

PREDICTOR

By Jennifer Blackmer
Directed by Imani Mitchell

At Capital Stage: June [21] 24 – July 23, 2023

Dramaturg: K. Keyvne Baar

*To the Woman
Who is
Wondering
Whether or Not
She is
Pregnant*

There is probably not one woman in the world who has not missed a period at least once in her life. Sometimes it's an occasion for joy. Sometimes it's not. But it's always a cause of concern, or wondering "whether or not..."

Now you can find out "whether or not" quickly and easily with Predictor, a new test for the hormone of pregnancy that you can do for yourself, at home, in private, in minutes.

Just What is a "Pregnancy Test"?

When conception occurs, the body secretes a hormone, HCG, the so-called hormone of pregnancy. This hormone plays an important part in protecting the developing embryo. It prevents menstruation and thus prevents the embryo from being flushed out. A pregnancy test is a test for the presence of this hormone.

Predictor, the result of years of research, is just such a test. Predictor is simple and easy to do. You can test yourself in minutes. You see the results in ten hours. And Predictor is accurate. It has been tested in homes, tested in laboratories, and tested clinically.

How Soon after Missing a Period Should I Use Predictor?

In many cases, a pregnancy test will be accurate four days after the first day of a missed period. For greater accuracy, however, you would do better to wait ten days. For example, if your period was due on the first day of the month, wait until the tenth day of the month before doing the test.

You Can Test Yourself Quickly and Easily with Predictor.

You simply add a couple of drops of urine and some water to some chemicals in a small tube. You shake the tube and wait 2-4 in its holder.

Then you go about your day while the test results develop on the tube. Results in two hours, and you can read the results instantly.

If You Get a Positive Result...

Go to your doctor for an examination and advice on prenatal care. He will tell you what steps to avoid, what diet to follow, what precautions to take. Early prenatal care can even help prevent possible birth defects.

If You Get a Negative Result...

Wait ten days. Then if you have not menstruated, either on foot (you may have taken the test too early) or go see your doctor.

Where Can I Buy Predictor?

You will find Predictor for sale in pharmacies, where there is a registered pharmacist in attendance. If you have any questions about Predictor, ask him. He will be glad to answer them for you.



Every woman has the right to know whether or not she is pregnant.

predictor

Predictor is a registered trademark of Predictor Labs, 2001 St. Peter Street, Boston, MA 02116

A Canadian ad for the Predictor test in the early 1970s. Credit...National Museum of American History from

Notes from your dramaturg: an introduction

Our play opens in 1967 when abortion was illegal and dangerous, women couldn't get a credit card on their own, and girls in school weren't allowed to take shop class. (My homeroom teacher ran the woodshop, and when I asked to take his class I was told "but little girls don't do that;" I'm still angry about that one.) A year later, I moved to New York City. In answer to your obvious question, I am five years younger than our protagonist.

This is my third show at Capital Stage, the theatre organization that gifted me with a perfect late-in-life career as a dramaturg. Lucky for me, I have a long memory. Very fortunate if you are an historian or a dramaturg, which I am. Less lucky is when I am *forced* by dint of the work to relive some less pleasant memories.

Okay, I'm getting a little off track here. My publishing experiences proved invaluable when I did my first show here, GLORIA; frustrating but fun memories. For my second show, HEROES OF THE FOURTH TURNING, I got to revisit my more scholarly pursuits which was grand.

Reading PREDICTOR was a very different experience. Working in an office/lab/anywhere that women were in the minority could be frustrating. It is difficult looking back on this time. It has been at times painful. This play may be about this invention, but it is so much more.

Moving to New York in 1968 was exciting, but also had its challenges. My roommate and I paid cash to get into our first apartment. After all, who had a credit rating. I also didn't have a winter coat or boots. I got a second job the first year at Alexander's, a now defunct department store. The wardrobe for a woman working in NYC was skirts and dresses. It was said that women wearing pants was, "the end of the civilized world as we know it." The exception to this was of course working backstage, but I digress.

I had two primary interests as I trekked from Los Angeles to the Big Apple: books/publishing and theatre. I found my way into book production, a decidedly male career. I was the first female assistant production manager for college textbooks at Holt, Rinehart, and Winston. I left them to go work for the vice-president of a printing company. I went as far as I could, because "girls can't sell printing," so I trained the new salesman. While at this company I also worked on several Off-Broadway shows. In those years no one could make a living doing Off-Broadway only. The end result was my first contract and joining Equity in 1972. I joined as a stage manager. When that show closed, I was told that if I wanted to continue in this line of work, I "needed to grow balls." It gives me great joy to know how much that has changed.

I have enjoyed, been challenged, and remain extremely thrilled by possibility in my life, in spite of the return of any number of those old issues today. I started teaching at NYU in 2008. In my civil rights class, when we discussed women's rights, it becomes exciting to recognize how much has changed since 1968. But then I feel it necessary to remind students that they must not take what they now have for granted. This play is opening on June 24. June 24th is my birthday. This June 24 is the one-year anniversary of Roe v. Wade being overturned.

And here's what follows:
An annotated sort of table of contents.

Script notes by page: Before each entry is the page number (in parentheses) from the script that applies to it. If there is no page number it means that the entries came from the same page. I did some editorializing when I just couldn't myself, but mostly it's just the information.

A biography of Meg Chase from the ever-dependable pages of Wikipedia. As with a number of these articles, a link is provided for a more complete version.

A timeline of pregnancy testing from the National Institute of Health. Don't even try to find Crane's name. I did the search for you, and she isn't mentioned. However, the timeline is interesting.

The *New York Times* 2012 article that Crane sees in Act II.

An article in the 2015 *Atlantic*, "Before There Were Home Pregnancy Tests" in which Crane is widely mentioned.

The *New York Times* 2016 article written by the same journalist who wrote the 2012 article. Now the author of a book on inventions "that change the world." She admits that "In 2012, I became part of her[Meg's] story." Now Crane is quoted extensively.

"19 Groundbreaking Discoveries by Women That Were Credited to Men." I thought you would find interesting this article in a 2019, issue of *Marie Claire*,

"How Sexist Is Hollywood? Check Out Geena Davis's Spreadsheet." Also for your reading pleasure and edification, I include this article from the *New York Times* of May 25, 2023:

Please note, I have not included all of the dates of all of the changes that have been achieved and some of which are being threatened in the world of women's rights. I have not written about much of this in detail, but if you want more you merely have to ask. I did finally find a women's history timeline that I would recommend checking out:

<https://www.infoplease.com/history/womens-history/timeline-us-womens-rights-1789-present>

PREDICTOR Script Notes

Real People, Organizations and Products. (I worked on the presumption that the not “real” names are composites and/or necessarily needed to move the play forward.)

(1) Margaret (Meg) Crane (her job is working on “women’s products”). She is what today we would call a gig worker.

Organon Pharmaceuticals: Jersey City, NJ

AKZO:

The milestone mergers and divestments are the formation of AKZO in 1969, the merger with Nobel Industries in 1994 forming Akzo Nobel, and the divestment of its pharmaceutical business and the merger with ICI in 2007/2008 resulting in current-day AkzoNobel.

(3) WHO MADE THAT: The only real product they sell is TANG which is powdered juice.

Scotch Tape, 3M, 1925 (a man)

Ziploc Bag, Dow Chemical, 1962 (a man)

Home Pregnancy Test, E.P.T. (“**early pregnancy test**”), Insight Pharmaceuticals, 1978.

(In 2011, Johnson and Johnson sold the test to Insight.)

(9) Rabbit tests:

The test, known as the Aschheim-Zondek test (after its developers), the A-Z test or the "rabbit test," was about 98 percent accurate. Women would euphemistically claim "the rabbit died" when referring to their pregnancy.

Did you know that doctors used to test for pregnancy by killing a rabbit, mouse, or other small animal? From the late 1920s through the early 1960s, pregnancy tests involved injecting a woman's urine into the ovaries of a small animal.

(12) Abbott Kimble (ad agency) There was an Abbott ad agency and there was a Kimble group.

(16) Aristotle’s *Organon*

The *Organon* (Ancient Greek: “ὄργανον”, meaning “instrument, tool, organ”) is the standard collection of Aristotle's six works on logical analysis and dialectic. *Organon* is divided into six works dealing with various topics: *Categories*, *On Interpretation*, *Prior Analytics*, *Posterior Analytics*, *Topics*, and *Sophistical Refutations*. The name *Organon* was given by Aristotle's followers, the Peripatetics.

Aristotle’s Prior Analytic:s The *Prior Analytics* is a work by Aristotle on reasoning, known as syllogistic, composed around 350 BCE. Being one of the six extant Aristotelian writings on logic and scientific method, it is part of what later Peripatetics called the *Organon*. The term *analytics* comes from the Greek words *analytos* and *analyo*.

(29) **Enceinte**: French for pregnant. Pronounced *en sant* (like Santa)

(30) **Carol Merrill:** (born Carol Lue Hiller c. 1940 in Frederic, Wisconsin) is a retired model for the long running **game show** *Let's Make a Deal* from 1963-1977. **And yes, I can demonstrate what she did.**

(40) **Althusser:** Louis Althusser, (born October 16, 1918, Birmandreis, Algeria—died October 22, 1990, near Paris, France), French philosopher who attained international renown in the 1960s for his attempt to fuse Marxism and structuralism.

Marxism: Marxism is an economic and political theory that examines the flaws inherent in capitalism and seeks to identify an alternative.

Structuralism is a general theory of culture and methodology that implies that elements of human culture must be understood by way of their relationship to a broader system.

