

Northeastern University

From the Selected Works of Kara W. Swanson

2017

Patents, Politics and Abortion

Kara Swanson, *Northeastern University*



Available at: https://works.bepress.com/kara_swanson/13/

PATENTS, POLITICS, AND ABORTION

Kara W. Swanson, Northeastern University School of Law*

On June 17, 1980, the banner headline on the front page of the *New York Times* read “Science May Patent New Forms of Life.”¹ The article reported on the Supreme Court decision in *Diamond v. Chakrabarty*,² a legal dispute that had captured public attention because of its underlying ontological question: what is life? The patent office, represented by then-patent commissioner Sidney Diamond, argued that life was a special category not subject to the patent laws. On the ground that living organisms were not patentable, the office had denied a patent to Ananda Chakrabarty for a laboratory-created bacterium with improved abilities to break down petrochemicals.³ In a 5-4 decision, widely seen as a change in patent doctrine, the United States Supreme Court disagreed, ruling that a living organism could be a “manufacture or composition of matter,” and therefore as patentable, ownable and marketable as any other new gadget.⁴ The quality of being alive was irrelevant to patent law.

During the 1980s, following the guidance of the *Chakrabarty* majority, the patent office considered laboratory-created organisms instrumentally, as “new products or processes of manufacturing,” whose “introduction . . . into the economy” under the protection of a patent might result in “increased employment and better lives for [American] citizens.”⁵ It climbed the evolutionary ladder, granting patents to oysters, corn and mice, declining to find any limit to the type of life that might be a patentable manufacture, short of the constitutional prohibition of human slavery.⁶ This embrace of an instrumentalist approach to life by the patent office was in sharp contrast to the rest of the executive branch under the presidential administrations of Ronald Reagan (1981-89) and George H.W. Bush (1989-92), where the dominant understanding of life was ardently non-instrumentalist.

Since the Supreme Court had ruled in 1973 that abortion, at least before fetal viability, was a constitutionally protected right,⁷ a national anti-abortion movement had begun to form, focused on overturning the *Roe v. Wade* decision and pushing for federal laws and regulations supportive of its understanding of life.⁸ This movement organized around a non-instrumentalist view of life as an ultimate protected value, calling itself “pro-life.” As the *Chakrabarty* case was being argued and decided, Reagan was building the coalition that supported his landslide election in November 1980, a coalition that included religious conservatives, newly drawn into politics through the “pro-life” movement.⁹ With Reagan’s election, those committed to what Reagan called the “sanctity of life”¹⁰ gained new prominence in the Republican Party and within the executive branch.¹¹

As abortion became a hot-button issue in federal politics, the patent office and its divergent understanding of life were ignored. Without public discussion, the patent office was granted non-combatant status in the “abortion wars” of the late twentieth century.¹² Using its instrumentalist, market-driven view of life, the United States patent office led the world in expanding patentable subject matter to include all mammals short of humans. It also granted patents to new technologies of abortion, virtually without objection from anti-abortion advocates. The patent office achieved this form of executive branch exceptionalism by operating in a perceived apolitical zone. Using the politics of life in abortion debates and patentability debates as a case study, this essay argues that this perception, while powerful, and reinforced by courts and scholars alike, is incorrect.¹³ The patent office has always been engaged in politics in its daily acts of granting and denying patent applications, that is, politics in the broad sense as used by feminist theorists and others, as encompassing not just electoral politics, but also the creation and reinforcement of power hierarchies.¹⁴ After considering the *Chakrabarty* case as a moment

when the perceived neutrality of the patent office was threatened and then strengthened in a new way, I then set the patent office exceptionalism of the 1980s and 1990s in historical context in order to trace the source and strength of the patent office's perceived neutrality. I first look back to examine the long history of the patent office and the abortion controversy and then forward at two turn-of-the-twenty-first-century inventions implicating the politics of life, the abortion pill and human-animal chimeras. I conclude by beginning to theorize the apolitical understanding of the patent office by considering what work this perception is doing and what it is hiding in the context of the politics of life.

Rethinking Diamond v. Chakrabarty

Diamond v. Chakrabarty is widely and correctly understood as a pivotal decision that undergirds the biotechnology industry in the United States. When Chakrabarty applied to patent his new bacterium in 1972, it was assumed in the patent office, in the inventive community and by lawyers and scholars that living organisms were not patentable.¹⁵ United States law promises a patent to anyone who “invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof.”¹⁶ While arguably the statute encompasses a newly discovered useful plant or animal, the courts have declared such discoveries to be non-patentable products of nature. Thus, the patent commissioner ruled in 1889 that a fiber isolated from pine needles, found to be particularly useful, was nevertheless not a patentable invention, because it was simply “what nature has produced.”¹⁷

In its early elaboration, the judge-made natural products doctrine appeared to be grounded on the distinction between nature and artifice, rather than on that between life and non-life. It banned patentability to *discovered* products of nature, like the pine fiber, but did not address *human-made* living organisms.¹⁸ As a practical matter, however, the product of nature

doctrine was interpreted to preclude *all* living organisms from patentability, whether discovered or invented.¹⁹ This understanding was left untheorized and unarticulated by the courts but was assumed to be based on the inherent unpatentability of life. As one author explained to the patent community in 1923, plants and animals were simply not patentable, even if “obtained by the aid of scientific management in their propagation.”²⁰ This assumption had helped drive the passage of plant patent acts in 1930 and 1970, as plant breeders sought a special form of intellectual property protection for their otherwise unpatentable new varieties.²¹

By seeking to patent Chakrabarty’s new bacterium, Chakrabarty’s employer, General Electric Corporation (“GE”) challenged the conventional understanding. When, after considerable wrangling in the patent office and the lower courts,²² the majority of the Supreme Court ruled that the received wisdom was misguided, and that living organisms could be patented if “made by man,”²³ the door opened not only to Chakrabarty’s patent,²⁴ but to property interests in all genetically modified plants and animals. This important and oft-told history of Chakrabarty’s patent included two rhetorical moves relevant to the patent office’s exceptional status as apolitical: the initial decision of the patent bureaucrats to articulate and formalize the assumed prohibition against patenting life when denying the application, and the characterization of the patent office’s role by Supreme Court.

To Grant or to Deny: The Patent Office Decision

Since 1836, all patent applications have been examined by a patent office employee to determine whether they meet the statutory requirements of patentability. The examiner who considered Chakrabarty’s application rejected it on the dual grounds that the bacterium was a natural product and that it was a living organism.²⁵ Because Chakrabarty had created a previously nonexistent bacterium by moving genetic material between existing strains, it was not

clear that he was claiming simply “what nature has produced.”²⁶ To bolster the rejection, therefore, the examiner also relied upon a *per se* rule against patenting life. When GE appealed the rejection to the Board of Patent Appeals, an administrative panel within the patent office, the Board for the first time in a published opinion articulated the received wisdom as patent office policy, affirming the rejection on the grounds that living organisms, no matter what their origin, could not be “manufactures or compositions of matter.”²⁷ Life was not patentable.

The patent bureaucrats thus made a deliberate decision to declare life *per se* unpatentable in order to reject Chakrabarty’s application. This decision was a political move by the office, just as a decision to grant the application would have been. Existing patent law provided a readily identifiable approach to granting the patent. The Court of Customs and Patent Appeals, a patent-savvy court charged with hearing all appeals from denied patent applications, embraced that alternative when GE appealed the Board decision. Rejecting the *per se* rule, the court instead articulated a distinct vision of life. The new bacterial strain was simply “an industrial product used in an industrial process in a useful or technological art.”²⁸ “Life,” the judges in the majority proclaimed, “is largely chemistry.”²⁹ Novel and useful chemicals were patentable, and thus novel and useful living organisms were also patentable. Was life chemistry that could be manipulated by industrial processes to make industrial products, and thus patentable like other industrial chemicals, or was it a special category outside of the scope of the “useful Arts” that patent law was designed to promote?³⁰ The patent office was forced to choose in order to process Chakrabarty’s application. Either decision had consequences, for GE and for other inventors and their employers.

