



Animal Sex in Public

Warping Time and Sexuality in the Zoo

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Abstract Contemporary zoological gardens are hoping to delay the sixth mass extinction through captive breeding of endangered species. This article explores the dominant temporal orders invoked by managing animal sex in captivity in order to unfold unnatural histories of the zoo. Departing from the queer critique of reproductive futurism, it demonstrates that in the modern zoo, reproduction is removed from sexuality. By mapping out the more-than-human dimensions of chronopolitics at the zoo, this article unravels the complex process of transposing sexual acts into temporally fixed sexuality. To account for multiple pasts and futures of captive sex, this analysis employs the category of queer animality. Tracing the fascination with animal homosexuality to early sexological taxonomies, this article argues that anchoring sexual identity in animality is an anachronistic move that rests on the myth of timeless nature. At the same time, the sexological distinction between constitutional and circumstantial homosexuality relies on two types of teleological temporality: developmental and degenerative time of evolutionary change. The zoo is not only a place where education of desire occurs along the deep time line of natural history but also a contested terrain of captivity that can cancel any claim to atemporal naturalness.

Keywords temporality, zoos, extinction, animal sexuality, queer time

Without a living subject, there can be no time.

—Jakob Johann von Uexküll, “A Foray into the Worlds of Animals and Humans”

You bring your knees in tight

But it's the pelvic thrust

That really drives you insane

Let's do the time warp again

Let's do the time warp again

—“The Time Warp,” *The Rocky Horror Picture Show*

In May 2015, an article in the *New York Times* featured a bizarre description of turtle genitalia. The reptilian penis was compared to a medieval weapon “equipped with fleshy spikes, protuberances and lobes, . . . designed to navigate the female’s equally complex reproductive organ, located inside a [B]yzantine chamber called the cloaca.”¹ Soon the anachronistic anatomical language of ancient architecture and weaponry gives way to a passage that resembles science fiction, in which turtle sex is stimulated with an “electrical probe to induce a partial penile erection” and a “fiber-optic endoscope to locate the compartment leading to [the female turtle’s] oviducts.”² These rather racy excerpts from the Science section of the newspaper might seem like an outré cyber erotica but are in fact part of a story detailing the conservation efforts of an international team of scientists, zookeepers, and veterinarians to save the Yangtze giant softshell turtle.³ These large freshwater turtles are critically endangered. With only two specimens left in captivity, members of Turtle Survival Alliance gathered at the Suzhou Zoo near Shanghai to try the artificial insemination method as the last resort to save the species from extinction. The juxtaposition of the ancient creatures on the brink of extinction with the futuristic devices of assisted reproductive technology presents the zoo as a time-warping vehicle forestalling the catastrophe of species loss. Since the mid-twentieth century, the zoo’s focus on *ex situ* conservation has symbolically shifted from a Garden of Eden that cultivated aesthetics of nature for urbanites to a kind of Noah’s Ark, in which the management of captive breeding programs is designed to arrest the crisis of species death. Managing animal sex to maximize their breeding capacities has become key in contemporary zoos that focus on reproducing species into the future.

To uncover the epistemological mechanisms behind the process of making reproductive sex into a fact of life at work in the zoo, this article historicizes the seemingly perennial nature of captive sex. In what follows, I show how contemporary zoos became bound to what Lee Edelman calls “reproductive futurism” through their mission to breed endangered species.⁴ The urgent temporality of extinction dictates the measures undertaken to save endangered species and shapes the goals for contemporary zoos as wildlife management institutions. Departing from Edelman’s critique, I show that in the context of zoos, reproduction, while becoming a function of species survival, is distanced from sexuality. I argue that this is made possible through the construction of sexuality as a taxonomic category defined by the sex act. Drawing on queer theory, I explore what kinds of temporalities are invoked by animal nonprocreative sex acts: Are they treated

1. Nuwer, “Scientists Make Novel Attempt.”

2. Nuwer, “Scientists Make Novel Attempt.”

3. Gitte Westergaard and Dolly Jørgensen show how the strange-looking male sexual organ had been made hypervisible since the first Western scientific description of the species in 1873. In their analysis of the preserved remains of Cù Rùa, the last male giant Hoàn Kiếm softshell turtle, they note that the display features the preserved penis detached from the body, thus making visible the turtle’s sexuality and infertility (“Making Specimens Sacred,” 74).

4. Edelman, *No Future*.

as incidents out of sync with the reproductive routine, as temporary glitches in the regular flow of life, as anachronistic evolutionary dead ends, or rather as a progressive proliferation of sexual identities? What do “gay” penguins or vultures offer for human queer politics? Is a turn toward queer animality a departure from the history of sexuality?

In this article I argue that desires once marked contrary to nature have their own unnatural history that reveals itself in the chronopolitics of captive sex. Although I define the elusive category of queer animality broadly—as acts and desires that disrupt the monogamous, heterosexual, penetrative sexual encounters expected of humans and projected onto nonhuman animal sexuality—by following historical actors, namely, the first sexologists who took interest in queer animality, this article places emphasis on same-sex encounters. I start by mapping out the dominant temporal orders of the seemingly linear kinship structures and reproductive cycles championed by the institution of the zoo. In this sense, I navigate what queer theorist Dana Luciano calls chronobiopolitics, or “the sexual arrangement of the time of life.”⁵ She deploys a wide understanding of sexuality as a spatiotemporal phenomenon pervaded by practices, behaviors, and materialities that are not obviously sex-related. In another queer intervention into the spatially oriented biopolitical analyses of sexuality, literary scholar Elizabeth Freeman theorizes chrononormativity, or “a mode of implantation, a technique by which institutional forces come to seem like somatic facts.”⁶ I investigate the implications of chronobiopolitics and chrononormativity practiced in the zoo for species survival. While Luciano’s and Freeman’s focus on embodied chronologies expands the Foucauldian analysis of modernity into new territories of biopolitical control, my analysis builds on this approach to extend it into the entanglement of human and nonhuman histories of sexuality. I do so in order to track the undercurrent of perverse pauses, stalls and nonsequential and time-warping moments in the unnatural history of animal sex in captivity.

