

Bioethics and animal production: zootechnical necropolitics as a regime of governance

Juliana Costa Velho de Abreu¹

1. Universidade Federal Rural do Rio de Janeiro, Rio de Janeiro/RJ, Brasil.

Abstract

The concept of zootechnical necropolitics is proposed as an analytical category to understand forms of governing life and death within industrial animal production systems. Based on Achille Mbembe's necropolitical theory, in dialogue with authors such as Foucault and Agamben, intensive animal production is analyzed as a laboratory of necropolitical rationality, in which life is sustained only insofar as it produces economic value. The theoretical-conceptual method consists of a critical reconstruction of the historical, epistemological, and political foundations of modern animal science. From this perspective, the concept of "within the farm gate" is re-signified as a zone of exception that legitimizes confinement practices. The theoretical results indicate that zootechnical necropolitics does not constitute an anomaly of the system, but rather its normalized mode of operation, thereby revealing the convergence between technoscience, economy, and institutional violence. By making this regime visible, the study contributes to the expansion of critical bioethics and to the debate on post-productivist transition in countries of peripheral capitalism.

Keywords: Bioethics. Animal cruelty animal production. Animal husbandry. Nutrition policy.

Resumo

Bioética e produção animal: necropolítica zootécnica como regime de governo

Propõe-se o conceito de necropolítica zootécnica como categoria analítica para compreender formas de governo da vida e morte nos sistemas industriais de produção animal. Com base na teoria necropolítica de Achille Mbembe, em diálogo com autores como Foucault e Agamben, analisa-se a produção animal intensiva como laboratório da racionalidade necropolítica, em que a vida é mantida apenas enquanto produz valor econômico. O método teórico-conceitual consiste na reconstrução crítica dos fundamentos históricos, epistemológicos e políticos da zootecnia moderna. Nessa perspectiva, o conceito de "porteira adentro" é ressignificado como zona de exceção que legitima práticas de confinamento. Os resultados teóricos indicam que a necropolítica zootécnica não constitui anomalia do sistema, mas sua forma normalizada de funcionamento, de modo a evidenciar a convergência entre tecnociência, economia e violência institucional. Ao tornar visível esse regime, o estudo contribui para o alargamento da bioética crítica e o debate sobre transição pós-productivista em países de capitalismo periférico.

Palavras-chave: Bioética. Bem-estar do animal. Criação de animais domésticos. Política de alimentos.

Resumen

Bioética y producción animal: la necropolítica zootécnica como régimen de gobierno

Se propone el concepto de necropolítica zootécnica como categoría analítica para comprender las formas de gobierno de la vida y la muerte en los sistemas industriales de producción animal. Con base en la teoría necropolítica de Achille Mbembe, en diálogo con autores como Foucault y Agamben, se analiza la producción animal intensiva como un laboratorio de la racionalidad necropolítica, en el cual la vida se mantiene únicamente en la medida en que produce valor económico. El método teórico-conceptual consiste en la reconstrucción crítica de los fundamentos históricos, epistemológicos y políticos de la zootecnia moderna. Desde esta perspectiva, el concepto de "puertas adentro" se resignifica como una zona de excepción que legitima prácticas de confinamiento. Los resultados teóricos indican que la necropolítica zootécnica no constituye una anomalía del sistema, sino su forma normalizada de funcionamiento, evidenciando la convergencia entre tecnociencia, economía y violencia institucional. Al hacer visible este régimen, el estudio contribuye a la ampliación de la bioética crítica y al debate sobre la transición posproductivista en países de capitalismo periférico.

Palabras clave: Bioética. Bienestar del animal. Crianza de animales domésticos. Política nutricional.

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This study is based on the observation that animal production agroindustrial systems (especially those aimed at production in cages) operate under forms of rationality that go beyond the technical management of productivity. “Within the farm gate” a true zone of exception is established in which the violation of rights is naturalized and sovereignty over life and death belongs to the owner of money, the owner of the farm.

Under the protection of state and federal decrees and norms, large-scale confinement, genetic standardization, and the biotechnological control of bodies make up a government regime that transforms life into an economic variable. This system is sustained by the strength of the myth of scientific neutrality and the promise of efficiency, which masks the structural violence inscribed in its daily practices. In this context, it is urgent to understand the ethical and political dimensions that legitimize and perpetuate such regimes of exception.

