

Beastly Homosexualities

Future Histories of Nonreproductive Sex and Technology

At the dawn of the twenty-first century, human beings have begun to re-imagine and re-configure some of the most fundamental aspects of nature and culture. Stepping into a social and biological landscape that could scarcely have been imagined a few decades ago, homosexual, bisexual, and transgendered people are at the forefront of this process, offering new paradigms of sexuality and gender for all of us to consider. As part of this (re)visioning, both futuristic and indigenous sources of inspiration are being consulted. As transgendered scholar Zachary Nataf observes:

In the search for new vocabularies and labels, terms like “shapeshifter” and “morphing” have come to be used to refer to gender identity and sexual style presentations and their fluidity. “Shapeshifter,” originally from Native American culture, was introduced into current popular culture from science fiction, especially a new offshoot of the cyberpunk subgenre made famous by William Gibson and exemplified by the work of Octavia E. Butler, the African-American author of the Xenogenesis series. Butler’s books are inhabited by genetics-manipulating aliens, a polygendered species whose sexuality is multifarious and who are “impelled to metamorphosis,” whose survival in fact depends upon their “morphological change, genetic diversity, and adaptations.”

Zachary I. Nataf, *The Future: the Postmodern Lesbian Body and Transgender Trouble*¹

However, one need not look into the future or on “alien worlds” to find appropriate models: shape-shifting and morphing creatures are not merely the stuff of fantasy or technology. The animal world—right now, here on earth—is brimming with countless gender variations and shimmering with sexual possibilities: entire lizard species that consist only of females who reproduce by virgin birth, and also have sex with each other; the multi-gendered society of the ruff, with four distinct categories of male birds, some of whom court and mate with one another; female spotted hyenas and bears who copulate and give birth through their “penile” clitorises; male greater rheas who possess “vaginal” phalluses (like the females of their species) and raise young in two-father families; female chimps who avoid pregnancy for years at a time by stimulating their own nipples, and seal populations in which more than 90% of the males do not reproduce; the vibrant transsexualities of coral reef fish, and the dazzling intersexualities of gynandromorphs and chimeras.² In their quest for “postmodern” patterns of gender and sexuality, human beings are simply catching up with the species that have preceded us in evolving sexual and gender diversity—and the aboriginal cultures that have long recognized this.³ The very melding of indigenous cosmologies and fractal sexualities suggested in the passage above is already well underway—but within the realm of science *fact*, not fiction.

At the beginning of the new millennium, it also appears that the lives of lesbian, gay, bisexual, and transgendered people are once again being defined and “imagined” through the lens of science and technology. Issues such as the “naturalness” of homosexuality (and by extension, nonreproductive heterosexuality and biotechnology), the

existence of a putative “gay gene” and the specter of selective “elimination” of homosexuality, the impact of reproductive technologies on lesbian and gay parenting, and the role of medicine in defining and mediating transgendered identities have assumed a prominence in both the popular and academic discourse that belies their deep roots in medical/pathological models of homosexuality and gender identity. What, if anything, does the occurrence of homosexuality, transgender, and nonprocreative heterosexuality in other species have to say about these issues? And what are their wider implications with regard to nonreproductive sex and technology?

Homosexuality and transgender of various types have been documented in hundreds of animal species worldwide.⁴ While the details of these phenomena are significant from a strictly zoological standpoint, they also hold enormous implications for human sexuality and gender—but not in the ways one might initially suppose. Certainly the occurrence of homosexual behavior among animals challenges conventional ideas about the “(un)naturalness” of homosexuality (or any form of nonreproductive sexuality). But this essay will also challenge the simplistic application of animal behavior to people’s lives—both by those in the queer communities as well as by those who oppose nonprocreative sexuality. We will consider how animal homosexuality and transgender vary along extragenetic dimensions (social, temporal, protocultural, etc.), and explore how these phenomena and their interpretations can and cannot be applied to the study of human (homo)sexuality and (trans)gender. More broadly, this essay interrogates and challenges the influence of biotechnology on how we conceptualize current, past, and future queer (and non-queer) lives. Once we understand how sexuality is both profoundly grounded in the body and yet deeply shaped by socio-historical forces that transcend biology, the “promises” as well as the “threats” posed by biotechnology—and its impact on (non)reproductive sexuality for all of us—will be revealed as largely illusory.

Two Hundred Million Years of Nonreproductive Sex

Sex has always been uncoupled from reproduction. The “nonprocreative superfluosity” of sexuality does not depend on human technology, nor is it a recent innovation: nonreproductive sexual behaviors (and even forms of technology) are widespread among nonhuman animals, and have an ancient history. Homosexual behaviors, for example, occur in more than 450 different kinds of animals worldwide, including everything from same-sex courtship and sexual activities to pair-bonding; they are found in every major geographic region and every major animal group, and have probably existed for millions of years. Homosexuality among primates, for example, has been traced back to at least the Oligocene epoch, 24 – 37 million years ago (based on its distribution among contemporary primates). Some scientists place its original appearance even earlier in the evolutionary line leading to mammals, at around 200 million years ago, and it has probably existed for much longer among other animal groups.⁵ But nonprocreative sexuality is not limited to homosexual encounters. Specific nonreproductive heterosexual practices in the animal world are many and varied, and they often parallel homosexual behaviors as well as the wide variety of nonprocreative sexual practices found in humans. These include various forms of oral sex (including fellatio and genital licking); stimulation of a partner’s genitals with the hands or other appendages (such as flippers), including vaginal penetration with the fingers (in primates); anal stimulation, including penetration with fingers or oral-anal contact; rump rubbing and even heterosexual anal intercourse; mounting that does not involve full genital contact (including reverse mounting, in which the female mounts the male); and a wide variety of masturbation techniques.

