific materiality but to . . . effect the realist illusion” (*Material Unconscious*, 15).

13. *Gelatin* will sometimes appear with an *e* and sometimes without over the course of this chapter, reflecting its inconsistent spelling in the texts I refer to.

14. Here I use *vanishing point* to name the point at which animal material is rendered perfectly nontransparent to visual culture, as well as the moment in the slaughter of animals at which, in the words of Noëlie Vialles, they become just “a substance to be processed” (*Animal to Edible*, trans. J. A. Underwood [Cambridge: Cambridge University Press, 1994], 44). In his early description of a tour of a slaughterhouse, Frederick Law Olmsted used the words “vanishing point” to name this identical moment: “We entered an immense low-ceiled room and followed a vista of dead swine, upon their backs, their paws stretched mutely toward heaven. Walking down to the vanishing point, we found there a sort of human chopping-machine where the hogs were converted into commercial pork” (*A Journey through Texas, or A Saddle-Trip on the South-western Frontier* [1857; reprint, Austin: University of Texas, 1978], 14, quoted by William Cronon in *Nature’s Metropolis: Chicago and the Great West* [W. W. Norton, 1991], 228. *Vanishing point* also references a perspectival effect in the visual arts.

15. Brown, *Material Unconscious*, 14.

16. Akira Mizuta Lippit, *Electric Animal: Toward a Rhetoric of Wildlife* (Minneapolis: University of Minnesota Press, 2000), 104.

17. Brown, *Material Unconscious*, 5.

18. The claim that “the animal lives *unhistorically*” is Friedrich Nietzsche’s, from “On the Uses and Disadvantages of History for Life,” in *Untimely Meditations*, trans. R. J. Hollingdale (Cambridge: Cambridge University Press, 1983), 61, quoted by Lippit in *Electric Animal*, 68.

19. Jonathan Crary suggests that “any optical apparatus,” in this instance the camera obscura, is “what Gilles Deleuze would call an assemblage . . . a site at which a discursive formation intersects with material practices” (*Techniques of the Observer: On Vision and Modernity in the Nineteenth Century* [Cambridge, Mass.: MIT Press, 1992], 31). Geoffrey Batchen takes a similarly nonempirical approach by locating the conditions of photography in a framework of “discursive desire” rather than in its technological determinations (*Each Wild Idea: Writing, Photography, History* [Cambridge, Mass.: MIT Press, 2001], 5).

20. Brown, *Material Unconscious*, 239.

21. Wade, *Chicago's Pride*, 32.

22. Ibid., xiv. Writes Wade: "In 1875, when the stockyard was only ten years old, a Chicago editor asserted that visitors would as soon think of leaving the city without having seen the yards and packinghouses as 'the traveler would of visiting Egypt, and not the pyramids; Rome, and not the Coliseum; Pisa, and not the Leaning-Tower'" (*Chicago's Pride*, xi).

23. Wade, *Chicago's Pride*, xiv.

24. There seems to have been a historical "window" in which slaughter enjoyed and capitalized on its visibility rather than sought invisibility, a window in which tours of abattoirs were immensely popular and the industry played a large role in publicizing the modern nation's efficiencies. This window did not remain open for long, however; although tours of slaughterhouses have continued across the twentieth century and into the twenty-first (often with the pedagogical purpose of giving schoolchildren a glimpse of industrial economy), the space of slaughter has become increasingly identified with resistance to graphic exposure, so that films of slaughterhouses circulated by animal rights organizations such as People for the Ethical Treatment of Animals in the second half of the twentieth century and the twenty-first have been seen as forced glimpses into a clandestine space barred from the public view.