The analysis proposed here is anchored in Mbembe’s theory of necropolitics¹, seeking to adapt it to the field of intensive animal production in dialogue with authors such as Foucault², Agamben³, and Haraway⁴. This study proposes that the concept of zootechnical necropolitics will enable us to understand how the technical management of death and suffering becomes an instrument of productive governance. In a context of constant death in life, animal bodies are kept functioning until the limit of their biological exhaustion to be then converted into disposable living resources. Life is thus controlled, prolonged, shortened, and consumed under a regime of management that denies existence any value outside the logic of production.

Thus, this study aims to establish the concept of zootechnical necropolitics as a category of analysis that can reveal the structure of a mode of production that is reproduced throughout Brazil and that leaves a continuous trail of violations of human and non-human animal rights that is legitimized by a techno-scientific rationality and market logic. The proposition of this category seeks to demonstrate that “within the farm gate” the structural violence of agroindustry manifests itself as a permanent zone of exception that

instrumentalizes life and accepts suffering as long as profit is preserved.

Method

The theoretical-conceptual method (anchored in the critical reconstruction of the historical, epistemological, and political foundations that sustain modern animal science) was adopted. The review methodology was based on an intentional bibliographic mapping following criteria of theoretical relevance, recurrence in discussions about power and life, and pertinence to the field of biopolitics and interspecies ethics. The theoretical framework was composed of research that dialogues with the notion of necropolitics and its contemporary derivations (notably by Mbembe¹, Foucault², Agamben³, and Haraway⁴) and Latin American authors who problematize the productivist rationality and the ethical dimension of animal exploitation.

The theoretical analysis consisted of finding convergences, displacements, and conceptual tensions between these authors to understand how the rationality of biopolitics is transformed into productive necropolitics within industrial systems of animal production. The analytical procedure sought to articulate categories of political philosophy with the materiality of zootechnical production, finding the daily exercise of the power to decide on life and death in the latter. The choice of Achille Mbembe¹ as an axis of reflection, rather than only stemming from his formulation of necropolitics, is due to the expansive force his concept carries by displacing Foucaultian biopolitics to territories in which life is kept in a state of death. If, in Foucault², biopolitics is concerned with managing and optimizing life, in Mbembe, necropolitics reveals the rationality by which power not only administers but fabricates death zones as a condition for the functioning of the system. It is precisely in this overflow that the possibility of thinking about animal bodies as part of the same political arrangement of disposability opens up.

Zootechnical necropolitics, in this sense, emerges as a necessary unfolding of the Mbembian concept itself: if necropower is exercised where life is made killable, it is necessary to recognize

industrial animal production as an exemplary laboratory of this rationality. In this field, life is biologically prolonged or considerably shortened and economically calculated but existentially nullified. Death is confused with the condition of life itself.

Based on Mbembe's¹ reflection on the political administration of death, it is proposed here to shift the gaze to the field of intensive animal production. This transposition requires identifying the concrete spaces in which sovereignty over life is exercised and in which the exception is converted into a productive routine. In this context, the category "within the farm gate" is formulated as a central analytical concept of zootechnical necropolitics.

Usually used in the technical vocabulary of agribusiness to designate the interior of rural properties, the expression "within the farm gate" gains a critical inflection in this study, designating the zone of exception in which the private sovereignty of capital overrides the public sovereignty of the State, thus instituting a regime of government in which human and non-human life is administered according to criteria of profitability. Economic power takes a sovereign form: the owner of money decides what lives, how they live, how much they live, and how they die.

From this point of view, "within the farm gate" is no longer just a spatial delimitation, becoming a political and epistemological category. It is precisely in this territory that legality becomes plastic and capable of responding to economic convenience, in which the technical-scientific discourse manages to legitimize systematic practices of violation of rights. Thus, "within the farm gate" is not only the physical space in which bodies are confined, but the symbolic and political territory in which contemporary forms of exploitation and dehumanization are consolidated. It is in this inner space, in which the exception is institutionalized and suffering is accounted for, that the most concrete face of necropolitics is manifested: that of life transformed into numbers, into flesh, into merchandise.

