

authorizing their local pediatrician, Dr. Mariano Tan, to contact the Child Guidance Clinic.

“I hope you will keep this letter strictly confidential,” Dr. Tan wrote to the clinic’s director. “Both of these children have been under my care since Oct., 1966. They are identical twins—both *male*—however, because of an unfortunate accident during circumcision on Bruce (now Brenda), the penis was amputated.” Tan went on to explain about Brenda’s sex change at Johns Hopkins.

The revelations in Tan’s letter seemed to explain, for both the clinic and the school, much about Brenda Reimer. “I just agreed it was a girl until I heard different,” says Brian’s first grade teacher, June Hunnie. “Once we knew the *background*, we thought to ourselves, Well, no wonder. What can you do to have a child sit down and quietly concentrate on classwork if there’s all this horrible stuff going on in the background? It’s impossible.”

Indeed it was—at least for Brenda. At the end of that school year, Minnetonka informed Ron and Janet that while Brian would be promoted to the next grade in the fall of 1972, Brenda (despite Dr. Money’s sanguine predictions) would have to remain behind.

## 4



ON 28 DECEMBER 1972, four months after Brenda Reimer began her second attempt at first grade, John Money unveiled his “twins case.”

The occasion was the annual meeting of the American Association for the Advancement of Science in Washington, D.C. There Money delivered to a capacity crowd of over one thousand scientists, feminists, students, and reporters the first speech in a two-day series of talks devoted to “Sex Role Learning in Childhood and Adolescence.” The symposium, held in the Ambassador Ballroom of the Shoreham Hotel, featured an impressive roster of leading researchers in the field of sexual development. Only Money’s appearance at the meeting would make headlines, however—thanks to the remarkable case he cited that morning, a still fuller account of which (he informed his audience) could be found in his book *Man & Woman, Boy & Girl* (coauthored with Anke Ehrhardt)—a book that happened to have been published, in an early

example of cross-promotional marketing, the very day of Money's appearance at the symposium.

*Man & Woman, Boy & Girl* had been in the making for the previous four years. Culling data from the hundreds of hermaphrodites who had passed through his Psychohormonal Research Unit since the early 1950s, and drawing (as Money announced in the book's preface) on scientific specialties as diverse as "genetics, embryology, neuroendocrinology, endocrinology, neurosurgery, social, medical and clinical psychology, and social anthropology," the book was a daunting, ambitious-looking effort of scholarship—all the more so for its often impenetrable Latinate terminology and convoluted syntactic structures. Its thematic thrust, however, was surprisingly straightforward and was reducible to one organizing idea stated again and again in its three hundred pages. It was the same idea Money had first advanced in his mid-1950s papers on intersexes: namely, that the primary factors driving human psychosexual differentiation are learning and environment, not biology.

Appearing five years after Money and Ehrhardt's data showing that female humans exposed to excesses of testosterone in utero displayed "tomboyism" in later life, *Man & Woman, Boy & Girl* had little choice but to acknowledge what Money called "a determining influence" of prenatal hormones on adult sexual behavior. Money explained that these influences were not decisive, however. Describing them as merely adding "a certain special flavor" to the girls' behavior, Money stated that in the formation of gender identity, prebirth biological influences are secondary to the power of postbirth environmental factors, which override them. To prove this nurturist bias, Money repeatedly evoked his principle of "matched pairs" of hermaphrodites—intersexual patients who shared a similar syn-

drome yet had been raised successfully, he claimed, as opposite sexes.

But the careful reader might have been struck by what looked like an uncharacteristic admission that hermaphrodites could not tell the whole story of human sexual development. For midway through the book, Money confessed to the frustrating constraints that prevented sex researchers from conducting the kinds of experiments that would provide truly conclusive answers to the riddle of psychosexual differentiation in humans. "The ultimate test of the thesis that gender identity differentiation is not preordained in toto by either the sex chromosomes, the prenatal hormonal pattern, or the postnatal hormonal levels would be undertaken, if one had the same ethical freedom of working in experiments with normal babies as with animals," he wrote. "Since planned experiments are ethically unthinkable, one can only take advantage of unplanned opportunities, such as when a normal boy baby loses his penis in a circumcision accident."