Malachy McCourt: Malachy Gerard McCourt is an Irish American actor, writer, one-time pub owner, and politician. He was the 2006 Green Party of New York candidate for governor in New York State, losing to the Democratic candidate Eliot Spitzer. He is the younger brother of author Frank McCourt.

(43) **Palaestra** is the goddess of the sport of wrestling in Greek Mythology. She lived in the vales of Arkadia.

(62) **Parsons:** Parsons School of Design, known colloquially as Parsons, is a private art and design college located in the Greenwich Village neighborhood of New York City.

(70) **Bette Davis in *All About Eve*.** The film stars Bette Davis as Margo Channing, a highly regarded but aging Broadway star, and Anne Baxter as Eve Harrington, an ambitious young fan who maneuvers herself into Channing's life, ultimately threatening Channing's career and her personal relationships.

Grace Kelly in *Rear Window*! In the film, **Kelly** stars as Lisa Carol Fremont, the stylish socialite and love interest of L.B. "Jeff" Jefferies, played by James Stewart. The story of a recuperating news photographer who believes he has witnessed a murder. Confined to a wheelchair after an accident, he spends his time watching the occupants of neighboring apartments through a telephoto lens and binoculars and becomes convinced that a murder has taken place.

(72) **Ira Sturtevant** was an award-winning advertising executive.

Footnote, Cone & Belding, is one of the largest global advertising agency networks. It is owned by Interpublic Group and was merged in 2006 with Draft Worldwide, adopting the name Draft FCB. In 2014 the company rebranded itself as FCB

(95) **Amyloid:** [not a company, but] Amyloids are aggregates of proteins characterized by a fibrillar morphology of typically 7–13 nm in diameter, a β -sheet secondary structure and ability to be stained by particular dyes, such as Congo red. In the human body, amyloids have been linked to the development of various diseases.

(96) Intec Laboratories: InTec is a world leader in infectious disease diagnostics with a focus on screening at the point of care. (Could well be one started by AKZO)

(101): “BROUGHT TO YOU BY THE MAKERS OF FRESH-AS-A-DAISY FEMININE HYGIENE PRODUCTS” Feminine hygiene products have been around long before this show is set. And the phrase “Fresh-as-a-Daisy” is used in many different ways with various products attached, i.e. “Fresh-as-a-Daisy” soap.

As **bringing a product to market** is part and parcel of the Meg’s ongoing discussion with the men, I give you the following from SurveyMonkey’s website: “The product life cycle is the progression of a product through 5 distinct stages—development, introduction, growth, maturity, and decline. The concept was developed by German economist Theodore Levitt, who published his Product Life Cycle model in the Harvard Business Review in 1965. We still use this model today.

Basically, the product life cycle is the time from the product concept through its eventual withdrawal from the market. The product life cycle is used for decision-making and strategy development throughout each stage.

Marketers use the product life cycle to customize messaging for each stage, using market research to guide their efforts. Managers use the product life cycle to make strategic decisions about pricing, expansion into new markets, packaging design, and more.

Every product spends a different amount of time in each stage—so there is no definitive timeline to reference. Each stage has its own costs, risks, and opportunities, and you’ll have to adapt your strategies depending on where you are in the life cycle.”

Please to note: **Predictor** was invented in 1967 and was first on the market in 1978 (the Colorstick test came out in 1984).

(102) **Menstruation**: Menstruation is the regular discharge of blood and mucosal tissue from the inner lining of the uterus through the vagina. The menstrual cycle is characterized by the rise and fall of hormones. Menstruation is triggered by falling progesterone levels and is a sign that pregnancy has not occurred. When you can menstruate, you can get pregnant.

Or as my mentioned in 7th grade by my PE teacher, “when it starts, come to me and say, ‘Miss Blake, now I am a woman.’” Everything the playwright says about menstruation, women have heard in their own lives. This is when the discussion of sanitary products begins. And yes, there was a belt that the pads were attached to.

Then there were tampons, “Even though tampons were technically available by the 1930’s, using them wasn’t popular, and there was concern that a tampon could damage the hymen of a virgin.”

My mother never used them and so she didn’t tell me about them. When I was about to be 16, I went away to a debate program and my roommate taught me all about them.

Although not mentioned, but beginning during the period of this play, Meg might have profited from being involved with a “**consciousness raising group**.” Initially formed by New York Radical Women, an early Women's Liberation group in New York City, they quickly spread throughout the United States. Consciousness-raising groups allowed women to discuss their feelings, needs and desires. These included feelings perceived as private, taboo, or shameful. In women-only spaces, women explored experiences of sex, abortion, relationships, and families, often for the first time.

(118) Meg asks, “And why can boys talk *everywhere*?” (I developed a theory that, because what she said was very true, that’s why there were so few female stand-up comics when I was young.)

(121) **Reverend Howard Moody:** His New York University obituary reads, “A staunch supporter of women’s reproductive rights and a patron of the avant-garde arts, an anti-war, anti-censorship, and civil rights activist, an outspoken advocate for the decriminalization of prostitution and marijuana and.... a Baptist minister? A brief sketch of Howard Moody’s activities reads like an episode of the 1980s quiz show ‘Odd One Out.’ But for nearly thirty-five years parishioners flocked to Judson Memorial Church on 55 Washington Square South to join the Reverend in his sometimes shocking, often provocative, and always stimulating call[s] to social activism.” (How I wish you could have met him and heard him.)

(128) [Eli] Lilly and Merck are both real companies that exist today.

To better understand how Meg could go without credit, the following, although written in 2021 by MoloLamkin LLP, pretty much represents what is happening with Meg’s “invention,” and many others like it. She wouldn’t be the first and she wasn’t the last. I was intrigued that using “her” was not coming from me.

If I Invent Something While Working for a Company, Does the Company Own Any Patent That I Obtain on the Invention?

“Generally, an inventor retains all patent rights to her invention. But that rule may not apply if the invention was discovered while the inventor was “on the clock” for her employer.

If you are an employee – not an independent contractor – and your invention was created as part of your job, then it is likely that your employer owns the rights to that invention and any patent obtained on it. This is known as the “work for hire” doctrine.

If the scope of your work involves inventing or designing, you will generally have entered into a written agreement with your employer regarding the ownership of any intellectual property created while on the job. This written agreement usually covers any patents, copyrights, and other forms of intellectual property, and its terms govern in the case of a dispute. Examine this agreement carefully to see what rights you may have, and consider consulting a patent litigation attorney.

On the other hand, if your invention falls outside the scope of your usual work and you do not have such a written agreement, you may be able to assert intellectual property rights in the patent even if you invented it while at work. This means that you would own the patent and have the right to enforce the patent against any infringer.

Note, however, that if your employer uses your patented invention, it may have a defense against your claims of infringement for that use. The “shop rights” doctrine provides that your employer can use an invention that you own but invented on company time without infringing your patent. But this right is limited: your employer cannot sell, assign, or use the patented invention outside the scope of its business.”

(133) “Lights shift into something different. Music, perhaps”. [as we begin moving towards the present]

(137) “It was an article in the *New York Times*. There it was, staring at me, authoritatively, in black and white, from the pages of the paper I read every single morning. Who Made That Home Pregnancy Test. I wasn’t mentioned, anywhere.” [This article was written in 2012. Another article follows in 2016 by the same reporter, makes up for this first one. Both are attached herewith.]

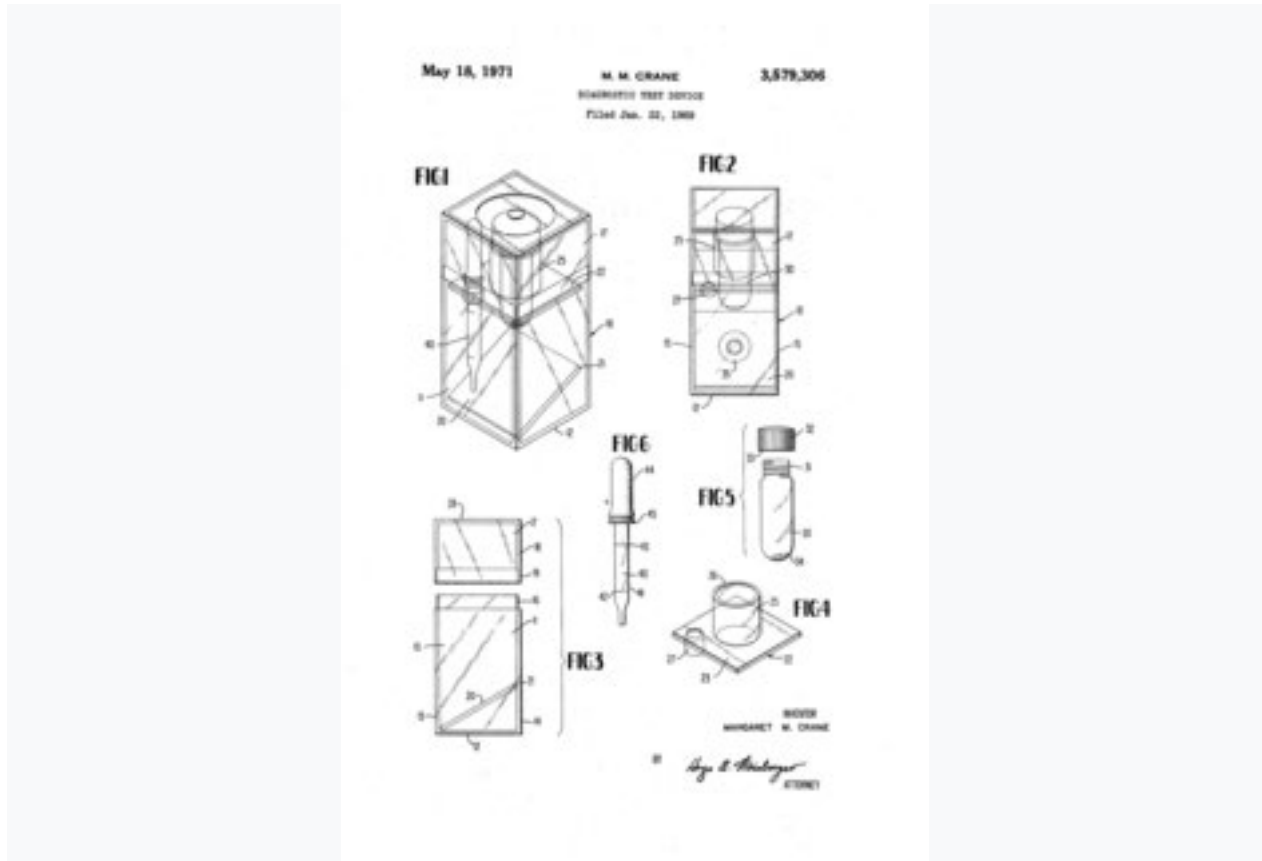
For the record, in 1978, “Trumpeted by advertisements as ‘a private little revolution,’ the first home pregnancy tests started appearing on drugstore shelves.”

