PRESIDENT'S ADDRESS
Pope Joan: A Recognizable Syndrome*

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My report was stimulated by a Christmas gift from my friend and colleague Patrizia Borelli: a book called La Papessa Giovanna: Roma e Papato Tra Storia e Leggenda? (Pope Joan: Rome and the Papacy between Truth and Legend) by Cesare D’Onofrio. Because there was great controversy about the existence of a female pope during the Middle Ages and my scientific interest has been directed at understanding the genetic and hormonal basis for infants born with ambiguous genitalia, I began to search for a biological basis for the existence of a pope who was elected as a male but unmasked as a female, as the legend goes.

The story of the female pope first appeared in a manuscript by friar Jean de Mailly in about 1250 A.D. During the late Middle Ages and Reformation dozens of people wrote about the existence of this scandalous woman, many of them Franciscan and Dominican friars or Protestants, and their stories were widely believed (1). The most popular version, which was a best seller all over Europe for hundreds of years after its publication circa 1265, was that which appeared in friar Martin Polanus’ Chronicon Pontificum et Imperatorum (2):

After ... Leo, John Anglicus, born at Mainz, was pope for 2 years, 7 months, and 4 days, and died in Rome, after which there was a vacancy in the papacy of 1 month. It is claimed that this John was a woman, who, as a girl had been led to Athens dressed in the clothes of a man by a certain lover of hers. There she became proficient in a diversity of branches of knowledge, until she had no equal, and afterwards in Rome, she taught the liberal arts and had great masters among her students and audience. A high opinion of her life and learning arose in the city, and she was the choice of all for pope. While pope, however, she became pregnant by her companion. Through ignorance of the exact time when the birth was expected, she was delivered of a child while in procession from St. Peter’s to the Lateran, in a narrow lane between the Coloseum and St. Clemens’ church. After her death, it is said that she was buried in that same place. The Lord Pope always turns aside from the street and it is believed by many that this is done because of abhorrence of the event. Nor is she placed on the list of the holy pontiffs, both because of her female sex and on account of the lowness of the matter.

The Italian humanist Boccaccio, who relished the tale and included it in his De Claris Mulieribus (published circa 1350), was the first to give John Anglicus (Pope John VIII) a woman’s name (Giliberta). His book was magnificently illustrated in French monasteries during the 15th century (Fig. 1).

There are various accounts of how Pope Joan died: some authors have her torn limb from limb by the angry crowd; others say she was dragged by horses through the streets of Rome. Petrarch (1304–1376), evidently thinking of the plagues of Revelation (2), added that after her death it rained blood for 3 days and nights and locusts with six wings and powerful teeth appeared in France. Obviously, the idea of a woman pope was anathema.

What is the basis for these fantastic stories? To answer this question, it helps to have some idea of the historical framework (Fig. 2). In 800, on Christmas Day, Charlemagne was crowned Holy Roman Emperor by Pope Leo III in thanks for his help in staying off the Lombards who periodically attacked Rome and for defending him from enemies among the Roman nobility, who had physically attacked him. But after Charlemagne’s death in 814, the papacy fell increasingly under the sway of the impious and powerful Roman nobility (3, 4). The existence of this corruption is central to understanding the birth of the legend. Joan’s papacy was placed by Martin Polanus and most of her other chroniclers in the years 855–857, between Popes Leo IV (847–855?) and Benedict III (7855–858) (Jean de Mailly and some others put her around 1100). But all of these accounts of Joan were written long after she was said to have lived—in most cases 400 years after! The existence of a female pope is not mentioned in any private letters or official communications or histories at the time(s) of the alleged papacy (which, interestingly, was the period during which the Cyrillic alphabet was developed by St. Cyril and sometimes used in papal correspondence). So why did the story appear?

