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Bodies Made Agriculture: How Animals Shaped Intensive Livestock Farming

Veronika Settele

English abstract: During the emergence and spread of intensive animal agriculture in the second half of the twentieth century, agricultural politicians, farmers, animal breeders, behavioral biologists, and veterinarians successfully worked on animals whose bodies produced more and more milk, meat, and eggs in less and less time. This paper examines the role of animal bodies as a force for this industrialization in the liberal democracy of West Germany and the socialist GDR. Behavioral patterns of cattle, pigs, and chickens that correlated with farm management and return on investment influenced the design of barns, practices of animal handling, and agrarian knowledge production – in both German states. In the democratized media society of West Germany, mediated animal bodies in films, newspaper articles, and in court cases additionally linked husbandry to the longstanding modern animal welfare discourse since the 1970s, thereby altering consumer values. The paper argues for a body-history approach to decipher the mutual entanglement of human-animal coexistence, even in settings where humans unquestionably subordinated animals under their interests.

At first glance, cattle, hogs, and chickens have not been overly influential in the recent history of animal farming. Otherwise, today's conventional livestock production would probably look different – less confined, less productive, with more fresh air or room to move. Instead, the emergence and diffusion of intensive animal husbandry was a common political outcome in societies with rising standards of living in the twentieth century. Agricultural politicians, farmers, animal breeders, scientists, and veterinarians worked on animals whose bodies produced ever more milk, meat, and eggs in ever less time. Simultaneously, the vast majority of the European population wanted to eat larger quantities of meat, eggs and dairy products while preferring better paid jobs in the industrial sector over poorly paid, strenuous and dirty work with animals. This was the case for all countries in the Global North, whereby the U.S., Denmark and the Netherlands turned out to be the forerunners of intensified livestock farming from the 1920s onwards. In the process of agriculture's industrialization, animals were rendered nameless factors of production via selective breeding and technological enhancement. Farmers and veterinaries adjusted their bodies to production systems holding out the prospect for greater profit. Economically speaking, this was quite successful, but this perspective remains incomplete.

A closer look inside the barns where animals were kept reveals that what happened during the industrialization of their farming cannot be

explained without taking the animals' bodies into account. Based on this observation, this paper argues that, through their bodies, certain animals together with certain humans shaped the history of agriculture. That said, the paper enters a historiographic discussion which has thus far followed in Foucault's footsteps and focused on governing human bodies, on delinquency, disability, gender, and sexuality.¹ Animal bodies, however, were not solely a manifestation of how industrialization subjugated living organisms. They also worked as a force for the industrialization of livestock farming. Cattle, chicken and pig bodies had a practical influence at the sites of production. Vitality continued to be the crucial resource of animal husbandry, also in its mechanized mass version. Yet, the vitality of the animals remained fragile. Again and again, bodies challenged farming processes by reacting in unforeseen ways to changing production techniques. Every time these reactions jeopardized expected profits, farmers, veterinaries, and politicians in turn reacted to keep the animals productive.

Lately, sick animals have gained attention in the historiography. By showing how the bodies of sick animals contributed to colonial domination in French ruled Saint Domingue in the decades following 1750, John Garrigus expanded the scholarship on epizootic disease in a colonial context to the Caribbean, which had hitherto centered on South Africa.² Livestock deaths caused by imported anthrax but inexplicable to contemporaries fueled myths about African poisoners and suspects were violently persecuted. There is also a wealth of research on how European States and the U.S. responded to animal disease in the nineteenth century by controlling farmers, slaughtering, and food pro-

- 1 Jennifer L. Derr, *The Dammed Body. Thinking Historically about Water Security & Public Health*, in: *Daedalus* 150 (2021), pp. 143–158; Norbert Peabody, *Disciplining the Body, Disciplining the Body-Politic. Physical Culture and Social Violence among North Indian Wrestlers*, in: *Comparative Studies in Society and History* 51 (2009), pp. 372–400; Ellen Amster, *The Body and the Body Politic. Medicine, Public Health, and Healing as History in the Modern Middle East and North Africa*, in: *International Journal of Middle East Studies*, 47 (2015), pp. 563–565; Tamara Myers, *Embodying Delinquency. Boys' Bodies, Sexuality, and Juvenile History in Early-Twentieth-Century Quebec*, in: *Journal of the History of Sexuality* 14 (2005), pp. 383–414.
- 2 John Garrigus, "Like an epidemic one could only stop with the most violent remedies". *African Poisons versus Livestock Disease in Saint Domingue, 1750–88*, in: *The William and Mary Quarterly* 78 (2021), pp. 617–652; Pule Phoofolo, *Epidemics and Revolutions. The Rinderpest Epidemic in Late Nineteenth-Century Southern Africa*, in: *Past and Present* 138 (1993), pp. 112–143; Wesley Mwatwara and Sandra Swart, "If our cattle die, we eat them but these white people bury and burn them!" *African Livestock Regimes, Veterinary Knowledge and the Emergence of a Colonial Order in Southern Rhodesia, c. 1860–1902*, in: *Kronos* 41 (2015), pp. 112–141.

cessing.³ Building upon the valuable research on animal disease, this paper shows how animal bodies not only shaped practices of farming through their proneness to become sick. Their vitality was key to all farming processes. Thus, farmers paid attention to all behavioral patterns correlating with farm management and return on investment. Moreover, the industrialization of cattle, chicken, and pig farming from the 1960s onwards occurred partially in democratized mass-media societies, where reporting rested upon pictures, and animal series on TV became part of a critical public sphere; citizens “started to criticize politicians, to argue for environmental awareness, and to denounce the exploitation of animals for economic purposes”.⁴ This environment further increased the leverage of animal bodies in the history of agriculture, which distinguishes the history of twentieth century livestock farming from its antecedents and renders the German example particularly interesting. Analyzing the parallel industrialization of animal farming in the liberal democracy of West Germany and the socialist GDR allows us to draw conclusions about the role of the overall economic system, the significance of free or censored media coverage and a transnational history of the astounding transformation of animal farming both German states shared not only with each other⁵ but with most European countries in the four decades after 1960.

In democratized media societies, particularly in the Global North, animal bodies influenced the production of livestock on a second level that goes beyond the barns. They affected how parts of society changed their thinking about animal farming. Beginning in the late 1960s, reports about hens with pitiful feathering, kept in cages that rarely allowed them to move, and injured by fellow animals with deviant behavior aroused attention.⁶ Only now, animal farming was linked to the long-

3 Alan L. Olmstead and Paul W. Rhode, *Arresting Contagion. Science, Policy, and Conflicts over Animal Disease Control*, Cambridge, Mass. 2015; Dorothee Brantz, “Risky Business”. *Disease, Disaster and the Unintended Consequences of Epizootics in Eighteenth- and Nineteenth-Century France and Germany*, in: *Environment and History* 17 (2011), pp. 35–51.

4 Christina von Hodenberg, *Mass Media and the Generation of Conflict: West Germany’s Long Sixties and the Formation of a Critical Public Sphere*, in: *Contemporary European History*, 15 (2006), pp. 367–395, here p. 373; see for Weimar Germany for example Martin H. Geyer, *Die Welt der Verlierer. Willy Römers Bilder von Not und Verelendung aus der Inflationszeit*, in: Diethart Kerbs (ed.), *Auf den Straßen von Berlin. Der Fotograf Willy Römer (1887–1979)*, Berlin 2004, pp. 201–226.

5 Frank Bösch, *Geteilte Geschichte. Plädoyer für eine deutsch-deutsche Perspektive auf die jüngere Zeitgeschichte*, in: *Zeithistorische Forschungen* 12 (2015), pp. 98–114, here p. 106.

6 See for example: Wolfram Gründler, *Gedränge im Berliner Hühnerhochhaus*, in: *Das Tier* 2 (1968), p. 28.

standing modern animal welfare discourse which had centered on carthorses and animal experiments for more than one hundred years.⁷ From the 1970s onwards, intensive animal farming was negotiated alongside animal bodies as they were depicted in mass media. Pictures in newspaper articles and on television showing dirty, injured or crowded animal bodies entered the public sphere. Initially, proponents of intensive animal farming refuted critical request on the animals' well-being in an industrialized environment with the argument that if the animals were not fine, they obviously would not carry on to lay eggs or give milk.⁸ This perspective lost its persuasive power once the poor appearance of the animal bodies was made visible to the public through different media channels.

This paper explores first the theoretical implications of the body history approach for the historical study of animal farming. It then empirically validates the material role of animal bodies for the intensification of livestock farming alongside cattle and hog farming by focusing on the case studies of East and West Germany in the second half of the twentieth century. Thirdly, it shows how mediated animal bodies in films, newspaper articles, and in court contributed to a changing attitude towards caged hens among consumers in the commercially-driven democracy of West Germany, some thirty years before veganism became a widespread phenomenon. Proceeding that way, the paper tests an approach which highlights the historical power of farmed animals without neglecting their subjugation under human interests.