Ira Sturdivant [*from the NY Times*] “...died August 13 [2008] of lung disease. He was "84 and three quarters." A life-long New Yorker, he founded the firm Ponzi & Weill with his partner of 41 years, Meg Crane, and was previously at BBDO and Foote, Cone & Belding. He was awarded a Clio and The One Club Gold Medal among many others. He specialized in advertising for pharmaceuticals, and financial services. Ira was a consummate gentleman with a quick wit and generous spirit. He earned a BS from New York University and was a Director of the NY State Phi Beta Kappa Association. He is survived by Meg, a daughter Loren Guinnebault of Paris, grandsons Maxime and Aladin Guinnebault and innumerable friends. A celebration of his life is planned for 2pm September 14 at Scandinavia House, 58 Park Avenue, NY 10016. Donations may be made to God's Love We Deliver.”

Margaret Crane

From Wikipedia, the free encyclopedia

Margaret M. Crane is an American born in 1942. She is known for her invention of the at-home pregnancy test which she called, "Predictor." Her Scientific career fields were Graphic Design and Product Design.



Margaret Crane's patent illustration for "Diagnostic Test Device", the first home pregnancy test

Margaret M. Crane (Meg Crane) is an American inventor and graphic designer who created the first at home [pregnancy test](#) in 1967 while working at [Organon Pharmaceuticals](#) in [West Orange, New Jersey](#).

She is the listed inventor on US Patent 3,579,306 and 215,7774. There was resistance to marketing pregnancy tests for consumers rather than doctors, and the home pregnancy test did not become available until 1977, except for a market test in [Canada](#) in 1972.

She was also a juror in the 2004 trial of [Martha Stewart](#) for lying to federal investigators during an insider trading investigation.

Career

At age 26, Crane was hired by Organon in 1967 to work on a new cosmetic line for the company. One day as she was touring the laboratory of the company she noticed many test tubes. Curious to what they were, she asked and to her surprise they were pregnancy tests. Each individual [test tube](#) contained [reagents](#) that when mixed with a pregnant woman's urine would indicate pregnancy by displaying a red ring at the bottom of the [test tube](#). Inspired by this, Crane saw the possibility of this as a home pregnancy test. She thought it was easy enough to do that women could perform this test at home and in a quicker fashion. Crane had no previous background in science, however, she saw making the pregnancy test an at-home and private experience was important and necessary. This inspired her to create her first model for the test, similar to the tests she observed in her lab. The model Crane proposed was sold across the nation in 1977. Crane and her partner Ira Sturtevant, who aided Crane in her endeavors, went on to develop an advertisement and design firm called Ponzi & Weill.

Invention

Crane took matters into her own hands and went to her home in New York to begin working on her prototype. She combined a [paper clip](#) holder, a test tube, a [mirror](#), and a dropper. She put her invention together and presented it to Organon but the idea was at first rejected. Nonetheless, they applied for patents in her name in 1969.^[6] When Crane presented her idea, it was met with major pushback. Crane's proposition made the lab hesitant due to worries that the lab would lose business to doctors if women started performing these tests at home. Organon eventually decided to do a test market of the product and Margaret Crane's design was chosen. Organon hired a New York advertising agency to do the marketing, and Ira Sturtevant was to head the account. He took a particular interest in Margret Crane's prototype. He was intrigued by how elegantly the home pregnancy kit was put together. Organon chose Canada for the test market and Crane and Sturtevant were chosen to head the project. They went on to become partners for more than 40 years until his death in 2008. With success the pair went on to build their own marketing company named Ponzi and Weill. This advertising business partnership played an important role in the promotion of the pregnancy test. "Every woman has the right to know whether or not she is pregnant," said an early ad for the test that women "can do by yourself, at home, in private, in minutes." This was Margaret Crane's biggest motivator to invent the at home pregnancy kit. Before Crane's invention, women would have to go to a doctor and have their urine tested in a lab to determine if they were pregnant. As a result, women would have to wait weeks for results. In the 1960s, when Crane's idea first came to be, a pregnancy test was processed in a lab by monitoring levels of a hormone called [human chorionic gonadotropin](#) (hCG) in urine. It was discovered that women secrete high levels of hCG when pregnant. Therefore, if hCG was detected it indicated pregnancy. Due to the [Food and Drug Administration](#) (FDA) rules for medical devices it took a while to receive approval for her prototype in the United States. The pregnancy test developed by Crane did not receive FDA approval until 1976. Soon after, Crane's pregnancy test hit the market in 1977, ten years after she had first proposed her idea. It was marketed as "The

Predictor". Although her name was on the patents for the device, Organon licensed the product to three over-the-counter pharmaceutical companies and Crane never received a penny for her design. She had to sign off her rights for a dollar and never saw that dollar. But she was grateful to have met her partner in the process. It was not until 2012 when the New York Times ran a short "who Made It" feature and Crane received proper recognition for her prototype that simplified the pregnancy of many women.^[8] Crane was reading the paper one morning and noticed that the column was about the history of pregnancy test. Her name was not included in the article, and she knew she had to speak up about her contribution in order to receive recognition. Crane was hesitant to come forward because the article was discussing the modern version of the pregnancy test, which Crane did not create. However, since Crane's ideas sparked the change in pregnancy tests with her prototype evolving into what is on shelves today, she stepped forward and emailed the author of the article. Since 2012, Crane has received recognition for her invention.

Legacy

A prototype of The Predictor and a 1970 packaged product version were acquired by the Smithsonian's [National Museum of American History](#) in 2015

For the full Wikipedia entry, including all references, this is the link:
https://en.wikipedia.org/wiki/Margaret_Crane

A timeline of pregnancy testing.

<https://history.nih.gov/display/history/Pregnancy+Test+Timeline>

Pre-1900

1350 BCE

One of the earliest written records of a urine-based pregnancy test can be found in an ancient Egyptian document. A papyrus described a test in which a woman who might be pregnant could urinate on wheat and barley seeds over the course of several days: "If the barley grows, it means a male child. If the wheat grows, it means a female child. If both do not grow, she will not bear at all." Testing of this theory in 1963 found that 70 percent of the time, the urine of pregnant women did promote growth, while the urine of non-pregnant women and men did not. Scholars have identified this as perhaps the first test to detect a unique substance in the urine of pregnant women and have speculated that elevated levels of estrogens in pregnant women's urine may have been the key to its success.

Middle Ages through the Seventeenth Century

Using visual aspects of urine to detect pregnancy became a popular method. In Europe, so-called "piss prophets" claimed to be able to diagnose many different conditions and diseases by the color of urine. In a 1552 text, pregnancy urine was described as: "clear pale lemon color leaning toward off-white, having a cloud on its surface." Other tests included mixing wine with urine and observing the results. Indeed, alcohol reacts with certain proteins in urine, so this may have had a moderate success rate.

Nineteenth Century

Various theories abounded, such as the possibility that pregnancy urine contained certain identifiable crystals or bacteria. Scientists did not know enough about pregnancy to develop a reliable test. However, for sexually active women, the best method for diagnosing pregnancy remained careful observation of their own physical signs and symptoms (such as morning sickness).

1890s

Many physicians began to describe the workings of chemicals in the body, suggesting that "internal secretions" by certain organs were crucial to an understanding of human biology. Ernest Starling named these chemical messengers "hormones."

American public health advocates started to encourage women to see their doctors as soon as possible after pregnancy was suspected. Prenatal care was found to improve the health of

both infants and mothers, even though most women would not see a doctor or midwife until well into the pregnancy.

1900–1970

1903

Research on human reproduction intensified in the early twentieth century. Ludwig Fraenkel described the corpus luteum, the glandular mass that forms in women's bodies during the normal menstrual cycle that we now know is supported by hCG during pregnancy. He identified some hormones that had a role in female reproduction, naming the hormone that promoted gestation, progesterone. Progesterone was isolated (an important step in the study of hormones) in 1934.

1920s

Independently, scientists in several laboratories across Europe described the presence of a substance that promotes ovary development and growth in rabbits and mice. In Germany, Selmar Aschheim and Bernhard Zondek noted that this substance specifically affected the formation of the corpus luteum.

Scientists recognized that there is a specific hormone (now known as human chorionic gonadotropin (hCG)) that is only found in pregnant women.

