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A Question of Sex: Cloning, Culture, and Legitimacy Among American Quarter Horses

In 2015, after a decade of litigation and legal appeals, the American Quarter Horse Association permanently banned cloned horses and their offspring from entering its venerated registry. In doing so, the Association, a behemoth among equine breed associations across the globe, took the position that particular technologically-mediated sexual liaisons between horses carried undesirable and preventable moral consequences. Through an analysis of the intersections between the sexual mechanics of cloning, the history of the American Quarter Horse Association, and the freighted cultural dimensions of the term "breed," this essay argues that this ban was meant to clearly delineate the appropriate methods of *sexual* contact among equines who could be *genetically* considered Quarter Horses, and it did so by removing cloning from among the possible ways in which a "legitimate" Quarter Horse could be created.

Of course, policing animal sex to protect certain genetic and cultural identities has many antecedents throughout the history of livestock breeding, as does the fact that animal breeding practices often reflect contemporaneous human attitudes towards sex and morality (see Ritvo; Pawley; Hurn), as well as racial formation (see Rosenberg, "How Meat Changed Sex") and class (see Coulter). For horses, as for all mammals, sex and genes are as unavoidably entangled with each other, as they are with historical and cultural contexts. Because of this, it is worth paying attention to how an institution's devotion to protecting specific genetic legacies allows it to also dictate the sexual arrangements and practices of its subjects. The American Quarter Horse Association (hereafter, the AQHA) is one among many of these institutions operating in the wildly diverse "horse world" of North America and Europe, where these particular institutions are called breed associations. Each one (there are many hundreds) considers itself the guardian of a particular kind of horse as defined through its genetic inheritance. The main tool of this genetic gatekeeping is called a stud book, which is rather like an enormous family tree. At the roots of the tree are the "foundation" horses that were used to create and define the breed. The branches of the tree grow from the offspring of these foundation horses. Any "registered" offspring of these foundation horses carry papers determining their legitimacy and place in the tree, and they are uncontested representatives of that breed. These papers belong to the horse, and transfer along with the horse if the horse is purchased, not unlike a vehicle title. Registered horses, if bred together, create automatically registerable

offspring. Registration papers confer status, economic value, and advantages among breed-specific competition events. Horses outside of this narrow group who, through various methods of official inspection and approval, are deemed advantageous to the overall gene pool, can enter the studbook from its margins and produce registerable offspring of their own. Such is the way a stud book becomes populated: through careful choices made by breeders with the intent to further the goals of its foundational genetics as horses produce offspring whose bodies and behaviors conform to breed standards (see Derry). This endeavor is always somewhat contradictory, being both inherently conservative and inherently futurist. But until the AQHA's cloning ban, a horse's mix of genes, rather than the method of their transmission, was the primary area policed by associations.

There are other examples of enforced equine sexual propriety, such as the Jockey Club's famously steadfast insistence on a live sexual encounter between two equines in order to produce a registerable (and thereby raceable, and potentially extremely valuable) Thoroughbred offspring (see Cassidy). For the Jockey Club, enforcing physical, embodied sexual intercourse between a male and a female horse is a way of preserving genetic purity: there can be no mistake who the genetic parents of a particular horse are if both were physically present to perform the sex act. This reasoning has kept that practice, colloquially called live cover, *de riguer* for the Jockey Club, despite the emergence of reproductive technologies such as artificial insemination that other equine breed associations have welcomed. These technologies carry the (very slight) risk of breeding mistakes — such as inseminating the wrong mare by accident — and the (slightly higher) risk of genetic fraud. With the notable exception of the Jockey Club, many breed associations adjusted their requirements to allow for new kinds of sexual encounters between horses that expanded along with reproductive technological developments. This trend included the AQHA: its stud book had previously adjusted to accommodate artificial insemination and other technological sexual techniques. Many European breed associations also accepted cloning in the mid-2000s, and I assumed that the AQHA would, as it had in the past, eventually clear its litigious refusal and go the same way. But when the AQHA drew its firm line at cloning, my eyebrow raised: why would this technique, more so than others before it, justify the withholding of registration to the offspring of registered horses? Why would this method of intercourse and conception be deemed inappropriate when others before it had passed muster? What line had been crossed for this breed association to associate morally repugnant consequences with this particular equine techno-carnal act?

For the AQHA, the discourse of the cloning debate did not center on a genetic risk that a particular sexual rule could mitigate. Instead, the ban on cloning posed a sexual

solution to a moral problem. As this essay argues, that problem was cultural: unlike other reproductive technologies, cloning threatened to fundamentally disrupt the structure of naturalized heteronormative animal reproduction that undergirds the cultural identity of the AQHA. It was cloning's queerness — its disruption to the *form* of the family tree — rather than cloning's impact on genetics — the tree's *content* — that required policing.

Cloning ruptured the AQHA's trend of adjusting its conception rules to accommodate reproductive technologies. Rupture and repulsion are common reactions to the specter of cloning: when I've spoken about animal cloning in public and academic contexts, the word often evokes an audience-wide cringe. The word is unsettling — due in no small part to its cultural sundering from ideas of "natural" mammalian sexual reproduction via its technological capabilities. Even more than certain reproductive technologies that preceded it, cloning widely connotes a futuristic imaginary of a science-fiction sort for the majority of the American population unfamiliar with genetic sciences and agricultural worlds, despite its commonplace use in agricultural-animal production since the 1990s and early 2000s (Russell). (It also genuinely surprises many people that animals are regularly cloned.) According to the AQHA, its "unnaturalness" fundamentally disrupts the narrative of what a Quarter Horse, as a representative of that breed, should be. This sense of unnaturalness stems both from the process and result of cloning. Cloning's power to consolidate genetic transmission through a single individual, rather than two mammalian parents, profoundly unsettles the foundational concepts of sexual reproduction. And sexual reproduction, in bringing together two individuals to make one, results in singular and exceptional individuals (if predictably so), whereas cloning repeats the life cycle of an existing individual. These disruptions fueled a large part of the AQHA's refusal to register cloned horses. But by closing its stud book to cloned horses, the AQHA took upon itself the role of re-defining the Quarter Horse as a breed. To do so, it drew clear boundaries around *genetic* definitions of equine legitimacy by imposing culturally conservative definitions of legitimate equine *sex*. The fears of cloning expressed by the AQHA — fears that center on technological disruptions to "natural" family, kin, and sexual networks — accompany the public expansions of legal and cultural protections for people whose kin and kind partnerships do not conform to heteronormative arrangements. In this context, the AQHA's foregrounding of "natural" sexual relations over genetic purity in determining what horse could be a Quarter Horse was a cultural backlash that reveals the extent to which assumptions of two-parent "naturalness" pervades American Quarter Horse history and American culture more broadly.

This essay's focus on sexuality and parentage brings it into the orbit of ongoing work in gender and sexuality studies that unites agricultural and animal history with concerns about race, gender, reproduction, and technology. While "nature" has made recent inroads into queer theorizing, particularly through the lens of "queer ecologies," the expansive potential of including nonhumans and multispecies relationships within sexuality studies remains somewhat abstract, in part because this work tends to privilege animal and nonhuman representation over direct engagement with material nonhuman beings and the endlessly messy and challenging work of forging and maintaining relationships with them (see, for example, Gandy; Mortimer-Sandilands). By contrast, attention to the material animal is absolutely central to recent work in agricultural history and anthropology in relation to the queer and multispecies sexualities that support (and have always supported) food systems and shape flows of capital (see Blanchette; Johnson; Rosenberg, *The 4-H Harvest*; Rosenberg, "How Meat Changed Sex"). Likewise, attention to genomic sciences and reproductive technologies are getting a fresh appraisal from scholars interested in their impacts on racial formations and kin networks, and some of this work engages directly with the material multispecies dimensions of these tools (see Kim; Tallbear, *Native American DNA*; Tallbear, "Theorizing Queer Inhumanisms"; Tallbear, *Beyond the Life/Not Life Binary*). As someone who was partly raised by horses, and who spent many years working on horse breeding farms, I was steeped in relations that grew up around the complex intersections of technology, capital, and care. In such spaces, invasive breeding technologies are thoroughly present and normalized, but so is the physical work of caring for stallions and mares and helping them raise their foals in a fundamentally cooperative human-equine world. This essay grows equally from personal experience and academic concerns: those relationships matter materially as well as historically, ethically, and politically. The choices people make when producing animals deserve close inspection, and can help us formulate a more complete accounting of how sex, technology, wealth, power, and kinship are materially constituted.

