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## The Twentieth Century Cowboy: Law's Light Touch

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# THE TWENTIETH CENTURY COWBOY: LAW'S LIGHT TOUCH

HENRY H. PERRITT, JR.\*

I. Introduction .....	144
II. Four Waves of Creative Destruction in the Beef Industry .....	146
III. Drivers of the Third and Fourth Waves .....	153
A. Closing of the Range: Taylor Act of 1934 .....	153
B. Corn Surplus .....	155
C. Railroad Rigidities .....	157
D. Trucks and Roadbuilding Flexibilities .....	160
i. Roadbuilding .....	161
ii. Trucks .....	167
E. Modal Economics .....	170
F. Timing of the Drivers .....	171
IV. Twentieth Century Industry Structure .....	173
A. Cow-Calf Operations .....	178
B. Feedlots .....	180
C. Beef Processing .....	183
D. Labor Markets .....	185
V. Law's Impediments .....	189
A. Economic Regulation .....	191
B. Collective Bargaining and Labor Market Rigidities .....	196
C. Antitrust Law .....	201
D. Agricultural Subsidies and Mandates .....	208
VI. The Future .....	210

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## I. INTRODUCTION

Kirby Randall, seventeen, wakes before the sun is up. His internal clock tells him that, before long, the cattle will also be waking up and moving around, ready for breakfast.

He sits up, sticks his bare feet into the legs of a pair of Levi-brand blue jeans, dons a T-shirt, sits down again, and pulls wool socks on. After that, he puts on a pair of pointed toed calf-high cowboy boots, sticks his arms in a work shirt, buttons it, and feels ready to greet the herd.

He knows that cattle, once they lie down for the night, usually sleep through it, but become active just before first light and seek to satisfy their hunger. Left unattended, they will drift as far as they can, which means more work to round them up later for branding, sale, and shipment. He has an incentive to keep the cattle contained; he later will be responsible for the necessary roundup as well.

Kirby works with a half-dozen other cowboys, who divide the necessary tasks up among themselves and alternate standing watch through the night on alert for anything that might cause a stampede. He is an employee of the ranch owner and gets paid a monthly wage, reporting to the foreman who started out as a cowboy just like him.

So far, this story could describe a Kirby in 1870 on a 10,000-acre ranch in Texas or Wyoming or the middle of a long cattle drive from Texas to Dodge City. But this Kirby is a twentieth-century cowboy. He has slept in a bed in a bunkhouse, probably air-conditioned and uses a properly equipped bathroom in the bunkhouse to brush his teeth, relieve himself, and to shower, probably daily, rather than going unwashed for weeks at a time and having to improvise for the other activities in creeks and prairies.

The herd of cattle that Kirby tends belong to only one rancher rather than being intermingled on the open range with herds belonging to others. Kirby's ranch is likely only a few hundred acres rather than thousands or tens of thousands of acres.

When he goes to work, Kirby is as likely to drive an ATV<sup>1</sup> or Jeep as he is to ride a horse. He wants to get his helicopter pilot's license so that he can participate in the new technique of rounding up cattle by a small helicopter:

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1. See Amos Kwon, *10 Best Sportsman's All-Terrain Vehicles*, GEAR PATROL (Jan. 23, 2015), <https://gearpatrol.com/2015/01/23/10-best-atvs-and-utvs/> (listing popular vehicles); *Full-Size Gator™ XUV Crossover Utility Vehicles*, JOHN DEERE, [https://www.deere.com/en/gator-utility-vehicles/full-size-crossover-gators/?CID=SEM\\_Res\\_enUS\\_Dcom\\_XUV&gclid=CjwKCAjwpuXpBRAAEiwAyRRPgfbPzTkB318B0KLwmsdN6Hdmjbi5O8GZ8jEK6FFrco0RaucGNtGkeRoCyoMQAvD\\_BwE](https://www.deere.com/en/gator-utility-vehicles/full-size-crossover-gators/?CID=SEM_Res_enUS_Dcom_XUV&gclid=CjwKCAjwpuXpBRAAEiwAyRRPgfbPzTkB318B0KLwmsdN6Hdmjbi5O8GZ8jEK6FFrco0RaucGNtGkeRoCyoMQAvD_BwE) (last visited May 31, 2020).

a technique that is just beginning to gain support, more in Australia and New Zealand than in the United States, so far.

Kirby knows considerably more and pays more attention to selective breeding of the cattle in his charge than his 1870 counterpart; an important part of the brand of his employer is its particular breeds of cattle with associated characteristics desired by the meat processors to whom it sells. In 1870, on the open range, cows and bulls mingled freely, and there was not much opportunity for the ranchers and cowboys to determine who mated with whom. Like his 1870 counterpart, Kirby keeps a gun with him most of the day, but it is not a revolver that he wears on his hip. It is a long gun that he keeps in the vehicle he is using or in a scabbard on the horse. It is not for fighting or defending his herd against rustlers;<sup>2</sup> it is for snakes and wild animals that are not part of a “protected species.”

Like his 1870s counterpart, Kirby aspires to own his ranch and herd someday. But rather than beginning to build it by branding “mavericks” on his own,<sup>3</sup> he will try to negotiate a deal with his employer to acquire the necessary stock and to pay for it with salary deductions. He will seek agreement to mingle his private stock with his employer’s herds and make economic arrangements for that as well.

If it turns out that ranching does not suit him as a long-term occupation, or if he is unable to work out the necessary business arrangement, he has other options available to him. This fall, he will attend college while he continues to work. He is unlikely to become a town marshal, a stagecoach guard, a gambler, or a saloon keeper.

Kirby’s roommate, Bennington, performs other aspects of Kirby’s 1870 counterpart’s job — what remains of the long cattle drive function. Bennington is an independent owner-operator truck driver, who specializes in hauling live cattle. The cattle, rather than being driven on the hoof by traditional cowboys, now are transported in a semitrailer attached to Bennington’s truck tractor. His work replaces not only the cattle drive itself but the transport of live cattle in rail cars to processing plants. Some industry observers call Bennington an “asphalt cowboy.”<sup>4</sup>

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2. See Wyatt Bechtel, *Cattle Rustlers Busted in Oklahoma Sting Operation*, DROVERS (Aug. 15, 2018, 3:06 PM), <https://www.drovers.com/ok-cattle-sting> (showing that rustling is still a problem and reporting on cattle theft detected at auction).

3. See Henry H. Perritt, Jr. *Rise and Fall of the Cowboy: Technology, Law, and Creative Destruction in the Industrialization of The Food Industry*, 94 N.D.L. REV. 361, 383–85 (2019) (describing the practice of allowing cowboys to build their own herds by capturing maverick calves — calves weaned without being branded with their mothers’ brands); see also Lewis A. Maverick, *The Term “Maverick,” Applied to Unbranded Cattle*, 1 CAL. FOLKLORE Q. 94, 95 (1942) (stating that so long as mavericks remain with their mother, the mother’s brand identifies it).

4. SHANE HAMILTON, TRUCKING COUNTRY: THE ROAD TO AMERICA’S WAL-MART

Kirby and Bennington's jobs are the result of four waves of Creative Destruction, the first two of which were the subject of the author's first article on the industrial revolution in the food industry, *Rise and Fall of the Cowboy*.<sup>5</sup>

The next two waves of Creative Destruction that gave rise to Kirby and Bennington's work were shaped by exemptions from general laws that channeled other American industries, in particular economic regulation of transportation and labor law and collective bargaining. This light touch of the law permitted market institutions in the cattle industry to adapt well to important changes in technology after the demise of the long cattle drive. This article begins by reviewing the four waves of Creative Destruction that shaped the American cattle industry from the end of the Civil War to the end of the twentieth century, then identifies the technological and sociological drivers of those waves, focuses on how twentieth-century law left beef markets largely alone, and concludes with a sketch of the twenty-first century in which laws specifically aimed at the cattle industry are likely to change it significantly.

## II. FOUR WAVES OF CREATIVE DESTRUCTION IN THE BEEF INDUSTRY

Joseph Schumpeter named the inevitable process of change and innovation in market economics "Creative Destruction."<sup>6</sup> Creative Destruction results when new technologies and business methods spawn entrepreneurship and new enterprises that eclipse incumbent enterprises.<sup>7</sup> Thus the railroad industry replaced the steamboat industry, and telephony and radio led to the demise of the telegraph industry.<sup>8</sup>

Creative Destruction is a model for understanding the causal relationships

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ECONOMY 135 (2008) (using term in chapter title).

5. See Perritt, *supra* note 3, at 371 (analyzing the determinants of the first two waves of Creative Destruction in the beef industry); U.S. DEPT. OF AGRIC., CONCENTRATION IN THE RED MEAT PACKING INDUSTRY 71–72 (1996), [https://www.gipsa.usda.gov/psp/publication/con\\_tech%20report/conc-rpt.pdf](https://www.gipsa.usda.gov/psp/publication/con_tech%20report/conc-rpt.pdf) [hereinafter CONCENTRATION IN THE RED MEAT PACKING INDUSTRY] (summarizing history of beef industry since 1600 and how transportation and refrigeration encouraged its evolution).

6. See JOSEPH A. SCHUMPETER, THE THEORY OF ECONOMIC DEVELOPMENT 212–55 (1983).

7. See JOSEPH A. SCHUMPETER, CAPITALISM, SOCIALISM AND DEMOCRACY 83 (1975) (stating that the capitalist economy continues to thrive when innovative goods, techniques, and ventures arise as a result of the current capitalist market).

8. See Perritt, *supra* note 3, at 368–69; see also Tomas Nonnenbacher, *History of the U.S. Telegraph Industry*, EH.NET, <http://www.eh.net/?s=history+of+the+u.s.+telegraph+industry> (last visited May 31, 2020) (explaining how the twentieth century saw a rise in the use of the telephone as it was both easier and faster to use, which led to the decline of the telegraph).

between stimuli and effects.<sup>9</sup> Stimuli comprise new technologies introduced into specific markets.<sup>10</sup> Their effects, the model predicts, will be the weakening of incumbent firms and the rise of new ones that eventually replace the incumbents.<sup>11</sup> As with any system subjected to stimuli, the effects exhibit various lags.<sup>12</sup> Some effects occur relatively soon; others are delayed for years or decades. Often, one stimulus causes effects that make the system receptive to other stimuli that set off their own effects.<sup>13</sup> For example, the Creative Destruction model, as it relates to the beef industry, is explained below. The closing off of the open range began to occur even as the long cattle drives were starting in the 1870s, intensified through the remainder of the nineteenth century, and finally was codified years later in the Taylor Act.<sup>14</sup> The effects of this change in land use rights were felt within a decade but continued to play out through many decades more.<sup>15</sup>

Similarly, railroad technology was the stimulus that produced effects in the form of long cattle drives as soon as railheads appeared in Kansas, Nebraska, and Wyoming. As the technology penetrated further, however, it also helped produce an opposing effect; ending the long cattle drives by establishing railheads closer to where herds were cultivated.<sup>16</sup>

The first wave<sup>17</sup> of Creative Destruction in the beef industry ended

9. See SCHUMPETER, *supra* note 7, at 83 (explaining that Creative Destruction exemplifies the method in which the economy evolves and adapts).

10. See *id.* (stating for instance that in the transportation industry, the economy moved “from the mail coach to the airplane”).

11. See *id.*

12. See *id.* (explaining that the process of Creative Destruction often takes time and, as a result, should be judged after the passage of time).

13. See Perritt, *supra* note 3, at 368 (exemplifying how an old technology or tool, such as steamboats, were replaced by a new technology or tool employed to perform the same activity).

14. See 43 U.S.C. § 315 (1934) (providing that the Secretary of the Interior has the authority to regulate the grazing of public lands); see also Perritt, *supra* note 3, at 400 (stating that the Taylor Act mandated federal administration of grazing on the public domain).

15. See Perritt, *supra* note 3, at 404–05 (explaining how property laws created private farming rights on former open rangeland).

16. Perritt, *supra* note 3, at 392. See generally STEVEN W. USSELMAN, *REGULATING RAILROAD INNOVATION* 15–60 (Cambridge Univ. Press, 2002) (discussing the railroad expansion and the politics of the western railroad development).

17. The definition of “waves” of Creative Destruction is arbitrary. The first and second waves were relatively distinct from the effects of the railroad felt before the effects of the steel-bladed plow, the windmill, and barbed wire. The third wave is distinguished from the second because of the demise of the long cattle drive and open range ranching. Similarly, the third wave is not neatly distinguished from the fourth. The determinants of the fourth wave, particularly truck technology and the public roadbuilding program, intensified the decentralization of beef processing, which was the

localized beef production and gave rise to large-scale open-range ranching and concentrated, geographically centralized beef processing, connected by railroads to railheads where the long cattle drives terminated.<sup>18</sup> The second wave of Creative Destruction brought this industry structure to an end and shifted cattle raising to smaller, enclosed plots of land closer to railheads, which had become more numerous. From 1894 to 1905, cattle ranchers transitioned away from using open-range ranching to fenced and owned land; development changed the economics because of land cost.<sup>19</sup> Even as the range wars were sputtering out and a proposal for a federally supported National Cattle Drive was failing in Congress,<sup>20</sup> ranchers in Montana and Wyoming were adapting to reality. They were using barbed wire to fence their ranches rather than relying on the open range. They were growing hay<sup>21</sup> for winter feeding, and they were using smaller pastures that resembled the feedlots of the twentieth century. They also were putting more entrepreneurial energy into improving cattle bloodlines.<sup>22</sup>

The third wave occurred in the first third of the twentieth century<sup>23</sup> and gave rise to a fundamentally different industry structure, which evolved from the ruins of the second wave.<sup>24</sup> The third wave gave rise to a more

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hallmark of the third. *See* Perritt, *supra* note 3, at 401). *See generally* J. STANLEY METCALFE, *EVOLUTIONARY ECONOMICS AND CREATIVE DESTRUCTION* 10–72 (1998) (tracing the history of Creative Destruction through changes of economic models).

18. *See* Perritt, *supra* note 3, at 371 (analyzing the determinants of the first two waves of Creative Destruction in the beef industry); *see also* CONCENTRATION IN THE RED MEAT PACKING INDUSTRY, *supra* note 5, at 71–72 (summarizing how operating costs were reduced in the late 1950s because of the advanced highway system and new refrigeration, slaughter, and shipping technologies).

19. J. OGDEN ARMOUR, *THE PACKERS, THE PRIVATE CAR LINES, AND THE PEOPLE* 150–51 (1906).

20. *See* THOMAS F. MCILWRAITH & EDWARD K. MULLER, *NORTH AMERICA THE HISTORICAL GEOGRAPHY OF A CHANGING CONTINENT* 252 (2d ed. 2001) (explaining that the cattle interests proposed a bill in 1885 to establish a national trail from Texas to Canada).

21. *See* ARMOUR, *supra* note 19, at 314 (detailing the use of stored hay as cattle fodder during grass shortages).

22. CHRISTOPHER KNOWLTON, *CATTLE KINGDOM: THE HIDDEN HISTORY OF THE COWBOY WEST* 234 (2017).

23. *See* Perritt, *supra* note 3, at 398–99 (noting that feedlots took force in society nearly fifty years after the end of the nineteenth century); *see, e.g.*, Shawn L. Archibeque, Dillon M. Feuz & John J. Wagner, *The Modern Feedlot for Finishing Cattle*, 2 ANN. REV. ANIMAL BIOSCIENCES 535, 550 (2014) (commenting that the feedlot industry developed in north-central Colorado in the 1930s and 1940s thanks to the availability of growing crop-yields).

24. Perritt, *supra* note 3, at 398–99; *see A Timeline of Changes: Beef Cattle Farming in North America*, ARROWQUIP (June 6, 2017), <https://arrowquip.com/blog/cattle-research/timeline-of-changes-beef-cattle-north-america> (discussing the trends in beef cattle commercialization in the latter part of the nineteenth century and beyond).

centralized industry that cultivated smaller herds near feedlots and widely dispersed beef processing facilities. Accordingly, beef packers had early instincts to locate slaughtering and dressing facilities as close to the cattle herds as possible.<sup>25</sup> The dominance of the Chicago stockyards faded as the beef packers shifted most of their activity to “branch operations” in places like Omaha, Kansas City, and Fort Worth.<sup>26</sup>

By the close of the 1880s, the packers were beginning to build branch plants near the herds. In 1888 a plant came into operation in Kansas City.<sup>27</sup> By 1893 dressing plants were springing up along the Missouri River.<sup>28</sup> The Chicago packers were developing “auxiliary markets” in Kansas City, South Omaha, East St. Louis, Fort Worth.<sup>29</sup> Local herds near auxiliary markets stayed on local pastures and barns and were fattened on corn right where it was grown.<sup>30</sup> In 1900, Chicago had a third of the market for meatpacking. Kansas and Nebraska had ten percent each.<sup>31</sup>

The fourth wave of Creative Destruction occurred in the second half of the twentieth century with the interstate highway system, the development of the refrigerated truck trailer, and truck drivers hired as independent contractors. The highway based system of slaughtering houses and beef dressing facilities eliminated the intermediary and enabled many farmers to deal directly with retail supermarket chains and to ship their beef directly to them after one stop at a combined slaughterhouse and dressing facility.<sup>32</sup>

The fourth wave intensified geographic dispersion of beef processing facilities and operating trucks on public highways linked cow-calf operations with feedlots and beef processors.<sup>33</sup> The beef processors shipped processed

25. See *Union Stock Yard & Transit Co.*, ENCYCLOPEDIA OF CHI. (2005), <http://www.encyclopedia.chicagohistory.org/pages/2883.html> [hereinafter *Stock Yard*] (stating that better transportation methods allowed the beef industry to be decentralized).

26. See *Meatpacking*, ENCYCLOPEDIA OF CHIC. (2005), <http://www.encyclopedia.chicagohistory.org/pages/804.html> [hereinafter *Meatpacking*] (explaining that railroads allowed beef packers to move their operations further out into the Great Plains).

27. LOUIS F. SWIFT & ARTHUR VAN VLISSINGEN, JR., *THE YANKEE OF THE YARDS: THE BIOGRAPHY OF GUSTAVUS FRANKLIN SWIFT 131–32* (1927) [hereinafter *YANKEE OF THE YARDS*]

28. See *id.* at 28 (stating that plants along the Missouri River were made so that cattle did not need to be shipped as far).

29. See Gail Lorna DiDonato, Student Work, *Building the Meat Packing Industry in South Omaha, 1883-1898*, U. NEB. 17 (1989) (stating that packing centers arose as cities tried to overtake Chicago’s dominance in the meatpacking industry).

30. See ARMOUR, *supra* note 19, at 117–18 (explaining that farmers began to fatten their cattle on their own land in order to improve the quality of the meat).

31. *Id.* at 156.

32. See *Meatpacking*, *supra* note 26 (explaining that the progression of technology and new industry practices allowed farmers to deal more directly with customers).

33. See *Stock Yard*, *supra* note 25 (explaining that highways helped to decentralize



beef in frozen form (“boxed beef”) on trucks directly to retail outlets.<sup>34</sup> Six technologies animated the fourth wave.<sup>35</sup> Feedlots, interstate highways, refrigerated truck trailers,<sup>36</sup> further automation of slaughtering and packing, flash freezing, and packaging technologies.

Cattle intended for slaughter still spent the first six to nine months of their lives nourishing on their mother’s milk.<sup>37</sup> Then they were turned loose into larger pastures to feed on grass and supplementary hay for twelve to eighteen months.<sup>38</sup> The cattle finished on corn and other carefully selected combinations in more concentrated feedlots located as close as practicable to geographically distributed slaughterhouses.<sup>39</sup> Replacement of rail links by trucks meant that the modern beef cow has to walk almost nowhere.

In the first and second waves, land law and railroad subsidies drove economic events.<sup>40</sup> The beef industry, like the rest of American industry, faced an inflection point in the last two decades of the nineteenth century.<sup>41</sup> U.S. heavy industry and railroads became subject to comprehensive regulation and collective bargaining.<sup>42</sup> The beef industry did not. Except for

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the beef industry).

34. *See id.*

35. *See id.* (listing the six technologies that helped revolutionize the industry).

36. *See generally* U.S. Patent No. 1969151 (filed June 5, 1933) (patenting the design for a refrigerated truck); U.S. Patent No. 2096712 (filed Dec. 2, 1932) (patenting the design for a truck’s mechanical refrigerating system).

37. *See* Karin Lindquist et al., *How to Wean Cattle*, WIKIHOW (Mar. 29, 2019), <https://www.wikihow.com/Wean-Cattle>; Jen Davis, *What Happens if You Don’t Wean Calves?*, PETS ON MOM, <https://animals.mom.me/happens-dont-wean-calves-9821.html> (last visited May 31, 2020) (explaining the preferences for weaning calves in a cattle operation).

38. Barry Estabrook, *Feedlots vs. Pastures: Two Very Different Ways to Fatten Beef Cattle*, THE ATLANTIC (Dec. 28, 2011), <https://www.theatlantic.com/health/archive/2011/12/feedlots-vs-pastures-two-very-different-ways-to-fatten-beef-cattle/250543/>.

39. Perritt, *supra* note 3, at 371–72.

40. Perritt, *supra* note 3, at 369; *see* Sean M. Kammer, *Railroad Land Grants in an Incongruous Legal System: Corporate Subsidies, Bureaucratic Governance, and Legal Conflict in the United States, 1850-1903*, 35 L. & HIST. REV. 391, 405–06 (2017) (explaining that despite the unpopularity of railroad subsidies, Congress subsidized millions of acres for railroads from 1850–1870, noting the potential for economic growth and spread of “civilization”).

41. Perritt, *supra* note 3, at 372–73; Cassidy L. Woodard, *From Cattle Drives to Labeling Legislation: Implications of Mandatory Country of Origin Labeling on the Beef Industry*, 47 TEX. L. REV. 399, 401–02 (2015) (describing how the increased demand for beef at the end of the nineteenth century led to the drastic change from romanticized cattle drives to the growth of the grotesque meat packing conditions and slaughterhouses).

42. Perritt, *supra* note 3, at 423–25; U.S.D.A., AGRIC. COOPERATIVE SERV., SERV. REP. 38, *MARKETING FED CATTLE: COOPERATIVE OPPORTUNITIES* (Sept. 1993) (detailing the beginning of collective actions in the U.S. livestock industry, including cooperative

the antitrust action brought against the Big Five Packers by the Roosevelt Administration and labeling standards promulgated by the United States Department of Agriculture (“USDA”), most segments of the beef industry continued to enjoy a laissez-faire environment throughout the twentieth century.<sup>43</sup> This laissez-faire environment allowed the third and fourth waves to develop, driven by technology.<sup>44</sup>

Rigorous analysis obligates a student of Creative Destruction to identify the victims and the beneficiaries of each wave. In the cattle industry, the victims of the first wave were local cattle farmers and local slaughterhouses, located near Eastern consumer markets.<sup>45</sup> The beneficiaries were Texas cattle ranchers, the promoters of cattle towns in Kansas, Nebraska, and Wyoming, and the entrepreneurs who built consolidated beef processing facilities such as the Chicago Stockyards.<sup>46</sup> In the second wave, the victims were the Texas ranchers and the promoters of cattle towns.<sup>47</sup> The beneficiaries were smaller cattle farmers and ranchers in the West and the beef processors who had the foresight to take advantage of the spreading railroad technology by establishing remote facilities near the cattle.<sup>48</sup>

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public auctions and small sale lots).

43. Perritt, *supra* note 3, at 415; Committee on Evaluation of USDA Streamlined Inspection System for Cattle (SIS-C), CATTLE INSPECTION 9–11 (1990), <https://www.ncbi.nlm.nih.gov/books/NBK235649/> (discussing the timeline of changes to regulation of the beef industry).

44. See Perritt, *supra* note 3, at 367 (noting some technological advancements in meat storage and preservation, including canning, pickling, and refrigeration). See generally *A Timeline of Changes: Beef Cattle Farming in North America*, ARROWQUIP (June 6, 2017), <https://arrowquip.com/blog/cattle-research/timeline-of-changes-beef-cattle-north-america> (discussing innovations in production that impacted the beef industry).

45. See Perritt, *supra* note 3, at 365 (discussing how the increased popularity of cattle drives led ranchers to cultivate herds closer to railroads and farther from small towns); see also John Fraser Hart & Chris Mayda, *The Industrialization of Livestock Production in the United States*, 38 SOUTHEASTERN GEOGRAPHER 58, 60–61 (1998) (describing how the modern impact of rapid industrialization of the cattle industry after World War II is that a small number of large farms produce a disproportionate share of U.S. livestock products).

46. Perritt, *supra* note 3, at 375; see also Hart & Mayda, *supra* note 45, at 63 (finding that early developments in livestock industrialization left the industry “concentrated in the Denver-Omaha-Lubbock triangle, especially in the Southern High Plains area of southwestern Kansas and the panhandles of Oklahoma and Texas”).

47. Perritt, *supra* note 3, at 397; Elmer Kelton, *The Texas Almanac: Ranching in a Changing Land*, TEX. ALMANAC (2007), <https://texasalmanac.com/topics/agriculture/ranching-changing-land> (explaining that blizzards, overgrazing, and drought contributed to loss of income for Texas ranchers).

48. See U.S. GOV’T ACCOUNTING OFF., GAO-RCED-97-100, PACKERS AND STOCKYARDS PROGRAMS: USDA’S RESPONSE TO STUDIES ON CONCENTRATION IN THE LIVESTOCK INDUSTRY 16 (1997) (summarizing concentration of industry in Chicago, and

In the third wave, the victims were ranchers who clung to grazing, now on enclosed plots, as a way of feeding their cattle.<sup>49</sup> The beneficiaries were the grain farmers who fed their corn surpluses to cattle on their own properties or feedlots established by others.<sup>50</sup> In the fourth wave, the spread and eventual dominance of truck technology operated on extensive public highways victimized the railroads and the processing firms who concentrated their capital at rail terminals.<sup>51</sup> The beneficiaries were the owners of new, more decentralized, processing facilities located within a day's truck drive of cow-calf operations.<sup>52</sup> The same stimuli intensified the feedlot phenomenon, further victimizing farmers who stuck to grass-fed beef and benefiting entrepreneurs who established specialized and larger feedlots.

Multiple stimuli often reinforce each other and intensify effects.<sup>53</sup> For example, feedlots, distinct from cattle ranches, first emerged because of the corn surpluses, but their evolution and eventual dominance of a phase in the

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then fragmentation after World War II, with slaughterhouses relocating near feedlots in the western High Plains).