1927

Aschheim and Zondek described a test (known as the A-Z test) which identified the presence of hCG in urine. To test for pregnancy, a woman's urine was injected into an immature rat or mouse. If the subject was not pregnant, there would be no reaction. In the case of pregnancy, the rat would show an estrous reaction (be in heat) despite its immaturity. This test implied that during pregnancy there was an increased production of the hormone. During early studies of the A-Z test, the scientists discovered that testicular tumors could produce hCG as well.

1930s

Hormone research blossomed in this period. Scientists in several different laboratories developed bioassays (special tests using animals or live tissue) to identify hCG by injecting samples to induce ovulation in rabbits, frogs, toads, and rats. These tests were expensive, required the sacrifice of several animals, and slow, often taking days to get results. The tests were also insensitive when measuring hormone levels to diagnose pregnancy because of the

similarity between hCG and another substance, luteinizing hormone (LH). Most bioassays were in fact unable to distinguish between the two except at extraordinarily high rates of hCG.

Herbert Evans discovered that when injected with certain fluids from the female glands a female rat would grow an abnormally large corpus luteum. These fluids were hormones now known as gonadotropins.

In the next few decades laboratory scientists increased their level of interest in the study of human reproduction and on the role of ovaries and testes in human development.

1932

The First International Conference of Standardization of Sex Hormones was held in London, marking the culmination of a decade of increased interest in the chemical properties of sex hormones rather than the previously limited focus on biological function.

1930S-1940S

Popular childbirth books began to encourage women to visit a doctor's office for confirmation of pregnancy rather than relying on "old wives' tales" for the diagnosis.

1958

Gonadotropins were first extracted from human pituitary glands.

1960

A "hemagglutination inhibition test" for pregnancy was developed by L. Wide and C.A. Gemzell. Because it used cells in the testing process, this test was an immunoassay rather than a bioassay. The test used purified hCG, mixed with a urine sample and antibodies directed against hCG. In a positive pregnancy test, the red cells clumped, displaying a particular pattern. This test was much faster and cheaper than the old bioassay, but still relatively insensitive, especially for early diagnosis of pregnancy. The test also cross-reacted with various medications.

JV: The problem with these kinds of tests is that there can be some substances in the urine to give a false-negative or a false-positive test at a pretty high frequency, so you had to be careful. It was important to identify what were the interfering substances that gave false results.

Mid-1960s

Important disease research in this period led to more knowledge about how hormones, steroids, and antibodies work in the human body. In the next decade, NICHD scientists would transfer these principles to their studies of reproductive hormones such as hCG.

JV: The first principle of developing a radioimmunoassay was the result of a person making the observation that, when patients with diabetes mellitus were treated with insulin, they developed a circulating antibody. Then after that, we started inducing antibody in animal models, and the rest is history.

JV: There were very few places that were doing reproductive endocrinology research [in the late 1960s and early 1970s] because they didn't have purified hormones, and there were just some very tedious ways of doing things. To compare the research tools we had back in the late 1970s to now, it's like Neanderthal to modern man. [There is] no comparison. It took brute force to get some things done.

1966

A. R. Midgley described the first radioimmunoassay for hCG, but the test still could not differentiate between hCG and luteinizing hormone. Several other laboratories reported improvements on this test, but did not solve this basic problem.

1970–2003

1970s

Two things came together in this period along with the so-called sexual revolution: increased research on reproductive health and a heightened desire (brought on by both improved prenatal care and legal abortion) to detect pregnancy as early as possible. Beginning in the 1970s, prenatal care and prenatal testing became more routine in the American health care system. 'A Preliminary screening test for pregnancy,' courtesy of the Food and Drug

1970

Tests available to doctors and technicians included Wampole's two-hour pregnancy test. The test could be done as early as four days after a missed period. In the packaging materials, the man pictured performing the test wore a laboratory coat, indicating that it was not intended for home use. Besides the equipment in the kit, (two test tubes, a plastic rack, a bottle of "control solution," a bottle of "hCG-antiserum" and a bottle of "cell suspension"), testers would need a small funnel and filter paper or centrifuge, clean pipettes or syringes, and saline solution in addition to a urine sample.



"A preliminary screening test for pregnancy," courtesy of the Food and Drug Administration History Office

1970-1972

Scientists at NIH learned more about the properties of hCG. They were specifically interested in which parts of the hormone showed biologic activity. Using various methods, they identified two subunits of hCG and focused on the beta-subunit. They found that the beta-subunit is where the immunologic and biologic specificity of hCG resides (what makes it different from other hormones). Using animal models, they took advantage of this discovery to develop a specific antiserum for measuring the hormone in humans.

In a 1972 textbook on gonadotropins, Vaitukaitis and Ross noted that: "Common antigenic determinants [biological characteristics] among hCG, LH, FSH, and TSH have made the production of specific antisera for radioimmunoassay difficult." However, the team was close: "the recent isolation and separation of subunits...have provided unique materials with which these questions could be explored."

1972

Vaitukaitis, Braunstein, and Ross published their paper describing the hCG beta-subunit radioimmunoassay that could finally distinguish between hCG and LH, therefore making it potentially useful as an early test for pregnancy. See Vaitukaitis, J.L., Braunstein, G.D., and Ross, G.T. (1972) "A radioimmunoassay which specifically measures human chorionic gonadotropin in the presence of human luteinizing hormone." *American Journal of Obstetrics and Gynecology*, 113, 751-8.

1973

The first edition of *Our Bodies, Ourselves*, the women's health manual written by the Boston Women's Health Collective, noted that available pregnancy tests were most accurate if done two weeks after the missed period. Though the authors insisted that instructions for "collecting and submitting your urine are simple," modern readers might disagree. "Drink no liquids after dinner the night before," the text instructed, "then as soon as you awake in the morning collect a urine sample in a clean, dry, soap-free jar and take it to a laboratory." Another possibility was sending the urine sample to a laboratory in North Carolina, after first writing to request the test kit.

Mid-1970s

Though the test was not yet widely available, NIH scientists spread the word about the new radioimmunoassay. At first, the test was found most useful for clinicians in testing and following patients being treated for hCG-secreting tumors. The sensitive radioimmunoassay could tell the doctors if the chemotherapy treatments had worked.

JV: We were doing assays for people all over the place. We felt ethically that we had to because it wasn't available anyplace else. So we used to give out a lot of antiserums to research labs and show them how to set up the assays.

1976

FDA approval was sought by Warner-Chilcott for e.p.t, the "Early Pregnancy Test" later known as the "Error Proof Test." e.p.t would become the first home pregnancy test kit on the market in the United States. The makers of e.p.t worked with the FDA to meet all the requirements of the 1976 Medical Devices Act. (The new regulations divided medical devices into three classes depending on potential for harm and misuse.) Approval was also granted to three other tests that were deemed "Substantially equivalent:" Predictor, ACU-TEST, and Answer.



From Directions and Technical Information on UCG-TEST, 1970, courtesy of Special Collections, Northwestern University Library

1976

Several articles in the American Journal of Public Health stated that public health would be better served if the average consumer could purchase a home pregnancy test and use it reliably in her own home.

1977

By the end of 1977, e.p.t was ready for the American market. (Because of requirements for the specific wording on packaging and other last-minute details, there is a lag time between FDA approval and wide availability of most medical devices.) In a “Dear Pharmacist” letter from Warner/Chilcott, drug stores were informed that “the e.p.t consumer advertising campaign has been designed to direct the consumer to their drug store to purchase e.p.t”

1978

e.p.t was advertised in major women's magazines including: Mademoiselle, McCall's, Redbook, Family Circle, Ladies' Home Journal, Good Housekeeping, and Vogue. Advertisements appeared later in the year for Predictor, Answer, and ACU-TEST.

The e.p.t test of 1978 was described to the public in Mademoiselle: “For your \$10,” the article notes, “you get pre-measured ingredients consisting of a vial of purified water, a test tube containing, among other things, sheep red blood cells...as well as a medicine dropper and clear plastic support for the test tube, with an angled mirror at the bottom.” The test took two hours, and was more accurate for positive results (97%) than for negative (80%).

Advantages, noted Mademoiselle, included “privacy and not having to wait several more weeks for a doctor's confirmation, which gives you a chance, if pregnant, to start taking care of yourself...or to consider the possibility of early abortion.” (Mademoiselle, April 1978, p. 86)

McCall's magazine claimed that “physicians we interviewed about the tests endorse the concept.” But the editors cautioned that women who get negative results and who still suspect pregnancy should not wait ten days to take the test again “but should seek medical help as soon as possible.” (McCall's, March 1978, p. 46)

1979

Taking the test at home, noted a 1979 article in Family Planning Perspectives, both protected the privacy of a woman who might not want her doctor to know she is sexually active and gave women a new opportunity to take an active role in their own health care.

1980s

Research increased and educational campaigns were launched to identify the importance of folic acid in early pregnancy and to warn of the dangers of various environmental hazards and alcohol to a developing fetus.

1990s

Advances in the technology of pregnancy tests included the development of new types of antibodies and the use of enzyme labels in place of radioactive labels.

2003

The next generation of home pregnancy tests was ushered in with FDA approval of Clearblue Easy's digital pregnancy test. In place of a thin blue line, the indicator screen will now display either "pregnant" or "not pregnant."

JV: The home pregnancy test is probably the most widely used test besides the hematocrit and hemoglobin [the blood test to measure red blood cells and iron levels that is part of the blood workup done regularly at doctors' offices]

**After Two Months of Pregnancy,
56% of Women Have Not Yet
Consulted A Physician**

**ACU-TEST™ In-Home Pregnancy Test Can
Help Bring Women to Earlier Care.**

National Center for Health Statistics, Washington, D. C.
Monthly Vital Statistics Report, Vol. 26, #12 Supplement, March 29, 1976.