Then Money revealed that just such an "unplanned opportunity" to experiment on a developmentally normal infant had come his way—and that he had seized it. Describing how the injured baby's parents had allowed their son to be surgically reassigned as a girl, Money also pointed out what he called an "extreme unusualness" to the case: the child in question was one of a pair of identical male twins. The momentous import of this would not have been lost on either Money's readers or his AAAS audience. Money was saying that he had used for his experiment a pair of children whose biology was as close to identical as any two human beings could be: a pair of children whose lives had begun with the same primordial zygote cell, whose DNA bore the same genetic blueprint, and whose brains and nervous systems had developed in the womb within the

same bath of prenatal hormones. In short, the ultimate matched pair.

That Money recognized the very special place Brenda Reimer's case occupied in his work—and indeed within the entire history of sex research—was clear from the emphasis he gave it in *Man & Woman, Boy & Girl*. First mentioned in the book's introduction, it was then cited at various key points throughout the text: in Chapter 8 on "Gender Identity Differentiation," in Chapter 9 on "Developmental Differentiation," in Chapter 10 on "Pubertal Hormones." It was in Chapter 7, on "Gender Dimorphism in Assignment and Rearing," that Money explored the case at greatest length, his account having been assembled from firsthand observation of Brenda during the family's annual visits to his Psychohormonal Research Unit and from letters and phone calls with Janet during the year.

Money made mention in passing of Brenda's "tomboyish traits" but dismissed these as insignificant next to the myriad ways she conformed to the stereotypes of female behavior—examples of which were selected from Janet's hopeful cataloging over the years of Brenda's fitful attempts to act more like a girl. Money did make reference to Brenda's extraordinary bathroom habits, but as he had done with Janet, he assured his readers that "many girls" attempt standing to urinate like boys, and he hinted that by age five Brenda no longer stood to pee—and that any sporadic reversion to her old habits was merely her effort at "copying her brother." No mention was made of the academic, social, and emotional difficulties that had obliged Money to intervene on Janet's behalf with the Winnipeg school authorities a year and a half before the book's publication.

By any measure, the account portrayed the experiment as an unqualified success. In comparison with her twin brother, Brenda provided what Money variously described as an "extra-

ordinary" and a "remarkable" contrast. Brian's interest in "cars and gas pumps and tools" was compared with Brenda's avid interest in "dolls, a doll house and a doll carriage"; Brenda's cleanliness was characterized as wholly different from Brian's total disregard for such matters; Brenda's interest in kitchen work was placed alongside Brian's disdain for it. Money did describe Brenda as always the "dominant twin," though he gave the impression that this was changing over time. By age three, he reported, her dominance over Brian had become "that of a mother hen." All in all, the twins embodied an almost miraculous division of taste, temperament, and behavior along gender lines and seemed the "ultimate test" that boys and girls are made, not born.

The significance of the case was not lost on the then-burgeoning women's movement, which had been arguing against a biological basis for sex differences for decades. Money's own papers from the 1950s on the psychosexual neutrality of newborns had already been used as one of the main foundations of modern feminism. Kate Millet, in her bestselling 1970 feminist bible, *Sexual Politics*, had quoted the 1950s papers as scientific proof that the differences between men and women reflect not biological imperatives, but societal expectations and prejudices. The twins case offered still more dramatic, and apparently irrefutable, evidence to support that view.

"This dramatic case," *Time* magazine duly reported on January 8, 1973, the week after Money debuted the case at the AAAS meeting in Washington, "provides strong support for a major contention of women's liberationists: that conventional patterns of masculine and feminine behavior can be altered. It also casts doubt on the theory that major sexual differences, psychological as well as anatomical, are immutably set by the genes at conception."

The *New York Times Book Review* hailed *Man & Woman*,

*Boy & Girl* as “the most important volume in the social sciences to appear since the Kinsey reports.” It summed up the book’s argument on the power of nurture to override nature thus: “[I]f you tell a boy he is a girl, and raise him as one, he will want to do feminine things.”

The twins case was quickly enshrined in myriad textbooks ranging from the social sciences to pediatric urology and endocrinology. “The clear message here is that even if biologically based sex differences in behavioral predispositions exist, social factors such as the sex which the child is assigned and in which the child is reared can substantially override and obscure them,” wrote Alice G. Sargent about the case in her 1977 women’s studies text, *Beyond Sex Roles*. Sociologists were equally enthralled by the case and cited it as the premier example of society’s power to mold the most fundamental building block of human identity. Typical was the textbook *Sociology*, first published in 1977, in which Ian Robertson wrote that Money’s work “indicates that children can easily be raised as a member of the opposite sex” and that what few inborn sex differences might exist in humans “are not clear-cut and can be overridden by cultural learning.” The 1979 volume *Textbook of Sexual Medicine*, by Robert Kolodny and renowned sex researchers Masters and Johnson, cited the case as compelling evidence of the power of nurture over nature: “The childhood development of this (genetically male) girl has been remarkably feminine and is very different from the behavior exhibited by her identical twin brother. The normality of her development can be viewed as a substantial indication of the plasticity of human gender identity and the relative importance of social learning and conditioning in this process.”