Body History Reconciles Interfering Approaches in Animal History

Some years ago, the historian Joshua Specht, announced the final acceptance of animal history in historiography.⁹ Since then, the success

7 Mieke Roscher, *Geschichte des Tierschutzes. Von der Aufklärung bis zur veganen Revolution*, in: Elke Diehl et al. (eds.), *Haben Tiere Rechte? Schriftenreihe der Bundeszentrale für politische Bildung*, Bonn 2019, pp. 39–52; ead., *Tierschutzbewegung*, in: Klaus Petrus and Arianna Ferrari (eds.), *Lexikon der Mensch-Tier-Beziehungen*, Bielefeld 2015, pp. 371–376; ead., *Geschichte des Tierschutzes*, in: Roland Borgards (ed.), *Tiere. Ein kulturwissenschaftliches Handbuch*, Stuttgart 2016, pp. 173–182.

8 See for example: Richard Robert Römer, *Das Was und Wie beim Federvieh. 790 Fragen und Antworten mit Bildern aus dem gesamten Gebiet der Geflügelzucht u. -haltung*, Stuttgart 1952, p. 12.

9 Joshua Specht, *Animal History after Its Triumph. Unexpected Animals, Evolutionary Approaches, and the Animal Lens*, in: *History Compass* 14 (2016), pp. 326–336. Specht in the meantime published his brilliant book “Red Meat Republic” on the conflict-rid-

story has thrived and continues to do so, if we look at the numerous dissertations and first books on the history of animals that are in the making.¹⁰ The way in which animals should enter historiography, however, is contested. A body history perspective, I argue, is able to bring together “the animal lens”¹¹ and the agency-centered approach which have so far been opposed to each other. In addition, body history is particularly appropriate for tracing the historical impact of animals beyond their role as companions; animals whose living conditions made it impossible to leave individual accounts in the sources.¹²

The animal lens means that animals are solely understood in relation to humans.¹³ Seen that way, the industrialization of cattle, hogs, and chickens informs us about how humans who established those dominating and efficient practices understood animals and their role in the world. Such a perspective reduces animals in historiography to a vehicle for a solely human-driven history. That did not satisfy historians who were concerned with the histories of “the animals themselves”, as the editors of the newest *Handbook of Historical Animal Studies* have defined their research interest in 2021.¹⁴ Thus, tracing the agency of animals became the most common paradigm of animal history. In various

den labor history of livestock production, see Joshua Specht, *Red Meat Republic. A Hoof-to-Table History of How Beef Changed America*, Princeton 2019.

10 See for dissertations: Jadon Nisly-Goretzki, *Agricultural Intensification and Human-Animal Relations in the Oeconomic Enlightenment. Confinement and Cross-breeding on Model Farms and Peasant Holdings in Franconia, ca. 1750-1830*, University of Bamberg; Ulrike Heitholt, *Zucht und Ordnung. Die Wanderausstellungen der Deutschen Landwirtschafts-Gesellschaft und ihre Einflussnahme auf die Rinderzucht (1885–1914)*, University of Kassel; Varsha Patel, *Transforming City Landscapes. Human-cattle Relationships and the Making of Urban Societies in Bangalore*; Published books: Thomas Fleischman, *Communist Pigs. An Animal History of East Germany's Rise and Fall*, Seattle 2020; Alex Blanchette, *Porkopolis. American Animality, Standardized Life & the Factory Farm*. Durham 2020; Anett Laue, *Das sozialistische Tier. Auswirkungen der SED-Politik auf gesellschaftliche Mensch-Tier-Verhältnisse*, Cologne: 2017; Amir Zelinger, *Menschen und Haustiere im Deutschen Kaiserreich. Eine Beziehungsgeschichte*, Bielefeld 2018.

11 Joshua Specht coined this term, see Specht, *Animal History*.

12 For different methodological suggestions on how to approach different animal histories see Aline Steinbrecher, *Tiere und Gesechichte*, in: Roland Borgards (ed.), *Tiere. Kulturwissenschaftliches Handbuch*, Stuttgart 2016, pp. 7–15, here p. 8 f.

13 Specht, *Animal History*, p. 328.

14 Mieke Roscher, André Krebber and Brett Mizelle, *Writing History after the Animal Turn? An Introduction to Historical Animal Studies*, in: Mieke Roscher, André Krebber and Brett Mizelle (eds.), *Handbook of Historical Animal Studies*, Berlin 2021, pp. 1–18, here p. 4; for a historical interest in animal agency see also David Gary Shaw, *The Torturer's Horse. Agency and Animals in History*, in: *History and Theory* 52 (2013), pp. 146–167; and recently: Alexandre Elsig et al., *Auf den Spuren des Nutztiers*. Editorial, in: *traverse. Zeitschrift für Geschichte* 2 (2021), pp. 7–16.

degrees, unveiling the way animals have shaped the past was meant as an emancipatory act. As has been the case with women or colonized peoples, interrogating the agency of animals was meant to provide them with historical and political power.¹⁵ This perspective also had its downsides which become especially clear in the case of animal farming. If the primary goal is to show animal agency, the “profound ways that humans have circumscribed and dominated animal life” disappear from view.¹⁶ In intensive livestock farming, animals were conceptualized as “living ‘processors’” transforming input materials into desired output materials. Their agency “to do anything except produce the intended products” was sharply restricted, typically by highly crowded conditions and limitations on the ability to pursue their own intentions, to interact with conspecifics and even to move.¹⁷ An agency-centered approach to the history of intensified animal farming would not fully elucidate how and why the practices of intensive livestock farming emerged and changed. Agency within the human-animal relation illuminates the history of livestock production only if not taken for granted, neither in humans nor in animals. Agency understood as a result of specific and changing historical circumstances, in contrast, allows us to shed light on the underlying characteristics of animal farming’s industrialization.

Finally, historians are always bound to sources that reflect perceptions of humans. Without contesting the tremendous influence animals had on their environment, it is just not possible to write a history from the animal’s point of view. Anthropocentrism is insurmountable in historiography.¹⁸ Body history, however, allows us to approach animals most closely without turning away from the core principles of the discipline, as this article seeks to demonstrate.¹⁹ A body history approach maps the economic, political, social, and cultural contexts of farm animals as well as their role within these settings. The fact that animals were not simply there is the starting point of body history. Their bodies are considered as artificial products,²⁰ following an observation of Gilles

15 Atsuko Matsuoka and John Sorenson, Introduction, in: Atsuko Matsuoka and John Sorenson (eds.), *Critical Animal Studies. Towards Trans-species Social Justice*, London 2018, pp. 1–17, here p. 7.

16 Specht, *Animal History*, p. 332.

17 Thomas Dietz and Richard York, *Animals, Capital and Sustainability*, in: *Human Ecology Review* 22 (2015), pp. 35–54, here p. 43 f.

18 Jan Philipp Reemtsma, „Fleisch in Fleisch begraben“. Was macht Gewalt gegen Tiere moralisch anstößig?, in: *Mittelweg* 36 (2014), No. 5, pp. 74–94, here p. 88.

19 Ewa Domanska suggested to do so and write “an alternative to history” based on the findings of (contemporary) studies about animal cognition, see Ewa Domanska, *Animal History*, in: *History and Theory* 56 (2017), pp. 267–287, here p. 278 and p. 281.

20 Maren Möhring, *Andere Tiere – Zur Historizität nicht/menschlicher Körper*, in: *Body Politics* 2 (2015), pp. 249–257, here p. 251.

Deleuze and Felix Guattari who noted in the 1970s that animal breeding had produced more differences between a workhorse and a racehorse than between a workhorse and an ox.²¹ Simultaneously and inextricably linked with human breeding efforts, the embodied behavior of the animals shaped the processes in which they were produced.²² Historicizing farm animals consequently overcomes the chicken-and-egg situation of the animal lens and agency-centered approaches. Neither humans nor animals were on earth naturally in the first place. Historians would do well to decipher the mutual entanglement of their existence. Regarding the history of animal agriculture, body history illuminates how animals influenced barn facilities, the practices of livestock handling, agrarian knowledge production and shifting values of non-agrarian consumers.

Bodies Shaped Facilities, Practices, and Knowledge Production – and vice versa

The living nature of animals complicated what looked simple in theory. In German cattle farms of the 1950s and 1960s, state paid consultants promoted modified feeding practices to save costs and increase return. Feeding experts, educated at agricultural colleges as well as at universities, calculated how much of which foodstuffs cows, heifers, calves, and bulls should be given at different points in life in order to achieve the most efficient synergy of hereditary disposition and feeding.²³ Eight weeks before giving birth to a new calf, each cow should be fed with an additional 150 grams of mineral supplements, according to the most

21 Gilles Deleuze and Felix Guattari, *Kapitalismus und Schizophrenie. Tausend Plateaus*, Berlin 1992, p. 350.

22 Pascal Eitler, *Animal History as Body History. Four Suggestions from a Genealogical Perspective*, in: *Body Politics 2* (2014), pp. 259–274, here pp. 259 f.