The American Quarter Horse as a breed is a good example of such an accounting, as the dense layers of its kinship networks are the results of very public biological and cultural moves. After lengthy and thorough public debate among people invested in the meaning of the breed, in the end, cloning could not make a Quarter Horse. Throughout this essay, I examine how the entanglements of ideas of nature, sex, and American heritage confer legitimacy to the Quarter Horse as a twentieth-century breed, and how cloning threatened to upend those historical fictions, including the naturalization of heteronormative kinship upon which this breed depends for its cultural and genetic identity. Brad Weiss's recent anthropological work on heritage hog[1] breeds, which are bred, raised, and marketed as "natural" alternatives to industrially produced pigs and

pig products, offers a helpful conception for thinking through the "nature" that is so often deemed inherent in these human definitions of animal legitimacy. Weiss pays close attention to the embodied actions, emotions, and human/nonhuman relations that get pulled into "nature." He asks, "How, for example, might the quality of 'natural' be registered as a sensuous quality in the course of feeding and watering a pig; then in the processing of its pork as a value-added product… And how might the meanings of 'nature' be modified, reinterpreted, or translated from field to slaughter facility to menu?" (Weiss 8). Similar questions can be asked of the relationships between equine breeding practices and registries: How might the quality of "natural" align and/or conflict with the quite sensuous enactment of human- and technologically-involved sexual arrangements that are designed to add legitimacy and value to the horse produced through that union? For both the hog and the horse, "nature" is shorthand for a fantasy of purity — purity of origins, purity of genetics, and, crucially, purity of the carnal body itself. Because reproduction is the central act of animal production, these are multispecies sexual fantasies made "natural," and therefore invisible as sexual fantasies, through the lens of commerce. As we imaginative humans well know, there's no better way to kill the heat of a fantasy than by exposing its workings to public view. For the AQHA, cloning did just that: it exceeded the bounds of "nature" and naturalization, thereby exposing the careful process of modification, reinterpretation, and translation of a horse from a genetic to cultural product.

America's Horse, According to Texas. The first successful equine clone was born in Italy in 2003 — six years after the first cloned mammal, Dolly the sheep, was born to researchers in Scotland. Veterinarians at Texas A & M University (TAMU) successfully cloned the first horse in the United States in 2005. Shortly thereafter, the University partnered with bio-tech venture capital firm ViaGen, based in Austin, Texas, to produce more. A crop of foals conceived via this partnership, twelve in all, were born in Texas in 2007. TAMU had been working on cloning other companion and agricultural animals since the mid-1990s, and had significantly invested in the promise of cloning to protect global biodiversity through its association with Project Noah's Ark, an international gene bank containing the genomes of endangered species (Haraway 153). In 1998, TAMU also housed a major domestic animal cloning research endeavor. Marketed as "The Missyplicity Project," TAMU researchers sought to successfully clone a privately-owned pet mutt bitch named Missy, using private funds from her anonymous owner to cover a significant portion of the research bill (McHugh 152). The project was aggressively promoted to the public through the internet, cultivating a wide public audience (the project failed; cloning dogs and many other species remains an elusive procedure). The use of private funds was key, as it was not yet clear whether Texan

taxpayers were willing to let their dollars go towards cloning initiatives at a major public university. All of TAMU's cloning projects were additionally aided by a corporate partner, Genetic Savings & Clone. GS&C is a cryopreservation warehouse located just down the road in College Station, Texas, the first of its kind to be, in McHugh's words, "directly associated with cloning research." Let no one say that early clone enthusiasts lacked a sense of humor, despite the seriousness with which TAMU incorporated — literally — cloning into its potential as the future global epicenter of cloned animal research.

TAMU's first successful cloned horse was a genetic copy of a European international-level show jumping horse named Quidam de Revel. The procedure was entirely funded by his Danish owner. This clone foal was named Paris Texas in a playful nod to the Euro-Texan collaboration ("First Cloned Horse"). News of the success, however, attracted a much more local equine clientele in its immediate aftermath: Quarter Horse breeders in Texas. TAMU is an agriculturally focused university with deep ties to three equine industries that heavily favor Quarter Horses: Quarter Horse racing, ranching, and rodeo (TAMU has had an active intercollegiate rodeo since 1919). In Texas, the people involved in these industries often overlap. And while Quarter Horses are extremely popular in Texas, they are by no means limited to that region. They remain one of the most sought-after horses around the world.

What exactly is a Quarter Horse? The term, if not the equine genetic legacy it represents, is native to the United States. The name derives from one of the first standards used to define what counted as a Quarter Horse: the ability to sprint a quarter of a mile with exceptional speed. The term was first used in the American colonies as early as the late 17th century, as Anglo colonists bred imported light-bodied English horses with small, hardy horses living along the eastern seaboard. The horses already in the colonies were all descended from Middle Eastern and Iberian horses brought to the Americas with the Spanish Empire as early as the 1500s. Several indigenous tribes managed small herds; others lived as feral animals on barrier islands. (Chincoteague and Assateague are the most famous locales, for readers of Marguerite Henry). Horses called Quarter Horses at this time were hybrid stock. They were bred by wealthy colonists for their versatility to perform hard work and provide human leisure in the form of racing (Mackay-Smith 106-138). In the 17th and 18th centuries, the European and colonial concept of a "breed" (or in the parlance of the time, "race") of animal was tied to a particular animal's extant performance and utility more than its looks or kin connections (Derry 15; 27).[2] Therefore, these colonial Quarter Horses were named for the physical tasks they accomplished, not their particular genetic mix or body type (29). American colonists who sought to breed a Quarter Horse chose parents who they thought could produce

an offspring likely to meet the standard of a fast quarter mile sprint. These parents could represent a vibrant mix of equine genetics; and it was possible that the horse produced would not turn out to be a Quarter Horse, after all.

A less-often emphasized point about early colonial Quarter Horses is that they were an expression of colonial wealth and tools of dispossession. Their bodies were used alongside enslaved labor to steal land from indigenous peoples and shore up the profitability of southeastern plantations, as well as to augment owners' profits with racing prize money and gambling returns. Quarter Horses inhabited an increasingly diverse task-based equine population, especially in the plantation south. Long before the Trail of Tears, these Quarter Horses reflected the complex power dynamics between colonizing and indigenous populations in their surroundings. They physically embodied the legacies of Spanish colonization through their genetics, and also hailed more recent economies that still depended on indigenous trade networks. As multitalented animals, their class status, along with that of their human peers, often depended on how many equine neighbors they had and of what kind. They most often lived alongside mules, used primarily for draft labor; "Saddlebred" horses, who were bred for their smooth gait to comfortably transport wealthy colonists under saddle and used primarily for overseeing plantations and policing the field labor of enslaved persons; and "Standardbred" horses, another strain of race horse named for their ability to meet a particular speed standard (Derry 29-30). These titles described all manner of hybrid horses. Breeders chose sires and dams from among the variety available to them, and focused more on performance and purpose than on particular gene pools. In this context, even in the 18th century, Quarter Horses always-already both embodied and effaced their messy and multicultural origins in order to consolidate power in the hands of white settler colonists, from the relatively poor to the very wealthy.

Throughout the 19th century, horses called Quarter Horses continued to be various versatile hybrids, but their purpose shifted away from plantation work towards the work of westward expansion. As horses dispersed with settler colonists across territories previously held by New Spain, it became harder to keep track of equine hybrid mixes. Short-distance racing continued to be a popular human leisure activity, fueling demand for horses bred for the twin purposes of agricultural work and racing. Additional crosses with equine stock managed by Shoshone, Nez Perce, and Comanche tribes in what had recently been New Spain contributed to the diversity of horses called Quarter Horses in the middle of the century. Hardy horses who could produce quick bursts of speed found special use among settler colonists in Texas who were consolidating cattle herds, as they could easily help corral a wayward cow. After

the American Civil War, as cattle ranching became an established economy in Texas, the term Quarter Horse began to be more frequently used to describe these quick, agile horses used for managing cattle. Settler colonists' horses in former New Spain received an additional infusion of hybridity with the more recently Spanish-derived horses used by Mexican vaqueros (Mackay-Smith).

In the final decades of the 1800s, major Anglo-owned ranches in Texas began to breed their own horses for ranch use, and some kept detailed records of their breeding programs. Ranch breeders called their hybrid horses Quarter Horses, and during the first decades of the twentieth century this name weathered the transition from defining a Quarter Horse by its utility and "type" to defining it through its bloodline and "breed." By World War II, the term "Quarter Horse" could no longer affix to a genetically diverse array of horses who could all perform a similar set of tasks, but instead it could only apply to horses whose pedigrees adhered to a particular set of recorded bloodlines.

The major marker of this shift is the formation of The American Quarter Horse Association (AQHA) and its stud book in 1940. This event grew out of a widely networked collaboration between researchers at the University of Texas and Texas A&M University, wealthy Texas ranchers, and people from various horse cultures who had found and kept meticulous records of where certain well-performing horses had come from. The AQHA website details how J. Frank Dobie, a famed folklorist, horse enthusiast, and equine historian at the University of Texas, met fellow researcher Robert Denhardt from Texas A&M University in 1937 while both were tracking down equine records in a library archive. This friendship pulled Denhardt into further research on a particular stallion named Steel Dust who was born in 1843. Denhardt followed traces of Steel Dust's alleged descendants by traveling to various ranches across Texas, Colorado, and Arizona. In the course of this research, Denhardt identified a handful of stallions who had worked on major Texas ranches in the 1880s (and who had, luckily, been among people who kept paper and oral records of their breeding and work lives) and whose descendants stood out among ranchers for their abilities as cow-handling horses.