Authors such as Agamben¹ and Haraway⁴ offer crucial mediations in this journey. The figure of the *Homo sacer* (bare life stripped of any political value) finds resonance in the confined animal, the death of which, rather than conceived as a loss, is often the end that justifies the means.

Haraway⁴ describes the constitution of laboratory and assembly-line creatures, revealing the point at which organism and machine become indiscernible. These contributions expose the conceptual plasticity required to name the hybrid zone in which modern animal science inscribes bodies.

From the agroecological critique that denounces genetic homogenization and the metabolic rupture between society and nature to critical bioethics (which highlights the forms of techno-scientific eugenics operating behind the scenes of animal science), what emerges is a political rationality that naturalizes suffering as a technical datum. It is at this intersection between necropower (which defines lives as disposable) and technoscience (which masks pain as a productivity variable) that the category of "zootechnical necropolitics" is consolidated.

Thus, this concept seeks to actively contribute to the discussion by refusing the anthropocentric limits of critical theory, re-inscribing Mbembe's¹ thought in a multispecies key and exposing the necropolitical face of a science that presents itself as neutral. By naming this regime zootechnical necropolitics, it denounces the invisible violence in animal production systems and proposes a lens that can unveil the intertwining between technique, economics, and politics in the manufacture of living bodies in a state of profitable death.

Zootechnical necropolitics

Historical foundations and productive structure

Throughout modern history, animal science has consolidated itself as technical-scientific knowledge aimed at maximizing animal productivity. However, under the aegis of neoliberal and globalized capitalism, this field began to operate as a radicalized biopolitical instrument aiming not only at controlling life but at programming it for exhaustion and disposal. The confined, mutilated, and instrumentalized animal body is no longer deemed a subject of life, being treated as a disposable productive unit, that is, a body the existence of which is only legitimized as long as it generates economic value.

It is at this point that zootechnical necropolitics imposes itself as a necessary concept. Unlike Foucaultian biopolitics (which manages and optimizes life), necropolitics, in Mbembe's words, fabricates death zones amidst life insofar as it produces living bodies that are treated as the living dead, subjected to agony, confinement, abandonment, and permanent exposure to pain¹, which create worlds of death with themselves, here encompassed by the concept of "within the farm gate." This is precisely the fate reserved for laying hens and breeding sows in intensive production systems, the life of which is reduced to an assembly line in which each heartbeat is measured by the number of eggs or offspring they can generate.

The consolidation of zootechnical necropolitics as a regime for governing animal death finds historical support in the technical-scientific restructuring of the field in the post-war period, especially by what is known as Green Revolution. This process, promoted by geopolitical and corporate interests, industrialized agriculture in the countries of the Global South under the pretext of modernization and the fight against hunger. The Green Revolution inaugurated a new productive rationality based on genetic standardization, intensive use of agrochemicals, mechanization, and submission of nature cycles to the logic of economic efficiency^{5,6}.

This same paradigm was extended to animal production, consolidating what is known as the Protein Revolution⁷, a process of radical industrialization of livestock systems that literally transformed animals into a factory/machine, which Steinfeld and collaborators⁸ named as the livestock revolution.

In this model, animal bodies began to be treated as biological machines in controlled environments, which gave rise to the concentrated animal feeding operations model, characterized by genetic standardization, extensive use of antibiotics, artificial environmental control, and a very high degree of specialization of the animal body the⁹, accompanied by intensification of research in animal science. In the case of laying birds, this materializes in strains highly selected for intensive laying that are kept under artificial photoperiods and a controlled diet, suffering beak trimming and the complete deprivation of

their natural behavior¹⁰. This regime creates a biologically controlled, existentially mutilated life in which the animal survives as long as it is functional to the system, dying the moment it ceases to be so.

This trajectory shows that, far from being an anomaly, zootechnical necropolitics constitutes the backbone of the capitalist mode of production, especially in peripherally capitalist countries under the current neoliberal and globalized phase. Such necropolitics organizes suffering as an acceptable and often unquestionable externality, legitimizes confinement as an efficiency technique, and dissolves animal subjectivity under layers of technocracy and scientific neutrality. It is, thus, a regime that manufactures living bodies in a state of slow, naturalized, and profitable death. This historical path enables us to understand the genesis of zootechnical necropolitics as a form of government of life and death in contemporary agroindustry.