In her book on orangutan rehabilitation centers in Borneo, anthropologist Juno Salazar Parreñas writes about four timescales at which anti-extinction care work occurs: the microscale of affective encounters, the individual human and nonhuman life stories, the *longue durée* of historical processes such as colonialism that span generations, and finally the epochal time of the Anthropocene.⁷ Such multiscalar temporality is also at work in the zoological garden, which itself forms a heterotopic space that collapses several modes of time. In the era of mass extinctions, the zoo functions as a mnemonic device tuned to overlapping modes of time: slow time of evolutionary change and quick time of capitalist consumption, leisure time of zoogoers and working hours of zookeepers, sacred time of transcendental contact with nature and secular time of mass entertainment, linear time of industrial modernity and cyclical time of circadian and reproductive rhythms, desperate time of human efforts to respond to the sixth mass extinction and

5. Luciano, *Arranging Grief*, 9.

6. Freeman, *Time Binds*, 3.

7. Parreñas, *Decolonizing Extinction*, 8.

reflective time of grieving species loss.⁸ Caught in the dialectical clasp between the timelessness of the grand narrative of Nature and the inevitable movement forward of the arrow of time impelled by capitalist productivity and evolutionary progress, the zoo offers itself as a potent epistemic site for analyzing the temporalized aspects of sexual subjectivities. As a space of human-animal encounters with a broad educational agenda, the zoo affords a concentrated view on the traffic in meanings attributed to the powerful entanglement of sex and nature.

“Giving Science a Holiday Air”: Zoos and the Education of Desire

A visit to a zoological garden can transport one through an illusion of timeless nature. But the institution has its own history that is closely tied to major social changes brought by Western modernity, including trends in urbanization, capitalist modes of production, and practices of colonialism that expanded the exotic animal trade.⁹ When animal collections became available for a wider public in the nineteenth century, the modern zoo accommodated what historical anthropologist Ann Laura Stoler calls the “education of desire” that was central to the construction of the European bourgeois self.¹⁰ Offering a glimpse into the natural worlds of colonized lands and their exotic others, the public zoo provided more than just popular lessons in natural history—it was a place to learn about the natural order at a time when the social order of the metropolis was changing. Industrial commodity production had transformed sexual division of labor in Western societies, which had previously centered on the household, and enabled wage-earning individuals to survive outside of familial structures. Furthermore, the growth of urban environments accommodated the newly won leisure time of wage earners in a variety of ways. In the aftermath of the loosening of traditional family structures powered by free labor, erotic pleasure was divorced from reproductive sexuality. As numerous historians of sexuality point out, in this way erotic pleasure gained the potential to become the driving force for sexual identity formation on the brink of modernity.¹¹ However, before we arrive at the point of emergence of homosexuality as an identity category tied to erotic aspects of life, some more careful untangling of the knots in the relationships between capitalist temporality and sexuality still needs to be done.

As well as having a huge impact on how bodies were organized along the assembly line, industrial capitalism also reorchestrated time. In her reflection on queer time, Freeman traces the gradual transformation of “cyclical time” into the rationalized domestic labor attuned to industrial rhythms of timetables, schedules, calendars, and daily

8. For discussion of zoos as places of remembrance, see Holtorf, “Zoos as Heritage”; “Zoo as a Realm.”

9. For classic works on zoo history, see Baratay and Hardouin-Fugier, *Zoo*; Rothfels, *Savages and Beasts*; McDonald and Vandersommers, *Zoo Studies*.

10. While Stoler highlights that this identity-building project occurred alongside the racialization of sexuality (and sexualization of race) through the colonial contact, my work shows that the zoo as a colonial institution was an important venue for the education of desire in the metropole. See Stoler, *Race*.

11. See D’Emilio, “Capitalism and Gay Identity”; Chasin, *Selling Out*, 10–12; Chauncey, *Gay New York*, 13.

routines.¹² While the secularized time of unpaid domestic female productivity replaced religious cyclical time, new forms of ritualization entered family time, carving out space for mass entertainment. In this new mode of time, the Sabbath transformed into the weekend, which constituted a perfect opportunity for family visits to the zoo. Consider the act establishing the New York Zoological Garden from 1895 that regulates its accessibility to the public: “Admission to the said garden shall be free to the public for at least four days, one of which shall be Sunday, in each week.”¹³

Within this new secular temporality, zoological exhibitions provided scientifically approved contact with the natural world and bolstered narratives of civilizational progress. An 1868 advertisement for the Central Park Zoological Gardens in the *New York Times* described the overlapping of science and popular education: “The Zoological Gardens have rendered real service to natural history by popularizing the knowledge of animals, and giving science a holiday air. They add to the pleasures of the cities and public education, civilization and morality.”¹⁴ This coupling of civilizing and moralizing mission that the zoo was set to fulfill suggests not only a continuation of discourses legitimizing colonial domination but also the existence of anxieties about certain kinds of urban pleasures.¹⁵