During this research, Denhardt also met Helen Michaelis, a ranching Texan with extensive social connections and experience raising horses. In order to improve her own herd, she had done significant research of her own into the bloodlines of racing and ranching Quarter horses in the 1930s. Together, she and Denhardt germinated the idea of forming a registry of horses who descended from specific ranching stallions, including Steel Dust. With Michealis's connections, they gathered several members of Texas ranching royalty, whose horse breeding programs were tied to these "original"

Quarter Horses, to charter the American Quarter Horse Association. The charter was written and signed around a resplendent banquet hosted at the historic Texan Four Sixes ranch. Along with Michaelis, each of the men at the table represented the financial and cultural interests of major Texas ranches. A few among them were East Coast natives with considerable urban wealth who had married into powerful ranching families.[3] The registry they founded only accepted horses whose genetics could be traced to Steel Dust and the handful of other foundation stallions identified by Denhardt and Michaelis, all of whom were nineteenth century ranch horses who had worked on the cattle operations that provided much of the AQHA founders' wealth. Horses who were to be included in the new AQHA stud book had to pass a visual inspection — and have their pedigree verified by Michaelis.

This genetic requirement marked the shift from Quarter Horses being a versatile "type" to Quarter Horses becoming a "breed." Furthermore, the creation of the AQHA and its restrictive stud book in 1940 was a strategic claim by its founders to control and nurture both a genetic legacy and a cultural one. This transition was not seamless. Many breeders of what they called Quarter Horses resisted the idea that their horse could not be included in a registry by virtue of its ancestry, rather than by meeting a practical performance standard. Denhardt, in a 1960 article he wrote for the *Quarter Horse Journal*, described the disgruntlement of breeders who chafed at Michaelis's enforcement of pedigree rules: '"No doubt the biggest problem Helen had to face grew out of the rule adopted by the association that in order to be registered, a horse must qualify on bloodlines. Had Helen known less about bloodlines, the task might have been easier. Everyone who had a horse turned down on bloodlines, after the inspector had passed it on performance and conformation, felt he was personally insulted. The very idea of having his horse turned down by some 'woman who never even saw the horse'" (Qtd in Close). This insult was an obviously human-gendered one, in the case of Michaelis leveraging the authority to lay down the new parentage rules to men whose authority on sexual matters, animal and otherwise, was not often challenged in 1940. But it also reflected a significant shift by tying equine-gender parentage rules to specific sires and dams in order to produce a "legitimate" equine offspring.

While the breeding research done by Denhardt and Michaelis was extensive, scholarly, and extremely valuable, the resulting stud book created a genetic and historical fiction that ranching horses were the "original" Quarter Horses. This story, one that is still told today, willfully ignores the nearly 300 years of previous equine history in the United States, and uses the concept of "native" American horseflesh to erase the myriad influences of Spanish-derived horses over time. And by situating large ranches as the

guardians of original bloodlines, the 1940 stud book performed the function of supporting large ranches as vital cultural institutions in the Anglo western United States. The Quarter Horse breed, as it was first defined through its stud book, effectively concentrated the cultural and economic power of large ranches through the medium of genetics.[4] It defined a breed through an individual's biology, but also through the culture to which that biology was attached. It consolidated genetic control over what had previously been a wildly diverse type of horse. It called that very particular consolidation "American" — a sleight of hand that did the double duty of asserting American nativism of the breed's origins and equating Texas cattle ranching culture with "American" culture. And, by virtue of the incredible economic and cultural forces its human founders represented — Wall Street, Hollywood, the oil industry — it tied these particular equine bodies to the urban nerve centers of twentieth century capital accumulation, all the while effacing those connections by foregrounding instead the primacy of Texas ranching.[5] The formation of the AQHA cemented the place of the narrowly-defined Quarter Horse as a literal embodiment of capital — economic, cultural, and genetic — and enshrined the appropriate means to acquire it, through ranching and its offshoot industries that were necessary to perpetuate a twentieth-century ranching economy.[6]

The answer to the question "what is a Quarter Horse?" then, is quite different depending on the historical and cultural context in which the question is asked. Before 1900, it meant a horse who could run a quick sprint. In the middle of the 20th century, the answer was a horse whose bloodlines tied back to a ranching ancestor — a change that revealed as much about the values and identities of those seeking control of the genetic version of this answer as it did of the horse in question. In the twenty-first century, the entwining of human values and the definition of the "breed" result in the assertion that a Quarter Horse, whatever else it may be, is certainly not a clone. What these different answers have in common, however, is an abiding interest in promulgating "legitimate" equine offspring.

Instituting Equine Sexual Propriety. The visible work of a stud book is the work of mapping out kin relationships. At the heart of defining the Quarter Horse as a "breed" — or defining any "breed" of carefully selected mammals — is to weight the selection of mates so that their offspring will look and perform to certain expectations. Any breeder looking to register the animals they bring into the world will choose to breed animals who are, in the language of stud books, eligible to produce registrable offspring. Thus, the less visible work of a stud book is to shape kin relationships by defining the appropriateness of chosen sexual partners.

Until reproductive technologies became available, geography was a main determiner of what these kin networks could look like. When the AQHA launched, the only way to produce an offspring from two horses was for the pair to engage in successful intercourse in the flesh. Mare owners looking to breed their mares to a specific stallion needed to transport them to the place where a stallion stood at stud. Occasionally, stallions would travel to a few locations during the breeding season to serve local mare populations, if there was a high demand. For people breeding horses in 1940, the most cutting-edge equine reproductive technologies were the good roads being built in rural areas, which made the process of choosing mates more expansive and allowed mare owners to choose from a wider variety of registrable stallions by virtue of the fact that distance was less of an obstacle. Still, the rules for who could be included in the first AQHA stud book reflected the fact that breeding horses was quite a limited enterprise. Anyone looking to breed two horses together had first to find two reproductively mature animals, and secondly to be in close enough proximity to bring them directly into contact with each other. Conceiving a foal without a live sexual encounter between a reproductively mature mare and stallion simply was not possible.

Because of these constraints, the additional limits the fledgling AQHA placed on equine partners did not concern sexuality. Legitimacy, as defined by the stud book, had to do with genetic authenticity — and, to that end, whether or not an equine individual was genuinely who a breeder claimed they were. In order to be registered during the first years of the stud book, prospective Quarter Horses had to pass an in-person inspection and pass a bloodline test to determine genetic legitimacy. A third requirement, submitting a photograph that showed his or her identifying markings, was instituted to prove that the horse listed in the registry book was the same horse being advertised and bred as a registered horse (Close). And in order to insure with even more surety that foals were the product of a legitimate liaison, a mare could be the parent of only one registered foal per year (typical equine gestation is 10-11 months; it would be nearly impossible for a mare to produce two foals within a single year). These procedures meant that at the outset many horses were turned down, not deemed eligible to register as "legitimate" Quarter Horses. This is the method by which these newly instituted genetic and identification standards replaced performance as the warrant for calling a horse a Quarter Horse (and, it must be noted, this process of moving from "type" to "breed" via stud books and genetic standards rather than measures of performance was happening across the horse world at this time — the AQHA was not atypical in this particular regard, and the Quarter Horse was not the only "breed" codified in this way). And, as the as the earlier quote about Michaelis's strict enforcement of the bloodline test suggests, many male breeders chafed at this transition.

What these new genetic limitations did was narrow the scope of kinship for certain horses, and shift legitimate equine kinship from a practical performance realm into a strictly sexual one. At once, a vast swath of horses who would all have been considered Quarter Horses based on what they did were now not considered Quarter Horses because of who their equine parents were (or weren't). After the stud book was instituted, the only way to guarantee that a horse would be called a Quarter Horse was to carefully choose, monitor, and prove that a sexual act between particular equine individuals had taken place. This is the invisible work of the stud book made manifest: it makes people obsess in every detail about animal sexuality in order to police ideas of genetic purity. However, this transition from breeders as producers of good horses to breeders as guardians of appropriate equine sexual acts was a subtle and barely visible shift. This was in large part because the practical limitations of horse breeding ensured that, for the first decades of the AQHA, genetic parentage and sexual parentage amounted to the same thing. The sexual act was necessary to making foals before the stud book existed; it was equally necessary after.