Ethical, epistemological, and political implications

The formulation of the concept of zootechnical necropolitics shifts the debate on animal production from the technical to the ethical-political level. What was once seen as a management problem becomes a matter of sovereignty and justice. "Within the farm gate" reveals the blind spot of scientific modernity: the place in which instrumental rationality transforms life into an economic variable and legitimizes violence under the name of efficiency.

From the epistemological point of view, this perspective requires a review of the very status of zootechnical knowledge. Applied science becomes a technology of government by naturalizing pain as an experimental datum and death as a stage of the productive process. To recognize this implication is to acknowledge that scientific neutrality is often the institutional language of necropolitics.

From an ethical point of view, the concept imposes a radical expansion of bioethics. It is no longer enough to discuss "animal welfare" in terms of mitigating suffering: it is necessary to question the system that produces it. Critical bioethics, in this sense, becomes a field of epistemological resistance capable of repoliticizing the relationship between technique, profit, and suffering.

Politically, the “within the farm gate” zone of exception shows the privatization of sovereignty over life. The State delegates to capital the authority to decide who or what lives and how they die, transferring to the market the biopolitical and, by extension, necropolitical function. By bringing this space to visibility, the concept of zootechnical necropolitics exposes the pact between science, property, and power and reaffirms the place of interspecies ethics and the post-productivist transition as a field already in dispute but still insufficiently explored in analyses of animal production in peripherally capitalist countries.

Inscribing zootechnical necropolitics in this horizon seeks to further the debate and reveal the mediations between technique, power, and economic dependence that sustain the regime of exploitation “within the farm gate.” In summary, the ethical, epistemological, and political implications of this reading, rather than ending with criticism, point to the need to reform scientific thinking, public policies, and professional training. The challenge lies in shifting the axis of production to that of coexistence via the reconstruction of animal science as a science of life rather than that as managed death.

Final considerations

The reflections above seek to open new reading avenues by establishing the category of zootechnical necropolitics as a critical tool to understand the way in which human and non-human life is captured by contemporary productive rationality. What is observed within the farm gate is not only the technical management of bodies but the daily expression of a political economy of death that sustains the very ideal of progress.

This picture takes on even more dramatic contours in peripherally capitalist countries, in which, as Luis

Felipe Miguel observes¹¹, the structural conditions of dependence, financialization, and institutional fragility produce vulnerable democracies and expanded spaces of exception. In these contexts, necropolitics is not just a government logic but a systemic necessity: the price of subordinate insertion in the global economy. Intensive animal production (with its cruel and technified materiality) condenses the asymmetry between center and periphery, revealing that the boundaries of national sovereignty and public ethics literally end at the limits of the gate.

Thus, to think about zootechnical necropolitics in peripheral countries is to think about the continuity of colonial hierarchies under new guises: the colonization of life and the land now mediated by technoscience and the rhetoric of sustainability. Animal suffering, human illness, and environmental degradation become converging expressions of the same exploitation structure the legitimacy of which rests on the promise of development.

The ethical, epistemological, and political implications of this diagnosis point to the urgency of an epistemological shift: from production to coexistence, from numerical efficiency to responsibility, from scientific neutrality to interspecies justice. This inflection dialogues with what Eduardo Gudynas¹² calls *buen vivir*, a Latin American ethical-ecological paradigm that opposes productivism and proposes a coexistence based on reciprocity between human beings, animals, and ecosystems.

Future research in this field should seek to articulate the concept of zootechnical necropolitics with comparative studies between peripheral countries, the formulation of public policies sensitive to sentience, and the strengthening of epistemologies of the South that claim other ways of producing and living. To think about life “within the farm gate” is also to rethink the place of Latin America in the global order and, with that, to rehearse other ways of coexisting on the planet.

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Juliana Costa Velho de Abreu – Master – julianacostavelho@gmail.com

 0000-0002-9590-3880

Correspondence

Juliana Costa Velho de Abreu – Rua Professor Bernardino Rocha, 132, Parque São Jorge, Campos dos Goytacazes, CEP 28080-176. Rio de Janeiro/RJ, Brasil.

Data availability: All data used or generated in this study are described and presented in full in the body of the article.

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