Why did the patent office decline to adopt a “life is chemistry” approach? Even though the *Chakrabarty* case unfolded during the immediate post-*Roe* period when Americans were

reacting to the new legal landscape of abortion, there is no indication that the patent office made its decision to defend a bright line rule against patenting life by any perceived need to align patent doctrine with a “pro-life” position. Its motives were less ontological than pragmatic. The patent office picked the less controversial option. The federal politics of life in the early 1970s were not yet focused on abortion, but instead, on a debate closely relevant to Chakrabarty’s patent application.³¹ In the early 1970s, scientists learned how to “splice” or recombine DNA to insert genes from one species into another. What Chakrabarty and others called “genetic engineering” promised an explosion of laboratory-made life with commercial potential, and also sparked intense controversy.³² Prestigious scientists called for a voluntary moratorium on all genetic engineering in July 1974 to allow time for both scientists and the federal government to consider the safety of this technique. The result was a period of public debate, which included congressional hearings and proposed legislation.³³

If the patent office had granted the Chakrabarty application in the early 1970s, it would have become the first government entity to approve this technology while its social acceptance was uncertain.³⁴ Enforcing the received wisdom against patenting life was the conservative option least likely to draw public criticism. That the agency was motivated more by the desire to avoid controversy than by a commitment to a particular ontology of life was made clear in 1979, when, after the patent office lost in court, the decision needed to be made whether to seek Supreme Court review. By this time, congressional hearings on genetic engineering had ended without legislation, the moratorium had been lifted, and fears of Frankenstein’s monster had been replaced by an optimistic forecast of economic growth driven by biotechnology.³⁵ In this context, the patent commissioner was willing to quietly drop the newly articulated rule against patenting life by declining to appeal. The Solicitor General overruled the commissioner,

however, viewing Supreme Court review as the best way to support the potential of biotechnology. The court decision had overturned settled, if informal, understandings of patent doctrine, and a Supreme Court decision would provide clarity to the nascent industry by resolving the validity of the expected new wave of patents.³⁶

No Politics in the Patent Office

The *Chakrabarty* opinion provided the sought-after certainty to biotechnology companies. Perhaps to the surprise of the patent commissioner, in overturning the office's attempt to avoid controversy by *denying* the patent, the Court also created a powerful rationale for excusing the patent office from any controversy resulting from *issuing* patents. The Court overturned the agency's decision as impermissibly attempting to set limits on patent doctrine, a decision which it declared should be left to what it called the "political branches."³⁷ According to the majority, the political branches that should decide whether life was patentable were "the Congress and the Executive."³⁸ Ignoring the inconvenient fact that patent commissioner Diamond was the politically appointed head of an executive branch agency, the Court implicitly carved the patent office out of the political executive branch, leaving it in an isolated apolitical zone in which it should consider living organisms as industrial products. The patent office was thus not only given the mandate to consider laboratory life as chemistry, but the mantle of apolitical neutrality to cloak its actions. Although it lost the case, the office had succeeded spectacularly with its controversy-avoiding strategy. Articulating a new *per se* rule based on common wisdom, the office had avoided the controversy about recombinant DNA in the 1970s, and then the Supreme Court declared its further actions in this area to be non-political.

Throughout the 1980s and 1990s, the "political branches" and popular opinion alike largely accepted the position that patents had nothing to do with the politics of life, and the

patent office issued patents to new forms of laboratory life undisturbed.³⁹ When cautious examiners rejected applications to genetically engineered corn in 1985 and a genetically modified oyster in 1987, the Board of Patent Appeals overturned the rejections, and ordered the patents to issue.⁴⁰ Shortly after the oyster decision, the commissioner issued a notice that the office considered all nonnaturally occurring, nonhuman multicellular living organisms to be patentable.⁴¹ In 1988, the patent office issued the first patent on a mammal, the so-called Harvard oncomouse.⁴² In the patent office, all life short of human life was chemistry, and potentially patentable. “We are not patenting life. . . . We are patenting technology,” one patent official said.⁴³

The ready acceptance of this characterization is remarkable given the inconsistency between the patent office’s position and the conceptual underpinning of the anti-abortion movement that “life is sacred” and thus always to be considered in a separate moral category.⁴⁴ While the “pro-life” movement was unquestionably focused on human life, this inconsistency was still potentially troubling, as pointed out as early as 1980 by biotechnology critic Jeremy Rifkin. In the sole *amicus* brief filed on behalf of the patent office’s position in *Chakrabarty*, Rifkin argued that any genetic engineering was a usurpation of the divine role and, further, that there was no scientifically or legally valid definition of life that would preclude the propertization of higher life forms, including humans, once life was considered patentable.⁴⁵ The instrumental view of life could not co-exist with the sacred view. While Rifkin persisted in making that argument, and garnered some support over the decades,⁴⁶ the argument that patenting life was inherently immoral or otherwise improper failed to gain much purchase in the “political branches” of Congress and the remainder of executive branch. The neutral status of the patent bureaucracy has been reflected in the quiet outside of the patent office. Despite the

heated furor of the abortion wars that repeatedly brought both “pro-life” and “pro-choice” marchers to Washington, D.C., there have been no protests in front of the patent office.⁴⁷

Informed commentary has also supported the patent office in its claim to apolitical status. Since *Chakrabarty*, scholars have debated whether the United States should follow the European Patent Office in explicitly considering the morality of patent applications – that is, whether the patent office should do more than what it has been seen to be doing since 1980, merely “patenting technology.”⁴⁸ The European Patent Office, since its creation in 1978, has had a specific statutory directive to consider the *ordre publique*, or morality, of all claimed inventions.⁴⁹ In the United States the post-*Chakrabarty* scholarly debates have turned on the desirability of reviving the so-called “moral utility” doctrine. First articulated by a trial court judge in 1817, this doctrine interpreted the statutory requirement that inventions be “useful” to require that inventions have a socially beneficial use. Inventions which were “frivolous or injurious to the well-being, good policy, or sound morals” of society should not be patentable.⁵⁰ This nineteenth-century doctrine, never endorsed by the Supreme Court or by Congress, was still recited by courts through the 1990s, but no longer used to invalidate patents after the 1920s.⁵¹ The patent office had disavowed its use in 1977.⁵²

As the patent office affirmed a broadening scope of patentable subject matter during the 1980s, commentators considered, but generally advocated against, relying on the moral utility doctrine to allow the patent office to make judgments about the social desirability of laboratory life. With the *Chakrabarty* majority, commentators agreed that such judgments were best left to other parts of the government, theorizing the apolitical neutrality of the patent office as a descriptive and normative matter based in legal doctrine.⁵³ Rather than reviving the “moral utility” doctrine, commentators lauded its demise as corrective of a misbegotten doctrinal

aberration, helping to bolster the executive branch exceptionalism of the patent office since *Chakrabarty*.

Abortion Politics and the Patent Office

The non-combatant status of the patent office during the late-twentieth-century abortion wars highlights the power of this discourse of neutrality. The 1980s and 1990s were not the first period during which abortion was a hotly debated sociolegal problem, however. Throughout United States history, the legal status and moral valence of abortion have changed repeatedly, although, as historian Carroll Smith-Rosenberg reminds us, abortion remains a “socio-sexual constant,” always practiced regardless of its legal, religious or medical status.⁵⁴ A historical view of abortion-related patents provides perspective on the exceptionalism of the patent office in the late twentieth century. Just as the disputed status of biotechnology in the early 1970s spurred agency action to avoid controversy about life and its legal status, the patent office long had been taking the sociolegal status of abortion into account when deciding whether to grant or deny applications in this potentially controversial area of technology.