Another reason this shift was so invisible was that it was equally as embedded in cultural norms as it was in practical application. The need for two horses to produce offspring via a sexual encounter did not challenge the human social norms of heterosexuality, sexual maturity, and genital intercourse as appropriate methods of conceiving offspring. These external constraints of sex, age, and proximity in order to produce an equine foal appeared "natural," just as they did for people, according to mainstream human-focused cultural arbiters in the United States in the 1940s, 50s, and 60s. Sexualizing the kin relationship among horses called Quarter Horses, far from being scandalous, was thus hardly noticed at the time it was instituted. It dovetailed seamlessly with the heterosexual two-parent definitions of family that pervaded public postwar American culture, a definition that had particular resonance among people in the ranching west concerned with social conservatism.[7] When Quarter Horses became a breed defined by pedigree, the legitimacy of a sex act and its resultant offspring became the primary determiner of equine value. It is no surprise that the concurrently held human values of sexual propriety and determining the legitimacy of a child through definitions of "appropriate" parentage should supply the logic through which to justify and navigate this turn to sexual obsession among Quarter Horse breeders. These cultural traits were just as important as genetic ones.

Technological Challenges to Legitimate Sex. Once the dust had settled over genetic claims to kinship, relative calm characterized the growth of the AQHA and its stud book from the early 1950s to the early 1990s. The breed became wildly popular among

American horse owners. Today, the AQHA is the largest breed registry in the United States, and its most famous slogan is that it represents "America's Horse" (this is the title of their members' periodical, which its website touts has the largest circulation of any horse-related magazine in the world). The moniker certainly mobilizes nativist readings of the breed's origins central to its stud book, but it does also describe the size and impact of the Quarter Horse population in the United States. The AQHA represents the largest number of horse-owning Americans and American horses. Its website touts the breed's popularity, declaring that Quarter Horses are owned and enjoyed by most horse enthusiast Americans.[8] In this, the AQHA is correct. A 2007 study of equine demographics found, beginning in the 1980s, "[AQHA] registrations exceeded all others [ie, Thoroughbred, Arabian, etc.] by tens of thousands," and that Quarter Horses registered by the AQHA made up nearly 60% of the total horses registered in the United States (Kilby 181-2).[9] By 2013, the Annual AQHA Membership Report tallied the number of U.S. human members at 144,030, and the number of U.S. human owners of registered Quarter Horses (who, unlike their horses, are not required to be members of the AQHA) at 729,769. The 2016 AQHA Annual Report lists 2,850,084 total living horses in its registry, with nearly 76,000 new horses added to the registry that year. Unsurprisingly, the state with the most number of currently registered horses is Texas, clocking in at 418,249, nearly four times that of the next most Quarter Horse-populated state, Oklahoma. AQHA headquarters are located in Amarillo, Texas, and the centrality of Texas to the preservation and performance of ranching cultures persists through popular cultural forms like rodeos, Quarter Horse-only shows, and western trail riding.

Another key part of the importance of Texas to the growth of Quarter Horse popularity and the AQHA is its earliest institutional partner: Texas A&M University. Robert Denhardt, the researcher who identified Steel Dust as an "original" Quarter Horse and promoted a ranch-based definition of what it meant to be a Quarter Horse, was a professor at then-Texas Agricultural and Mechanical College. He managed the first AQHA offices in College Station, Texas from 1940 to 1942.[10] The folkloric work he started of tracing oral histories and equine bloodlines gradually moved from the humanities to the sciences, as animal reproduction became a veterinary specialty during later decades. This disciplinary transition did not disrupt the codification of the entwined biological and cultural genealogies of Quarter Horses and western ranching. Instead, as both the AQHA and TAMU grew over the second half of the twentieth century, the fortunes of both remained connected as research in the natural sciences at TAMU supported expansion of Texas agriculture and extractive industries, as well as its animal health and veterinary programs — all deeply tied to ranch lands. From the 1980s forward, it was common for the AQHA board to have one or more members who were

also veterinary faculty at TAMU. In fact, as I write this in 2017, the current First Vice President of the AQHA, Dr. Jim Heird, is also "the executive professor and coordinator of equine initiatives at Texas A&M University." Dr. Heird is also appointed as TAMU's Dr. Glenn Blodgett Equine Chair professorship, and has a long resume in professional rodeo administration ("Heird Continues Tenure"). Dr. Glenn Blodgett, meanwhile, runs the horse division at the Four Sixes Ranch in Texas — one of the major ranches represented at AQHA's founding in 1940. TAMU has consistently been a hub of veterinary care, breeding support, and administrative support to the AQHA's elite constituency.

In this context, it is not surprising that Quarter Horse breeders were some of the first to buy into TAMU's equine cloning capabilities. Reproductive innovation at this world-class research facility was nothing new. Breeders trusted their veterinarians and the scientific research they represented at TAMU, and those who were willing to take risks on new reproductive technologies had not been disappointed. Quarter Horse breeders also trusted the AQHA to adapt to new reproductive technologies. Despite initial setbacks on how to incorporate new technologies into its registry policies, the AQHA had twice changed its rules to accommodate reproductive technologies that expanded equine kinship possibilities. Once in the 1990s and again in the early 2000s, new reproductive technologies overstepped AQHA parentage rules that had been instituted at its inception in 1940 — rules that made sense for a time when it was impossible to breed horses other than through a live sexual encounter. In both cases, the AQHA resisted and then accepted changes to its rule book.

The first of these challenges was artificial insemination (AI), a technique that had been in wide use in dairy production since the 1940s and, with the invention of reliable semen cooling and transport technologies in the late 1980s, made a leap to the performance horse market in the early 1990s (Derry 104-109). However, as early as the 1970s, some horse breeders across various breeds and stud books used on-site AI — where both the stallion and the mare were present, and the time from semen collection to implantation was nearly minute-to-minute — to minimize the risk of injury to stallions from mares refusing to be mounted. The AI technique mitigated stallion injury because it separates the sexual encounter into two parts. First, semen is collected from the stallion by means of human manual stimulation; the stallion ejaculates into a sterile artificial vagina. Then, the semen is implanted into a mare by a veterinarian or trained technician (Vaught, "Animal Sex Work"). While on-site AI was not the same as a live sexual encounter between horses, the specialized procedure did not violate the existing rules of AQHA registry rules of verified parentage, and the association considered the small number of horses who had been conceived via on-site AI to be eligible for

registration. I want to emphasize this point because it underscores the fundamental role of the AQHA, as it saw itself: to protect genetic integrity, and not to get involved in sexual integrity. As I argued earlier, when the AQHA was formed, genetic integrity and sexual integrity were one and the same. In this first foray away from live intercourse as a viable way of producing foals, the AQHA's tacit acceptance of on-site AI still operated under that logic.

Disputes erupted within the AQHA when off-site AI became possible. These were serious enough to require legal action, and resulted in changes to the stud book rules. AI requires humans to take on key roles in the sexual exchange of semen between two horses, and effectively severs the necessity for two oppositely sexed same-species partners to actually have sex. But if genetic integrity of the resulting offspring is the main goal, then that detail could be overlooked in favor of ensuring that the correct stallion's semen was implanted in the correct mare. On-site AI allowed for this, in the eyes of the AQHA. However, when the Hamilton Equitainer, a cooling container specifically designed to ship refrigerated equine semen via FedEx Ground and Air, was developed in the 1980s, the AQHA maintained that its parentage verification requirements prohibited the eligibility of any foal conceived from an *off-site* mating facilitated with shipped semen and AI. The severance of the sexual act between horses was one thing; the fact that the horses to be bred no longer had to be in the same barn, ranch, town, or even state was quite another. AI with cooled shipped semen opened a host of questions for the AQHA to consider — not least among them how the technology could favor the owners of certain popular stallions over others, once access to semen was no longer bounded by geography. The primary concern for the AQHA remained one of parentage, and how to verify the genetic integrity of a foal if its alleged parents had not physically encountered each other. AI with shipped semen not only disrupted the sexual act itself, but wildly expanded the geographic limits of potential equine kin networks. Yet once a suitable system of permits was devised for ensuring that only one stallion and one mare could produce a foal with cooled shipped semen (giving the AQHA recourse should a genetic fraud occur), the AQHA amended its registry rules in 1997 to allow horses conceived with cooled shipped semen to be eligible (Hopkins and Meadows). The queerness of AI, in that humans and technologies became not only the orchestrators of but also necessary physical participants in a sex act between two horses, could be overlooked when it was deployed in the service of preserving the sanctity of sire-dam verification. The stud book could accommodate species queering as long as two-parent sexual norms could still be maintained.

