

‘A woman and now a man’: The legitimation of sex- assignment surgery in the United States (1849–1886)

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Abstract

Throughout much of recorded history, societies that assigned rights and duties based on sex were confounded by people with unclear sex. For the sake of maintaining social and legal order in those contexts, legal systems assigned these people to what they figured was the ‘most dominant’ sex. Then, in mid-19th century United States, a new classification mechanism emerged: sex-assignment surgery, which was imagined by some surgeons to ‘fix’ one’s physical and legal sex status permanently. Other surgeons, however, fiercely opposed the new practice. This article traces the controversy around sex-assignment surgery through three high-profile cases published in US medical journals from 1849 to 1886. Its central argument is that the more general effort to transform surgery into a scientific field helped legitimate the practice of sex-assignment surgery. Although such surgery was subject to intense moral criticism because it was thought to breach the laws of men and nature, over time, these concerns were abandoned or transformed into technical or professional disagreements. In a secondary argument, which helps explain that transformation, this article shows that surgeons gradually became comfortable occupying the epistemic role of sex-classifiers and even sex-makers. That is, whereas sex classification was traditionally a legal task, the new ability to surgically construct one’s genitals engendered the notion that sex could be determined and fixed in the clinic in a legally binding manner. Accordingly, I suggest that surgery became an epistemic act of fact-making. This evolution of the consensus around sex-assignment surgery also provides an early origin story for the idea of sex as plastic and malleable by surgeons, thus offering another aspect to the history of plastic sex.

Keywords

sex, gender, intersex, surgery, law, expert testimony, co-production, medical controversy

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In 1849, the parents of a three-year-old girl from Louisville, Kentucky, became concerned about their daughter's sex development. The girl had long black hair and beautiful eyes, and looked perfectly developed, but about a year earlier, the parents had noticed that she started rejecting dolls and preferred 'boyish sports'. Additionally, they thought that her genitals didn't look quite 'normal'. They decided to seek a professional opinion from Samuel D Gross, an acclaimed surgeon and professor of surgery at Louisville Medical Institute. Gross conducted a physical examination of the girl's genitals and found that her labia contained well-formed testes. In describing what he observed, he said that such 'genital malformation' usually denoted 'hermaphroditism'.¹

The question that surfaced in the clinic was whether a 'surgical fix'² would be appropriate. Professor Gross believed that removing the testes would help the little girl avoid developing masculine desires and character during puberty, thus saving her much sorrow, 'disgrace', and even death. He was particularly worried about her marital prospects and believed that she would have a better chance of marrying as a woman without a sexual drive than she would as an unfulfilled man (Reis, 2009: 47).

The girl's parents were eager to follow through with the operation, and although Gross had already decided that surgery was indeed necessary and proper, the unprecedented and novel character of the procedure propelled him to consult with Professor Miller, a trusted colleague. After Miller carefully examined the girl, he likewise concluded that 'excision of the testes' would be justifiable as 'an act of kindness and of humanity' (Gross, 1852: 387). Professor Gross and others agreed and performed the castration on July 20, 1849. Gross continued to see the girl, and three years after the operation, he published a report in *The American Journal of Medical Science*, declaring the experiment a success: 'Her dispositions and habits have materially changed, and now are those of a girl; she takes great delight in sewing and housework and she no longer indulges in riding sticks and other boyish exercises'. He added that this operation could serve as a precedent for similar cases in the future.

Gross's report introduced a new technique to surgeons' toolkits: the ability to shape the genitals of so-called hermaphrodites in order to settle their sex. Given that the medical view of the time vested virility in the testes, Gross knew that performing castration on a young girl for the main purpose of asserting her femininity would be controversial. Indeed, his report ignited a fierce debate about the legitimacy of sex-assignment surgery as a matter of professional practice. Whereas some believed that surgeons should use their professional skills simply to improve their patients' lives in widely accepted ways, such as by treating illness or pain resulting from genital malformation, others thought that it was also possible and even desirable to intervene with their patients' constitutive sexual organs and to endorse surgical procedures that would alter or establish sex status in a legally binding manner.

Such surgery was not standard in the 19th century; Gross's surgery was likely the first to be conducted and published in the country. While similar procedures were more commonly mentioned and offered only in the last quarter of the century,³ the three cases selected in this article were unique in the controversy they generated, both among surgeons and outside of medical discourse, regarding the use of surgical tools to construct sex. By revealing the deep internal ethical and professional conflicts that accompanied this practice from the start, these cases contribute significantly to the historical discussion of sex-assignment surgery for intersex people.

These cases illustrate that the practice of such surgery for hermaphrodites was legitimized in surgical discourse when it was reframed not as a question of ethics but as a technical and anatomical challenge requiring technological developments. The article showcases how a procedure that the surgical community at first largely opposed was gradually reconfigured as normatively benign and professionally legitimate. Although commentators initially expressed repulsion over Gross's surgery, claiming that it vainly trespassed into the realms of law, nature and God, the fierce resistance lost its moral-ethical essence over time and was reformulated as a professional disagreement, which eventually neutralized the perception of a moral violation. Ultimately, the analysis seeks to underscore the normalizing effect of scientific discourse over ethically controversial biomedical novelties.

Additionally, surgeons became legal fact-makers in the context of sex classification, through the technology of plastic surgery. Whereas the role of sex classification in ambiguous cases had previously been left in the hands of jurists and courts, the cases presented here describe the process by which US surgeons started to feel comfortable occupying that role independently. Accordingly, this article seeks to develop the idea of surgery as an epistemic act of fact-making that received recognition and acknowledgment from both legal authorities and the public in this time period.

Background

Genital surgery in the 19th century

Unlike physicians of the late 18th century, who had long been respected as science-based experts, surgeons had only recently started to be considered learned men with practices seated in scientific theory and method. As historians of surgery describe, before that time, surgeons' social status, education and practice were considered to be inferior to those of physicians (Doyle, 2007: 345, 2008: 10; Lawrence, 1992, 1998; Porter, 2006: 191). Surgeons shared a guild with barbers, and their labour was seen as manual capability, requiring a skilful hand rather than a learned mind (Porter, 2006: 177).

Aspiring to transform their profession into one meant for gentlemen, surgeons linked their practice with the developing scientific field of anatomy, promoted surgery as a public good and sought the help of the state to regulate and institutionalize surgery and dissection (Doyle, 2008: 14). With this approach firmly entrenched, in the mid-19th century, a few surgeons began exploring a new type of surgery that could potentially solve the 'problem' of sex ambiguity: sex-assignment surgery.

Surgery on genitals for people whose sex status was clear was already a familiar practice in 1850. Santoni-Rugiu and Sykes (2007) list a number of routine surgeries on genitals that were practiced from ancient times through early modern periods, such as circumcision, posthioplasty (prepuce reconstruction) and surgeries treating various 'vaginal malformations'. Genital surgeries started professionalizing in the first half of the 19th century, when US surgeons began publishing textbooks and monographs describing the elements of surgical practice in specialized areas and diseases, including venereal diseases, gynaecology, hypospadias and genito-urinary organs (Rutkow, 1999).

In 1833, for example, Dr John C Warren published a report telling of a surgical construction of a 'non-existing vagina' (Warren, 1833). According to the report, a 23-year-old female patient requested a surgical procedure that would form an opening. Dr Warren did not express any doubts regarding her sex status and mentioned that, although she was well-formed otherwise, he and his colleagues could not find her uterus upon examination. He nevertheless complied with her request, as he believed it was possible that a uterus existed, perhaps undeveloped and hidden. Just two years earlier, in 1831, Dr George Bushe described five cases of genital reconstructive surgeries that had been conducted between 1822 and 1827 to treat different forms of hypospadias in males, females and children⁴ (Bushe, 1832: 1–3). In all five cases, patients (or their parents) sought out the clinic hoping to solve a pressing medical issue, such as urinary problems, or to relieve pain and discomfort. No patient was believed to possess an unclear sex status, and the surgeries were conducted for stated health-related reasons.