Advertisement for ACU-TEST, American Journal of Public Health, January 1979.

Note: Quotations labeled "JV" are from an interview with Judith Vaitukaitis, August 18, 2003.

Warner/Chilcott

DIVISION OF WARNER-LAMBERT COMPANY

HARRY M. HART
DIRECTOR
TRADE PROMOTIONS/TRADE RELATIONS

20 TABOR ROAD
MORRIS PLAINS, NEW JERSEY 07950

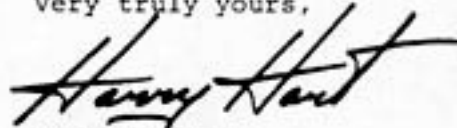
Dear Pharmacist:

e.p.t., the in-home early pregnancy test is now available on a national basis.

The e.p.t. consumer advertising campaign has been designed to direct the consumer to their drug store to purchase e.p.t. Warner/Chilcott is also supplying complete e.p.t. product information to pharmacies and the medical profession.

The purpose of this communication is to provide you with information about this significant breakthrough in home diagnostics so that you will be fully informed and be able to answer any questions your customers may have. Arthur D. Flanagan, M.D., Vice President, Medical Affairs, recently provided physicians with an e.p.t. product monograph and package insert. We are sending you a copy of this physician information packet for your reference and to keep you informed of the Warner/Chilcott professional e.p.t. information program.

Very truly yours,



Harry M. Hart

HMH:sg

SERVING THE MEDICAL PROFESSION SINCE 1888

"Dear Pharmacist" letter from Warner-Chilcott, c. 1977. Courtesy of the National Museum of American History, Smithsonian Institution

DESIGN (NEW YORK TIMES)

Who Made That Home Pregnancy Test?

By Pagan Kennedy

- July 27, 2012

The first home pregnancy test, which appeared in drugstores in 1977, looked like a kid's chemistry set: it contained a vial of purified water, an angled mirror, a test tube and red blood cells taken from a sheep. "I had to refrigerate the urine," recalled one woman interviewed as part of an online public history project. "The test could not be disturbed. You had to put it where it would not feel any vibration." Cumbersome as they were, those early kits — e.p.t. was the first to hit the market — were far more convenient than the alternative.

A trip to the doctor's office could be especially daunting for single women, who might receive a stern lecture along with the results. "It was revolutionary for women back then, when you consider the options that were available," says the historian Sarah A. Leavitt.

Home pregnancy tests emerged from a surprising confluence of scientific and social changes. In 1972, scientists at the National Institutes of Health announced a new method for the rapid detection of pregnancy; the following year, Roe v. Wade made abortion legal — and home testing all the more attractive. "The e.p.t. In-Home Early Pregnancy Test is a private little revolution any woman can easily buy at her drugstore," read a 1978 print ad that celebrated the product as a tool of feminist liberation.

But many women recoiled from the prospect of collecting their own urine and analyzing it in a bathroom lab. So the home pregnancy test became a blockbuster product only when it entered the Wand Era — with ingeniously designed sticks that collected urine at one end and gave results at the other. In 1988, Unilever introduced the first "one step" test, Clearblue Easy, so named for the blue stripe that slowly materialized to indicate pregnancy.

[Illustration goes here in the original article.]

According to the Food and Drug Administration, one-third of all American women have used a home pregnancy test. And Leavitt says it was the wand that transformed how we define pregnancy. "Eventually, of course, you'll know you're pregnant," she says. But the home test has "shifted that knowledge earlier" so that pregnancy starts with a moment in the bathroom, watching a little plastic window and waiting for a sign.

EARLY DECISION

Marcel Wanders, once called "the Lady Gaga of the design world," is the art director at [Moooi](#). In 1990 he designed a home pregnancy test for Organon Teknika.

What was the biggest challenge you faced in reimagining the pregnancy test? Organon had a test that was larger than the competitor's. Instead of accepting that as a problem, I decided to make it an opportunity. We designed a test you could write on: your name, the baby's name, the date. You could put stickers on it. It was like a desk.

So the woman who used it could keep it as a memento? Yes. I think a lot of people would use it as a souvenir.

How does a designer convey the message "You're pregnant" with one simple icon? You don't want to put too much meaning into it. Because the pregnancy test has a very different significance to different people. For some people, it's good news. For others, it's bad news. You can't put too much of your own sensibility into the object.

WHAT TO INSPECT WHEN YOU'RE EXPECTING

Designers have experimented with many symbols to convey the message "You're pregnant."



For the original article the link is: <https://www.nytimes.com/2012/07/29/magazine/who-made-that-home-pregnancy-test.html?searchResultPosition=1>

Before There Were Home Pregnancy Tests

How women found out they were pregnant when they couldn't just pee on a stick

By Cari Romm (a former assistant editor at *The Atlantic*.)

JUNE 17, 2015 (THE ATLANTIC)

When it hit shelves in the 1970s, the Predictor pregnancy test, made by Organon Pharmaceuticals, went for \$10. On Tuesday, the auction house Bonham's sold the original prototype, along with the first consumer version of the test, for \$11,875.

The Predictor was the brainchild of a freelance designer named Margaret Crane, who had been hired in Organon in 1967 to work on a new cosmetics line. While touring the company's lab, she wrote in a note accompanying the Bonham's sale,

I noticed multiple lines of test tubes suspended over a mirrored surface. I was told that they were pregnancy tests ... Each test tube contained reagents which when combined with a pregnant women's urine, would display a red ring at the base of the test tube, as reflected in the mirror.

Inspired, she set to work developing a simplified version of the test: At her home in New York, she assembled a plastic paper-clip holder, a mirror, a test tube, and a dropper, and presented her kit to Organon a few months later. In 1969, the company applied for a patent in her name.

"I thought how simple that was," she recalled of seeing the tests for the first time, according to Bonham's. "A woman should be able to do that herself."

Simple, though, had been a long time in the making.

* * *

A long, long time before women peed on sticks, they peed on plenty of other things.

One of the oldest descriptions of a pregnancy test comes from ancient Egypt, where women who suspected they were pregnant would urinate on wheat and barley seeds: If the wheat grew, they believed, it meant the woman was having a girl; the barley, a boy; if neither plant sprouted, she wasn't pregnant at all. Avicenna, a 10th-century Persian philosopher, would pour sulfur over women's urine, believing that the telltale sign was worms springing from the resulting mixture. In 16th-century Europe, specialists known as "piss prophets" would read urine like tea leaves, claiming to know by its appearance alone whether the woman who supplied it was pregnant.

But as strange as it sounds to modern ears, "piss prophecy," so to speak, never really fell out of favor—at least not with pregnancy tests. The name changed, and the tools changed. And what also changed, most significantly, was who got to play the part of the prophet.

Doctors in the 18th and 19th centuries, shaped by the scientific discourse of the Enlightenment, abandoned the belief that urine could simply be eyeballed, instead pursuing the idea that it must contain some less easily identifiable traits—some bacteria or crystal structure, visible only under a microscope—that could signify a pregnancy. Around the end of the 19th century and the beginning of the 20th, scientists began to discover the chemicals that regulated various functions in the human body, including reproduction. The word “hormone” was coined in 1905; in the 1920s, human chorionic gonadotropin (hCG)—a hormone found in high concentrations in pregnant women—was identified.

The first true precursor to today’s pregnancy test was developed in 1927, when the German scientists Selmar Aschheim and Bernhard Zondek discovered that injecting a pregnant woman’s urine into a mouse or rat would send it into heat, which could be ascertained only by dissecting the animal. Over the next few decades, the AZ test, named after its creators, replaced rodents with rabbits—the phrase “the rabbit died” was, at one point, a euphemism for a positive pregnancy test—and then frogs (so many frogs were exported from southern Africa to the U.S. for pregnancy tests, in fact, that some scientists believe they may be the source of a fungal disease currently threatening the country’s amphibian population). In the 1960s, scientists ditched the animals entirely, turning instead to immunoassays, or tests that combined hCG, hCG antibodies, and urine—if a woman was pregnant, the mixture would clump together in certain distinctive ways.

While women no longer needed a frog or a rabbit, though, they still needed a doctor. The test also frequently turned up false positives, as hCG could easily be confused for other similar hormones. A more accurate test wouldn’t arrive until 1972, when Judith Vaitukaitis and Glenn Braunstein, researchers at the National Institutes of Health, identified an immunoassay that could successfully measure levels of hCG, rather than simply detecting its presence. Recognizing the potential of their discovery, the two attempted to patent it on behalf of NIH—but were shot down by the institute’s lawyers, who argued that because the project had been funded with public dollars, nobody should receive any royalties for the resulting product. Instead, the knowledge went immediately into the public domain, until pharmaceutical companies recognized the same potential that Vaitukaitis and Braunstein had seen.

In the meantime, both scientists moved on to other things—which, according to an oral history by NIH, may have been an act of self-preservation as much as anything. To obtain enough urine for another part of their hormone research, unrelated to pregnancy tests, the scientists had struck up a deal with a nearby retirement home for nuns: The nuns would collect their urine over several weeks in plastic containers big enough to hold around 15 gallons at a time. Once a month, Vaitukaitis, Braunstein, and their colleagues—including “someone who was strong enough to lift these bottles,” Vaitukaitis recalled—would trek over to haul it all back to the lab.

“We got a lot of stuff done with that,” she recalled, but “I would never want to do it again.”

* * *

“The pregnancy test has a very different significance to different people,” Marcel Wanders, a product designer for a 1990 version of Organon’s test, told *The New York Times* in 2012. “You can’t put too much meaning into it.”