The process of “giving science a holiday air” is well documented by changing rules regarding zoo admissions, illustrating the outreach of these institutions and their main target groups. For a long time, entry to the London Zoological Gardens was restricted to the members of the Zoological Society or was dependent upon a member’s invitation supplemented with a paid fee, rendering the zoo an elitist facility geared toward distancing the bourgeoisie from the working classes and their “vulgar tastes.” According to Patrick Wirtz, “As the bourgeoisie amassed and accumulated resources, including leisure time, they indulged in an extensive consumer culture and pursued special interests as elite pastimes.”¹⁶ From the 1850s the Zoological Society started extending its admission policies by reducing the entry price.¹⁷ But accompanying changes in familial time management, the gardens shifted from being an institution for the privileged social classes—such as gentlemen collectors and amateur natural historians—toward being a public venue combining their educational mission with entertainment for wider audiences.¹⁸

Public institutions such as museums and zoos arranged their display according to more or less coherent narratives and were saturated with multiple meanings beyond

12. Freeman, *Time Binds*.

13. New York Zoological Society, “Act of Incorporation,” 65.

14. *New York Times*, “Zoological Gardens,” 5.

15. The environment of the modern metropolis created ample opportunities for nonnormative sexual practices to be realized in the shady folds of urban spaces. Recreational green spaces such as public parks and zoological gardens were designed in response to such dangers of degeneracy, the landscaping choices intended to cultivate moral virtues and prevent perversion. That is, the zoo was part of the public health infrastructure of the city.

16. Wirtz, “Zoo City,” 66.

17. Åkerberg, *Knowledge and Pleasure*, 117.

18. For a detailed discussion on the question of public access, see Ito, *London Zoo*, 81–106.

the scientific. Nevertheless, the power afforded by natural history to such zoological displays lies in a linear scheme of deep time devised to turn social formations into facts of life. The educational mission of the zoo structured the displays and warranted a process that in critical pedagogy is called “the hidden curriculum”—the transmission of values, norms, and beliefs as an intrinsic side effect of the learning process. Helena Pedersen further develops this concept in relation to the zoo into what she terms *zoocurriculum*, or “a species-coded hidden curriculum structuring human-animal boundary work as well as the position and possibilities of nonhuman animals in human society.”¹⁹ Stemming from critical animal studies, Pedersen’s work focuses mostly on the processes that position the human as a privileged species and that through display instruct observers about their possible relations to animal others. Building on her observations, I suggest that the boundary work of the *zoocurriculum* is a temporalized practice that includes the transmission of gendered, raced, and sexualized ideas mapped onto the nonhuman animals on display, and back to human subjects again. It turns notions such as the family, monogamy, gender binary, and heterosexuality into transparent objects invisible to those whom they privilege. The zoological display not only projects anthropocentric ideas about animal behavior—often with a strong focus on courtship rituals, pair-bonding, and mating modeled on human heterosexual familial structures—but also fixes them as normative by placing animal specimens and their human observers along the deep time line of natural history. Arranging animals on display in breeding pairs or family units (while often ignoring rich sexual and gender diversity in the animal kingdom) suggest to viewers that the gender binary and the heterosexual family model transcend species boundaries. They appear static in evolutionary time. In this way, realizing the hidden *zoocurriculum* complements Freeman’s *chrononormativity*, or a temporal mode of disciplining bodies. As such, it allows for organizing “individual human bodies toward maximum productivity,”²⁰ but also for making animal bodies available for observation as timeless points of reference to the normative conceptions of the family, the nation, and even the human.

Taxonomic Temporalities

Modern zoological gardens in the nineteenth century accommodated classificatory systems when organizing their collections according to classes or families. But taxonomy has been more than an organizational principle for spatially arranging the variety of creatures on display—it formed an epistemic modality that produced the notion of species as a systematizing category in life sciences. For Foucault, this taxonomic order also presents itself as a temporal phenomenon:

All the creatures that taxonomy has arranged in an uninterrupted simultaneity are then subjected to time. Not in the sense that the temporal series would give rise to a

19. Pedersen, “Animals on Display,” 3.

20. Freeman, *Time Binds*, 3.

multiplicity of species that a horizontally oriented eye could then arrange according to the requirements of a classifying grid, but in the sense that all the points of the taxonomy are affected by a temporal index, with the result that “evolution” is nothing more than the interdependent and general displacement of the whole scale from the first of its elements to the last.²¹

The taxonomic table and its indebtedness to the evolutionary logic demonstrates how time has been spatialized and space temporalized in the zoo. This is where the “horizontally oriented eye” can, in fact, meet the scale that is curated and embodied in the collection. In this sense, zoological taxonomies collapse different stages of evolutionary development into one continuous time line. As a system of knowledge, taxonomy installed the idea of developmental progress at the phylogenic and ontogenic levels.