In fact, masturbation among animals provides evidence for an early form of “technology” in the context of nonprocreative sexuality. In addition to using their hands, feet, or tails, apes and monkeys employ various objects and implements to stimulate themselves sexually, and even deliberately create masturbatory tools by cutting or forming materials such as leaves or twigs (often in highly creative ways). One male orang-utan, for example, ingeniously fashioned an implement by pushing a hole through a leaf with his finger. He inserted his erect penis into this “orifice,” then rubbed the leaf up and down the shaft to stimulate himself. One female chimpanzee inserted the stem of a leaf into her vagina, often lubricating it with saliva and manipulating it with her hand so as to stimulate herself internally. In one instance, she rocked back and forth with the stem inserted, rubbing the leaf against a vertical surface so that the stem actually vibrated inside of her.

Many animals also routinely mate (or engage in other sexual activities) with opposite-sex partners outside of the breeding season or when the female is not ovulating—including during menstruation and pregnancy (or, in birds, during the incubation period). Not only is this found in a wide variety of species, but such nonreproductive activity frequently constitutes a significant portion of all sexual behavior. Heterosexual activity also occurs among sexually immature animals, between adults and juveniles, between genetically related animals, between members of different species, and sometimes even between live and dead animals—all instances in which reproduction is not optimized (if not altogether impossible).

In addition to nonprocreative sexual behaviors, actual forms of “birth control”—i.e. ways of preventing pregnancy—occur in many animals. Besides infrequent copulation or mating during times when fertilization cannot occur, more than 20 different strategies have been identified whereby females are able to limit, control, and prevent insemination. These include copulatory plugs (gelatinous barriers that form or are deposited in the female’s reproductive tract, blocking insemination), and semen ejection by females following mating. One of the most extraordinary forms of birth control was recently discovered in chimpanzees: nipple stimulation. As in a number of other mammals, the regular reproductive cycles of female chimps are inhibited or interrupted while they are suckling infants. Some females without infants have learned that by stimulating their own nipples they can effectively mimic this physiological effect, thereby preventing themselves from conceiving even though they are not actually lactating. In some cases, chimps have avoided pregnancy for as long as a decade by employing this ingenious “contraceptive” technique. Actual abortion occurs in many species as well, including baboons, sea lions, deer, and foxes. Abortions may be either spontaneous; a result of stress and harassment from males; or (in primates) deliberately self-induced via physical means or the ingestion of abortion-causing plants.

Many animals also separate and reorder key reproductive events. We are used to thinking of breeding as a predetermined sequence, one stage leading inevitably to the next: ovulation followed by mating followed by fertilization followed by embryonic development followed by birth (or egg-laying). However, significant gaps and rearrangements of these events are possible. For instance, sperm storage—where a female caches sperm in her reproductive tract, which she uses to fertilize her eggs weeks, months, or even years later—can temporally separate mating from fertilization, and can also result in ovulation taking place *after* insemination. And delayed implantation—in which a fertilized egg remains in “suspended animation” for months prior to being implanted in the womb—can separate fertilization from fetal development during pregnancy in many species.⁶

Nonreproductive sex (both heterosexual and homosexual) and various forms of “birth control” and reproductive manipulation are therefore nothing new, nor are they unique to the human species. What is relatively new, however, is the condemnation and suppression of nonprocreative sexuality, especially homosexuality, by human cultures and societies. Indeed, such condemnation extends to the scientific discussion of these phenomena and continues to this day in the zoological discourse. Biologists consistently react to these phenomena with a mixture of disbelief, confusion, and even outright hostility. Sexual and gender variance in animals are routinely described in scientific publications with overtly homophobic or heterosexist language, including words such as “aberrant,” “unnatural,” “abnormal,” “bizarre,” “inappropriate”—even, in extreme cases, “perverse,” “immoral,” or “criminal” (mirroring attitudes toward human homosexuality/transgender in the wider culture.)