49. Perritt, *supra* note 3, at 394–95; John J. Hasko, *Cattle v. Sheep: The Idaho Experience*, 3 THE CRIT: CRITICAL STUD. J. 79, 89 (2010) (discussing cattle grazing for feed sources).

50. See Perritt, *supra* note 3, 394–95 (noting that farmers had struggled to develop fencing to keep cattle in and the invention of the barbed wire fence, which allowed farmers to keep their cattle on their properties); J.S. Cotton & W.F. Ward, *Economical Cattle Feeding in the Corn Belt*, U.S. DEP'T AGRIC. (June 24, 1914), <https://digital.library.unt.edu/ark:/67531/metadc85802/> (arguing that it was cheaper to feed cattle corn).

51. See Perritt, *supra* note 3, at 398 (noting that the refrigerated truck trailer and highway system displaced centralized slaughterhouses linked to markets by a railroad); HAMILTON, *supra* note 4, at 136–37 (discussing the revolutionary impact of refrigerated trucks on the meatpacking industry by enabling smaller market players to bypass rail and the monopolized system of large meatpackers).

52. See Perritt, *supra* note 3, at 398–99 (explaining that the fourth round of Creative Destruction led to a decentralized system of smaller farms and feedlots linked to regional slaughterhouses and markets by truckers and there was no longer a need to move cattle across open ranges to transport them via railroads); Marc Stimpert, *Counterpoint: Opportunities Lost and Opportunities Gained: Separating Truth from Myth in the Western Ranching Debate*, 36 ENVTL. L. 481, 490 (2006) (explaining that open ranges led to competition for limited resources, resulting in landed ranchers excluding other kinds of ranchers from access to land and water and resorting to harassment to maintain control).

53. See Perritt, *supra* note 3, at 398–99 (tracing the growth of feedlots from small farms to large factories with a thousand cattle stimulated by emergence from feedlots from excess corn and the development of refrigerated trucks); Erik Schlenker-Goodrich, *Moving Beyond Public Lands Council v. Babbitt: Land Use Planning and the Range Resource*, 16 J. ENVTL. L. & LITIG. 139, 144–45 (2001) (stating that the competition for resources, coupled with the arrival of sheep in the western range, resulted in even more competition for resources, ultimately leading to ecological degradation).

production chain resulted from truck transportation on public highways.<sup>54</sup>

### III. DRIVERS OF THE THIRD AND FOURTH WAVES

The closing of the open range led to the demise of the long cattle drive and marked the second wave of Creative Destruction.<sup>55</sup> The second wave put in motion forces that led to the third wave.<sup>56</sup> Advances in truck technology and public road construction led to the fourth wave.<sup>57</sup>

#### *A. Closing of the Range: Taylor Act of 1934*

The Taylor Act reinforced and codified the decline of open range ranching, which already had fallen into disfavor because of increased farm settlement encouraged by the homesteading laws.<sup>58</sup>

At first, public lands were genuinely open; anyone who wanted to graze his cattle there could do so. But before long, the tragedy of the commons had begun to manifest itself.<sup>59</sup> Overgrazing became a concern, as cattle had to venture farther and farther from the centerline of the trails to find grass that had not already been cropped down by previous herds. Even more important, competition for scarce water resources grew.<sup>60</sup> By the end of the 1870s,

54. See Perritt, *supra* note 3, at 398 (discussing the emergence of feedlots from a surplus of grain); cf. Brian Sawers, *Race and Property After the Civil War: Creating the Right to Exclude*, 87 *MISS. L.J.* 703, 705 (2018) (noting the effects of closing the range in the United States were an example of economic change driving legal change, and property law in particular).

55. Perritt, *supra* note 3, at 372 (noting that although the second wave ended cattle drives, it did not end the flow of beef and it channeled production and transportation into smaller herds); see MARY G. RAMOS, *TEXAS ALMANAC, CATTLE DRIVES STARTED IN EARNEST AFTER THE CIVIL WAR* (1991).

56. See Perritt, *supra* note 3, at 388–89 (distinguishing Chicago as a hub for meatpacking and noting that forces of the third wave led to the decentralization of slaughterhouses and packing houses closer to the markets); Woodard, *supra* note 41, at 401 (explaining that the farmer’s shift of moving cattle near railroad cities to ship cattle by rail stimulated the growth of the meatpacking industry; therefore, increasing the innovation across the country with the need for expanding railroads).

57. See Perritt, *supra* note 3, at 388–92 (describing the invention of refrigerated truck technology as delivering efficiencies reflected in the economies of scale); Kaitlyn Trout, *You Can’t Have Your Beef and Eat it Too: The Statutory Effect of Anti-Corporate Farming Acts on Family Farms and Beef Corporations*, 39 *OKLA. CITY U.L. REV.* 513, 530 (2014) (stating that the federal highway system’s swift expansion coupled with the innovation of refrigerated trucks enabled meat packagers to move into rural areas near the farmers; therefore, reducing costs and industrializing the meatpacking industry).

58. See George Cameron Coggins Margaret, *The Law of Public Rangeland Management II: The Commons and the Taylor Act*, 13 *ENVTL. L.* 1, 41 (1982) (explaining that the act “allowed for the withdrawal of unappropriated public domain into grazing districts” and thus led to the decline of open range ranching).

59. See *generally id.* (providing background regarding the tragedy of the commons).

60. See Perritt, *supra* note 3, at 370 (noting that the increase in cattle drives led to

extralegal mechanisms for enforcing quasi-property rights to the open range had developed.<sup>61</sup> According to law, the cattlemen did not own water rights or grazing rights in the public land.<sup>62</sup> Cattlemen staked claims to regular pastures and regular water sources.<sup>63</sup> The custom of the range induced most other ranchers to respect those claims.<sup>64</sup>

As the range grew more crowded, the voluntary respect diminished in effectiveness, and the ranchers organized associations that formalized the rules and enforced them. The system was especially complete and rigorous in Wyoming before statehood. The Wyoming Cattlemen's Association controlled the public territorial institutions, including its legislature.<sup>65</sup>

The use of public lands diminished substantially in the twentieth century as a result of two political forces leading to legal restrictions.<sup>66</sup> The first of these was the move, stimulated by the dustbowl crisis,<sup>67</sup> to the sustainable

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overgrazed land and scarcity of food and water for the moving cattle); Russel L. Tanner, *Leasing the Public Range: The Taylor Grazing Act and the BLM*, WYOHISTORY.ORG (Aug. 30, 2015), <https://www.wyohistory.org/encyclopedia/leasing-public-range-taylor-grazing-act-and-blm> (describing how grazing habits were primarily first-come-first-serve: ranchers who first got to the land and water sources ended up controlling these areas).

61. Perritt, *supra* note 3, at 410 (noting that open range ranching led to attempts at a quasi-property regime to reduce disputes); *Invention of Improved Barbed Wire Changes the West*, THE HIST. ENGINE, <https://historyengine.richmond.edu/episodes/view/6265> (last visited May 31, 2020) (explaining how barbed wire was invented in the 1870s and used to monitor livestock movement).

62. Andrew P. Morriss, *Miners, Vigilantes, & Cattlemen: Overcoming Free Rider Problems in the Private Provision of Law*, 33 LAND & WATER L. REV. 581, 652 (1998) (explaining that "at the beginning of ranching in the West," although no rancher had legal title to the land, he had "range rights," which were customary rights to water and the surrounding free range land and were recognized by his neighbors).

63. *Id.*

64. *Id.*

65. Perritt, *supra* note 3, at 388 n.106 (articulating the way cattlemen pushed for their own interests through their control of the legislature); see also W. Turrentine Jackson, *The Wyoming Stock Growers' Association Political Power in Wyoming Territory, 1873-1890*, 33 THE MISS. VALLEY HIST. REV. 571, 571 (1947) (explaining the role the Wyoming Stock Growers' Association held in influencing public territorial institutions).

66. Perritt, *supra* note 3, at 401 (explaining that property law led to the demise of open range cattle drives). See generally Adam M. Sowards, *Public Lands and Their Administration*, OXFORD RES. ENCYCLOPEDIA OF AM. HIST. (Aug. 2017), <https://oxfordre.com/americanhistorical/view/10.1093/acrefore/9780199329175.001.0001/acrefore-9780199329175-e-396?rskey=fw0XJZ> (providing background on the management of public lands in the twentieth century and the political factors that resulted in a decline of available public lands).

67. See Michael M. Welsh, *Beyond Designed Capture: A Reanalysis of the Beginnings of Public Range Management, 1928-38*, 26 SOCIAL SCI. HIST. 347, 349-51 (2002) (characterizing general academic view that Taylor Act resulted from rancher concerns about Dust Bowl overgrazing and was intended to ensure that ranchers

management of public and private agricultural land in the plain states. The result was the enactment of the Taylor Act in 1934.<sup>68</sup> The second, beginning to be influential about fifty years later, was the environmental movement, which sought to protect public lands from any kind of private exploitation that might disturb its beauty or displace native species.<sup>69</sup> That movement continues to gain force in the twenty-first century, reinforced by claims that current trends and beef husbandry are unsustainable and contribute to global warming more than petroleum carbon emissions.<sup>70</sup>

The resulting legal restrictions on the use of public land for grazing have curtailed the supply of land for grazing, reinforced by denser settlement throughout the country.<sup>71</sup> This reduction in the supply of land coincided with the continuing increase in the demand for beef.<sup>72</sup> The result is that land has become the dominant factor in beef production. The industry responded by adopting new technologies and business methods that increased the efficiency of land cattle production, thereby keeping its cost tolerable.<sup>73</sup> Enclosed pastures and feedlots are the manifestations of that response.

### B. Corn Surplus

Corn surpluses transformed beef husbandry.<sup>74</sup> They made it possible to

controlled range management); *see also id.* at 354–55 (proposing revised history that Taylor Act originated in more general concerns about Dust Bowl).

68. The Taylor Grazing Act of 1934, 43 U.S.C. §§ 315-315r (1934).

69. *See* Karen Klitz & Jeff Miller, *Con: Cattle Grazing Is Incompatible with Conservation*, BAY NATURE (May 7, 2015), <https://baynature.org/article/con-cattle-grazing-is-incompatible-with-conservation/>.

70. *Id.*

71. Perritt, *supra* note 3, at 395–97 (explaining how as settlers increased in number, so did the frequency of fencing in previously open land); *cf.* Clarence H. Danhof, *The Fencing Problem in the Eighteen-Fifties*, 18 AGRIC. HIST., 168, 173 (1944) (conveying that in order for settlers to keep their property within their own boundaries, fencing and private land became necessary for farming).

72. Perritt, *supra* note 3, at 365 (stating that cattlemen noticed demand for beef increasing in eastern cities and rushed to meet the demand). *See generally* Hannah Ritchie & Max Roser, *Meat and Dairy Production*, OUR WORLD IN DATA (Aug. 2017), <https://ourworldindata.org/meat-production> (indicating that global beef production has doubled from 1961–2014).

73. Perritt, *supra* note 3, at 392 (stating that as societal changes made “open-range ranching uneconomical, changes in grain cultivation and production came to the rescue of the beef industry”). *See generally* David I. Smith, *19th Century Development of Refrigeration in the American Meat Packing Industry*, 8 TENOR OF OUR TIMES 99 (2019) (stating that new technological advancements, such as refrigerated railway cars, created a decrease in prices for the cattle industry).

74. *See* William Trimble, *Historical Aspects of the Surplus Food Production of the United States, 1862–1902*, 1 AGRIC. HIST. SOC’Y PAPERS 221, 225 (1921) (explaining that U.S. corn exports increased by a factor of twelve from 1852 to 1881, but some

depend less on grass grown on the open range or enclosed pastures and to feed cattle regardless of the amount or quality of grass available. The corn surpluses facilitated the adjustment to the closing of the open range because surpluses reduced the amount of acreage necessary to feed beef cattle. Typically, a cow-calf pair requires two acres of grassland from time of breeding to the time the calf is weaned.<sup>75</sup> Another one to three acres are required to finish a steer that is entirely grass-fed.<sup>76</sup> By concentrating cattle in feedlots and feeding them corn instead of grass, the amount of land required for cattle production is reduced by at least half.<sup>77</sup> Corn long had been used as a feed supplement. For example, in places where winters were too harsh for the cattle to continue to feed on the open range, cattlemen supplemented with corn.<sup>78</sup> Feedlots are possible, however, only because enough corn is available to feed cattle in them. Ultimately, corn surpluses made feedlots possible.

A graph of corn yields from 1866 shows that corn productivity did not dramatically increase until the late 1930s.<sup>79</sup> Productivity is only one aspect

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observers put the onset of the corn surplus much later in time); *see also Big Nutritional Changes in Recent History*, SLANKER GRASS-FED MEAT, <https://www.texasgrassfedbeef.com/grass-fed-meat-education/big-nutritional-changes-recent-history> (last visited May 31, 2020) (dating corn surplus to use of self-propelled combine beginning with World War II).

75. *See Balancing Your Animals with Your Forage*, USDA, [https://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/stelprdb1167344.pdf](https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1167344.pdf) (last visited May 31, 2020) (characterizing the acreage required for raising cattle increases considerably on native grass or in wooded areas); *see also Livestock Management*, TEXAS PARKS AND WILDLIFE, [https://tpwd.texas.gov/landwater/land/habitats/post\\_oak/habitat\\_management/cow/index.phtml](https://tpwd.texas.gov/landwater/land/habitats/post_oak/habitat_management/cow/index.phtml) (last visited May 31, 2020) (estimating requirements of 815 acres per cow-calf unit on native grass, 36 acres on tame pastures, and 5075 acres in wooded areas and justifying rule of thumb that it takes 1.82.0 acres of grass to feed one cow-calf pair for 12 months).

76. *See* Greg Halich et al., *Producer's Guide to Pasture-Based Beef Finishing*, U. OF KY. COOPERATIVE EXTENSION SERV. 1, 13 (2015), (suggesting at least one acre per 1,000 steer for finishing; developing overall cost estimate for ranch that finishes steers on grass).

77. *See Corn-Fed: Cows and Corn*, PBS, <https://www.pbs.org/independentlens/kingcorn/cows.html> (last visited May 31, 2020) (characterizing the ability of feedlots to bring cattle to market weight in fifteen months rather than the normal two to three years for pastured cattle).

78. *See id.* (reporting that steers were fed corn as a supplement, not as a staple, until the 1950s); *see also* Jason Schmidt, *Trends in the Production and Marketing of Grass-fed Beef*, KAN. RURAL CTR., <http://old.kansasruralcenter.org/publications/CCCSchmidtGrassFedBeef.pdf> (last visited May 31, 2020) (characterizing 1916 as a time of grass-fed in summer and grain-fed in winter and 1950s when "subsidized grain led to dominance of the feedlot industry").

79. *A Brief History of U.S. Corn, in One Chart*, WASH. POST (Aug. 16, 2012), [https://www.washingtonpost.com/news/wonk/wp/2012/08/16/a-brief-history-of-u-s-corn-in-one-chart/?utm\\_term=.dc82644fc264](https://www.washingtonpost.com/news/wonk/wp/2012/08/16/a-brief-history-of-u-s-corn-in-one-chart/?utm_term=.dc82644fc264).

of corn supply, however. “For most of the nineteenth century, American farmers were able to produce more and more food by planting on ever more acreage.”<sup>80</sup>

This also increased the supply.<sup>81</sup> Supply and demand fluctuated, producing surpluses in some years and not in others.<sup>82</sup> Where there was a surplus, a farmer could feed it to stock or let it rot — there were not markets developed for other uses — such as fuel — until a century later.<sup>83</sup>

### C. Railroad Rigidities

Overcoming the inherent rigidities of the rail infrastructure was a centerpiece of the third wave. The rail infrastructure retarded adaptation to new technologies in beef production. The spine of the rail network served long cattle drives and centralized slaughtering and packing operations in a few hubs, mainly Chicago.<sup>84</sup>

Rail transportation is among the most capital-intensive industries that exist.<sup>85</sup> Most of the capital goes into acquiring the right-of-way, surveying the route, and constructing the track.<sup>86</sup> Thereafter, the additional capital outlays are necessary to maintain the track and purchase locomotives and other rolling stock. Rarely is it cost-effective or possible to rip up the track on an existing right-of-way and substitute a railroad running elsewhere, as land-use patterns change.<sup>87</sup> The capital simply is not available for such

80. *Id.*; see Philip D. Hubbs, *The Origins and Consequences of the American Feedlot System 2* (Aug. 2010) (unpublished M.A. thesis, Baylor University) (reporting on how improved agricultural technology, chiefly steel-bladed plow and mechanical reaper led to corn surplus).

81. See Hubbs, *supra* note 80, at 2 (explaining that several inventions allowed for larger pieces of land to be effectively utilized, allowing food production to rise).

82. *Id.* at 6–7.

83. *History of Ethanol Production and Policy*, N.D. STATE UNIVERSITY, <https://www.ag.ndsu.edu/energy/biofuels/energy-briefs/history-of-ethanol-production-and-policy> (last visited May 31, 2020) (characterizing corn ethanol production as beginning in the 1970s during the fuel crisis due to high fuel costs).

84. See Hubbs, *supra* note 80, at 21–22 (explaining that spine of the rail network had been constructed to serve larger purposes, and the expansion of the railroad allowed ranchers to not have to drive their cattle to Kansas to a railyard).

85. Matt Wilson, *The Resurgence of Railroads*, CAPITAL GROUP, [https://www.capitalgroup.com/content/dam/cgc/tenants/pcs/images/Perspective-Images/Quarterly%20Insights/Summer%202015%20Quarterly\\_Insights.pdf](https://www.capitalgroup.com/content/dam/cgc/tenants/pcs/images/Perspective-Images/Quarterly%20Insights/Summer%202015%20Quarterly_Insights.pdf) (last visited Dec. 29, 2019) (“Rail is one of the most capital-intensive industries, with nearly one-fifth of revenue going toward [maintenance] . . .”).

86. See Martha Lawrence, *Railways Are the Future—So How Can Countries Finance Them?*, WORLD BANK BLOG (Feb. 22, 2018), <https://blogs.worldbank.org/transport/railways-are-future-so-how-can-countries-finance-them>.

87. See CURTIS A. MORGAN ET AL., RAIL RELOCATION PROJECTS IN THE U.S.: CASE STUDIES AND LESSONS FOR TEXAS RAIL PLANNING 25 (2006) (explaining the costs of



purposes after initial construction is complete. A railroad, once established, may run additional branch lines to tap new sources of traffic.<sup>88</sup>

At the turn of the twentieth century, the architecture of the rail network was fixed.<sup>89</sup> It was a hub and spoke system.<sup>90</sup> As it pertains to the beef industry, the hubs were in Chicago, Kansas City, and Omaha. The spokes radiated out from those hubs through the West with major facilities for live cattle loading at a few railheads such as Dodge City, Ogallala, Cheyenne, and Miles City.

New technologies made it possible — and sometimes forced — decentralization of ranching and beef packing, it was difficult for the railroads to adapt.<sup>91</sup> Decentralization of ranching meant that cattle were raised in much smaller herds dispersed throughout the cattle-raising states.<sup>92</sup> While the railroads could, and sometimes did, run branch lines to establish railheads in remote places, the economics of the strategy were not good; rarely did the density of cattle loadings cover the capital cost of the branch line.<sup>93</sup> It is now commonplace in transportation economics to understand that the “granger lines,” in building out to less dense territories sealed their fate and assured their eventual doom because the traffic could not support their networks.<sup>94</sup>

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railroad relocation).

88. See I.E. Quastler, *A Descriptive Model of Railroad Network Growth in the American Midwest, 1865-1915*, 77 ELECTRONIC J. GEOGRAPHY 87, 92 (1978) (providing three “causes” for adding branch lines, including the “widespread belief that local firms could provide effective competition to the major railroads . . . incentive . . . to ship and receive” for speed and cost efficiency, and adding lines for exhaustible resources).

89. See Julie A. Hogeland, *An Application of Steindl’s Theory of Concentration to the U.S. Meat Packing Industry, 1895-1988*, 32, 33–34, in RETHINKING CAPITALIST DEVELOPMENT: ESSAYS ON THE ECONOMICS OF JOSEF STEINDL (Tracy Mott & Nina Shapiro eds., 2005).

90. See *id.*

91. See Perritt, *supra* note 3, at 390 (describing how using this technology to revolutionize the food industry further necessitated someone to take the risk of a substantial investment); John M. Thies, *Decentralization in the Meat Packing Industry*, 1 KANSAS STATE U. 1, 2–3 (1965) (noting that changes in technological process had an important influence on decentralization).

92. See Perritt, *supra* note 3, at 399 (stating that decentralization of the smaller herds were linked directly to regional slaughterhouses and supermarkets by independent truckers); see also Mary Hendrickson, *Creating Alternatives: A Participant Observer’s Reflections on the Emerging Local Food System in Kansas City*, 24 SOUTHERN RURAL SOC. 169, 178 (2009) (understanding agricultural alternatives to old methods of farming and the benefits associated with them).

93. See Margaret Walsh, *Reviews*, 7 J. AM. STUD. 108, 109 (1973) (describing how “a wide disparity developed between the income and the investment needs of the railroads”).

94. See SOLON JUSTUS BUCK, *THE GRANGER MOVEMENT: A STUDY OF AGRICULTURAL ORGANIZATION AND ITS POLITICAL, ECONOMIC AND SOCIAL*

So, for time, ranchers either did not decentralize their ranching operations as much as they would like, sticking close to the established trailheads, or they did decentralize them and incurred the cost of driving the cattle from the new, smaller, ranches to the existing railheads.<sup>95</sup> All the time, they complained loudly about the poor service they received from the railroads, as part of the Granger Movement.<sup>96</sup>

The evolving regulatory regime under the Interstate Commerce Commission (“ICC”) further impeded adaptation.<sup>97</sup> While the Interstate Commerce Act popularly is perceived as a consumer-oriented (or shipper-oriented) strategy to restrain monopolistic rate increases, its economic and legislative history shows that it was mainly intended to prevent ruinous competition by placing a floor under rates and limiting market entry.<sup>98</sup> Thus, when a railroad decided it was economical to run a new branch line into growing beef ranching territory, opponents of that new transportation competition could block it through the ICC.<sup>99</sup> Similarly, if a railroad decided it wanted to lower rates to increase traffic and make an existing line pay, anticompetitive forces acting through the ICC could block that rate reduction.<sup>100</sup>

Other aspects of railroad technology interfered with adaptation as well.<sup>101</sup> Not only did the capital intensity of constructing a railroad right-of-way and maintaining it require a certain level of traffic density to provide a reasonable rate of return, but the capital intensity of locomotives made it profitable only when the locomotive pulled a substantial string of cars. Nowhere was it profitable for a locomotive to pick up a single car and haul it all the way to

MANIFESTATIONS 1870-1880 164 (1913).

95. See J. C. Swanson & J. Morrow-Tesch, *Cattle Transport: Historical, Research, & Future Perspectives*, 79 J. ANIMAL SCI. (E. SUPPL.) E102, E103 (2001) ].

96. See Martin Ridge, *Ignatius Donnelly and the Granter Movement in Minnesota*, 42 MISS. VALLEY HIST. REV. 693, 703–08 (1956) (describing Granger Movement’s focus on legislative railroad regulation).

97. See *Federal Supervision of Railroad Passenger Service: The Sunset Case, Dawn of a New Era or Monument to the Old?*, 1970 DUKE L. REV. 529, 529–30 (1970) (explaining how the Interstate Commerce Commission has played a role in impeding development by intentionally downgrading services).

98. Marg A. Wallace, *Interstate Commerce Commission*, 56 GEO. WASH. L. REV. 937, 959 (1988) (contending that government must encourage “reasonable rates for transportation” yet mitigate “unfair” and “destructive” competition).

99. See Herbert Hovenkamp, *Regulatory Conflict in the Gilded Age: Federalism and the Railroad Problem*, 97 YALE L.J. 1017, 1023 (1988) (stating that regulations can control market entry and thus restrict competition).

100. See *id.*

101. *Cattle Car*, AMERICAN-RAILS, <https://www.american-rails.com/cattle.html> (last visited Dec. 27, 2019).

its destination.<sup>102</sup> The labor cost of engine and train crews, inflated through most of the twentieth century by state “full crew” laws<sup>103</sup> and by collective bargaining agreements,<sup>104</sup> exacerbated the economic disadvantage of moving small trains, even as the locomotive enabled pulling longer ones.

The necessity of running longer trains added to the obstacles to adaptation. Unless traffic density is very high, a railroad cannot assemble a long train unless it comprises cars headed for different destinations.<sup>105</sup> That means that each car has to pass through a succession of classification yards — nodes in the rail network that disassemble inbound trains, aggregate the cars from them going in the same direction, and assemble those cars into another outbound train headed in the general direction of the destinations for the cars. Then, the process is repeated so that the number of cars comprising a train that reaches a particular destination is of efficient length.

Each stop in the classification yards results in delay, usually a day or more to match up inbound trains with outbound trains. The delays often are increased by railroad “blocking” strategies that do not let a train leave the terminal until it has some minimum number of cars.<sup>106</sup> Even when the railroad tracks go to the right places, pickups and deliveries often are delayed because of the need for local trains to have a minimum number of cars to be economic.<sup>107</sup> No trainmaster sends a locomotive with an engine and train crew out to pick up a single car from the shipper and bring it back to the terminal if he can help it.

Semitrailer trucks encounter no such inefficiencies; a driver is happy to take the tractor to an origin and pick up a single semitrailer with a load and drive it directly to its destination and drop it off.

#### *D. Trucks and Roadbuilding Flexibilities*

Trucks and highways enabled the beef industry to decentralize. By 1920,

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102. *See id.* (contending that railroads experienced a downfall in part because shipping costs could not be justified for small transport loads).

103. *See* Bhd. of Locomotive Firemen & Enginemen v. Chicago, R. I. & Pac. R.R. Co., 393 U.S. 129, 130 (1968) (describing history of state full-crew laws).

104. *See* Chicago & N.W. Ry. Co. v. United Transp. Union, 330 F. Supp. 646, 648–49 (N.D. Ill. 1971) (issuing injunction against rail union for refusing to negotiate over crew consist dispute; union insisted on adherence to national pattern of collective agreements).

105. *See* Ravindra Ahuja, Krishna Jha, & Jian Liu, *Solving Real-Life Railroad Blocking Problems*, 37 INTERFACES 404, 405 (5th ed. 2007), [https://www.researchgate.net/publication/220249980\\_Solving\\_Real-Life\\_Railroad\\_Blocking\\_Problems](https://www.researchgate.net/publication/220249980_Solving_Real-Life_Railroad_Blocking_Problems) (explaining the use of classification cars in railways).