In addition to having been performed on those whose sex was unambiguous, genital surgeries were sought by people with unclear sex for a variety of reasons well before 1850. In his 1750 *A Dissertation on Hermaphrodites*, George Arnaud de Ronsil, a surgeon in London, described numerous case reports (including his own and those of other surgeons) that alleged that hermaphrodite patients were operated on or dissected after death (Arnaud, 1750: 35–52). In this dissertation, Arnaud de Ronsil also attempted to collect as many existing medical reports documenting such procedures as possible and contemplated surgeons' ability to help them. He explained, however, that there was no consensus on the role of surgeons: Whereas some believed that surgery could do nothing to help hermaphrodites, others believed that surgeons should 'lend a helping-hand to those who are thus disfigured by nature' (Arnaud, 1750: 10–11). Despite this lack of consensus, his dissertation shows that people with unclear sex in Europe visited surgeons to relieve pain or treat cosmetic issues and that surgeons began to forge a path for themselves in the 'regulation' of hermaphrodites about a century before Gross's operation.

But if the practice of genital reconstructive surgery was already in place to some degree by 1850, and if surgeons were already operating on people with unclear sex in some parts of the world, what was so alarming about Gross's report in *The American Journal of Medical Science*?

The innovation in Gross's surgery was that it applied the advancing technology of genital reconstructive surgery to a *legal* problem: assigning hermaphrodites to a sex status indefinitely. Unlike commonplace surgeries to re-create genitals, this surgery did not address pressing medical needs and was unrelated to relief from pain or to the patients' requests. That is, Gross offered a procedure that could potentially secure the girl's sex *status* socially and legally, which was believed by some to go against the laws of nature and of men.

Although these surgeries were the first in the US to be reported as attempting to assign sex, surgeons did not refer to them as the first-ever sex assignment surgeries. The phrase 'sex assignment surgery' (commonly used to describe normalization surgeries for intersex people in the present) did not exist at the time. Instead, surgeons used available language to describe the technical aspects of the procedure, and they acknowledged that the circumstances and rationalizations they offered were new. Gross, for example, used typical medical jargon to describe the procedure – 'an operation', an 'excision of the testis'

and ‘castration’ – but it was clear to him that conducting these procedures in order to control the sex and sexual development of a child with ‘doubtful sex’ was something new. Gross was evidently aware of the innovative juxtaposition of medicine and law in this surgery: he titled his report ‘A new principle in juridical medicine’. In other cases, the choice of words reflected the surgeon’s (or critic’s) vindicating use of language. Avery, for example, reported finding a ‘perfect’ testicle in a female patient, but when describing the surgery, perhaps uncomfortable with removing ‘perfect’ testicles, he said that he performed an operation ‘of removing the tumour, by the usual operation for castration’ (Avery, 1868: 48).

Of course, the fact that such surgeries were offered to and sometimes conducted on people classified as having ‘doubtful sex’ does not mean that they did in fact create or secure a person’s sex. An individual’s sex status was constructed through a variety of practices and institutions, with genitals being expected to align with the individual’s social presentation. Genital surgeries were thought to have the potential to make the body align with the person’s social presentation. Thus, whatever social role was chosen for the individual by the doctor, the parents, or in some cases the individual, could now potentially be reflected in bodily anatomy.

From a co-productionist standpoint (Jasanoff, 2004), Gross’s surgery was a vivid illustration of the way in which nature and social order can be reconfigured at once. These surgeries thus enabled a dramatic epistemic shift: surgeons were not only becoming people who were credentialed to classify hermaphrodites to their ‘true’ sex; they also engendered a new concept of human sex as plastic and operational.

Sex assignment surgery in 19th-century surgical discourse

How was sex assignment surgery legitimized? In *Hermaphrodites and the Medical Invention of Sex*, Dreger argues that in France and England surgery was conducted mostly for therapeutic reasons, but sometimes revealed unexpected organs and led to a diagnosis of ‘mistaken sex’. Plastic surgeries to construct genitals, such as vaginoplasty, only occurred in the later decades of the 20th century (Dreger, 1998: 91–93), and were a way for medical men to cope with the challenge that hermaphrodites posed to the ‘natural’ separation of males and females, coupled with fear related to the 19th-century deterioration of men and women’s traditional social roles (Dreger, 1995).

Matta (2005) similarly notes that sex-corrective surgery became routinized earlier in the United States than it did in Europe because US doctors conflated hermaphroditism with homosexuality earlier and more strongly, and they wanted to use surgery to address this perceived problem. Reis (2009) corroborates this point, describing mid- to late 19th-century surgeries on hermaphrodites in the United States as driven by the physician’s desire to make patients suitable for matrimony (i.e. to ensure that they could engage in heterosexual sex and procreate). By the turn of the 20th century, physicians believed in their ability to diagnose a patient’s real sex and to apply surgical techniques that would impose heterosexuality and ‘save’ patients from same-sex unions (Reis, 2009: 56).

Although these explanations have strong footholds in medical records, my aim is to explore a different line of justification. This logic is located not in the changing social climate but rather in internal professional discourse and its practices of legitimation,

which are tailored to make sense within medical and scientific cultures. More than explaining why sex-assignment surgery became commonplace, this article contributes to our understanding of how such surgery was gradually justified in medical discourse. In this context, the scientific discourse was a technology of legitimation and silencing criticism from within.

In the past three decades, such surgery has been the subject of intense criticism by the intersex rights movement, which has mounted a strong resistance against conducting sex-assignment surgery on intersex children without their consent (even with the consent of their parents). Scholars have also criticized such surgeries, which are often practiced on intersex infants in order to ‘normalize’ their genitals and construct ‘normative’ sex and gender presentation (Fausto-Sterling, 2000; Karkazis, 2008; Sudai, 2018; Tamar-Mattis, 2006). Although such surgeries are still recommended and practiced in many instances, both medical and legal institutions are increasingly recognizing the harm that these surgeries cause.

Surgery as legal fact-making

In addition to tracking how such surgery became acceptable in medical discourse, this article highlights an unexamined epistemic aspect of this surgery: its capacity to effectively create judicial facts in the public arena. In other words, surgical sex (i.e. the constitution of sex by a surgeon) was capable of satisfying legal authorities in their quest to determine an individual’s sex status in legal matters such as marriage, inheritance rights, etc.

In premodern times, legal jurisdiction over hermaphrodites commonly took precedence over medical jurisdiction (Fausto-Sterling, 2000: 40). Premodern common law recognized the phenomenon of people with doubtful sex, and legal treatises then sought to regulate their rights and duties in contexts where sex status determined those rights and duties. The common law tradition classified hermaphrodites as males or females using a dominancy rule: ‘[a] hermaphrodite is classed with male or female according to the predominance of the sexual organs’ (Bracton and Twiss, 2012: 35). The little-known case law from early modern England and colonial America indicates that sex at this time was adjudicated in court, predominantly using juries and witnesses (Sudai, 2021).

In the late 18th century, common law doctrine of evidence started relying on experts to provide qualified opinions on ‘matters of science’.⁵ The subject of hermaphrodites was also becoming a matter of expert opinion. The clearest evidence for this shift can be found in the stream of medical jurisprudence books meant to guide physicians testifying in court on matters of scientific facts, which routinely included the issue of hermaphrodite classification and advice on how to differentiate between sex organs and other relevant characteristics (e.g. Beck, 1823; Beck and Beck, 1850; Taylor, 1866). Throughout the 19th century, physicians published reports on legal matters that required their specialized opinions to determine a person’s sex. Examples included: deciding whether Levy Suydam, a young man from Connecticut suspected of doubtful sex, would be allowed to vote in the local elections (Barry, 1847), deciding whether an individual presenting as female in male attire could get a certificate indicating he was indeed a male in order to escape punishment for cross-dressing (Flint, 1840), or testifying in court as to whether a wife was indeed female or a hermaphrodite so that the marriage could be annulled (Webber, 1882).