23 R. Dieter, über neue zucht- und lebensmittelhygienische Aufgaben, die aus der modernen Fütterung und Haltung landwirtschaftlicher Nutztiere erwachsen, in: *Tierärztliche Umschau 15* (1960), pp. 393–398; Karl Richter, *Viehfütterung, Rinder – Schafe – Pferde – Schweine*, Stuttgart 1968; Dr. Dietrich, *Magere Kühe sind teure Kühe*, in: *Mitteilungen der Deutschen Landwirtschafts-Gesellschaft 42* (1953), p. 1070; K. Holtze, *Der Futterplan als Mittel zur Sicherung der Wirtschaftlichkeit der Rindviehhaltung*, in: *Wissenschaftliche Beiträge zum 60. Geburtstag von Prof. Dr. Max Witt, Mariensee 1959*, S. 159–168; E. Farries, *Spezielle Probleme der Eiweissversorgung in der Tierernährung*, in: *MPI-Schriftenreihe 1970, Mariensee 1970*, pp. 143–151; BArch Berlin, DK 1 /10320 Erfahrungsaustausch Probleme der Milchproduktion am 25. Oktober 1960, *Verhandlungsstenografen Brigade Leipzig*, p. 33; Kirsten Stoike, *Melkerin in der LPG Tierproduktion Putlitz, Kreis Pritzwalk, Die Kuh melkt nach wie vor durch das Maul*, in: *Ministerium für Land-, Forst- und Nahrungsgüterwirtschaft (ed.), XII. Deutscher Bauernkongreß der DDR, Berlin 1982*, pp. 179–183, here p. 180.

read agricultural weekly in Bavaria in 1959.²⁴ The supplement was considered crucial for the future milk yield and the robustness of the expected calf. Beside minerals, the correct amount of green stuff such as hay, silage or pellets from dried grass bothered the cattle breeder. Too much food was considered as harmful to the targeted performance of the animal as too little. Veterinarians pointed out to offer calves ample food, while being cautious not to give them too much after they have reached sexual maturity. Their later milk yield was supposed to decline if they became too heavy.²⁵

Great effort was put into finding the most profitable way of feeding cattle.²⁶ In the German state of Lower Saxony, the Max Planck Institute (MPI) for Animal Breeding and Animal Feeding opened its doors in Mariensee in 1948 after it had become clear that the hitherto leading German research institute for animal nutrition, the *Kaiser-Wilhelm-Institut* for animal breeding in Dummerstorf near Rostock in what became the GDR, was no longer available for West German scientists. Max Witt, former professor for animal husbandry at the University of Jena, became the first director of the MPI in Mariensee. There, he ran elaborate and lengthy experiments. For fourteen years, he and his team evaluated the nutrition of 200 cows on a daily basis. Every day, they documented fodder, weight and performance.²⁷ The cows were kept in separated boxes so they did not pilfer their neighbors' fodder. When they were lactating, the amount of fat in the milk was analyzed. A giant deep freezer of one hundred cubic meters guaranteed experiments with fresh grass also in winter times. At the end, 30.732 documented weeks provided information on the correlation of fodder, age, milk, weight, and carcass value. The MPI scientists published their findings regularly in the agricultural press; this gave them a wide reach and the agency to shape the discussion about how best to farm animals. For decades, experts on animal nutrition had complained that their findings remained ignored in most stables. Fritz Stockklausner, professor for animal breeding at the university of Munich, admonished in 1936 that anybody who wanted to bring out more than dung from the stable [e.g. to earn money] had to know the nutritional values of the single foodstuffs and the nutrient demands of

24 Kühe sind keine Automaten. Die Vorbereitungsfütterung ist der Schlüssel zur Leistungssteigerung, in: Bayerisches Landwirtschaftliches Wochenblatt 1959, No. 46, p. 16.

25 Viktor Langen, Aus Leserbriefen. Schwere oder leichte Kühe?, in: Neue Mitteilungen für die Landwirtschaft 1950, No. 18, p. 274.

26 For the long tradition of quantifying the bodies of livestock since 1800, see the paper of Juri Auderset and Hans-Ulrich Schiedt in this issue.

27 Max-Planck-Gesellschaft (ed.), Max-Planck-Institut für Tierzucht und Tierernährung, Neustadt am Rübenberge 1967, pp. 19–21.

the single animals.²⁸ Professor Witt from the MPI in Lower Saxony echoed this sentiment in 1964 with growing satisfaction: Modern food production would no longer offer suitable workplaces for slower people, he thought. Instead, they would find employment “at the assembly line or – in an office”.²⁹ The mounting self-confidence of the animal feeding experts originated from the overall economic development which urged farmers to be more economical in order to keep pace with postwar wealth development.

But still, the findings of nutritional experiments were not applied at most cattle farms in the 1950s. There, dairy farmers struggled with much more basic challenges. Young, lively calves tussled with each other for their fodder and thereby ruined the production target. Farmers complained in letters to the editor in agricultural weeklies that their animals lost too much energy while scrambling and did not grow as expected.³⁰ Not only were calves accused of inappropriately handling the fodder. Farmers considered the wasteful play with the foodstuff the main reason for poor feed utilization among cattle. They described how cows stepped back from the feeding trough, tossed their head and threw the fodder around which then landed on the dirty floor and became useless, trampled under the trotters.³¹ Those descriptions fell on sympathetic ears in the West Germany dairy farm community from the 1950s on as cattle farmers in their role as individual entrepreneurs were busy keeping up with the overall economic boom in terms of wages, holidays, and free time. In East Germany, agricultural experts considered cattle with inadequate table manners equally problematic, albeit from a different economic viewpoint. There, cows generating additional costs were portrayed as a potential danger for the consolidation of the new state itself. As early as 1945, soviet military administration redistributed more than two million hectares of land taken uncompensated from former large landowners to refugees and agricultural workers. Seven years later, the ruling party of the GDR, SED, changed its agricultural policy dramatically and urged farmers to give up individual property (including animals) and join a collective. The fundamental reorganization of agriculture within a decade worsened the supply situation, especially

28 Fritz Stockklausner, *Praktische Viehpflege und Viehfütterung. Ein Leitfaden für Viehhaltungs- und Melkkurse und für Melkerlehrlinge*, München 1936, p. 25.

29 Max Witt, *Aufrechterhaltung der Nahrungsproduktion in Europa – eine verpflichtende Aufgabe der westlichen Industriegesellschaft*, in: *Aus dem Max-Planck-Institut für Tierzucht und Tierernährung Mariensee/Trenthorst* 19, 1964, pp. 5–35, here p. 6.

30 *Fütterung einzeln oder in Gruppen? Bei der Kälbermast geht es um jedes Gramm*, in: *Bayerisches Landwirtschaftliches Wochenblatt* 1971, No. 2, p. 17.

31 *Stu.*, *Gegen Futtermittelverderb*, in: *Bayerisches Landwirtschaftliches Wochenblatt* 1965, No. 27, p. 18.

around 1959-60, when state officials enforced collectivization increasingly violently.³² Farmers who had not joined a collective voluntarily until early 1960 were sued for alleged war guilt, their obligations to deliver were lifted, and they were disadvantaged in the acquisition of credit, machinery, animals or seeds.³³ This pressure boosted peasants' flight from the GDR, suicides and incendiaries. Not being able to keep cattle in particular, which stood for financial as well as symbolic individual sovereignty, left some farmers killing and mistreating their animals out of desperation.³⁴ The most important agricultural goal in this tense political situation was to stabilize supply. From that perspective, farm animals whose individual behavior reduced profit and therewith the available amount of milk and meat were portrayed as political enemies as their behavior fueled further discontent within the GDR. Cows were reported to illicitly "provoke" their fellow diners in Leipzig in 1960.³⁵ They jostled for fodder with neighboring animals which impeded both from the scheduled calorific intake.

East German agricultural politicians appealed urgently to cattle farmers to prevent inefficient animal behavior – and appealing was all they could instantly do.³⁶ In contrast to market mechanisms in West German farm business management which promised wage increase if costly animal behavior was stopped, planned economy organization of GDR barns hampered farm workers' motivation to optimize the animals' outcome.³⁷

32 Jens Schöne, *Das sozialistische Dorf. Bodenreform und Kollektivierung in der Sowjetzone und DDR*, Leipzig 2008, p. 151 f.; Arnd Bauerkämper, *Ländliche Gesellschaft in der kommunistischen Diktatur. Zwangsmodernisierung und Tradition in Brandenburg 1945–1963*, Köln 2002, pp. 159–194; Heinz, Michael. *Von Mähdreschern und Musterdörfern. Industrialisierung der DDR-Landwirtschaft und die Wandlung des ländlichen Lebens am Beispiel der Nordbezirke*, Berlin 2011, pp. 157–159.

33 Anett Laue, *Das sozialistische Tier. Auswirkungen der SED-Politik auf gesellschaftliche Mensch-Tier-Verhältnisse in der DDR (1949–1989)*, Köln 2017, p. 157.

34 Jens Schöne, *die Landwirtschaft der DDR*, Erfurt 2005, pp. 35 f.; id., *Frühling auf dem Lande? Die Kollektivierung der DDR-Landwirtschaft*, Berlin 2005; Laue, *Das sozialistische Tier*, pp. 158–163.

35 Federal Archives Berlin, DK 1 / 10320 Zentraler Erfahrungsaustausch zu Problemen der Milchproduktion, der Entwicklung der Kuhbestände sowie der Winterfütterung der Kühe am 25.10.1960 in Leipzig, Referat Dr. Breitenstein, Forschungsstelle für Tierhaltung Knau, p. 34.