The Franciscan and Dominican mendicant orders were founded around 1200 in reaction to the corruption and wealth of the Church. (The plight of the Franciscans may bring to mind Umberto Eco’s The Name of the Rose, which is set during this same time.) But at this time, Pope Innocent III was struggling to reassert a righteous authority and was not inclined to let his clerics find their own path. Dominican and Franciscan monks may well have invented the scandalous story in their fight for independence.

The direct inspiration for the tale may have been the women of the powerful Theophylact family; matriarch Theodora had purchased the papacy for her lover, who became Pope John X (914–928). Pope John X was then imprisoned by Theodora’s daughter Marozia so that her own son, whose father was an even earlier pope (Sergius III), could become...
Pope John XI (931–935) after she had arranged the murders of two intervening popes (2).

Another avenue for this legend might have been the Christian literary tradition of the female saint in male disguise, which derives from the early legend of St. Pelagia the Penitent. Examples of such stories are those of St. Eugenia, an authentic Third century Roman martyr about whose life few facts are known, and the apocryphal saints Marina, Theodora, Margaret Reparata, Euphrosyne, Apollinara, and Anastasia Patricia. Saint Hildegund, whose life is well documented, appears to have really lived the myth: she hid in a monastery in male disguise until her death in 1188, when she was discovered to be a woman (2). Because the Old Testament forbade transvestism as an “abomination,” this was a scandalous course to pursue, one which later was used to incriminate Joan of Arc, who was accused of refusing to take off men’s clothing to hear mass (5).

Is there any solid evidence that Pope Joan ever lived? There are three curious facts to weigh. The first is this: In the nave of the Cathedral of Siena is a series of busts representing each of the legitimate popes. The head of Johannes VIII, Femina de Anglia, was placed between those of Leo IV and Benedict III until 1600, when Pope Clement VIII ordered it removed and, it is said, it was subsequently recycled as the head of Pope Zacchary (2). Was this a cover-up?

Whatever the first source of the Pope Joan legend, the turmoil within the Church continued for centuries. At one point, the Popes even fled to Avignon to avoid “antipopes” who challenged their authority in Rome; this is the period known as the “Avignon captivity” (1306–1367). Martin Luther and the Protestant Reformation occurs around 1571, when a whole new spate of accounts of Pope Joan appeared, these written by Protestants, who had their own reasons for keeping the scandal alive.

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Second, there is the famous porphyry chair, in Italy called “La Sedia Gestatoria.” This is a red marble chair, now in the Vatican museum (Fig. 3). Another, identical chair was stolen by Napoleon and reputedly put in the Louvre. These chairs have a perforated seat, and it is known that both of them were used in the ceremonies of installation of the popes between 1099 (Paschal II) and 1513 (Leo X) (2). It is rumored that these chairs were used to ascertain the gender of pope-elect as a direct result of the scandal of a real Pope Joan (6, 7). The “junior cleric present” purportedly palpated the genitals of the papal candidate through the hole in the bottom of the chair, and, if he found what he expected, shouted in a loud voice, “Testiculos habet et bene pendentes (He has testicles, well hung).” To which all the others replied, “Habe
Pope Joan? (John VIII) 854-857
Pope Joan? (Anastasius) 2 mos. in 855
Pope Leo IV 877-882
Pope Benedict III 875-878
Pope John VII 705-707
Pope John VIII 867-882
Jean de Mailly, Stephen of Bourbon (Dominicans) write first stories of child-bearing Pope, Johannes Anglicus.
Boccaccio, De mulieribus claris, first gives Pope John a woman's name.
Martin Polanus writes best-known version of the legend.
Protestant Elkannah Settle writes Life of Joan.
William of Ockham, Franciscan theologian, refers to woman pope in debate.
Avignon Captivity. Canonical Popes in Avignon under protection of French King, 1306-1367.
Martin Luther. The Protestant Reformation begins, 1521.
395 A.D. Death of Theodosius. Roman Empire splits in half.
800 900 1000 1100 1200 1300 1400 1500 1600
Charlemagne crowned Holy Roman Emperor by Pope Leo III in thanks for protection from Lombards. On death of Charlemagne in 814, papacy weakened at mercy of corrupt Roman nobility.
Numerous antipopes due to power struggles in and out of Church.
Founding of reformist Franciscan and Dominican mendicant orders of Friars.
A Woman Pope (as History doth tell)/In High Procession once in Labour fell/And was delivered of a Bastard Son/Whence Rome some call the Whore of Babylon.