The debate over cooled shipped semen was just the beginning for the AQHA's legal disputes over parentage with regard to reproductive technologies, and the one-foal-per-mare-per-year rule lay at the center of the next controversy. Originally intended as an obvious failsafe for ensuring against genetic fraud, this rule became restrictive when a new technology, embryo transfer, became available. This technique resembles surrogacy in human terms: a female who is not the genetic mother of an offspring gestates the fetus to term. With this technique, one mare can physically provide more than one egg for fertilization, and more than one embryo per breeding season to be implanted into various surrogate mares — thereby becoming a biological mother to more than one foal in one calendar year. In the fall of 2000, a number of Texas Quarter Horse breeders sued the AQHA on the grounds of violating the Texas Constitution and state anti-trust laws by not allowing them to register more than one eligible foal per mare. Because only one foal could be registered — despite each foal being genetically eligible — the plaintiffs argued that the AQHA was depriving them of the potential profits from selling horses that come with registration (McBride). Significant criticism came not only from those who were worried about genetic fraud and the increased concentration of favored genetics in a very few horses, but also from an increasingly vocal group concerned about the number of overproduced Quarter Horses being funneled into the United States equine slaughter pipeline.[11] Nevertheless, the courts found in favor of the plaintiffs, and the AQHA settled with the plaintiffs in 2003. It revised its rule book in 2004 to allow one mare to genetically parent more than one foal per year (Ross).[12]

The significance of the embryo transfer debate, in contrast to but nevertheless extending from the debate over AI, is that the AQHA had to decide whether genetic integrity was related to the act of sex. Now that a naturalized sexual act between two present partners was exposed as not necessary, as it could be mediated through technology, what was the AQHA's imprimatur? Did altering the sexual act threaten the genetic definition of the breed? Would allowing for technological interventions challenge the baseline definition of "natural" conception that the AQHA had depended upon when setting out its genetic protocols? If the "nature" of sex could change so drastically, was the "nature" of genetic integrity also at risk?

By changing its rules to allow horses to be bred with shipped semen and then to allow one mare the ability to officially mother several foals at one time, the AQHA granted that technological intervention in the sexual act between two horses was not against nature, as far as genetics were concerned. But its resistance to these technologies, represented by the legal proceedings necessary to change the rules so as to

accommodate them, signaled that the Association was wary of viewing this kind of scientific intervention as progress for the breed.

Laboratory Parentage: Remixing Sexual Reproduction. Elite Quarter Horse breeders in Texas were encouraged by the direction the AQHA was going in the early 2000s. Breeders who had taken the risk of using AI and embryo transfer to produce horses that might not be able to be registered had seen their boldness rewarded. As the embryo transfer battle came to a close in 2004, cloning technologies for horses were heating up. When Quidam de Revel's cloned foal was born at TAMU in 2006, a small group of elite Texas Quarter Horse breeders began to clone their most lucrative breeding horses. These breeders trusted in the research at TAMU, and they had precedent to support their hope that the association's trend of accepting technological reproductive change.

These breeders partnered with TAMU and Austin-based biotech gene banking firm ViaGen to produce the first 12 American-owned equine clones, all Quarter Horses, in 2006-7. TAMU provided the veterinary care, research laboratories, and genetic scientific expertise; ViaGen provided the gene banking, keeping the raw material from horses to be cloned safe and privately managed; and the horse owners themselves provided the money to complete the procedure, approximately $150,000 per horse. These cloned horses were reproductively mature sires and dams with impeccable AQHA genetic pedigrees. Their owners were attempting to maximize their reproductive worth in perpetuity by proving they could be cloned, and then banking their genes for future use.

Several of these foals were clones of a single stallion, Smart Little Lena. Smart Little Lena was a top-producing Quarter Horse stallion, a horse with more demand for breeding than he could supply even with shipped semen (a stallion can only ejaculate so much). He possessed an excellent breeding history that proved his ability to transfer athletic quality to his offspring. Smart Little Lena was owned by a syndicate which kept a reproductive veterinarian on staff full-time. This veterinarian, a TAMU graduate, initiated the partnership between the Smart Little Lena syndicate and TAMU to clone the stallion, and performed the veterinary part of the cloning procedure (where successfully cloned embryos are implanted into surrogate mares for gestation, essentially an embryo transfer). This successful partnership was only possible because of the personal connections and extensive resources that could be shared between the syndicate, their home veterinarian, and TAMU. In order for the reach of horse cloning to expand commercially, those connections needed to be made more accessible. After

the first crop of cloned American foals was born in 2007, ViaGen stepped into that role, serving first as a coordinator between horse owners and TAMU and also as a storage facility for DNA (Russell).

It is no accident that Smart Little Lena, an established top breeding earner and unimpeachable paragon of Quarter Horse stud book genetics, was a test case for whether clones would enter into the AQHA registry. And while horse cloning was newly possible, cloning in agricultural contexts was already an established method of consolidating the power and impact of a select genetic pool (Derry 130-131). If one were to follow the logic that guided the institution of the AQHA stud book in the first place, cloning seems to be a reasonable extension. The stud book was built on the premise that a small number of horses were worthy of producing offspring by virtue of their pedigrees. Cloning essentially serves the same purpose: it consolidates genetic power (and an owner's ability to profit from it) in the hands of a few individuals. And it surely negates genetic fraud, as a clone is understood to be a genetic copy of the original individual. Smart Little Lena was a perfect test case to see if this logic could be used to argue for the inclusion of clones in the AQHA stud book, and by making a fleet of cloned Smart Little Lenas, the syndicate took a gamble on whether the AQHA would once again expand its rule book to accommodate them.

In part because of the dense networks between cattle ranchers, TAMU veterinarians, and elite Quarter Horse breeders, cloning was already familiar to some Quarter Horse breeders. By 2005, animal cloning in industrial agricultural contexts has become fairly commonplace at the elite level of population genetics. To be clear: relative to the millions of animals participating in agricultural production across the globe, the number of clones is very small. But this small number of cloned animals and their offspring create a disproportionately large impact on the overall genetics of commercially produced animals, including beef cattle. The producers of industrial animal genetics rely on cloning to solidify the reproduction of quality commercial animals. Despite being effectively hidden from public view, cloning is a well-established if "boutique" agricultural practice. Cloning operates, therefore, in two registers: as an established — almost passé — method of producing animals among people who work in animal agriculture, and as a jarring invocation of futuristic technology to many members of the wider American public.

This double register is fitting to the process of cloning. The technique and technologies of animal cloning are utterly predictable developments stemming from the long history of agricultural animal reproduction. They are also absolutely remarkable for their ability to bypass two-parent mammalian sexual conventions. It is this latter

consequence that pushed beyond the limits of the AQHA's flexibility: not only does cloning transcend the limits of "natural" sex, but it also flouts the idea that an extant mammalian organism — a living being in the world — can be assumed to be the result of the sexual pairing of two oppositely sexed parents. What is genetic integrity in the face of a clone?

The answer to this question is difficult to settle, because cloning subverts the two-parent paradigm of mammalian sex. The most significant breakthrough to lead to successful cloning was a technique called somatic cell nuclear transfer (SCNT). Dolly the sheep was the first SCNT-conceived mammal, born in Scotland in 1997 (Kishigami et. al., 1945-1950).[13] Somatic cells describe any cell of an organism that is not a reproductive cell, such as eggs or sperm. Skin, hair, muscle, organ tissues — these are made of somatic cells that, like all cells, contain an individual's DNA, but are not meant for reproductive purposes. The major diversion of SCNT from other forms of scientifically-assisted reproduction is that it requires no reproductive cells from prospective cloned individuals in order transfer genetic material — AI and embryo transfer still require eggs, sperm, and fertilization. This use of somatic cells in nuclear transfer represents what is truly new about the technique. Laboratory technicians isolate and harvest the nucleus of a somatic cell, which contains the genetic information of the hopeful clone. Then, the nucleus is transferred in full to a donor animal's egg cell, which, if all goes well, incorporates the somatic nucleus into its cellular structure, forming what is essentially a fertilized egg. These nuclear-transferred eggs go through a number of laboratory "passages" in which cells grow in culture media — a critical stage of SNCT where "they can not only be multiplied but also modified through gene targeting" (Franklin 19-25). Once these eggs are multiplied and modified to create the potential options desired by clients commissioning the desired clone(s), veterinarians implant the egg(s) into a surrogate female's uterus for gestation, and there the recognizable process of mammalian reproduction resumes, sans sex and all the attendant messiness and genetic unpredictability of sperm-egg fertilization.

What typically gets lost in recounting the process of cloning is that it redefines parentage to include non-genetic essential contributors. A cloned animal has only one genetic parent, but it has a host of necessary multispecies non-genetic parents: it has the veterinarians and laboratory geneticists essential to the success of its transition from somatic cell to embryo; it has a donor egg cell to finalize the process of "conception," and it inhabits a surrogate female who gestates, gives birth, and mothers the postnatal clone. The donor egg is absolutely critical to cloning, which, as a modified sexual process, requires a reproductive cell to house and gestate the cloned embryo.

Cloning through SCNT is a hybridized, remixed form of sexual reproduction from start to finish. Because SCNT merges two cells, it does not resemble asexual reproduction, or replication. But because it requires the genetic material from only one individual, and only one reproductive cell, it isn't your typical sex, either. Furthermore, the desired genetic material comes from a non-reproductive somatic cell, while the reproductive egg cell necessary for the conception and gestation of the eventual animal is cleaned of its own genetic information so as not to "contaminate" the clone. Instead of four strands of DNA re-combining to form a new individual, as with typical sexual reproduction, two strands are removed completely, leaving the existing individual's DNA intact despite the centrality of the egg to conception. SCNT may be about copying a single individual, but in practice it is a profoundly strange *transpeciative* enterprise, which goes beyond a multispecies social or sexual mingling. Where AI and embryo transfer certainly cannot happen without human intervention, the fact still remains that were the same two horses to be together in the flesh, a foal could result from their sexual pairing. For cloning, however, the resultant foal could not be possible without human interventions at the most intimate levels. The prospective clone, an invisible egg donor, and the successfully produced clone are all present within a single egg cell, gestated by a specially chosen birth mother. Cloning brings the human obsession with the equine carnal act — an involvement begun with the transition from defining a breed by performance to pedigree — to the realm of transpeciative sex. At every stage, cloning is queer interspecies mixing, a far cry from the naturalized vision of opposite-sexed same-species reproduction enshrined in the original AQHA studbook.