But whereas medical jurisprudence books assigned the role of ‘expert’ to physicians and surgeons, this article identifies a moment in the history of surgery during which surgeons exceeded their role as witnesses who provided expert opinions to judicial authorities. That is, they began conducting sex classification and assignment completely independent of the courts, at their clinics. In such cases, surgeons were not merely assisting judicial authorities – instead, they were involved in a creationist imaginary, believing that they could actually change or produce sex. One surgeon, for example, advised a male-presenting patient whom he believed was ‘really’ female to undergo an operation to get relief, ‘but when I informed him that it would entirely change his assumed sex, and make him a woman, he opposed it’ (Haskins, 1851). Another reported that an operative procedure ‘eradicated all semblance of duality of sex and placed the young patient safely in the ranks of womankind’ (Goffe, 1903).

By the end of the 19th century, many believed that science – not law, the police or the court – should address the problem of unclear sex (Allen, 1897). By closely reading the trilogy of cases presented in this article, I suggest that surgeons grew to believe that they, rather than traditional judicial fact finders, were most suitable to be the epistemic authorities on sex classification. Insofar as patients, judicial authorities and the general public accepted surgical authority to do so, surgeons’ epistemic weight in the production of judicial sex status increased.

Surgeons’ confidence in their ability to independently classify and assign hermaphrodites to a particular sex was intertwined with the rise of the idea of ‘true sex’. Although the pre-existing common law rule stated that hermaphrodites were individuals presenting both male and female characteristics, the scientific theory foregrounded in sex classification guidelines in medical jurisprudence books was that hermaphrodites did not exist, and that every individual had one ‘true sex’ that needed to be revealed and stated by a competent and learned man. As a result, when they worked with hermaphrodites, the traditional role of doctors as healers of pain or disease was infused with a scientific duty to find the ‘fact’ of true sex – and to expose possible fraud (Reis, 2009: 30–32).

In Foucault’s introduction to *Herculine Barbin*, he dated the permeation of the ‘true sex’ concept into our ‘order of things’ to the 18th century. Within emerging biological theories of sexuality and growing administrative control, the idea that an individual could combine the two sexes was simply not viable (Barbin, 1980). Some 18th-century dictionaries began reflecting the growing understanding that hermaphrodites did not exist, and they cited medical authorities who argued that so-called hermaphrodites are actually males or females with an ‘ill conformation of the parts of generation’.⁶ As Foucault explained, this meant that doctors no longer searched for the sex that was ‘most dominant’ but were inclined to see just one sex that was ‘hidden’ beneath the illusive body: ‘to strip the body of its anatomical deceptions and discover the one true sex behind organs that might have put on the forms of the opposite sex’ (Barbin, 1980). Indeed, well-known 18th-century doctors produced accounts that presume to decipher the ‘real sex’ of famous hermaphrodites exhibited at the time in England.⁷

Surgeons’ confidence in their own ability to find hermaphrodites’ real sex and to ‘fix it’ was received in different ways. Both physicians and patients had much to gain from each other: For their part, physicians and surgeons who were fascinated with hermaphrodites benefitted from the opportunity to examine, clinically treat and sometimes publish

reports on hermaphrodites (Dreger, 1998: 60–61). In contrast, patients sought help with a variety of issues, approaching physicians to seek pain relief, ask for a cosmetic adjustment, get a confirming opinion of their sex, or look for a revision of their sex status to gain access to particular legal rights or ensure that they could marry their same-sex partners (Dreger, 1998: 58–59). When patients did not accept physicians' determinations, as Dreger notes, 'battles of wills could and did erupt' (Dreger, 1998: 50). Although surgeons did not promise a change of legal sex either to patients or to parents of children with unclear sex, towards the end of the 19th century, both patients and their parents in the US seemed to trust physicians to know and assert that sex.

The cases that follow thus illustrate a moment of epistemic intersection between two professional apparatuses for producing facts. In these instances, the anatomical or *surgical fact*, manifested in the individual's body presentation and produced by surgeons, was fused with the *legal fact* of sex, manifested in the individual's legal status and produced by courts. This alchemy of the 'facts of nature' and the 'facts of law' is documented in Shapiro's seminal book *A Culture of Fact*, which describes how legal principles of producing facts were taken up by natural philosophers to produce facts about nature through experiments (Shapiro, 2000). The alchemy of the *legal fact* of sex with the facts of *nature* meant that hermaphrodites were assessed less and less on the basis of their acts and practices and gradually more on the basis of their 'natural' signs. The legal profession had much to gain from incorporating a more 'natural' understanding of sex in the law, such as clarity, certainty and impartiality. From that perspective, the 'surgical fact' of sex had a smooth path into legal settings, as it represented a conveniently domesticated version of the natural order: Surgery could easily remove 'doubt' from cases of 'doubtful sex'.⁸

However, the naturalization of the legal fact of sex was not wholesale. The fact that some surgeons believed that they could produce a legally binding sex status in their clinics does not mean that the legal system ceded its authority to decide sex altogether. Although the question of doubtful sex was indeed becoming more medical and less legal,⁹ legal authorities were still required to make sex status determinations. They did so much less frequently, and almost never without or against medical opinion, but continued classifying intersex people well into the 20th century.¹⁰ The power relationship gradually shifted over time: Until the early 20th century, medical professionals produced evidence and opinions to assist the judiciary, but over time, jurists started to depend on surgeons and deferred to medical mastery instead of the other way around.

Case one: A Gross Breach (1852)

Although Gross's surgery did not present any unusual or innovative surgical techniques, it did provoke a fierce debate with regard to its moral foundations. Its audacity and presumed capacity to change a person's sex seemed outrageous. Commentators from both the medical and legal fields reacted to the publication of this case with strong objections, arguing, as mentioned earlier, that the surgery breached the laws of morals, of nature and of men.

That this epistemic revolution was heralded by one of the most celebrated surgeons of the time may help explain the attention it received. Gross was called 'The Nestor of American surgery', 'the father of American surgical research' and 'America's first pathologist', among other monikers (see Laios, 2018; Malkin, 2001; Toledo-Pereyra,

2006). His clinic has since been a site of scholarly interest and exploration, and it was depicted by Thomas Ekins in one of the most celebrated modern artworks in the US: ‘The Gross Clinic’, completed in 1875 (Bamber, 1998; Doyle, 1999; Tucker, 2012).

Part of what led to his fame was his frequent role as an expert witness. Gross was drawn to the subject of medical jurisprudence even in medical college, and in 1833, he was invited to serve as an expert witness in a high-profile murder case involving the strangulation of a pregnant woman. His testimony played a crucial role in the conviction of the defendant, Goetter, who had been represented by one of the most skilled lawyers of the area. This testimony boosted Gross’s career, and he soon after received his first professorship appointment.

Mohr suggests that Gross was a paradigmatic manifestation of how 19th-century US physicians could rise to greatness if they engaged in the operation of medical jurisprudence (Mohr, 1993: 52–54). In the following decades, Gross became a strong advocate for the implementation of medical evidence and testimonies in US courtrooms (Gross, 1868; Mohr, 1993: 53–54). But even when Gross conducted the surgery in 1849, he was already familiar with the potential of harnessing medical knowledge to judicial needs. In fact, Gross claimed that even as a child, he had had ‘naturally a high moral sense, and an utter detestation of misconduct and crime’, which later earned him the byname of ‘Judge’ (Gross, 1887: 7). We might speculate that Gross was attempting to use this surgery for a larger purpose: to create what he believed could be a promising collaboration between law and surgery.

Despite Gross’s authority and the respect he commanded, nearly all commentators reacted to the procedure with some degree of abhorrence. One criticism was relatively restrained: The *British Chronicle of Medical Science* published a brief account of Gross’s report in three lines and ended with a query: ‘A question then arises as to whether the operation was justifiable – the author, of course, takes the affirmative side’ (Gross, 1853). The editors of the journal in which Gross published his original report (*The American Journal of the Medical Sciences*) took a stronger tone in their final remarks. Not satisfied with the soundness of Gross’s argument, they backed away from his opinion, and analogized the surgery to no less than mercy killing, suggesting that the harm from surgery was out of proportion with the medical problem at hand:

[I]t appears to us the administration of prussic acid to terminate the sufferings of those afflicted with malignant disease, or who have received severe and irremediable injuries, might be justified by the same train of reasoning (Gross, 1852: 390).