FIG. 2. Timeline.

ovo nostro papa (Our father is virile)." (7) "Then they proceed [ed] joyfully to the consecration of the pope-elect" (2).¹

The third piece of "evidence" used to assert the truth of the legend is the detour in the route that the popes followed in their processions between their home in The Lateran Palace and St. Peter's. This route includes both the Colosseum and the Basilica of St. Clement, a beautiful church built on the site of a third century Mithraic temple.² Around the time that the legend of Joan was spread by Martin Polanus' book, formal papal processions began to turn off the direct road between St. Clement's and the Colosseum, purportedly to avoid the place where Joan gave birth. At a spot where the detour begins there is a little chapel on the street, which, although it is officially called the Chapel of the Virgin, is popularly referred to, as I discovered walking there this spring, as the Chapel of La Papessa.

The story of Pope Joan is undoubtedly a legend. It is very hard to believe that this fantastic event could have occurred in the Ninth century without a contemporary written record. Yet despite the unlikelihood of its truth, this tale has continued to be retold and even believed up to the present day. It has been the vehicle for ribald mockery and for serious accusation of the church (8):

¹ Charles W. Lloyd (7) comments, "Such a procedure could at least have assured avoidance of the election of another Papess Joan, and in Rabelais' time no one was ignorant of the common saying: 'Testicullos qui non habet/Papa esse non potest.'"
² There is an interesting connection with the Pope Joan legend here (2): A stone inscribed with the phrase "Petre, Pater Patrum, Petisse esse non potest." A Woman Pope (as History doth tell)/In High Procession once in Labour fell/And was delivered of a Bastard Son/Whence Rome some call the Whore of Babylon.

It has been used as feminist propaganda, as a basis of romantic fiction and drama, both tragedy and comedy, and in card games such as "Pope Joan" and "Tarot," which has a card, the High Priestess, first identified with Pope Joan in the famous deck made for the Visconti-Sforza family by Bonifacio Bembo in the 1400s (Fig. 4).

My brother-in-law is one of the chief librarians of the Library of Congress and when I was preparing this lecture, I asked him to send me every title he had on Pope Joan. I was amazed to find that there are hundreds of publications about Pope Joan (Figs. 5 and 6). Many are written by historians sorting through the evidence about the legend, but the story has a life of its own. In the 20th century alone at least six novels and plays have been published about her. One of them, by Emmanuel Royidis, is a classic of contemporary Greek literature which was translated into English by the great novelist Lawrence Durrell, who called it "a masterpiece of irreverence." The Greek Orthodox Church banned the book and excommunicated Royidis. A play about Pope Joan with the theme "It's what other people think that makes sin" was written by one of Harvard's greatest art historians, A. Kingsley Porter. Michael Anderson (director of "Around the World in 80 Days," "Logan's Run," and "The Shoes of the Fisherman") made the movie "Pope Joan" starring Liv Ullmann. Anderson twists the chronology so that he can have Charlemagne impregnate the pope after she crowns him Holy Roman Emperor. Caryll Churchill included Pope Joan as one of the five women characters of her successful play "Top Girls," produced in New York in 1982 by the late Joseph Papp.
If Pope Joan was a legend, why as a civilization have we not lost interest in her after all these centuries? Why do many people persist in thinking that her story could have been true?