Although the intellectual climate is certainly improving and many zoologists no longer harbor such negative attitudes, biased responses are not just a thing of the past. At a conference in the mid-1990s, for example, primatologist Linda Wolfe provoked incredulity and outrage from her colleagues for daring to suggest that animals may engage in (homo)sexual activity purely for pleasure. In 1995, colleagues of zoologist Paul Vasey responded to his research on homosexual behavior with comments that the monkeys he was studying were “perverts” who “didn’t know how to use their genitalia properly.” In a report published in 1997, same-sex courtship and sexual activity in fruit flies (as well as refusal of heterosexual advances) were characterized by scientists as “abnormal,” “aberrant,” and a “defect.” And in 1998, an ornithologist described homosexual mounting in sandpipers as “puzzling” and “one of the strangest behaviors” he had observed.⁷

Even when homophobia and heterosexism are not this overt, they pervade much evolutionary theorizing, which insists that every animal behavior, including homosexuality, must have some reproductive “function.” Scientists continue to suggest that homosexuality is simply a way of practicing for heterosexual mating, a method to attract opposite-sex partners, a form of social bonding that “relieves tension” or otherwise improves reproductive success, a type of “sperm competition,” and several other more far-fetched “explanations.” Even though there is ample evidence against such proposals as the sole “reason” for nonreproductive sexuality,⁸ they persist because current paradigms of biology cannot countenance animal behaviors that are performed exclusively (or even primarily) for sexual pleasure. Sexual activity has long been relieved of its procreative function in other species as well as our own. Unfortunately, sex has not yet been “liberated” from reproduction in the minds of most scientists and, by extension, nonscientists. What good is technology that uncouples sexuality from procreation when societal attitudes continue to insist that they remain inextricably linked?

“Biological Degeneracy” and the (Un)Naturalness of Homosexuality

All too often the occurrence of homosexuality in animals is equated with its “naturalness” and, by extension, its “acceptability” in people. This interpretation is far too naive. The concept of “naturalness” is an extremely dubious one, whether wielded by the lesbian and gay community or by right-wing politicians. Beliefs about the occurrence of homosexuality in animals have been used historically both to support *and* condemn homosexuality in humans—often simultaneously within the same society, and by scientists and nonscientists alike. In contrast to the “naturalness” view that is prevalent today, for example, in many historical contexts homosexuality was equated

with “animalistic” behavior and persecuted on exactly that basis. The Nazis classified homosexuals as “subhumans” suffering from an innate genetic “defect,” and homosexual men who were subjected to medical experiments in concentration camps were labeled “test animals.” In fact, Adolf Hitler was heavily influenced by the writings of Georg Lanz von Liebenfels, whose most important work was entitled *Theozoology, or Tales of Sodom’s Apelings and the Gods’ Electron*. This pamphlet described the struggle between an “inferior race” of dark-skinned animal-men (“Sodom’s Apelings”) and a heroic master-race of techno-humans equipped with electronic body parts.⁹ During this time period, therefore, beliefs about the “bestial” nature of homosexuality only strengthened anti-homosexual sentiments in society rather than eliminated them.

A revealing illustration of the continuity, complexity, and coincidence of these societal, historical, and scientific attitudes toward animal homosexuality is provided by the following timeline, which juxtaposes incidents relating to jackdaws (a type of crow), nonprocreative sexuality, and—appropriately enough—the city of Linz (along with other Austrian locations).

- 1935: Konrad Lorenz publishes the first zoological descriptions of homosexual pairs in jackdaws, claiming that such behavior only occurs in captivity and is not a feature of “natural” populations. That same year, Leopold Obermayer, a Jewish homosexual imprisoned in Dachau, is assaulted by an SS-commander who yells, “You are not a human being, you are a beast!” Two years previously, the Nazis burn the library of Magnus Hirschfeld, a Jewish homosexual who in 1900 published one of the earliest scientific surveys of animal homosexuality.¹⁰
- 1939: The first Jewish prisoner at Mauthausen, a concentration camp near Linz, is a Viennese-born man arrested for being a homosexual; he is killed a year later. Meanwhile, Adolf Hitler launches one of the largest campaigns of art-theft in history, earning him the nickname “The Jackdaw of Linz” (after the jackdaw’s plundering habits). One strategy for seizing artworks is to accuse their owners of engaging in illegal homosexual activity. An altarpiece stolen in this way is hidden by the Nazis in a salt-mine at Alt Aussee, not far from where Konrad Lorenz would later study homosexual pairing in geese.¹¹
- 1979: Homosexual pair-bonding in wild jackdaws is observed for the first time, refuting Lorenz’s pronouncements to the contrary 44 years earlier. Zoologists discover that about 10% of widowed females in a Netherlands population form homosexual pairs, while approximately 5% of trios include same-sex bonding. Around the same time in Vienna, a zoologist describes homosexuality in female hedgehogs as “abnormal” activity that will cause “damage” to the animals.¹²
- 1989: Konrad Lorenz asserts that the word *homosexual* should not be used to describe same-sex pairs in geese because not all members of such pairs engage in sexual activity or pair exclusively with same-sex partners. Yet he unhesitatingly labels opposite-sex pairs “heterosexual” even though sexual activity is not an important component of male-female pairings in this species, and not all such birds pair exclusively with opposite-sex partners.¹³

1999: The city of Linz installs a webcam to record the behavior of jackdaws and make video images available live on the internet. A nest belonging to a heterosexual pair is chosen as the focus of activity. The website emphasizes the reproductive behavior of the species, omitting all mention of homosexual pairings as well as the many types of nonprocreative heterosexual behavior that have been documented in jackdaws.¹⁴