Changing Law and Technologies

The legal status of abortion has changed radically over time, from an unregulated practice, to a regime of intense but incomplete criminalization, to a constitutionally protected right subject to a shifting set of regulations. When the patent system began in 1790, abortion was largely not a legal matter in the United States. Following English understanding, what today is considered abortion was legal before “quickening,” that is, before the pregnant woman felt the fetus move. Social disapproval focused on any preceding non-marital sexual activity, rather than on the destruction of a fetus.⁵⁵

The legal status of abortion began to change around the mid-nineteenth century as elite physicians agitated to criminalize abortion. States criminalized abortion at an increasing rate after the Civil War, such that by the turn of the twentieth century, most states had done so.⁵⁶ These new laws usually provided an exception for “therapeutic abortions,” that is, abortions performed by a physician in certain situations, most frequently to save a woman’s life.⁵⁷ Under this legal regime that persisted until about 1970, it thus always remained legal for doctors to perform some abortions. Abortion practice in this period included doctors performing legal therapeutic abortions, women attempting self-abortion, leading often to serious health consequences, and a thriving black market in illegal abortions, some of which were safe and effective, and others of which offered grave risk to vulnerable women.⁵⁸

Like the legal status of abortion, the technology of abortion also changed over time. Women have long used both abortifacient substances and physical interventions to terminate pregnancy and turned to a range of practitioners for advice, herbal remedies, and procedures.⁵⁹ During the nineteenth century, the safest and most reliable methods of abortion changed from abortifacients to physical interventions. By the turn of the twentieth century, doctors preferred to abort by a dilation and curettage (“D&C”) procedure, dilating the cervix and scraping out the uterus, while midwives and other practitioners might use physical manipulation to induce miscarriage without curettage.⁶⁰ D&C remained the preferred technique for doctors performing abortions until the 1970s, when they began to favor the use of vacuum aspiration.⁶¹ Activists within the women’s health movement in the 1960s and 1970s also experimented with simpler techniques, such as menstrual extraction.⁶² By the late 1980s, as discussed further below, a new approach to non-instrumental abortion, the “abortion pill,” offered another alternative.

Over the course of the nineteenth and twentieth centuries, the continuing practice of abortion and these technological changes offered opportunities for invention, and thus, patents. How did the patent office deal with abortion technologies in the pre-*Roe* era, and how did it do so after abortion became a hot-button political issue?

A Quiet Prohibition

Intriguingly, between 1850 and 1970, the period when abortion was disfavored in law and medicine, although not completely outlawed, the patent office issued virtually no patents on inventions specifically described as related to intentional pregnancy termination.⁶³ This absence of patents ended just as the public discussion about the legal status of abortion was changing rapidly. The American Law Institute proposed model abortion reform legislation in 1959, designed to give doctors more discretion to perform therapeutic abortions. This legislation was rapidly adopted by twelve states, including California, where then-Governor Ronald Reagan signed the bill into law. By 1967, the American Medical Association (the “AMA”), the largest professional organization of doctors, formally reversed its anti-abortion stance, and endorsed abortion law reform. The reform movement, originated by doctors, was joined by women activists advocating complete repeal of abortion laws, which three states did in 1970.⁶⁴

Abruptly, and without any public discussion, abortion patents began to issue from the patent office in 1970, several years before *Roe v. Wade* declared all statutes criminalizing abortion to be unconstitutional. The first patent explicitly claiming an improved abortion technology was granted on an application filed in 1968.⁶⁵ Another patent explicitly claiming an improved curette for use in abortions issued in 1972, and then in 1973 and 1974, about fifteen patents related to instrumental abortions issued.⁶⁶

This sharp transition indicates either that, previous to 1968, no such patents were sought, or that the patent office had declined to grant such patents. From the historical record, it is impossible to know how many applications related to abortion were filed with the patent office and denied.⁶⁷ While the number of such patent applications may have been low, it strains credulity to conclude that no innovators in abortion-related technology sought patents during the previous century.⁶⁸ Hundreds of thousands, perhaps millions, of women were paying for abortions every year during this period, and numerous practitioners specialized in abortions, creating a market for improved devices and medicines.⁶⁹ A closer look at issued patents from this period supports an inference that some such patents were sought, but were denied unless drafted to minimize the connection between the claimed technology and the practice of abortion.

While the words “therapeutic abortion” were not used in any issued patents before 1970, patents did issue for instruments useful in performing abortions. For example, at the turn of the twentieth century, as D&C became the most popular medical technique for abortion, there was a cluster of patents issued to improved uterine curettes. While uterine curettage could be performed in other circumstances, such as to remove the afterbirth or an incomplete miscarriage, and to treat female infertility, curettes were not part of the usual equipment of a doctor in family practice.⁷⁰ In the 1960s, when a small-town family practitioner decided to start performing abortions in defiance of the law, he found the process of ordering curettes from his usual supplier “scary,” believing that the salesman would find it “obvious” that he was ordering such instruments for the purpose of performing abortions.⁷¹ Given this strong association between curettes and abortion at mid-century, it is likely that these improved curettes were designed in order to better perform abortions. Their innovators, wishing to commercialize their inventions, may have deliberately used careful drafting to avoid a known, but informal, policy of the patent

office to deny patents to explicitly abortion-related technologies. While some of these patents specify that the purpose of the claimed invention was the removal of the contents of the womb,⁷² sometimes describing the need for curettage after an abortion or miscarriage,⁷³ other patents were much more vague about the possible use for these instruments, suggesting only “uterine purposes,”⁷⁴ and, in all cases, leaving perhaps their most common and lucrative use unmentioned.

If the patent office was denying explicit abortion patents, and through trial and error, patent practitioners learned to work around this quiet prohibition, the question is why.⁷⁵ During this period, the patent bureaucracy could rely on the moral utility doctrine to deny applications to inventions which met the statutory standards of patentability as new and nonobvious, but were controversial, even though technically legal. The abrupt change in the patent office reception of explicitly abortion-related patents in 1968, from denial to grant, occurred a decade before the patent office’s disavowal of the moral utility doctrine. While there is no direct evidence available, the inference that the patent office was using the moral utility doctrine to deny patents to technologies of abortion is supported by the closeness by which the issuance of such patents tracks the attitude of the AMA in its stance on abortion.

As the leading advocates for the criminalization of abortion, the medical profession publicized its opinion in the second half of the nineteenth century that abortion was dangerous to women and harmful to society in almost all circumstances, that is, that abortion failed the moral utility test as injurious to the “well-being, good policy [and] sound morals of society.”⁷⁶ This characterization of abortion, which the medical profession maintained until the 1960s, provided a rationale for denial of abortion-related patents, as at least as injurious as other legal inventions found unpatentable pursuant to the moral utility doctrine. These included a windscreen that

occluded vision and imitation silk stockings.⁷⁷ Given the perceived dangers of abortion, and its largely illegal status by the second half of the nineteenth century, examiners had ample justification to use the moral utility doctrine to refuse abortion-related patents. By the time the AMA changed its views in 1967, in part because of the enormous toll on women's health from black market and self-abortions, many doctors had come to view therapeutic abortion as a social benefit.⁷⁸ Immediately thereafter, the patent office began to issue patents claiming improvements in therapeutic abortion technology. Just as the patent office had followed the lead of scientists when considering whether to grant patents to laboratory life, it followed the lead of the most relevant profession, medicine, in considering whether to grant abortion-related patents, in each case refusing patents to disapproved technologies.

More Exceptionalism

Throughout the 1980s and 1990s, as the dominant politics of life on the federal level became more heated through the abortion wars, and as the patent office decided that life was chemistry and therefore patentable, the patent office continued steadily to issue abortion-related patents.⁷⁹ Just as the patent office followed its unique politics of life with respect to living organisms after the *Chakrabarty* decision, it also followed its own politics of life with respect to abortion technology, although in these later decades without recourse to the now-disavowed moral utility doctrine. The mantle of neutrality cast by *Chakrabarty* provided a new rationale that continued to make granting such patents non-controversial, even as anti-abortion partisans gained influence within the federal government. The patent office only "patented technology." The neutrality of the patent office as negotiated with respect to patenting living organisms thus extended patent office exceptionalism to insulate the agency from any criticism of its involvement in abortion technologies, ground zero of the federalized ontological dispute about

life. The patent office remained, as it had for over a century, outside of public debates about abortion, although its strategy had switched from one of denial to one of grant, and its grounds had switched from moral utility to technocratic neutrality.

Two Late 20th-Century Case Studies: RU-486 and Human Chimeras

The non-combatant status of the patent office in the abortion wars is all the more remarkable given its issuance of a patent to the most famous late-twentieth-century abortion technology, the “abortion pill,” and a well-publicized challenge to the “life is chemistry” policy in the form of an application to patent melded human-animal creatures. The sagas of these two inventions in the patent office illustrate both the durability and the limits of the patent office’s perceived neutrality.