It is this transpeciative aspect that challenges conventional understandings of what it means to reproduce, despite cloning's extension of familiar logics of favoring certain genetics over others. Ian Wilmut, the lead scientist in the development of SCNT, saw cloning technologies as a kind of interdisciplinary method of reproduction that combined different forms of existing knowledge — "genetic engineering, genomics, and our [his team's] method of cloning from cultured cells" – to do something new. The technology, he asserted, "makes it possible in principle to build new organisms at will," a potential that "will take humanity into the age of biological control" (Qtd. in Franklin, 21). In this view, animal clones are stopovers on a longer journey into what we could call the biological Anthropocene: a term which allows for a reorientation away from the typical view of Anthropocenic factors (even just in agriculture) such as global pesticide use, extractive industries, and political machinations, and towards a more granular, even cellular, view of the Anthropocene, where humans desire to — and succeed at — controlling the molecular dimensions of the larger world. Clones, in giving humans staggering control over the genetic mixes of animals, are the Anthropocene writ small.

They are also, as anthropologist of agriculture Sarah Franklin points out, products of centuries worth of purposeful practical and scientific agricultural research. Of Dolly, Franklin reminds us that she is "typically agricultural in that the project of her creation combined basic questions of genetics, or selective breeding, with commercial and industrial applications" (21). Dolly and her agricultural clone contemporaries inhabit a longstanding tension between pastoral and industrial economies. For cloning used in intensive agricultural contexts, the process of isolating and reproducing an individual's genes is oriented towards improving the genetics of a population: that is, clones are produced to maximize the quality of a large number of animals across time and space by extending the sexual impact of individual males and females. This general logic holds for performance horses, but there are important differences. An obvious one is scale, since the market for animal sport is much smaller than for animal food. Another is that agricultural animals are rarely, if ever, sexually altered by neutering or spaying. Male and female poultry, cattle, and hogs that are not intended for reproductive purposes are simply slaughtered before they reach sexual maturity. In contrast, after World War II most male horses to be used for breeding became part of breed registries like the AQHA, all of which require rigorous physical and genetic approval. These male horses have to earn the use of their testicles, and a large majority of quality male horses in the United States are gelded (castrated) as youngsters for this reason. Castration is an accepted form of limiting the gene pool only to horses deemed worthy of reproduction — a much smaller concern in short-lived agricultural animals. Therefore, in order to apply the population-level logics of agricultural cloning to the Quarter Horse world, the Smart Little Lena syndicate had to convince the AQHA that they were operating under the idea that cloning was an extension, not a refutation, of the stud book's original intention. They needed to put forward the argument that cloning could foster the genetic primacy of individual sires that demonstrated both the genetic and cultural attributes the association wanted to promote.

This gamble that the Smart Little Lena syndicate took by cloning a culturally and genetically impeccable horse did not turn out in their favor. The AQHA had, in fact, already attempted to pre-empt the syndicate's test case by adding a new rule to their Official Handbook prohibiting clones from their registry in 2004, immediately on the heels of the embryo transfer settlement and as TAMU scientists were working on the successful cloning of Quidam de Revel. Rule 227 did not mince words: "American Quarter Horses produced by any cloning process are not eligible for registration." The text then specifically prohibited registration of '"horses produced by any cloning process," including "any method by which the genetic material of an unfertilized egg or

an embryo is removed and replaced by genetic material taken from another organism, added to/with genetic material from another organism or otherwise modified by any means in order to produce a live foal"' (Qtd. in Dowell). This rule prevented any cloned horse and the sexual offspring of a cloned horse from inclusion in the registry, effectively severing their branch from the stud book family tree. This action had the same effect as castrating a stallion, as far as the stud book was concerned: no matter his genetic fitness, any horse produced by a clone stallion could not be recorded in the registry (AQHA, "Cloning Lawsuit").

Rule 227 supported an older and more general rule that "only horses resulting from the breeding of a sire and dam are eligible for registration." This rule figured prominently in the recently settled lawsuit over embryo transfer. The lawsuit allowed embryo transfer to count as a "breeding of a sire and dam," despite the AQHA's protest that the procedure, because the biological dam did not gestate and birth the foal herself, could compromise the genetics of the foal ("Briefs Filed"). The sire-dam stipulation was deemed legally flexible enough to describe horses conceived through assisted reproductive technologies as long as both semen and eggs from two individual male and female horses were required for these procedures to work. Despite the fact that no actual horse-horse intercourse takes place, these procedures remained steadfastly, if oddly, heterosexual.

Cloning, in requiring only one genetic parent, broke from this sire-dam definition. In fact, as I have argued, cloning explodes the naturalized idea of heterosexual sex and mammalian parenthood. The AQHA used this reason to justify a legal campaign for equine gender and sexual heteronormativity, in order to resist including clones in its registry. Cloning, therefore, unlike AI and embryo transfer, offered the AQHA a way to emphasize the cultural ramifications of sex. In the case of Smart Little Lena, it opened the door for the AQHA to use a definition of appropriate sex, rather than a definition of appropriate genetics, as a tool to legislate inclusion in its registry. These sexual stipulations foreground the underlying conservatism of the AQHA's ties to foundational genetics and how they should be promulgated. Despite the Association's willingness to favor breeders' desires to profit from their top horses through technological reproduction, the transpeciation involved in equine cloning forced the AQHA to delineate that "legitimate" offspring had to be conceived through forms of sex that it deemed appropriate. Having only one parent, according to the AQHA, was too radical a departure from the one stallion-one mare requirement for a Quarter Horse foal to be legitimated by the registry.

The AQHA instituted Rule 227 in 2004. The first Quarter Horse clones, including clones of Smart Little Lena, were born in 2007. In 2008, pro-clone advocates petitioned the Association to change the rule and allow clones into the registry. At this juncture, the Association decided to turn to its membership to weigh in on whether Rule 227 should stand. A member survey circulated in 2010 showed strong support for upholding the ban. The survey was sent to 3,000 randomly selected AQHA members, and found that 86.02% of the respondents did not approve of horse cloning.[14] The sample size was extremely small, but the response was a consistent and resounding "no" to registering Quarter Horse clones among those surveyed. Plaintiffs took the AQHA to court in 2013 to sue for lost profits, using the same antitrust tactic that won the registration rights for foals conceived through embryo transfer. This time, however, the AQHA succeeded in using the "one mare, one stallion" stipulation to defend its ban, which a federal court upheld in a final ruling against the pro-clone plaintiffs in 2015. When news of the upheld ban broke, less formally-solicited public opinions echoed the member survey. Online Quarter Horse forums erupted in spirited commentary in support of the ban. Commenters on the online forum BarrelHorseWorld.com, for example, cheered. "Good for the AQHA," wrote one commenter, "we have enough things evolving from test tubes." Another agreed: "I know I would never breed to a clone, I just don't think it's a good idea to mess with mother nature." Nature, in this logic, was defined primarily by two opposite sex parents — and in opposition to scientific "tampering" with what was assumed to be natural. The clone ban allowed the AQHA to define registerable horses by the heterosexual pairing of their parents: one sire — one dam. The AQHA had successfully worked against the incursions of cloning into naturalized heteronormativity by echoing the language used by the now-defunct Defense of Marriage Act (1996), which defined marriage as constituted solely by one human male and one human female. These appeals to reproductive conservatism aligned with the AQHA membership's conflation of heterosexual sex with "nature."

The use of conservative marriage language around cloning and "natural" sex echoes the cultural values of the AQHA's founding, and found purchase among its 21st century members. The dubious naturalness of the technology was the prime cause for concern for the AQHA's members, as the procedure seemed to push into a deviant sexual territory well beyond the boundaries of heterosexuality. Thus, cloning enacted both a retrenchment and a departure for the Association. The strategy of upholding two-parent requirements allowed the Association to continue to determine registry eligibility — and thus the direction of the Quarter Horse breed — with appeals to conservative social values that lay at the heart of its founding in Cold War Texas. This allowed the Association and its members to reject certain reproductive technologies on

the basis that they contradicted the Association's investment in American cultural traditions of family that support heteronormative kinship networks.