The lack-of-proportionality argument touched on a then-ongoing dispute between the radical and conservative philosophies of surgery in the United States (Brieger, 1992). According to the conservative surgical approach, it was legitimate to destroy some parts of the body in order to save others. The radical approach, however, warned against physicians’ appetite for surgery and the drama of the ‘surgical theatre’. It characterized the good surgeon as being bold but not reckless. According to Brieger (1992: 219), Gross’s clinic was a depiction of the conservative approach and demonstrated a central tenet of this philosophy: that complicated and daring surgery is legitimate if the end goal is to prevent pain and conserve life.

Other commentators expressed more extreme objections. In an 1853 editorial review of surgical developments in the *Nashville Journal of Medicine and Surgery*, the authors called the operation a paradigmatic illustration of ‘folly and absurdity’ (*Nashville Journal of Medicine and Surgery*, 1853). In their view, instead of helping the patient, Gross’s surgery actually secured the misfortune it was trying to prevent. In the original report, Gross had described removing perfectly formed testes, and this claim led the authors to assert ‘beyond all controversy’ that the little girl was a boy who was wrongly castrated by Gross: ‘It was intended to convert, by emasculation, this poor little boy – unfortunate by nature, and made doubly so by art into a girl’ (p. 245).

Both Gross and his critics based their reasoning on the essentialist assumption that masculinity is vested in testes, though they reached different conclusions. Gross thought that removing the testes would eliminate current ‘boyish’ behaviours and potential virility in the future. The critics, however, held that the boy’s virility vested in the removed testes would have superseded the child’s socialization as a girl, had the testes been left in place: ‘for the instinct resident in a brace of well-developed testes could not be expunged by all the paraphernalia of the wardrobe of the queen of Sheba, or the asseverations of all the midwives, male or female’¹¹ (*Nashville Journal of Medicine and Surgery*, 1853: 244). They suggested that puberty would have intensified his external and internal masculinization, and that this would have helped the child ‘more effectually than all the surgeon’s knives from Ambrose Paré to Gross’. They argued that Gross was vain when he meddled in nature’s plan for this boy: ‘the very voice with which nature has distinguished sex, so that the mouth couldn’t be opened without revealing it, has here been hushed by the surgeon’s skill’ (p. 245).

Regardless of the results of this particular case, however, the critics were repulsed by the surgery as a matter of principle. They said that it could not have been justified under any circumstances, ‘not by morals, science nor religion’ (*Nashville Journal of Medicine and Surgery*, 1853: 246). They were worried that it would become an accepted professional practice, as Gross recommended. This concern was legitimate due to Gross’s distinguished reputation and authority, and their fears were not far from what came to pass: In the same year as their report, Gross’s surgery was cited by a different physician, who mentioned it as a potential way to prevent suffering by those with ‘organs so imperfectly formed’ and who said that it had been performed ‘by one of our own most prominent surgeons’ (Blackman, 1853: 63).

Professor Gross realized that his actions carried unprecedented ethical, moral and legal implications. In his report, he justified his decision to operate based on the idea that ‘the records of medical jurisprudence are silent upon the subject’ (Gross, 1852). This was not the case, of course, as the topic of ‘doubtful sex’ had been routinely included in Beck’s *Elements of Medical Jurisprudence* since its first edition in 1823. Additionally, 19th-century medical jurisprudence books from England and the US described cases of doubtful sex and guided medical experts on the ‘right’ way of classifying people as either male or female.

The authors of widely known medical jurisprudence books took issue with Gross’s surgery in turn, formulating their critique mostly around the subject of rights (particularly legal rights). In 1860, to conclude a chapter on ‘doubtful sex’, Dr T Romeyn Beck dedicated a long footnote to Gross’s surgery. Beck was fairly restrained and merely

posed the question of whether ‘we have a right to deprive a person of the sexual propensity’ (Beck and Beck, 1860: 186). Other medical jurisprudence authors, however, were enraged. In 1866, Dr Hartshorn, the American editor of the *British Taylor Manual of Jurisprudence*, included Gross’s surgery under the subheading of ‘Destruction of sex by operation’. Dr Hartshorn criticized Gross for depriving the child of the rights and privileges of males:

In a country where the rights of citizenship and power of voting for members of congress are much valued, where they depend on direct proofs of sex ... it is a serious question whether he has not here struck a severe blow at the political rights of these beings, in thus wilfully destroying the physical evidence of the male sex! In this country, it might have been a question whether he had not rendered himself liable in damages for thus tampering with the laws of nature. (Taylor, 1866: 577)

It appears that Gross never responded to any of these criticisms, and it is unclear whether he ever repeated this surgery. In his own autobiography and textbooks on surgery, he made no reference to this case nor to the reactions it inspired.¹² This silence could be due to regrets about having conducted it after being so fiercely criticized by colleagues, or perhaps he considered it to be an insignificant anecdote that left no special trace on his life story. Nevertheless, his episodic surgical entrepreneurship produced an enduring legacy: Gross injected into US surgical historiography the idea that hermaphroditism – or doubtful sex – had a surgical fix that could potentially solve it for once and for all. In this moment when surgeons were occupied with building their professional ethos (Porter, 2006: 193–194; Landsman, 1998: 453), Gross offered an epic role for surgeons: taking control of the laws of nature and men.

Case two: Avery (1868) – ‘a genuine hermaphrodite’

The next scandalous surgery to reconstruct the sex of a hermaphrodite individual was conducted almost two decades later by Dr Henry Newell Avery, in 1868. That year was an eventful one for Dr Avery: He moved to Poughkeepsie, NY, got married and was appointed Professor of Physiology in the New York Homoeopathic Medical College (Cleave, 1873: 96–97). In September, Dr Avery reported in *The Medical Investigator* that he had received a patient from Nova Scotia (Canada) who came to town to visit her sister and sought ‘surgical aid in the states’. She was a teacher, 24 years old, unmarried and she reported a ‘growth upon her privates’. Dr Avery was impressed by her ‘coarse voice’ and ‘masculine frame and face’.

Upon examination, Dr Avery found an unusual looking appearance. Although the right side of the outer folds of the vulva looked ‘natural’, in the left side, Avery reported a large tumour that looked like a testicle with a usual-looking scrotum. ‘In fact’, Dr Avery said, ‘everything resembled a testicle’. There was also no sign of a uterus. On further questioning, the patient stated that she vomited a small portion of blood upon waking up, and that the tumour had been there since she was 10 years old. According to Avery, she had sought him out because she wanted him to remove the tumour, as it annoyed her and her hometown physician said that he could not help her with it.

Dr Avery felt embarrassed by his unexpected finding and consulted with colleagues, who all agreed that the tumour resembled a testicle ‘in every respect’ and recommended an operation. Dr Avery proceeded to conduct the castration. The ‘tumour’ was removed and then examined under the microscope. After looking at the cellular structure and finding rudimentary spermatozoa in the convoluted tubes, the tumour was conclusively declared by Avery and his colleagues to be a testicle.

It is unclear whether Avery drew legitimacy to conduct this surgery from Gross, but he did not seem to think that he was operating in any unusual way. The reason for reporting the case, Dr Avery explained, was not the novelty of the operation but rather that he believed that despite the general agreement among scientific communities of the past century that hermaphrodites did not exist, here was an authorized case of a genuine hermaphrodite: ‘This being the only case, I believe, on record, where a testicle has been discovered in a woman, it will naturally interest many. The *fact* can now be settled that such a thing as a hermaphrodite has existed’ (Avery, 1868: 48). The medical community was indeed interested.