The Abortion Pill

In 1982, French scientist Etienne Baulieu announced the discovery of a novel molecule, RU-486 (chemical name, mifepristone), that would cause an abortion without surgical intervention. According to Baulieu, a woman, having taken a dose of the substance, could proceed with her abortion at home. This new technology of non-instrumental abortion was widely viewed as potentially transformative of both abortion practice and the abortion wars, and immediately sparked controversy.⁸⁰

The history of RU-486 in the United States provides a clear example of how the apolitical reputation of the patent office allowed it to escape controversy and how this perception is mistaken, because the grant of any patent is a political act. The patent office was the first federal agency to consider this new abortion technology, just as it had been the first agency to consider the legal status of genetically engineered organisms. The owner of the invention, the French pharmaceutical company Roussel Uclaf, filed the United States patent application in January

1982 and the patent office treated it as merely another chemical case.⁸¹ By the time the patent issued in 1983, however, Baulieu had made his announcement and garnered significant international attention. Despite the controversy already raging about the pill and the intense focus on anti-abortion policies in the Reagan White House, as Reagan publicly pledged to fight the “urgent moral crisis” of abortion, the patent did not receive any public discussion or notice.⁸² While anti-abortion activists mobilized to fight the introduction of the pill into the United States, there was no criticism of the patent – no one, for example, pointed a finger at the Reagan administration for betraying its principles by issuing such a patent.

When approval was sought from the Food and Drug Administration (“FDA”) under the administration of George H.W. Bush, however, the FDA was subjected to extreme political pressure as it fulfilled its mandate to decide whether the drug was safe and efficacious, and approval was not granted until the administration of Bill Clinton (1993-2000).⁸³ Like the patent office, the FDA is charged with using technical expertise to make decisions about new technologies and to either grant or withhold a federal stamp of approval. Despite these parallels, the patent office alone was insulated by the powerful assumption that it was apolitical. Yet while the patent was not examined as part of the abortion pill debate, the ensuing controversy was framed by the existence of the patent.

Like all patents, this patent existed within and helped to create power dynamics. The concentration of power over the abortion pill through the patent, a result of the patent office’s quiet abandonment of its anti-abortion stance less than two decades previously, offered Roussel the chance to reap monopoly profits from each mifepristone-induced abortion. It also created leverage for anti-abortion forces. Those opposing women’s access to RU-486 lobbied Roussel and its parent company, the German chemical firm Hoechst A.G., to keep the medication out of

the United States market. Bowing to this pressure, the company refused to seek FDA approval or to license any other company to do so through the 1980s.⁸⁴ The patent thus supported anti-abortion activists in their efforts to reduce options for doctors and patients when choosing a legal medical procedure, creating and supporting politics by its existence as federally recognized property. The Population Council, a non-profit organization promoting birth control and family planning, finally was able to negotiate a license to test the drug and seek FDA approval, and to arrange for manufacturing within the United States.⁸⁵

Human Chimeras

While the RU-486 controversy was dragging on, with the patent office involvement left unremarked, the patent office found itself front and center in another controversy touching upon the status of human life, as its “life is chemistry” approach came under direct attack in 1997. Biotech gadfly Rifkin recruited the scientist Stuart Newman to apply for a patent to human-nonhuman creatures, “chimeras,” made by melding human embryos with those of baboons, mice, pigs or chimpanzees. Newman and Rifkin deliberately crafted the application as a challenge to the post-*Chakrabarty* politics of life within the patent office and gave interviews to publicize their challenge.⁸⁶

Rifkin told the press that he wanted to force the patent office back to the questions it had first raised when it proposed the *per se* rule against patenting life in *Chakrabarty*, questions like:

What is a human being? What is life? . . . What is the border between nature and artifice? What is the border between humans and our fellow creatures? What does it mean to be alive?⁸⁷

Rifkin’s challenge was not only an attempt to force the patent office to draw a new bright line that would limit patenting laboratory life, but also an explicit attempt to make the politics of the patent office and of patents visible. Rifkin wanted to expose how the patent office was not

simply patenting chemistry or technology, but rather making decisions that implied answers to these larger questions. Given that the “political branches” had failed to regulate in this area since 1980, the patent office’s practice of granting patents was creating facts on the ground, with each issued patent.

Rifkin’s strategy was partially successful. The public attention drove the patent office to issue a press release, stating that Newman’s application would never be granted, although the grounds for the anticipated rejection were unclear. The patent commissioner stated: “It is the position of the [office] that inventions directed to human/non-human chimeras could, under certain circumstances, not be patentable because, among other things, they would fail to meet the public policy and morality aspects of the utility requirement.”⁸⁸ This statement suggested that the patent office was prepared to revive the moral utility doctrine, a proven past bulwark against involvement in controversial technologies. Like abortion technologies before 1970, and recombinant organisms in 1972, chimeras might be legal and arguably within the scope of patentable subject matter, but they were objects of considerable public disapproval. Rifkin’s public relations strategy ensured that granting Newman’s application would not be yet another unremarked, apolitical, technical patent office decision, but instead would draw negative attention and controversy. In response, the patent office returned to the strategy of denial and delay that it had used when confronted with the Chakrabarty application, and additionally suggested publicly that “some guidance” from Congress or the courts would be welcome.⁸⁹

The patent office finally rejected the Newman application in 2004 without explicitly invoking the moral utility doctrine, but arguing that as an invention encompassing a human, it was outside the boundaries of patentable subject matter.⁹⁰ Unlike Chakrabarty, Newman did not appeal his rejection to the courts. As the patent office and Rifkin had hoped, Congress took up

the issue, and the America Invents Act of 2011 inserted life into the patent statute for the first time, creating a statutory prohibition against patenting inventions “encompassing human organisms.”⁹¹

The Politics of Patents

These examples of the interplay between the patent office and technologies implicating the ontology of life in the late-twentieth-century United States illustrate the strength of the current apolitical understanding of patents and the patent system and the unacknowledged politics of patents. The RU-486 saga and the Newman/Rifkin application both highlight the patent office as, in the words of one scholar, “the most closed venue of all” within the political branches.⁹² While the neutrality of the patent office has been reformulated since the demise of the moral utility doctrine, it has been maintained by a long-standing agency practice of refusing to grant patents to deeply contentious technologies. The office avoids controversy even as it does politics constitutively and continually.

The appeal and strength of the patent office’s perceived apolitical nature is understandable. While it is a foundational premise of law and society scholarship that law and society exist in shared contexts, mutually dependent and co-constitutive, intellectual property law has been resistant to law and society scholarship, and the patent system, perhaps most of all.⁹³ It is simply assumed to exist in a world apart, for largely the same reasons that science has also been considered apart from society – its claims to objectivity and a methodology based on fact-driven, non-teleological discovery. Patent law deals with technology, technology is based on science, science is neutral, objective and fact-driven – therefore patent law is also. These common assumptions undergird the narrative of patent office neutrality. But just like science, technology, and other areas of law, the patent system does not exist in a separate realm.⁹⁴ Like

the technological artifacts they represent, each issued patent is a political entity,⁹⁵ with significant real world consequences.⁹⁶ The granting of patents to a wide variety of living organisms, and then to human, animal and plant genes, has shaped an entire new industry, led the courts in other countries to allow similar patents for fear of disadvantaging their economies, and is now creating the context for genomic medicine and global agriculture.⁹⁷

Since the patent system was created in 1790, patent bureaucrats have been making choices, granting or denying patent applications. Either way, they are doing politics – that is, creating power hierarchies by granting or denying an intangible property interest, often with tangible results.⁹⁸ Too much attention to its political role threatens the functioning of the office, as the patent office learned early in its history,⁹⁹ and as other parts of the administrative state know well.¹⁰⁰ For over one hundred years, the patent office had relied on the moral utility doctrine to avoid issuing patents that might be most likely to draw public controversy and expose the politics of patents. Despite the consensus in recent decades that the moral utility doctrine is appropriately discarded, and that the patent office is appropriately refraining from policy decisions, the patent office continues to do politics even in the absence of a legal mandate to consider social benefit and public morals. It has no other choice. Before consideration by other parts of government that we might think are better suited to deliberate policy nuances, the patent office must decide whether to grant or deny patents to new technologies. Lacking the moral utility doctrine, the office has sought both doctrinal and bureaucratic means to avoid issuing highly controversial patents. It articulated new doctrines in denying the Chakrabarty and Newman applications. As a bureaucratic solution, the office in the mid-1990s instituted the “Sensitive Application Warning System,” an informal internal system to flag potentially

problematic applications, so that staff could make the decision to grant or deny with full awareness of the possible public response.¹⁰¹

If we acknowledge that patents have politics and that the patent office is always doing politics, then it is not natural or obvious that no one pickets the patent office, or that the Supreme Court carves out the patent office from the “political branches” of the executive and legislative. Instead, that apolitical status needs to be analyzed – where did it come from, what work is it doing, what is it hiding? In this essay, I have explored these questions in the context of the politics of life. I have argued that the apolitical reputation of the patent office in the late twentieth century came not only from the apolitical reputation of science and technology, but from strategic moves by the patent office, switching from a strategy of denial to a strategy of grant, and from the support of the Supreme Court and scholars. The RU-486 saga provides one example of the work that the apolitical reputation has been doing: it has allowed the patent office to fulfill its core mission of granting patents without the disruptions that other expertise-based agencies have suffered as a result of the abortion wars.