Interpreting Foucault’s theory of biopower and his scattered references to temporal regimes, Freeman notes that “temporality is a nonreproductive, but nevertheless somatic and material, mode of sensory receptivity that collates bodies in relations of affinity across space.”²² Such a definition not only challenges the naturalness of chrononormativity but also opens up the possibility for queer time to emerge, as she claims, “from within, alongside, and beyond this heterosexually gendered double-time of stasis and progress, intimacy and genealogy.”²³ Species taxonomies outline the progressive timeline of heteronormative reproduction, yet the same classificatory approach has been generative in wayward temporalities of queer intimacy. Once the taxonomic table attempts to embrace the aberration of the norm, it makes the abnormal available for inspection. In the late nineteenth century, the new science of sexology aimed at cataloging erotic inclinations labeled “contrary to nature” by some, often borrowing from the methods and language of naturalists.²⁴ For Foucault to argue that this is exactly when the homosexual emerged as a “species” not only points to the generative character of psychiatric catalogs of sexual perversions but also implies that sexuality was conceived as a taxonomic category.²⁵

While modern sexology is typically understood as a medical science emerging from psychiatry, it also drew on the taxonomic methods of zoology.²⁶ The very speciation of those sexualities that exist outside the reproductive norm warps the time line of evolutionary progress. Theories of degeneration allowed the possibility of devolution. Drawing from the Lamarckian notion of heritability of acquired characteristics, degenerationists accounted for environmental factors in shaping sexual lives.²⁷ This way they

21. Foucault, *Order of Things*, 164–65.

22. Freeman, *Beside You*, 8.

23. Freeman, *Time Binds*, 23.

24. Bauer, *Sexology and Translation*; Fuechtner, Haynes, and Jones, *Global History*; Kahan, *Book of Minor Perverts*.

25. Foucault, *History of Sexuality*, 43.

26. For a detailed genealogy of “biological sexology” and a queer interpretation of Charles Darwin’s theory of evolution, see Brooks, “Darwin’s Closet”; Bauer, “Darwin, Marañón, Hirschfeld.”

27. For a premodern history of sexuality in relation to environmental factors, see LaFleur, *Natural History*.

contributed to the process of forging sexual identity into an inborn condition, regulated through biogenetic mechanisms. Sexologists understood sex itself as a natural inclination, but the object of desire could deviate from the reproductive norm. For example, in *Psychopathia Sexualis* (1886) Richard von Krafft-Ebing contends that the propagation of the human species is driven by a natural instinct and that “in coarse, sensual love, in the lustful impulse to satisfy this natural instinct, man stands on a level with the animal.”²⁸ Medical and psychiatric classifications of sexual disorders often viewed patients as being stuck at the level of animalistic lust. With the proliferation of encyclopedic records of sexual deviations, same-sex desire was understood as an anachronistic state through associations with nonhuman animality coded in sexological terminology. The use of notions such as “atavistic retrogression” or “psychosexual hermaphroditism” relied on the idea of regression to a primordial state usually attributed to lower animals. According to sexologists, these temporal transgressions made themselves visible in the bodies, behaviors, experiences, feelings, desires, and fantasies of their patients. Devolutionary animality lurked behind scientific taxonomies of “abnormal” sexualities. But what was the approach when nonhuman animals were themselves understood as sexual subjects?

For sexual reformers, such as Magnus Hirschfeld or Havelock Ellis, including queer animals in their ever-expanding taxonomies presented an opportunity to evidence the naturalness and universality of homosexuality across species and time. But they did not embrace all animal same-sex acts as natural, determined on the pivotal distinction made between constitutional and circumstantial homosexuality. Based on a survey of natural history writings, scientific journals in zoology, and observations by zoo staff, Hirschfeld classified three groups of homosexual tendencies in nonhuman animals: “(1) Animals that pair up with individuals of the same sex out of necessity or by mistake; (2) those in whose case the decision is undecided whether or not it can also have to do with inclination, and (3) those in whose case you have to assume it is a pronounced same-sex orientation based on accompanying circumstances.”²⁹ Given that most of the observations of same-sex sexual behavior referred to in this quote concerned domestic or zoo animals, the circumstances were indeed critical for determining whether same-sex attraction was a temporary effect of captivity or rather an expression of an innate and hereditary predisposition. Ina Linge demonstrates that Hirschfeld criticized the artificial conditions of laboratory experiments on “sexual intermediacy” in nonhuman animals and “was deeply interested in exploring homosexuality in its natural habitat.”³⁰ What about the artificiality of zoo captivity?

At the turn of the twentieth century most sexologists agreed that sex-segregated environments produced only temporary homosexual bonds, for example, among prisoners, men aboard ships, women in textile factories, girls or boys in boarding schools.

28. Krafft-Ebing, *Psychopathia Sexualis*, 1.

29. Hirschfeld, *Homosexuality*, 719.

30. Linge, “Potency of the Butterfly,” 61.

In his comprehensive genealogy of same-sex sexuality, Ellis (referring to another sexologist, Albert Moll) also included zoo animals among such “circumstantial homosexuals”:

Dr. Seitz, Director of the Frankfurt Zoological Garden, gave Moll a record of his own careful observations of homosexual phenomena among the males and females of various animals confined in the Garden (*Antelope cervicapra*, *Bos Indicus*, *Capra hircus*, *Ovis steatopyga*). In all such cases we are not concerned with sexual inversion, but merely with the accidental turning of the sexual instinct into an abnormal channel, the instinct being called out by an approximate substitute, or even by diffused emotional excitement, in the absence of the normal object.³¹

Given that the primary research subjects for sexologists were human, it is safe to assume that Ellis’s conclusions were informed by the well-established belief that captivity contributes to a temporary deviation from heterosexuality. With its longstanding analogy to prison confinement, the zoo was easily regarded as a place that harbored homosexual behavior simply as an outlet for the biological sex drive.³²