The fact is, on a biological basis, it might have been. I have known a man who if he had lived in the Ninth century could have been Pope Joan. He became my patient because one day a nurse, who was his wife, came to me and said, "Dr. New, I think my husband has congenital adrenal hyperplasia and is a female pseudohermaphrodite." They'd been married for 10 yr. Why did she think this? She said, "Because he bleeds from his penis every month." The patient proved, in fact, to be a female with 21-hydroxylase deficiency who had lived all his life as a male. He had had many female lovers before he married. His wife was entirely satisfied with their sexual relationship. But he was bleeding monthly. Presumably, he was having menstrual periods, though he had never been treated. And I suppose it would be possible to think that this patient could be reproductive as a woman, since he was having cyclical menstrual periods.

The endocrinological basis of the legend could be that Pope Joan had a recognizable syndrome: classical 21-hydroxylase deficiency. From a medical perspective the story of Joan would be that Pope John VIII was a female pseudohermaphrodite who had a homosexual liaison, got pregnant, and delivered a child.

Pondering this scenario led me to investigate what was known about sexual differentiation in Joan's time. Medical science in the Middle Ages derived primarily from the theories and observations of Aristotle and Hippocrates and their Second century heirs and interpreters Galen and Soranus. The foundation of medieval science was Hippocrates' construct of four elements (earth, air, water, and fire) whose interaction underlay all physical phenomena (Fig. 7). Galen interpreted the Greek legacy teleologically, within the context of Christian belief. Because the authority of the ancients was so powerful, it was difficult for medieval scientists to progress in their understanding of physiology. However, by the 11th century there was some admixture of the Western legacy with Arabic and Jewish medicine (9).

The medieval view of the differences between men and...
women was quite different from ours: Men were thought to be more perfect by nature: hotter and dryer, and therefore better metabolizers. Their beards, chest hair, and more massive musculature were the end products of their exuberant metabolism. Women, on the other hand, were metabolically imperfect because they were essentially too cold. They needed menstruation to eliminate unmetabolized fluid, unless it was shunted via the "quilin vein" (Hippocrates) to the breasts, where it became milk, or to the uterus, where it nourished the fetus.

Unused, menstrual blood was a kind of poisonous by-product of female metabolism. According to Vincent of Beauvais (10), who wrote in 1478, menstrual blood could prevent cereals from sprouting, cause grapes to sour, kill herbs, make trees lose their fruit, rust iron, turn bronze black, give dogs rables, and dissolve glue made of bitumen that was impervious to iron. A child conceived during a mother's period might be born with leprosy or measles. But without the

4 Aristotle's assertion that a menstruating woman's glance will dull a mirror (Dreams, c. 350 B.C.) led to an association of menstruating women with the mythological basilisk, a serpent born of a rooster's egg whose glance and touch were poisonous. Also called the cockatrice, it could only be killed by its own reflection (10).
Medieval German song about Joan: she prays to the Virgin Mary to bless her with a child although she is a sinner.

North
- COLDNESS: Water, Winter, Phlegm, Phlegmatic
- East: Fire, Summer, Blood, Choleric

South
- MOISTURE: Air, Spring, Blood, Sanguine
- West: Earth, Autumn, Humour, Temperament

Dr. Bapst Jutta singet und rufft Mariam an, da sie geboren sol.

Maria Mutter reine aller Sander ein
der bines weine ich dy blut so rot, meine ange:
treten gieffen das las mich franz geniessen!

und bis fur mich dein liebes kind.

Fig. 8. The tenth figure of the treatise of Guy of Vigevano, showing a woman whose womb has seven compartments.

Fig. 7. The interaction of the four primary qualities, a concept derived from the school of Hippocrates (from Jacquart, D. and C. Thomasset (10); reproduced with permission).