While many might applaud that result, wishing that other agencies shared the patent office exceptionalism, there are also costs that need to be acknowledged. The strategic moves of the patent office to maintain its perceived neutrality have consequences. In the context of technologies of abortion, these consequences may have included the slower diffusion of safer abortion technologies during much of the nineteenth and twentieth centuries, as innovations were not published as patents. The patent system was created to promote the progress of the useful arts, and denying access to the patent system, or requiring inventors to disguise the uses of their inventions, may have slowed that progress. In the context of biotechnology, as has been amply discussed by other scholars, the consequences have included a reconfiguration of world-wide

agribusiness based on seed patents and arguably also an altered trajectory for medical research and health care, with negative consequences for public health and distributive justice.¹⁰²

As calls for the patent office to consider morality or ethics increase in the twenty-first century, the patent office may decide, as it did when facing the Chakrabarty and Newman applications, that its interests are once again best served by being more explicit about its political decisions. If it does so, however, such a move will not newly politicize the patent office, but simply change the interpretation that the patent office offers of its role. Just as a woman's personal choice to terminate a pregnancy has always also been a political choice, patents too have been and remain political.¹⁰³

* For helpful comments, I would like to thank audiences at the Information Society Project, Yale Law School; 4S/EASST Joint Meeting, Copenhagen Business School; Law & Society Approaches to IP, Golden Gate School of Law; Feminist Legal Theory Workshop, George Washington School of Law; University of Michigan School of Law IP Workshop; NYU School of Law Innovation Workshop; and Northeastern University School of Law Faculty Workshop, as well as Aziza Ahmed, David Cohen, Rose Corrigan, David Phillips, and the members of the Independent Women Scholars Salon. I also appreciate the work of my research assistant, Leah Porter, and the support provided by a Faculty Research Stipend from Northeastern University School of Law.

¹ Linda Greenhouse, "Science May Patent New Forms of Life, Justices Rule, 5 to 4," *New York Times*, June 17, 1980.

² *Diamond v. Chakrabarty*, 447 U.S. 303 (1980).

³ *Ibid.* at 305-06. For the history of the case, see Daniel J. Kevles, "Ananda Chakrabarty Wins a Patent: Biotechnology, Law and Society," *Historical Studies of the Physical & Biological Sciences* 25 (1994): 111-35; and Rebecca S. Eisenberg, "The Story of *Diamond v. Chakrabarty*: Technological Change and the Subject Matter Boundaries of the Patent System," in J. C. Ginsburg and R. C. Dreyfuss, eds., *Intellectual Property Stories* (New York: Foundation Press, 2006), 327-57.

⁴ *Chakrabarty*, 447 U.S. at 308-09 (construing 35 U.S.C. §101).

⁵ *Ibid.* at 307 (quoting *Kewaunee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 480 (1974)).

⁶ "Animals – Patentability," *Official Gazette of the Patent Office* 1077 (Apr. 21, 1987): 24.

⁷ *Roe v. Wade*, 410 U.S. 113 (1973).

⁸ Mary Ziegler, *After Roe: The Lost History of the Abortion Debate* (Cambridge: Harvard University Press, 2015), xv and generally; James Risen & Judy L. Thomas, *Wrath of Angels: The American Abortion War* (New York: BasicBooks, 1998), 39-40; and Kerry N. Jacoby, *Souls, Bodies, Spirits: The Drive to Abolish Abortion since 1973* (Westport, CT: Praeger, 1998).

I do not mean to suggest that pro-life activism began in 1973. See Linda Greenhouse and Reva B. Siegel, eds., *Before Roe v. Wade: Voices that Shaped the Abortion Debate before the Supreme Court's Ruling* (New York: Kaplan, 2010), ix; Dallas A. Blanchard, *The Anti-Abortion Movement and the Rise of the Religious Right: From Polite to Fiery Protest* (New York: Twayne, 1994), 4, 28-33; Ziegler, *After Roe*, 30-38. Once the legal status of abortion was federalized in *Roe v. Wade*, however, the abortion issue began to affect federal politics, including federal agencies, in new ways. Blanchard, *Anti-Abortion Movement*, 33-34, 73-75.

⁹ Lisa McGirr, *Suburban Warriors: The Origins of the New American Right* (2001), 232-36; Darren Dochuk, *From Bible Belt to Sun Belt: Plain-folk Religion, Grassroots Politics, and the Rise of Evangelical Conservatism* (New York: W.W. Norton, 2011), 383-95; and Blanchard, *Anti-Abortion Movement*, 28.

¹⁰ Ronald Reagan, *Abortion & the Conscience of a Nation* (Nashville, TN: Thomas Nelson, 1984), 24 (reprinting article first published in *Human Life Review* (Spring 1983)).

¹¹ Blanchard, *Anti-Abortion Movement*, 33.

¹² For the use of "abortion wars," see Risen & Thomas, *Wrath of Angels*, xi and Rickie Solinger, ed., *Abortion Wars: A Half Century of Struggle, 1950-2000* (Berkeley: University of California Press, 1998).

¹³ For courts, see discussion of *Chakrabarty* below. For examples of scholarship urging the patent office to stay out of politics, particularly with respect to the politics of life, see Robert P. Merges, "Intellectual Property in Higher Life Forms: The Patent System and Controversial Technologies," *Maryland Law Review* 47 (1987-88): 1051; Reagan Anne Kulseth, "Biotechnology and Animal Patents: When Someone Builds a Better Mouse," *Arizona Law Review* 32 (1990): 710-11; and Cynthia M. Ho, "Splicing Morality and Patent Law: Issues arising from Mixing Mice and Men," *Washington University Journal of Law & Policy* 2 (2000): 282-85. Cf. Margo A. Bagley, "Patent First, Ask Questions Later: Morality and Biotechnology in Patent Law," *William & Mary Law Review* 45 (2003-4): 469, and, from a Canadian perspective, W.A. Adams, "The Myth of Ethical Neutrality: Property, Patents, Animal Rights and Animal Welfare in *Commissioner of Patents v. President and Fellows of Harvard College*," *Canadian Business Law Journal* 39 (2003): 181-213; and E. Richard Gold, "The Reach of Patent Law and Institutional Competence," *University of Ottawa Law & Technology Journal* 1 (2003-2004): 263-84.

¹⁴ For the broad meaning of politics, see Carol Hanisch, "Introduction," 1 (Jan. 2006) to on-line re-publication of "The Personal is Political" (1969), <http://www.carolhanisch.org/CHwritings/PIP.html>, essay originally re-published without introduction in Shulamith Firestone and Anne Koedt, eds., *Notes from the Second Year: Women's Liberation* (New York: Radical Feminism, 1970). For the power hierarchies created by patents, see Margo A. Bagley, "Stem Cells, Cloning, and Patents: What's Morality Got to Do With It?" *New England Law Review* 39 (2004-5): 504-05.

¹⁵ Donald G. Daus, Robert T. Bond, and Shep K. Rose, "Microbiological Plant Patents," *Patent, Trademark and Copyright Journal of Research and Education* 10 (1966): 93-94 (noting belief, while arguing against it); and Glenn E. Bugos and Daniel J. Kevles, "Plants as Intellectual Property: American Practice, Law and Policy in World Context," *Osiris* 7 (1992): 79 ("fundamental tenet of patent law").

¹⁶ *Patent Act of 1952*, 35 U.S.C. (July 19, 1952), §101. This language has persisted since the Patent Act of 1836, which established the modern patent examination system. *Patent Act of*

1836, Ch. 357, 5 Stat. 117 (July 4, 1836) §6 (“new and useful art, machine, manufacture, or composition of matter, or any new and useful improvement on any art, machine, manufacture”).