106. *See, e.g., id.* at 406 (purporting to mitigate delays seen in assembling railway cars).

107. *See id.* (identifying delays in railways).

automobile and truck technology had progressed to the point where trucks had sufficient capacity to provide interesting alternatives to drives of live cattle on foot and rail transport over short distances.<sup>108</sup> The limiting factor was the inadequacy of roads more than shortcomings of the vehicles.<sup>109</sup>

The trucking revolution in transportation differed from the railroad revolution almost a century earlier.<sup>110</sup> The infrastructure for both was built with public funds and subject to shifting political alliances and budget crises.<sup>111</sup> But the railroads, with few and short-lived exceptions, were private sector projects, in which the same corporate entities build the infrastructure and operated the vehicles that ran on it.<sup>112</sup> Road-building was different. Almost all the significant roads after World War I were built by the public sector and remained in governmental hands for operation and maintenance.<sup>113</sup> Others, in the private sector, decided whether to run vehicles on the highway and defined their own purposes. The infrastructure and the vehicles were as firmly inter-dependent as in the case of railroads, but the centers of decision-making were different.<sup>114</sup> When the two were not congruent, governments built highways that were little used, and vehicle owners continued to suffer from an inadequate road network going to where they wanted to go.<sup>115</sup>

### *i. Roadbuilding*

Construction of good public roads and truck technology to take advantage of them to haul cattle were defining features of the third wave.<sup>116</sup> The technology of roadbuilding advanced considerably in the nineteenth

108. See AMERICAN-RAILS, *supra* note 101 (contending that trucks were more desirable than railways for cattle transport).

109. See *id.* (contending that the highway improvements led to a more widespread use of trucks for cattle drives).

110. Daniel Sweeny, *The Structure of Transp. Revolutions*, UNIVERSITY OF WASH. (last modified Jan. 12, 2005), <http://staff.washington.edu/jbs/itrans/charge20.htm> (explaining the process of the transportation revolution in the United States).

111. *Id.*

112. *Id.*

113. Rickie Longfellow, *Back in Time: The Nat'l Road*, U.S. DEP'T OF TRANSP.: FED. HIGHWAY ADMIN. (last modified June 27, 2017), <https://www.fhwa.dot.gov/infrastructure/back0103.cfm> (explaining the creation and development of roads in the United States).

114. Sweeny, *supra* note 110.

115. *Id.*

116. Kathy Weiser, *The Nat'l Road-The First Highway in America*, LEGENDS OF AMERICA (last modified July 2019), <https://www.legendsofamerica.com/ah-national-road/> (describing how the first national road was developed and the types of roads that existed in the nineteenth century).

century.<sup>117</sup> John McAdam proposed improvements in English roads beginning in 1810, based on raising the roads above ground level, cambering their surface convexly (curving it, with a peak on the centerline, to facilitate drainage, and layered construction with stone slabs at the bottom and crushed rock over it).<sup>118</sup>

Despite the name “macadam,” the idea of putting tar or asphalt on the surface came later, in 1901.<sup>119</sup> The problem it sought to solve was the extraction of dust and other small particles from gravel road by the aerodynamic wake of fast-moving automobiles.<sup>120</sup> Eventually, these vehicle dust tails destroyed the integrity of McAdam-designed roads.<sup>121</sup> Roads paved with tar or asphalt did not suffer from this deficiency.<sup>122</sup> Asphalt, derived from petroleum, and mixed with aggregate, generally replaced tar, which was derived from coal, by 1920.<sup>123</sup>

Technologies for road construction, enabling road graders and other earth-moving equipment, also were developed during this period.<sup>124</sup> Before 1920, most country roads were built and maintained by private property owners.<sup>125</sup> They granted easements across their own property — or tolerated easements — to allow others to pass on the roadway.<sup>126</sup> If usage and the cost of maintenance were too much, the landowner would charge a toll.<sup>127</sup> The tragedy of the commons did not develop because the servient tenement for the easements were always in private hands, subject to the power to

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117. Sweeny, *supra* note 110.

118. Christopher McFadden, *John Loudon McAdam: The Father of the Mod. Road*, INTERESTING ENGINEERING (Oct. 26, 2017), <https://interestingengineering.com/john-loudon-mcadam-the-father-of-the-modern-road>.

119. See U.S. Patent No. 765,975 (filed Nov. 3, 1902) (claiming apparatus for improving the preparation of tar-soaked gravel).

120. McFadden, *supra* note 118.

121. *Id.*

122. *Id.*

123. *Id.*

124. See U.S. Patent No. 823,872 (filed Aug. 29, 1905) (claiming a cutting and scraping blade combined with a compacting roller, mounted on the same horse-drawn frame).

125. Stephen Mihm, *Privatizing Roads Was A Great Idea. Not Anymore.*, BLOOMBERG (Feb. 7, 2018, 11:00 AM), <https://www.bloomberg.com/opinion/articles/2018-02-07/privatizing-roads-was-a-great-idea-not-anymore> (commenting on the reasons that road privatization was not beneficial in the history of the United States).

126. Daniel B. Klein & John Majewski, *Turnpikes and Toll Roads in Nineteenth-Century America*, ECON. HISTORY ASS'N, <http://eh.net/encyclopedia/turnpikes-and-toll-roads-in-nineteenth-century-america/> (last visited Dec. 27, 2019) (describing how privatization of roads was a business and collecting tolls was necessary to finance road maintenance).

127. Mihm, *supra* note 125.

exclude.<sup>128</sup> Farmers and small-town residents resisted governmental roadbuilding programs<sup>129</sup> because of concern about taxes,<sup>130</sup> and because making roadbuilding decisions at the township, county, or state level threatened an ideology of democratic autonomy.<sup>131</sup>

Opposition to the results of this decentralized system gradually developed through the second half of the nineteenth century<sup>132</sup> and intensified with the availability of better grading machinery,<sup>133</sup> better technologies for the roads themselves,<sup>134</sup> the bicycle craze with its organized advocacy,<sup>135</sup> and the widespread adoption of the automobile.<sup>136</sup> States slowly overcame farmer opposition and experimented with a variety of subsidies from higher levels of government, especially for trunk roads, leaving most local autonomy intact.<sup>137</sup> One result was the Federal Aid Road Act of 1916.<sup>138</sup>

Throughout the 1920s, road building and road paving programs advanced on the agendas of state and county governments. Persuading local and state governments to engage in roadbuilding was a nontrivial accomplishment. Significant doubts existed as to the constitutional power of states to fund internal improvements. This constitutional question had not stopped canal-building and railroad building projects, but the argument remained available for anyone who opposed improving the roads. The Great Depression, beginning in 1929, deflated economic activity, but roadbuilding involved

128. Klein, *supra* note 126.

129. Hal S. Barron, *And the Crooked Shall Be Made Straight: Public Road Administration and the Decline of Localism in the Rural North, 1870-1930*, 26 J. SOCIAL HIST. 81, 88 (1992).

130. *Id.* (explaining that local roadbuilding programs let farmers work on roads they cared about the most and to satisfy obligations by using their own labor, teams, and tools; paying taxes was only a default).

131. *Id.* at 81.

132. *Id.* at 83–86 (describing the increasing calls for better finance and planning with respect to roads).

133. *Id.* at 86–87 (showing picture of “Champion Road Grader, 1886”).

134. *Id.* at 87 (describing movements to “macadamize” trunk roads).

135. *See id.* at 88 (describing “League of American Wheelmen” — “19<sup>th</sup> century Yuppies” — activities in 1899 and 1900); *see also* Richard F. Weingroff, *Highway Existence: 100 Years and Beyond, A Peaceful Campaign of Progress and Reform: The Federal Highway Administration at 100*, U.S. DEP’T OF TRANSP. FED. HIGHWAY ADMIN., [hereinafter *Highway Existence*] <https://www.fhwa.dot.gov/publications/publicroads/93fall/p93au1.cfm> (last modified Jan. 31, 2017) (describing bicycle campaign for improved roads).

136. Barron, *supra* note 129, at 94–95 (describing effect of automobile advocates after First World War, into the 1920s).

137. *Id.* at 89–93.

138. *Id.* at 93–94.

publicly funded jobs and thus suffered less.<sup>139</sup>

The first serious campaign to build a national system of national paved roads began in 1912 under the leadership of Carl Fisher, an entrepreneur in the automobile industry, based in Detroit.<sup>140</sup> Fisher was charismatic and had a good sense of showmanship.<sup>141</sup> He recruited effective public relations professionals and held meetings with businessmen around the country, promoting “Lincoln Highway,” a paved road that would run from coast to coast.<sup>142</sup> Although the Lincoln Highway was “dedicated” in 1913, less than half of it was paved at that time, and a trip from New York to the West Coast on it took twenty to thirty days.<sup>143</sup>

Fisher and his allies got the Lincoln Highway built, by cajoling one state and county government after another to improve roads and to connect them.<sup>144</sup> Bridge-building was one of the more challenging parts of the effort because of its cost. The Lincoln Highway is today’s U.S. Route 30, and its path is mostly followed by Interstate 80.<sup>145</sup>

Fisher, and the other advocates of government support for roadbuilding, understood that the automobile industry would benefit especially from better roads; if people could go somewhere conveniently, they would buy more cars. As early as the 1920s, the industry had become sufficiently invested in the project and began lobbying against mass transit facilities such as streetcars and suburban trolleys.<sup>146</sup>

In 1926, state and federal lawmakers established a Joint Board to facilitate a national roadbuilding effort.<sup>147</sup> The Board had no regulatory authority or funding capacity, but it successfully coordinated the implementation of a national system for numbering highways.

The United States Bureau of Public Roads was established in 1918, initially as a part of the USDA, and subsequently absorbed into the Federal Highway Administration, in 1970.<sup>148</sup> The Bureau of Public Roads provided

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139. LINDA LEVINE, CONG. RESEARCH SERV., R41017, JOB CREATION PROGRAMS OF THE GREAT DEPRESSION: THE WPA AND THE CCC 4 (2010).

140. Richard F. Weingroff, *The Lincoln Highway*, U.S. DEP’T OF TRANSP. FED. HIGHWAY ADMIN., (last updated June 27, 2017), <https://www.fhwa.dot.gov/infrastructure/lincoln.cfm>.

141. *Id.*

142. *Id.*

143. *Id.*

144. *Id.* (emphasizing that as late as 1921, only eight percent of U.S. roads were paved, even with gravel).

145. *Id.*

146. *Id.*

147. *Id.*

148. *Highway Existence*, *supra* note 135.

limited federal subsidies for specific highway projects such as bridges and tunnels.<sup>149</sup>

The federal Government involvement intensified during the New Deal when the Works Progress Administration used federal dollars to put people to work building aspects of the highway infrastructure.<sup>150</sup>

In 1918, Dwight D. Eisenhower, then a lieutenant colonel in the army, participated in a trans-continental Army excursion on public roads, aimed at building public support for a road improvement program.<sup>151</sup>

By the outbreak of World War II, it was possible to go almost anywhere in the settled part of the United States by automobile or truck on paved roads.<sup>152</sup> Still, the difficulty of passing slower traffic on two-lane roads and the delays occasioned by stoplights and stop signs at the proliferating number of intersections limited capacity of the highway infrastructure.<sup>153</sup>

In 1913, federal subsidies began with the Post Office Appropriation Bill, which included \$500,000 for an experimental post road program.<sup>154</sup> In 1916 President Woodrow Wilson signed the Bankhead Bill, beginning the Federal-Aid Highway Program.<sup>155</sup>

Federal-Aid Highway Program funding increased in 1919, but the states responded sluggishly. In 1921, legislation addressed the major concerns

149. Richard F. Weingroff, *Milestones for U.S. Highway Transportation and the Federal Highway Administration*, U.S. DEP'T OF TRANSP. FED. HIGHWAY ADMIN., <https://www.fhwa.dot.gov/publications/publicroads/96spring/p96sp44.cfm> (last modified Jan. 31, 2017). See generally Richard F. Weingroff, *From 1916 to 1939: The Federal-State Partnership at Work*, U.S. DEP'T OF TRANSP. FED. HIGHWAY ADMIN., <https://www.fhwa.dot.gov/publications/publicroads/96summer/p96su7.cfm> (last modified Jan. 31, 2017) (discussing the federal aid highway program); *Federal Highway Administration*, WIKIPEDIA, [https://en.wikipedia.org/wiki/Federal\\_Highway\\_Administration](https://en.wikipedia.org/wiki/Federal_Highway_Administration) (showing from 1917 to 1941 261,000 miles of highways were built with Federal aid of \$3.17 billion, with state and local governments providing another \$2.14 billion).

150. *The Works Progress Administration*, PBS: THE AMERICAN EXPERIENCE, <http://www.pbs.org/wgbh/americanexperience/features/surviving-the-dust-bowl-works-progress-administration-wpa/> (last visited Dec. 27, 2019).

151. Elliott Carter, *Dwight Eisenhower Was Along for the Ride from Washington to San Francisco*, WASH. POST, (July 7, 2019), <https://www.washingtonpost.com/history/2019/07/07/driving-cross-country-was-crazy-idea-an-army-convoy-set-out-show-it-could-be-done/>.

152. Richard F. Weingroff, *Before the Federal-Aid Highway Act of 1916: Francis v. Du Pont In Context*, U.S. DEP'T OF TRANSP. FED. HIGHWAY ADMIN., <https://www.fhwa.dot.gov/highwayhistory/dupont.pdf>.

153. Richard F. Weingroff, *Federal Aid Road Act of 1916: Building the Foundation*, U.S. DEP'T OF TRANSP. FED. HIGHWAY ADMIN., <https://www.fhwa.dot.gov/publications/publicroads/96summer/p96su2.cfm> (last modified Jan. 31, 2017).

154. *Highway Existence*, *supra* note 135.

155. *Id.*



about the Federal-Aid Highway Program.<sup>156</sup> “The proposal retained the federal-aid principle, but satisfied supporters of long-distance roads by restricting funds to a federal-aid system, to be linked at state lines . . . and requiring that paved surfaces should be at least eighteen feet wide.”<sup>157</sup>

By the early 1930s, the United States received many proposals to create a network of highways.<sup>158</sup> President Franklin D. Roosevelt was enthusiastic about the potential highway systems because the project would create jobs.<sup>159</sup> Section 13 of the Federal-Aid Highway Act of 1938 tasked the Bureau of Public Roads with making a study of needs and producing a corresponding report entitled *Toll Roads and Free Roads*.<sup>160</sup> The report’s “A Master Plan for Free Highway Development,” “called for a 26,700-mile non-toll network, with routes identified on the basis of statewide surveys showing where traffic volumes were highest.”<sup>161</sup>

World War I turned national attention to other matters, but Congress called for a “national expressway study” in 1943 by amending the Federal-Aid Highway Act.<sup>162</sup> In 1944 President Franklin Roosevelt sent the *Interregional Highways* report to Congress recommending increasing the rural and urban highway network.<sup>163</sup>

The Federal-Aid Highway Act was again expanded in 1944, to include the National System of Interstate Highways.<sup>164</sup> The 1944 expansion granted states the authority to determine routes with federal approval but failed to allocate funds to the expanded network.<sup>165</sup> Three years later, in 1947, the Public Roads Administration announced its plan for the 37,700 mile National System of Interstate Highways.<sup>166</sup>

Construction of the system required strong national leadership to fund it. President Dwight D. Eisenhower provided that leadership.<sup>167</sup> Eisenhower contrasted his experience in 1918 with his experience at the end of World War II when he saw the German autobahns.<sup>168</sup> He was enthusiastic about

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156. *Id.*

157. *Id.*

158. *Id.*

159. *Id.*

160. *Id.*

161. *Id.*

162. *Id.*

163. *Id.*

164. *Id.*

165. *Id.*

166. *Id.*

167. *Id.*

168. *Id.*

what became the Interstate Highway System, beginning with his signing of the National Aid Highway Act of 1956 as he was running for reelection.<sup>169</sup>

Meanwhile, truck technology was advancing, with bigger diesel engines and sturdier semitrailers. Large trucks on interstate highways were superior to trains of eighty cattle cars confined to fixed right-of-way and having to pass through fixed classification yards to beef packing hubs.<sup>170</sup> Now, a cattle rancher or beef packer could arrange for point-to-point transportation of live cattle or process beef directly from ranches or feedlots to slaughterhouses and directly from slaughterhouses to packers and on to retailers or consumers.<sup>171</sup>

### *ii. Trucks*

Good roads had little impact without vehicles to travel on them. Any vehicle must be designed around the loads it is intended to carry. The propulsion system must deliver enough power to pull the load, the body of the vehicle must be adequate to contain the load, shield it from the elements, and to tolerate opposing forces of friction and drag and those exerted by the propulsion system.<sup>172</sup> These basic principles determine whether the vehicle is a semi-trailer truck, a freight wagon pulled by oxen, a railroad train, or an aircraft.

Early attempts to use steam engines on roads were unsuccessful because the weight of the engine necessary to pull an acceptable load was too great for the roads to bear.<sup>173</sup> Once the basics of internal combustion engines, clutches, and transmissions had been worked out,<sup>174</sup> it was not much of a challenge for engineers to put a truck body — not much more than a wagon bed — on the back of a passenger car, turning it into a truck.

Farmers were receptive. Before automobiles and trucks became common, farmers were using a variety of small internal combustion engines for farm tasks such as running cotton gins, pumping water, churning butter, threshing

169. *The Interstate Highway System*, HISTORY, <http://www.history.com/topics/us-states/interstate-highway-system>. (last modified Jun. 7, 2019).

170. Hubbs, *supra* note 80, at 62.

171. *See id.* (asserting that flexibility of truck transportation facilitated establishment of modern feedlot system).

172. *See Vehicle Propulsion*, SCIENCEDAILY, [http://www.sciencedaily.com/terms/vehicle\\_propulsion.htm](http://www.sciencedaily.com/terms/vehicle_propulsion.htm) (last visited Dec. 26, 2019) (explaining the propulsion system and how it relates to engines and power).

173. Merrill J. Roberts, *The Motor Transportation Revolution*, 30 BUS. HIST. REV. 57, 57–58 (1956).

174. *See id.* at 58 (noting that not only internal combustion engines, but also transmissions, clutches, and differentials were necessary developments); *see also* HAMILTON, *supra* note 4, at 45–46 (identifying key technology developments that made agricultural trucking feasible).

grain, and washing clothes.<sup>175</sup> Cattle farmers were among the earliest adopters of truck technology.<sup>176</sup>

Reliable data on the price of truck tractors during the first half of the twentieth century is not available. The price of farm tractors is available; however, and farm tractors and truck tractors are not too different in basic capability, although they look quite different. Early gasoline-powered tractors became available soon after 1900, led by the Fordson.<sup>177</sup> The tractors weighed between 2,000 and 3,000 pounds and cost just under \$1,000.<sup>178</sup> By 1920, Ford cut the price of the Fordson from \$625 to \$395, and International Harvester followed suit.<sup>179</sup> Horses and mules still predominated over tractors until about 1944, however.<sup>180</sup>

For the most part, trucks are intended to take one trailer load of freight from an origin directly to a destination.<sup>181</sup> The ideal size truck for transporting live cattle from cow-calf farm to feedlot or from feedlot to the slaughterhouse is usually the biggest allowed by traffic laws. Further, the ideal truck to transport live cattle accommodates multiple beeves, giving them adequate ventilation, water, and physical support so they do not fall while in transit.

The ideal size truck for transporting sides of beef from slaughterhouses to packing plants is one that is designed to pull carcass that fully utilizes the available volume allowed by traffic laws. Likewise, trucks designed to carry frozen beef packages from the packinghouses to retailers or customers should be designed so that the volume of the trailer can be fully utilized, with the tractor whose tractive effort is sufficient to pull the corresponding weight.<sup>182</sup>

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175. William J. White, *Economic History of Tractors in the United States*, EH NET (Mar. 26, 2008), <https://eh.net/encyclopedia/economic-history-of-tractors-in-the-united-states/> (describing the early uses of tractors by farmers in the United States).

176. See HAMILTON, *supra* note 4, at 59.

177. See White, *supra* note 175 (describing the Fordson model).

178. See *id.*

179. See *id.* (discussing how Ford initiated a price war with competitors after experiencing a “drastic” drop in sales).

180. *Id.*

181. *Truckload vs. Less Than Truckload: What's the Difference?*, FREIGHTQUOTE, <https://www.freightquote.com/blog/less-than-truckload-vs-truckload-freight-whats-the-difference> (last visited Dec. 27, 2019) (noting that less-than-truckload operations exist and they require terminals at which trailers can be unloaded and reloaded, a classification process not unlike that performed by rail classification yards, except at the package level rather than at the truckload or carload level).

182. *Transporting Meat and Poultry*, THE MEAT WE EAT, <https://meatscience.org/TheMeatWeEat/topics/article/2017/05/30/transporting-meat-and-poultry> (last visited Dec. 28, 2019).

In all cases, truck trailer size should be large enough such that transporting output away from an operation does not interpose a bottleneck, but not so large that utilization suffers from a trailer sitting around waiting to be filled because the production line represents a bottleneck.<sup>183</sup>

Daimler Motors, an early innovator in the cattle transportation business, listed the key truck technology developments as including: sectional steel frames and cast steel wheels, upright valves and pinions instead of belt drive, pneumatic tires, and diesel engines.<sup>184</sup>

The first production truck from Chevrolet, a one-ton truck introduced in 1918, was inspired by vehicles used in plants to move parts and pieces from place to place.<sup>185</sup> In the simplest terms, this is an example of form follows function. It was a rolling chassis featuring an open cab, an inline four-cylinder engine, and an open frame allowing customers to install the body that fit their unique needs. Later developments included drum and disk brakes.<sup>186</sup>

The “semi-truck” originated in as early as 1898 and aimed at hauling newly manufactured automobiles to their customers.<sup>187</sup> Before long, Charles Fruehauf and John Endebrock, inventors of the semi-trailer and train mobile, improved the design and structures for special purpose trailers, separate from the tractors that pulled them.<sup>188</sup> Fruehauf developed refrigerated trailers in

183. *How to Make a Successful Trucking Company: 7 Steps*, COMMERCIAL CAPITAL LLC, <https://www.comcapfactoring.com/blog/how-to-make-a-successful-trucking-company-one-important-tip/> (last visited Dec. 28, 2019).

184. *Prime Movers: Milestones of the Mercedes-Benz Truck History from 1896 to the Present Day*, DAIMLER, <https://www.daimler.com/company/tradition/truck-milestones.html> (last visited Dec. 28, 2019) (listing milestones in the history of truck technology, such as six-cylinder diesel truck engines producing 120 horsepower in 1939).

185. Dale Wickell, *Classic Chevy Trucks: 1918–1959*, LIVEABOUTDOTCOM (last modified June 21, 2018), <https://www.liveabout.com/classic-chevy-trucks-1918-1959-3273701>.

186. *Isuzu Trucks Evolution of Truck Tech: Past, Present and Future*, ISUZU TRUCKS BLOG (Mar. 15, 2019), <http://content.isuzu.com.au/industry-insights/evolution-of-truck-tech-past-present-future/>.

187. *The History of the Semi Truck*, EVAN TRANSPORTATION, INC., <https://www.evantransportation.com/blog/semi-trucks/the-history-of-the-semi-truck/> [hereinafter *History of the Semi Truck*] (last visited Dec. 28, 2019). *But see* Roberts, *supra* note 173, at 60 (noting that semi-trailer and pneumatic tire were innovations from the First World War period).

188. *History of the Semi Truck*, *supra* note 187; *The History of Semi Trailer Trucks*, GREAT WESTERN TRANSPORTATION, <https://www.gwtrans.com/the-history-of-semi-trailer-trucks/> (last visited Dec. 28, 2019); Truck Comprising Tractor and Semi-Trailer, U.S. Patent No. US3718346A (issued Feb. 27, 1973); Tractor and Trailer Construction, U.S. Patent No. 2126819A, (issued Aug. 16, 1938) (providing for increased loads within dimensional limitation of law by adding axle to trailer).

the 1920s with capacities of either four or six tons.<sup>189</sup>

In 1904 only 700 trucks were operating.<sup>190</sup> That number expanded to 25,000 in 1914 and exploded to 416,569 in 1924.<sup>191</sup> By 1936 a three axle<sup>192</sup> payload of ten tons was common, compared with fifty-five horsepower carbureted engines in 1926. Market penetration by trucks was dramatic. In 1936, trucks hauled fifty-five percent of cattle to public stockyards. In 1939, sixty percent arrived by truck; 1949, seventy-five percent; and by 1960, ninety percent.<sup>193</sup>

### *E. Modal Economics*

The production functions for truck and rail transportation are dramatically different. Capital costs for constructing a new line of railroad are huge, compared to the capital costs for an entrepreneur wishing to enter the trucking business.<sup>194</sup> This is not because it costs more to build a good railroad than to build a good highway; the opposite may be true.<sup>195</sup> But the difference in business economics is that the cost of railroad infrastructure is born by private enterprise, while building road networks has consistently been a task of the public sector.<sup>196</sup>

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189. Scott Mall, *Flashback Friday: Fruehauf Trailers Changed Trucking Forever in Freight Waves*, FREIGHT WAVES (Apr. 5, 2019), <https://www.freightwaves.com/news/economics/flashback-friday-fruehauf-trailers-changed-trucking-forever>.

190. Jerry Spelic, *The Early History of Semi-Trucks*, PARTNERSHIP (June 15, 2016), <https://www.partnership.com/blog/post/the-early-history-of-semi-trucks>.

191. *See id.*

192. *See Traffic Monitoring Guide*, U.S. DEP'T OF TRANSP. FED. HIGHWAY ADMIN., [https://www.fhwa.dot.gov/policyinformation/tmguide/tmg\\_2013/vehicle-types.cfm](https://www.fhwa.dot.gov/policyinformation/tmguide/tmg_2013/vehicle-types.cfm) (last visited Dec. 28, 2019) (describing a three-axle vehicle as two axles on the tractor, one on the semi-trailer).

193. HAMILTON, *supra* note 4, at 66.

194. *See* COMMERCIAL CAPITAL LLC, *supra* note 183 (describing various issues and costs to entering truck business).