25. Upton Sinclair, *The Jungle* (1905; New York: New American Library, 1960), 38.

26. Ibid., 102. While Sinclair's fictional focus on the trials of a Lithuanian family in *The Jungle* played a pivotal role in politicizing the conditions of immigrant workers in the stockyards, his text perpetuates racist stereotypes of African Americans as lazy, opportunistic "scabs" willing to replace desperate strikers. More than a trope for the predatory relations of capital, "the jungle" is a racist trope closely tied to a seminal scene in the novel that describes an orgy of black strike-breakers flooding the stockyards, a scene that portrays them as promiscuous and primitive bodies surging up from "the South" to undermine a Euro-American socialist movement. While one of the first working bodies to appear in Sinclair's fictional rendition of the slaughterhouse tour is the spectacularized body of the "Negro," then, work in the stockyards is otherwise identified with exploited but decidedly white ethnicities (suggesting that "the great burly Negro" functions aesthetically in Sinclair's text to excite the currency of slaughter as spectacle). The "Negro" in the quoted passage appears as a figure even more gratuitously inserted by Sinclair to spectacularize slaughter when read against the later description of the indolent and riotous black

strikebreakers who, Sinclair suggests, can never fill the place of labor because they are the very embodiment of unruly, disorganized nature. The labor movement depicted by Sinclair can be read as protecting the hope and essence of an “America” imperilled not only by capitalist greed but by unimprovable racial natures. See Amy Kaplan’s discussion of how “the meaning of America” is constructed in its supposed distance and difference from “the jungle” in “Left Alone with America: The Absence of Empire in the Study of American Culture,” in *Cultures of United States Imperialism*, ed. Amy Kaplan and Donald E. Pease (Durham, N.C.: Duke University Press, 1993), 7.

27. Brown, *Material Unconscious*, 48.

28. Sinclair, *The Jungle*, 39.

29. *Ibid.*, 38, 35.

30. *Ibid.*, 36. Wade writes that alongside the yards’ mechanized hoisting and transporting, the “new method of slaughtering hogs impressed visitors for two other reasons. One was the spurting of blood caused by heart and muscular action during the dangling hog’s death-struggle. It lasted only a minute or two but startled those who expected a slow gurgle. The other surprise was the noise. Prior to the introduction of the pig-hoist, hogs never made much noise on the killing floor. However, catching the live hog by a hind leg, clamping the pulley to that leg, and raising him to the overhead rail caused a shrill, piercing cry of alarm. By the late 1860s the frantic squealing of startled hogs was a common feature of the pork houses” (*Chicago’s Pride*, 63).

31. In his history of the rendering industry, Pierre Desrochers writes, “It has long been said that ‘everything but the squeal’ is being used as a productive input in the meatpacking industry” (“Market Processes and the Closing of ‘Industrial Loops’: A Historical Reappraisal,” *Journal of Industrial Ecology* 4, no. 1 [2000]: 34).

32. The Swift booklet is classified as a piece of “advertising ephemera” in a digital archive at Duke University titled *Emergence of Advertising in America: Advertising Ephemera (1850–1920)*. The guidebook is available online at <http://scriptorium.lib.duke.edu/ea/> (accessed March 1, 2005). I am indebted to Mark Simpson’s scrupulous archival research into early American postcard cultures, during which he came across the Swift and Company souvenir booklet and shared it with me.

33. Lauren Berlant, *The Queen of America Goes to Washington City: Essays on Sex and Citizenship* (Durham, N.C.: Duke University Press, 1997), 28.

34. The little girl in Swift and Company’s booklet helps Swift and Com-

pany to disavow, too, the pervasively masculinist discourses that construct woman as meat through the crossing of sexual and alimentary codes (theorized by Carol Adams in *The Sexual Politics of Meat: A Feminist-Vegetarian Critical Theory* [New York: Continuum International, 1990]).

35. Lynne Kirby, *Parallel Tracks: The Railroad and Silent Cinema* (Durham, N.C.: Duke University Press, 1997), 8.

36. Batchen, *Each Wild Idea*, 117.

37. Vialles, *Animal to Edible*, 53.

38. Sinclair, *The Jungle*, 36.

39. Vialles, *Animal to Edible*, 53–54.

40. The complicit logics of animal disassembly and filmic assembly are intensified when slaughter is itself the subject, or content, of film, as in Georges Franju's *Le sang des bêtes* (Forces et Voix de France, 1949).