The AQHA benefitted from the rhetoric of unnatural reproduction that surrounded wider debates over the technology both within the Association and outside of it. Brenda Pieper, owner of popular Quarter Horse breeding stallion Playgun, expressed that she was "very much opposed to doing it [cloning] just for the sake of putting that animal into the breeding herd," highlighting anxieties about the unknown impacts of cloned animals on population genetics. Others stepped around the futuristic connotations of cloning, characterizing it instead as a "step backward," a shrinking of the gene pool instead of an expansion of it (Qtd. in Overton, "Carbon Copies"). These concurrent anxieties about the future on one hand, and the past on the other, reveal the extent to which the people involved in this debate struggled to firmly grasp the very nature of what cloning creates: a facsimile. No rules yet exist for how such new forms of life should be governed.

The biological Anthropocene focuses what is at stake in these discussions: namely, how the unknowable futurities embedded in cloning — its inevitable speculative dimensions — shift the boundaries of what counts as natural, and what those consequences might be down the road. The uneasy distinctions between elite "original" horses and their messily created reproductive copies are the ground, largely out of view, on which the cultural terms of political economies of technologized reproduction are being hashed out. These distinctions clarify where the veneer of nature ruptures in regard to human intervention in creating animal life. Other equine breed associations and stud books took the opposite tack of the AQHA. European breed registries have all dropped any injunction against cloning. Any horse cloned from a horse registered with the major European Olympic-type sporthorse breed associations — the Hanoverian Verband, the Dutch Royal Studbook, the Swedish Warmblood Studbook, and so on — can be registered and travel around the world to compete. Any offspring of that clone would also be considered eligible. In 2014, Blake Russell, President of ViaGen, reported that European sporthorses now make up the "biggest part of the horse [cloning] market," adding, "that industry shifted about 5 or 6 years ago [2008-2009]." The shift Russell describes was from Quarter Horses to European sporthorses as the dominant part of ViaGen's equine business. Clearly, the definition of natural as an appropriate marker for a horse's performance, whether practical or genetic, did not have to align with the AQHA's cultural conservatism.

Deviant Sex: The Unsettled Taxonomies of Facsimile Life. Scientific concerns about cloning as detrimental to animal health, reproductive capacity, and performance has

been somewhat dispelled over time. Still, the widespread public association of cloning with something profoundly unnatural and unnerving is pervasive. Andrew Roush, as a psychology student at Western Carolina University, conducted a survey in which he asked his respondents to "evaluate the 'naturalness' of animals of the same species in different circumstances," such as the naturalness of an "elephant in a jungle versus zoo." Roush tracked the percent decline in perceived "naturalness" caused by varying degrees of domestication, captivity, and scientific or genetic manipulation. The largest percentages of decline had to do with the last category, genetics — and of those, clones were by far the "least" natural. The percent decline in naturalness for a cow living on a farm to a cloned cow was a whopping 80%, a significantly steeper decline even than that between a fish in the ocean and a fish who had been genetically modified to glow in the dark (Herzog).

The battle between heteronormative and transspeciative sex occurred on a hill of conservative definitions of sexual legitimacy that the AQHA successfully defended. "America's Horse," a breed first defined by the imposition of genetics over performance and the privileging of ranching over other cultural horse histories, must now also abide by conservative definitions of sex that once were "natural" and now must be policed in the face of deviant transpeciative technologies. Yet the fuller implications of cloning for refiguring conceptions of gender, sexuality, and species, and the possibility for a fuller accounting of how the technology could be put towards the improvement of animal worlds, is not foreclosed. The AQHA's clone ban cooled much of the appeal for performance horse cloning among Quarter Horse breeders. However, one last story of Quarter Horse cloning bears telling here, as it clarifies the sexual potentials of cloning and the ways in which the new life forms engendered by the technology can reframe ideas of sex, nature, and transpeciative encounters in the biological Anthropocene.

I have focused on the Smart Little Lena Quarter Horse clones in this essay, but they were not the only clones foaled in TAMU's inaugural class of equine clones. One clone among these was especially remarkable: a healthy foal who happened to be a clone of a castrated male horse. Clayton, the foal, was a genetic facsimile of a gelding named Scamper. Scamper, an unregistered Quarter Horse, had carried his owner, Charmayne James, to record successes in the sport of barrel racing. James wanted to re-create him in stallion form so she could capitalize on his performance record and celebrity through stud fees. James claimed, "If there was ever a horse to be cloned to help promote the sport of barrel racing [then he's it] ... and that's where my goal in life is, is to help promote barrel racing and help people get some better, sounder, quality horses out

there" (Church). When Clayton was born, James did not plan to barrel race him, because she regarded him as too valuable to risk injury. This value came both from the $150,000 James paid to ViaGen and Texas A&M to bring him into the world, and also his future income potential as a sire. Clayton's purpose was to serve "exclusively for breeding," using Scamper's performance record and status as the only barrel horse to be inducted into the ProRodeo Hall of Fame as the basis for Clayton's breeding worth ("Satisfied Owners and Breeders"). The goal of cloning Scamper, then, was to produce a Scamper who could mix with mares as if he had been a stallion in the first place — it is a form of earning *back* his testicles. Clayton is a genetic facsimile of Scamper, and is being marketed as a correction of the original human mistake of Scamper's castration in light of his exceptional athletic performance record. Through the reproductive capabilities of Clayton, James parlayed Scamper's performance record into a new narrative of technological redemption: through the promise of cloning, Scamper the gelding could reproduce.

James, in cloning Scamper, never intended to try and crash the gates of the AQHA, and never attempted to register Clayton. Their story is one of reproductive, not genetic, redemption. This curious scenario is surprisingly apt to the process of cloning. Sarah Franklin reminds us of the ancient and botanical roots of the word "clone," which derives from the Greek word for "twig," and describes both the process and result of growing a new plant from a cutting of an existing one: a graft, in other words (Franklin 19). But she also makes clear that complex multicellular mammals are not plants, and argues that the word "clone" is a loose and imperfect metaphor for the work involved in creating a new animal from the cells of an existing one. Imprecision, contingency, and obfuscation are part and parcel of calling Clayton, or Dolly, or any other animal that successfully represents the genes of another, a clone. As a biological being, Clayton simultaneously is and is not Scamper: he grafts both testicles and reproductive profitability onto what was once simply story of multispecies love.

Love tends to get short shrift in narratives of Anthropocenic anxiety in favor of pulling back the curtain of the workings of profit. But James's story is instructive in reminding us to attend to love stories that can live within otherwise techno-bureaucratic and human-dictated activities. The reasons James gives for bringing Scamper into the domain of the cloning laboratory are love stories. In one interview, James described the exceptional bond they shared from the day she met Scamper at a New Mexico feedlot (Scamper's testicular redemption is as much a class story as it is a gender one) as central to their competitive success. She tells the story of that day as the meeting of two kindred souls:

> My dad told me I could ride him, but warned me that he was cold backed [he had a history of dismounting his riders]…. I saddled him up and took him out behind the barn where no one could see me, and, of course, I kicked him into a lope [fast] because my dad told me not to. Scamper dropped his head and bucked a little, but I just kind of giggled because I didn't really know any better, and he looked at me, and right then, it was apparent that he loved little girls, and he loved me. … Looking back, I probably should have been a little more fearful, but I knew that he would never hurt me. (James and Wheatley)

Because this affinity is deeply wound into the narrative of his transformation from gelding to sire, Scamper's story exceeds prior limits of both species and sexual capacity that previously governed capitalist definitions of animal reproduction. Clayton, as a "correction" of the mistake of castrating Scamper, reminds us that the genetic facsimile is a form of nature that, no matter one's trepidation, is capaciously able to correct human errors (while perhaps also marking an "erroneous" path into unknowable reproductive futures). And James, in attempting to fit cloning into the world view of barrel racing enthusiasts, mobilized naturalized assumptions of *heteronormative*, if not *heterospeciative* love — between herself as a female human and him as a male horse — in order to obscure, or decenter, the queer transpeciative aspects of cloning.[15]

Conclusions. Reconstituting these connections is paramount to understanding the AQHA's difficulty in reconciling cloning with a tradition that denies legitimacy of queer sex in the service of defining American normativity in its "heartland." Cloning, as Franklin reminds us, makes plain the inseparability of new biologies from the "meaning systems they reproduce, depend upon, or challenge, such as beliefs about nature, reproduction, scientific progress; or categories such as gender, sex, and species" (3). The debate over cloning within the Quarter Horse breed reveals that the historical and cultural constraints to genetic integrity are equally important, if not more, than genes themselves. The meaning systems of the AQHA, embedded in a conservative and nativist interpretation of American history and one-male-one-female definitions of legitimate kin relationships, simply cannot support cloning's transformation of these categories. As a marker of the biological Anthropocene, Clayton, and cloning more generally, demands a reframing of reproductive technologies to reckon with their transgenic and transpeciative dimensions. They demand a reckoning with the cultural ideas that have shaped what it means to breed, and what it means to be a breed. Cloning demands a new rhetoric to encompass both its redemptive and its commercial potentials in rural spaces that engender conservative definitions of a life form's

legitimacy based on its parentage, and an examination of how more granular and affective stories, like love stories, interact with the laboratory to both illuminate and obscure key elements of transpeciative reproduction. Ultimately, as both the stories of Smart Little Lena and of Scamper illustrate in their different ways, cloning cracks open the foundations — genetic and cultural — that have supported the ties between "America" and "America's Horse."