195. Alan Kandel, *Rails vs Roads for Value, Utilization, Emissions-Savings: Difference Like Night and Day*, AIR QUALITY MATTERS (Jan. 11, 2014), <https://alankandel.scienceblog.com/2014/01/11/rails-vs-roads-for-value-utilization-emissions-savings-difference-like-night-and-day/> (dictating costs in both mass transit and highway construction).

196. To be sure, much of the backbone of the real network was built with public funding in the form of land grants and government bonds, but the private, profit-seeking, railroads ultimately had to pay for it. This was not the case for trucking enterprises. To be sure, the truckers had to pay road taxes, usually in the form of fuel taxes, but the aggregate of those taxes never came close to amortizing the cost of the roads they drove their trucks on. *See* William R. Childs, *How Public and Private Enterprise Have Built American Infrastructure*, ORIGINS (Oct. 2017), <https://origins.osu.edu/article/how-public-and-private-enterprise-have-built-american-infrastructure> (noting how public and private enterprise have contributed to roadways and railroads).

Not only that, but the relationship between fixed and variable costs is also quite different between the two modes. The minimum economic size of a locomotive is much greater in terms of weight and horsepower — and therefore cost<sup>197</sup> — than the minimum economic size of a truck tractor.<sup>198</sup> This was especially true in the steam locomotive era. Experiments with steam tractors and other steam-driven road vehicles showed that steam engines were not feasible for these smaller vehicles.

On the other hand, a locomotive of the late nineteenth and early twentieth century could pull twenty to forty cars at a time.<sup>199</sup> So the cost of movement — a variable cost — per railcar as part of a reasonably sized freight train was much less than the cost of moving a truck trailer, each of which required its own truck tractor.<sup>200</sup> This cost advantage was offset by disadvantages associated with local freight car collection and distribution and by classification yard costs and delays, as discussed in Section III.C.

But the basic differences in cost structure for the two modes gave trucks a considerable advantage for collecting cattle from geographically dispersed locations and collecting processed beef from geographically dispersed processing plants. The retail part of the market and the distributors that fed it were geographically decentralized until the late twentieth century, and so trucks also presented an advantage for serving the retail distribution market.<sup>201</sup>

#### F. Timing of the Drivers

Distinguishing the four waves requires paying careful attention to the timings of the different drivers.

Land-use frictions already were discouraging open range ranching and

197. At the turn of twentieth century, the price for new locomotives was between \$20 per pound for “catalog” locomotives and \$40 per pound for custom locomotives. Loco1sa, Comment to *Price of Steam Locomotives Circa 1920’s*, MODEL RAILROADER (Jan. 13. 2012, 12:16 PM), <http://cs.trains.com/mrr/f/13/t/213759.aspx>. A 4-4-0 locomotive at the turn of the century weighed 124,000 pounds. So, the price for a standard locomotive would have been approximately \$250,000. See *4-4-0 “American or Eight-Wheeler” Type*, MENDOCINO COAST MODEL R.R. & HISTORICAL SOC’Y, [https://www.mendorailhistory.org/1\\_railroads/locos/4-4-0.htm](https://www.mendorailhistory.org/1_railroads/locos/4-4-0.htm) (last visited Dec. 28, 2019).

198. See *supra* Part III(D)(2) (stating the cost of a farm tractor at the turn of the twentieth century was about \$1,000 for a weight of 2,000-3,000 pounds); see also White, *supra* note 175 (noting the cost of a farm tractor at the turn of the twentieth century to be approximately \$1,000).

199. *About the Engines*, R.R. EMPIRE, <http://www.therailroadempire.com/about/theengines> (last visited Sept. 28, 2019) (noting weight each popular steam engine was capable of pulling).

200. See COMMERCIAL CAPITAL LLC, *supra* note 183.

201. Spelic, *supra* note 190.

long cattle drives by 1890.<sup>202</sup> These frictions continued and intensified throughout the twentieth century and were reinforced by the Taylor Act in 1935, which illuminated free grazing on public lands.<sup>203</sup> Fragmented land ownership, encouraged by the homesteading acts, railroads, and promoters of towns and cities<sup>204</sup> resulted in more enclosure, fencing cattle out. In the second quarter of the twentieth century, environmental concerns became more influential.<sup>205</sup> These concerns pushed feedlots away from population centers.

Agricultural productivity increased greatly in the twentieth century, resulting in corn surpluses which made corn attractive to feed cattle in confined feedlots.<sup>206</sup> The popularization of the farm tractor, the reaper, and other harvesting began in the mid-twentieth century but did not make an impact until after the Second World War.<sup>207</sup>

Trucking emerged as an alternative to rail transportation for short distances in the 1920s.<sup>208</sup> Roadway transportation rapidly expanded with improvements in truck technology and roadbuilding, while the railroads ran into economic and regulatory difficulties causing them to reduce their capabilities.<sup>209</sup> Roadbuilding began to make a difference by the 1930s, but

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202. See Perritt, *supra* note 3, at 361; see Kelsea Kenzy Sutton, Comment, *The Beef with Big Meat: Meatpacking and Antitrust in America's Heartland*, 58 S.D. L. REV. 611, 630 (2013) (considering the impact of the meatpacking industry and the dramatic changes to the American food system because of land use protocol).

203. The Taylor Grazing Act of 1934, 43 U.S.C. §§ 315-315r (1934).

204. The Chicago, Burlington and Quincy, especially, was active in encouraging agriculture in Nebraska. It introduced alfalfa cultivation and improved seeds for the crops and held seminars on best agricultural practices. It hired recruiters to work in Eastern states and Europe to induce immigrants to come to Nebraska.

205. See Klitz & Miller, *supra* note 69.

206. See Trimble, *supra* note 74, at 225 (explaining that U.S. corn exports increased by a factor of twelve from 1852 to 1881, but some observers put the onset of the corn surplus much later in time); see also SLANKER GRASS-FED MEAT, *supra* note 74 (dating corn surplus to use of self-propelled combine beginning with World War II).

207. Bill Ganzel, *Beef, Feedlots & IBP*, WESSELS LIVING HISTORY FARM (2017) [https://livinghistoryfarm.org/farminginthe50s/crops\\_08.html](https://livinghistoryfarm.org/farminginthe50s/crops_08.html) (showing that in 1945, just under fifty percent of cultivation still was performed by horses and mules).

208. See Perritt, *supra* note 3, at 398–99 (explaining that the fourth round of Creative Destruction led to a decentralized system of smaller farms and feedlots linked to regional slaughterhouses and markets by truckers, and there was no longer a need to move cattle across open ranges to transport them via railroads); Michael Billiel, Note, *Fine-Tuning Deregulation: The Interstate Commerce Commission's Use of Its General Rail-Exemption Power*, 53 GEO. WASH. L. REV. 827, 830 (1985) (finding that in the twentieth century, trucks and barges started carrying more of the railroad cargo).

209. Perritt, *supra* note 3, at 423–25; see Billiel, *supra* note 208, at 830 (explaining that as railroads became financially unstable, Congress was pushed into eliminating outdated regulation).

not until the Interstate Highway System beginning in the mid-1950s, did roadways and high-capacity semi-trailer trucks gain a decisive advantage over less flexible railroads.<sup>210</sup>

Freezing technologies relevant to beef, including flash freezing and cryogenic packaging, were not invented until the mid-1930s, and it took a generation for them to become influential in industry organization.<sup>211</sup> Freezing certain types of food, especially fish, however, had been practiced and received consumer acceptance long before that, beginning in the mid-nineteenth century or before.<sup>212</sup>

#### IV. TWENTIETH CENTURY INDUSTRY STRUCTURE

After the end of the long cattle drives, beef production evolved into an industry more fragmented than in 1890.<sup>213</sup> The functions of the huge open range rancher have been subdivided between decentralized cow-calf operators and cattle feedlots, while the concentration of the packers has remained high and increased somewhat.<sup>214</sup>

The cattle rancher's consistent goal since long before the Civil War was to decrease the distance that live cattle had to be moved from where they were bred to where they were slaughtered.<sup>215</sup> This was not much of a

210. *Highway Existence*, *supra* note 135.

211. See *The History of NFRA*, NATIONAL FROZEN & REFRIGERATED FOODS ASSOCIATION, INC., <https://nfraweb.org/about-nfra/history/> (last visited Oct. 1, 2019) (noting consumer resistances to frozen foods in the 1940s and 1950s); see also Perritt, *supra* note 3, at 371 (analyzing the determinants of the first two waves of Creative Destruction in the beef industry); CONCENTRATION IN THE RED MEAT PACKING INDUSTRY, *supra* note 5, at 71–72 (summarizing how operating costs were reduced in the late 1950s because of the advanced highway system and new refrigeration, slaughter, and shipping technologies).

212. *The Strange History of Frozen Foods*, EATER (Aug. 21, 2014, 9:40 AM), <https://www.eater.com/2014/8/21/6214423/the-strange-history-of-frozen-food-from-clarence-birdseye-to-the> (describing the history of frozen foods).

213. See James S. Drouillard, *Current Situation and Future Trends for Beef Production in the United States of America — A Review*, 31 ASIAN-AUSTRALASIAN J. ANIM. SCI. 1007 (June 21, 2018), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6039332/>.

214. *Id.*

215. Imagine a network comprising a set of nodes connected by directed links. Each node represents a stage in the trip a pound of beef makes from birth of a calf to the dinner table. In a simplified higher-level network, each node represents a sub-network comprising its own nodes and links. For example, the “feedlot” node in the macro-network represents hundreds of separate feedlots and the representing transport of beef between each node and its predecessor and successor. The cost variable is the arithmetic result of the cost per unit of beef afforded by transportation technology, the distance, and the quantity of beef moving through it.

Any one of the nodes can be the starting point for quantifying the variables representing



problem when beef markets were local, before Swift and Armour's innovations.<sup>216</sup> But a combination of scale economies and adverse political reactions to environmental effects of cattle-raising encouraged the movement of slaughterhouses and packinghouses to more remote locations and centralizing them. That led to the location of large-scale slaughterhouses and packinghouses in Chicago, while the refrigerator car enabled the slaughtered cattle to reach Eastern markets in tolerable condition.<sup>217</sup> Supplying the Chicago beef processing operations led to the cattle drive, which lasted only so long as most of the herds were in Texas, and public land was available for the herds to cross on their way to railheads in Kansas, Nebraska, and Wyoming.<sup>218</sup>

This industry organization still required long-distance transport of live beef in cattle cars, and the meatpackers now had enough capital to reorganize the industry further so industry innovators began to push to decentralize the slaughterhouse and packing operations so they could be located closer to where the herds ended up after the drive.<sup>219</sup> Meanwhile, the diminished availability and increased cost of land encouraged cattle ranchers to migrate north from Texas to Kansas, Nebraska, Wyoming, and Montana.<sup>220</sup> The combination of ranch relocation and decentralization of slaughterhouses and

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values in the network. It is possible and useful to start with the dinner-table load and make each unit of consumption one pound of cooked beef. Then, the weight for each "upstream" node can be estimated by applying a factor representing waste. For example, in shipping live beef, that factor would include cattle that die en route or become injured so that they are not edible. (See discussion *infra* Part V.D.) A factor of two percent is reasonable for spoilage between the packinghouse and delivery to the retail customer. So, the factor for the weight carried by the last link would be 1.01. The factor established for the transport of live animals for slaughter has been well-established for a long time. Only about forty percent of the animals going to the slaughterhouse emerge from the slaughterhouse. Another ten percent or so do not survive the trip. So, the weight factor for any link involving the transport of live animals is 2.6 (1÷.4, plus.10).

216. Perritt, *supra* note 3, at 373; see Barbara Krasner-Khait, *The Impact of Refrigeration*, HISTORY MAGAZINE (Feb. 2019), <https://www.history-magazine.com/refrig.html> (discussing how essential refrigeration was to the expansion of the meat industry).

217. Perritt, *supra* note 3, at 388; Krasner-Khait, *supra* note 216.

218. Perritt, *supra* note 3, at 397; see Wayne Gard, *The Role of the Cattle Trails*, 29 NEB. HISTORY 287, 299 (1958), <https://history.nebraska.gov/sites/history.nebraska.gov/files/doc/publications/NH1958CattleTrails.pdf>; see also Katie Wagner, *Tragedy of the Commons in the American West: The Cattle Boom*, ARCGIS, <https://www.arcgis.com/apps/MapJournal/index.html?appid=4c90d2adcc9542f2bbc1561a42871d86> (last visited Dec. 28, 2019).

219. See Al Reinert, *The End of the Trail*, TEXAS MONTHLY (Nov. 1978), <https://www.texasmonthly.com/articles/the-end-of-the-trail/> ("The newly simplified scheme of refrigeration promised to eliminate the cost and hazard of transporting beef on the hoof, but first the meatpacking plants had to move closer to the hooves.")

220. Perritt, *supra* note 3, at 392; see Wagner, *supra* note 218.

packing decreased two of the legs over which live cattle had to be moved — one of them the length of the drive where cattle removed on the hoof, and the second, the length of the train ride from railhead to processing facility.

At the same time, a feverish pace of railroad construction continuing after the Civil War, increased the number of railheads and their geographic dispersion, making it easier for large-scale ranches to be located near the railheads.

The same shortages of public land and increasing land prices for private land that made long cattle drives uneconomic also made large-scale ranching less economic.<sup>221</sup> By 1890, entrepreneurs realized that they should be organizing cattle breeding and feeding on smaller plots of land with greater density of cattle per acre.<sup>222</sup> This was possible only with a food source other than prairie grass. Exploding agricultural productivity provided the answer in the form of corn surpluses. So now the optimal organization of beef production was to locate cattle breeding and feeding near processing facilities and also near corn growing territory and to ship the refrigerated product to distant markets. Transportation costs both for the live animals and their feed were thereby minimized. When these forces reached equilibrium, the inflexibility of the railroad infrastructure represented the main constraint on the further evolution of market structure.

The structure of the beef industry fluctuated considerably through the twentieth century, though it has remained highly segmented.<sup>223</sup> Some segments became less concentrated, while others became more concentrated.<sup>224</sup> The links between adjacent segments likewise have varied in their degree of concentration.<sup>225</sup> Ranching — the initial stage of cattle production — became less concentrated.<sup>226</sup> At the beginning of the century,

221. *Id.* See generally Tom R. Troxel & Kenny Simon, *Best Management Practices for Small Beef Cow-Calf Herds*, UNIV. OF ARK. DIV. OF AGRIC., <https://www.uaex.edu/publications/PDF/FSA-3117.pdf> (last visited Dec. 28, 2019).

222. *Id.* at 398; U.S. CENSUS BUREAU, 1950 CENSUS OF AGRICULTURE (pt. 6), 5 U.S. DEPT. OF COMM. 69, 86 (1952) (explaining that at the beginning of the twentieth century, two-thirds of acreage in the United States were dedicated to the production and feed of livestock and poultry).

223. See Drouillard, *supra* note 213, at 1009 (providing a comprehensive overview of the structure of the beef industry; U.S. system of beef production is highly segmented, contrasting with highly integrated systems for pork and poultry production); see also *In re Beef Industry Antitrust Litigation*, 542 F. Supp. 1122, 1127 (N.D. Tex. 1982) (providing a diagram of the product flow in the industry).

224. Drouillard, *supra* note 213, at 1009.

225. *Id.*

226. See Perritt, *supra* note 3, at 392; Bill Bullard, *Under Siege: The U.S. Live Cattle Industry*, 58 S.D. L. REV. 560, 570 (2013) (reasoning that cattle's longer biological cycle makes the early stages of cattle production less adaptable to poultry, dairy, and hog's highly concentrated production model).

smaller enclosed cow-calf operations began to replace large open range ranchers.<sup>227</sup> By the end of the century, the segment was dominated by thousands of relatively small cow-calf operations raising a few hundred cows as a complement to other agricultural production.<sup>228</sup> Acquiring rights to use land in the quantities necessary for nineteenth-century style open-range ranching had become impracticable.<sup>229</sup>

As the nodes in the cattle network, where cattle are initially produced, became more geographically diffuse, so did the transportation infrastructure necessary to link these nodes to the nodes in the adjacent segment: cattle feedlots.<sup>230</sup> Indeed, the cause-and-effect relationship ran both ways: decentralization of cattle production would not have been possible without the more flexible transportation infrastructure provided by trucks operating on the expanded public highway system.<sup>231</sup>

Feedlots, the next stage in the production chain, where cattle are fattened or “finished” for slaughterhouses, initially were relatively diffuse geographically and decentralized.<sup>232</sup> Surplus corn enabled farmers to feed cattle in enclosures rather than relying on the ranchers to feed them on the grass on larger areas of range before they were shipped to the slaughterhouse.<sup>233</sup> Through the century, however, environmental concerns and some economies of scale encouraged the degree of concentration in the feedlot industry.<sup>234</sup>

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227. See Perritt, *supra* note 3, at 398. See generally Scott Michael Rank, *American West — The Cattle Industry*, HIST. ON NET, <https://www.historyonthenet.com/american-west-the-cattle-industry> (2019) (explaining that the invention of barbed wire and wind pumps contributed to the enclosure of cattle in the late nineteenth century).

228. See Perritt, *supra* note 3, at 394; see also Bullard, *supra* note 226, at 570 (noting that cattle and the cow-calf industry are the “meatpackers’ last frontier”).

229. See Perritt, *supra* note 3, at 392. See generally Ann Brower et al., *The Cowboy, the Southern Man, and the Man from Snowy River: The Symbolic Politics of Property in Australia, the United States, and New Zealand*, 21 GEO. INT’L ENVTL. L. REV. 455, 491–92 (2009) (explaining the changes in land rights and ownership were largely attributed to changing social and societal values along with the need for conservation and subdivision development).

230. See Perritt, *supra* note 3, at 398; William E. Rosales, *Dethroning Economic Kings: The Packers and Stockyards Act of 1921 and Its Modern Awakening*, 2004 WIS. L. REV. 1497, 1525 (2004) (discussing cattle being raised on feedlots).

231. See HAMILTON, *supra* note 4, at 151.

232. See SIC 0211: *Beef Cattle Feedlots*, REFERENCE FOR BUSINESS, <https://www.referenceforbusiness.com/industries/Agriculture-Forestry-Fishing/Beef-Cattle-Feedlots.html> (last visited Dec. 28, 2019).

233. See William D. McBride & Kenneth Mathews, Jr., *The Diverse Structure and Organization of U.S. Beef Cow-Calf Farms*, U.S. DEP’T OF AGRIC. 8 (Mar. 2011), [https://www.ers.usda.gov/webdocs/publications/44530/7611\\_eib73.pdf?v=0](https://www.ers.usda.gov/webdocs/publications/44530/7611_eib73.pdf?v=0) (last visited Dec. 28, 2019).

234. See Perritt, *supra* note 3, at 388–89; Trout, *supra* note 57, at 529 (highlighting

Concentration increased when beef packers established their own feedlots, organized cattle auctions between cow-calf operators and feedlots, and supplemented or replaced auctions between the feedlot stage in the cattle slaughtering stage.

Beef slaughtering and packing operations substantially decentralized in the first part of the twentieth century, as beef packers in the Chicago stockyards moved their operations closer to the locations where beef was being grown.<sup>235</sup> This diffusion was animated in part by entrepreneurial efforts to reduce the cost of transporting beef on the hoof, facilitated by the changes in the transportation infrastructure from rail to truck, and encouraged by the results of the Roosevelt Administration's antitrust action against the big four beef packers.<sup>236</sup>

As the century progressed, however, economies of scale and the growing power of retail brands encouraged concentration. The physical facilities in which slaughtering and packing operations took place remained relatively dispersed geographically but their ownership became more concentrated.

The transportation links between feedlot and slaughterhouses became much less concentrated, as the owner-operator a cattle transporter replaced the railroad. This became so by the midpoint of the century and continues to the present. Even vertically integrated processors like Cargill contract with owner-operator truckers to transport beef between nodes in their internal processing network.<sup>237</sup>

Although an in-depth analysis of the retail food sector is beyond the scope of this Article, the development of that sector inevitably affects the upstream industry structure. Large supermarket chains exercise considerable market power over their suppliers. This can favor popular brands of beef, which in turn favors concentrated beef packers.

The rise of e-commerce, even before Amazon got into the retail grocery business, facilitated direct packer to consumer sales of branded frozen boxed beef.<sup>238</sup> The boxed beef revolution not only enables eliminating separate retailers altogether, but it also makes it likely that existing retailers will eliminate their butcher operations, presenting to their consumers boxed beef

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the use of feedlots in raising cattle).

235. See *id.*; YANKEE OF THE YARDS, *supra* note 27, at 26–27.

236. See HAMILTON, *supra* note 4, at 136, 161.

237. See generally *Owner Operators*, CARGILL, <https://www.cargill.com/transportation/cmls-owner-operators> (last visited Dec. 28, 2019) (noting that owner-operators earn top rates and year-round freights with Cargill).

238. See *IBP and Boxed Beef & a New "Big Four"*, WESSELLS LIVING HISTORY FARM (2007), <https://livinghistoryfarm.org/farminginthe50s/making-money/ibp-boxed-beef/> (last visited Dec. 28, 2019). See generally HAMILTON, *supra* note 4, at 151–62 (describing the boxed beef revolution in the industry).

that they have purchased directly from the packers.

### A. Cow-Calf Operations

Cow-calf operations are ranches that represent the first step in beef production.<sup>239</sup> They maintain cows and their calves after they are born, usually on land not suitable or needed for crop production.<sup>240</sup> On good grass, each animal requires about thirty acres for an entire season. Cow-calf operators' principal product is "feeder calves," which they sell to feedlots for finishing.<sup>241</sup>

Sixty percent of cow-calf operators sell the calves at or shortly after weaning, at between six and nine months of age, weighing 400-700 pounds.<sup>242</sup> Most of these are small farms located in the southeast and Southern Plains.<sup>243</sup> About a third of the operations, usually larger ones, continue grazing the calves for thirty to ninety days before selling them. This is called "backgrounding."<sup>244</sup> These operations tend to be in the Northern Plains and the West.<sup>245</sup>

Cow-calf operators specialize in managing herds of heifers and cows, overseeing the birth of their calves and raising the calves to the point of

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239. See Drouillard, *supra* note 213, at 1010–11 (noting that the vast majority of cow-calf output is channeled to large commercial feedlots, although the cow-calf operator sometimes retains title to their cattle while they go through the feedlot).

240. See *id.* at 1010.

241. See Alane Michaelson, *How to Raise a Feeder Calf*, CAREERTREND (last modified July 5, 2017), <https://careertrend.com/how-8600621-raise-feeder-calf.html>.

242. See McBride & Mathews, Jr., *supra* note 233, at iii, 5.

243. See *id.* at 8; see also *Livestock Management*, TEX. PARKS & WILDLIFE, [https://tpwd.texas.gov/landwater/land/habitats/post\\_oak/habitat\\_management/cow/](https://tpwd.texas.gov/landwater/land/habitats/post_oak/habitat_management/cow/) (last visited Dec. 28, 2019) ("As a general rule, moderate to light stocking rates for well-managed pastures in this area are: one animal unit (cow with calf) per 8 – 15 acres on native grass; 3 – 6 acres on tame pastures (bermudagrass/bahia grass); 50 – 75 acres on wooded areas.").

244. See McBride & Mathews, Jr., *supra* note 233, at iii, 5 (explaining that backgrounding after weaning eliminates the stress of transportation and provides an opportunity to acclimate calves to eat from a feed bunk, which is a long tray intended to contain feed from which cattle eat directly); see also *Keys to Success in Stocker Programs*, UNIVERSITY OF ARK. EXTENSION SERV., <https://www.uaex.edu/publications/pdf/mp184/Chapter9.pdf> (last visited Dec. 28, 2019) ("Stocker (growing calves on pasture) or backgrounding (growing calves using mixed feeds or stored forages) programs add value to cattle for feedlots because they desire cattle that are weaned, are from a minimum of suppliers, are familiar with feed bunks and water sources and have minimal health issues . . . . Short-term (35- to 45 -day) preconditioning programs add value to calves because these programs provide evidence the calves being marketed (1) are weaned, (2) have been processed (dehorned, castrated, dewormed and vaccinated) and (3) are familiar with feed sources.").

245. See McBride & Mathews, Jr., *supra* note 233, at 35.

weaning, at which time they are sold to feedlots.<sup>246</sup>

Margins for cow-calf operators are slim when fully allocated costs are taken into account. Many operators stay in business only because they do not account for sunk capital costs in land or herds, or because raising beef is only one of several lines of business, permitting them to share the cost of capital in land and equipment among several different activities. For example, a tractor might be used to distribute feed to cattle herds, and also used to power implements for raising corn or soybeans.

The smaller operations in the South benefit from a longer grazing season and less need for supplemental forage.<sup>247</sup> This feeding schedule results in lower feed costs and permits smaller operations to be sustainable. The larger operations in the Northern Plains experience higher feed costs but can compete with those in the South because of production efficiencies and economies of scale.<sup>248</sup>

Branding and roundups are not important, because the cattle are contained on land belonging to a single rancher. Only eighty percent of cow-calf operators use branding or ear tagging.<sup>249</sup>

Despite the economies of scale, expansion is inhibited because of the significant land area required for large-scale cow-calf production. "In most areas of the United States, beef cow calf production is the residual user of land. As the opportunity cost of pasture and rangeland increases for uses such as crop production and recreational activities, the size of beef cow calf operations may be limited or fragmented into smaller units."<sup>250</sup>

The fragmentation of cow-calf operations enabled by independent trucking was reflected by a dramatic increase in the number of possible points of sale, manifested by "the rise of hundreds of country buying stations and local auction markets."<sup>251</sup>

Radio broadcasting also paid an important role. Its early morning livestock market report enabled cattle farmers to seek out the market in which they could get the best price.<sup>252</sup>

Although there was some concentration, beef sellers and beef packers were highly fragmented. From 1992 to 1993, 88.8 percent of cow-calf

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246. See Drouillard, *supra* note 213, at 1009.

247. See McBride & Mathews, Jr., *supra* note 233, at iii.

248. See *id.*; see also UNIVERSITY OF ARK. EXTENSION SERV., *supra* note 244, at 58 (noting that pastured cattle ultimately headed for feedlots can be fed with hay and other stored forages, are fed mixed diets comprised of fiber, corn, and other grains, or on grass).

249. McBride & Mathews, *supra* note 233, at iv.

250. *Id.* at iii.