41. Kirby, *Parallel Tracks*, 8.

42. Lippit, *Electric Animal*, 194. Lippit writes that Dziga Vertov and Sergei Eisenstein argue “for an understanding of cinema as organism” (194).

43. Brown, *Material Unconscious*, 242.

44. Michel Chion, “Quiet Revolution and Rigid Stagnation,” *October* 58 (Fall 1991): 70–71.

45. Lippit, *Electric Animal*, 186.

46. Jonathan Beller, *The Cinematic Mode of Production: Attention Economy and the Society of the Spectacle* (Lebanon, N.H.: University Press of New England, 2006).

47. *Ibid.*, 39. The notion of “kino-eye” is Dziga Vertov's, first posited in his 1929 film manifesto *Man with a Camera* (quoted by Beller in *Cinematic Mode of Production*, 39).

48. Beller, *Cinematic Mode of Production*, 283.

49. I discuss the distinction first made by Marx between the formal subsumption and the real subsumption of labor in the final section of chapter 1.

50. Lippit, *Electric Animal*, 1.

51. Samuel E. Sheppard, *Gelatin in Photography* (New York: Van Nostrand for Eastman Kodak, 1923), 25. Sheppard noted that 1873 was significant, “for during that year the preparation of a gelatin emulsion in a practical form was successfully accomplished. That gelatin was attracting much attention at this time is attested by the fact that the first advertisement of gelatin for photographic purposes to appear in the British Journal Photographic Almanac was in 1873” (14).

52. Sheppard, *Gelatin in Photography*, 25.

53. See the last section of chapter 1, where I discuss Marx's figure of "mere jelly."

54. Contrary to what some may think, the use of gelatin emulsions has not abated with the shift from photochemical to digital imaging technologies. On their Web page the Gelatine Manufacturers of Europe assure their stakeholders that "gelatine is also indispensable for digital photography. The ink-jet printer paper coated with gelatine guarantees brilliant colors and clear shapes" (<http://www.gelatine.org>; accessed March 2004).

55. Douglas Collins, *The Story of Kodak* (New York: Harry N. Abrams, 1990), 49.

56. On its "History of Kodak" Web page today, the Kodak Company pays homage to the understated role of emulsion coatings in image production under the heading "Emulsion, the Image Recorder" (<http://www.kodak.com/US/en/corp/aboutKodak/KokakHistory/filmImaging.shtml>; accessed November 20, 2003). It is perhaps significant that Kodak has made transparent the until-now invisible role of emulsions only now that the business of making photochemical film stocks has ostensibly become "history" due to the digitization of image production.

57. Kodak Company, "History of Kodak" Web page.

58. Brown, *Material Unconscious*, 14.

59. Sheppard, *Gelatin in Photography*, 25.

60. Collins, *Story of Kodak*, 65.

61. Kodak Company, "History of Kodak" Web page.

62. Collins, *Story of Kodak*, 129.

63. *Ibid.*, 359, 337.

64. Hemacite is described in an 1892 issue of the journal *Manufacture and Builder* in a story titled "Doorknobs, etc. from Blood and Sawdust" as follows: "A novel enterprise has been in successful operation in Trenton, N.J. for several years, the productions of which, consisting of a line of builder's hardware and various articles, for interior decorations, are manufactured of a substance known as 'hemacite,' which material is nothing else than the blood of slaughtered cattle and sawdust, combined with chemical compounds, under hydraulic pressure of forty thousand pounds to the square inch" (*Manufacture and Builder* 24, no. 1 [January 1892]). A digitized version of the article appears in Cornell University Library's The Making of America digital collection, <http://cdl.library.cornell.edu/moa/index.html> (accessed April 17, 2004).

65. Jeffrey Meikle, *American Plastic: A Cultural History* (New Brunswick, N.J.: Rutgers University Press, 1997), 11.

66. The Celluloid Manufacturing Company was founded in 1871, as Meikle notes, by the Hyatt brothers (*American Plastic*, 11).