Although Gross had likewise removed a questionable testicle from a supposed female, the two surgeons received sharply different types of objections. Whereas Gross’s commentators focused on the problematic ethical, moral and legal implications of converting what they figured was a boy into a girl, Avery’s commentators for the most part forwent the ethics of the surgery and predominantly focused their oppositions to Avery’s statements that his patient was ‘as near a hermaphrodite as anything can be’ (Avery, 1868: 47) and that, contrary to scientific belief, this patient proved that hermaphrodites exist. Thus, Avery entered a turbulent area of contestation.

As part of their commitment to enlightenment, truth and the scientific way of producing facts, 18th-century medical writers in Europe had contested the ongoing belief in hermaphrodites. US medical writers shared the sentiment: They cited known European authorities who had developed classification mechanisms for so-called hermaphrodites,¹³ claiming that hermaphroditism was a changing category placed on a fast-track for extinction. The ruling paradigm stated that every case of inconclusive sex could be classified eventually, and that arguing for the existence of hermaphrodites was unenlightened and superstitious:

Medical men ought to be extremely careful about giving sanction to popular notions and prejudices. If an unprofessional individual could get the assent of a medical men to one of his favourite whims he would feel as if he had undoubted authority for repeating cock and bull stories. (H, 1882: 193)

By the mid-19th century, denying the existence of hermaphrodites was a progressive scientific belief – indeed, it was a signal of professional competence and modernity. Gross himself dedicated a portion of his report to belie the ‘fable’ about the ‘imagined’ class of beings who combined the qualities of male and female that were called hermaphrodites (Gross, 1852: 389).

It was into this context that Dr Avery’s report, titled ‘A genuine hermaphrodite’, was introduced. In a set of public correspondences between medical commentators, the main concern was whether the patient was a kind of hermaphrodite or a male with some

genital deformity. First to respond was Dr Benjamin Lee in *The Medical Gazette* in October 1868 (Lee, 1868: 53). Lee took issue with Avery's conclusion that hermaphrodites exist: 'On this final expression of opinion hinges the whole gist of the matter' (p. 53). After he reviewed the signs reported by Avery in his investigation, Lee believed that the patient was a male with imperforate penis – in other words, that Avery had castrated a legal male. Lee said that every writer on medical jurisprudence would have solved this case, and that perhaps one other testicle lies beneath the skin and could be used to put the patient 'in possession of his virility'. Lee believed that if the patient had presented themselves as a male, then Avery would have declared the patient to be so without hesitation. At the end of Lee's letter, the editors of the *Gazette* agreed with Lee's observations, adding that 'a clearer case of hypospadias was never recorded' and that 'there can be but little doubt of a man having been castrated in this instance' (p. 53).

This professional controversy regarding the existence of hermaphrodites became entangled with the rise of new diagnostic technologies. During the second half of the 19th century, visual evidence produced via technologies such as microscopes, X-ray tubes and telescopes emerged as a superior form of evidence, as it included details that were inaccessible to the naked human eye and offered a sort of new 'mechanical objectivity' (Golan, 2000, 2004b: 474). Accordingly, many treating physicians preserved tissues that they removed from their patients in order to submit them for microscopic examination to validate the nature of the body. Carl Muller, a 'distinguished microscopist' (*American Observer Medical Monthly*, 1869), was the editor of the 'Pathology and Microscope' section of the *American Homoeopathic Observer*. Muller was an enthusiastic believer in the potential of microscopic examination to settle the issue at hand and so asked Dr Avery for the removed testicle in order to conduct an independent examination. Muller found essential differences between the tumour and a testicle – mainly missing ducts and vessels – which made him conclude that this case was 'one of *True Lateral Hermaphroditism*', and he cast as ignorant the previous commentators who had figured that the patient was actually male.

A second round of quarrelling between Muller and physicians over the correct diagnosis occurred a few months later, when Dr JG Baldwin, a New York doctor with 'a taste for natural history' (Cleave, 1873: 340), wrote a review in *Pathology and Microscope* that supported the observations made by Dr Lee and the editors of *The Medical Gazette* (Baldwin and Müller, 1869). Baldwin described analogous cases reported in European medical encyclopaedias and concluded that the patient could not be classed as a 'true or genuine hermaphrodite' but was rather 'a male with a hypospadiac fissure, and that Dr Avery, while intending to remove a tumour from the privates of a woman, did really remove a testicle from the well-developed scrotum of a man'. Muller then used Baldwin's opinion as an opportunity to advocate for microscopic examination as a better, more realistic form of observation and attacked Baldwin for 'cramming' the books to find evidence that would fit his hypothesis, instead of conducting a 'rigid microscopical investigation' (Baldwin and Müller, 1869: 262).

The only voices who made a statement about the legitimacy of the surgery per se were Gross's fiercest critics: the editors of the *Nashville Journal* in December of the same year. The writers started with a cynical remark about Avery's alleged discovery: 'why, bless your soul, good Doctor Avery, Dr S. D. Gross discovered two testicles in a woman!'

However, their criticism seemed despondent. Unlike in the 10-page critical essay condemning Gross, this author did not dwell on the moral, ethical and legal catastrophe but was rather satisfied with a two-page lecture, which more than anything else aimed for sarcasm and contempt regarding the surgical practice of castration for medical reasons. The author sadly joked about how castration had become a solution to treat small testicles.

Unlike the attention they had paid to Gross's surgery, prominent medical jurisprudence books paid no attention to this case at all, nor to the surgeries that followed it. Their lack of response may have had several causes. First, it could have reflected the fact that this surgery was conducted by a lesser-known surgeon and that they therefore didn't learn of it. Another possible reason for their silence could have been that this case involved a post-pubertal adult rather than a baby. Medical jurisprudence books considered the way bodies changed during adolescence to be significant and recommended waiting until after puberty to assign a sex, in order to avoid mistakes (Beatty, 1845: 159; Taylor, 1880: 711; Wharton and Stillé, 1855: 311). Lastly, during the final decades of the 19th century, trust in medical testimony and expert witnesses began to dramatically decrease, and the professional field of medical jurisprudence faded from its former greatness (Mohr, 1993). As one commentator in the *New York Times* explained, 'Then medical – or, far better, medico-legal – experts were really respected; Now they are sadly suspected' (*New York Times*, 1910). In any case, the medico-legal community seemed to have neglected the topic of hermaphrodites and did not contest reported cases of sex-assignment surgeries.

Around this time, physicians from the field of obstetrics and gynaecology began taking interest in the ongoing debate about the existence of hermaphrodites. A series of essays published in *The American Journal of Obstetrics and Disease of Women and Children* were dedicated to the question of hermaphroditism. Paul Mundé, a gynaecologist from Mount Sinai hospital in New York, published a report and presented it in front of the New York Obstetrical Society, exhibiting the case of a hermaphrodite patient named Catharina/Carl Hohmann, who had been examined by many doctors in Europe and the US. The detailed report described the multiple and contradictory diagnoses by doctors, particularly in light of Catherine's changing body over the years. At the age of 48, after 'there being no female function left', Catherine entered Mundé's office in male attire after changing his name legally to Carl (Mundé, 1876: 625). Mundé joined the general query of the time: 'Is *he* a man, is *she* a woman or is *it* really a true lateral hermaphrodite?' (Mundé, 1876: 629). He was unconvinced of any conclusion and generally seemed to support Hohmann's decision to live as a male. While he did not mention Gross's surgery at all, he did seem to believe that surgery – specifically, an autopsy – could provide definitive answers regarding Hohmann's sex in the future.