251. HAMILTON, *supra* note 4, at 67.

252. *Id.*

operators sold fewer than 1,000 cattle, but the 152 sellers who sold at least 32,000 cattle annually accounted for forty-three percent of total sales.<sup>253</sup> While the number of cow-calf operations decreased fifteen percent between 1997 and 2007 and the size increased thirteen percent from thirty-eight to forty-three cattle, these changes were much less dramatic than in hog and dairy farms, where capital was substituted for land by moving large scale production into confinement facilities.<sup>254</sup>

The level of production is sensitive to price and the costs of feed, land, machines, calving percentages, weather, calf death loss, and length of the breeding season. The length of gestation and maturation for cattle imposes a lag in responses to changes in price and costs of the factors of production.<sup>255</sup>

### B. Feedlots

Two characteristics define feedlots: a confined enclosure; and where cattle are fed grain-based diet rather than grass.<sup>256</sup> The demise of open range ranching after 1885 accelerated the shift to enclosed pasturage, and corn surpluses resulting from improved agricultural productivity by the 1890s were encouraging the use of grain in the enclosures.<sup>257</sup> Thus, feedlots were beginning to be an important part of cattle production by the turn of the twentieth century.<sup>258</sup> The Chicago Stockyards were a prime example. Enclosed pens held tens of thousands of cattle, who were fed grain while they were waiting for their turns at the slaughterhouse.<sup>259</sup>

Grass from public lands became insufficient to feed cattle herds for three reasons. First, homesteaders and lessees enclosing public lands left fewer grasslands available.<sup>260</sup> Second, overgrazing meant that the number of feet

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253. CONCENTRATION IN THE RED MEAT PACKING INDUSTRY, *supra* note 5, at 31. *See generally* Ganzel, *supra* note 207 (discussing the historical events that caused ranching to move away from consolidation by the midpoint of the twentieth century).

254. McBride & Mathews, Jr., *supra* note 233, at 1.

255. *Id.* at 1–2; *see* Lyle Holmgren & Dillon Feuz, *2015 Costs and Returns for a 200 Cow, Cow-Calf Operation, Northern Utah*, UTAH STATE UNIVERSITY (Mar. 2015), [https://digitalcommons.usu.edu/cgi/viewcontent.cgi?article=1716&context=extension\\_curall](https://digitalcommons.usu.edu/cgi/viewcontent.cgi?article=1716&context=extension_curall) (calculating costs and revenue for cow-calf operation and providing a sample budget to calculate varying production costs for cow-calf operations).

256. Ryan Goodman, *Ask a Farmer: What is a Cattle Feedlot?*, BEEF RUNNER (Oct. 8, 2012), <https://beefrunner.com/2012/10/08/ask-a-farmer-what-is-a-cattle-feedlot>.

257. *See* Hubbs, *supra* note 80, at 16–17, 21–22.

258. *Id.* at 7–8.

259. Monica Eng, *Beef Backers Steak Out Their Claim*, CHI. TRIBUNE (Nov. 11, 2009), <https://www.chicagotribune.com/news/ct-xpm-2009-11-11-0911090227-story.html>.

260. *Ranching*, NATIONAL GEOGRAPHIC, <https://www.nationalgeographic.org/encyclopedia/ranching/> (last visited Dec. 28, 2019).

available per acre diminished sharply.<sup>261</sup> Third, the herds increased substantially, even as the available public lands were shrinking.<sup>262</sup>

Once herds had to be provided with feed, hay, or corn, it was inefficient to feed them in large spaces.<sup>263</sup> Transporting feed over longer distances costs more than transporting it over shorter distances. So, it began to make sense to concentrate the herds and to feed them where they were concentrated. Thus, the feedlot arose.<sup>264</sup>

Feedlots, as they were understood in 1890, were quite different from feedlots as they are understood in 2020.<sup>265</sup> In 1890 a feedlot — which probably was not called by that name — often comprised several acres; it was kind of a corral where the herd could be fed conveniently without having to be rounded up from open grasslands.<sup>266</sup>

By the end of the twentieth century, “feedlot” was a term of art.<sup>267</sup> Typically, it involved herds of cattle much more concentrated, with a higher density of animals per square foot than had been the case a century before.<sup>268</sup> Additionally, the food was mixed more scientifically to achieve nutritional goals and the supply of food often was mechanized.<sup>269</sup>

261. Clara M. Love, *History of the Cattle Industry in the Southwest*, 19 SOUTHWEST HISTORICAL QUARTERLY 370, 390 (1916).

262. *See id.* at 376 (discussing the shrinking supply of public lands available after the spread of homesteaders and railroads across the Midwest). *See generally* Hubbs, *supra* note 80 (discussing the growth of cattle industry across the Midwest around the turn of the twentieth century).

263. Al Reinert, *The End of the Trail*, TEX. MONTHLY (Nov. 1, 1978), <https://www.texasmonthly.com/articles/the-end-of-the-trail/> (“There is an axiom in the cattle business that it’s always cheaper in the long run — since cattle are such awesome gluttons — to take them to their feed, instead of the reverse. Thus, Panhandle feedlots came into being when Americans began to want the kind of well-marbled, juicy, and tender meat that only a super-rich diet can develop, even on an animal as lazy as a cow. As the demand increased, the feedlot owners proved willing and able to outspend the packers for the prime young steers they intended to feed.”).

264. Hubbs, *supra* note 80, at 45–46 (explaining that Gustavus Swift pioneered the cattle feedlot to facilitate decentralized slaughtering and packing of beef by developing feedlots as an intermediate feeding step between a year on pasture and slaughter).

265. *See id.* at 50–61 (highlighting differences between feedlots of the 1890s and those of the twenty-first century). *See generally* REFERENCE FOR BUSINESS, *supra* note 232 (describing the history of feedlots, including details of technology changes in 1980s and 1990s).

266. Hubbs, *supra* note 80, at 45–46.

267. *See* Goodman, *supra* note 256 (defining and describing feedlots).

268. *See* REFERENCE FOR BUSINESS, *supra* note 232 (describing the concentration of feedlot industry after 1970, which formerly had been dominated by relatively small farmers).

269. *See* CONCENTRATION IN THE RED MEAT PACKING INDUSTRY, *supra* note 5, at 43 (“Feedlot cattle typically reach their slaughter weight in 3–6 months. After that there is a market window of 3–4 for delivery for slaughter.”).



Feedlots buy “feeder calves” from cow-calf operators at 400–800 pounds, and sell “slaughter cows” to beef packers, at a slaughter weight of 1,000–1,500 pounds.<sup>270</sup> Cow-calf operators retain title to cattle on feed in feedlots in some cases, but feedlot operators assume title partially or wholly in other cases.<sup>271</sup> Feedlots in the modern sense did not become prevalent until after World War II.<sup>272</sup> The USDA says that only 5.1 percent of U.S. cattle were fed on feedlots in 1935, but that sixty-six percent were finished on feedlots in 1963.<sup>273</sup>

Concentration is low in the feedlot segment of the industry.<sup>274</sup> The big feedlots were located near highly automated slaughter and packinghouses, and the large processors began to move their facilities close to the feedlots, relying more on non-union labor.<sup>275</sup> A 1996 USDA study<sup>276</sup> concluded that packers obtain sixty-four percent of their cattle within seventy-five miles of their plants, eighty-two percent within 150 miles, and ninety-five percent within 270 miles.<sup>277</sup>

The limitations on the growth of feedlot size arose not from technologies of confinement, herding, or feeding but from limitations of veterinary medicine, which gradually improved, permitting economies of scale to be realized more fully.<sup>278</sup> Public policy also played a role, as some states adopted tax and environmental policies favoring feedlots, but others sought to discourage them. The result was a considerable shift westward.<sup>279</sup>

As the ethanol industry has risen, distilled grain from ethanol refineries has become an important feedlot input, pulling feedlots closer to the

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270. See *USDA Terms and Definitions*, BEEF2LIVE (Sept. 18, 2019), <https://beef2live.com/story-usda-cattle-terms-definitions-85-143143> (defining feeders as “young steers or heifers, weighing approximately 400-800 pounds”); Brian McMurry, *Cow Size is Growing*, BEEF (Feb 1, 2009), <https://www.beefmagazine.com/genetics/0201-increased-beef-cows> (stating that the average size of a full-grown cow is now estimated to be around 1,350 pounds).

271. REFERENCE FOR BUSINESS, *supra* note 232.

272. Ganzel, *supra* note 207.

273. *Id.*

274. See Drouillard, *supra* note 213, at 1012 (reporting sixty-one percent of 26,586 feedlots in the U.S. “have fewer than 100 cattle,” and seventy-seven percent of cattle are produced by feedlots having a “capacity greater than 1,000 animals”).

275. See Ganzel, *supra* note 207.

276. CONCENTRATION IN THE RED MEAT PACKING INDUSTRY, *supra* note 5, at 5.

277. See *id.* at 5, 21–22 (providing additional statistics).

278. See Hubbs, *supra* note 80, at 56–61 (identifying diseases and conditions that veterinary medicine had to address for large-scale feedlots to be successful).

279. REFERENCE FOR BUSINESS, *supra* note 232 (describing geographic shift of feedlot industry from Midwest to southern plains states: Texas, Nebraska, Kansas, and Colorado).

refineries, and generally concentrating more of the feedlot industry in the Midwest. In 1996, large packing plants obtained nearly half their cattle from large feedlots, while smaller plants obtained less than a quarter from large feedlots.<sup>280</sup>

Towards the end of the twentieth century, the role of public markets such as auctions and terminals declined in favor of packer purchases directly from producers and captive supplies as a result of vertical integration and vertical coordination agreements.<sup>281</sup> Packers primarily purchase cattle on the spot market rather than through futures or forward markets or marketing agreements.<sup>282</sup>

### C. Beef Processing

Beef slaughtering and packing operations<sup>283</sup> centralized, mainly in Chicago, during the nineteenth century. One of the most dramatic phenomena of the twentieth century was the decentralization of beef packing to facilities located closer to cattle feedlots.<sup>284</sup> Ownership, however, remained centralized.<sup>285</sup> Cudahy was the first of the big four packers to recognize that:

[T]here were economies to be had if they moved away from the urban stockyards closer to the source of their raw materials. They realized it was cheaper to locate a packinghouse close to the new large feedlots, buy cattle directly and ship the meat in quarters of beef rather than paying for shipping the live animals to an urban market. Cudahy was the first packer to move away from Chicago.<sup>286</sup>

Live cattle are transported to the processing facility as quickly as possible, spending only minutes in a truck trailer, rather than hours or days in a railroad

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280. See CONCENTRATION IN THE RED MEAT PACKING INDUSTRY, *supra* note 5, at 6; *In re Beef Industry Antitrust Litigation*, 542 F. Supp. 1122, 1131–40 (N.D. Tex. 1982) (describing how pricing works in the competitive market for slaughter beef).

281. See CONCENTRATION IN THE RED MEAT PACKING INDUSTRY, *supra* note 5, at 12.

282. See *id.* at 6, 31–32, 42. (“Packers may contract for future delivery of livestock through an exclusive marketing agreement with individual feedlots, in which price is based on market prices at the time of slaughter. Packers may also purchase cattle through forward contracts in which price is specified in advance or is based on futures prices or some other formula.”).

283. To facilitate less cumbersome discussion, the text conflates these conceptually distinct functions into “beef packing.”

284. See Joshua Spect, *The Price of Plenty: How Beef Changed America*, THE GUARDIAN (May 7, 2019), <https://www.theguardian.com/environment/2019/may/07/the-price-of-plenty-how-beef-changed-america> (“Decentralising slaughter would make wholesale butchering again dependent on local knowledge that the packers could not acquire from Chicago.”).

285. Ganzel, *supra* note 207.

286. *Id.* (reporting decentralization by Cudahy).

stock car.<sup>287</sup> After slaughtering, the sides of beef spend three weeks or more in a refrigerated locker to “age.”<sup>288</sup> The sides of beef are then subdivided into major muscle groups and conventional cuts before undergoing another aging process for forty days.<sup>289</sup> Each cut is individually packaged in a heavy custom-formed “cryo-vac” packaging and then blast frozen in a vacuum.<sup>290</sup> The frozen cuts are kept in a negative forty-five degrees Fahrenheit cold-storage locker that maintains humidity. Shipments occur directly from the locker.<sup>291</sup>

Flash freezing involves exposing beef to temperatures well below the freezing point of water, typically at negative forty degrees Fahrenheit.<sup>292</sup> Flash freezing results in smaller ice crystals, which do less damage to the beef molecules than larger crystals.<sup>293</sup> When slow-frozen beef thaws, the damaged tissue leaks into the interstices left by the ice crystals, resulting in a mushy consistency and taste.<sup>294</sup> This does not happen with flash-frozen food. The technique was developed by Clarence Birdseye in the early twentieth century,<sup>295</sup> popularized in “TV Dinners” beginning in 1954,<sup>296</sup> and refined by Daniel Tippmann, who used a vacuum and passed supercooled air through pallets of cut beef.<sup>297</sup> Consumer acceptance of frozen beef lagged, however, until the late 1950s and 1960s.<sup>298</sup>

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287. See Steve Johnson, *Flavor in a Flash! – Fresh Frozen vs. Frozen Foods*, NEB. STAR BEEF (Aug. 16, 2018), <https://www.nebraskastarbeef.com/kind-frozen-fresh-frozen-vs-frozen-foods/> (noting Nebraska Star Beef’s processing facility is located near their cattle feedlots).

288. *Id.* (discussing harvested carcasses spend “at least twenty-one days in a locker” as the first part of Nebraska Star Beef’s aging process).

289. *Id.*

290. *Id.*

291. *See id.*

292. *Id.* (describing the flash-freezing process, which freezes meat nearly instantaneously).

293. Martha Zepp, *Understanding the Process of Freezing*, PENN STATE EXTENSION (last modified May 3, 2018), <https://extension.psu.edu/understanding-the-process-of-freezing> (explaining “large ice crystals punch through cell membranes,” which results in a loss of liquid when thawing).

294. See Johnson, *supra* note 287 (noting food frozen over a longer period of time does not maintain its freshness).

295. See U.S. Patent No. 1,773,079 (filed June 18, 1927); U.S. Patent No. 1,773,080 (filed June 20, 1927); U.S. Patent No. 1,773,081 (filed June 18, 1927).

296. *The Strange History of Frozen Foods*, EATER (Aug. 21, 2014, 9:40 AM), <https://www.eater.com/2014/8/21/6214423/the-strange-history-of-frozen-food-from-clarence-birdseye-to-the> (describing the history of frozen foods, after Birdseye’s invention).

297. U.S. Patent No. 12/879,521 (filed May 12, 2011).

298. *The History of NFRA*, NATIONAL FROZEN & REFRIGERATED FOODS ASS’N, INC., <https://nfraweb.org/about-nfra/history/> (last visited Oct. 1, 2019) (noting consumer

The boxed beef phenomenon began in 1960 with the Iowa Beef Packers.<sup>299</sup> Iowa Beef “built a completely new plant in Dennison, Iowa, close to big feedlots and cheap energy sources. The sprawling plant was all on one floor so that the beef carcasses could be moved around on conveyers. Immediately after the animal was killed, the beef was refrigerated and the rest of the process was done in the cold. That reduced the shrinkage of the meat from dehydration.”<sup>300</sup>

“It was a natural progression from the efficiencies of shipping carcasses to shipping boxed beef. There is a lot of wasted space in a modern truck or rail car filled with chilled sides of beef. A side of beef has an awkward shape — it can’t be neatly packed, and a side has a lot of bone and trim that will never go into the meat case. It was logical to move to boxed beef.”<sup>301</sup>

In 1992, the four largest packers accounted for eighty-two percent of beef slaughter, up from thirty-six percent in 1980.<sup>302</sup> A 1996 USDA survey of fifteen slaughter and packing plants showed an average slaughter rate of 216 head per hour for slaughter-only plants and 273 head per hour for slaughter and fabrication plants.<sup>303</sup> The same study showed significant diseconomies of scale in packing operations.<sup>304</sup>

Packers make cattle purchase decisions daily. Part of daily cattle purchase choices is the balance among cattle purchased in the spot, cash market, cattle purchases committed to under marketing agreements, and cattle committed to in futures or forward contracts.<sup>305</sup>

#### D. Labor Markets

The labor markets for cowboys as herders have changed dramatically over the century; the labor markets for slaughterhouse and packinghouse workers have remained the same. The functions performed by the nineteenth-century cowboy now are performed by three different occupations: cowboys and

resistances to frozen foods in the 1940s and 1950s).

299. Ganzel, *supra* note 207 (reporting that shipping boxed beef directly to consumers originated with Iowa Beef Packers in 1960).

300. *Id.*

301. *See id.* (quoting IBP executive Dale Tinstman); *see also* Drouillard, *supra* note 213, at 9 (reporting that most of the output of beef packing industry is distributed in the form of boxed beef).

302. *See* CONCENTRATION IN THE RED MEAT PACKING INDUSTRY, *supra* note 5, at 13; *see also id.* at 31 (stating that the big three firms — ConAgra, Excel, and IBP — accounted for seventy-five percent of the market).

303. *See id.* at 53.

304. *See id.* at 55 (chain speeds, as a measure of output, decreased with increasing plant size).

305. *Id.* at 44 (describing the elements of the decision).

ranch hands, feedlot herdsman, and cattle truck drivers.

The Indeed.com job board advertised for 108 “cattle farm” positions on July 31, 2019<sup>306</sup> and 745 for “cowboy.”<sup>307</sup> By way of comparison, the same job board had 157,589 ads for “truck driver” on the same date<sup>308</sup> and 24,642 for “construction worker.”<sup>309</sup> The job descriptions mostly required the ability to perform general farm duties as well as those associated specifically with cow-calf operations.<sup>310</sup>

A USDA sponsored study of cow-calf operation costs<sup>311</sup> showed labor inputs varying between two and four hours per bred cow for paid employees and twelve to twenty-two hours per bred calf for unpaid labor (proprietors).<sup>312</sup> This is consistent with small-farm operations that employ workers outside the family only sporadically.

Indeed.com had ninety-two “feedlot jobs.”<sup>313</sup> For example, the ad for Bull Creek in Le Mars, IA was indicative of similar ads: “New Progressive cattle feedlot in Northwest Iowa between LeMars and Akron Iowa looking for Pen Riders/walkers/feeding/processing. Must have experience and the willingness to learn. Must be good with people and a good team player; come join our team!”<sup>314</sup> Compensation for feedlot workers was similar to that for cow-calf operation employees, ranging from \$25,000 to \$50,000 annually.<sup>315</sup>

Feedlots employ substantial numbers of cattle herders, still known as “cowboys.” They wear cowboy hats, cowboy boots, ride horses, and use

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306. *Cattle Farm Jobs, Employment*, INDEED.COM (Oct. 1, 2019), <https://www.indeed.com/q-Cattle-Farm-jobs.html>.

307. *Range Cowboy Cow Calf*, INDEED.COM (Oct. 1, 2019), <https://www.indeed.com/jobs?q=cowboy&l&vjk=3be0f9cd0730a8a8>.

308. *Truck Driver Jobs*, INDEED.COM (Oct. 1, 2019), <https://www.indeed.com/jobs?q=truck+driver&l=>.

309. *Construction Worker Jobs*, INDEED.COM (Oct. 1, 2019), <https://www.indeed.com/q-construction-worker-jobs.html>.

310. Full Time Farm Hand, INDEED.COM (Oct. 1, 2019), <https://www.indeed.com/q-Cattle-Farm-jobs.html?advn=2540334193340019&vjk=cad1d999826242b4> (last visited July 31, 2019); Range Cowboy Cow Calf, INDEED.COM (Oct. 1, 2019), <https://www.indeed.com/jobs?q=cowboy&l&vjk=3be0f9cd0730a8a8>.

311. Sara D. Short, *Characteristics and Production Costs of U.S. Cow-Calf Operations*, U.S. DEP'T OF ARGIC. (Nov. 16, 2001), [https://www.ers.usda.gov/webdocs/publications/47150/16084\\_sb974-3\\_1\\_.pdf?v=0](https://www.ers.usda.gov/webdocs/publications/47150/16084_sb974-3_1_.pdf?v=0).

312. *Id.* at 7 (charting “labor efficiency” in Table 1).

313. *Feedlot Jobs*, INDEED.COM (Oct. 1, 2019), <https://www.indeed.com/jobs?q=feedlot&l=>.

314. *Id.*

315. See Farm Hand/Laborer, INDEED.COM (Oct. 1, 2019), <https://www.indeed.com/jobs?q=feedlot&l&vjk=970fc5da99540581>.

their horses to herd the cattle.<sup>316</sup> The average number of employees per feedlot “increased from 10.36 in 2010 to 15.31 in 2015.”<sup>317</sup> The number of cattle per full-time employee increased from 1,000 in 2004 and 2010 to 1,095 in 2015.<sup>318</sup> One quasi-credible report says that there were some 10,000 workers in the field of “support activities for animal production,” and that the annual salary was only about \$20,000 annually.<sup>319</sup>

Recruiting is limited by a lack of work ethic, attracting people to rural areas, and attracting employees willing to work more than forty hours per week.<sup>320</sup> The early twentieth-century trucking labor force was comprised mostly of farm boys and young men from country villages “willing to work unconscionably long hours at low pay just to be working at all,” thereby satisfying an increasing demand for farmers who wanted to ship more cheaply by truck than by rail.<sup>321</sup> Trucking offered a chance to remain in the country while, at least theoretically, becoming the owners of small businesses rather than factory hands deprived of their independence.”<sup>322</sup> Many farmers also owned their own trucks and thus starting a trucking operation to haul others’ freight did not require any capital outlay.<sup>323</sup>

Often, they priced below cost, because they were ignorant of concepts such as depreciation and kept poor track of actual expenses.<sup>324</sup> The result was an intensification of the competitive pressure on railroads and unionized truckers.<sup>325</sup>

In the twenty-first century, owner-operators are mostly truck-load carriers. They have been in the trucking business for an average of twenty-six years,

316. See Kansas Beef, *Pen Riders – The Feedlot Cowboys*, YOUTUBE (June 12, 2018), <https://www.youtube.com/watch?v=yxaLh0KRn60> (explaining the role of feedlot cowboys, responsible for 17,000 heads of feed in a floodlit); see also JBSUSA1, *JBS Five Rivers Careers*, YOUTUBE (Sept. 9, 2015), <https://www.youtube.com/watch?v=R3pfbBLc-9Y> (attempting to recruit feedlot cowboys).

317. Jacob Birch & Kathleen Brooks, *2015 Nebraska Feedyard: Labor Cost Benchmarks and Historical Trends*, INST. OF AGRIC. & NAT. RESOURCES (2015), [extensionpublications.unl.edu/assets/html/ec836/build/ec836.htm](http://extensionpublications.unl.edu/assets/html/ec836/build/ec836.htm).

318. *Id.*

319. Oswald J. Eppers, *Modern Cowboy Jobs — More than Campfire Romantic*, STREET DIRECTORY, [https://www.streetdirectory.com/travel\\_guide/189244/careers\\_and\\_job\\_hunting/modern\\_cowboy\\_jobs\\_more\\_than\\_campfire\\_romantic.html](https://www.streetdirectory.com/travel_guide/189244/careers_and_job_hunting/modern_cowboy_jobs_more_than_campfire_romantic.html).

320. Birch & Brooks, *supra* note 317, at 5. But see Perri Capell, *Cowboy as a Career?*, WALL ST. J. (June 14, 2005), <https://www.wsj.com/articles/SB111870673562958624> (reporting on an interview with a cowboy who disagrees with the conventional wisdom that being a cowboy is one of the worst occupations).

321. HAMILTON, *supra* note 4, at 47.

322. *Id.*

323. *Id.* at 48.

324. *Id.* at 50.

325. *Id.* at 51.

and were thirty-seven years old, on average when they became an owner-operator.<sup>326</sup> Their average age is fifty-five, eighty-six percent have a high school diploma, and they earn on average \$50,000 per year.<sup>327</sup>

The nineteenth-century cowboy transported cattle by driving them on the hoof from the open range to railheads. The twentieth-century cowboy was an independent owner-operator trucker who transported cattle from cow-calf operations to feedlots and from feedlots to slaughterhouses. The ratio of the cowboy to beef was much higher in the trucking context than in the long cattle drive context. Roughly a dozen cowboys could handle a herd of a couple of thousand cattle.<sup>328</sup> Each semitrailer truck requires a driver and can accommodate roughly twenty-five cattle, depending on their weight. But trucks drive considerably faster than cattle can walk, and the distance over which cattle are trucked is shorter than the distances of the long cattle drives.<sup>329</sup> The speed of transport is a product of technology. Decreased distance is a product of the decentralization of the beef industry.

Word-of-mouth was an important recruiting and job search tool in 1875, and it remains so today. A young man seeking work as a cowboy could go to town, ask around, and pretty quickly find out who was hiring. A young man or woman in 1990 could ask around wherever cattlemen gather — at auctions and shows. Now, course, word-of-mouth occurs via email, Internet websites,<sup>330</sup> and social media.

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326. *Owner-Operator and Professional Employee Driver Facts*, OOIDA FOUND., <https://www.oida.com/OOIDA%20Foundation/RecentResearch/OOfacts.asp> (last visited July 31, 2019) (showing the data presented in the text relates to all owner-operators, but there is no reason to believe that the demographics for cattle truck drivers differ).

327. *Id.*

328. *Cowboys*, HISTORY (Apr. 26, 2010), <https://www.history.com/topics/westward-expansion/cowboys>.

329. A reasonable representation for labor productivity in transporting cattle is beef-miles-per hour. A large cattle herd travels at a bit less than two miles per hour. If a herd comprises 2,000 cattle, that is 4,000 beef-miles-per-hour divided by twelve cowboys, showing that each cowboy produces 333.33 beef miles per hour. A cattle truck transporting fifty beeves at forty-five miles per hour produces 2,250 beef miles per hour, which represents the labor productivity of its driver. So, labor productivity for this branch of cowboy has increased nearly tenfold in the last century and a half. See Philip K. Thornton, *Livestock Production: Recent Trends, Future Prospects*, 365 PHIL. TRANSACTION ROYAL SOC'Y B BIOLOGICAL SCI. 2853–67 (2010), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2935116/>.