Money meanwhile did his part to ensure that the case got maximum exposure in both the academic and lay press.

Through the 1970s he made the case the centerpiece of his public addresses, rarely giving a speech in which he did not mention it. He soon introduced refinements into his crowd-pleasing presentation. At a March 1973 address at the prestigious Nebraska Symposium on Motivation, Money included a slide show in which he displayed a close-up photograph of Bruce’s groin following the loss of his penis and a shot of the twins standing near a doorway. Brian is dressed in a short-sleeved shirt and dark trousers, Brenda in a sleeveless dress, white ankle socks, and white shoes. Money also showed a shot of Brenda alone, taken by Money himself. The child is seated awkwardly on the patterned upholstery of his office sofa. She wears a floral dress and running shoes, her bare left knee lifted self-protectively against the lens, her left hand deliberately obscuring her face. “In the last illustration,” Money told his audience, “you have a pretty persuasive example of feminine body talk.”

At his Nebraska lecture, Money also dropped a telling comment in summing up the case, when he told his listeners that Brenda’s successful sex change refuted charges that “Money studies only odd and atypical cases, not normal ones.” To those in the know, this was a not very veiled allusion to Money’s principal theoretical rival, Milton Diamond.

In fact, Diamond did not object to Money’s use of “odd and atypical cases” to study gender identity formation. He merely questioned the theoretical conclusions that Money drew from them. Since publishing his challenge to Money in 1965, Diamond had taken a teaching post at the University of Louisville in Kentucky, where he set to work studying intersexes himself. In his own interviews with intersexual patients, whom he met at the Louisville Children’s Hospital, Diamond found that an imposed sex assignment in early infancy was by no means the magical panacea Money’s writings suggested.

Instead, Diamond met several patients who contradicted the claim that rearing in a particular sex will always make a child accept that designation. There was the female baby exposed to excessive testosterone in utero, who was reared from birth as a girl but at age six stated to her mother that she was “a boy.” There was the genetic male born with a tiny penis and raised as a girl, who at age seventeen voluntarily came to Louisville Children’s Hospital requesting a change of sex to male—and was willing to endure more than twenty-five surgeries to construct an artificial penis, so vehemently was “she” determined to live in the sex of her genes and chromosomes. Even in those instances when an intersexual child *did* seem to accept a sex in contradiction to his or her biology, Diamond was not convinced that they had undergone a transformation in their core sexual identity. Such cases “should be considered a credit to human role flexibility and adaptability rather than an indelible feature of upbringing,” he warned in the book *Perspectives in Reproduction and Sexual Behavior*, published in 1968.

In the years following publication of that book, Diamond was heartened to see that his views were beginning to be noticed by a scattering of scientists, researchers, and clinicians. In England, a pair of physicians, Dewhurst and Gordon, who had been treating intersexual patients for a decade, published their book, *The Intersexual Disorders*, in which they specifically questioned Money’s assertion that rearing in a particular sex invariably led to a child’s identifying with that sex. They not only cited a nationwide survey of British physicians whose clinical experience with intersexes contradicted Money’s claim, but also referred to Diamond’s work with intersexes in Louisville. A year later, in 1970, a fellow American joined Diamond for the first time in challenging Money’s theory of human psychosexual differentiation.

Dr. Bernard Zuger was a Manhattan-based child psychia-

trist whose work treating young male homosexuals and their families had caused him to question the prevailing view that sexual orientation results from rearing and environment. By exploring the family dynamics of his gay patients, Zuger discovered that in many cases the stereotypical pattern of an overbearing mother and a detached, hostile father did pertain; but by actually observing children in their family settings, Zuger came to believe that such a dynamic was not a *cause* of the child’s homosexuality, but an *effect*. Long-term interviews with some fifty-five children (some of whom Zuger would follow for thirty years) showed that in virtually every case the boys demonstrated very early feminine play preferences, interests, and behavior. The father’s efforts to bond over masculine interests were rebuffed by the child, and the father—rejected—would emotionally withdraw; the mother would move in to fill the vacuum, thus creating the observed pattern of a distant father and overbearing mother. Zuger suspected a biological basis for homosexuality that contradicted the universally accepted nurturist view—a view, as Zuger later wrote, that was founded to a remarkable degree on Money and the Hampsons’ prize-winning 1950s papers on hermaphrodites. It was in an effort to learn how the Johns Hopkins team had arrived at those findings that Zuger submitted their work to close review.