He was referring to the challenge of choosing the graphic that would appear on the test to signify a pregnancy. In the years before today's blue lines, *The Times* reported, a positive result came in the form of a baby's smiling face, a swollen belly, even a single wiggling sperm—cutesy, cheery images announcing news that, for many women, is neither cheery nor cute.

Iconographic missteps aside, though, this was the defining feature of the home pregnancy test: In the privacy of their own bathrooms, women could—to borrow Wanders' phrasing—put their own meaning onto it, a fact that led some to protest the test's rising popularity even as others celebrated it.

Unlike medical tests that reveal something otherwise unknowable about a body, a pregnancy test can only speed the delivery of information; regardless of who pees on what, a pregnancy has other, more obvious ways of making itself known with time. The home pregnancy test, then, wasn't just about knowing; it was about taking charge, a sentiment that fit in nicely with the ethos of the time. The first home test approved by the FDA, Warner-Chilcott's e.p.t. (short for "early pregnancy test," and later for "error-proof test"), came to market in 1976, followed soon after by the Predictor and a handful of others. At that point, *Our Bodies, Ourselves* was six years old, and abortion had been legal in the U.S. for three.

"In many ways," the NIH website notes, "a pregnancy test is difficult to market. The term 'hCG' sounds foreign and the phrase 'urine stream' is difficult to sugar coat." From the beginning, advertisements for home pregnancy tests focused less on how they worked and more on what they offered—privacy, autonomy, knowledge of one's own body. "Every woman has the right to know when she is pregnant," read one 1970s ad for the Predictor, "and to know it with the least possible fuss and bother in the least possible time." And [a 1978 ad](#), this one for the e.p.t., called it "a private little revolution that any woman can easily buy at her drugstore."

But in any revolution, even a private little one, something is being overthrown. In this case, it was the authority of doctors, not all of whom were happy about a changing status quo. Unregulated tests had already been recalled several times before the FDA approved the e.p.t, they pointed out. Tests could be used incorrectly; they could be flat-out wrong; putting them in the hands of the patients, they argued, would harm more than it would help. In an [editorial](#) published in *The American Journal of Public Health* in 1976, one physician argued against the use of home tests: "I feel that the reputations of both the commercial concerns and the profession of medical laboratory technology will suffer unless legislation is introduced to limit the use of such potentially dangerous kits."

In a note following the piece, the journal's editors sided firmly on the side of the tests: "Not everyone," they wrote, "needs carpenters to hammer in their nails."

(I didn't put a link on this article as the magazine often makes you pay for an article.)

Opinion (*New York Times*)

Could Women Be Trusted With Their Own Pregnancy Tests?

By Pagan Kennedy

• July 29, 2016

In 1967, Margaret Crane was a 26-year-old product designer at Organon Pharmaceuticals, sketching face-cream bottles and ointment jars. One day, as she walked through a lab at the company's headquarters in New Jersey, she spotted rows of test tubes on shiny racks that twinkled under the industrial lights.

"What are these?" she asked one of the scientists.

Pregnancy tests, he said. A doctor would collect urine from his patient and send it to the company's lab for analysis. The results would be sent back to the doctor, who would then inform the patient.

But Ms. Crane immediately saw another possibility: Why not cut out the doctor entirely?

This was the dawn of the sexual revolution, when abortions were generally illegal and 26 states barred single women from obtaining birth control. Many a single woman slipped on a ring before entering the medical office and added a Mrs. to her name. Few laws protected "girls" in the workplace from gender discrimination, and bosses had the right to lay off women who became pregnant.

"I knew a number of women who'd had abortions and went through misery to find one," Ms. Crane told me recently. She understood what an at-home pregnancy test would mean: It was a way for a woman to peer into her own body and to make her own decisions about it, without anyone else — husband, boyfriend, boss, doctor — getting in the way.

That night Ms. Crane, a real-life Peggy Olson [a character in the series Mad Men], started building her own prototype, eventually coming up with a sleek and user-friendly version of what she'd seen in the lab. Inside a clear plastic box that had been holding paper clips on her desk, Ms. Crane fitted an eyedropper, along with a test tube that sat just above a mirror. The customer would squeeze a few drops of urine into the tube, and then peer through the transparent wall of the box at the mirror. In its reflection, she could watch the bottom of the test tube, where a compound was reacting with the drops. If, in two hours, a red circle appeared, she was pregnant.

Ms. Crane brought her model to work and begged her managers to consider her idea.

They all said no. The company's market was doctors, and doctors would hate this product that made their services seem less necessary. On top of that, her managers seemed terrified by

scenarios in which hysterical women killed themselves. “What if a senator’s daughter, unmarried, found she was pregnant and jumped off a bridge?” one asked. “The company would have to go under for that.”

Fifty years later, it’s hard to remember why her idea seemed so disturbing. Today, eight out of 10 women learn they are pregnant from a drugstore device. The test allows women to quickly begin prenatal care or seek out an abortion. The home-testing wand has become a bit of everyday magic.

And yet the test did not become available in the United States until 1977 — four years after *Roe v. Wade*, and 10 years after Ms. Crane proposed it. Pharmaceutical companies were afraid of antagonizing doctors and aligning themselves with the “fast women” who desired a fast test.

Ms. Crane’s story offers a lesson about the social and political forces that can keep even trusted and easy-to-use medical tools out of the hands of patients, and especially the hands of young female patients. An entire crowd of chemists, biologists and engineers made the technology possible. But it took Ms. Crane — a Greenwich Village artist — to grasp the meaning of the device, and to fight for it.

She didn’t start fighting right away. After Ms. Crane’s bosses said no to the pregnancy test, she retreated to the office that she shared with a secretary. There, she busied herself with her usual work, sketching lipstick cases and cosmetics bottles.

But it turned out that one of the executives suggested her concept to *his* bosses at Organon’s parent company in the Netherlands — and the Dutch greenlighted the project. No one bothered to inform Ms. Crane.

In January 1968, Ms. Crane heard a rumor that her bosses were going forward with the home pregnancy test. She learned there was going to be a strategy meeting where men would discuss the design of the new product, and decided to crash it.

She found her boss in a conference room with a group of freelance product designers. On the table, the designers had lined up their proposed models. In an effort to appeal to female customers, the male designers had covered them in flowers and frills. Ms. Crane thought this was insane: What customer would want to analyze her urine in a box with a tassel?

She slid her prototype into line with the others. It’s clear plastic walls showed off the minimalistic lab equipment inside. Then, with a glance at her boss, she took her seat at the table, challenging him to throw her out. He didn’t.

As the meeting came to order, a lanky adman appeared in the doorway and shook hands all around. This was Ira Sturtevant, who had been hired to oversee the marketing plan. He was decked out in the male plumage of Madison Avenue — the dark suit, the mane of hair, the easy confidence. He inspected the line of prototypes, and then pounced.

“This is what we’re using, isn’t it?” he asked, holding up Ms. Crane’s model.

No, her boss said. “That’s just something Meg did for talking purposes.” He claimed it would be too expensive to manufacture.

Ms. Crane was sure of two things: She would prove that her model could be affordably manufactured and distributed to women. And she would spend the rest of her life with Ira Sturtevant.

In the end, her model won out, because it was the only one that would reliably allow customers to perform the lab work and view results. In 1969, Organon applied for a patent, with Ms. Crane listed as the inventor. “We had a little ceremony in the office, with the lawyers and executives. They had me sign my rights away for \$1,” Ms. Crane told me. She never did get that dollar.

Happily, her work on the application had required that she meet with Mr. Sturtevant. When he asked her out for drinks at the Barclay Hotel bar in Midtown Manhattan, she wore a little navy dress from Ohrbach’s, with her hair in a bun. After a few martinis, she walked him back to her apartment.

A few months later, they were living together and running their own advertising consultancy. The business partners were — to use the language of the time — living in sin. They did their best to hide the scandalous arrangement from clients. The subterfuge included two phone lines in their tiny apartment: Ms. Crane’s line went to her side of the sofa bed and Mr. Sturtevant’s to his. One night, Ms. Crane remembers, she was chatting with a client who decided he wanted to bring Mr. Sturtevant into the conversation, and the phone on the other side of the bed began ringing. She desperately tried to muffle her receiver. Afterward, she and Mr. Sturtevant “couldn’t stop laughing.”

In 1970, as Organon prepared to introduce a home pregnancy test in Canada, the company hired the partners to oversee the process. A year later, the Predictor test appeared with the slogan “Every woman has the right to know whether or not she is pregnant,” and Ms. Crane had the satisfaction of seeing the test on store shelves in Montreal.

But it stirred up a lot of debate. “I was shocked, frankly,” she said, especially by the fears that the product unleashed in the United States. When a mail-order New York firm tried to sell Organon test kits to American consumers in 1971, it faced opposition from the United States Public Health Service. In 1973, a New Jersey drugstore bought kits made by the drug company Roche and offered fast and private tests to their customers, and though the technology was similar to that available in medical clinics, the state medical examiner questioned the legality of the service.

Why so much opposition? Some regulators worried that “frightened 13-year-olds” would be the main users of the test kits. But after the product did become available in the United States in 1977, it appealed instead to college-age and married women — many of whom desperately hoped for children.

Even so, the Texas Medical Association warned that women who used a home test might neglect prenatal care. An article in this newspaper in 1978 quoted a doctor who said customers “have a hard time following even relatively simple instructions,” and questioned their ability to

accurately administer home tests. The next year, an article in *The Indiana Evening Gazette* in Pennsylvania made almost the same claim: Women use the products “in a state of emotional anxiety” that prevents them from following “the simplest instructions.”

The tale of the home pregnancy test is not unique. Breakthroughs that give patients control over their bodies are often resisted. Again and again, the same questions come up: Are patients smart enough? Can they handle bad news? And do they have the right to private information about their bodies.