330. *Drive For Us*, STEVE'S LIVESTOCK TRANSPORT, <http://www.slt.ca/drive-for-us/> (last visited Oct. 29, 2019) (“Steve’s Livestock Transport, North America’s largest commercial livestock transportation company, has immediate opportunities for motivated owner-operators and company drivers who want to advance their careers and help keep the economy moving. If you are looking for purposeful work, love being on the road and are eager to contribute to one of today’s most important industries as part of a company that truly cares, join us!”); *Livestock Trucking*, INDEED.COM,

Then, as now, site visits supplemented word-of-mouth. A cowboy looking for work in 1875 would visit a series of ranches, inquiring at each whether the ranch was hiring. He might also visit loading docks at railheads and see if anyone was hiring cowboys to accompany the cattle in the stock cars on their way to slaughter and packing houses. Today he can drive around to different facilities looking for work, but he also can do virtual site visits. A firm that is actively recruiting is likely to have a notice to that effect on its website. In addition, job boards provide clearinghouses for independent truckers.<sup>331</sup> Any shipper or consignee desiring truck transportation can post a notice on one of these boards, and any owner-operator can respond by submitting a bid.

Labor union organization is nonexistent in all three labor markets, except for a handful of cattle truck drivers who are classified as employees of trucking companies hauling general freight and thus outside the agricultural exemption.

#### V. LAW'S IMPEDIMENTS

The agricultural exemptions in the Interstate Commerce Act and the National Labor Relations Act allowed the beef industry to develop relatively free of governmental regulation.<sup>332</sup> Market forces thus determined the industry structure to a greater extent than was possible in other American industries.<sup>333</sup>

Law can influence Creative Destruction in several ways. It can be one of the causes, as when homesteading laws helped bring about the destruction of the long cattle drive.<sup>334</sup> It can seek to block the technologies that cause Creative Destruction, as some people propose with respect to Artificial

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<https://www.indeed.com/q-Livestock-Trucking-jobs.html> (last visited Oct. 29, 2019) (listing 58 independent cattle trucking positions); *Owner Operators*, CARGILL, <https://www.cargill.com/transportation/cmls-owner-operators> (last visited Oct. 29, 2019).

331. See *Load Board*, LIVESTOCK NETWORK, [https://www.livestocknetwork.com/Cattle\\_Loads/](https://www.livestocknetwork.com/Cattle_Loads/) (last visited Oct. 29, 2019); see also *Livestock Haulers*, LIVESTOCK TRANSPORT, <http://www.livestock-transport.com/hauler/> (last visited Oct. 29, 2019) (“Search Haulers. They are here to get you on your way.”).

332. Kirsten Zerger, *The NLRA Agricultural Exemption—A Functional or Mechanical Approach?*, 2 INDUS. RELATIONS L. J. 131, 137 (1977).

333. Savannah Kuper, *The Politics Behind America’s Industrial Meat Industry*, CLIMATE CHANGE, FOOD, SOCIAL ISSUES (Apr. 2, 2014), <https://edblogs.columbia.edu/scppx3335-001-2014-1/2014/04/02/the-sham-of-meat-politics/>.

334. See Perritt, *supra* note 3, at 409; Ray H. Mattison, *The Hard Winter and the Range Cattle Business*, 1 MONT. MAG. HIST. 5, 5, 21 (1951) (discussing changes in the cattle industry).



Intelligence and robotics.<sup>335</sup> It can retard adaptation, as in the case of economic regulation under the Interstate Commerce Act,<sup>336</sup> some aspects of collective bargaining, and some interpretations of competition law.<sup>337</sup>

In the nineteenth century, property law helped spawn and subsequently extinguish the long cattle drive.<sup>338</sup> Open range law combined with railroad technology and refrigerator car technology gave rise to enormous ranches on public lands in Texas from which cattle were driven on the hoof to railheads in Kansas, Nebraska, and Wyoming.<sup>339</sup> Within about fifteen years, however, homesteading law combined with steel-plow, windmill, and barbed-wire-fence technologies, brought the long cattle drives to an end.<sup>340</sup> The high-point of open-range ranching occurred in 1885.<sup>341</sup> Thereafter, technology development and other legal regimes shaped further waves of Creative Destruction, and the industry structure that emerged as an adaptation to them.<sup>342</sup> During this period, however, the period from the last decade of the nineteenth century to the end of the twentieth century, the law was not so much a driver of Creative Destruction or a facilitator of adaptation as it was a potential impediment.<sup>343</sup> The beef industry largely avoided these impediments because of special exemptions for the agricultural sector, including the beef industry.

The law played a significantly different role in the third and fourth waves

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335. See Mara Hvistendahl, *Can We Stop AI Outsmarting Humanity?*, THE GUARDIAN (Mar. 28, 2019), <https://www.theguardian.com/technology/2019/mar/28/can-we-stop-robots-outsmarting-humanity-artificial-intelligence-singularity> (highlighting perceived dangers of AI as a threat to humanity and summarizing arguments for prohibiting “super intelligent” AI).

336. See discussion *infra* Part 0.

337. See discussion *infra* Parts 0., 0.

338. See Perritt, *supra* note 3, at 408; Terry L. Anderson & P.J. Hill, *The Evolution of Property Rights: A Study of the American West*, 18 J.L. & ECON. 163, 170–72 (1975) (providing a history of the impact of western migration on land use and the development of property law to control unwanted intrusions and expansions onto private property by cattlemen and sheepherders).

339. Perritt, *supra* note 3, at 364–365; see Terry L. Anderson & P.J. Hill, *Cowboys and Contracts*, 31 J. LEGAL STUD. 489, 499 (2002) (noting the associations that developed among cattlemen facilitated cattle drives, but this was then undone by a change in property laws).

340. Perritt, *supra* note 3, at 392; Valerie Weeks Scott, *The Range Cattle Industry: Its Effect on Western Land Law* 28 MONT. L. REV. 155 (1967) (identifying the relationship between the Homestead Act of 1862 and other pressures that led to the decline of large cattle drives).

341. Perritt, *supra* note 3, at 392 n.139; Mattison, *supra* note 334, at 5–7 (explaining that 1885 was the apex of free-range cattle).

342. Perritt, *supra* note 3, at 365.

343. Perritt, *supra* note 3, at 403.

of Creative Destruction than it played in the first and second.<sup>344</sup> The first wave was facilitated by public land law that permitted ranchers to cultivate herds numbering thousands to hundreds of thousands of acres of land for free.<sup>345</sup> The same land law permitted long cattle drives without the need to pay transit fees or to confront legal claims of trespass.<sup>346</sup>

In the second wave, the law closed off the long cattle drives by granting exclusive rights in the hitherto public land for very low prices, drawing hundreds of thousands of homesteaders to what had been rangeland.<sup>347</sup> The legal framework essentially abstained from addressing disputes between the drovers and the homesteaders, requiring them to fall back on self-help measures, including organized violence and numbers at polling places.

In the third and fourth waves, the law played a potential and pernicious role, by distracting market participants from reality, in the case of antitrust law, or by seeking to retard adjustment to new technologies, in the case of economic regulation and labor law.<sup>348</sup> The beef industry benefited from exemptions from much of this influence.

#### A. Economic Regulation

The most important legal doctrine shaping the twentieth-century beef industry was the agricultural exemption to truck regulation. The exemption allowed independent owner-operator truckers to develop a flexible transportation system to support the dispersed activities of cow-calf operators and feedlots and to link them with more concentrated beef packers.<sup>349</sup> The agricultural exemption in the Interstate Commerce Act

344. See generally Perritt, *supra* note 3 (providing background information on the four waves of Creative Destruction); JOSEPH A. SCHUMPETER, *CAPITALISM, SOCIALISM AND DEMOCRACY* (1942) (outlining the process of Creative Destruction).

345. See Perritt, *supra* note 3, at 401 (sharing that the federal government “allow[ed] free grazing and traversing of the public lands, which comprised most of the plains states”); see also Karen R. Merrill, *Whose Home on the Range?*, 27 W. HIST. Q. 433, 435 (1996) (highlighting that “ranchers were able to graze their animals for free, and . . . build up enormous operations”).

346. See Perritt, *supra* note 3, at 401 (citing Merrill, *supra* note 345, at 433) (clarifying that “Texas cattlemen could . . . enjoy free feed and free transport from their Texas ranches to the railheads in Kansas and further north”). See generally Scott, *supra* note 340 (discussing open-range cattle industry in the western United States between 1864 and 1900).

347. See Perritt, *supra* note 3, at 401 (suggesting that the government’s “policy was the encouragement of smaller-scale settled farming under the Homestead Act of 1862”); Scott, *supra* note 340, at 177.

348. See Perritt, *supra* note 3, at 401–26 (providing background information on the law’s role in the waves of Creative Destruction); see, e.g., Wayne D. Collins, *Trusts and the Origin of Antitrust Legislation*, 81 *FORDHAM L. REV.* 2279, 2317–32 (2013).

349. See Motor Carrier Act of 1935, Pub. L. No. 74-255, §§ 203(b)(4a)–(4b), (6), 49

allowed independent trucking to develop in a way that supported the dispersion of cow-calf operations and feedlots, something that would have happened to a much more modest extent, if it happened at all, under the economic regulatory regime applied to the rest of the trucking industry and railroads.<sup>350</sup>

The architects of economic regulation under the Interstate Commerce Act explicitly intended to use it to block Creative Destruction in the beef industry.<sup>351</sup> The industry escaped the potential obstructionist effects of ICC regulation by obtaining and protecting the agricultural exemption.

Trucking began at the local level.<sup>352</sup> Merchants and manufacturers began to substitute light trucks for animal-drawn wagons, and as their trucks had excess capacity, they offered haulage to others. Truck transport was a local phenomenon because the only adequate roads were local.

Availability of truck transportation and its price tended to fluctuate widely depending on how much excess capacity truck owners had after they hauled their own goods. Prices were low because the owner's principal businesses had already covered the capital costs of the trucks.

As the industry grew with improved roads, higher capacity trucks, and growing dissatisfaction with railroad service, patterns of localization and byproduct-pricing persisted. Scheduled, over the road, operations developed later than local cartage. While shippers and consignees wanted stability in the provision of over the road services, the less formal, ad hoc nature of contract relationships continued in the local cartage part of the market.

Support for the regulation of trucking came from three sources.<sup>353</sup> First, it came from shippers and consignees who wanted to stabilize the market. They were interested in reducing the incidence and frequency of entry and exit. Second, established truckers wanted to protect their market share against new entrants, particularly those who charged lower rates. Third, the railroads were fighting to forestall competition from a new mode that was

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Stat. 543; HAMILTON, *supra* note 4, at 58 (“[T]he exemption primarily served its intended function: it helped individual farmers . . . haul . . . livestock to market more cheaply than they could via railroad or regulated trucks.”).

350. *See id.*

351. Interstate Commerce Act, Pub. L. No. 49-41, 24 Stat. 379 (1887); *see* Thomas Gale Moore, *Trucking Deregulation*, LIBRARY OF ECON. & LIBERTY: CONCISE ENCYCLOPEDIA OF ECON., <https://www.econlib.org/library/Enc1/TruckingDeregulation.html> (last visited Oct. 29, 2019) (highlighting the negative consequences of the Interstate Commerce Act that likely would have inhibited Creative Destruction in the beef industry if trucking had not undergone deregulation after the Act's passage).

352. Roberts, *supra* note 173, at 59 (citing C. H. Spencer, *Business Getters for Small Concerns*, 108 SCI. AM. 76 (1913)) (conveying that local trucking came first, with delivery radii of up to fifty miles, compared with ten miles for horse-drawn vehicles).

353. Moore, *supra* note 351.

more efficient and therefore, if left to the market, could both charge lower prices and provide better service — up to certain stage lengths.<sup>354</sup>

Regulation entered the picture because the railroads understood the competitive economics analyzed in Section III.E. The Interstate Commerce Act and the Interstate Commerce Commission established a legal regime well-suited to discouraging trucking of beef.<sup>355</sup> Both railroad companies, who sought to eliminate “ruinous competition”, and the Granger movement, which sought reduced rail transportation rates, initially favored the Interstate Commerce Act.<sup>356</sup>

Moreover, established truckers favored regulation as a barrier to new entry and low-cost competition. After the enactment of the Motor Carrier Act of 1935,<sup>357</sup> both defenders of the status quo and opponents of innovation had a powerful vehicle to advance their interests.<sup>358</sup>

The principal objectives of the regulatory regime were to set a floor under rates, prohibiting rate cutting, and restricting entry of new operators.<sup>359</sup> The railroads, the Teamsters Union, and Teamster-organized trucking carriers pushed for regulation that would limit the effects of competition, as part of the New Deal.<sup>360</sup> Secretary of Agriculture, Henry A. Wallace, however, recognized that fragmented trucking featuring independent drivers could help “undermine the monopoly power of railroad-based food processors,” and he successfully spared agricultural trucking from the regulatory regime applicable to trucking in general.<sup>361</sup>

Even as the Teamsters developed into a national behemoth, the agricultural exemption — Section 203B of the Motor Carrier Act — exempted truckers hauling farm products from the regulatory regime that empowered the Teamsters.<sup>362</sup>

354. See generally Paul Steven Dempsey, *Interstate Trucking: The Collision of Textbook Theory and Empirical Reality*, 20 *TRANSP. L. J.* 185 (1992) (providing a helpful discussion of the adverse effects of deregulating the trucking industry).

355. Moore, *supra* note 351.

356. See *id.*

357. See *United States v. Am. Trucking Ass’n*, 310 U.S. 534, 538–41 (1940) (summarizing the legislative history of the Motor Carrier Act of 1935).

358. See generally *Maurer v. Hamilton*, 309 U.S. 598 (1940) (adjudicating the preemption controversy over challenges to higher capacity automobile carriers).

359. See *HAMILTON*, *supra* note 4, at 53–54 (discussing the barriers to entry, and the regulation of trucking rates).

360. See *id.* at 53 (explaining how the evolution of transportation regulation during the New Deal created a “highway transportation market [that] was defined more by government policy than by purely economic motives”).

361. *Id.* at 44.

362. See *id.* at 55–56 (discussing the growth of the Teamsters, and the “agricultural exception” found in the Motor Carrier Act of 1935).

Cattlemen in the 1930s “turned . . . to unregulated trucking as a tool for challenging the Packers control over live cattle prices.”<sup>363</sup> By the 1930s, cattle producers who dominated the National Cattlemen’s Association were not ranchers commanding huge expanses of land in the West; they were Corn Belt producers, who usually fed fewer than a couple of hundred cattle, incidental to the farming operations. Their profitability depended upon careful monitoring and tactics taking advantage of fluctuations in the prices for beef and commodity prices. They had to be nimble.<sup>364</sup> They were instinctively strongly opposed to government intervention, even if it was advertised as likely to stabilize their incomes.<sup>365</sup> Independent trucking offered them a way to seek profits without the burdens of governmental bureaucracy.<sup>366</sup>

Spokesmen for the trucking industry argued that the economics of trucking were ill-suited for regulation — making most of the same arguments that led to the deregulation of the industry in the mid-1970s. They were right. Both entry and exit in the trucking industry are easy. To enter the market, all an entrepreneur needs to do is buy or lease a truck, find someone who wants to ship something, and he is in business. If the occupation doesn’t pay or otherwise doesn’t suit him, the trucker can sell the truck in a robust secondary market and not be too much worse off when he undertakes a different occupation.<sup>367</sup> The result of these realities is a considerable amount of churn in the identity of suppliers of trucking services. Prices tend to be wildly unstable because some independent truckers are ignorant about depreciation and amortization of capital costs, while others have a profitable base of traffic and want to supplement it by filling up backhauls or otherwise keeping the marginal cost close to zero.

The concept of economic regulation for trucking was born into the politics of anti-competition. As regulation sank its teeth into the industry it worked, as it was continuing to work with respect to rail transportation, as a powerful antidote to innovation. An operator that wanted to offer new technologies was opposed and eventually thwarted by those wanting to protect the status quo. Those offering lower prices because they had adopted new technology were thwarted as well. Not only the railroads used political levers of the ICC

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363. *Id.* at 63.

364. *See* Drouillard, *supra* note 3, at 1008, 1010 (clarifying that market and weather conditions have a major impact on “the age at which cattle are placed into feedlots”).

365. *See* HAMILTON, *supra* note 4, at 64 (examining the factors that contributed to cattlemen’s opposition to “government regulations on livestock marketing”).

366. *See id.* at 65 (suggesting that cattlemen “found trucks to be more effective for boosting incomes than government” regulations).

367. *See* Dempsey, *supra* note 354, at 193–94.

against the truckers, but the truckers also used them against railroads.<sup>368</sup> The less efficient and less inventive producers in both industries used them to protect against their more nimble and innovative competitors. The beef industry escaped all this because of the agricultural exemption from economic regulation.

*East Texas Freight Lines, Inc. v. Frozen Food Express*,<sup>369</sup> arose when three motor carriers filed a complaint against a competing carrier, alleging that its competitor's transportation of fresh and frozen meats in interstate commerce without a certificate of convenience and necessity violated the Interstate Commerce Act.<sup>370</sup> The Commission agreed, holding that the frozen items were not within the agricultural exemption.<sup>371</sup> The district court invalidated the Commission's order, holding that the commodities were within the exemption, and the Supreme Court agreed.<sup>372</sup>

The Court reasoned:

It is plain from this change that the exemption of 'agricultural commodities' was considerably broadened by making clear that the exemption was lost not by incidental or preliminary processing but by manufacturing. Killing, dressing, and freezing a chicken is certainly a change in the commodity. But it is no more drastic a change than the change which takes place in milk from pasteurizing, homogenizing, adding vitamin concentrates, standardizing, and bottling. Yet the Commission agrees that milk so processed is not a 'manufactured' product, but falls within the meaning of the 'agricultural' exemption. 52 M.C.C. 511, 551. The Commission also agrees that ginned cotton and cottonseed are exempt. *Id.*, 523–524. But there is hardly less difference between cotton in the field and cotton at the gin or in the bale or between cottonseed in the field and cottonseed at the gin, than between a chicken in the pen and one that is dressed. The ginned and baled cotton and the cottonseed, as well as the dressed chicken, have gone through a processing stage. But neither has been 'manufactured' in the normal sense of the word.<sup>373</sup>

The Agricultural Exemption, presently codified at 49 U.S.C. § 13506,<sup>374</sup> applies to the Surface Transportation Board, successor, in material part, to

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368. *Id.* at 223–24.

369. 351 U.S. 49 (1956).

370. *Id.* at 49.

371. *Id.* (summarizing procedural history).

372. *Id.*

373. *Id.*

374. *See* 49 U.S.C. § 13506(a)(6)(A) (exempting transportation of "ordinary livestock" from regulation).

the ICC.<sup>375</sup>

### *B. Collective Bargaining and Labor Market Rigidities*

The agricultural exemption under the National Labor Relations Act and its limitation to statutory employees, excluding independent contractors, meant that cow-calf, feedlot operations, and the transportation services that connected them could be shaped entirely by market forces and not constrained by collectively bargained labor agreements.<sup>376</sup> Beef packing, on the other hand, is subject to federal labor law and was highly organized through much of the twentieth century.

Trade unions exist to protect and enhance compensation and working conditions on a foundation represented by the status quo.<sup>377</sup> Therefore, union organization and collective bargaining are hostile to the adjustments required by Creative Destruction. Indeed, much effective organization by trade unions was occasioned by real or perceived hardships associated with adaptation to new technologies.

The beef industry has largely avoided these effects because of an agricultural exemption in the National Labor Relations Act and because the modern-day cowboy in the form of an owner-operator independent truck driver is not an “employee” protected by the Act.<sup>378</sup>

Collective bargaining has an uneven presence in the beef industry. Owner-operator independent truckers are not entitled to engage in collective bargaining under the National Labor Relations Act.<sup>379</sup> Cow-calf operation and feedlot cowboys are outside the coverage of the National Labor Relations Act because of the agricultural exemption.<sup>380</sup> On the other hand, the packers were highly organized at the beginning of the twentieth century,<sup>381</sup> and technologically driven concentration made it easier for

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375. See *Serv. First Logistics, Inc. v. J. Rodrigues Trucking, Inc.*, No. 16-14337, 2017 WL 1365410, at \*2–4 (E.D. Mich. Apr. 14, 2017) (applying “Carmack Amendment” to carrier-liability claim, which depends on economic regulatory jurisdiction; relying on *East Texas Freight Lines* and other Interstate Commerce Act cases); see also 49 U.S.C. § 13506(a)(4)-(6) (containing the agricultural exemption).

376. 49 U.S.C. § 13506 (a)(1)–(6).

377. See *United Mine Workers v. Pennington*, 381 U.S. 657, 667 (1965).

378. 29 U.S.C. § 152(3).

379. See HAMILTON, *supra* note 4, at 159.

380. See *supra* Part V.A.

381. See John Brueggemann & Cliff Brown, *The Decline of Industrial Unionism in the Meatpacking Industry: Event-Structure Analyses of Labor Unrest, 1946-1987*, 30 WORK & OCCUPATIONS 327, 327 (2003), <https://journals.sagepub.com/doi/pdf/10.1177/0730888403253912> (arguing that meatpackers remained highly organized through the mid-twentieth century, but the development of new technologies, geographic reorganization of production, and new pools of cheap non-union labor eviscerated United

unions to organize and maintain the firm once representation rights were won.<sup>382</sup> Collective bargaining did not inhibit the geographic dispersion of beef processing plants, even though they are owned by a handful of large unionized enterprises.<sup>383</sup> Many of these local and regional facilities are not organized.

Collective bargaining, when it is effective at all, puts a floor under wage rates and, usually, through collectively bargained work rules, limits employer flexibility to accommodate new technologies by reassigning or shrinking the workforce.<sup>384</sup>

Collective bargaining was crystallizing as a labor market institution while long cattle drives were disappearing.<sup>385</sup> As the second and third waves of Creative Destruction were occurring, the law of collective bargaining, which emerged in fits and starts from the 1880s until the 1940s, was a pragmatic response to widespread social unrest manifested by outbreaks of strikes throughout the period.<sup>386</sup> The content of the regulatory regime that emerged, reflected the ongoing tension between profits and productivity on the one hand, and quality of work-life on the other. Much of the content was shaped by the insights of a robust generation of labor law and industrial relations academics.

In theory, the rights, privileges, and procedures that define labor law<sup>387</sup> create a regime of industrial democracy in which employee representatives and enterprise management can work together to chart the course of the enterprise, including its adaptation to changes in technologies and business models. Sometimes it has worked this way, as in the post-World War II collective-bargaining agreements that accommodated greatly increased coal mine productivity in exchange for sharing some of the profit gains through employee benefit trusts<sup>388</sup> and in some of the railroad crew size-reduction

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Packinghouse Workers of America).

382. See *UFCW Meat Packing & Food Processing*, UNITED FOOD & COM. WORKERS, <http://www.ufcw.org/meat-packing/> (last visited Oct. 29, 2019) (reporting changes in industry structure that have made union organizing more difficult and reporting that seventy percent of beef consumed in the U.S. is processed by UFCW members).

383. See *id.*

384. See Charles B. Craver, *Labor Arbitration as A Continuation of the Collective Bargaining Process*, 66 *CHI.-KENT L. REV.* 571, 573 (1990).

385. *Id.*

386. *Id.*

387. See 29 U.S.C. § 157 (giving employees the right to engage in collective action with respect to wages, hours, and working conditions); see also 45 U.S.C. § 153 (conferring a similar right to airline and railroad employees).

388. See *E. Enter. v. Apfel*, 524 U.S. 498, 504–06 (1998) (recounting the history of bargaining for health care benefits for coal miners).



agreements of the early 1980s.<sup>389</sup>

For the most part, however, collective-bargaining has not worked to accommodate change, but rather to delay it as long as possible and to prevent firms from realizing the economic benefits of new technologies. Crew-size agreements and other work rules in the railroad industry are dramatic examples. Sixty years after diesel locomotive technology made locomotive firemen unnecessary, railroads were still obligated to employ and pay them.<sup>390</sup> Through the same period, rail labor worked effectively to legislate many collective bargain restrictions into statutory law at the state level.<sup>391</sup>

The trucking industry suffered similarly. The Teamsters union insisted on collectively bargained provisions to protect the market share of large unionized trucking operators which blocked as much as possible the entry of smaller operators that might offer a lower rate and be harder to organize.<sup>392</sup>

In *California Dump Truck Owners Ass'n. v. Associated General Contractors*,<sup>393</sup> the court of appeals described the limitation on owner-operators, while finding that it did not violate the antitrust laws outside the labor exemption:

The MLA may have an effect upon the appellants, but it is an indirect effect. The MLA does not prohibit the use of owner-operators by the employers. Under the MLA, an employer may obtain trucks or equipment from any source. The only requirement is that the owner-operators must be cleared before starting to work on the second day. To be cleared, the owner-operators must present themselves and proof of legal or registered ownership at Local 36's office. The owner-operators are not subject to the provisions of Article II(B)(2) and (3) which require that employers first seek workmen from the appropriate union.<sup>394</sup>

The Teamsters Union represents workers in the food processing industry, such as forklift drivers, machine operators, and production line workers.<sup>395</sup>

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389. See *UTU v. Conrail*, 535 F. Supp. 697, 701–02 (Reg'l Rail Reorg. Ct. 1982) (explaining the history of crew-consist controversy and the Conrail crew consist agreement).

390. See *Bhd. of Locomotive Firemen & Enginemen v. Atchison, Topeka & Santa Fe Ry. Co.*, 442 F.2d 794, 798 (D.C. Cir. 1971) (recounting the history of efforts to eliminate firemen from diesel locomotives).

391. *Bhd. of Locomotive Firemen & Enginemen v. Chicago, Rock Island & Pac. R.R. Co.*, 393 U.S. 129, 143–44 (1968) (upholding the constitutionality of full crew laws).

392. See *Richards v. Neilsen Freight Lines*, 810 F.2d 898, 901 (9th Cir. 1987) (“[W]e can assume that the terminations were either in response to back solicitations by Foothills, or in response to pressure by the Union on each major carrier not to interline with Foothills until Foothills recognized the Union.”) (finding conduct to be within the labor exemption to the antitrust laws).

393. 562 F.2d 607 (9th Cir. 1977).

394. *Id.* at 613.