Ellis defined homosexuality broadly to include such circumstantial sex acts and considered it “a phenomenon of wide occurrence among all human races and among most of the higher animals.”³³ He reserved the term “sexual inversion” for cases of “constitutional abnormality” because it referred to cases that remained unchanged throughout the life of the individual. This distinction between constitutional and circumstantial perversions echoes an earlier debate among sexologists on whether homosexuality should be regarded an acquired vice or a congenital disorder. This debate was largely framed by the possible legal consequences ensuing from either explanation of sexual perversion. Regardless of their commitment to reformist or pathologizing definitions of same-sex desire, the most prominent sexologists invested in the congenital model that explained “unnatural” feelings and acts as inborn anomalies or degenerative defects inscribed deeply into individual bodies and life histories. The gradual fortification of the congenital model concentrated the initial polyvocality of sexual taxonomies into a narrower focus on “true” inverts and homosexuals. In *The Book of Minor Perverts*, literary scholar Benjamin Kahan recovers the forgotten (or dismissed) historical etiologies of noncongenital sexualities. He notes that “the temporality of congenitality—its implicit ‘always’—produces the body as an especially productive site for sexual identity” and biopolitical control.³⁴ This suggests that, in contrast, the ephemeral temporality of circumstantial homosexuality—with its implicit “sometimes”—is not a solid basis for identity formation. Or perhaps such queer temporality produces a more elusive subjectivity that resists classification.

31. Ellis, *Sexual Inversion*, 7.

32. For a historical analysis of prison sex, see Kunzel, *Criminal Intimacy*.

33. Ellis, *Sexual Inversion*, 83.

34. Kahan, *Book of Minor Perverts*, 15.

As Jennifer Terry poignantly observes, “animals help us tell stories about ourselves, especially when it comes to matters of sexuality.”³⁵ The first sexual rights advocates devoted parts of their scientific classifications of the occurrences of homosexuality to the animal kingdom to anchor homoerotic desire in the idea of timeless nature. Although queer animals have been utilized as evidence of naturalness of homosexuality and gender variance in humans, same-sex sexual behaviors among zoo animals are still often reported as momentary, circumstantial, and ephemeral. The zoo forms an ambiguous terrain for queer emancipation: on the one hand, as a space of confinement it might serve as a risky political tribune, while on the other, the transcendental idea of Nature offers a powerful safeguard for a newly gained identity.

Zoological Reproductive Futurism

Even though for early sexologists sexual identity encompassed anatomical and physical markers, behaviors, and desires, in the course of the history of human sexuality sex acts eventually became the grammar of sexual orientation. In contrast, for nonhuman animals, sexuality was typically reduced to the sex act. Any sexual encounter that defies the reproductive norm of the species is primarily considered outside the realm of sexuality. In most biological and ethological studies, nonreproductive animal sex is considered as a sum of stand-alone acts that can be scientifically measured and explained in relation to reproductive heterosexuality. Consider a report on oral sex observed in captive brown bears published in the *Zoo Biology* journal. Over the course of six years, a team of biologists, conservationists, and veterinarians visited a Croatian sanctuary, where they documented exactly “28 acts of fellatio between two male bears in 116hr of observation (averaging one act per 4.1 observation hr; range 0.2–24 hr)” with each act lasting 168 ± 44.6 seconds on average.³⁶ These precise measurements account for the role of time in calibrating the sex act as observable evidence and unit of analysis. Additionally, focus on duration allows the scientists to demonstrate the long-term and recurrent character of this nonreproductive sexual behavior, while its apparent ritualization makes it a phenomenon that demands explanation. The authors give an overview of biological and ethological literature that suggests answers ranging from understanding homosexual behavior as supplementing heterosexual courtship, through pointing to its social function in establishing a hierarchy, to treating it as a pathology resulting from captivity, deprivation, or other external factors.

In a move that echoes medical case studies of early sexologists, the scientists supplement quantitative results from their observations with brief life stories of the research subjects: we learn that both bears were born in the wild, orphaned as cubs, and then raised together in captivity. Ultimately, these facts from the early lives of the two individuals provide a basis for explaining the nature of their sexual relation—the scientists

35. Terry, “Unnatural Acts,” 151.

36. Sergiel et al., “Fellatio,” 350.

interpreted this case of bear fellatio as resulting from an early deprivation of maternal suckling when the cubs were orphaned.³⁷ In an attempt to make sense of sexual activity that does not add to the reproductive success of the species, the biologists desexualize this behavior by describing it as “a substitute for teat-sucking that also resulted in a let-down of substitute ‘milk.’”³⁸ By applying the logic of substitution and “counterfeit sex” they repeat the tropes common in early twentieth-century psychiatric sexology of circumstantial homosexuality. Additionally, the scientists temporalize this behavior as “infantile,” suggesting that the bears deprived of maternal care got stuck on an early stage of ontogenic development. In short, they conclude that, despite being sexually stimulating, the act of fellatio in bears does not count as sex.

These meticulously timed queer sex acts were measured against the evolutionary imperative of reproduction imagined as the final stage of psychosexual development. The primacy of sexual reproduction in evolutionary theory contributes to this marginalization of nonreproductive sexuality understood as arrested development in biological sciences. Against this logic, queer biologists demonstrate that homosexuality in nonhuman animals does not violate any evolutionary laws; rather, it fits well into the mechanism of natural selection.³⁹ Still, many scientific explanations of this phenomenon tend to rehearse the outdated narrative of sexual inversion, but only in its circumstantial variant. As in the case of bears, queer sex acts in the zoo are still easily dismissed as abnormal effects of deprivation and captivity, and are likely to be bracketed as deviant, backward, or redundant from the privileged viewpoint of heteronormativity. Sociobiological attempts at explaining animal homosexuality as a form of companionship, a rehearsal for heterosexual courtship, or altruism that supports the proliferation of the abstracted “selfish genes” of the close kin also desexualize it in order to force fit these nonnormative sexual expressions into the reproductive model of sexuality. Dominant representations of animal sex as naturally motivated by the reproductive drive render same-sex behavior in the animal kingdom an impossibility, an aberration, or a temporary confusion at best.