Lorenz's equating of homosexuality with "unnatural" behavior—as well as his unwillingness to apply the term *homosexual* to gander pairs and thereby invite human-animal comparisons (or imply full heterosexual-homosexual equivalence)—is especially problematic in light of his activities during the Third Reich. As a member of the Nazi party in Austria and an official lecturer for its Office of Race Policy, Lorenz did not hesitate to draw analogies between animals and people to support and develop the doctrines of "biological degeneracy," "racial purity," and the "elimination" of "inferior" or "asocial" elements. Among his most blatant assertions in this regard are published statements that physical and moral "decay" in people is "identical" to the effects of domestication on animals and that the "defective type" among humans is like "the domesticated animal that can be bred in the dirtiest stable and with any sexual partner." He also wrote that "Precisely in the large field of instinctive behavior, humans and animals can be directly compared ... these studies will be fruitful for both theoretical as well as practical concerns of race policy." In his private correspondence, Lorenz also employed human-animal comparisons to express his anti-Semitism, for instance when he described a species of duck as having "an ugly Jewish nose."¹⁵

Today, we must understand how our interpretation of animal behavior—particularly sexuality—has been filtered through this history, and the dangers inherent in drawing comparisons between animals and people. Animals do many things that we do not consider acceptable human behaviors—cannibalism, rape, incest, etc.—while humans, in turn, engage in many activities not found among animals without such activities being labeled "unnatural" (for example, writing e-mail, cooking food, or waltzing). So anyone today who wishes to use the occurrence of homosexuality—or nonreproductive heterosexuality—in animals to support their "legitimacy" in people must be careful: it can just as easily be used to argue that these things are "animalistic" rather than "natural." Indeed, some current critiques of reproductive technologies echo Nazi beliefs that homosexuality was simultaneously "bestial" and "against nature." One anti-abortionist, for instance, recently stated that "post-procreative" technologies (including techniques that allow gays and lesbians to have children) are "animalizing" people by eliminating "natural" (i.e. reproductive) sexuality.¹⁶

We simply cannot base our decisions about the "morality," "normality," or "desirability" of human behaviors on whether such behaviors occur in the animal world. More specifically, people who are lesbian, gay, bisexual, or transgendered do not need to "justify" their existence by pointing to examples among animals. Even if homosexuality and transgender were *never* found in the animal world, lesbians, gays, and trans people would still deserve full equality as human beings, and freedom from discrimination, prejudice, and violence (as do computer users, chefs, and ballroom dancers, none of whom can find analogues for their behaviors or identities in the animal world).

Finally, the intervention of technology in the dissemination of information about animal behavior will do nothing to further our knowledge unless it is also accompanied by a corresponding advancement in attitudes and beliefs. The Linz webcam and associated website essentially erase all traces of the jackdaw's nonprocreative sexuality, thereby perpetuating the history of silence, misinformation, and distortion that has

surrounded this species—like so many others—for more than half a century. Information on homosexuality and nonreproductive heterosexuality in jackdaws has now been available for many decades. Yet to thousands of web-surfers, the jackdaw is still presented as a “perfectly” heterosexual creature whose behavior is geared exclusively toward breeding. Under the guise of technological “improvement” and “access,” the Linz webcam has unwittingly completed a circle that began 64 years previously when Lorenz insisted that homosexual pairing was not part of the “natural” behavior of jackdaws.

Genetic Mistakes or Mistaken Genetics?

Much of the current discourse on queer life—both popular and academic—has been infused with the apparition of the “gay gene” or “gay marker”—Does it exist? How can it be isolated? What are its ethical and practical implications? Most of this discussion either overtly or implicitly characterizes the “gay gene” as a portion of genetic code that *absolutely* determines sexual orientation. It is unlikely that such a marker will be discovered, because it is unlikely that such a marker exists—just as it is unlikely that there is an absolute genetic determinant of compassion, or playfulness, or integrity, or the ability to perceive beauty. This does not mean, of course, that homosexuality lacks a genetic basis—only that nongenetic factors are equally, if not more, important in the expression of (homo)sexuality, regardless of whether it has a genetic component.

Theories about the origin of sexual orientation in humans simply cannot—and should not—be built or modelled on nonhuman animal behavior. The differences in homosexuality between nonhuman species (or between different human cultures, historical periods, individuals, etc.)—are too enormous, and these differences simply multiply when we attempt to make comparisons between human and nonhuman species. Nevertheless, an understanding of the extra-genetic components of animal homosexuality *is* relevant for how we think about human homosexuality. In animals, numerous factors in addition to genetics affect the expression of (homo)sexuality—social, temporal, geographic, environmental, individual, even (proto)cultural influences. This challenges the idea that animal homosexuality is strictly “instinctual” and invariant, and this perspective is extremely valuable for studies of human (homo)sexuality. If nothing else, it provides further support for the idea emerging from most studies of human sexual orientation, that sexuality results from a complex interaction of factors rather than being a polarized “environment vs. genetics” issue.