Three years later, JW Underhill, the president of the Obstetrical Society of Cincinnati, joined the intellectual effort to determine whether hermaphrodites exist and said that the answer 'depends entirely upon the definition of that term' (Underhill, 1879: 174). By synthesizing the old common law rule of hermaphrodites and reported cases in medical literature, he concluded that 'there does exist among the human species such a phenomenon as the hermaphrodite'. Like Mundé, Underhill did not mention any of the operations to construct sex, but rather projected faith in the capacity of

a post-mortem operation to decide ‘to which sex the being more properly belongs’ (Underhill, 1879: 174). Although Underhill did not address the legal implications of establishing legal sex status through surgery, he was certainly aware of the legal implications of his practice: ‘the most practical points for our consideration relate to the legal relations of hermaphrodites’. He focused on three particularly fruitful areas – marriage, suffrage and inheritance (or ‘legitimacy’) – and commented that, in these instances and a few others ‘which require the distinguishment of sex, the testimony of competent medical authority is very essential for the correct and intelligent solution of the legal question at issue’ (Underhill, 1879: 176). Overall, it seems that gynaecologists believed that surgical techniques have probative qualities for questions of law but did not go as far as to claim that legal authorities should submit to medical authorities (Swasey, 1881).

Ethical concerns about genital surgery moved into the background as a new clash emerged: This reconceptualised debate was now a professional dispute between medical men over whether the person in question was a hermaphrodite and over which the instruments would be most reliable to reach any conclusion. That is, the debate no longer focused on the legitimacy of the surgery or on the liability of surgeons for interfering with the laws of men and nature. As the existence of hermaphrodites no longer drove the debate, it was then further musicalized and neutralized, and a new question took centre stage: Is the person *really* a male or a female?

Case three: McGuire (1884) – ‘A case of mistaken sex’

By the last decades of the 19th century, it was not uncommon for patients in the US to approach surgeons for classification of their ‘true sex’.¹⁴ Dr William P McGuire, who came from a family of doctors in Virginia and served as president of the Virginia Medical Society (The Washington Post, 1926), was one of the surgeons who was approached in this way. He reported that on January 12, 1884, a lady patient entered his clinic ‘in order to have the sex to which she belonged determined’ (McGuire, 1884b). The voice and features looked to him ‘effeminate’ and ‘modest’, and the patient testified to have always presented herself as a woman.

The patient, who was well-known in the town of Winchester, went by the name of Elizabeth Rebecca Payne.¹⁵ She was said to be ‘a most graceful and dashing horse rider’ who generated admiration when she rode into Winchester with ‘habit and somewhat long hair trailing in the wind’. Payne was one of five or six daughters, managed a farm and a store, and was known for her ‘remarkable business talent for a woman’ (Savannah Morning News, 1884).

After Dr McGuire examined Payne, he reported that he found a ‘small penis in the natural position about three-quarters an inch in length, with a well-formed glans and prepuce’ (McGuire, 1884b: 186). He conducted further examination and reported that the patient disclosed to him that she had ‘masculine desires’ and that during her sleep she would sometimes have ‘pleasurable sensations followed by an ejaculation of a white fluid from the opening of the urethra’, which Dr McGuire interpreted to be ‘of course, an ejaculation of semen’. He reports that ‘there was no trouble in determining her sex’, and he advised Payne to change her presentation to that of a man and to conduct a ‘plastic

operation' to reconstruct a new urethra in order to urinate more conveniently, 'as she is now obliged to do so in the sitting posture' (p. 186).

McGuire's report differs from the other two cases described in notable ways. This patient did not undergo castration (i.e. removal of testes) but was rather advised to change her *presentation* of sex to that of man, and was offered a supporting procedure. Unlike in previous cases, McGuire expressly pronounced this procedure to be a 'plastic operation'. The word *plastic* signifies that this was a specialized operation, rather than a cosmetic/beauty surgery conducted by charlatans and quacks, and secondly, that the operation was intended to solve an aesthetic-cultural issue (the patient's posture while urinating) rather than a health matter (Haiken, 1997).

McGuire's recommendation and actions were cutting-edge for the time. True, urethra relocation surgeries were not uncommon, but until this point, they had not been used as a way to surgically consign people to the opposite sex. Nevertheless, unlike in the two cases described earlier, the fact that McGuire offered a surgery to establish sex did not provoke any negative reactions from his professional community. This difference may reflect a change in how the nation related to surgeons: by the time Dr McGuire was practicing, US surgeons had reportedly reached heroic status. Whereas 18th-century surgeons in England had fought to become legitimate members of the scientific community, in the 19th century, US surgeons were celebrated as symbols of democracy – even as frontiersman (Lawrence, 1992: 9–10; Lawrence and Shapin, 1998: 188–197). Surgery in the US had successfully associated itself with values with which the country's citizens identified, such as democracy and imperialism (Lawrence, 1992: 27–30; Rutkow and Lillemoe, 2018), and thus was granted more leeway than it had once been. The result was a vibrant surgical discourse on genital construction surgery for hermaphrodites, which made a name for US surgeons as potential helpers to hermaphrodites outside the US.¹⁶

Dr McGuire's case made waves in medical journals, and the way they reported on his case signalled another change in the focus of the debate. That is, whereas medical writers had previously focused on identifying real or true *hermaphrodites*, they were now contemplating real or true *sex*. 'Whether doctors asserted or denied hermaphrodites' reality, they tried to determine each patient's true, singular sex with certainty, even though the bodies they saw manifested ambiguity' (Reis, 2009: 124). Under this new 'true sex' paradigm, the remaining question was, therefore, not whether a given person was a 'real' hermaphrodite but rather whether this person was male or female.

To Dr McGuire's statement that his patient's sex was easy to determine, the *Maryland Medical Journal* reacted sceptically and argued that from an 'anatomical standpoint' the patient's characteristics suggest that she was a female with imperfect sexual development (Editors, 1884a: 762). They suggested that descended ovaries could be mistaken for testicles, that an enlarged clitoris could be confused with a penis, and that 'masculine' sexual desire could be a result of 'vicious moral influences' and 'bad associations' (Editors, 1884a: 763). They argued that as long as McGuire did not validate the existence of spermatozoa in the white fluid, he could not know her sex 'beyond a doubt' (Editors, 1884a: 763). Shortly thereafter, McGuire published a reply in the same journal, accusing his critics of bad faith (McGuire, 1884a). His main response was that no female characteristics such as a uterus, vagina or menstruation were found during his examination, and that since the operation, the patient had married a female and was having 'regular sexual

intercourse with ejaculation of semen' (with the only difference from usual being that it fell outside his wife's vagina) (McGuire, 1884a: 774). The journal's editors replied that they had merely pointed out the insufficiency of facts and evidence to support his conclusion (Editors, 1884b: 779).

Despite this focus on the patient's 'real sex', however, a few medical writers also hashed out the older debate and thus tried to contextualize McGuire's report within the evolving theory of vanishing hermaphrodites. They cited popular classifications and encyclopaedias on the subject to strengthen the view that true hermaphrodites did not exist.¹⁷ At this point, however, no one argued that Payne was a genuine hermaphrodite nor that such a thing existed. Commentators who mentioned hermaphrodite theory and history did so only for the sake of resolving Payne's correct classification as male or female.

Newspaper articles suggested that the notion of an elusive 'real sex' hidden within the body had become a common cultural idea, with headlines such as 'Proved his real sex', 'A man who was a woman', 'A woman and now a man' and 'Masquerading for years'. Although the actual medical report says nothing about the operation itself and raises doubts as to whether it was even conducted (Reis, 2009: 74–75), the newspapers reported that Payne's *real sex* was now exposed and declared, with the validation and help of a 'simple and painless operation' (St Paul Daily Globe, 1884a) completed by local well-respected surgeons: Dr McGuire, who was 'widely known as a skilful surgeon', and Dr Love, who was also considered to be a 'highly esteemed physician and gentleman' (Memphis Daily Appeal, 1884).

Newspaper reports additionally revealed that Payne's *legal sex* had been changed. After visiting Dr McGuire, Payne astonished the County Court's clerk, Mr Riley, by applying for a license to marry Anne Hinton, a domestic worker for Payne's family. At first, Mr Riley refused, but newspapers reported that McGuire's confirmation of Payne's sex was sufficient to change his mind: 'Payne proved his real sex by producing the certificate of Dr P. W. Maguire, of Winchester' (Memphis Daily Appeal, 1884). Mr Riley apparently also asked that Payne change his name to one suiting the male sex, which Payne likely did. Payne and Hinton eventually married at the Southern Methodist Congressional Church in Martinsburg.