36 Hildegard Fuhrmann, *Kälberpflegerin der LPG Typ III in Seerhausen, Kreis Riesa*, in: *Landwirtschaftsrat beim Ministerrat der DDR (Hg.), VIII. Deutscher Bauernkongress*, Berlin 1964, pp. 246–250, here p. 247.

37 Barbara Schier, *Alltagsleben im „sozialistischen Dorf“*. *Merxleben und seine LPG im Spannungsfeld der SED-Agrarpolitik 1945–1990*, Münster 2001, pp. 199 and 219; Günter Uhlemann, *Den Viehverlusten zu Leibe*, in: *Nationalrat der Nationalen Front des Demokratischen Deutschland (ed.), VII. Deutscher Bauernkongress 9. bis 11. März 1962. überarbeitetes Protokoll*, Berlin 1962, pp. 338–341; Ministerium für

East German farming awards and pay plans tried to improve motivation among farm workers, but GDR livestock farming remained less efficient than its West German pendant due to worsening structural difficulties of planned economy since the 1960s. So-called “individual animals” of LPG members, a maximum of two cows with calves, two sows with piglets and unlimited poultry still privately owned and able to be privately sold were for example reported to be in constant better shape than collectively owned LPG-animals.³⁸

Those calves and cows that behaved differently from what farmers or planners expected acquired leverage in the history of agriculture. Their behavior had financial consequences when it caused additional work for humans or additional expenditure on fodder, veterinary service, or facilities. Some animals made it difficult to implement more profitable feeding strategies in traditionally built barns, since their behavior hampered the planners’ desire to feed each animal following precast calculations. As a consequence, feeding troughs for cattle were redesigned. Agricultural engineers developed fences that separated the head of the eating animal from the rest of its body as well as between the animals standing side by side.

For a body history analysis, it is insignificant whether the animals acted intentionally – which would be impossible to clarify for historians anyway – or whether their behavior happened instinctively and spontaneously. Solely the fact that their bodies acted in a certain way found reflection in animal agriculture’s transformation from an economic system rich in tradition, dependent on seasons and manual labor, into a numerical business with rationalized work flows. Given the additional costs they implied, farmers would not have installed feeding fences in the first place had animal behavior not had more serious consequences for the business plans of farms.

The development of milking machines further illustrates the influence of certain animal bodies on the changing technologies used on them. Milking machines entered German cattle barns in the 1950s and 1960s at a breathtaking speed. While there were just 75,316 milking machines in the Federal Republic of Germany in 1954, by 1966 this number had

Land- und Forstwirtschaft (Hg.), *Organisation der Viehwirtschaft und Anwendung des Leistungsprinzips in der LPG „Wilhelm Pieck“ in Kauern*, Berlin 1955, p. 17.

38 Michael Heinz, *Die Geschichte der individuellen Kuh. Private landwirtschaftliche Produktion in der DDR*, in: Susanne Muhle et al. (eds.), *Die DDR im Blick. Ein zeithistorisches Lesebuch*, Berlin 2008, pp. 69–76; Bauerkämper, *Ländliche Gesellschaft und kommunistische Diktatur*, pp. 168, 345, 497, 512; Laue, *Das sozialistische Tier*, p. 213.

risen to 520,200.³⁹ With this rise the milking machine displaced the tractor in numbers as a symbol of agricultural modernization in post-war Germany. Agricultural advisors recommended the purchase of a milking machine as noticeably more useful than buying the “unfortunately more prestigious tractor”, agricultural advisers admonished.⁴⁰ Milking had become the bottleneck of man-power cattle farming from the early 1950s. “Must milking as a regular occupation die out?”, a farmer asked in 1953.⁴¹ Although at that time being able to milk a cow was more common than being able to drive a car – milking was in 1952 the fifth most frequent skill that all West German citizens shared after cycling, cooking soup, swimming and knitting – farmers had begun to realize the labor shortage they were facing in their cow barns.⁴² Former farm workers were either forced out of farm work through the motorization of agriculture or, more frequently, preferred better paid jobs in the booming industrial sector over sitting on a small stool under and between cows twice a day and milking udders with tired hands. In the 1950s, apprenticeships started to go unfulfilled. Soon the whole profession of non-family farm workers in West Germany disappeared. In 1950, they composed five percent of West German wage earners, even ahead of civil servants. A quarter of a century later, they were not even counted anymore.⁴³ For the farm owner, the appeal of a machine as a replacement for ever scarcer manual labor was obvious. Furthermore, the machines milked at a constant pace and allowed “even weaker persons” to “undertake milking flawlessly without overexertion”, as an early advertisement suggested.⁴⁴ Without question, the labor shortage in agriculture provided decisive momentum for the mechanization of milking in both German states in the second half of the twentieth century. Yet, how the machine was designed and how the interaction between animals, humans, and the machine took shape in detail can only be under-

39 Statistisches Bundesamt (ed.), *Statistisches Jahrbuch für die Bundesrepublik*, Stuttgart 1958, p. 129; Statistisches Bundesamt (ed.), *Statistisches Jahrbuch für die Bundesrepublik*, Stuttgart 1969, p. 145.

40 J. Lohner, *Das maschinelle Weide-Melken*, in: *Bayerisches Landwirtschaftliches Wochenblatt* 1952, No. 142, p. 479; *Die Melkmaschine setzt sich immer mehr durch. Sie gehört zu den wirtschaftlichsten Maschinen im Betrieb*, in: *Bayerisches Landwirtschaftliches Wochenblatt* 1956, No. 10, p. 17.

41 Anton Erhard, *Muß der Berufsmelker aussterben*, in: *Bayerisches Landwirtschaftliches Wochenblatt* 1953, No. 143, p. 158.

42 Elisabeth Noelle Neumann and Peter Neumann, *Jahrbuch der Öffentlichen Meinung 1947–1955*. Allensbach 1956, p. 46.

43 Elisabeth Noelle-Neumann, *Jahrbuch der Öffentlichen Meinung 1974–1976*, Wien 1976, p. 3.

44 Reinhold Bartmann, *Mechanisierte Milchgewinnung*. Berlin 1964, p. 13; *Bayerisches Landwirtschaftliches Wochenblatt* 1953, No. 142, p. 591.

stood if we take the bodily reaction of the animals to their new environment into account.

This became particularly clear in Dedelow. Dedelow, which is nowadays a district of Pankow in the German state of Brandenburg, was the GDR's flagship dairy farm. In Dedelow, seven agricultural cooperatives and one nationally-owned farm built a colossal joint venture from 1969 onwards. Automated milking of more than 2,000 cows at one place was meant to display socialism's productivity.⁴⁵ And so it did: An engineer from Hamburg, Johannes Spiehs, who passed by Dedelow regularly when he travelled to Berlin by train, wrote to the West German Minister of Agriculture on August 4, 1970. He questioned why the Federal Republic had not yet built industrialized dairy farms of this kind and suggested immediately full-scale tests.⁴⁶ But Spiehs was not permitted look inside the farm. If he had been, he would have seen that rarely anything worked out as indicated in the brochure spread to promote the giant farm as ultimate proof of socialism's modernity.

In Dedelow, engineers had designed a rotary milking parlor to milk hundreds of cows in an endless work flow with minimal human labor. A first milker would allow the cows to enter the carrousel. There, the animals would line up next to each other, directing heads outwards and hindquarters inwards. During their tour a second milker standing inside the carrousel and roughly one meter below the animals would clean the udders and apply the cups of the machine. After that, a third milker would supervise the automated milking process and control the rotating speed according to the remaining milk in the udders. After one round trip, the milked cows would leave the rotating platform and new cows would enter.⁴⁷

Yet, the plans for a cattle-futurama were flawed and in the summer of 1969 the situation in Dedelow was devastating. On some days the quality of the milk was so bad, dirty and contaminated with wound secret that it became useless for human consumption.⁴⁸ As traditional dairy

45 Gerhard Krenz, *Notizen zur Landwirtschaftsentwicklung in den Jahren 1945–1990. Erinnerungen und Bekenntnisse eines Zeitzeugen aus dem Bezirk Neubrandenburg, Schwerin 1996*, p. 99; Federal Archives Berlin, DK 1 / 15276, *Sicherung der Eutergesundheit, Gutachten zur Entscheidung über die Anwendung des Systems der Beispielanlage für 2000 Milchkühe Dedelow im Angebotsprojekt für das Jahr 1970*, Dedelow 30.7.1969.

46 Federal Archives Koblenz, B 116 / 23293, Abt. II A, Johannes Spiehs, *Ingenieurbau, Hamburg an Bundesminister Ertl, Bonn, 4.8.1970*.

47 L. Görlich and P. Lamprecht, *Rekonstruktion des Melkkarussells M 691-40 in der Milchviehanlage Dedelow*, in: *agrartechnik 25* (1975), pp. 71–73.