The socio-cultural dimensions of animal homosexuality also expose the limitations and conceptual underpinnings of the “nature vs. nurture” debate. Too many times, evidence of homosexuality in animals is used to bolster the idea that homosexuality is innate, genetically controlled, or otherwise fixed at (or before) birth. In the process, the complexities and nuances of sexual orientation and gender—in both animals and humans—are overlooked. In fact, the plurality of homosexualities found in both human and nonhuman species suggests a blurring of the supposedly distinct categories of biology and society. On the one hand, it is no longer possible to attribute the diversity of human (homo)sexual expression solely to the influence of culture or history, since such diversity may in fact be part of our biological endowment, an inherent capacity for “sexual plasticity” that is shared with many other species. On the other hand, it is equally meaningful to speak of the “culture” of homosexuality in animals, since the extent and range of variation that is found (between individuals, or populations, or species) exceeds that provided by genetic programming, and begins to enter the realm of individual habits, learned behaviors, and even community-wide “traditions.”

Evidence for a genetic component to homosexual behavior in animals has been accumulating and will continue to accumulate in the next decades. Yet it is also clear that social, environmental, and individual factors are at least as important as genetic ones, especially in “higher animals” such as mammals and some birds that have complex forms of social organization and highly flexible behavioral interactions. The expression of homosexuality often varies widely between different social contexts, age groups, activities, individuals, and even populations and geographic areas, in ways that transcend any possible genetic “control.” For example, in species such as the ruff (a type of sandpiper), individuals differ sharply in their participation in homosexual activity, yet the genetic differences that are known to exist between such individuals cut across their differences in homosexual behavior rather than falling in line with their sexual variations. In addition, homosexual (and other sexual) activity has a strong “cultural,” social, and/or learned dimension in a number of species, especially primates. Ultimately, then, it is of relatively little importance whether there is an actual homosexual “gene.” Even if homosexuality is shown definitively to have a genetic component (as is likely), it will always remain just that—a *component*, one part of a much larger picture that includes the totality of a human or nonhuman animal’s biology and social environment.

Undoubtedly attempts will still be made to “find” a putative “gay gene” in people and to “eradicate” homosexuality by eliminating or changing this “gay marker.” But sexuality is far more complex, fluid, and mysterious than this—and infinitely more resilient as well, precisely *because* of its nonbiological components. It may indeed become possible to eliminate or alter some *forms* of homosexuality through “gene therapy.” However, in the twenty-first century—as in centuries past—just as many people will continue to fall in love with individuals of the same sex when they aren’t “supposed” to—after leading “perfectly” heterosexual lives, for example, or when nothing in their genes indicates that they “should” be other than straight, or in spite of the fact that their parents were carefully “screened” for the “gay marker.” And such people will continue to discover and celebrate the value of their love, regardless of whether science or society considers it abnormal.

Against the Privileging of Genetic Parenthood

While biotechnology may allow sex to be more fully uncoupled from reproduction for straight people, sex is *already* separate from procreation for lesbian and gay people. If heterosexuals look to technology in some measure to “restore” pleasure to their sexuality by removing reproduction from it, then homosexuals look to technology to “restore” reproduction to their already pleasurable sexual lives. In North America at least, many gays and lesbians are eager to become parents, and reproductive technologies are often touted as the way to accomplish this. The issue is typically framed in terms of how scientific advances will allow lesbian and gay couples to finally “have their own children.” Highly speculative ideas about cloning and male pregnancy (among other things) are offered as ways to fulfill the elusive dream of becoming “real parents” (i.e., like heterosexuals).

Of course, gay couples can *already* have children together (at least, in a few political jurisdictions)—it’s just that such children do not share both partners’ genes. Certainly there may be some amazing biotechnological developments in the coming years that will allow or mimic such genetic sharing. However, an even *more* significant advance will be the destigmatizing and perhaps even valorizing of individuals (both gay and straight) who choose not to have children of their own—by remaining childless, or by raising children who do not share all or any of their genes. Every person—regard-

less of their sexual orientation or gender identity—unequivocally has the right to reproduce in whatever way they desire, and this is especially important for queers, who have historically been denied—and continue to be denied—the right to have families as well as access to reproductive technologies.¹⁷ Gays still have their children taken away from them, lesbians are still prevented from using sperm banks to become pregnant, and same-sex marriages are still illegal in most parts of the world because such relationships are deemed “nonprocreative.” Nevertheless, it is also important to question the technological privileging of genetic ties and the nuclear family. Specifically, it must be recognized that there is nothing inherently “natural,” moral, or requisite about bearing and/or raising children of one’s own.

If we choose to look outside our own species—and as already mentioned, we can only do so with considerable caution—then the animal data show quite clearly that sexuality and pair-bonding exist independently of reproduction, that many animals simply do not procreate, and that the “drive” to reproduce is far from automatic or “instinctive.” Animal populations survive and thrive with huge numbers of nonbreeding individuals,¹⁸ who are just as “(un)natural” as the ones that do breed. There is a tendency to regard the urge to procreate among animals as automatic, all-pervasive, and unstoppable. While heterosexual interactions often do have this quality, there are just as many examples of animals who do not reproduce: individuals who actively remove themselves from the breeding cycle, whose nonparticipation in reproduction is guaranteed by the overall social organization of the species or by physiological constraints, who produce offspring rarely (if ever), or who lead complete lives without (or after) reproducing.