67. Meikle, *American Plastic*, 12.

68. *Ibid.*

69. *Ibid.*, 17.

70. The rhetoric of “hunting with a camera” was already in circulation in the 1890s, making one of its first appearances in Edward Augustus Samuels’s “With Fly-Rod and Camera” (1890), as well as subsequent appearances in works such as Richard Tepe’s “Hunting with a Camera” (1909). An article titled “Big Game Hunting with a Kodak” appeared in a 1925 issue of *Kodakery: A Journal for Amateur Photography*.

71. As Douglas Collins writes, the “barrel of Marey’s ‘chronophotographic gun’ contained the camera’s lens, behind which glass plates were arranged along the edge of a revolving metal disc. With his gun loaded with relatively fast gelatin dry plates Marey was able to make twelve exposures per second” (*Story of Kodak*, 69). The new sport of hunting with the camera as a quasi gun is also notated, as Collins shows, in the word “snapshot,” formerly “a British hunting term” that “would come to signify any photograph taken quickly and casually” (72).

72. Lippit, *Electric Animal*, 187.

73. Michael Taussig, *Mimesis and Alterity: A Particular History of the Senses* (New York: Routledge, 1993), 22. See the Introduction to this book, in which I discuss Taussig’s notion of a two-layered mimesis.

74. Collins, *Story of Kodak*, 46.

75. *Ibid.*

76. Kenneth Mees, quoted by Collins in *Story of Kodak*, 200.

77. Documents pertaining to gelatin manufacture, emulsion science, and the Eastman Gelatine Corporation are scarce in the University of Rochester Library’s Eastman archives. After searching on my behalf, archivists eventually located a slim folder containing fewer than ten documents, including early press releases and news stories on Eastman Gelatine, internal reports on gelatin’s manufacturing history, a manual for employees of Eastman Gelatine, and a “Commentary” on the company’s dry gelatin stocks. The archivists’ difficulty in locating information on gelatin reinforces my contention that it constitutes a “material unconscious” of mass image culture.



78. "Gelatin Is Simple Stuff," anonymous article, George Eastman Archives, University of Rochester Library, Rochester, N.Y., 2.

79. Ibid.

80. Ibid.

81. Jacques Derrida, "And Say the Animal Responded?" in *Zoontologies: The Question of the Animal*, ed. Cary Wolfe (Minneapolis: University of Minnesota Press, 2003), 137.

82. "Gelatin Is Simple Stuff," 2.

83. In an article of unspecified date titled "This Is Eastman Gel" (George Eastman Archives, University of Rochester Library, Rochester, N.Y.), *Kodakery* editor and author Bob Lawrence writes, "It is estimated that parts of 5,000,000 or more animals go into its gelatine making annually." In 1999, the Eastman Gelatine Corporation was still annually purchasing 80 million pounds of bovine skeleton from slaughterhouses to make into photographic gelatin (Alec Klein, "A Kodak Moment: Company Grinds Cow Bones, but Keeps Costs Close to the Bone," *Wall Street Journal*, January 18, 1999). The company's largest supplier of cow bones at that time was Monfort of Greeley, Colorado.

84. "Gelatin Is Simple Stuff," 15.

85. A. M. Kragh, "Swelling, Adsorption, and the Photographic Uses of Gelatin," in *The Science and Technology of Gelatin*, ed. A. G. Ward and A. Courts (London: Academic, 1977) 439–74. Kragh writes that because gelatin "contains the sulphur sensitizers later found essential for obtaining high sensitivity" and because the DNA in gelatin is a natural restrainer, "it might be thought that gelatin had been designed with the photographic process in mind" (471).

86. "Commentary on Dry Gelatine Raw Stocks in Storage," internal report of Eastman Kodak, Charles Eastman Archives, University of Rochester Library, Rochester, N.Y., 1969.