48 Federal Archives Berlin, DK 1 / 15276 *Sicherung der Eutergesundheit, Rat für landwirtschaftliche Produktion und Nahrungsgüterwirtschaft der DDR, Abteilung Landwirtschaftsbau, Abteilung Veterinärwesen: Abschlußbericht über veranlasste Maß-*

farmers did no longer qualify for developing solutions for this milking disaster, veterinaries stepped in as problem solvers. State officials were particularly concerned as the situation in Dedelow threatened milk supply and socialisms' credibility at the same time. They paved the way for veterinaries to acquire agency in shaping the processes of animal agriculture. In the summer of 1969, state commissioned veterinaries were made to meet weekly in order to take back control. Their consultations revealed that the animals and the machine were not yet compatible. The machine led to irritations of the cows' teats which soon became inflamed. Mastitis, as inflammations of udders were called in veterinary terminology, was nothing new in dairy farming. During the mechanization of milking, however, mastitis became politized. Healthy udders replaced former concern about milk hygiene.⁴⁹ Almost every tenth cow had to be slaughtered in July and August 1969 in Dedelow. The cows' bodies refused mechanized milking. Investigating veterinarians found out that the human milkers neither replaced the rubber cups after they had become brittle and flawed nor cleaned them properly.⁵⁰ In addition, the machine itself potentiated the danger of mastitis. It did not empty the udders entirely and the remaining milk caused inflammations of the sensitive organ. Additionally, the machine increased the bacteria's radius of movement considerably. Via the milking equipment bacteria now spread from animal to animal. The veterinarians of Dedelow repeatedly commanded to separate cows "with mutations of udder or milk". They were supposed to be taken to the stall for sick animals.⁵¹ The dairy farmers actually working with the animals were meant to implement the processes, engineers and veterinaries would have designed beforehand. Animal health and sickness experienced a reinterpretation during the industrialization of milking. Animals, whose bodies were no longer able to match the production targets, attracted veterinary attention; animals, whose bodies were not causing immediate business trouble, were considered healthy.

nahmen zur Sicherung der Eutergesundheit und Verbesserung der Milchhygiene in der Beispielanlage der Kooperationsgemeinschaft Dedelow, Berlin, den 25.9.1969.

49 Maria Böhmer, „A mamelle seine, lait sein“. Milchhygiene und Eutergesundheit in der Schweiz, ca. 1950–1980, in: SZG 71 (2021), pp. 34–54.

50 Federal Archives Berlin, DK 1 / 15276 Sicherung der Eutergesundheit, Bericht über die 3. Beratung zur Veränderung der Situation in der MVA Dedelow am 26.8.1969, Neubrandenburg, den 27.8.1969.

51 Federal Archives Berlin, DK 1 / 10965 Technisch ökonomische Zielstellung für Viehanlagen, Veterinärmedizinische Stellungnahme von Haupttierarzt Dr. Schiller, 9.12.1964; Federal Archives Berlin, DK 1 / 10957, Eutergesundheit und Milchhygiene, Bereich tierische Produktion 1961–1965, Veterinäruntersuchungs- und Tiergesundheitsamt Stendal, 30.8.1962.

Undetected mastitis of a single animal was discussed as a threat to the productivity of large parts of the dairy herd. In 1975, every third West German cow was supposed to have one form of mastitis. Veterinarians reported on alert that 95 per cent remained undiscovered.⁵² Each infection would reduce the farm's milk yield, they emphasized. This link of health and productivity guaranteed them a voice as the agricultural discourse on animal farming in this time focused solely on increasing productivity. Seriously infected cows were no longer able to produce milk and had to be slaughtered if they could not be cured quickly as the situation in Dedelow revealed in the summer of 1969. There, bodies not playing along in the mechanized production process not only challenged the milk supply but also the performance of state-led socialism at one of its agricultural flagships.

The actions taken to overcome the increased danger of mastitis through mechanized milking show, in Dedelow and elsewhere, how unexpected reactions of the cows' bodies changed the conditions for both, humans and animals. They prompted revised training for milkers, revised selection criteria for cattle breeding, new research on the disease, and increased leverage for veterinarians on concrete farming practices. A dairy herd was especially threatened by mastitis if the humans who ran the machine were not trained appropriately. Several illustrated textbooks showing the steps of milking with the machine were published around 1960.⁵³ The first step, they indicated, was to examine the first sprays of milk in order to discover mutations early on. In addition, milking with the machine became part of the training for milkers and the traditional West German milking competitions altered the discipline from milking by hand to milking with the machine in 1960.⁵⁴

In contrast to human hands, the milking machines did not adjust to "problem udders" whose teats had a different shape. Ludwig Dürrwaechter, a leading scientist of cattle breeding in Munich, listed 16 deficient udders in his regularly re-issued "Instructions for Animal Evaluation".⁵⁵ Those irregularities had never been appreciated before, but with

52 Jürgen Deneke and Jens Meyer, Der Euterentzündung können Sie einen kräftigen Riegel vorschieben. Zitendeseinfektion nach dem Melken wirksam und billig, in: Bayerisches Landwirtschaftliches Wochenblatt 1975, No. 50, p. 18.

53 Fritz Kintzel, Die Arbeit im Fischgrätenmelkstand, Berlin 1961; N. Andresen, Handmelken – Maschinenmelken. Ein Vergleich der beiden Arbeitsweisen, Oelde 1959.

54 Der erste Melkmaschinen Wettbewerb im Spitalhof in Kempten – zehn Teilnehmer, in: Bayerisches Landwirtschaftliches Wochenblatt 1960, No. 12, p. 50; Fritz Lachenmaier, 100 Jahre Deutsche Landwirtschaftsgesellschaft. Ein Rückblick in Wort und Bild, Frankfurt 1985, p. 118.

55 Ludwig Dürrwaechter, Anleitung für die praktische Tierbeurteilung, München 1960⁵, pp. 41 f.

the spread of milking machines they aggravated mastitis. The machines did not adapt if the teats did not fit properly in the cups, if they were too long or too short, or if the four quarters of a cow's udder had no equally steady milk flow. Put on udders now considered irregular the cups of the machines either did not empty each quarter entirely or continued to suckle on an already emptied quarter. Both resulted in irritations and inflammations which – again – led to financial trouble. Uniform udders with even quarters became necessary to maintain the new currency of dairy farming: c/h – cows milked per hour. As the form and structure of udders were inherited, cattle breeders acknowledged and implemented “milkability” as a selection criterion for cattle breeding.⁵⁶ Veterinary medicine was thus not the only realm that became more powerful during the industrialization of livestock production. Animal breeding that provided standardized animals, with whom only serial production was possible, became equally influential at the expense of the single farmer's room for maneuver for action in the stable. With the rise of the milking machines, “legs for the horse, udders for cows” became the motto of cattle breeders.⁵⁷ While cows and machines were imagined as partners adapting to each other's needs, the machine's adaptability onto irregular bodies was considered limited. Instead, bodies were re-designed in order to maintain the mechanized workflow and the humans who were able to implement the animals' body changes gained agency.

In addition to farming facilities and practices, the embodied reactions of animals changed contemporary agricultural research. Shifting to the industrialization of pig farming, one can trace how animal bodies causing financial loss inspired contemporary research in engineering and animal welfare.⁵⁸ Since vitality was the indispensable requirement for animal farming, human knowledge production was deeply interwoven with how the animals performed. Pig farming in Germany faced a similar labor shortage as dairy farming from the 1950s onward.⁵⁹ In East and

56 Gibt es ein Melkmaschinen Euter? Rinderzüchter verwahren sich gegen unsachliche Behauptungen, in: Bayerisches Landwirtschaftliches Wochenblatt 1957, No. 40, p. 12.

57 Max Witt, Leistungsschau der Rinderzucht. Das Niederungsvieh, in: DLG (ed.), Deutsche Spitzentiere im Wettstreit. Deutsche Spitzentiere im Urteil der Berichterstatter der Tierschau Köln 1953, Frankfurt 1953, pp. 23–38, here p. 35 and p. 38.

58 J. L. Anderson's monograph on pig farming in the US from the early Colonial period to the present is a compelling history of capitalism and agriculture. Although he argues convincingly that pigs had a unique role in the development of the United States, it remains unclear, what the role hogs played in building America's capitalist system looked like in detail, see: J. L. Anderson. *Capitalist Pigs: Pigs, Pork, and Power in America*. Morgantown: West Virginia University Press, 2019.

59 For a contemporary analysis of human work and animal welfare in industrialized pig farming, see Barbara Wittman, *Körper im Schweinestall*. Kulturwissenschaftlich-

West Germany, farmers and agricultural politicians lamented the inability to find motivated workers.⁶⁰ Clearing the pigs' dung out of the pigsty with a shovel and barrow was – understandably – especially unpopular. In Norway, however, this had become superfluous in eighty percent of the newly built pigsties by 1963.⁶¹ Norwegian pig farmers started to install slatted floors through which the animals would step down the dung with their feet. The idea sounded perfect: Putting in litter and putting out the strong-smelling dung would become obsolete as work steps in the pigsty. In addition, the whole floor would serve as lying surface for the animals which would decrease the required floor space for each pig from around one square meter to roughly half of that.⁶² Increasing animal density was also necessary to make sure the pigs could not evade their excrements but step them down thoroughly. The unexpected reaction of the animals, however, put an end to the overly enthusiastic dreams of economic efficiency in the first place.