Why do animals not reproduce? Biologists have coined the term “reproductive suppression” to refer to various forms of nonbreeding, implying that all animals would breed if they could, but are somehow “prevented” from doing so. However, the underlying mechanisms involved in nonbreeding are far more complex than this term implies. Numerous social, physiological, environmental, and individual factors are implicated, often interacting in ways that are still poorly understood. In some animals, procreation is indeed actively “suppressed”—in wolves, for example, dominant pack members often physically attack lower-ranking individuals who try to mate. In other species, though, no coercion is involved. Particularly in birds with communal breeding systems (such as pied kingfishers), as well as primates such as tamarins and marmosets, scientists describe individuals not as “unwillingly” suppressed in their breeding efforts, but rather as “choosing” to forgo procreation or exercising “self-restraint” in their reproductive participation.

Procreation is often a physically demanding and exceedingly dangerous undertaking that some animals may also simply “avoid.” Nonbreeders are often in better physical condition than breeders, since they do not have to undergo the rigors of the reproductive and parenting process. In fact, breeding could even be considered “suicidal” in some cases, since it may lead to a reduced life expectancy. Male bighorn sheep and female red deer that breed, for example, have significantly higher mortality rates than nonbreeders. Finally, the risk of acquiring sexually transmitted diseases (which are found in a surprising number of animals) may also affect procreative activity. For instance, female razorbills (a kind of bird) avoid reproductive copulations with males when the risk of infection from STDs is greatest (although they continue to engage in nonprocreative sexual activity, i.e. mounting without direct genital contact). Heterosexual behavior in a number of other species may also be curtailed by the potential danger of STDs.

In the end, then, there is no single “reason” why animals don’t reproduce: nonbreed-

ing, like sexuality, is simply a part of the mosaic of animals' lives, manifesting itself in many different ways. Heterosexuality (like homosexuality) constitutes a whole range of behaviors and life histories, not a single inalterable template that every animal must follow. And nonbreeding is one of the many ways to be "heterosexual."

Once animals establish a family, an enormous number of different parenting arrangements can be employed—only a small fraction of which involve a "nuclear family" configuration with a mother and father both caring for their own offspring. Nearly 300 species of mammals and birds have developed adoption, parenting assistance, and "daycare" systems, for example, in which offspring are raised or cared for by animals other than their biological parents. Such systems can be viewed both as examples of adults being freed from their parenting duties by a natural "helping" system, and instances of animals forgoing a portion of their reproductive "responsibilities" in order to pursue other activities.

So human beings are not unique in sometimes opting not to pass on their own genes. In addition to developing reproductive technologies, then, we need to begin placing less emphasis on whether children are "truly" our own by virtue of sharing our genes, and more on developing an awareness that people who do not have children—or who raise "other" people's children through adoption, foster-parenting, or other arrangements—are as much a part of the fabric of society.

Transforming Transgender

Reproductive technologies of the future could precipitate a fundamental redefinition of male and female roles. However, a profound revisioning of gender boundaries is already taking place in the realm of transgender, both with and without technology. It may at first appear that transgendered—especially transsexual—identities are thoroughly dependent on medical technology. Current discourse often focuses on the extent to which surgery and hormones can finally "create" an individual of the "opposite" sex, while the quality, affordability, and ease of "sex reassignment" technologies are very real issues for trans people who choose to utilize them in their transitioning. After a long history of being pathologized by medical models, transgendered identities now seem to be linked—for better or worse—to the "promises" and "marvels" of science and technology. As with reproductive technologies, it is possible that the role of biotechnology in this area will indeed move along a trajectory from reactionary to benign to beneficial. However, twenty-first century advances in this arena will lie not so much in technology, but in our conceptualization and social enactment of gender. (Trans)gender is as much—if not more so—about how we imagine and perceive "male" and "female," "man" and "woman," "masculine" and "feminine," as it is about what genitals or chromosomes or reproductive capabilities a person has. Of course, every individual is fully and unquestionably entitled to modify their body surgically, hormonally, or by whatever means necessary to bring it in line with their internal gender identity. Ultimately, however, it is likely that transgender will become less, not more, dependent on "science and technology" (surgery, body modification, etc.).¹⁹ This is because (trans)gendered identity belongs as much to the society in which a person lives as it does to that person.

There are cultures around the world (and historical periods) that accept genetically male individuals as "genuine" women and genetically female individuals as "genuine" men even though they have not altered their bodies, and cultures that "allow" or recognize individuals who "switch" genders or occupy indeterminate gender spaces without using technology. There are also animal societies where individuals which are biologically male, for example, live and are accepted as females even though their

physical appearance is completely male (e.g. bighorn sheep), or where gender-ambiguous individuals are fully integrated into the species' social networks (e.g. hooded warblers). And there are other societies—such as ours today—that continue to regard transgendered people as “less than” people born male-bodied men or female-bodied women no matter how much surgery or body modification they have undergone.