When home H.I.V. tests were being developed in the 1980s, they inspired the same kind of fears as the pregnancy test — including unfounded dread that if people learned bad news alone at home, many of them would kill themselves. The Food and Drug Administration approved the first home H.I.V. testing kit only in 1996. Customers would take a blood sample at home, mail it to a lab and hear results over the phone, often from a counselor. The first rapid, truly private H.I.V. home test didn’t reach drugstores until 2012.

Meanwhile, in most areas of the United States, women still need permission from a doctor to buy birth control pills, even though they are arguably safer than a lot of other drugs now sold over the counter and there are very few health risks involved. It’s true that some women with conditions like liver disease, breast cancer and hypertension may be at risk of developing complications from the pill, but labels can warn them against using it. We can trust women to figure this out.

Indeed, dozens of other countries make birth-control medications available to women without a prescription. According to a recent [Reason-Rupe poll](#), 70 percent of Americans believe that we should follow their example.

“I think that the medical profession grossly underrates human abilities,” said Eric Topol, a cardiologist and professor at Scripps Research Institute. “Doctors often don’t feel consumers have the wherewithal to make a diagnosis, even if they’re using validated strategies like the pregnancy test.” Numerous studies have shown that when a test is reliable, people prefer to use it at home rather than trek to a doctor’s office, and patients can be quite skilled at doing this, he said.

Dr. Topol encourages his own patients to use their smartphones to keep track of their heart rate, blood pressure and glucose levels, and even to do electrocardiograms to detect heart arrhythmias at home. Not all patients want to monitor themselves, but those who do can often uncover problems that would be invisible to their doctors. “The patients know what’s going on in their life, and can put the information into context,” he said.

Smartphone cameras can detect problems like jaundice, ear infections and melanomas. Some of these tools are already performing as well as doctors when it comes to making the right diagnostic calls — and every year, the tools get better.

Consumers do need to be protected from false advertising and faulty devices. But they don’t need or want to be protected from accurate information about their own bodies. The popularity of these products proves this.

Despite all the fearmongering about home pregnancy tests, American women embraced them. By 1978 home testing was a \$40 million market, and today it no longer seems the least bit controversial.

“People come up to me, women and a surprising number of men, to thank me,” Ms. Crane says.

What happened to Margaret Crane? If her life were a typical romantic comedy, she would have married Ira Sturtevant and used her own invention to find out that she was going to have his baby. But she invented her own kind of Hollywood ending. She and Mr. Sturtevant lived happily for 41 years in a series of enviable Manhattan apartments — without ever marrying or having children — until his death in 2008. “I was so lucky,” Ms. Crane said, summing it up.

In 2012, I became part of her story when I wrote a short [article for The New York Times Magazine](#) about the history of home pregnancy testing, and didn’t mention Ms. Crane. At that point, she had yet to claim her due as a pioneer, and even some of her friends had no idea of the role she had played.

“Frankly, your story in The New York Times made me sit up pretty straight,” she told me. She realized that if she stayed silent, her memories might be lost forever. So she dug the original Predictor prototype out of a closet and auctioned it off as the first of its kind; its purchase by the Smithsonian’s National Museum of American History attracted a flurry of attention.

Now, because the Smithsonian sale helped to establish her as a groundbreaking American inventor, “people come up to me, women and a surprising number of men, to thank me,” Ms. Crane said. “I’m very pleased about that.”

Pagan Kennedy is the author of “Inventology: How We Dream Up Things That Change the World.”

If you want to see the article complete with pictures, go to the link below.

<https://www.nytimes.com/2016/07/31/opinion/sunday/could-women-be-trusted-with-their-own-pregnancy-tests.html?searchResultPosition=1>

19 Groundbreaking Discoveries by Women That Were Credited to Men

Because of course they were.

[in Marie Claire, Feb 28, 2019]

By Krystyna Chavez...the former Social Media Editor of Marie Claire where she oversaw all things social media and connected with MarieClaire.com readers. She came to Marie Claire from Racked.com, where she was the Community Manager. Before that, Krystyna was at Latina Mag and Cosmo for Latinas. She graduated with a Marketing major from Fordham University.

Hedy Lamarr: Wireless Communication

Hollywood actor Hedy Lamarr should actually be the person credited with the invention of wireless communication. During the second World War, Hedy worked closely with George Antheil to develop the idea of "frequency hopping," which would have prevented the bugging of military radios. Unfortunately, the U.S. Navy ignored her patent—and later used her findings to develop new technologies. Years later, her patent was re-discovered by a researcher, which led to Lamarr receiving the Electronic Frontier Foundation Award shortly before her death in 2000.

Alice Ball: Cure for Leprosy

Alice Ball was a young chemist at Kalihi Hospital in Hawaii who focused on Hansen's disease, a.k.a. leprosy. Her research sought to find a cure for the disease by figuring out how to inject chaulmoogra oil directly into the bloodstream. Topical treatments worked, but had side effects patients weren't interested in.

Sadly, Ball became sick and returned home, where she died in 1916. Arthur Dean took over her study, and Ball became a memory—until a medical journey now referred to the "Ball Method." Her method was used for over two decades all over the world to cure the disease.

Marion Donovan: Disposable Diapers

In the '40s, new mothers had very few options for diapers. There was cloth...and that was pretty much it. The daughter of an inventor, Marion's first patent was actually for a diaper cover. She later added buttons, eliminating the need for safety pins. Her original disposable diaper was made with shower curtains, with her final one made from nylon parachute cloth. This new method helped keep children and clothes cleaner and dryer, not to mention helping with rashes. But, of course, diaper companies at first ignored her patent.

Elizabeth Magie Phillips: Monopoly

The invention of everyone's favorite board game has been credited to Charles Darrow, who sold it to Parker Brothers in 1935. But it was Elizabeth Magie Phillips who came up with the original inspiration, The Landlord's Game, in 1903. Ironically, she designed the game to protest against monopolists like Andrew Carnegie and John D. Rockefeller.

Vera Rubin: Dark Matter

Rubin is the astrophysicist who confirmed the existence of dark matter in the atmosphere. She worked with astronomer Kent Ford in the '60s and '70s, when they discovered the reasoning behind stars' movement outside of the galaxy. She's dubbed a "national treasure" but remains without a Nobel Peace Prize because, well, you can guess why.

Margaret Knight: Square-Bottomed Paper Bag

In 1868, Knight invented a machine that folded and formed flat, square-bottomed brown paper bags. She built a wooden model of the device but couldn't apply for a patent until she made an iron model. While the model was being developed in the shop, a man named Charles Annan stole the idea and patented it. Though he received credit for it, Knight filed a lawsuit and finally won the rights to it in 1871.

Dr. Grace Murray Hopper: Computer Programming Language

Hopper created the first computer language compiler tools to program the Harvard Mark I computer—IBM's computer that was often used for World War II efforts. Though it's noted in history that John von Neumann initiated the computer's first program, Hopper is the one who invented the codes to program it. One of the programming languages she pioneered, COBOL, is widely used today.

Caresse Crosby: The Modern Bra

Once upon a time, there was a rebellious gal who was tired of wearing corsets. Enter: Caresse Crosby, who developed the modern bra. She was the first to acquire the patent for the modern bra, AKA a "Backless Brassiere," yet is often left in the shadows because she sold her patent to the Warner Brothers Corset Company.

Ada Harris: Hair Straightener

Marcel Grateau is often credited for the invention of the hair straightener, but it was Harris who first claimed the patent for it in 1893. (Grateau made his claim to fame with the curling iron around 1852, and we certainly know there's a difference.)

Esther Lederberg: Microbial Genetics

Lederberg played a large part in determining how genes are regulated, along with the process of making RNA from DNA. She often collaborated with her husband Joshua Lederberg on their work on microbial genetics, but it was Esther who discovered lambda phage—a virus that infects E. coli bacteria. Despite their collaboration, her husband claimed the 1958 Nobel Prize for Physiology or Medicine for discoveries on how bacteria mate.

Jocelyn Bell Burnell: Pulsars

Jocelyn Bell Burnell discovered irregular radio pulses while working as a research assistant at Cambridge. After showing the discovery of the pulses to her advisor, the team worked together to uncover what they truly were: Neutron stars, AKA pulsars. Burnell received zero credit for her discovery—instead, her advisor Antony Hewish and Martin Ryle received the Nobel Prize for Physics in 1974.

Chien-Shiung Wu: Nuclear Physics

Often compared to Marie Curie, Chien-Shiung Wu worked on the Manhattan Project, where she developed the process for separating uranium metal. In 1956, she conducted the Wu experiment that focused on electromagnetic interactions. After it yielded surprising results, Tsung-Dao Lee and Chen-Ning Yang, the physicists who originated a similar theory in the field, received credit for her work, winning the Nobel Prize for the experiment in 1957.

Ada Lovelace: Computer Algorithm

In the mid-1800s, Ada Lovelace wrote the instructions for the first computer program. But mathematician and inventor Charles Babbage is often credited with the work because he invented the actual engine.

Rosalind Franklin: DNA Double Helix

Franklin's X-ray photographs of DNA revealed the molecule's true structure as a double helix, which was a theory denounced by scientists James Watson and Francis Crick at the time. However, since Watson and Crick originally discovered the (single) helix, they ended up receiving a Nobel Prize for their research.

The ENIAC Programmers: First Electronic Computer

The ENIAC (Electronic Numerical Integrator and Computer) was the first computer ever built. In 1946, six women programmed this electronic computer as part of a secret World War II project. Inventor John Mauchly is often the only one who gets credit for its creation, but the programmers are the ones who fully developed the machine.