On Thursday, November 25 in 1965, a farmer in Bavarian Gunzenhausen was shocked after he had entered his pigsty. He found all his twenty animals dead, lying on the floor with foam at the mouth and purple spots at their throats.⁶³ Autopsy on the following day revealed that they had died from choking. What had happened? The farmer wanted to clear the pit beneath the slatted floor. Therefore, he suctioned the manure once and pumped it back in order to homogenize it before spreading it on the fields. He had not given a thought to the fact that the animals' dung could become potentially lethal. Ammonia and hydrogen sulfide superseded the oxygen above the manure pit and led to the animals' death by suffocation. Suffocated pigs were no daily fare. However, many farmers who had recently invested in slatted floors observed hogs losing their appetite. That was equally troubling since constantly gaining weight was all a fattening pig was supposed to do. State financed research institutes such as the Max Planck Institute for Agricultural Engineering in Rhineland-Palatinate (FRG) and the Institute for the Science

subjektzentrierte Perspektiven auf menschliche Arbeitsqualität und tierisches Wohl in this issue.

60 Federal Archives Berlin, DK 1 / 4050 Erfahrungsaustausch VEB Mast von Schlachtvieh 1955, Tagung 21./22. Januar, Diskussionsbeitrag der Kollegen in dem Erfahrungsaustausch für Mast- und Schlachtvieh am 21.1.55, pp. 5 and 9, 22.1.55, p. 1.

61 L. Marady, Der Spaltenboden im Schweinestall. Er erspart viel Stallarbeit, erhöht die Sauberkeit und das Wohlbefinden der Schweine, in: Bayerisches Landwirtschaftliches Wochenblatt 1963, No. 44, pp. 18 and 20, here p. 18.

62 Viktor von Malchus, Wissenschaftliche Agrarpolitik im Königreich Norwegen, Berlin 1964.

63 Abgase töten 20 Schweine. Fehler mit verheerenden Folgen. Vorsicht bei Spaltenboden, in: Bayerisches Landwirtschaftliches Wochenblatt 1966, No. 5, p. 24.

of Animal Breeding in Dummerstorf (GDR) quickly turned to the question of how to construct slatted floors which would not harm the animals. The promising economic advantages of slatted floors surpassed the doubts and anxieties that had risen. State funded scientists found out that the dangerous gases would stay in an airspace left between manure and floor. From there, fans would withdraw the smelly gases, away from the animals.⁶⁴ Automatic ventilation hence became a prerequisite for the new technique. In the political environment of economic growth as the goal for animal farming at business and state level, pig farmers endeavored to make efficiency gains through cost accounting. The socialist GDR tried to achieve pig farmers' economic compliance through seminars and reward systems. In the market economy of West Germany pig farmers saw their economic decisions directly reflected in their earning. Both systems appreciated profitability in the stable as most important political goal of animal farming from the 1950s to the 1980s. In this economic environment, animals, whose behavior negatively interfered with the economic plans of their owners such as unforeseen reactions to the first types of slatted floors, gained power and influenced the redesign of the barns.

Bad air, it turned out, was not the only challenge for industrialized pig farming. The slatted floors also altered the animals' behavior in another way. The new system saved space and allowed the further concentration of pigs. Densely kept, with no stray on the floor to dig in with their snout, they started to nibble at their fellow animals, preferably at their curly tails. Some of the injured animals had to be slaughtered before maturity because the sore rest of their bitten off tail could not be cured. That implied substantial financial loss. Therefore, cannibalism became a serious problem of pig farming throughout the 1960s.⁶⁵ In 1965, after one quarter of 120 pigs in a slatted floor experiment in the research institute of Forchheim had lost their tails, experts recommended to offer toys, such as chains hanging from the ceiling, paper sacks, old buckets or cut tires to keep the animals busy.⁶⁶ The investment of the slatted floor

64 [blj], Frische Luft auch auf Spaltenboden. Unterflurabsaugung verbessert das Klima, in: Bayerisches Landwirtschaftliches Wochenblatt 1969, No. 19, p. 16; AID (ed.), Moderne Schweineproduktion. Informationen über Ferkelproduktion und Schweinemast anlässlich der 52. DLG Ausstellung 28.5.–4.6.1972 in Hannover, Bonn 1972.

65 Ernst Lohmann, Der Einfluß von Haltungsverfahren auf die Mastleistung beim Schwein, Göttingen 1969, p. 103; see also Christian Zumbrägel's article in this issue; Spaltenboden hat nicht nur Vorteile. Futterverbrauch höher, es kommt sehr auf Wärme-Regulierung an, in: Bayerisches Landwirtschaftliches Wochenblatt 1965, No. 50, p. 20.

66 K. Neubrand, Ferkel beißen sich die Schwänze ab, in: Bayerisches Landwirtschaftliches Wochenblatt 1965, No. 8, p. 42; [ab], Biß-Schutz für Schweine, in: Bayerisches

needed to be refinanced by increased and reliable productivity. When, instead of growing quickly the animals injured each other, their weakened bodies challenged profitability – and again gained leverage on farming practices for this very reason.

Individual pig farmers who saw their income threatened by the cannibalistic pigs became innovative. In the Netherlands, a farmer put plastic sheets in the pig's snout.⁶⁷ A farmer from Upper Bavaria constructed a spiky metal clip he would attach to already bitten tails. We know about those measures as the specialized press for animal farmers reported extensively on them. Each new idea promised to put an end to the troubling cannibalism. Those efforts, however, turned out to be too costly for industrialized pig farming as they again considerably increased the amount of time farmers were occupied with single animals. Instead, pig farmers started to apply a preventive measure that affected all animals. They began to cut off the curly tails of all piglets with a hot knife. Although behavioral biologists considered cannibalism to be a behavioral disorder and hence a signal that something was wrong, the new method did not vanish; behavioral biologists did not possess interpretational hegemony regarding the state of affairs in the pigsties of the 1970s. Instead, they were outflanked by veterinary advisers trained in business economy. As a consequence, the bodies of the pigs adapted to the new, time-saving and cost-reducing technique of slatted floors. Seen through the lens of body history, animal farming appears to be a circulation of human actions and physical reactions of the animals that again provoked human reactions. Through their bodies, animals triggered creative human power. At the same time, it remains clear who held the whip – not only figuratively. A body history approach to animal farming traces the power structures between humans and animals empirically as the new invasive procedure in the pigsties indicates.

Mediated Bodies Fueled Animal Welfare in West Germany

By turning attention to poultry, the third important branch of animal farming, it is possible to extend the argument of animal bodies gaining agency in the history of livestock production to another level. In contrast to cattle and pig farming, new methods of chicken farming entered pub-

Landwirtschaftliches Wochenblatt 1966, No. 31, p. 14; O. Rieger, Spaltenboden behagt Schweinen nicht. Ein Testbericht aus der Versuchs- und Lehranstalt Forchheim/Baden, in: Bayerisches Landwirtschaftliches Wochenblatt 1966, No. 52/53, pp. 22 and 24.

67 [ab], Biß-Schutz für Schweine.

lic discourse in the 1970s. Caged chicken found eloquent advocates. The media attention most likely resulted from the rapid and radical change in farming practices chicken farming faced compared to less coherent and radical developments in cattle and hog farming. The change in farming practices came upon the reporting method of the 1970s based on images and emotions. This coincidence transformed media attention into a vehicle for political change in animal farming in the liberal democracy of West Germany.

In 2012, the European Union banned tightly-packed battery cages with hens long after the German Federal Constitutional Court had sanctioned their end in 1999. In the U.S., public opinion against caged farm animals changed more slowly, but pointed in the same direction. Despite this, approximately half of egg-laying hens in Europe still lay their eggs in cages, in so-called “enriched” ones that offer some space for movement. Since September 2018, the European Citizens’ Initiative “End the Cage-Age” has gained more than 1.6 million signatures. As a consequence, the European Commission committed in June 2021 to table a legislative proposal to phase out the use of cages in animal farming before the end of 2023. From a historical point of view, the ongoing fight against caged hens requires an explanation. Just a few decades earlier, contemporary agricultural engineers were enthusiastic about the manifold advantages cage systems offered compared to free run hens. Caged hens would benefit from optimized sanitation, less injuries by aggressive fellows, and their farmers would equally benefit, namely from cheaper egg production. In crowded cages, the hens would not need as much heating and feeding as when they moved freely, and in addition, the eggs would remain cleaner, and thus more valuable.

The unprecedented outrage regarding the highly profitable system of caged hens paradigmatically shows the growing orientation towards post-materialistic values in welfare societies from the 1970s onwards. At the same time, it reveals the inconsistencies of contemporary diagnoses such as Ronald Inglehart’s *Silent Revolution*.⁶⁸ Why is it that civil society actors in West Germany have masterminded the end of battery cages since the 1970s but simultaneously failed to abandon the technology until today?

I argue that the narrative of ill-treated animal bodies lied at the center of the increasing rhetorical success of anti-caged-hen initiatives. Bernhard Grzimek, director of the Frankfurt Zoological Garden since 1945, veterinarian, and the nation’s conscience in animal welfare, shocked the

68 Ronald Inglehart, *The Silent Revolution. Changing Values and Political Styles among Western Publics*, Princeton 1977.