However, in some cases, zoos embrace animal homosexuality in its congenital variant—but only without sex. Such desexualization via the reproductive model is visible in the way that most zoos deal with homosexual behavior among their animals by redirecting attention from queer sex acts toward the pair’s parenting skills. Homosexual animal couples can earn their place within the zoological reproductive matrix by being recast in the role of good parents. The many cases of “gay” penguins being entrusted eggs to hatch indicate how common this strategy is when it comes to birds and other oviparous (egg-laying) animals.⁴⁰ This is because the final breeding decision stays with

37. Sergiel et al., “Fellatio,” 351.

38. Sergiel et al., “Fellatio,” 351.

39. Bagemihl, *Biological Exuberance*; Roughgarden, *Evolution’s Rainbow*; Sommer and Vasey, *Homosexual Behaviour*.

40. For a discourse analysis of the gay penguin narratives, see Talburt and Matus, “Orienting Ourselves.”

human keepers who can allow same-sex couples to incubate a surplus egg or not. In 2017 Artis Amsterdam Royal Zoo announced that the first successful hatching in five years in their griffon vulture colony was due to a pair of male birds. Their keeper described them as “a very tight couple” showing all the typical pair-bonding behavior, “but, as two males, the one thing they could not do was lay an egg.”⁴¹ From the point of view of the zoo staff this was a clear win, because by harnessing same-sex pair-bonding behavior (that in birds often includes nest building and paternal care), they were able to maximize the reproductive success of the captive colony. In this case, the egg-hatching substitutes for delivery in a miraculous act of male birth-giving. What is missing from the story is gay sex, which is rendered irrelevant in the realization of a heteronormative fantasy of family values.

The context of the zoo matters for understanding the role of sex in chronobiopolitics. Especially endangered species are expected to engage in reproductive sex only. The pronatalist speculative futures foreground the act of heterosexual procreation as an assurance of species survival and the maintenance of social order through reproduction of living matter, natural resources, and a labor force. Feminist scholars studying the different modes of reproducing animals expose the intensive traffic between human and nonhuman reproductive technologies and show that it is crucially linked with the reproduction of social systems of power and identification.⁴² Biological reproduction conceptualized as a vehicle for continuing the social body and its structures into the future entails prolonging the life of institutionalized fantasies of the nation and family, capital and class. The practices of breeding nonhuman animals in the zoo carry codes of gender and sexual normativity that are central for the production of chrononormative discourses of kinship, decent, and bloodline. The fleshy bounds of these biological and semiotic forms of lineage aid in imagining time as a linear progression forward, from generation to generation. Animals that gained homosexual subjectivity fit into this narrative as long as they aid in reproduction of the species. In this way the zoological anti-extinction machinery concerned with issues of sustainability and biodiversity is an expression of environmental futurism.

Based on the idea of reproducing species as a countermeasure against extinction, the temporality of the zoo critically depends on what queer scholar Lee Edelman calls reproductive futurism. In his manifesto, Edelman discusses the temporality of reproduction in relation to the figure of the Child, which represents the heteronormative fixation on securing the survival of social reality through “the compulsory narrative of reproductive futurism.”⁴³ By linking queerness to the Freudian death drive, Edelman intends to disjoin queer desire from the regime of life understood as an ideological figuration of

41. Baker, “Gay Vultures.”

42. See Ritvo, “Possessing Mother Nature”; Franklin, *Dolly Mixtures*; Frieze and Clarke, “Transposing Bodies.”

43. Edelman, *No Future*, 21.

progress. He argues that “the figure of this Child seems to shimmer with the iridescent promise of Noah’s rainbow, serving like the rainbow as the pledge of a covenant that shields us against the persistent threat of apocalypse now—or later.”⁴⁴ Contemporary zoological gardens often employ the mythology of Noah’s Ark to describe their conservation mission.⁴⁵ Compulsory biological reproduction of species in the zoo is a future-oriented ideological formation, securing the world as we know it, with a given inventory of living species to be sustained. According to this narrative, every birth of an endangered species brings the zoo closer to achieving its wildlife conservation goals. Every giant panda or polar bear cub contributes to its species’ reproductive success and becomes a token in the environmental politics of cuteness. Every rare egg hatched delays the crisis of extinction. Every spectacular birth broadcast from the zoological backstage serves as lively proof of the effectiveness of the zoo’s salvation efforts.

Nonetheless, zoological reproductive futurism is mostly realized via the mundane management of captive animal populations organized within the bureaucratic structures of species survival plans (SSPs), population management plans (PMPs), and taxon advisory groups (TAGs), all developed during the 1980s. The SSPs provide detailed recommendations about which two individual animals should be bred, based on their pedigree and health. In order to maintain maximum genetic diversity, they also define the limits of reproducing animals in captivity—after a certain point of breeding, some animals are administered contraceptives, while the so-called “surplus animals” or “genetically redundant” individuals are often culled.⁴⁶ With its stakes in both bio- and necropolitics exercised on animal bodies, the zoo’s administrative apparatus carefully selects those nonhuman children/cubs that will be loved by the public and promised a future within the zoological industrial complex. Survival is achieved through the preservation and proliferation of genetic material, making zoo animals into living genetic reservoirs for their species. In the dominant zoological narrative, the promise of genetic immortality and the consistent upholding of species variation not only privilege sexual reproduction over asexual forms of replication but also indirectly disavow homosexuality imagined as an evolutionary dead end. What if the only remaining female giant softshell turtle was not interested in mating with any of the remaining captive males? Modern assisted reproduction technologies can overcome such hurdles, in some cases rendering the sex act obsolete.