Newspapers also revealed a second viewpoint – that of Payne – through an interview in which Payne claimed to have had no long-term suspicions about his sex. Nevertheless, Payne was convinced by the surgeon's declaration:

I really did not suspect my true sex ... until three or four weeks ago, when some casual remark made by a lady friend aroused my suspicions. I then determined to go to Dr McGuire, but did not inform him of my perplexity. After professional inquiry he at once, but with much hesitancy, made known my true sex. I suppose it was the force of nature which impelled me to fall in love with Miss Hamilton. (St Paul Daily Globe, 1884b)

Why, then, was Payne immediately compliant with the surgeon's rather radical advice to change sex? Perhaps compliance can be explained by the many benefits to which Payne would be entitled as a man. At the time, it was common for people with unclear sex to prefer (or to be advised by their parents) to present as male in order to enjoy male privileges (Flint, 1840; Goltman, 1897). In fact, some 19th-century US females

presented themselves as males for similar reasons: to serve in the military, enjoy more security while traveling, earn higher wages, etc. (Manion, 2020a; Manion, 2020b). For Payne, then, being classified as male could offer access to many such privileges, from inheritance rights (given that Payne came from a family of daughters) to higher status in the business world. But the most obvious benefit of all was that being classified as male allowed Payne to marry Anne, about whom Payne was passionate and has been ‘struck with her beauty and ladylike bearing’ ever since Anne had come to work for her family (St Paul Daily Globe, 1884b).

In this as in other cases, then, physicians who treated people with unclear sex had the capacity to legitimate illicit same-sex relationships. In last decades of the 19th century, medical discourse in the US generated what Reis calls a Gordian knot between gonads, marriage and surgery (Reis, 2009: 82). Physicians who reported their interactions with hermaphrodites often expressed their wish to secure heterosexual copulations and marriages. For example, in 1880, Dr Gregory reported that a young man with what appeared to be a perfect vagina, female labia and urethra came to see him ‘anxious to get married’ and asked whether he should marry a man or a woman. Dr Gregory advised him to not get married, ‘because I really thought it was my duty to dissuade him’ (Gregory, 1880a). Gregory contemplated whether surgery could solve the problem, as ‘the removal of his rudimentary penis would leave him, so far as appearance goes, a perfect female’ (Gregory, 1880b: 547). This case exemplifies the Gordian knot that Reis mentioned: Gonads would often dictate the ‘real sex’, which, when affirmed by surgery, could ‘license’ the romantic relationship. This logic certainly translated to Payne’s situation.

Additionally, Payne’s statement that it ‘was the force of nature which impelled me to fall in love with Miss Hamilton’ conformed with the notion, promoted by sexologists and medical men, that sexual desire is congenital. Writers in the field of sexology often conflated hermaphroditism with sexual behaviour’s considered pathological (Reis, 2009: 62). Krafft-Ebing’s *Psychopathia Sexualis*, published in 1892, used the word hermaphroditism to create new categories of ‘deviant’ sexual behaviour’s: ‘mental’ and ‘psychical’ (Krafft-Ebing, 1892: 230–239).

The making of sexual desire into an innate characteristic was considered progressive, as it indicated that sexually ‘deviant’ behaviours were not criminal – rather, they were treatable and plausibly non-punishable.¹⁸ However, the association between sexual deviance and hermaphroditism fused back into medical discourse about hermaphrodites and fed medical worry regarding hermaphrodites’ sexual morality (Allen, 1897). While sexologists did not address genital surgeries for hermaphrodites, the logic they offered to connect deviant psycho-sexual behaviour to hermaphroditism provided another line of support for using a surgical approach to restore Victorian sexual morality.

The field of gynaecology benefitted from justifications for genital surgery. In an essay titled ‘Hermaphroditism’, published in the *American Journal of Obstetrics and Diseases of Women and Children*, Dr George Dubois Parmly offered another such justification: It started by suggesting that many of those dubbed hermaphrodites were actually women masquerading as men. They were females with enlarged clitorises or ‘strong-minded’ women who, for the purpose of enjoying the civil and economic privileges of males, decided ‘to take the role of a man in social life’ (Parmly, 1886). Having been published just two years after Dr McGuire’s case, the paper addressed that case directly. Remarkably,

the author did not think that Payne was a fraud or a woman in disguise – instead, he accepted the judgment of Dr McGuire and Dr Love, and he repeated their proclamation that Payne was ‘in truth a man’ and that ‘his sex was really masculine’ (Parmly, 1886). For Parmly, who believed in the concept of true sex and the need to prevent ‘ill-assorted unions’, Payne’s reassignment to the male sex by the doctors was a useful solution.

Gynaecologists had much to gain professionally from encouraging the use of genital surgery to fix different problems. In addition to using it in situations concerning hermaphrodites, gynaecologists continued attending patients with ‘deformed’ or ‘missing’ reproductive organs, often assisting surgical techniques to help their female patients perform ‘wifely obligations’. These procedures sometimes included the removal of ovaries or tumours, opening a cul-de-sac, fixing hernias, and more. In an essay exploring the ‘physical and moral’ effects of absence of the internal female sexual organs, Mundé (1899) reported he had performed castration ‘on hundreds of women for ovarian disease’. To alleviate patients’ worry about submitting to surgery that would remove gonads he added that ‘in none of these cases has there been any change in the physical appearance or in the moral or mental attributes’ (Mundé, 1899).

Although Mundé advocated for such surgeries as a way to solve pathological issues, his essay also included some creationist language referring to patients’ sex status. For example, he tells of a lady patient who asked for an operation ‘to bring on menstruation, hoping that she might thus be able to conceive’ and also ‘to have a proper vagina made’. In response, Mundé said that ‘an artificial vagina is easily constructed’. This idea of constructing genitals to make the body fit a gender assignment was not only accepted but also practiced by other gynaecologists into the 20th century, as just a few years later the journal published a report on an ‘operation for removal of the penis and the utilization of the skin covering it for the formation of a vaginal canal’ for a pseudohermaphrodite (Goffe, 1903).¹⁹

Given the range of uses for these surgeries, for Mundé, Parmly and others, it was essential that genital surgeries remain legitimate and noncontroversial – otherwise, they and other gynaecologists would lose an important set of tools. As a result, medical motivations for conducting these surgeries were intertwined with cosmetic and cultural ones and used to support their continuation.

This trend toward genital surgery for different problems, hermaphroditism included, increased with the publication of more cases in medical journals and a special textbook on the subject in the following decades (e.g. Young, 1937). These publications no longer included any trace of the dramatic ethical crisis in mid-19th century. Over time, the field of sex-assignment surgery gradually became a urological specialty.

Conclusion

The professional consensus around the practice of sex-assignment surgery for people with unclear sex evolved dramatically in the second half of the 19th century in the United States. This practice, which was fiercely opposed in 1852, induced hardly any ethical challenges by 1882. According to the technocratic narrative, this new consensus should be seen as a product of successful (albeit dubious) surgical experience with this procedure as reported by Gross, Avery and McGuire. In this article, however, I show that the legitimization of the

practice was bound up with professional trends that intended to modernize and thus 'scientist' surgical practice, and that these trends made it possible to understand sex-assignment as a scientific and medical labour rather than a legal or religious act of creation.

First, the reconceptualization of the body in anatomical language and theory also reconceptualized bodily abnormalities as surgical problems and legitimized surgical fixes as a way of handling them. Accordingly, medical reports on hermaphroditism explained this condition using complicated and cutting-edge anatomical theories that helped generate a scientific classification for it. Second, the theory that 'true' hermaphrodites did not exist was considered to be necessary for progress and modernity. The denial of true hermaphroditism was part of denouncing superstitions and folk tales, to mature from an era of supernatural or mythological creatures into a new world where anything can be explained in naturalistic, objective and physical terms.