West German public on 13 November 1973.⁶⁹ On this day, his weekly TV-program “A Place for Animals” showed German hens in cages instead of African animals in the wild as otherwise customary. As Christina von Hodenberg has shown, by then television had become the “unquestionable leading medium in urban and rural West Germany”.⁷⁰ Whereas traditionally cattle were used to being fed “very late in the day”, by the 1970s the late feeding of cattle ended in order to move forward the evening’s leisure to fit in with the programming schedule, a retired farmer’s wife in rural Westphalia reported in 1965.⁷¹ Obviously, not only had her human family adapted properly to the new rhythms of television, but her cattle, regardless of the new feeding schedule, “look[ed] just as healthy as in earlier years,” she added.⁷² A village veterinarian echoed this sentiment stating that cattle farmers now would only call in for help right after popular broadcasts as they “don’t like going to the stables when a suspenseful programme is on”.⁷³ Documentaries on nature, wildlife and animal shows ranged among the most popular genres.⁷⁴

Bernhard Grzimek “arguably Germany’s most important wildlife conservationist of the twentieth century” became the most important opponent of chicken battery farms in West Germany and beyond.⁷⁵ From 1957 until 1987 seventy to eighty percent of West Germans, and a rising number of East Germans watching West German TV program, watched

69 Grzimek. Spur verloren, in: *Der Spiegel* 1969, No. 45, pp. 31 f., here p. 31; Jens Ivo Engels, Von der Sorge um die Tiere zur Sorge um die Umwelt. Tiersendungen als Umweltpolitik in Westdeutschland zwischen 1950 und 1980, in: *Archiv für Sozialgeschichte* 43 (2003), pp. 297–323, here p. 300.

70 Christina von Hodenberg, Square-eyed Farmers and Gloomy Ethnographers, in: *Journal of Contemporary History* 51 (2016), pp. 836–865, here p. 862.

71 *Ibid.*, p. 839.

72 *Ibid.*, p. 840.

73 *Ibid.*, p. 853.

74 *Ibid.*, p. 859.

75 Thomas Lekan, A Place for Animals, in: *RCC Perspectives* 2013, pp. 43–48, here p. 43. Grzimek’s achievements surrounding the protection of the Serengeti and other national parks in Africa through Western donations have recently be portrayed critically since the “real sacrifice came from local Africans, particularly those pastoralist groups who had to leave their homelands to make room for a new kind of tourist habitat”, *ibid.* Additionally, Grimek’s 1959 documentary “Serengeti Shall Not Die” as well as his 1956 book and film “No Room for Wild Animals” on a trip to then still colonized Belgian Congo have increasingly been unmasked as a projection of colonialist fantasies in which the East African steppes were imagined as the “cultural heritage of all mankind”, see Thomas Boes, Political Animals. “Serengeti Shall Not Die” and the Cultural Heritage of Mankind, in: *German Studies Review* 36 (2013), pp. 41–59; Raf De Bond, A World Laboratory. Framing the Albert National Park, in: *Environmental History* 22 (2017), pp. 404–432, here pp. 419–422.

“A Place for Animals”.⁷⁶ In this program, Grzimek manifested himself as educationalist and activist and presented the “natural” give-and-take between predator and prey and the danger beloved charismatic mammals faced; human-on-human violence, in contrast, as part of European colonialism, anti-imperialist struggles or military dictatorships were not depicted.⁷⁷ The rising media coverage of nature and environmental issues around 1970 constituted a new era in West Germany, the “ecological age”, and Grzimek was an important figure therein.⁷⁸

Grzimek’s way of dedication to wild animals in African savannas addressed emotions “deep within the human’s soul”.⁷⁹ It is telling and at the same time plausible, that Grzimek turned to wild elephants and caged chicken simultaneously. In 1986, the German sociologist Ulrich Beck diagnosed in his famous book *Risk Society*:

“With detraditionalization and the creation of global media networks, the biography is increasingly removed from its direct sphere of contact and opened up across the boundaries of countries and experts for a *long-distance morality* which puts the individual in the position of potentially having to take a continual stand. At the same moment as he or she sinks into insignificance, he or she is elevated to the apparent throne of a world-shaper.”⁸⁰

Caged chicken and the Serengeti animals became part of the same long-distance morality. Both kinds of animals lay beyond the “direct sphere of contact”; both kinds of animals became part of the same *Zivilisationskritik*; both fit perfectly within the “limits to growth” mindset of the global north in the mid-1970s; both tied in with the emerging sense of responsibility for “the planet” including its fauna.⁸¹ In contrast to Serengeti animals, however, the economic interdependencies of industrial chicken farming were more easily understood. The pictures displaying hens with little space and bleeding or with plucked feathers and a commentary linking their depressing appearance to the way they were kept

76 Frank Uekötter, Umweltbewegung zwischen dem Ende der nationalsozialistischen Herrschaft und der „ökologischen Wende“. Ein Literaturbericht, in: *Historical Social Research* 28 (2003), pp. 270–289, here p. 282.

77 Lekan, *A Place for Animals*, p. 44.

78 David Motadel, Review: *The German Nature Conservation Movement in the Twentieth Century*, in: *Journal of Contemporary History* 43 (2008), pp. 137–153, here p. 152.

79 Joachim Radkau, Rev. on Greenpeace. *Von der Hippiebewegung zum Ökokonzern* by Frank Zelko, in: *Vierteljahrschrift für Sozial- und Wirtschaftsgeschichte* 104 (2017), pp. 89–91, here p. 90.

80 Ulrich Beck, *Risk Society. Towards a New Modernity*, London 1992, p. 137.

81 David Kuchenbuch, „Fernmoral“. Zur Genealogie des globalen Gewissens, in: *Merkur* 70 (2016), pp. 40–51, here p. 44; the cookbook „*Diet for a Small Planet*“ (New York 1971) by Frances Moore Lappé, which highlighted the environmental impact of meat production, further illustrates this trend perfectly.

resulted in immediate political turmoil in West Germany. Some West German farmers eagerly embraced the criticism on caged chicken farming which further strengthened it. They disliked animal factories as incompatible with their self-image of brokers between nutrition and nature. Additionally, they were worried about unfair competition with financially stronger investors who would prevent them from making money with chickens.⁸²

After Grzimek's broadcast on caged hens in November 1973, scientists at the Max Planck Institute for Behavioral Physiology reported that their telephone rang for days.⁸³ Animal welfare organizations focusing on factory farming emerged and existing organizations took up the issue of caged hens. They started signature campaigns and published widely on the topic, portraying for example former prisoners of Nazi concentration camps who declared their solidarity with the caged animals.⁸⁴ A new consensus of human self-limitation in animal farming appeared among behavioral biologists, animal welfare activists, and some consumers which held that not everything which is economically reasonable in the stable should also be realized, as an economy-only view on chicken farming ignores ethical questions. Grzimek remained the key figure in the West German debate which gained pace in the following years.⁸⁵ He and his fellow campaigners ensured that the West German public remained informed how their breakfast eggs were produced from then on. The mediatized bodies of caged hens served as a vehicle for the new interspecies empathy.

The comparison with the GDR highlights the role of free expression for mediated animal bodies to unfold power. In East Germany, isolated voices questioned caged hens, too. They, however, were either actively silenced or at least lacked the important tool of media freedom. Heinrich Dathe, who had built the Berlin Tierpark in 1954 and since then had become Grzimek's East German pendant in popularizing zoological knowledge on radio and TV, commented at the same time on caged chicken, however in diametrically opposed terms. Dathe adhered to lay-

82 Wolfgang Hoffmann, *Industrie auf dem Land. Eier vom Fließband – Bauern-Krieg gegen Agrarfabriken*, in: *Die Zeit* 1970, No. 25, <https://www.zeit.de/1970/25/eier-vom-fließband/komplettansicht> (14.2.2023).

83 Federal Archives Koblenz, B 116 / 50127, Dr. Nicolai an Dr. Schultze-Petzold, 5.12.1973.

84 Federal Archives Koblenz, B 116 / 50129, Informationen des Vereins gegen tierquälische Massentierhaltung e. V., 2305 Heikendorf bei Kiel, Felix Wankel an Prof. Dr. Hans Schlütter, 16.2.1976.