The authority on medieval and Renaissance gynecology is Trotula (*Dame Trot* of nursery rhymes and Chaucer’s *Canterbury Tales*) (14, 15). Trotula was a midwife of the great early medical school at Salerno, which in the 11th century emerged as the crucible in which Greek, Roman, Jewish, and Arabic medicine were mixed. The manuscripts *Trotula major* and *Trotula minor* were enormously popular treatises on women’s health and cosmetology, written around the year 1150. The author’s observations on menstruation, conception hypotheses (10).

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Fig. 9. A, Hermaphroditus lifting his skirt in a holy ritual gesture. Statue in the National Museum, Stockholm. B, A copy of one of several statues of Hermaphroditus believed to be by Polycles the Elder (early Fourth century B.C.). The towel on the god's head may be a reference to the nuptial bath.

Fig. 10. The Birth of Aphrodite by Sandro Botticelli (Uffizi Museum, Florence).
tion, and obstetrics are acute, as well as graceful—so much so that she was held up as the prototype of the female physician by two presidents of the American Medical Women’s Association and has a place setting in Judy Chicago’s feminist artwork “The Dinner Party” (16). But it turns out that, as a writer, Trotula, like Pope Joan, may well have been an imposter. It has been said that “she” was a male physician who took the famous and beloved 11th century midwife’s name in order to gain credibility, since in those times women were treated almost exclusively by other women (16).

In the scientific schema of the Middle Ages and Renaissance, hermaphroditism was understood as a lack of resolution in the “forming faculty,” as the eminent barber-surgeon Ambrose Paré put it (17). Hermaphrodites were integrated quite forthrightly into the social fabric. By the end of the 17th century, French and English laws existed which required hermaphrodites “to choose the sexe which they will use, and in which they will remaine and live, judging them to death if they be found to have departed from the sexe they made choice of” (17). Hebrew law had always made special provision for hermaphrodites (18).

This was in marked contrast to the fate of hermaphrodites in classical Greece and Rome, where they were put out to die on hillsides (5). But despite an abhorrence for real hermaphrodites, the Greeks were fascinated by the idea of hermaphroditism, as it seems all cultures are, including our own.

The Greeks had a god called Hermaphroditus, who was the patron of sexual union (Fig. 9). The image of this minor deity, with a woman’s breasts and a penis, was painted on the walls of many private homes. He is first written about in Theophrastus’ (382–287 B.C.) “Characters” (19). Hermaphroditus was the child of Hermes and Aphrodite, the goddess of love, who was herself conceived of the sea and her castrated father Chronos’s testicles (her name means “foam”)

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**Fig. 11.** Hermaphroditic figure from the Dogon tribe (from the Menil Collection, Houston. Reproduced with permission).

**Fig. 12.** Maddalena Ventura by José de Ribera, 1631 (painting in Toledo, Spain).
According to classical scholar Marie Delcourt, Hermaphroditus' bisexuality was a holy symbol of fertility (5). In connection with her analysis of the worship of Hermaphroditus, Delcourt describes many astonishing rituals in ancient Greece that have transvestism as their core, and she associates the Greeks' fascination with bisexuality with a yearning for immortality.

As for real hermaphrodites, Herodotus (450 B.C.) had suggested that a tribe of ambisexual Scythian "Enarees" was created by Aphrodite as punishment for ransacking her most ancient temple (5). Hippocrates, however, thought the Enarees must have been feminized by excessive horseback riding (19).

In 7 A.D. the Latin poet Ovid wrote a myth in his Metamorphoses about Hermaphroditus, a story which as far as we know is entirely his invention but which has popularly supplanted the Greek version of the origin of Hermaphroditus' ambisexuality (17): A nymph, Salmacis, fell in love with handsome Hermaphroditus, whom she saw bathing in a pool, and prayed to be united with him forever.