87. Eastman Kodak Company, *A Handbook for the Men and Women of Eastman Gelatine Corporation*, Charles Eastman Archives, University of Rochester Library, Rochester, N.Y., 1945.

88. Kristin Ross, *Fast Cars, Clean Bodies: Decolonization and the Reordering of French Culture* (Cambridge, Mass.: MIT Press, 1995), 38.

89. Andrew Loewen, "The Ford Motion Picture Department: Reel Subsumption and Intensive Taylorism," unpublished article, 1.

90. AdAge, <http://www.adage.com> (accessed April 2, 2002).

91. Saul A. Rubinstein and Thomas A. Kochan, *Learning from Saturn:*

*Possibilities for Corporate Governance and Employee Relations* (Ithaca, N.Y.: Cornell University Press, 2001), 2.

92. Mark Dery, “‘Always Crashing in the Same Car’: A Head-On Collision with the Technosphere,” in *Against Automobility*, ed. Steffen Bohm, Campbell Jones, Chris Land, and Matthew Paterson (Oxford: Blackwell/Sociological Review, 2005), 223.

93. Taussig, *Mimesis and Alterity*, 223.

94. As Lisa Gitelman shows, when it was not an animal it was a racialized human other who was plugged into this mimetic template to serve as the phonograph’s “natural” foil. Gitelman analyzes a stereotypical Edison-era anecdote of a black man who, listening to a Buckeye Music Company phonograph recording of “The Flogging” (excerpted from *Uncle Tom’s Cabin*), jumped up and declared he’d like to get that slave driver. “The man didn’t hear the phonograph or the record,” writes Gitelman, “he heard through them to Simon Legree whipping Uncle Tom. It is this selective hearing that the Buckeye proprietor recognizes as the highest compliment that can be paid to any communicative or inscriptive medium, including the talking machine” (*Scripts, Grooves, and Writing Machines: Representing Technology in the Edison Era* [Stanford, Calif.: Stanford University Press, 1999], 121). Gitelman notes that the “proprietor’s anecdote plays off an important trope resident in Anglo-American constructions of race and class, the familiar narrative of the alien naif who mistakes mimetic representation for reality” (121).

95. Flink, *Automobile Age*, 114.

96. In 1895, the first two periodicals devoted to automobiles appeared: *Horseless Age* and *Motorcycle* (Flink, *Automobile Age*, 18).

97. Jonathan Crary, *Suspensions of Perception: Attention, Spectacle, and Modern Culture* (Cambridge, Mass.: MIT Press, 1999), 144.

98. Lippit, *Electric Animal*, 187.

99. *Ibid.*, n. 71.

100. David Gartman, *Auto-Opium: A Social History of American Automobile Design* (New York: Routledge, 1994), 93.

101. Rubinstein and Kochan, *Learning from Saturn*, 37.

102. *Ibid.*, 2.

103. Flink, *Automobile Age*, 44.

104. The Saturn Vue campaign ran from February to May of 2002. Alongside its print ads, television ads depicting, among other things, the Vue morphing into a rabbit as it darted behind trees were aired during CBS’s *Survivor*

series, during coverage of the Salt Lake City Olympics, and during the Grammy Awards.

105. This particular ad in the Saturn campaign appeared in a 2002 issue of *Martha Stewart Magazine*.

106. As Taussig notes, “Controlled mimesis is an essential component of socialization and discipline, and in our era of world history, in which colonialism has played a dominant role, mimesis is of a piece with primitivism” (*Mimesis and Alterity*, 219).

107. Johannes Fabian, *Time and the Other: How Anthropology Makes Its Object* (New York: Columbia University Press, 1982), 31.

108. Along with Donna Haraway, I invoke the multiple connotations of “specie”: “I hear in species filthy lucre, specie, gold, shit, filth, wealth. . . . Norman O. Brown taught me about the join of Marx and Freud in shit and gold, in primitive scat and civilized metal, in specie” (*The Companion Species Manifesto: Dogs, People, and Significant Otherness* [Chicago: Prickly Paradigm, 2003], 16).