Like the Canadian team more than a decade earlier, Zuger found serious problems with the Johns Hopkins team’s methodology, interpretation of the clinical data, and statistical analysis. Noting that the papers were “lacking in such data as the ages when individual cases were observed, their subsequent course, and the part substitution therapy played in maintaining their gender role,” Zuger also referred to new biological evidence, which had arisen in the intervening fifteen years, that cast further doubt on the Hopkins team’s conclusions. Unlike the Canadian team, however, Zuger actually reanalyzed the

Johns Hopkins data using what he considered proper statistical methods and in light of the new biological findings. In doing so, he meticulously dismantled case after case cited by Money and the Hampsons and showed how children who, according to the team, had been raised in contradiction to their prevailing biological sex had in fact accepted a gender assignment in keeping with one or another of the factors that constitute a person's biological makeup as male or female: the chromosomes, the gonads, or the hormones. Summing up, Zuger wrote that of the sixty-five instances given as evidence for the dominance of rearing over biology, only four cases could be said to have escaped challenge—and even those were questionable. “The four cases,” Zuger wrote, “might be explained on the basis of the ‘flexibility’ which Diamond attributes to human sexuality, or perhaps even by specific biologic factors which more detailed studies might have brought to light.”

Slated for publication in a 1970 issue of the journal *Psychosomatic Medicine*, a prepublication copy of Zuger's paper was shown by the journal's editors to Money, who fired off a blistering response.

“It is difficult for the seeing to give art instruction to the blind,” Money began, before proceeding to accuse Zuger of “intentionally biased sampling” and lambasting his work as “argumentative,” and “very conjectural.” Declining to address any of the specific scientific, methodological, and statistical unorthodoxies Zuger had highlighted, Money instead issued a threat to the journal editors: “I am sure you have ascertained, by now, the strength of my feeling about Dr. Zuger's manuscript. I do not want to take the easy way out and recommend simply that you do not publish it, because I know it would be equally easy, these days, to journal-shop and get the manuscript into print in another journal. What I really

want is to ask Dr. Zuger to subject his manuscript to a very radical, total revision.” A revision, in Money's exhaustive spelling out, that would bring Zuger's conclusions into agreement with Money's.

It was a measure of Money's academic power that the editors took his advice. They asked Zuger to revise his paper along the lines suggested by Money. Zuger declined, pointing out that Money had made no criticism “carrying any substance whatever” and adding, “Dr. Money's notion of a total revision, way beyond the scope of the paper, amounts to, of course, stalling it forever.” Instead, through an arrangement agreed upon by both researchers, Zuger's paper and Money's letter of rebuttal were published in their entirety in the September-October 1970 edition of the journal.

Whatever larger debate might have been stimulated by the cumulative weight of the critiques by the Canadians in 1959, Diamond in 1965 and 1968, the British team in 1969, and Zuger in 1970 was effectively quashed by the fanfare that attended the publication, in late 1972, of Money's magnum opus, *Man & Woman, Boy & Girl*, and in particular its remarkable chapter on the twins case.

Dr. Mel Grumbach, a pediatric endocrinologist at the University of California, San Francisco, and a world authority on the subject, says that Money's twins case was decisive in the universal acceptance not only of the theory that human beings are psychosexually malleable at birth, but also of sex reassignment surgery as treatment of infants with ambiguous or injured genitalia. Once confined principally to Johns Hopkins, the procedure soon spread and today is performed in virtually every major country with the possible exception of China. While no annual tally of infant sex reassignments has ever been made, one physician conservatively estimates that three to five cases of

babies with incongruous genitalia requiring sex change crop up annually in every major American city—giving the United States alone a total of at least one hundred such operations a year. Globally that figure could be as high as a thousand a year.

“Doctors were very influenced by the twin experience,” Grumbach explains. “John stood up at a conference and said, ‘I’ve got these two twins, and one of them is now a girl, and the other is a boy.’ They were saying they took this normal boy and changed him over to a girl. That’s powerful. That’s *really* powerful. I mean, what is your response to that? This case was used to reinforce the fact that you can really do *anything*. You can take a normal XY male and convert it into a female in the neonatal period, and it won’t make any difference.” Grumbach adds, “John Money is a major figure, and what he says gets handed down and accepted as gospel by some.”