These findings problematize the narrative of chronological advancement of technology and knowledge. The cases discussed here show that ethical challenges to *whether* surgeons should conduct surgery were reformulated as technical or methodological challenges as to *which* surgery to conduct, thereby removing the moral sting. This insight expands our understanding of the internal mechanisms by which scientific or semi-scientific professions legitimize their own controversial practices. As shown here, prior to the early 20th-century battle over traditional gender norms, US surgeons were already getting comfortable with surgically assigning patients to what surgeons believed was their 'true' sex.

In the process, surgery became a mode of judicial fact-making. As shown in the third case, a 'note from the doctor' was an extremely powerful tool that had the potential to change one's legal sex status and rights immediately. Such a change is anything but trivial – when someone's doubtful sex needed to be clarified for legal reasons prior to mid-19th century, the pursuit of truth would often be conducted in court. Sex assignment surgeries for hermaphrodites, however, consolidated two epistemic orders and roles: The surgeon was now a jury, judicial fact-finder and surgical fact-maker. This consolidated practice became more and more popular in the decades that followed, when surgeons became the constituters of legal sex.

Taken together, the trilogy of cases presented here can be understood as tracing an origin story for 'plastic sex'. As historians and philosophers of sex have described, by the 19th century, Western culture had moved from a one-sex to a two-sex model (Laqueur, 1992). Here, though, emerged a novel model of sex, which maintains gravity and force in the legal sphere to this day: the idea of sex as plastically constructed by surgeons. Although this idea is usually attributed to early 20th-century surgeries for transsexuals and 'inverts' (Haiken, 1997; Meyerowitz, 2002: 21), this article shows earlier traces of the notion of malleable sex.

Today, many laws and policies related to defining legal sex (or reclassifying gender) rely on the person's operative genital history (Spade, 2008), which reflects the legal recognition that surgeons have achieved in the past century. It is also evidence of the popularity of the self-made plastic sex model, brought to life by the surgical discourse of 'doubtful sex' cases and a scalpel. Exploring surgeons' creationist force in the legal sphere contributes to the scholarship concerned with the role of science and technology in the formation of governance. By historicizing the process through which surgeons

appropriated the capacity to determine sex, we can demystify other connections between body morphology and legal status taking place continuously.

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Notes

1. Hermaphroditism is a mythological term taken from Latin to describe the joining of male and female in the same individual (Oxford English Dictionary, n.d.). This term was used by the medical profession to denote the condition of ‘doubtful sex’ throughout the 19th and 20th centuries, until it was officially removed from medical jargon in 2006 and changed to ‘disorders of sex development’ (Houk et al., 2006). Today, people with sexual characteristics that do not fit medical definitions of male and female choose to be called in different ways depending on context (e.g. intersex, people with Disorders of Sex Development). Although some reclaim the historic term hermaphrodite, for many others it is considered anachronistic and derogatory. (Intersex Society of North America, n.d.) In this work I use the terms ‘hermaphrodite’ or ‘pseudohermaphrodite’ where I discuss individuals with undefined sex in a historical context, but use ‘intersex people’ when speaking about them in the present. I tried using gender neutral pronouns for the most part, or adopt the gender pronoun that aligns with the individual’s gender presentation at the time. However, I also used gendered pronouns (her/his, he/she) when citing or relying directly on a source or a viewpoint which used them.
2. ‘Surgical fix’ is a term coined by Fausto Sterling to describe genital normalization surgeries for intersex children (Fausto-Sterling, 2000: 56).
3. From my review of US medical journals, I found 57 cases in which doctors reported treating hermaphrodites or people with doubtful sex in the US. Out of these 57 cases, 21 reported to have offered or conducted surgeries. Seventeen out of 21 of these reports were published between 1870–1903. Matta’s count displays the same pattern, though with somewhat different numbers. In her examination of US cases from 1850 to 1904, she found 16 mentions of surgery out of 90 cases reported (Matta, 2005).
4. In fact, the book mentioned hermaphroditism in a completely different part of the book, under the heading ‘gleanings from foreign journals’ (Bushe, 1832: 200).

5. After Lord Mansfield decided *Folkes versus Chadd* (1782) 99 Eng. Rep. 589. See Golan (2004a).
6. See, for example, *New and Complete Dictionary of Arts and Sciences Comprehending All the Branches of Useful Knowledge 1612 (1754–1755)* ('It is now generally allowed, that there is no such thing as a true hermaphrodite; most, if not all those who pass for such, being mere women, whose clitoris is grown to an enormous size, and the labia pudendi become unusually tumid'); *Encyclopaedia Britannica or a Dictionary of Arts and Compiled upon a New Plan 784 (1771)*; Chambers, *Ephraim Cyclopaedia: Or, An Universal Dictionary Of Arts And Sciences (1741)*.
7. This theory was promoted by natural philosophers from at least mid-18th century. See the writings of James Parsons and James Douglas in Parsons (1741) and Guerrini (2016: 28).
8. In the early modern period, removal of tissues through surgery or dissection was imbued with the symbolism of 'unveiling' nature and domesticating it (Jordanova, 1989).
9. Particularly from the second half of the 20th century in which treatment protocols produced by the Hopkins Clinic led by the psychiatrist John Money recommended conducting sex-assignment surgeries for babies with unclear sex within the first two years of life (Sudai, 2018: 10–11).
10. See court cases from recently addressing 'hermaphrodites'/'intersex' in different context, such as work discrimination: *Wood v. CG Studios, Inc.*, 660 F. Supp. 176 (E.D. Pa. 1987); Jail placement: *Cozart versus Collins*, 27 F. App'x 477 (6th Cir. 2001); *Estate of DiMarco versus Wyoming Dep't of Corr., Div. of Prisons*, 473 F.3d 1334 (10th Cir. 2007); medical treatment: *M.C. ex rel. Crawford versus Amrhein*, 598 F. App'x. 143 (4th Cir. 2015).
11. The idea that sex is innate, and that Gross's surgery was merely changing the exterior, was also made by the editors of Wharton and Stillé medical jurisprudence book, who also added the hope that the procedure would not be followed in the future (Wharton and Stillé, 1855: 317).
12. I looked for mentions of the surgery by years (1849–1852), places (Louisville, Nashville), names of commentators (Beck, Hartshorn, etc.), and related medical terms (testes, castration, hermaphrodite, etc.) in the two volumes of his biography.
13. Mainly the works of St. Hillair and James Young Simpson (see Simpson, 1856, 1871; Todd, 1835).
14. See Gregory (1880b), where a man came to seek advice as to which sex he should marry (Bishop, 1892; Bradfield and Reichert, 1882; Goltman, 1897).
15. Interestingly, newspapers reported this case with different biographical details and dates, differing on the name of the patient, her/his age, the date of marriage, and more. For example, *The Indianapolis Journal (1884)* and *St Paul Daily Globe (1884a, 1884b)* named the patient 'Jane Catherine Jaynes'; *The Barbour County Index (1884)* reported the name as 'Jane Catherine Payne'; *The ACA (1884)* reported the name as 'Jane Catherine Payue'.
16. See, for example, the case of Catherine Hohmann, who was advised, some years after Gross's publication, by her lover to emigrate to America 'where she could have an operation performed' (Mundé, 1876: 631). See also a dissertation on hermaphrodites presented to the Faculty of Medicine in Paris mentioning surgery in the United States (Poppesco, 1875: 34).
17. See: Bigelow (1884), citing St. Hilaire; Editors, 1884a: 763), citing Courty; Parmly (1886: 939), citing St. Hilaire.
18. See for example a 1899 letter published in the *New York Medical Journal (1899)* calling doctors to embrace Havelock Ellis's book *Sexual Inverts*, which recognizes the 'pathological states' of 'congenital sex perversion' because 'it is unreasonable to send a man to prison because he is deformed in certain psychical centres'.

19. In 19th-century hermaphrodite classification schemes, ‘Pseudohermaphrodite’ was usually used to describe cases that could be classified by the examiner to either male or female, and were thus separated from cases of ‘true’ hermaphrodites.

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