Lise Meitner: Nuclear Fission

Lise Meitner discovered the true power of uranium, noting that atomic nuclei split during some reactions. The discovery was credited to her lab partner Otto Hahn, who won the Nobel Prize for Chemistry in 1944.

Katherine Johnson: Moon Landing Path

You may recognize Johnson's name from the 2017 box-office hit *Hidden Figures*. Before her recognition in the film adaptation, Johnson was nicknamed a "computer" for her intelligence. She discovered the exact path for the Freedom 7 spacecraft to successfully enter space for the first time in 1961 and later for the Apollo 11 mission to land on the moon in 1969. She often went unrecognized by her male colleagues and faced racial discrimination.

Mary Anderson: Windshield Wipers

Anderson first came up with the idea of windshield wipers while riding in a streetcar in the snow. She tried selling her device to companies after receiving the patent for it in 1903, but all of them rejected her invention. It wasn't until the '50s and '60s when faster automobiles were invented that companies took to the idea. By then, Anderson's patent had expired, and later, inventor Robert Kearns was credited with the idea.

Nettie Stevens: Sex Chromosomes

Stevens discovered the connection between chromosomes and sex determination. Despite Stevens' breakthrough, her colleague and mentor E.B. Wilson published his papers before her and is often noted for the discovery.

If you have any interest in seeing the original of the article, which includes photos of each person, the link is below:

<https://www.marieclaire.com/culture/g5026/female-discoveries-credited-to-men/>

How Sexist Is Hollywood? Check Out Geena Davis's Spreadsheet

When it comes to quantifying bias in popular entertainment, the Academy Award winner is in a league of her own.

By Chris Colin

- May 25, 2023

The NEW YORK TIMES: "Transforming Spaces" is a series about women driving change in sometimes unexpected places.

Geena Davis and her family were returning from dinner in their small Massachusetts town when her great-uncle Jack, 99, began drifting into the oncoming lane of traffic. Ms. Davis was about 8, flanked by her parents in the back seat. Politeness suffused the car, the family, maybe the era, and nobody remarked on what was happening, even when another car appeared in the distance, speeding toward them.

Finally, moments before impact, Ms. Davis's grandmother issued a gentle suggestion from the passenger seat: "A little to the right, Jack." They missed by inches.

Ms. Davis, 67, relayed this story in her 2022 memoir, "Dying of Politeness," an encapsulation of the genially stultifying values that she had absorbed as a child — and that a great many other girls absorb, too: *Defer. Go along to get along. Everything's fine.*

Of course the two-time Academy Award-winning actress ditched that pliability long ago. From "Thelma & Louise" and "A League of Their Own" to this year's coming-of-age drama, "Fairyland," back-seat docility just wasn't an option. Indeed, self-possession was her thing. (Or one of her things. Few profiles have failed to mention her Mensa membership, her fluency in Swedish or her Olympic-caliber archery prowess.) But cultivating her own audaciousness was only Phase 1.

Next year will mark two decades since the creation of the Geena Davis Institute on Gender in Media. When her daughter was a toddler, Ms. Davis couldn't help noticing that male characters vastly outnumbered female characters in children's TV and movies.

"I knew everything is completely imbalanced in the *world*," she said recently. But this was the realm of make-believe; why shouldn't it be 50/50?

It wasn't just the numbers. *How* the women were represented, their aspirations, the way young girls were sexualized: Across children's programming, Ms. Davis saw a bewilderingly warped vision of reality being beamed into impressionable minds. Long before "diversity, equity and inclusion" would enter the lexicon, she began mentioning this gender schism whenever she had an industry meeting.

“Everyone said, ‘No, no, no — it *used* to be like that, but it’s been fixed,’” she said. “I started to wonder, what if I got the data to prove that I’m right about this?”

Amid Hollywood’s trumpeted causes, Ms. Davis made it her mission to quietly harvest data. Exactly how bad *is* that schism? In what other ways does it play out? Beyond gender, who else is being marginalized? In lieu of speechifying and ribbons, and with sponsors ranging from Google to Hulu, Ms. Davis’s team of researchers began producing receipts.

Ms. Davis wasn’t the first to highlight disparities in popular entertainment. But by leveraging her reputation and resources — and by blasting technology at the problem — she made a hazy truth concrete and offered offenders a discreet path toward redemption. (While the institute first focused on gender data, its analyses now extend to race/ethnicity, L.G.B.T.Q.I.A.+, disability, age 50-plus and body type. Random awful finding: Overweight characters are more than twice as likely to be violent.)

Image

Even when braced for it, the institute’s findings are staggering: In the 101 top-grossing G-rated films from 1990 to 2005, just 28 percent of speaking characters were female. Even in crowd scenes — even in *animated* crowd scenes — male characters vastly outnumber female ones. In the 56 top grossing films of 2018, women portrayed in positions of leadership were four times more likely than men to be shown naked. (The bodies of 15 percent of them were filmed in slow motion.) Where a century ago women had been fully central to the budding film industry, they were now a quantifiable, if sexy, afterthought.

“When she started to collect the data, it was kind of incredible,” said Hillary Hallett, a professor of American studies at Columbia University and the author of “Go West, Young Women! The Rise of Early Hollywood.” “This wasn’t a vague feeling anymore. You couldn’t claim this was just some feminist rant. It was like, ‘Look at these numbers.’”

Ms. Davis is by turns reserved and goofy offscreen — a thoughtful responder, an unbridled guffawer. (At one point she enunciated the word “acting” so theatrically that she feared it would be hard to spell in this article.) On a recent afternoon in Los Angeles, she took a break from illustrating the children’s book she had written, “The Girl Who Was Too Big for the Page.”

“I grew up very self-conscious about being the tallest kid — not just the tallest girl — in my class,” she said. “I had this childhood-long wish to take up less space in the world.”

In time she began to look beyond her height — six feet — to the insidious messages reinforcing such insecurity.

“Hollywood creates our cultural narrative — its biases trickle down to the rest of the world,” she said in “[This Changes Everything](#),” the 2018 documentary she produced about gender inequity in the film industry. The documentary takes its name from the incessant refrain she kept hearing after the success of “Thelma & Louise,” and later “A League of Their Own.” Finally the power and profitability of female-centric movies had been proven — this changes everything! And then, year after year, nothing.

Image

It was here that Ms. Davis planted her stake in the ground — a contention around why certain injustices persist, and how best to combat them. Where movements like [#MeToo](#) and [Times Up](#) target deliberate acts of monstrosity, hers would be the squishier universe of unconscious bias. Did you unthinkingly cast that doctor as a male? Hire that straight white director because he shares your background? *Thought* you were diversifying your film, only to reinforce old stereotypes? (Fiery Latina, anyone?)

It's a dogged optimism that powers Ms. Davis's activism — a faith that Hollywood can reform voluntarily. When she goes to a meeting now, she's armed with her team's latest research, and with conviction that improvement will follow.

"Our theory of change relies on the content creators to do good," said Madeline Di Donno, the president and the chief executive of the institute. "As Geena says, we never shame and blame. You have to pick your lane, and ours has always been, 'We collaborate with you and want you to do better.'"

If a car full of polite Davises can awaken to oncoming danger, perhaps filmmakers can come to see the harm they're perpetuating.

"Everyone isn't out there necessarily trying to screw women or screw Black people," said Franklin Leonard, a film and television producer and founder of the **Black List**, a popular platform for screenplays that have not been produced. "But the choices they make definitely have that consequence, regardless of what they believe about their intent."

He added: "It's not something people are necessarily aware of. And there's no paper trail — it can only be revealed in aggregate. Which gets to the value of Geena's work."

Unique to the institute's efforts is its partnership with the University of Southern California's Signal Analysis and Interpretation Laboratory, which uses software and machine learning to analyze scripts and other media. One tool born of that collaboration, Spellcheck for Bias, employs AI to scan scripts for stereotypes and other problematic choices. (Janine Jones-Clark, the executive vice president for inclusion for NBCUniversal's global talent development and inclusion team, recalled a scene in a television show in which a person of color seemed to be acting in a threatening manner toward another character. Once flagged by the software, the scene was reshot.)

Still, progress has been mixed. In 2019 and 2020, the institute reported that gender parity for female lead characters had been achieved in the 100 highest-grossing family films and in the top Nielsen-rated children's television shows. Nearly 70 percent of industry executives familiar with the institute's research made changes to at least two projects.

But women represented just 18 percent of directors working on the top 250 films of 2022, up only 1 percent from 2021, according to the Center for the Study of Women in Television and Film; the percentage of major Asian and Asian American female characters fell from 10 percent in 2021 to under 7 percent in 2022. A 2021 McKinsey report showed that 92 percent of film executives were white — less diverse than Donald Trump's cabinet at the time, as Mr. Leonard of the Black List noted.

“I think the industry is more resistant to change than anybody realizes,” he added. “So I’m incredibly appreciative of anyone — and especially someone with Geena’s background — doing the non-glamorous stuff of trying to change it, being in the trenches with Excel spreadsheets.”

Ms. Davis has not quit her day job. (Coming soon: a role in “Pussy Island,” a thriller from Zoe Kravitz in her directorial debut.) But acting shares a billing with her books, the diversity-focused Bentonville Film Festival she started in Arkansas in 2015 — even the roller coasters she rides for equity. (Yes, Thelma is now Disney’s gender consultant for its theme parks and resorts.)

“We’re definitely heading in the right direction,” she said. “Bill Gates called himself an impatient optimist, and that feels pretty good for what I am.”

Here is the link to the original article: <https://www.nytimes.com/2023/05/25/business/geena-davis-hollywood-sexism-gender.html?searchResultPosition=1>