In *Boys Don't Cry*—the recent cinematic dramatization about “preoperative” (or “non-operative”) female-to-male trans person Brandon Teena—there is a pivotal moment when Brandon's girlfriend Lana is forced to look at Brandon's female genitals. Afterwards, in a stunning demonstration of faith and insight, Lana continues to regard, defend, and love Brandon as male/man/masculine in the face of the overwhelming scorn, ridicule, and violence of those around them—and in spite of the fact that “science and technology” have not altered Brandon's physical appearance. The lives of transgendered people in the twenty-first century—and anyone whose life is gendered, which is in fact everyone—will have improved not only when technologies that “reassign” sex (and reproduction) have advanced, but when we can all accept the chosen gender(s) of those around us as unflinchingly, courageously, and lovingly as Lana did.

The Infinitude of the Body

When most effective, the technology of communication allows us to bring the histories and experiences of others into our home, but without changing our home. When most effective, the technology of travel allows us to pass through the histories of other persons with the “comforts of home,” but without changing those histories. When it is most effective, technology will have no effect at all.

James P. Carse

Our malaise arises from this: ...infinite access to knowledge that simply fails to interact with the body or with the imagination.... What we know and how we know it must have a basis in the flesh—the whole flesh, not just a brain in a jar of formaldehyde. The knowledge we want is neither utilitarian nor “pure” but celebratory ... and it must be corporeal rather than abstract, fleshless, mediated by machine or by authority or by simulation.

Hakim Bey²⁰

Our bodies do not require technology to uncouple sex from reproduction: sex always has been nonprocreative and always will be, regardless of whether technology intervenes.²¹ It is our minds, cultures, societies, religions, and sciences, however, that have ignored, stigmatized, suppressed, and avoided nonreproductive sexuality—by defining “sex” as only heterosexual, penis-vagina penetration for the purpose of conception rather than pleasure. Yet our bodies contain an infinitude of possibilities beyond this narrow definition, a multitude of sexualities and genders that require little more than our awareness to set them in motion.

“Reproductive technologies” become necessary mainly because people cannot—or will not—imagine and experience their desire beyond an opposite-sex partner, or the missionary position, or sex-for-making-babies. If people could change their sexual orientation and “become” homosexual at will, for example, they would not need technology to free their (hetero)sexuality from procreation—all they would need to do is find a same-sex partner. Is the inability of most people to do so a result of genetics, hormones, culture, society, politics ...? Probably all of these and more, but the very act of relying upon technology to accomplish the same result is an acknowledgment of the powerful forces—both social and biological—that shape and constrain desire.

And just because heterosexuality is “unlinked” from reproduction through technology does not mean that it will automatically become “pleasurable.” Hanif Kureishi once described heterosexual sex as “that stuff when the woman spends the whole time trying to come, but can’t, and the man spends the whole time trying to stop himself coming, but can’t.”²² Long after the “artificial womb” has been perfected and the human genome has been fully sequenced, we will still be dealing with the vicissitudes of male-female relations, the negotiation of desire, the cultural and social expectations and incompatibilities that are part of such interactions. Ultimately, the body and its social environment cannot be completely transcended, no matter how much technology is applied.

Fears about the “artificiality” of new reproductive technologies are largely misplaced. The “natural” (animal) world contains an unending variety of “artificial” manipulations, interruptions, avoidances, reorderings, and terminations of reproductive events—from birth control and homosexuality to cloning (parthenogenesis) and surrogate parenting. So the “effects” of such technologies have actually been with us for millions of years. And certainly the social, political, and ethical dimensions of biotechnologies need to be carefully evaluated—issues of commodification, access, mediation, and alienation from the body being paramount among them. Beyond this, however, lies the much larger question of how society views sexual pleasure. To paraphrase James Carse: When most effective, the technology of (non)reproduction will allow us to fully uncouple sexual relationships from procreation, but without altering our fundamentally uneasy relationship to sexual pleasure. Under the illusion of great strides of progress, therefore, nothing really will have changed at all. The future history of sexuality, then, lies not so much in its freedom from reproduction through technology, but in its liberation from the repressive social constructs that continue to devalue pleasure.

Notes

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- 1 Nataf, Zachary I. *Lesbians Talk Transgender*, p.55.: Scarlet Press, London. 1996
- 2 Gynandromorphs and chimeras are types of intersexual animals, i.e. creatures that share both male and female characteristics.
- 3 Bagemihl, Bruce. “Left-Handed Bears and Androgynous Cassowaries: Homosexual/ Transgendered Animals and Indigenous Knowledge,” *Whole Earth* 100:pp. 77 – 83. 2000 (www.wholeearthmag.com/ArticleBin/338.html); Bagemihl. *Biological Exuberance*, pp. 215 – 44.
- 4 Transgender refers to the combining, crossing over, or blurring of gender or sexual characteristics, and includes transsexuality (sex-change), intersexuality (hermaphroditism), and “transvestism” (mimicry of the opposite sex in appearance or behavior). For further discussion of this terminology and the many forms of homosexuality and transgender found in animals, see Bagemihl, *Biological Exuberance*.
- 5 Vasey, Paul L. “Homosexual Behavior in Primates: A Review of Evidence and Theory,” *International Journal of Primatology* 16: pp. 173 – 204. 1995
- 6 Baker, Robin and Mark A. Bellis. *Human Sperm Competition: Copulation, Masturbation, and Infidelity*. Chapman and Hall, London. 1995
- 7 See Bagemihl, *Biological Exuberance*, pp. 201 – 11 for more extensive discussion and references on nonreproductive heterosexuality in animals.