Time of Extinctions

The most advanced technoscientific modes of reproducing animals practiced at zoos nowadays collapse different modes of temporality with the use of genetic engineering, cloning, in vitro fertilization, and cryopreservation of gametes. These biotechnological

44. Edelman, *No Future*, 18.

45. Minter, Maienschein, and Collins, *Ark and Beyond*.

46. See Chrulew, “Managing Love.”

tools arguably put queerness on the horizon, considering the promiscuous possibilities offered by modern transbiology—“a biology that is not only born and bred, or born and made, but made and born.”⁴⁷ In the wake of the sixth mass extinction, transbiology still holds an ambiguous status—it might be a promise of salvation, or that of monsters.⁴⁸ As sociologist of science Carrie Friese illustrates in *Cloning Wild Life*, the techniques of interspecies nuclear transfer (popularly known as cloning) use domestic animals as egg donors and surrogates in order to reproduce rare specimens. For example, the 2003 project of cloning an endangered species of wild bovine called Javan banteng involved extracting the nucleus from a skin cell obtained from a captive specimen before it died in 1980—the tissue sample was stored in the Frozen Zoo at the San Diego Zoo Institute for Conservation Research. The DNA sample was then transferred into an ovum of domestic cow, and the resulting embryo was implanted into a cow acting as a “maternal container.”⁴⁹ Animals born thanks to the method of nuclear transfer are in fact interspecies hybrids of banteng and domestic cattle.

On the epistemological level, techniques of cloning perform several tasks at the same time: they challenge the established species classifications, reevaluate the idea of genetic purity, and redefine the distinction between sexual and asexual reproduction. More importantly for this discussion, these transbiological techniques radically warp the idea of linear temporality, as reproduction is made possible even postmortem with the use of cryopreserved somatic cell lines from deceased animals. In terms of temporal transgressions, Friese underscores that “cloning allows for biological time to be folded back and thus potentialized for the future.”⁵⁰ These transpositions also radically transform the role of zoos in the wake of the extinction crisis. The zoo serves as an archive, storing technical skills for administering life-prolonging technologies of reproduction, and as a repository of genetic memory for the future. The new Ark welcomes genetically engineered animals, matched through the data assessment software of the SSPs and “made to be born” in labs with the use of tissues stored in genome banks. In a broad perspective of wildlife conservation politics, the role of the zoo focuses more and more on shepherding the genomes of captive populations rather than on the animals themselves. This follows the logic of genetic essentialism, where the living animal is reduced to an expression of the genetic information that makes up its species being.

These levels of abstraction carve out new speculative futures for wildlife conservation management that rely on the production of durability and find their futuristic realization within the institution of the frozen zoo. Developed as genome banks, these collections store the cryopreserved cells of endangered species for future use in breeding them back from extinction. The largest facility of this kind, storing over ten thousand

47. Franklin, “Cyborg Embryo,” 171.

48. Haraway, “Promises of Monsters.”

49. Janssen et al., “Postnatal Management.”

50. Friese, *Cloning Wild Life*, 115.

living cell cultures, oocytes, sperm, and embryos, is trademarked as the Frozen Zoo. The Beckman Center for Conservation Research that runs it works in close collaboration with the San Diego Zoo Safari Park, which functions as “a critical safety net” for maintaining self-sustaining populations and ensuring biodiversity.⁵¹ As a database of animal life, the frozen zoo was designed to remember the past by freezing its potentiality for becoming an animal form. Matthew Chrulew observes that the “cryopolitics” of the frozen zoo has the power to “transform the relationships between humans, animals, and technologies, reorganizing space and time beyond familiar constraints in the interests of optimal efficiency and diversity. Animals no longer need be present or even alive to breed.”⁵²

The frozen zoo is a strangely taxidermic project—one that not only produces permanence in a gesture of bioremembrance but also aims at turning back time through creating an opportunity for reviving formerly extinct species. Specimens are scaled down to cell samples—diversity coded in a minimalistic karyotyped sequence of life trumps the aesthetics of fleshy forms or furry taxidermic sculptures. Although this vision of reproducing life is futuristic, it remains rooted in antiquated collection principles. In this way, the contemporary zoo epitomizes what Ruth A. Miller calls “the reproductive thought” that renders nonhuman life into a biopolitical norm. She underscores its relationship to temporality by demonstrating “that this thought—this reproductive activity, this life, generating and flourishing—is not just memory, not just a sense of futurity, not just a sense of the agelessness of time, but the sickly, sticky state that is nostalgia.”⁵³ Although Miller models her nonhuman nostalgia on the radically nonhuman slime, I argue that zoo specimens also function simultaneously as embodied matter and abstracted data in the reproductive-informational system of the zoological collection. As such, reproduction in the zoo becomes removed from sexuality, just to be harnessed for the politics of survival.

Managing captive reproduction reveals how much work goes into upholding the natural facade of reproductive sexuality. The requirement of making animal collections sustainable along with the principle of genetic diversity dictate the reproductive choices made in the zoo, with some animals bred into the future and some “bred for extinction.”⁵⁴ The latter roughly translates into spaying, neutering, or using pharmaceutical contraception to stop “genetically redundant” animals from breeding. While for Irus Braverman the practices of controlled death at the zoo point to the paradox of pastoral power that needs to kill in order to let live, I believe it also implicates the zoo as a space of longing. This longing is for a world that most likely will never exist. It is a desperate

51. San Diego Zoo Wildlife Alliance, “Beckman Center for Conservation Research,” <https://science.sandiegozoo.org/who-we-are/beckman-center> (accessed June 22, 2021).