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Notes

1. In this essay, I do use farm terms like hogs, poultry, and cattle in addition to lay terms like pigs, chickens, and cows. Among animal studies scholars, the former terms are rightly connected with the de-individualization of farmed animals that accompanies their transformation from animal to product. As such, many argue that the ethical choice of terminology should only include lay terms that maintain the rhetorical individuality of animals as part a broader ethics. This is a toothsome issue for me, as words matter very much to the constitution of power, and I am also ethically committed to promoting the individuality and personhood of animals, but I, as yet, refuse to hide or disown the realities of my own farming past in the process of critically appraising it. So, in this essay, as with others I write, I retain the capitalistic nomenclature when writing about the material realities of animals-becoming-capital, and use individualizing terms when speaking of animals-as-animals. Throughout, animals are "who," not "it." One interesting twist I've noticed while preparing this essay is that horses do not have a de-individualized equivalent term: horses are horses, whether they be also companions or paychecks to their proximal humans.

2. Readers can consult a variety of literature on this topic in relation to the development of modern agricultural breeding practices. I suggest starting with Margaret Derry, *Bred*

for Perfection: Shorthorn Cattle, Collies, and Arabian Horses since 1800 (Johns Hopkins University Press, 2003) and *Masterminding Nature: The Breeding of Animals, 1750-2010* (University of Toronto Press, 2015); and Harriet Ritvo, *The Animal Estate: The English and Other Creatures in Victorian England* (Harvard UP, 1989).

3. The AQHA describes its founding as taking place at a "dinner party" hosted by Anne Burnett and Jim Hall in 1940. Burnett, the heiress to the Four Sixes ranching empire in Texas, was one of the largest landowners in the world. Hall was a New Yorker who owned a seat on the New York Stock Exchange and was part of an elite East Coast horse culture before marrying Anne. They were joined at this "party" by several others, including Robert Lee Underwood, who tied his ranch to oil fortunes in the 1930s; and Jim Minnick, who supplied horses to Hollywood stars Tom Mix and Will Rogers.

4. These requirements created predictable rifts between many people who called their horses Quarter Horses. By 1945, two other Quarter Horse associations had formed in order to legitimate their non-ranching horses: the American Quarter Racing Association and National Quarter Horse Breeders Association. Both were concerned the AQHA stud book was too restrictive. By 1950, in part because of the confusion these multiple associations created, the AQHA and these two offshoot associations negotiated a contentious merger.

5. For further foundational reading on Quarter Horse history, see: Dan D. and Jack Casement, "Social Significance of the Quarter Horse." *The Cattleman*. September 1940; Robert M. Denhardt, *Quarter Horses: A Story of Two Centuries* (University of Oklahoma Press, 1967) and *The Quarter Horse* (American Quarter Horse Association, 1941; rpt., Texas A&M University Press, 1982); J. Frank Dobie, "Billy Horses and Steel Dusts." *The Cattleman*. March 1937; Wayne Gard, *Fabulous Quarter Horse-Steel Dust: The True Account of the Most Celebrated Texas Stallion* (Duell, Sloan and Pearce, 1958); and Don Hedgpeth, *They Rode Good Horses: The First Fifty Years of the American Quarter Horse Association* (American Quarter Horse Association, 1990). I would like to point out that all of these histories were written by white men. The meaning of the Quarter Horse in American culture is indelibly tied to the preservation of white, heteropatriarchal values.

6. Weiss's exploration of the concept of a "heritage" breed and the entanglement of value with naturalization is a helpful one here, despite the very important distinction that hogs raised for meat face different cultural and economic pressures than horses do. Nevertheless, if we play with the idea that a Quarter Horse is a "heritage" breed, Weiss's observations can help us parse the cultural danger cloning posed to the AQHA.

If it is assumed that an industrial hog is not "naturally" produced, either as an animal or as a food product, then the clear distinction that "heritage" breeds can make is to connect genes, management practices, and products to the definition of "natural" that industrialization repudiates. By cultivating a breed of hog that does not conform to industrial practices and then protecting that bloodline from further hybridization, Weiss argues, "Such an unsullied line connotes a sense of what is uniquely real, and not modified or corrupted for commercial or commodified interests" (118). Furthermore, "it becomes clear," Weiss writes, "that genetic diversity — and as a result, heritage as a quality of distinctive breeds — is always situated within a concrete social order.... A heritage breed is relevant to someone's heritage, not simply to abstract continuity, traceability, or longevity" (117). Ideas of what a "natural" hog is, what their "natural" life should be like, and what a "natural" pork product is are baked into the value — both cultural and economic — ascribed to these animals. Just as important is the naturalization of whose "heritage" is being put forth as worthy of preservation — certainly it is not the hogs' and their genetic qualities, but a human heritage. In this way, Weiss reminds us, "A breed can embody a temporal sense of depth, as well as purity and distinction" (247).

7. For an entry into the literature on cultural and political conservatism in the western United States and its impact on sexual norms in the Cold War, I suggest starting with Lisa McGirr, *Suburban Warriors: The Origins of the New American Right* (Princeton University Press, 2nd ed., 2015).

8. The website for *America's Horse* magazine does not give concrete circulation numbers, but it does automatically go out to every AQHA member. Its website provides a handy infographic with fascinating readership demographics and data for its advertisers. As of my last visit to this site in 2018, the graphic lists the average median income for AQHA members at $161,000 and the average members' net worth at $1.19 million; 49% of its membership is aged 56 and over; 75% are female; 34% have been members for more than 20 years; 97% own a pickup truck or SUV; 61% are college educated; and 47% report as recreational, not professional, riders. See https://www.aqha.com/media/10650/aqha-member-demographics.pdf.

9. By various measures presented in this study, Quarter Horses dominate the American equine landscape. In a table cited here, documenting the fifteen-year totals of the nine largest breed registries in the US, Quarter Horses registered with the AQHA made up nearly 60% of the total horses registered in the US. The study also published a table based on data from the USDA/National Animal Health Monitoring System from 1998, which showed that registered quarter horses made up 39.5% of the total equine

population in the US (donkeys, burros, ponies, and miniature horses included). Kilby points to several difficulties in formulating an accurate number of the total equine population, but argues that it is at or above 9.6 million.

10. Denhardt left his post at the AQHA to serve in World War II. Michaelis took over secretarial duties until 1946.

11. The technique of embryo transfer faced severe criticism from within and outside the Quarter Horse world, as some breeders used this technology (and, to be fair, AI as well) to produce a very large foal crop with the intention of only registering the "best" of them. Anthropologist Tamar McKee notes, "not only was Artificial Insemination (AI) allowed … but the semen of one stallion could be used to impregnate [an unlimited] number of mares in order to increase a breeder's chances of creating the ideal foal" (McKee). In this equation, only the best foals would be registered, and the rest, as McKee found, "could be culled through slaughter," or gelded and sold as grade horses. Scamper, a horse you will meet later in this essay, is likely a product of just this kind of logic: his conformation and talent suggest that he was not ill-bred, but, perhaps because of his fiery temperament, his breeder determined he was not part of the top of that year's foal crop. Scamper and others like him form a cohort of unwanted and untended, and largely invisible, equine surplus in the United States. While many unregistered horses do find good homes, the overwhelming presence of unregistered Quarter Horses in the U.S. slaughter pipeline (they represent 7 of 10 of the total horses shipped from the U.S. to slaughter facilities in Canada and Mexico) reveals a startling excess of these horses (McKee).

12. For a thorough and extremely useful primer on the legal gymnastics of livestock production designed to facilitate animal capital, see Rosenberg's "How Meat Changed Sex: The Law of Interspecies Intimacy after Industrial Reproduction."

13. The technique's success is unevenly distributed among mammal species, however. Some such as horses, cows, cats, mice, and famously, sheep, have all been successfully cloned. Others, to the ongoing disappointment of their advocates, have yet to yield a clone, such as dogs (though, at the time this article is going to press, it appears from newsmedia accounts that one of Barbra Streisand's pet dogs has successfully been cloned) and a number of endangered species of wildlife.

14. The sample number, 3000, represents roughly .02% of the total US-based membership of the AQHA in 2010, which was approximately 144,000, according to Kilby.

15. This love discourse is in direct contrast to the near-complete absence of attention to same-species love, in this case between horses, that characterizes breeding in the horse world more broadly. As Samantha Hurn describes for the particular equine breed the Welsh Cob, "In commercial cob breeding … love has nothing to do with sex. If a mare takes to the stallion she is covered by, then it makes the process easier for all concerned. If she does not, then there is little she can do about it" (31). Addressing this gap requires a complete ethical overhaul of the entire capitalist enterprise of creating animal flesh and life in the biological Anthropocene.

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