- 7 Vines, Gail. "Queer Creatures," *New Scientist* 163(2198):pp. 32 – 35 (www.newscientist.com/ns/19990807/queercreat.html); 1999
Paul L. Vasey, personal communication; Finley, K.D. et al. "dissatisfaction, a Gene Involved in Sex-Specific Behavior and Neural Development of *DROSOPHILA melanogaster*," *Proceedings of the National Academy of Sciences* 94:pp. 913 – 18. 1997
Lanctot, Richard B. "Sexual Attitudes at Northern Latitudes," *Natural History* 107(6): pp. 72 – 75. 1998. See Bagemihl, *Biological Exuberance*, esp. pp. 87 – 106, for a comprehensive discussion of homophobia and heterosexism in zoology.
- 8 For detailed discussion and argumentation, see Bagemihl, *Biological Exuberance*, esp. pp. 168 – 195.
- 9 Plant, Richard. *The Pink Triangle: The Nazi War Against Homosexuals*, pp. 27, 185. Henry Holt, New York. 1986
Grau, Günter (ed.). *Hidden Holocaust? Gay and Lesbian Persecution in Germany 1933 – 45*, p. 284. Cassell, London. 1995
Johansson, Warren and William A. Percy. "Homosexuals in Nazi Germany," *Simon Wiesenthal Center Annual* 7:pp. 225 – 63. 1990
Hamann, Brigitte. *Hitler's Vienna*, pp. 217 - 18. Oxford University Press, New York. 1999
- 12 Lorenz, Konrad (1935) "Der Kumpan in der Umwelt des Vogels," *Journal für Ornithologie* 83:pp. 10 - 213, 289 - 413. 1935
Friedländer, Saul. *Nazi Germany and the Jews*, Vol. I, p. 114. HarperCollins, New York. 1997
- 11 Friedländer, ibid., pp. 246 – 47
Roxan, David and Ken Wanstall. *The Jackdaw of Linz: The Story of Hitler's Art Thefts*, p. 42. Cassell, London. 1964
- 12 See Bagemihl, *Biological Exuberance*, pp. 90, 606 – 10 for further details and full references.
- 13 Lorenz, Konrad. *Hier bin ich – wo bist du?* R. Piper, Munich. 1988
- 14 www.linz.at/umwelt/natur/dohlen/ewebkam.htm
- 15 Deichmann, Ute. *Biologists under Hitler*, pp. 179 – 205. Harvard University Press, Cambridge. 1996
Klopfer, Peter H. *Politics and People in Ethology*, p. 59. Bucknell University Press, Lewisburg. 1999
- 16 Garrett, Pete.r. "Endgame: Reproductive Technology and The Death of Natural Procreation," www.lifeuk.org/speech5.html. 1999
- 17 For more on the difficulties faced by gay and lesbian parents, see: Rochman, Sue. (1999) "Taking Aim at Parents," *The Advocate*, June 22, pp. 78 – 80. 1999
Bull, Chris. "A Year of Triumph and Pain," *The Advocate*, June 22, pp. 53 – 60. 1999
- 18 Virtually every animal population includes nonbreeding individuals, and many of these are still sexually active. In some cases, as many as half (right whales), three-quarters (blackbuck), or even 80 – 95% (New Zealand sea lions, northern elephant seals, naked mole rats, some dragonfly species) of one or both sexes do not reproduce. See Bagemihl, *Biological Exuberance*, pp. 196 – 208, for more details on nonbreeding as well as adoption among animals.
- 19 For some discussion of the autonomy of transgendered identities from surgery and other forms of body modification, see: Bagemihl, Bruce. (1997) "Surrogate Phonology and Transsexual Faggotry: A Linguistic Analogy for Uncoupling Sexual Orientation from Gender Identity," 1997, in Anna Livia and Kira Hall (eds.), *Queerly Phrased: Language, Gender, and Sexuality*, pp. 380 – 401. Oxford University Press, New York.
Cromwell, Jason. *Transmen and FTMs: Identities, Bodies, Genders, and Sexualities*. University of Illinois Press, Urbana. 1999
- 20 Carse, James P. *Finite and Infinite Games*, p. 148. Ballantine Books, New York. 1986
Bey, Hakim. *Immediatism*, pp. 30, 53 – 55. AK press. Edinburgh and San Francisco. 1994
- 21 See Bagemihl, *Biological Exuberance*, esp. pp. 252 – 55, for further development of the idea that procreation is already a biologically "superfluous" component of sexuality, i.e. merely a by-product or incidental effect of other forces.
- 22 Kureishi, Hanif. *Sammy and Rosie Get Laid*, p. 33. Penguin, New York. 1988