Ceremonial hermaphroditic figures appear in non-Western cultures, as well. The Menil Collection in Houston has an extraordinary African figure (Fig. 11) with prominent penis and jutting breasts, which comes from the Dogon tribe, an isolated people whom Marcel Griaule, a French anthropologist, discovered in 1946 living in a Stone Age culture on the Bandiagara Escarpment. This sculpture probably represents (20, 21) a first-generation human being according to the Dogons' religious beliefs. In the Hindu religion, there is an androgynous representation of Siva and Parvati, called Ardhanarisvara, "lord who is half-woman." Ardhanarisvara's body is asymmetrical: generally, his left side has a female breast, long hair, and a swelling hip, and his right half has a penis with one testicle, short hair, male breast, and slim hip (22).

Some cultures have favored hermaphroditism in their priests, as well. In The Golden Bough Frazier describes effeminate sorcerers or priests among the Sea Dyaks of Borneo, the Bugis of South Celebes, the Patagonians of South America, and the Aleutians and many Indian tribes of North America (23). Rabbis and priests have argued from the text "Man and woman he created them" that Adam was a hermaphrodite. And Plato wrote in 'The Symposium' (c. 375 B.C.), "In the first place the sexes were originally three in number, not as they are now; there was man, woman, and the union of the two, having a name corresponding to this double nature; they once had a real existence, but it is now lost, and the name only is preserved as a term of reproach."
America, and he lists transvestite rituals in many other societies (23). Recently, the biological basis for intersex in the sharmans of a primitive people in Papua, New Guinea has been described. An enzyme detect in 5α-reductase explains the ambiguous genitalia (24).

In later European art and literature there are many signs of a fascination with hermaphroditism. For instance, there is this extraordinary painting by José de Ribera. commissioned for King Philip IV of Spain in 1631 (Fig. 12). It is a portrait of Maddalena Ventura of Naples,9 mother of seven, who grew a luxuriant beard at age 37 and is shown nursing her last child when she was 52. She could be a patient with nonclassical 21-hydroxylase deficiency. In Sexuality in Western Art Edward Lucie-Smith reproduced an illustration of "The Land of the Hermaphrodites" taken from a famous autobiographical 17th century travel book (25). In the center of Andrea Mantegna's beautiful painting, "Pallas Expelling the Vices from the Garden of Virtue" (1499–1502), recently exhibited in New York, is a hermaphroditic monkey, wearing the motto "Immortal hatred, fraud, and malice" on its sleeve. Hermaphrodites have been featured in circuses and tabloids in the Western world for centuries (17, 26).

Interest in gender ambiguity has grown in 20th century America. The psychoendocrinologist John Money and others have made important observations about the roles of pre- and postnatal sex hormones on gender identity (27–33). Gender is a focus of controversy at the modern Olympic games. This began with a furor in 1932 when medalist Stella Walsh was discovered to have a male chromosome and ambiguous genitalia. In the 1990s some athletes need consultations with endocrinologists before they register for a meet (34). Frank deception has been documented only once, in Berlin in 1936, when Hermann Ratjen, a man, entered the women's high jump for Nazi Germany — and lost (34).

In the sphere of modern culture, the play "M. Butterfly," an interpretation of a true story about a 20-yr love affair between two men, one of whom thought the other was a woman, had a long run on Broadway, starring Tony Randall and Alec Mapa. Recently, The New York Times catered to its readers' tastes by choosing a mediocre novel about hermaphrodite lovers for review (35). And what are we to make of our androgynous superstars Michael Jackson (Fig. 13), Boy George, and Madonna, who despite her Marilyn Monroe image, has posed nude as Michelangelo's David (36)? Is this disguise, transformation, or a desire to be ambiguous?

No wonder the story of Pope Joan has resurfaced and once again inspired controversy and art, including a movie and postnatal sex hormones on gender identity (27-33).

Acknowledgments

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References

6. Haermerlienn F. 1490 De nobilitate et rusticitate dialogus.

9 Naples, coincidentally, was the home of De Crecchio, the anatomist who in 1865 gave us the first clinical description of a female pseudohermaphrodite with enlarged adrenal glands.