But not all. Mickey Diamond had continued his research into how the sexual nervous system is organized before birth, and his studies had only strengthened his conviction that neither intersexual nor normal children were born psychosexually neutral—a conviction that would make him view with alarm the burgeoning practice of infant sex reassignment. And he was more convinced than ever that converting a normal infant from one sex to the other would be impossible. “But I didn’t have any evidence to disprove the twins case at the time,” Diamond says. “I didn’t have anything except a theoretical argument to challenge it.” He vowed to follow the case closely—a decision, he says, that was made from purely scientific motives. If, however, Diamond also by now felt a degree of personal involvement in his theoretical dispute with Money, that was perhaps understandable. For in the chapter directly following his account of the twins case in *Man & Woman, Boy & Girl*, Money had lashed out at Diamond and the others who had challenged his classic papers. Restating his own position,

Money had acidly observed: “It would not have been necessary to belabor this point, except that some writers still don’t understand it,” and he went on to say that the work of Diamond and the others was “instrumental in wrecking the lives of unknown numbers of hermaphroditic youngsters.”

At the time of *Man & Woman, Boy & Girl*’s publication, Money and Diamond had limited their debate solely to published papers and books. That was shortly to change.

In September 1973, some nine months after the book’s publication, John Money chaired the Third Annual International Symposium on Gender Identity, held at the Hotel Libertas in Dubrovnik, Yugoslavia. The symposium brought together a number of the leading authorities in the field of sexual development. These included Money’s coauthor Dr. Anke Ehrhardt, who had taken a position as clinical associate professor in psychiatry at the State University of New York at Buffalo; Dr. Donald Laub, the Stanford Medical School professor and plastic surgeon who specialized in sex change surgery; and Dr. Ira Pauly, a psychiatrist who today is still a leader in the field of transsexualism. Milton Diamond, not invited as either presenter or panelist, had nevertheless come to Yugoslavia to attend the conference. After the first day of speeches, during which Money had given the keynote address, the scientists gathered at an evening cocktail reception. The convivial gathering took place in a large room with vast windows that framed a view of the sunset over the Aegean Sea.

“I was sitting with some people over at one end of the room,” Diamond recalls, “and Money was sitting over in another part of the room with Anke Ehrhardt. And all of a sudden he gets up and shouts at the top of his voice, ‘Mickey Diamond, I hate your fucking guts!’”

An altercation ensued.

“They were arguing over the twins case,” says Vern Bul-

lough, then a professor at the State University of New York at Buffalo, and a friend of both men. "Mickey pointed out to John that all the data was not there, that it was too early to draw definitive conclusions about the kid. John suddenly slugged Mickey. Hit him. Mickey did not fight back. He just repeated, 'The data is not there.' John yelled at him, 'We have to stick together as sex researchers and not challenge one another!'" (Diamond says that he cannot recall any physical contact during this encounter.)

The combatants were separated, but the incident, Bullough says, threw a considerable pall over the party. Still, it did not inhibit Money's ongoing promotion of the twins case in lectures, published papers, and the press. The following June, Baltimore's *News American* newspaper ran a long profile on Money, in which the twins case was highlighted as his most impressive accomplishment in sex and gender research. "There isn't any question which one is the boy and which one the girl," Money told the newspaper. "It's just plain obvious."

"Such findings," the story continued, "could have an effect on future attitudes about sex roles that could prove comparable to that of Darwin's theory of Evolution."

## 5



IN 1967, AT THE TIME of Brenda's castration, Dr. Money had stipulated to the Reimers that he see the child once a year for follow-up consultations. The trips, which were sometimes separated by as many as eighteen months, were meant to "guard against the psychological hazards" associated with growing up as a sex-reassigned child, as Money said in a letter to the Reimers' lawyer. According to the Reimers, however, and to contemporaneous clinical notes, the family's trips to the Psychohormonal Research Unit only exacerbated the confusion and fear that Brenda was already suffering. As Money's private case files show, Brenda reacted with terror on her first follow-up trip to Johns Hopkins at age four. "[T]here was something almost maniacal about her refusals [to be tested]," Money wrote in his notes, "and the way she hit, kicked and otherwise attacked people."

"You get the idea *something* happened to you," David says, explaining the dread that engulfed him during those mysterious