395. Int'l Bhd. of the Teamsters Union, *Food Processing Division*, TEAMSTERS BLOG,

The Union does not advertise that it represents any truck drivers in the cattle hauling industry or adjacent processing industries.<sup>396</sup>

The exclusion of independent contractors from the collective-bargaining system<sup>397</sup> provided more breathing room for the owner-operator part of the trucking industry to develop and establish a foothold in the beef industry. The statutory definition of “employees” enjoying collective-bargaining rights worked in conjunction with the agricultural exemption from economic regulation for this part of the trucking industry.<sup>398</sup>

In *Holly Farms Corp. v. NLRB*,<sup>399</sup> however, the Supreme Court agreed with the court of appeals that the NLRB permissibly determined that “live haul” crews were statutory employees, outside the agricultural exemption.<sup>400</sup> The employees in question were chicken catchers, forklift operators, and truck drivers who collected birds raised by independent contract growers and transported them to Holly Farms processing plant for slaughter.<sup>401</sup> The court noted that the National Labor Relations Act’s agricultural exemption is interpreted according to the agricultural exemption in the Fair Labor Standards Act.<sup>402</sup>

Section 3(f) of the FLSA provides:

“Agriculture” includes farming in all its branches and among other things includes the cultivation and tillage of the soil, dairying, the production, cultivation, growing, and harvesting of any agricultural or horticultural commodities (including commodities defined as agricultural commodities in section 1141j(g) of title 12), the raising of livestock, bees, fur-bearing animals, or poultry, and any practices (including any forestry or lumbering operations) performed by a farmer or on a farm as an incident to or in conjunction with such farming operations, including preparation for market, delivery to storage or to market or to carriers for transportation to

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<https://teamster.org/divisions/food-processing> (last visited Sept. 30, 2019) (see also sidebar on other divisions).

396. *Id.*

397. See *Pan Alaska Trucking v. Int’l Bhd. of Teamsters*, 621 F. Supp. 800, 803 (D. Alaska 1985) (holding that association of independent truckers, supported by Teamsters Union, did not qualify for labor exemption of antitrust laws; denying motions to dismiss antitrust suit). Compare *N. American Van Lines, Inc. v. NLRB*, 869 F.2d 596, 604 (D.C. Cir. 1989) (declining to enforce NLRB order because moving-van drivers were independent contractors and outside the coverage of NLRA); *with Corp. Express Delivery Sys. v. NLRB*, 292 F.3d 777, 780 (D.C. Cir. 2002) (enforcing NLRB order and finding that express delivery owner-operator truck drivers were NLRA employees under entrepreneurship test).

398. See 29 U.S.C. § 203(e) (2018).

399. 517 U.S. 392 (1996).

400. *Id.* at 408–09.

401. *Id.* at 394.

402. *Id.* at 397–98 (quoting and applying § 3(f) of FLSA, 29 U.S.C. § 203(f)).

market.<sup>403</sup>

Notably, the subsection expressly includes “raising of livestock,” which likely includes cow-calf operations, “preparation for market,” which logically includes feedlots and packing houses, “delivery to market,” and “carriers for transportation to market, which likely includes transport between segments of the market.”<sup>404</sup> The Supreme Court, however, distinguished between “primary” agricultural activities, such as raising of beef, and “secondary” activities, such as delivery, storage, and transportation of beef.<sup>405</sup>

The Court easily concluded that primary farming includes raising poultry.<sup>406</sup> “All agree that the independent growers, who raise Holly Farms’ broiler chickens on their own farms, are engaged in primary agriculture.”<sup>407</sup> The activities in question, however, were not “performed by a farmer.”<sup>408</sup> Nor were the operations necessarily “incidental” to farming, given that the live-haul work began after the farmers’ contractual obligation ended, and that the farmers did not participate in the live-haul operation, and that live-haul crew activities were integrated with Holly Farm’s processing operations rather than with farming operations.<sup>409</sup>

This interpretation, while not compelled by the statute, was sufficiently reasonable to be within the Board’s statutory discretion.<sup>410</sup> It also accords with the Department of Labor’s interpretive guidance, quoted below, the Court said.<sup>411</sup>

Labor Department guidance interpreting the FLSA exemption says: “[n]o matter how closely related it may be to farming operations, a practice performed neither by a farmer nor on a farm is not within the scope of the ‘secondary’ meaning of ‘agriculture.’”<sup>412</sup>

Sections 780.120 and 780.121 of the regulation address the “raising of livestock.”<sup>413</sup> Section 780.120 makes it clear that cattle are “livestock.”<sup>414</sup> Section 780.121 says:

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403. 29 U.S.C. § 203(f) (2018).

404. *Id.*

405. *Holly Farms Corp.*, 517 U.S. at 398.

406. *Id.* at 399.

407. *Id.* at 399–400.

408. *Id.* at 400.

409. *Id.* at 402–04.

410. *Id.* at 408–09.

411. *Id.* at 408.

412. 29 C.F.R. § 780.129. (2018).

413. *Id.* §§ 780.120–780.121.

414. *Id.* § 780.120.

The term “raising” employed with reference to livestock in section 3(f) includes such operations as the breeding, fattening, feeding, and general care of livestock. Thus, employees exclusively engaged in feeding and fattening livestock in stock pens where the livestock remains for a substantial period of time are engaged in the “raising” of livestock. The fact that the livestock is purchased to be fattened and is not bred on the premises does not characterize the fattening as something other than the “raising” of livestock. The feeding and care of livestock does not necessarily or under all circumstances constitute the “raising” of such livestock, however. It is clear, for example, that animals are not being “raised” in the pens of stockyards or the corrals of meat packing plants where they are confined for a period of a few days while en route to slaughter or pending their sale or shipment. Therefore, employees employed in these places in feeding and caring for the constantly changing group of animals cannot reasonably be regarded as “raising” livestock (NLRB v. Tovrea Packing Co., 111 F. 2d 626, cert. denied 311 U.S. 668; Walling v. Friend, 156 F. 2d 429). Employees of a cattle raisers’ association engaged in the publication of a magazine about cattle, the detection of cattle thefts, the location of stolen cattle, and apprehension of cattle thieves are not employed in raising livestock and are not engaged in agriculture.<sup>415</sup>

Thus, employees of cow-calf operators and feedlots are unequivocally within the exemption.<sup>416</sup>

### C. Antitrust Law

Contrasted with its approach to transportation law and labor law, the federal government moved aggressively to use competition law to reshape the industry.<sup>417</sup> The effort had little effect, however.<sup>418</sup>

Antitrust law had relatively little to do with the evolution of the industry.<sup>419</sup> Cow-calf operations separated from large scale ranching and

415. *Id.* § 780.121.

416. *Id.*

417. Perritt, *supra* note 3, at 401; see William Estuardo Rosales, Comment, *Dethroning Economic Kings: The Packers and Stockyards Act of 1921 and its Modern Awakening*, 2004 WIS. L. REV. 1497, 1507–08 (2004) (describing the federal government’s late-nineteenth and early twentieth-century efforts to curb price-fixing and other illegal anti-competitive practices in the cattle industry).

418. Perritt, *supra* note 3, at 401; see James May, *Antitrust in the Formative Era: Political and Economic Theory in Constitutional and Antitrust Analysis, 1880-1918*, 50 OHIO ST. L. J. 257, 293 (1989) (noting that nineteenth-century regulators were unable to foresee that anticompetitive conduct would not have nearly as much impact on “persistent market power” in the cattle industry as new technology and economies of scale).

419. See Perritt, *supra* note 3, at 426–27 (discussing the changes in the industry that occurred due to land, labor, capital, technology, and entrepreneurship). *But see* Bullard,

replaced part of its function while remaining decentralized.<sup>420</sup> This occurred because of land scarcity, land-use policies, technology, and other market forces, not because of law.<sup>421</sup> Feedlots replaced the other function of large scale ranching.<sup>422</sup> Feedlots also have a less centralized structure than the big nineteenth-century ranches, driven by technology and market forces; not by law.<sup>423</sup>

Antitrust law targeted the beef packing segment, and there it had little effect; beef packer concentration was high, and greater at the end of the twentieth century.<sup>424</sup> The early twentieth-century antitrust attack on the beef packers was motivated by cattlemen's rage against developments in the market for beef. Beef prices had declined in the middle of the Populist Movement.<sup>425</sup> This came on the heels of an excess of the British capital, overgrazing, speculation, and the end of open range ranching by the winter of 1886–1887.<sup>426</sup>

The combination of decreased supply — twenty-five percent of the Northern Plains herds were killed by the winter, some probably exaggerated, estimates said — and depressed prices meant sharply reduced revenues for

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*supra* note 226, at 562–63 (detailing how the USDA implemented regulations for the cattle industry in 1974).

420. Perritt, *supra* note 3, at 399; see Marc Stimpert, *Clear the Air: Counterpoint: Opportunities Lost and Opportunities Gained: Separating Truth from Myth in the Western Ranching Debate*, 36 ENVTL. L. 481, 496 (2006) (explaining that the change to the farming system was a difficult shift from farming practices of the past that allowed closed ranching).

421. Perritt, *supra* note 3, at 426–27. *But see* George Cameron Coggins, *The Law of Public Rangeland Management V: Prescriptions for Reform*, 14 ENVTL. L. 497, 497 (1984) (explaining that Congress attempted legal remedies when it gave the Bureau and Land Management over 170 million acres of land to control).

422. Perritt, *supra* note 3, at 398; Hubbs, *supra* note 80, at 2.

423. Perritt, *supra* note 3, at 398–99; Drouillard, *supra* note 213, at 1007–08.

424. See Perritt, *supra* note 3, at 400 (arguing that the cause of rising beef prices was likely “overgrazing, overinvestment, and the obsolescence of open-range ranching brought about by steel plows, windmills, and barbed wire” and not beef packers’ conspiracies); Sutton, *supra* note 202.

425. Samuel Western, *The Wyoming Cattle Boom, 1868-1886*, WYOHISTORY.ORG (Nov. 8, 2014), <https://www.wyohistory.org/encyclopedia/wyoming-cattle-boom-1868-1886>.

426. Wholesale prices for cattle surged to \$6.47 per hundredweight in May 1870, remaining between \$4.00 and \$5.00 per hundredweight for most of the 1870s. They dipped to \$4.00 in 1880 but climbed back to \$7.00 by 1882. This stimulated a new surge in British investment. Overgrazing and the drought threaten production, the oversupply continued to depress prices, to \$3.16 per hundredweight in November 1886. Then came the winter of 1886-1887, causing a loss of at least fifteen percent of the herds—most estimates are much higher, but probably inflated. Cattle prices did not climb back to \$7.00 per hundredweight until 1910. See Western, *supra* note 425.

the loudest voices in the industry.<sup>427</sup> They looked for someone to blame other than the invisible hand of the marketplace. The Populist Movement made any large corporation an attractive target, and the five largest meatpackers qualified.<sup>428</sup> The Roosevelt Administration eventually yielded to this pressure and brought an antitrust action against the packers.<sup>429</sup>

The same technologies and market expansions that created surplus corn, leading to feedlots for cattle, also threatened to reduce farmer incomes, as prices fell in the face of greatly increased supply.<sup>430</sup> Similarly, the technologies that were reshaping the beef industry made it increasingly difficult for traditional participants in that market to maintain the status quo. Change is always painful, and the capacity to make a change is unevenly distributed, that is the “destruction” part of Creative Destruction.<sup>431</sup> Farmers and ranchers reacted by seeking someone to blame for the threats to their livelihoods. Railroads and beef packers proved to be attractive targets.<sup>432</sup> Beef packers were remote and depersonalized from corporate form, which made it easy to demonize them. Political entrepreneurs of the Populist and Progressive Movements fanned the flames.<sup>433</sup>

427. *Id.* (showing prices were sluggish because more land was being brought into beef production on small enclosed plots).

428. See Perritt, *supra* note 3, at 400 (noting the lawsuit filed against the big five meatpackers); James L. Hunt, *Populism, Law, and the Corporation: The 1987 Kansas Supreme Court*, 66 J. AGRIC. HIST. 28, 28–30 (1992), <https://search.proquest.com/openview/ecdff30e40ae773de89421537490e68/1?pq-origsite=gscholar&cbl=1816684> (stating Populism was anticorporate and government ownership of “natural monopolies”); Alan Furman Westin, *The Supreme Court, The Populist Movement and the Campaign of 1896*, J. POL. 3 (Feb. 1953), <https://www.jstor.org/stable/2126191> (mentioning the effect of Supreme Court opinions from 1876 to 1896 on the Populist movement).

429. Perritt, *supra* note 3, at 400. See generally Gordon David, *Swift and Co. v. United States: The Beef Trust and the Stream of Commerce Doctrine*, 28 A. J. LEGAL HIST. 244, (1984) (detailing the political and legal history surrounding *Swift & Co. v. United States*).

430. Perritt, *supra* note 3, at 393; Kelton, *supra* note 47 (showing that changes in the technology of cattle ranching led to turmoil in the industry).

431. Arthur M. Jr., Diamond, *The Creative Destruction of Labor Policy*, 2 LIBERTARIAN PAPERS 107, 107 (2014), <http://libertarianpapers.org/wp-content/uploads/2014/08/article/2014/08/lp-6-2-22.pdf>.

432. See Perritt, *supra* note 3, at 399–400 (discussing the controversy over the “Beef Trust” where beef packers were blamed for the rise in the cost of beef); JOSHUA SPECHT, *RED MEAT REPUBLIC* 247–48 (2019).

433. Perritt, *supra* note 3, at 399–400 (explaining “political entrepreneur” as the term is used in the text, which includes office seekers and officeholders, and other political activists such as party leaders, newspaper editors and reporters and other kinds of “reformers”); Robert B. Shepherd, Jr., *What Roosevelt Thought: A Rough Rider’s Guide to the USTEA*, 23 QUINNIAC PROB. L.J. 311, 314 (2010) (explaining that progressive politicians were concerned over corporate abuses and sought to highly regulate business

The result was the Sherman Antitrust Act and a general trust-busting movement.<sup>434</sup> The economics of the movement sought to inhibit technology's effects retarding more effective production and distribution by larger regional and national entities.<sup>435</sup>

The movement was quite powerful, animating a large part of the domestic program of the Roosevelt Administration, including prosecution and civil lawsuits against the "beef trust" brought under the Sherman Act.<sup>436</sup>

In *Swift & Co. v. United States*,<sup>437</sup> the Supreme Court affirmed, in material part, the injunction against the "beef trust" granted by the circuit court.<sup>438</sup> Although the Court accepted the government and the ranchers' theory that meatpacker conspiracies had depressed beef prices, far more likely causes were overgrazing,<sup>439</sup> overinvestment, and obsolescence of open range ranching brought about by steel plows, windmills, and barbed wire.<sup>440</sup>

The court characterized the Government's claims:

[I]t charges a combination of a dominant proportion of the dealers in fresh meat throughout the United States not to bid against each other in the live-stock markets of the different states, to bid up prices for a few days in order to induce the cattle men to send their stock to the stock yards, to fix prices at which they will sell, and to that end to restrict shipments of meat when necessary, to establish a uniform rule of credit to dealers, and to keep a black list, to make uniform and improper charges for cartage, and finally to get less than lawful rates from the railroads, to the exclusion of competitors . . . . [A]fter all the specific charges, there is a general

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trust forms).

434. See 15 U.S.C. §§ 1–7 (2018) (protecting trade and commerce against unlawful restraints and monopolies).

435. See Perritt, *supra* note 3, at 427; *Progressives and the Era of Trustbusting*, CONST. RIGHTS FOUND. (2007), <https://www.crf-usa.org/bill-of-rights-in-action/bria-23-1-b-progressives-and-the-era-of-trustbusting.html> (noting the effect of outlawing the combination or conspiracy to "monopolize any part of the trade or commerce").

436. Perritt, *supra* note 3, at 400; *Swift & Co. v. United States*, 196 U.S. 375, 395 (1905) (applying the Sherman Antitrust Act to allow the government to regulate the meat industry and prevent leading meatpackers from fixing beef prices from stockyards with the intent to control meat across states).

437. 196 U.S. 400 (1905).

438. *Id.* at 402 (affirming *Swift & Co. v. United States*, 122 F. 529, 529–530 (C.C. N. D. Ill. 1903)).

439. See *Morrow-Thomas Hardware Co. v. Comm'r*, 22 T.C. 781, 788–89 (Tax. Ct. 1954) (discussing the agricultural history of the plains, including the dust bowl, along with the proposition that proper farming practices could prevent a "dust condition"); Merrill, *supra* note 345, at 435 (describing the tension between homesteaders and ranchers as ranchers sought federal protection of grazing rights).

440. See Perritt, *supra* note 3, at 400; STEVEN F. MEHLS, *THE NEW EMPIRE OF THE ROCKIES: A HISTORY OF NORTHEAST COLORADO* 57–58 (Frederic J. Athearn ed., 1984) (describing how market prices for cattle declined partially due to overgrazing).

allegation that the defendants are conspiring with one another, the railroads and others, to monopolize the supply and distribution of fresh meat throughout the United States, etc., as has been stated above, and it seems to us that this general allegation of intent colors and applies to all the specific charges of the bill.<sup>441</sup>

The eventual remedy was to force the divestiture of significant parts of the five dominant national beef processors and to reverse the vertical integration that markets and technology had produced through the entrepreneurship of Swift and his contemporaries.<sup>442</sup>

The Federal Trade Commission concluded in 1918<sup>443</sup> that a market sharing agreement among the big five packers market-sharing took:

[T]he form of a livestock pool, providing substantially for the division of purchases of the cattle, sheep, and hogs sent to market according to certain fixed percentages . . . . With each packer purchasing only a certain percentage of livestock . . . each is bound to have relatively the same proportion of meat for sale . . . . In brief, the prearranged division of livestock purchases forms the essential basis of a system, by which the big packers are relieved of all fear of each other's competition and, acting together, are able to determine broadly not only what the live-stock producers receive for their cattle and hogs, but what the consumer shall pay for his meat.<sup>444</sup>

The consent decree in 1920<sup>445</sup> provided for the divestiture of packer interests in stockyards, terminal railroads, cold storage warehouses, and retail meat markets.<sup>446</sup>

The result was the opening up of market-entry opportunities for retailers and distributors of processed beef and the power of processor-owned feedlots. For the most part, however, the antitrust suit left intact the market structure for live cattle.<sup>447</sup> Beef ranchers continued to do business mainly under the influence of supply and demand in the global market for grain and meat and continued to be threatened with obsolescence if they did not

441. *Swift & Co.*, 196 U.S. at 394–95.

442. See AZZEDDINE M. AZZAM & DALE G. ANDERSON, *ASSESSING COMPETITION IN MEATPACKING: ECONOMIC HISTORY, THEORY, AND EVIDENCE* 1, 21 (1996) [hereinafter *COMPETITION IN MEATPACKING*].

443. FED. TRADE COMM'N, *REPORT OF THE FEDERAL TRADE COMMISSION ON THE MEAT-PACKING INDUSTRY: SUMMARY AND PART I* 28 (1919).

444. William H. Nicholls, *Market-Sharing in the Packing Industry*, 22 J. FARM ECON. 225, 225 (1940) (quoting FED. TRADE COMM'N, *supra* note 443.).

445. See *Swift & Co.*, 276 U.S. at 319–21 (describing the 1920 consent decree and litigation that produced it and rejecting the claim that consent decree was void).

446. *COMPETITION IN MEATPACKING*, *supra* note 442, at 1, 22.

447. *Id.* at 1 (proposing that neither the consent decree nor the Packers and Stockyard Act had a direct effect on the meatpacking industry).



embrace new technologies.<sup>448</sup>

Fifty years later, in *United States v. Armour & Co.*,<sup>449</sup> the Supreme Court held that the Consent Decree did not prohibit Greyhound Corporation from acquiring Armour, one of the defendants to the consent decree.<sup>450</sup> The Court explained the Government's argument:

The crucial provision, Paragraph Fourth, forbids the corporate defendants from "engaging in or carrying on" commerce in the enumerated product lines. This language, taken in its natural sense, bars only active conduct on the part of the defendants. Thus Armour could not trade in these products, either under its own corporate form, or through its 'officers, directors, agents, or servants.' The entry of Armour into the grocery business through subsidiaries is clearly and draconically prevented by the separate provision of Paragraph Fourth forbidding the defendant meatpackers from owning "any \* \* \* interests whatsoever" in a firm trading in the enumerated commodities. In the Government's view these prohibitions also bar Armour from having any ownership relationship with corporations like Greyhound. The Government contends that Armour has an obligation not to engage directly or indirectly in legal or economic association with firms in the retail food business. It refers to the prohibited relationship between Armour and Greyhound.<sup>451</sup>

The Court disagreed, holding that the Consent Decree does not bar relationships, only conduct.<sup>452</sup>

In its opinion, the Court summarized the litigation history of the Consent Decree:

Since 1920, the decree has withstood a motion to vacate it in its entirety, *Swift & Co. v. United States*, 276 U.S. 311 (1928), and two attempts on the part of the defendants to have it modified in light of alleged changed circumstances. *United States v. Swift & Co.*, 286 U.S. 106 (1932); *United States v. Swift & Co.*, 189 F. Supp. 885, 892 (ND Ill. 1960), *aff'd*, 367 U.S. 909 (1961). Thus the decree stood at the time this case arose, and still stands, as originally written.<sup>453</sup>

Cattlemen have not given up their efforts to blame the beef packers for market reverses. In *In re Beef Industry Antitrust Litigation*,<sup>454</sup> the district court rejected the plaintiff's argument under the Sherman Act that alleged

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448. *Id.* at 22 (stating that technological developments such as "transportation and refrigeration" may have had an impact on the meatpacking industry).

449. 402 U.S. 673 (1971).

450. *Id.* at 687-88.

451. *Id.* at 678.

452. *Id.*

453. *Id.* at 678.

454. 542 F. Supp. 1122 (N.D. Tex. 1982).

that grocery retailers conspired to hold down the prices they paid to packers, which restrictions were directly passed on to feedlot operators.<sup>455</sup>

Despite the commotion and political rhetoric occasioned by the lawsuit and the 1920 Consent Decree — and more recent lawsuits — antitrust law did little to slow the concentration of beef packing, which continued to increase throughout the twentieth century,<sup>456</sup> in terms of ownership, though not in size and location of processing facilities. The structure of that segment of the industry was a result of technology and business models, and the law could not do much about it.<sup>457</sup>

Despite this, cattlemen continue to assert conspiracies by the meatpackers in violation of the antitrust laws. The 1903 litigation and the 1920 Consent Decree, however, may have discouraged the packers from vertically integrating.<sup>458</sup> Economies of scale in the retail food industry and the broadening of product lines for the major beef packer brands logically could have led to forward integration into the retail sector, but such a corporate strategy would have sailed directly into the wind represented by the Consent Decree, and courts refused to lift or modify it in 1928, 1932, and 1960.<sup>459</sup>

Similarly, the economics of feedlot operations suggest the desirability of backward integration by packers into that sector. But the data shows that packers have used other techniques, such as participation in futures markets, and signing forward contracts with feedlots and cow-calf operators, to realize some of the benefits of vertical integration.<sup>460</sup> The economics of cow-calf operations, constrained as they are by land scarcity and environmental concerns, make it less likely that beef packers could find a way of integrating into that sector.<sup>461</sup>

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455. *Id.* at 1141–42 (“The true facts are that the packers’ calculations of anticipated profit have no such formulaic operation nor have feeders shown the inelasticity of the supply.”).

456. See CONCENTRATION IN THE RED MEAT PACKING INDUSTRY, *supra* note 5, at 71–72 (summarizing the history of the beef industry since 1600).

457. See generally Robert M. Aduddell & Louis P. Cain, *The Consent Decree in the Meatpacking Industry, 1920-1956*, 55 BUS. HIST. REV. 359 (1981) (concluding that consent decree tended to deprive society of rational structural change but was largely ineffective).

458. Aduddell & Cain, *supra* note 457, at 371.

459. See Sutton, *supra* note 202, at 612; see also *Armour & Co.*, 402 U.S. 673, 673 (1971).

460. See Sutton, *supra* note 202, at 612 (discussing the history of meatpacking from the early 1920s, elaborating that vertical integration has led to more companies signing forward contracts); see also MORGAN HAYENGA ET. AL., MEAT PACKER VERTICAL INTEGRATION AND CONTRACT LINKAGES IN THE BEEF AND PORK INDUSTRIES: AN ECONOMIC PERSPECTIVE 19–20 (2000) (listing reasons for vertical integration in the beef industry).

461. See PEARSON HIGHER EDUC., AN OVERVIEW OF THE U.S. BEEF INDUSTRY 7, 8

Moreover, the continued readiness of cattlemen to blame their disappointments on violations of competition law by beef packers probably exerts an *in terrorem* effect on beef packer integration strategies.

#### *D. Agricultural Subsidies and Mandates*

General agricultural policies had opposing effects on the beef industry. Price supports for corn artificially increased the supply and lower the price for the most important type of cattle feed, tending to increase cattle production.<sup>462</sup> On the other hand, mandates for ethanol as a fuel tended to crowd out cattle feed as a use for corn, thus increasing the price and reducing the number of cattle produced.<sup>463</sup>

The agricultural sector has experienced less government regulation than other sectors, but it has enjoyed other forms of government intervention. Beef production is not subsidized directly, but a variety of corn subsidies and stabilization measures influence beef production indirectly.<sup>464</sup> Particularly important are ethanol mandates for fuel. While the government has been abstentionist with respect to regulation of product markets in the beef industry, and with respect to regulation of labor markets through collective bargaining, it has been activist with respect to the subsidization of factor markets.<sup>465</sup> Corn is the most important agricultural crop in the United States, and close to half of it is animal feed.<sup>466</sup> Feed accounts for sixty-five percent

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(2016) (explaining that forage supply may be affected by environmental changes, which has a direct effect on the price of production for the cattle industry).

462. See Thomas Capehart, *Feedgrains Sector at a Glance*, U. S. DEP'T OF AGRIC. ECON. RESEARCH SERV. (Aug. 20, 2019), <https://www.ers.usda.gov/topics/crops/corn-and-other-feedgrains/feedgrains-sector-at-a-glance/> (explaining how the Federal Agriculture Improvement and Reform Act allows farmers to make their own cropping decisions, leading to an increase in the amount of corn being produced in order to increase the number of cattle they can maintain).

463. See Joshua A. Byrge & Kevin L. Kliesen, *Ethanol: Economic Gain or Drain?*, FED. RESERVE BANK OF ST. LOUIS (July 1, 2008), <https://www.stlouisfed.org/publications/regional-economist/july-2008/ethanol-economic-gain-or-drain> (explaining the federal government requires a 500% increase in ethanol production by 2022, which will inevitably increase the proportion of the nation's corn crop).

464. See Daniel A. Sumner, *Agricultural Subsidy Programs*, ECONLIB, <https://www.econlib.org/library/Enc/AgriculturalSubsidyPrograms.html> (last visited Oct. 30, 2019) (explaining how much of the government support for agriculture comes in the form of indirect consequences from the subsidies it provides).