85 On 13 June 1975 Grzimek wrote to all member of the West German Parliament, Federal Archives Koblenz, B 116 / 50129, Bernhard Grzimek an die Damen und Herren Abgeordneten des Deutschen Bundestages, 13.6.1975.

ing performance as the only valid indicator for animal welfare. No matter how poor the animals' appearance, he told East German consumers – who had equally begun to worry whether caged hen farming was compatible with animal welfare – that as long as caged hens continued to lay eggs, nothing could be wrong in the stable.⁸⁶ After the fall of the Berlin wall and the collapse of the GDR, East German environmental activists used caged chicken farming as a metaphor for the limited freedom to travel of East German citizens from 1961 to 1989.⁸⁷

On 25 November 1975, the animal welfare organization “Bund gegen den Missbrauch der Tiere” (Confederation against the Mistreatment of Animals) invited the members of the West German parliament to the city hall in Bonn Bad Godesberg. There, they showed the film “Subdue the Earth. Modern Chicken Farming or Cruelty to Animals?” by Andreas Grasmüller, a lawyer and animal welfare activist from Munich.⁸⁸ A cage with four hens was put in the entrance hall as a practical demonstration and caught much attention, an observer sent by the Ministry of Agriculture reported.⁸⁹ In his and the Ministry's eyes, the public demonstration of caged hens was biased. They claimed that the pitiful display would use mass psychology in an illegitimate way; representatives of industrialized chicken farming had blamed Grzimek's broadcast for doing the same. Hans Schlütter, president of the central association of the German poultry sector, had unsuccessfully tried to prohibit the repeated broadcast in 1974.⁹⁰ Those pictures would willingly appeal to the audience's feelings and portray the chicken economy from an illegitimate emotional perspective.⁹¹ This was also the line of the large-scale chicken farmers who were afraid of losing their income after they had invested heavily in the new cage systems. Single farmers as well as agricultural associations moved to court in order to prevent further public film screenings. The courts, however, as the wider public, judged in numerous lawsuits in

86 Heinrich Dathe, KIM-Tiere kennen keinen Kummer. Antworten auf Fragen besorgter Tierfreunde, in: *Urania* 48 (1972), No. 10, pp. 62 f.

87 Carlo Jordan and Hans Michael Kloth, *Arche Nova – Opposition in der DDR. Das „Grün-ökologische Netzwerk Arche“ 1988–90*, Berlin 1995, p. 492.

88 Federal Archives Koblenz, B 116 / 50129, Vermerk Betreff Tierschutz; here: Öffentliche Veranstaltung des Bundes gegen den Mißbrauch der Tiere e. V. über die gegenwärtige Problematik der Nutzgeflügelhaltung am 5.11.1975 in der Stadthalle Bad Godesberg, 1.12.1975.

89 *Ibid.*

90 Federal Archives Koblenz, B 116 / 50127, Prof. Dr. Schlütter an Dr. Eckerskorn, Bundesministerium für Ernährung, Landwirtschaft und Forsten, 6.7.1974.

91 Federal Archives Koblenz, B 116 / 50129, Prof. Dr. Schlütter, Zentralverband der Deutschen Geflügelwirtschaft e. V. to representatives of the German parliament, 2.12.1975.

favor of freedom of expression.⁹² In addition, judges raised doubts in their verdicts, whether caging hens was compatible with the West German animal welfare act of 1972. The 1970s saw various new formations of animal welfare associations in West Germany. They however, remained unaffected by animal rights philosophy which questioned mass husbandry more fundamentally, unlike their counterparts in the UK.⁹³

The reason for the febrile atmosphere was a legal vacuum in which caged hens carved their existence from 1972 until 1987. The animal welfare act of 1972 would have needed by-laws specifying what the noble paragraphs – stating that no one may cause an animal pain, suffering or harm without good reason – meant for the new routines of poultry farming. Various expert committees working on that topic from 1967 onward failed to define them. The differences between experts attached to the chicken industry and experts advocating for the chickens from a behavioral biology perspective turned out to be irreconcilable. Due to the missing by-laws it was German courts that had to decide whether caged egg production was legal whenever a worried customer went to court. In 1987, a lawsuit was about to be filed at the Federal Court. Right before that could happen, Minister of Agriculture Ignaz Kiechle enacted an ordinance – a competence he had only obtained the previous year – favoring profit-seeking chicken farmers by authorizing the use of the smallest cages that were up for discussion. However, even after Kiechle's ordinance eliminated the legal vacuum, litigations continued. The ordinance turned out to be a new juridical problem because it differed in meaning from its corresponding law. This is how German chickens became a matter of constitutional jurisdiction. Beginning in the early 1970s and continuing throughout the 1980s and 1990s, consumers first campaigned for a ban of caged poultry farming after they had seen pictures of this production technique. Judges at various levels formed their opinion which was equally mediated. The impression of the depicted bodies shifted values regarding animal agriculture. The way from changing values to changing practices of intensive animal farming, however, was – and is – hampered. Changing values were neither reflected in consumer behavior, nor could they seriously compete with the lobbying of agricultural functionaries that had evolved since the second half of the nineteenth century.

92 Federal Archives Koblenz, B 116 / 50129, o. A., Film über „Hähnchenfabrik“ darf weiter gezeigt werden, in: *Süddeutsche Zeitung*, 11.12.1975; o. A., Rechtsanwalt darf Film über Massentierhaltung zeigen. Hühnerfreunde siegen vor Gericht, in: *Augsburger Allgemeine Zeitung*, 11.12.1975.

93 Mieke Roscher, *Tierschutzbewegung*, in: Arianna Ferrari u. Klaus Petrus (ed.), *Lexikon der Mensch-Tier-Beziehungen*, Bielefeld 2015, pp. 371–375, here pp. 374.

Conclusion: Efficacious Bodies and Digitalized Cyborgs

This paper has empirically traced the impact of animal bodies on the history of livestock farming during its industrialization in the twentieth century. Cows played with their fodder and thereby affected accounting in the economic situation they and their farmers were situated; bloated udders threatened the profitability of milking machines and thereby inspired the creation of animals with bodies more compatible with the machine; dying, anorectic or cannibalistic pigs provoked new research on air purification, and caged hens aroused compassion among consumers and judges who then banned the confining cages. Body history affords us an analytical tool to detect animals in historiography that have not been overtly powerful at first glance. For a long time, farm animals have either remained invisible in the history of twentieth century agriculture or were addressed as statistical factors of production. Animal ethics approaches, in contrast, portrayed cows, hogs, and chickens as sensitive individuals who were unjustly oppressed. In all these perspectives, the animals were regarded as not actively affecting the environment they were living in. Body history, in contrast, allows to address power structures between humans and animals in the setting of farming and at the same to reveal the animals' role within this process. Thus, body history enriches the promising new history of agriculture that has risen in the past few years.⁹⁴

The bodily role of the animals analyzed here is of great importance precisely because cattle, hogs, and chicken were kept to derive profit from their bodies. Whenever behavior affected profits, farmers, veterinarians, and agricultural engineers attended to the animals. Reconstructing the implementation of milking machines in cattle farming and slatted floors in pigsties speaks to how animals' unanticipated reactions to newly introduced production techniques shaped the further development of those techniques. In order to maintain economic growth in livestock production – which consistently remained a priority in agricul-

94 Juri Auderset and Peter Moser, *Die Agrarfrage in der Industriegesellschaft. Wissenskulturen, Machtverhältnisse und natürliche Ressourcen in der agrarisch-industriellen Wissensgesellschaft (1850–1950)*, Vienna 2018; Tiago Saraiva, *Fascist Pigs. Technoscientific Organisms and the History of Fascism*, Cambridge, MA 2016; Paul Brassley et al., *The Real Agricultural Revolution. The Transformation of English Farming, 1939–1985*, Suffolk 2021; Floor Haalboom, *Oceans and Landless Farms. Linking Southern and Northern Shadow Places of Industrial Livestock (1954–1975)*, in: *Environment and History*, doi: 10.3197/096734020X15900760737202; Mindi Schneider and Samuël Coghe, Editorial Introduction. *Livestock Frontiers*, in: *Commodity Frontiers* 3, 2021, pp. i–viii.

tural politics in both Germanies – the needs of animals were considered whenever they challenged their exploitation.

The challenging nature of managing living organisms has not changed since industrialized livestock production took shape. Today, the interplay between automated milking systems, which pretended to eliminate the need for humans, and cows runs smoothly most of the time. Transnationally, continued cattle breeding has given rise to cows with ever growing statistical milk yield, shorter lifespans, and udders perfectly fitting the cups of the milking machine. Heat detection, instead, has become a current challenge. To create offspring with the most wanted bodily features, farmers pair each cow through artificial insemination with a promising bull. Therefore, they have to detect the moment of fertility. That, however, is more difficult the more efficient the cow's organism is geared towards a high milk yield. Today, the amalgamation of animals and techniques creates digitalized cyborgs. Dairy farmers attach pedometers to the cow's feet, and sometimes insert additional thermometers into their vaginas. A push message appears on the farmer's smartphone, when the devices indicate signs of receptivity. Russian and Turkish dairy farmers additionally had their cows put on virtual-reality glasses to increase their milk yield. The lush meadows displayed deluded the animals into thinking they were grazing on summer pasture instead of standing on the concrete floors of an indoor facility. This paper has tried to show how some animal bodies, although strategically bred, confined and violently adapted, have contributed to a large degree to the contingent processes of intensified animal farming. Bodies made agriculture, and they continue to do so.

*Dr Veronika Settele, veronika.settele@uni-bremen.de, lecturer in modern history at the University of Bremen. She has published two monographs on livestock farming, food infrastructures, and agricultural policy, *Revolution im Stall: Landwirtschaftliche Tierhaltung in Deutschland, 1945–1990* (Göttingen: Vandenhoeck & Ruprecht, 2020), and *Deutsche Fleischarbeit: Geschichte der Massentierhaltung von den Anfängen bis heute* (C.H. Beck: Munich, 2022), and has recently turned to the history of sexuality.*