109. See Fredric Jameson’s *Postmodernism, or The Cultural Logic of Late Capitalism* (Durham, N.C.: Duke University Press, 1992).

110. Dorothee Brantz, “Recollecting the Slaughterhouse,” *Cabinet Magazine* 4 (Fall 2001): 120.

111. Karl Marx, *Capital: A Critique of Political Economy*, vol. 1, trans. Ben Fowkes (London: Penguin, 1976), 163–64.

112. James O’Connor, *Natural Causes: Essays in Ecological Marxism* (New York: Guilford, 1998), 26.

113. Bill Brown, “Science Fiction, the World’s Fair, and the Prosthetics of Empire, 1910–1915,” in *Cultures of United States Imperialism*, ed. Amy Kaplan and Donald E. Pease (Durham, N.C.: Duke University Press, 1993), 136.

114. Vialles, *Animal to Edible*, 51.

115. Gayatri Chakravorty Spivak provoked sustained debate around the subaltern subject’s ability to speak and to be heard within dominant systems of symbolic sense with her famous essay “Can the Subaltern Speak?” She repeats that question, with a difference, in *A Critique of Postcolonial Reason: Toward a History of the Vanishing Present* (Cambridge, Mass.: Harvard University Press, 1999).

116. Spivak, *Critique of Postcolonial Reason*, 307, 309.

117. Brown, *Material Unconscious*, 5.

118. Mark Simpson, “Immaculate Trophies,” *Essays in Canadian Writing* 68 (Summer 1999): 97.

119. Friedrich Nietzsche, "On the Uses and Disadvantages of History for Life," in *Untimely Meditations*, trans. R. J. Hollingdale (Cambridge: Cambridge University Press, 1983), 61, quoted by Lippit in *Electric Animal*, 68.

### 3. Telemobility

1. As Robert Montraville notes in his introduction to Galvani's *Commentary*, while Galvani was the first to popularize experiments using frogs, he was not the first to study animal electricity: "A few years before, in Bologna, Floriano Caldani (1756) and Giambattista Beccaria (1758) were able to demonstrate electrical excitability in the muscles of dead frogs" (Luigi Galvani, *Commentary on the Effect of Electricity on Muscular Motion* [1791], trans. Robert Montraville [Cambridge, Mass: Elizabeth Licht, 1953], xi).

2. Walter Benjamin, "Theses on the Philosophy of History," in *Illuminations*, ed. Hannah Arendt, trans. Harry Zohn (New York: Harcourt, Brace and World, 1968).

3. See chapter 1 under the heading "First Genealogy."

4. Régis Debray, *Media Manifestos: On the Technological Transmission of Cultural Forms*, trans. Eric Rauth (London: Verso, 1996), 46.

5. Jacques Derrida, *Specters of Marx: The State of the Debt, the Work of Mourning, and the New International*, trans. Peggy Kamuf (New York: Routledge, 1994), 79.

6. Akira Mizuta Lippit, *Electric Animal: Toward a Rhetoric of Wildlife* (Minneapolis: University of Minnesota Press, 2000), 190.

7. Michel Foucault, *The Order of Things: An Archaeology of the Human Sciences* (New York: Pantheon, 1970), 277.

8. Ibid.

9. Karl Marx, *Capital: A Critique of Political Economy*, vol. 1, trans. Ben Fowkes (London: Penguin, 1976), 169.

10. Karl Marx, "The Early Writings 1837–1844," in *Karl Marx: Selected Writings*, ed. David McLellan (Oxford: Oxford University Press, 1977), 110.

11. Edward B. Tylor, *Primitive Culture: Researches into the Development of Mythology, Philosophy, Religion, Language, Art, and Custom* (1871), 7th ed. (New York: Brentano's, 1924), 160.

12. Ibid.

13. W. J. T. Mitchell, *What Do Pictures Want? The Lives and Loves of Images* (Chicago: University of Chicago Press, 2005), 7.

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