¹⁷ *Ex parte Latimer*, 1889 Dec. Comm. Pat. 123, 126. See also *Funk Bros. Seed Co. v. Kalo Inoculant*, 333 U.S. 127, 130 (1948).

¹⁸ Christopher Beauchamp, “Patenting Nature: A Problem of History,” *Stanford Technology Law Journal* 16 (2013): 257.

¹⁹ Or nearly all. This interpretation persisted alongside the occasional grant of patents to bacteria and yeast. Daus, Bond & Rose, “Microbiological Plant Patents,” 94-95n36.

²⁰ Harold C. Thorne, “Relation of Patent Law to Natural Products,” *Journal of the Patent Office Society* 6 (1923-1924): 25.

²¹ *Plant Patent Act of 1930*, Public Law 71-245, 71st Cong. (May 23, 1930); *Plant Variety Protection Act of 1970*, Public Law 91-577 (Dec. 24, 1970). Cary Fowler, “The Plant Protection Act of 1930: A Sociological History of Its Creation,” *Journal of the Patent & Trademark Office Society* 82 (2000): 621.

²² For the procedural history, see Kevles, “Ananda Chakrabarty,” 119-21, 127; Applications of Bergy and Chakrabarty, 596 F.2d 952, 956-57, 967-71 (C.C.P.A. 1979); and Eisenberg, “*Diamond v. Chakrabarty*,” 334, 340-50.

²³ *Chakrabarty*, 447 U.S. at 309.

²⁴ Ananda M. Chakrabarty, “Microorganisms Having Multiple Compatible Degradative Energy-Generating Plasmids and Preparation Thereof,” U.S. Patent 4,259,444, filed June 7, 1972, and issued March 31, 1981.

²⁵ *In re Chakrabarty*, 571 F.2d 40, 42 (C.C.P.A. 1978).

²⁶ *Ibid.* at 41. The Supreme Court ultimately agreed and found that the bacterium was not a product of nature. *Chakrabarty*, 447 U.S. at 309-311.

²⁷ The Board issued its *per se* rule first in the companion case, *Bergy*. *Ex parte Bergy*, 197 U.S.P.Q. 78 (Pat. & Tr. Office Bd.App.1976). The unpublished *Chakrabarty* board decision was in accord. 571 F. 2d at 42.

²⁸ *Applications of Bergy and Chakrabarty*, 596 F.2d at 974.

²⁹ *Ibid.* at 975.

³⁰ U.S. Constitution, art. I, §8, cl. 8.

³¹ Cf. *Hyde Amendment*, Public Law 94-439, 94th Cong. (Sept. 30, 1976)(banning use of Medicaid funds for abortions except if the woman’s life is endangered) passed for the first time in 1976, and was subsequently renewed. Solinger, ed., *Abortion Wars*, xiii.

³² U.S. Patent 4,259,444, Abstract.

³³ Kevles, “Ananda Chakrabarty,” 121-23; Sally Hughes, “Making Dollars out of DNA: The First Major Patent in Biotechnology and the Commercialization of Molecular Biology, 1974-1980,” *Isis* 92 (2001): 541; and Judith Swazey, David R. Sorenson, and Cynthia Wong, “Risks and Benefits, Rights and Responsibilities: A History of the Recombinant DNA Research Controversy,” *Southern California Law Review* 51 (1977-78): 1024.

³⁴ Note that Chakrabarty had not used DNA splicing techniques, but older techniques of manipulating bacteria.

³⁵ Daniel J. Kevles, “*Diamond v. Chakrabarty* and Beyond: The Political Economy of Patenting Life,” in *Private Science: Biotechnology and the Rise of the Molecular Sciences*, ed. Arnold Thackray, (Philadelphia: University of Pennsylvania Press, 1998), 71 (“at the end of the 1970s the commercial prospects of biotechnology figured prominently in the minds of federal policy

makers”); and Hughes, “Making Dollars,” 544 (Carter and Reagan administrations relying on high tech business, including biotech, to bolster the economy).

³⁶ Kevles, “Ananda Chakrabarty,” 126-27 (based on interviews with government lawyers).

³⁷ *Chakrabarty*, 447 U.S. at 317.

³⁸ *Ibid.*

³⁹ Note that Congress held hearings on patenting life and considered legislation between 1987 and 1993. David Manspeizer, “The Cheshire Cat, the March Hare and the Harvard Mouse: Animal Patents Open Up a New, Genetically-Engineered Wonderland,” *Rutgers Law Review* 33 (1991): 491nn17-18; and Michael E. Sellers, “Patenting Non-naturally Occurring Manmade Life: A Practical Look at the Economic, Environmental, and Ethical Challenges Facing Animal Patents,” *Arkansas Law Review* 47 (1994): 269nn4, 6. There was also a legal challenge to animal patents that was dismissed. *Animal Legal Defense Fund v. Quigg*, 932 F.2d 920 (Fed. Cir. 1991).

⁴⁰ *Ex parte Hibberd*, 227 U.S.P.Q. 443 (B.Pat.A.I. 1985); and *Ex parte Allen*, 2 U.S.P.Q.2d 1425 (B.P.A.I. 1987). Kevles, “*Diamond v. Chakrabarty*,” 71-74.

⁴¹ “Animals – Patentability.”

⁴² Phillip Leder and Timothy Stewart, “Transgenic Non-Human Mammals,” U.S. Patent 4,736,866, filed Jun. 22, 1984, and issued Apr. 12, 1988. Kevles, “*Diamond v. Chakrabarty*,” 74-76.

⁴³ Dashka Slater, “HuMouse™,” *Legal Affairs* 21 (Nov/Dec. 2002).

http://www.legalaffairs.org/issues/November-December-2002/feature_slater_novdec2002.msp.

⁴⁴ McGirr, *Suburban Warriors*, 232.

⁴⁵ Brief for Peoples Business Council as Amici Curiae Supporting Petitioners, *Diamond v. Chakrabarty*, 447 U.S. 303 (1980)(No. 79-136), 1, 5.

⁴⁶ *See supra* note 39.

⁴⁷ Jacoby, *Souls, Bodies, Spirits*, 69, 112.

⁴⁸ Ho, “Splicing Morality;” and Shobita Parthasarathy, “Whose Knowledge? What Values? The Comparative Politics of Patenting Life Forms in the United States and Europe,” *Policy Science* 44 (2011): 271, 277-78.

⁴⁹ Convention on the Grant of European Patents, Oct. 5, 1973, Part II Ch. 1 Art. 53(a).

⁵⁰ *Lowell v. Lewis*, 15 F.Cas. 1018, 1019 (D.Mass. 1817).

⁵¹ *Juicy Whip v. Orange Bang*, 185 F.3d. 1364, 1366-67 (Fed. Cir. 1999). *See also* Ho, “Splicing Morality,” 248-49; Bagley, “Patent First,” 469-70; and Bagley, “Stem Cells, Cloning, and Patents,” 506.

⁵² *Ex parte Murphy*, 200 U.S.P.Q. 801, 802 (B.P.A.I. 1977).

⁵³ *See supra* note 13.

⁵⁴ Carroll Smith-Rosenberg, “The Abortion Movement and the AMA, 1850-1880,” in Carroll Smith-Rosenberg, *Disorderly Conduct: Visions of Gender in Victorian America* (New York: Knopf, 1985), 217.

⁵⁵ Cornelia Hughes Dayton, “Taking the Trade: Abortion and Gender Relations in an Eighteenth-Century New England Village,” *The William and Mary Quarterly*, Third Series, 48 (1991): 19, 23; James C. Mohr, *Abortion in America: The Origins and Evolution of National Policy, 1800-1900*, 4, 6, 16-17 (New York: Oxford University Press, 1978); Susan E. Klepp, “Colds, Worms, and Hysteria: Menstrual Regulation in Eighteenth-Century America,” in *Regulating Menstruation: Beliefs, Practices, Interpretations*, eds. Etienne Van de Walle and Elisa P. Renne

(Chicago: University of Chicago Press, 2001), 22; and Michael Grossberg, *Governing the Hearth: Law and the Family in Nineteenth Century America* (Chapel Hill: University of North Carolina Press, 1985), 170-75.

⁵⁶ Smith-Rosenberg, "The Abortion Movement and the AMA," 217-44; and Mohr, *Abortion in America*, 119-46, 200-225.

⁵⁷ Leslie J. Reagan, *When Abortion was a Crime: Women, Medicine, and Law in the United States, 1867-1973* (Berkeley: University of California Press, 1997), 5.