465. See Ethics Insiders, *Should Governments Subsidise the Meat and Dairy Industries?*, MEDIUM (Dec. 19, 2016), <https://medium.com/@laletur/should-governments-subsidy-the-meat-and-dairy-industries-6ce59e68d26> (explaining that governments have subsidized certain food products in order to affect consumer habits by driving down prices).

466. See Capehart, *supra* note 462.

of the total cost of raising beef for slaughter.<sup>467</sup> Accordingly, cattle production is quite sensitive to corn markets.

USDA price supports in the form of subsidies for the difference between an administratively determined reference price and the market price for corn results in an artificially large corn supply because it boosts the revenue farmers receive from growing corn above the revenue that market prices would produce.<sup>468</sup> This suppresses corn prices and reduces the cost of beef production.<sup>469</sup> The effect is the same as if the government directly subsidized beef production.<sup>470</sup>

Two forces have offset this phenomenon. First, government promotion of ethanol as part of a pathway toward energy independence<sup>471</sup> has diverted thirty percent of the corn crop, resulting in a reduced percentage available for animal feed, and tending to increase the price.<sup>472</sup> Ethanol production,

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467. See Greg Lardy, *A Cow-calf Producer's Guide to Custom Feeding*, N.D. STATE UNIVERSITY (May 2018), <https://www.ag.ndsu.edu/publications/livestock/a-cow-calf-producers-guide-to-custom-feeding> (referring to the Worksheet for Projecting Cost of Gain and Breakeven Price, which demonstrates that \$498.54 total feedlot cost, divided by \$326.25 total feed cost equates to sixty-five percent).

468. See USDA Communications, *\$14.5 Billion to Be Paid to US Farmers in Latest Market Facilitation Program*, HOOSIER AG TODAY (May 23, 2019), <https://www.hoosieragtoday.com/14-5-billion-paid-us-farmers-latest-market-facilitation-program/> (describing types of payments); USDA Press Release, *USDA Announces Details of Support Package for Farmers*, U. S. DEP'T OF AGRIC. (July 25, 2019), <https://www.usda.gov/media/press-releases/2019/07/25/usda-announces-details-support-package-farmers> (announcing a temporary program of price supports due to Chinese trade disruptions).

469. See Wes Ishmael, *Corn Prices Shift Opportunity*, BEEF (June 28, 2019), <https://www.beefmagazine.com/marketing/corn-prices-shift-opportunity>.

470. See Stephanie Henry, *Corn Prices Continue to Look for Support*, DROVERS (Oct. 23, 2018), <https://www.drovers.com/article/corn-prices-continue-look-support> (discussing relationship among corn prices, corn supply, USDA policies, and cattle markets).

471. See U.S. Department of Energy, *Key Federal Legislation*, ALT. FUELS DATA CTR., [https://afdc.energy.gov/laws/key\\_legislation](https://afdc.energy.gov/laws/key_legislation) (stating that the federal government provides a variety of tax credits and other incentives for ethanol); The Energy Independence and Security Act, 42 U.S.C. § 7545 (2)(B)(i)(I) (2009) (providing that transportation fuel must include a minimum of 36 billion gallons of renewable fuels by 2022; ethanol is the dominant biofuel at present, but the 2007 legislation intends to shift the total supply to other biofuels, such as cellulosic biofuels).

472. See Drouillard, *supra* note 213 (reporting that growth in ethanol industry shifted feedlot feed to distiller's grain, now comprising ten percent to as high as seventy percent of feedlot feed); Andrew Gottschalk, *The Impacts of the U.S. Corn/Ethanol Policy on the U.S. Cattle Industry*, INST. OF AGRIC. & NAT. RES. (Dec. 11–13, 2007), <https://beef.unl.edu/beefreports/symp-2007-01-xx.shtml> (observing that the major impact of ethanol policy is to sharply increase corn prices, negatively affecting cattle industry, especially cow-calf sector); Nicholas Loris, *Ethanol and Biofuel Policies, Downsizing the Federal Government*, DOWNSIZING GOV'T (Feb. 9, 2017), <https://www.downsizinggovernment.org/ethanol-and-biofuel-policies> (arguing that

however, produces another source of cattle feed — distiller's grain, a byproduct of the ethanol refining process.<sup>473</sup> The net effect of ethanol policy has been to advantage Midwestern cattle producers.<sup>474</sup>

Second, changing dietary habits and, to a lesser extent, the campaign against global warming, have decreased beef consumption.<sup>475</sup> The combination of reduced demand and higher feed prices have resulted in an equilibrium of price and supply different from what the market would have produced.<sup>476</sup> Quantifying the difference is challenging because the ethanol subsidies did not simply divert a large percentage of a fixed level of corn production, it also called forth additional land into corn production.

The ethanol subsidies and mandate introduced a new degree of freedom for farmers. In addition to electing between corn and another crop, they can elect to sell their corn to an ethanol refinery or a feedlot.<sup>477</sup>

## VI. THE FUTURE

The thesis of this article is that the world of the twentieth-century cowboy has been shaped by technology and changes in business practices, and relatively little by law. The future of the cowboy and his industry in the twenty-first century will be shaped much more by law, although technology, of course, will continue to play an important role. The laws that shaped the cattle industry in the nineteenth century and the laws from which the cattle industry was largely exempt in the twentieth century were laws of general application, relating to property rights, economic regulation of

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“top-down” subsidies and mandates has “harmed consumers, damaged the economy, and produced negative environmental effects”).

473. See Gottschalk, *supra* note 472 (noting that Distillers' Dried Grain (“DDG”) is mostly available in the Midwest because spoilage and transportation costs generally limit its use to within 60 miles of ethanol refinery).

474. See *id.* (noting that ethanol policy results in as much as a \$50 per head advantage to midwestern cattle producers).

475. See Yan Zheng et al., *Association of Changes in Red Meat Consumption with Total and Cause Specific Mortality Among US Women and Men: Two Prospective Cohort Studies*, *BMJ* (June 12, 2019), <https://www.bmj.com/content/365/bmj.l2110> (finding that the consumption of red meat has a direct relationship with an increase in mortality rates); Abigail Abrams, *How Eating Less Meat Could Help Protect the Planet From Climate Change*, *TIME* (Aug. 8, 2019), <https://time.com/5648082/un-climate-report-less-meat/> (finding that the production of red meat has an adverse relationship with climate change due to the grazing patterns of the animals used).

476. See Dillion Feuz, *Understanding Beef Demand*, *BEEF* (Feb. 24, 2009), <https://www.beefmagazine.com/sectors/retail/0225-understanding-beef-demand> (explaining the relationship between consumer demand and the price of beef).

477. See Larry Stalcup, *Competing with the Big Boys*, *BEEF* (Nov. 1, 2007), [https://www.beefmagazine.com/sectors/feedlot/competing\\_big\\_boys](https://www.beefmagazine.com/sectors/feedlot/competing_big_boys) (noting that there is a great financial incentive for farmers to sell their crop to an ethanol plant).

transportation, and collective bargaining.<sup>478</sup> The laws likely to channel the effects of new technologies in the cattle industry in the twenty-first century are different. They target the beef industry and seek to change its practices directly.

Here is one projection for the future of the industry:

With ample supplies of lower-cost ethanol by-products, smaller feedlots in the Midwestern United States will be an important part of the industry, but overall, increasing corporate ownership (private and publicly traded companies) seems probable in both the United States and Canada. With generally favorable weather conditions, less-restrictive nutrient management and environmental concerns, and relatively limited urban encroachment, the Great Plains of the United States and the western provinces of Canada should continue to be the major of cattle feeding areas in North America.<sup>479</sup>

The author continues:

In contrast to feedlots, consolidation in the North American cow-calf industry is limited by the capital required for land, particularly in the semi-arid western cow-calf production areas. As a result, cow-calf production is likely to remain structurally diverse for the foreseeable future. With a decreasing cow herd for the next few years and significant feeding capacity, however, it seems plausible that an increase in contractual arrangements between feedlots, particularly the large cattle feed companies, and the cow-calf and stocker operators who supply cattle will occur over the next few years. Such alliances should facilitate animal identification and traceability through the food chain, provide the opportunity for applying genetic selection tools in cow-calf herds that might benefit feedlot performance and marketing (e.g., markers for feed efficiency or carcass traits), and allow for implementation of pre- and early postweaning management strategies to improve animal health.<sup>480</sup>

Kirby and Bennington's futures will be determined by five large forces, themselves defining the fifth wave of Creative Destruction. Two of these are technological; three are sociological. The technological forces are two different aspects of robotics. Self-driving trucks will largely replace the trucks Bennington now drives, significantly decreasing job opportunities, while making it possible for Bennington and a few others like him to become

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478. See Cattle Research, *A Timeline of Changes: Beef Cattle Farming in North America*, ARROWQUIP (June 6, 2017), <https://arrowquip.com/blog/cattle-research/timeline-of-changes-beef-cattle-north-america> (explaining the changes in North America during this time period, which directly affected the cattle industry).

479. Michael L. Galyean, et al., *The Future of Beef Production in North America*, 1 ANIMAL FRONTIERS 29, 32 (2011).

480. *Id.*

monitors and controller sitting at remote computer consoles.<sup>481</sup>

Self-driving trucks may be slower to penetrate the cattle hauling market than other aspects of the trucking industry, however. Self-driving vehicle technology works better in controlled environments than in uncontrolled and unpredictable ones. In 2019, a Tesla Model Three can navigate an Interstate highway and most urban roads reliably and safely, staying in its lane, making lane changes only when prompted by the operator and has determined there is no other vehicle in the way, following a prescribed distance from the vehicle in front of it, starting and stopping with traffic flows.<sup>482</sup> It gets lost, however, when its automatic pilot is triggered on a secondary road without stripes marking the centerline and the sides of the road.

Discriminating between the side of the pavement and an unpaved shoulder is much harder than maintaining a prescribed distance from a white line, and discriminating between the surface of an unpaved road and the shoulder or the drainage ditch is even harder. The point is not that a robot cannot be designed to operate in the remote territory; it can. The point is that the design challenges are much greater, and therefore, the technology is much more expensive.

The market for self-driving trucks in any application is determined by a comparison of the costs of buying a robotic truck and the cost of hiring a truck driver to operate a conventional truck.<sup>483</sup> The cattle trucks linking cow-calf operations and feedlots and those linking most feedlots with processing plants must operate on unimproved roads to facilities that have little advanced technology. They are not limited to interstate highways and the pathways connecting buildings in high-tech manufacturing facilities. It is likely to remain much cheaper to hire Bennington to drive a conventional truck than to design and build one that will navigate all the routes autonomously. It will, thus, be some time before self-driving trucks have a material impact on cattle hauling operations, even after they have taken over much of long-haul over-the-road trucking. Bennington probably has a job for as long as he wants it.

Other aspects of robotics will replace much of what Kirby does.

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481. See Jeff Daniels, *Future of Farming: Driverless Tractors, AG Robots*, CNBC (Sep. 16, 2016), <https://www.cnbc.com/2016/09/16/future-of-farming-driverless-tractors-ag-robots.html> (explaining the ways in which the farming industry will change as a result of self-driving tractors).

482. See *Autopilot*, TESLA, <https://www.tesla.com/autopilot> (last visited Oct. 6, 2019).

483. See CSJ, *Driverless Trucks Will Reduce Labor Costs, Move Toward Cure for Driver Shortage*, OIL & GAS 365 (May 31, 2019), <https://www.oilandgas360.com/driverless-trucks-will-eliminate-labor-costs-move-toward-cure-for-driver-shortage/> (claiming that self-driving trucks will help save costs because of their fuel efficiency and longer hours of operation without needing to factor in the costs for labor).

Inexpensive drones will observe herds, pinpoint their locations for roundups, and identify sick or injured cattle.<sup>484</sup> They will enable a smaller number of cowboys like Kirby to be dispatched to deal with problems exactly where they occur. Wheeled robots will drive cattle.<sup>485</sup> Operating in conjunction with automatically operated and synchronized gates, these robots will move cattle from one corral to another and load them off and on truck trailers. Stationary robots will handle most of the feeding operations in feedlots.

As with Bennington's, how much of Kirby's job will be replaced by robots depends on how much the robots cost. Kirby has lots of specialized skills, integrated in ways that are subtle and difficult to articulate and define. And Kirby comes pretty cheap. Designing and building a robot to do what Kirby does is very expensive, and it's not clear that the robot would be able to do his job as well or as quickly as he does it. So the mere possibility of advanced robot technology does not necessarily mean lost job opportunities for Kirby.

The three sociological forces are changing dietary habits, growing concern about environmental degradation, and growing sensitivity to animal rights.

Public concern with the adverse health effects of poor diets has been growing. Dietary improvement was not an unknown subject in the nineteenth century, but it has greatly intensified in the last decades of the twentieth and the first two decades of the twenty-first century.<sup>486</sup> Improved nutrition science has made it possible to understand the differential effects of eating different kinds of foods, sedentary lifestyles replacing hard manual work on the farm and in the factory have worsened physical fitness, and growing obesity have alarmed public health commentators.<sup>487</sup> It is not uncommon for them and the general press and media to refer to the situation as a "crisis."<sup>488</sup>

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484. See Drovers, *The Practicality of Drone Use in Ranching*, DROVERS (Sept. 13, 2016, 9:07 AM) <https://www.drovers.com/article/practicality-drone-use-ranching> (concluding that inexpensive drones can be useful for herding, monitoring fences, and finding lost stock); see also Heather Smith Thomas, *Are You Ready for a Drone?*, CANADIAN CATTLEMAN, (Nov. 28, 2017), <https://www.canadiancattlemen.ca/2017/11/28/should-you-get-a-drone-for-your-cattle-operation/> (describing inexpensive drone use on cattle ranches).

485. See *Meet the Robot That's Making Cattle Herding Safer*, CARGILL (Oct. 18, 2018), <https://www.cargill.com/story/meet-the-cowboy-robot-thats-making-cattle-herding-safer>.

486. See *Americans Are Concerned About Poor Eating Habits*, BARN A (July 15, 2014), <https://www.barna.com/research/americans-are-concerned-about-poor-eating-habits/> (highlighting the difference between age groups and concerns about diet).

487. See BongKyoo Choi et al., *Sedentary Work, Low Physical Job Demand, and Obesity in US Workers*, 53 AM. J. INDUS. MED. 1088, 1089 (2010) (discussing the possible cause for the obesity crisis being connected to low physical labor).

488. See David Blumenthal et al., *Rising Obesity in the United States is a Public Health Crisis*, THE COMMONWEALTH FUND (Apr. 24, 2018), <https://www.commonwealth>



Many of the proposals for improved nutrition emphasize eating less red meat and animal fats.<sup>489</sup> During the same time period, consumer tastes have shifted away from beef toward poultry, pork, and seafood.<sup>490</sup> It is likely that the campaign for healthier diets will continue, and that this rhetoric, combined with food sciences improvements in “meatless hamburgers” and other simulated beef products, will continue to exercise a restraining influence on consumer demand for beef.<sup>491</sup>

Environmental concerns long have shaped the beef industry. Indeed, the first wave of Creative Destruction was occasioned in part by the antagonism of residents of towns and cities to having slaughterhouses in their neighborhoods and cattle drives through their streets.<sup>492</sup> The modern-day environmental movement, generally viewed as having been triggered by Rachel Carson’s book *The Silent Spring*,<sup>493</sup> has focused environmental protection efforts on agriculture, including the cattle industry.<sup>494</sup> Runoffs from feedlots as a source of water pollution have been a concern since the earliest days of the Environmental Protection Agency (“EPA”), and environmental activists insist that feedlot control should be strengthened<sup>495</sup>

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fund.org/blog/2018/rising-obesity-united-states-public-health-crisis.

489. See *ACS Guidelines for Nutrition and Physical Activity*, AM. CANCER SOCIETY (last modified Apr. 13, 2017), <https://www.cancer.org/healthy/eat-healthy-get-active/acs-guidelines-nutrition-physical-activity-cancer-prevention/guidelines.html>.

490. See Perritt, *supra* note 3, at 372–73 (“One cannot be sure that the shift in consumer tastes is attributable mainly to calls by experts for better nutrition; it may be a result of simple shifts in consumer tastes, much as the first part of the Industrial Revolution was occasioned by consumer shifts toward beef.”); see also, Richard Waite, *2018 Will See High Meat Consumption in the U.S. but the American Diet is Shifting*, WORLD RESOURCES INST. (Jan. 24, 2018), <https://www.wri.org/blog/2018/01/2018-will-see-high-meat-consumption-us-american-diet-shifting> (depicting the decline in the consumption of beef in favor of poultry because of increased health concerns with consuming red meat).

491. See Brunilda Nazario, *Impossible? New Veggie Burgers Make a Run at Beef*, WEBMD (May 31, 2019), <https://www.webmd.com/food-recipes/news/20190531/impossible-new-veggie-burgers-make-a-run-at-beef?print=true>.

492. See Perritt, *supra* note 3, at 391 n.133; see, e.g., Carl Abbott, *The Neighborhoods of New York, 1760–1775*, 55 N.Y. HIST. 35, 48–49 (1974).

493. See generally RACHEL CARSON, *SILENT SPRING* (1962) (describing the adverse environmental impact of pesticides); *The Story of Silent Spring*, NAT’L RES. DEF. COUNCIL (Aug. 13, 2015), <https://www.nrdc.org/stories/story-silent-spring> (discussing influence of *Silent Spring*).

494. See NAT’L RES. DEF. COUNCIL, *supra* note 493 (discussing DDT and its effects on animals).

495. See *Concerned Area Residents for the Env’t v. Southview Farm*, 34 F.3d 114, 118–19 (2d Cir. 1994) (reversing the district court and holding that feedlot was point source under Clean Water Act). See generally *Guide Manual on NPDES Regulations for Concentrated Animal Feeding Operations*, EPA (Dec. 1995), <https://www3.epa.gov/npdes/pubs/owm0266.pdf> (summarizing statutory and regulatory requirements

with accompanying limitations on where feedlots can be placed. Odors and noise from feedlots animate local zoning bodies to exclude them from areas close to dense populations.<sup>496</sup> As the population increases and as residential areas penetrate further into what had been rural territory, these pressures are likely to increase, ratcheting up the cost of land and the cost of environmental controls for feedlot operators.

Air pollution also is a concern, greatly intensified by the campaign against Global Warming. Approximately forty percent of greenhouse gases originate on farms and feedlots, potent sources of methane from cattle digestion.<sup>497</sup> These methane sources have been largely unregulated under the Clean Air Act because of the difficulty in addressing diffuse sources of air pollution as contrasted with point sources,<sup>498</sup> and because of the power of the agricultural lobby.<sup>499</sup>

under Clean Water Act for cattle feedlots).

496. See *Coyote Flats, L.L.C. v. Sanborn County Comm'n*, 596 N.W.2d 347, 356–57 (S.D. 1999) (reversing the circuit court and upholding the denial of a permit to construct feedlot); see also *Altenburg v. Bd. of Supervisors*, 615 N.W.2d 874, 881 (Minn. Ct. App. 2000) (upholding ordinance restricting feedlots); Greg Henderson, *Missouri Feedlot Sued By Neighbors*, DROVERS (July 31, 2019), [https://www.drovers.com/article/missouri-feedlot-sued-neighbors?mkt\\_tok=eyJpIjoiTnpaa1pEVTJaR000Wm1GbCIiInQiOiJxcTM5UjN4Uktjakd0S2tFK01TcGxma3E4Mkd6dDEwaVRERzc5M3p1b2VSVEFkbDdydVNrR2xaQ3FpOWduRjVjNkNkNkSkk4ekNDeVNmcG9YNHlwaEpCQlNoN3d2VUIQ3J5SndvSjF0Smc0dlcrY2xBbm4rMFh2eXA1NGFablh0aSJ9](https://www.drovers.com/article/missouri-feedlot-sued-neighbors?mkt_tok=eyJpIjoiTnpaa1pEVTJaR000Wm1GbCIiInQiOiJxcTM5UjN4Uktjakd0S2tFK01TcGxma3E4Mkd6dDEwaVRERzc5M3p1b2VSVEFkbDdydVNrR2xaQ3FpOWduRjVjNkNkNkSkk4ekNDeVNmcG9YNHlwaEpCQlNoN3d2VUIQ3J5SndvSjF0Smc0dlcrY2xBbm4rMFh2eXA1NGFablh0aSJ9) (reporting litigation by neighbors against feedlot that sought a permit to increase capacity from 900 head to 6,999).

497. See Georgina Austin, *Agriculture Eyed as Culprit in Global Methane Emissions Spike*, INSIDE CLIMATE NEWS (Dec. 16, 2016), <https://insideclimatenews.org/news/14122016/agriculture-methane-emissions-climate-change> (“Climate gains from a leveling off of carbon dioxide emissions are offset by a spike in methane, bringing new scrutiny to the livestock industry.”); see also Juliette Majot, et al., *Big Meat and Big Dairy’s Climate Emissions Put Exxon Mobile to Shame*, THE GUARDIAN (Nov. 7, 2017), <https://www.theguardian.com/commentisfree/2017/nov/07/big-meat-big-dairy-carbon-emissions-exxon-mobil> (alleging that “three meat companies — JBS, Cargill, and Tyson — are estimated to have emitted more greenhouse gases last year than all of France and nearly as much as some of the biggest oil companies like Exxon, BP, and Shell”).

498. See C. Gilmour et al., *Biogeochemistry of Trace Metals and Metalloids*, SCI. DIRECT (2009) <https://www.sciencedirect.com/topics/earth-and-planetary-sciences/diffuse-source> (observing that diffuse sources of pollution are more difficult to control than point sources).

499. See Direck Steimel, *Keeping Up the Pressure on EPA*, IOWA FARM BUREAU (July 15, 2019), <https://www.iowafarmbureau.com/Article/Keeping-up-the-pressure-on-EPA> (referring to the campaign to get EPA to increase ethanol mandates); see also Nancy Fink Huehnergath, *Big Agriculture Bullies and Lobbies to Keep Americans in the Dark*, FORBES (May 5, 2016 11:06 AM), <https://www.forbes.com/sites/nancyhuehnergath/2016/05/05/big-ag-bullies-and-lobbies-to-keep-americans-in-the-dark/#304ef676502c> (criticizing the power of the farm lobby to limit public access to information about animal rights and competition). See generally Daniel W. Drezner, *The Power of the Farm*

Intensification of efforts to mitigate global warming are certain to draw more attention to and pressure for regulating methane emissions from cattle. Although some reduction can be obtained by changing cattle diets,<sup>500</sup> the campaign against methane is likely to be translated into louder calls for people to eat less beef, resulting in less cattle production.<sup>501</sup>

The animal rights movement grows out of the centuries-old concern about cruelty to animals.<sup>502</sup> In its recent form, it has resulted in the virtual eradication of the fur industry.<sup>503</sup> Activists regularly target meat processing as a source of mistreatment of animals.<sup>504</sup> The movement has changed the way that cattle are handled in transport, feedlots, and slaughterhouses.<sup>505</sup> Further, major producers consistently advertise their practices in assuring humane treatment of the cattle that pass through their operations.<sup>506</sup> Concern

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*Lobby*, FOREIGN POLICY (July 26, 2007 3:20 PM), <https://foreignpolicy.com/2007/07/26/the-power-of-the-farm-lobby/> (describing political power of farm lobby, in general, and with respect to farm subsidies).

500. See Daniel Nash, *Cargill Announces Commitment to Reduce Greenhouse Gas Emissions Across its North American Beef Supply Chain*, CARGILL (July 24, 2019), <https://www.cargill.com/2019/cargill-announces-commitment-to-reduce-greenhouse-gas-emissions> (“Over the next three years, Cargill and TNC will work hand-in-hand with farmers and ranchers to demonstrate how grazing management planning and adaptive management improves sustainability outcomes related to soil, carbon storage, vegetation, wildlife habitat, water, and other ecological parameters.”).

501. See Rachel Nuwer, *Raising Beef Uses Ten Times More Resources Than Poultry, Dairy, Eggs or Pork*, SMITHSONIAN (July 21, 2014), <https://www.smithsonianmag.com/science-nature/beef-uses-ten-times-more-resources-poultry-dairy-eggs-pork-180952103/> (“[C]easing to eat meat altogether may be the best choice for the planet.”; making arguments that beef production is an inefficient use of resources and a major source of greenhouse gasses).

502. See *History*, AM. HUMANE, [www.americanhumane.org/about-us/history](http://www.americanhumane.org/about-us/history) (last visited Oct. 30, 2019) (reporting that American Humane Society resulted in 1877 merger of several organizations concerned with the treatment of farm animals).

503. See John F. Burns, *Fur Industry Shrinking with No End in Sight*, N.Y. TIMES (Feb. 26, 1991) (reporting decline of industry, due in large part, to an international coalition of animal rights advocates).

504. See *Factory Farming: Misery for Animals*, PETA (last visited Sept. 28, 2019), <https://www.peta.org/issues/animals-used-for-food/factory-farming/> (“On today’s factory farms, animals are crammed by the thousands into filthy, windowless sheds and stuffed into wire cages, metal crates, and other torturous devices. These animals will never raise their families, root around in the soil, build nests, or do anything that is natural and important to them. Most won’t even feel the warmth of the sun on their backs or breathe fresh air until the day they’re loaded onto trucks headed for slaughterhouses.”) (concluding with call a for “vegan lifestyle”).

505. See P. M. Seng & R. Laporte, *Animal Welfare: The Role and Perspectives of the Meat and Livestock Sector*, 24 REV. SCI. TECH. 613, 615 (2005), <https://pdfs.semanticscholar.org/74b7/a3d7ccdc98b10cdd7fa93b55c3a20ae17b90.pdf> (analyzing impact of animal rights concerns on the beef industry).

506. See generally *Animal Welfare vs. Animal Rights*, ANIMAL HANDLING (last visited Sept. 27, 2019), [animalhandling.org](http://animalhandling.org) (emphasizing industry’s humane practices); *Animal*

with animal-rights and the beef industry suffers from an inherent contradiction, however: treating cattle well is one thing, but eventually killing them as a source for human food can be viewed — and is viewed by some — as the ultimate cruelty and deprivation of their rights.

So the animal rights movement is necessarily, at its heart, an anti-beef movement. The movement combines with the environmental and dietary forces to limit the demand for beef, and therefore the level of production — at least that is its purpose.

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*Welfare*, CARGILL (last visited Sept. 27, 2019), <https://www.cargill.com/news/animal-welfare> (“[A]nimal welfare is one of our top priorities.”).