52. Chrulew, “Freezing the Ark,” 297.

53. Miller, *Biopolitics*, 42.

54. Braverman, *Zooland*, 174.

holding on to a moment in time that humans want to preserve forever. This longing embodies the fear of losing oneself.⁵⁵ Its nostalgic grip can be found in the myth of timeless nature that foregrounds dominant biological models of animal sexuality. Futuristic projects of de-extinction, rewilding, and cloning endangered species implicate reproduction as the key feature through which longing is dealt with in the zoo. But is it possible to grieve the loss of a whole species? Is loss on such a scale even possible to comprehend?

In 2019 the Wildlife Conservation Society reported that the last known female Yangtze giant softshell turtle had died in the Suzhou Zoo during recovery from anesthesia after the fifth attempt at artificial insemination.⁵⁶ Almost two years after this tragic loss, hope for saving the species from extinction was restored when Vietnamese conservationists confirmed that one of the wild turtles they recently discovered in a lake near Hanoi belongs to this extremely rare species and the specimen is female.⁵⁷ Earlier, Chinese scientists in Suzhou Zoo did not leave much to chance, and they collected ovarian tissue from the deceased turtle to freeze it for future research and species resurrection efforts. With this kind of liminal story, nobody would even dare to question the heterosexuality of animals at the very brink of extinction. In fact, animal sexuality has been rendered obsolete because the sole purpose of this rescue mission is reproduction, even without sex. As time is running out, these last representatives of a critically endangered species are quite literally bred until they die. But both survival and sexuality are species categories in the sense that they depend on the intimate choreography of taxonomies and temporalities in which subjectivity is lost.

The conservation turn observed in modern zoos has an important side effect that needs to be considered in the genealogy of queer animality: it centers sexual reproduction (even if heavily mediated by technology) as the keystone for animal welfare and species survival. This is evident in the efforts to save the giant softshell turtle that unequivocally focus on reproduction. These kinds of heroic stories of saving species from oblivion and actively combating extinction in the zoo through the use of modern reproductive technologies form the predominant discourse on the role of these institutions today. Although practical techniques of captive breeding have changed throughout the zoo's modern history—from studbooks and fertility charts, through databases and species survival plans, to cloning and frozen zoos—reproduction remains key in ensuring both species and institutional survival in the gardens. With the promise of turtles all the way down, captive breeding remakes the world by stretching the time-scales of slow death. In the classical feminist and queer theory, focus on reproduction as a means of survival renders life itself as biological, while naturalizing heterosexuality. However, through the lenses of chronobiopolitics, reproduction is not always heterosexual, especially when it gets decoupled from sexuality altogether.

55. On longing and taxidermy, see Poliquin, *Breathless Zoo*.

56. Wildlife Conservation Society, "Concerning Efforts."

57. Nuwer, "World's Rarest Turtle."

Conclusion

The zoo project makes reproduction the cornerstone of species survival and thus materializes temporality through genealogies, lineages, and familial-sentimental formations of species imagined as isolated entities. In the time of extinctions, human reproduction and sexuality are always implicated in the representations of the Anthropocene. These interlaced human-animal ontologies further imbricate diverse racial, gendered, and sexual subjectivities. From this perspective, animal queer sex acts in the zoo might be conceptualized as interruptions to the linear progressive temporality of natural history, as flickering manifestations of queer time, or simply as offshoots of human sexual categorizations complicit with current political narratives. Stories about gay penguin parents, for example, proliferate when humans focus on adoption rights and rainbow families.

Queer theory tailored to the deep time of slow ecocide could help overcome the trauma of extinction and offer alternatives to the normative understanding of reproduction and its futurities. In discussion with Edelman's radical rejection of familial temporality, José Esteban Muñoz argues for a queer futurity, where queerness is configured as an ontological possibility looming on the horizon. Muñoz critiques the "autonaturalizing temporality" of straight time, in which "the only futurity promised is that of reproductive majoritarian heterosexuality, the spectacle of the state refurbishing its ranks through overt and subsidized acts of reproduction."⁵⁸ This formulation eerily recalls the zoological, assisted reproductive technologies used for the selective breeding of endangered species. Reproduction understood as an act of replicating or generating living beings forms the backdrop of the biological mechanism of carrying life into the future, but as such it also holds a potential for a queer futurity of unbound flourishing growth. The chronology of queerness is far from linear: it is found in the elusive nature of non-reproductive sexual acts, the discontinuous history of perversion, the circumstantial conditions of captive sex, and the stuttering time of subjectivities in flux. This article argues that animal sexuality is key for understanding how temporality informs human sexual subjectivities as defined by sex acts. The role of queer animality in early sexological records on the one hand testifies to the lure of the timelessness of nature myths, while on the other it demonstrates that the emergence of expert knowledge on sexuality was informed by taxonomic methods of zoology. The zoo is not only a place where education of desire occurs along the deep time line of natural history but also a contested terrain of captivity that cancels claims to atemporal naturalness. Writing an unnatural history of queer sex from the zoo might seem like a risky project, given how easily captive homosexuality gets dismissed. But treating nonreproductive animal sex as queer acts without queer subjectivity reveals that sexuality is not such a stable and perennially timeless category after all.

58. Muñoz, *Cruising Utopia*, 22.

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