⁵⁸ Reagan, *When Abortion was a Crime*, 14-15, 76-79.

⁵⁹ Mohr, *Abortion in America*, 6-16; and Janet Farrell Brodie, "Menstrual Interventions in the Nineteenth-Century United States," in *Regulating Menstruation*, eds. Van de Walle and Renne, 39.

⁶⁰ Reagan, *When Abortion was a Crime*, 9-10, 70-76.

⁶¹ George J. Annas, "Predicting the Future of Privacy in Pregnancy: How Medical Technology Affects the Legal Rights of Pregnant Women," *Nova Law Review* 13 (1988-89): 335; and C.E. Joffe, T.A. Weitz, and C.L. Stacey, "Uneasy Allies: Pro-choice Physicians, Feminist Health Activists, and the Struggle for Abortion Rights," *Sociology of Health & Illness* 26 (2004): 779 (technique introduced in US in 1968). Abortions performed after 12 weeks require different techniques. Laura Kaplan, *The Story of Jane: The Legendary Underground Abortion Service* (New York: Pantheon Books, 1995), 148-58, 237-240; Brief for Planned Parenthood Federation of America, Inc., Association of Planned Parenthood Physicians, Inc. and Certain Medical School Deans, Professors and Individual Physicians as Amici Curiae Supporting Appellants, *Planned Parenthood of Central Missouri v. Danforth*, 428 U.S. 52 (1976)(Nos. 74-1151, 74-1419), 4.

⁶² Sheila B. Ruzek, *The Women's Health Movement: Feminist Alternatives to Medical Control* (New York: Praeger, 1978), 54-57; Kaplan, *The Story of Jane*, 197, 200-01; and Michelle Murphy, *Seizing the Means of Reproduction: Entanglements of Feminism, Health, and Technoscience* (Durham, NC: Duke University Press, 2012), 155-59.

⁶³ Counting abortion-related patents is unavoidably imprecise. While full texts of patents before 1970 are available for searching, problems with optical character recognition affect searches. The terms used for abortion during this period are numerous. I conducted searches using the following terms: "abortion," "pregnancy and termination," "amenorrhea," "restor! and menses," "miscarriage," and "menstrual extraction." These searches yield only one patent filed before 1968 that clearly states the invention is "intended for use . . . chiefly, as regards abortions." This patent was issued to a resident of Germany for "double spoon pliers," i.e., forceps, and was filed based on an earlier-filed German application. Konrad Steiglitz, "Double Spoon Pliers for Surgical Operations," U.S. Patent 1,649,423, filed May 5, 1927, and issued Nov. 15, 1927.

⁶⁴ Risen & Thomas, *Wrath of Angels*, 11, 14-15; and Reagan, *When Abortion was a Crime*, 220-222, 233-234, 241.

⁶⁵ Marshall B. Taylor, "Vacuum Curette," U.S. Patent 3,542,031, filed Jun. 1, 1968, and issued Nov. 24, 1970 ("for evacuating the uterus of gestational tissue to effect therapeutic abortion").

⁶⁶ Randolph R. Robinson, "Vacuum Curette," U.S. Patent 3,670,732, filed May 1, 1970, and issued Jun. 20, 1972. For examples of subsequent patents, see L. Elmaleh, "Manual Suction Curettage Instruments," U.S. Patent 3,721,244, filed Jan. 1, 1971, and issued Mar. 20, 1973; R. Robinson, "Abortive Device and Method," U.S. Patent 3,722,500, filed Dec. 1, 1970, and issued Mar. 27, 1973; H. Karman, "Medical Instruments," U.S. Patent 3,769,980, filed Jun. 1, 1971, and

issued Nov. 6, 1973; H. Bridgman, "Vacuum Cannula Apparatus," U.S. Patent 3,804,089, filed Jun. 1, 1971, and issued Apr. 16, 1974; H. Karman, "Abortifacient," U.S. Patent Number 3,810,456, filed Apr. 1, 1972, and issued May 14, 1974; and M. Gutnick, "Abortion Facilitating Device and Process," U.S. Patent 3,848,602, filed Apr. 1, 1972, and issued Nov. 19, 1974.

⁶⁷ Until 2000, all United States patent applications were kept secret. *Patentability of Inventions and Grant of Patents*, Public Law 106-113, *U.S. Statutes at Large* 113 (1999), 1501, now encoded as 35 U.S.C. §122. While patent applicants have had the right to appeal denials of patents since 1870 (*Patent Act of 1870*, *U.S. Statutes at Large* 16 (1870), 198 §46), there are no published administrative decisions considering appeals from denials of abortion-related applications.

⁶⁸ Demand may have been depressed by the opposition of the AMA to all medical patents (Joseph Gabriel, "A Thing Patented is a Thing Divulged," *Journal of the History of Medicine and Allied Sciences* 64 (April 2009): 139-42), and by the fact that many innovators may have been illegal abortionists, and thus may have been unwilling to draw attention to themselves by commercializing or patenting abortion technologies. Note, however, that medical patents to non-abortion technologies continued to issue during this period, despite the AMA opposition and that during parts of the criminalization era, illegal abortion practitioners were widely tolerated and advertised publicly, and abortifacient medicines and devices were openly sold at pharmacies. Kara W. Swanson, "Food and Drug Law as Intellectual Property Law: A Historical Perspective," *Wisconsin Law Review* (2011) 353n92 (estimating 500 medical patents between 1836 and 1870); William D. Noonan, "Patenting Medical and Surgical Procedures," *Journal of the Patent and Trademark Office Society* 77 (1994): 658 (counting medical method patents before 1968); and Reagan, *When Abortion was a Crime*, 15, 44, 69-70, 148-50 (openness of abortion during criminalization).

⁶⁹ Reagan, *When Abortion was a Crime*, 23, 147-59.

⁷⁰ William H. Cary, "Experience with Artificial Impregnation in Treating Sterility: Report of 35 Cases," *Journal of the American Medical Association* 114 (June 1, 1940): 2183 (past history of curettage as "empirical panacea for sterility").

⁷¹ Carole Joffe, "Portraits of Three 'Physicians of Conscience': Abortion before Legalization in the United States," *Journal of the History of Sexuality* 2 (1991): 58-59.

⁷² J. Martin, "Uterine Curette," U.S. Patent 618,521, filed Apr. 7, 1898, and issued Jan. 31, 1899.

⁷³ Milo Rob Staff, "Curette," U.S. Patent 651,395, filed Sept. 26, 1899, and issued Jun. 13, 1900.

⁷⁴ William A. Whitlock, "Surgical Instrument," U.S. Patent 928,011, filed Dec. 31, 1908, and issued Jul. 13, 1909., col. 1, line 11. See also Henry Grey, U.S. Patent 635,382, filed Jan. 14, 1899, and issued Oct. 24, 1899; Emory Willis Peery, "Curette," U.S. Patent 622,386, filed Mar. 31, 1898, and issued Apr. 4, 1899; Ethelbert Reavley, "Curette," U.S. Patent 839,641, filed Dec. 21, 1905, and issued Dec. 25, 1906; and F.T.M. Moormeister, "Uterine Curette," U.S. Patent 879,297, filed April 3 1907, and issued Feb. 18, 1908.

⁷⁵ During this period, there was increasing use of patent practitioners to draft applications, who, as repeat players, could have reacted to patent office practices. Kara W. Swanson, "The Emergence of the Professional Patent Practitioner," *Technology & Culture* 50 (2009): 519. See also I.J. Fellner, "Patentability of Therapeutic Methods," *Journal of the Patent Office Society* 28 (1946): 90 (patent practitioners shied away from medical method patents, based on perception of patent office policy).

⁷⁶ Smith-Rosenberg, "The Abortion Movement," 220-22, 236-38; Mohr, *Abortion in America*, 147-170; and Reagan, *When Abortion was a Crime*, 80-90.

⁷⁷ Note, "Who's Going to Stop Me From Patenting My Six-Legged Chicken? An Analysis of the Moral Utility Doctrine in the United States," *Wayne Law Review* 46 (2007): 2069-71; and Merges, "Intellectual Property in Higher Life Forms," 1062-64. The history of the moral utility doctrine is reviewed in, e.g., Note, "Monsters at the Patent Office," *DePaul Law Review* 53 (2003-04): 163-170.

⁷⁸ Reagan, *When Abortion was a Crime*, 218-222, 234; and Mohr, *Abortion in America*, 256.

⁷⁹ For example, Scott Cronk and Michelle Thomas, "Suction Canister Assembly for the Collection of Body Fluids and Tissue Specimens," U.S. Patent 4,870,975, filed Jul. 5, 1988, and issued Oct. 3, 1989; and Raisa V. Gainutdinova, et al. "Gynecological Aspiration Tip," U.S. Patent 4,935,003, filed Jan. 9, 1988, and issued Jun. 19, 1990.

⁸⁰ Annas, "Predicting the Future of Privacy in Pregnancy," 335-36 ("radically alter . . . the abortion debate"). The controversy is discussed in, for example, Etienne-Emile Baulieu, *The "Abortion Pill": RU-486 A Woman's Choice* (New York: Simon & Schuster, 1991); Lawrence Lader, *RU 486: The Pill that Could End the Abortion Wars and Why American Women Don't Have It* (Reading, MA: Addison-Wesley, 1991); Adele Clarke and Theresa Montini, "The Many Faces of RU486: Tales of Situated Knowledges and Technological Contestations," *Science, Technology and Human Values* 18 (1993): 42-78; Gwendolyn Prothro, "RU 486 Examined: Impact of a New Technology on an Old Controversy," *University of Michigan Journal of Law Reform* 30 (1996-97): 715; and Lars Noah, "A Miscarriage in the Drug Approval Process?: Mifepristone Embroils the FDA in Abortion Politics," *Wake Forest L. Rev.* 36 (2001): 571.

⁸¹ The patent did not mention abortion, claiming possible uses in contraception, hormonal irregularities and amenorrhea. Jean G. Teutsch, et al., "Novel Steroids," U.S. Patent 4,386,085, filed Jan. 8, 1982, and issued May 31, 1983, col. 27, lines 32, 35-36, 39. This approach was probably not due to any reluctance to mention abortion so much as to the difficulties of proving specific utility in chemical cases. At the time of filing, the inventors may have lacked the requisite data to claim utility in inducing abortions.

⁸² Reagan, *Abortion & the Conscience of a Nation*, 19.

⁸³ Center for Drug Evaluation and Research, FDA, letter to Sandra P. Arnold, Population Council, dated Sept. 28, 2000, available at: http://www.accessdata.fda.gov/drugsatfda_docs/appltr/2000/20687appltr.htm. (Last viewed, Aug. 27, 2014).

⁸⁴ Lader, *RU-496*, 108, 131-33; and Baulieu, "Abortion Pill," 126-29, 135-40.

⁸⁵ Note, "Griswold, the FDA, and the State Legislator: The Regulation of Mifeprex," *William & Mary Journal of Women & the Law* 8 (2002): 448.

⁸⁶ Rick Weiss, "Patent Sought on Making of Part-Human Creatures," *Washington Post* (April 2, 1998); David Dickson, "Legal Fight Looms Over Patent Bid on Human/Animal Chimeras," *Nature* 392 (April 2, 1998): 423. The story of the Newman patent application is described in, for example, Slater, "HuMouse," Sean Coughlin, "The Newman Application and the USPTO's Unnecessary Response: Patentability of Humans and Human Embryos," *Chicago-Kent Intellectual Property Journal* 5 (2006): 90, 92-93; Ryan Hagglund, "Patentability of Human-Animal Chimeras," *Santa Clara Computer & High Technology Law J.* 25 (2008-09): 66-69; and Parthasarathy, "Whose Knowledge?," 273-75.

⁸⁷ Slater, "HuMouse," 22.

⁸⁸ U.S. Patent and Trademark Office, Media Advisory 98-6, "Facts on Patenting Life Forms Having a Relationship to Humans" (April 8, 1998) available at <http://www.uspto.gov/news/pr/1998/98-06.jsp>. (Last viewed Aug. 15, 2016).

⁸⁹ Rick Weiss, "U.S. Denies Patent for a Too-Human Hybrid," *Washington Post* (Feb. 13, 2005).

⁹⁰ Final Rejection, Aug. 11, 2004, Application No. 10/308,135.

⁹¹ *Leahy-Smith America Invents Act of 2011*, Public Law No. 112-29, 125 Stat. 284, codified as 35 U.S.C. §33. While patent reform legislation initially did not pass (S. 659, 109 Congress, 1st sess. (March 17, 2005)), the Weldon Amendment, a rider to the annual appropriations bill since 2004, banned the use of federal funds to grant a patent to an invention encompassing a human until passage of the Leahy-Smith Act. Ava Caffarini, "Directed To or Encompassing a Human Organism: How Section 33 of the America Invents Act May Threaten the Future of Biotechnology," *John Marshall Review of Intellectual Property Law* 12 (2013): 776-77.

⁹² Parthasarathy, "Whose Knowledge?" 274.

⁹³ Rosemary J. Coombe, *The Cultural Life of Intellectual Properties: Authorship, Appropriation and the Law* (Durham, NC: Duke University Press, 1998), 7, 12, 25-26.

⁹⁴ The social and political nature of science and technology has been the focus of much science and technology studies scholarship in recent decades. For an introduction to the literature, see Mario Biagioli, ed., *The Science Studies Reader* (New York: Routledge, 1999); and Wiebe E. Bijker, Thomas P. Hughes, and Trevor J. Pinch, eds., *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology* (Cambridge, MA: MIT Press, 1987).

⁹⁵ Langdon Winner, "Do Artifacts Have Politics?" *Daedalus* 109 (Winter 1980): 121-36. See also Shobita Parthasarathy, "The Patent is Political: The Consequences of Patenting the BRCA Genes in Great Britain," *Community Genetics* 8 (2005): 235-36; and Arjun Appadurai, "Introduction: Commodities and the Politics of Value," in *The Social Life of Things: Commodities in Cultural Perspective*, Arjun Appadurai, ed., (Cambridge: Cambridge University Press, 1988 [1986]): 3-63.

⁹⁶ Ho, "Splicing Morality," 252n29 (detailing patent consequences).

⁹⁷ Daniel J. Kevles, "Of Mice and Money: The Story of the World's First Animal Patent," *Daedalus* 131 (Spring 2002): 78-88; and Daniel J. Kevles, "Genes, Disease, and Patents: Cash and Community in Biomedicine," in Caroline Hannaway, ed., *Biomedicine in the Twentieth Century: Practices, Policies, and Politics* (2008): 207-11.

⁹⁸ Dan L. Burk, "Feminism and Dualism in Intellectual Property," *American University Journal of Gender, Social Policy & the Law*, 15 (2007): 203, 206 (noting "hierarchies, privileges, and power relationships" inherent in patents and copyrights); and Dan L. Burk, "Do Patents Have Gender?," *American University Journal of Gender, Social Policy & the Law* 19 (2011): 886, et seq. (analyzing how patent system "create[s] or reinforce[s] social patterns of dominance and submission").

⁹⁹ Robert C. Post, "'Liberalizers' versus 'Scientific Men' in the Antebellum Patent Office," *Technology and Culture* 17 (1976): 24-54.

¹⁰⁰ For examples of other technical agencies that struggled to maintain an apolitical neutrality, see Ronald Brickman, Sheila Jasanoff, & Thomas Ilgen, *Controlling Chemicals: The Politics of Regulation in Europe and the United States* (New York: Cornell University Press, 1985)(EPA) and David M. Phillips, "Ethics and Disclosure," in *Corporate Governance and Institutionalizing Ethics*, eds. W. Hoffman, T. Moore, and D. Fedo, (Lexington Books, 1984), 109-112 and Charles

R. O'Kelley & Robert B. Thompson, *Corporations and Other Business Associations*, 4th ed. (New York: Aspen Publishers, 2003), 203-205, 226 (SEC).

¹⁰¹ Parthasarathy, "Whose Knowledge?" 279-80.

¹⁰² Keith Aoki, *Seed Wars: Controversies and Cases on Plant Genetic Resources and Intellectual Property* (Durham, N.C.: Carolina Press, 2008), 27-30, 41-60, 125-27; Parthasarathy, "Whose Knowledge?" 275; and *Association for Molecular Pathology v. PTO*, 702 F.Supp.2d 181, 204-11 (S.D.N.Y. 2010).

¹⁰³ Hanisch, "The Personal is Political," 1969.