

## Air and Space this Week

### Item of the Week

# The Immigrant, Actress, Inventor

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[KEY WORDS: ██████████ Actress Inventor Frequency-agile Jamming]

She was born Hedwig Eva Maria Kiesler in 1914 in Vienna Austria-Hungary. Her father was a Jewish bank manager from what is now Ukraine; her mother was a Budapest-born professional pianist. She had an interest in acting and performing from a very early age, and won a beauty contest at age 12. But this beauty had brains, too, and she also had a great interest in technology. However, the 1930's were a bad time to be Jewish in Austria, especially after the dreaded [Anschluss](#), so she hustled her mother to the United States, but remained in Austria to take acting classes. She got a job as a script girl for a Viennese movie company, and was cast as an extra in one of their productions. A few minor roles followed, and she moved to Berlin where she met a fledgling Russian director, with whom she made one film. She got a lead role in a German comedy, and then she met director Gustav Machaty.

The film industry of the middle 1930's, especially in Europe, were a lot "looser" than the film industry in the U.S. She made a movie in 1933 with Machaty entitled *Ecstasy*. It gained considerable notoriety after distribution, because she had a brief nude and sex scene, and the movie theme was rather adult. She played a young woman trapped in a loveless marriage with a much older man. An affair and suicide were included in the production. The film was banned in the USA because of sex, and banned in Germany because she was Jewish.

But she made many fans with *Ecstasy*, including one of the richest men in Austria, an arms merchant named Fritz Mandl, who pursued her vigorously. Her parents were appalled, since Mandl had ties to Mussolini (and later to Hitler). But she married Mandl anyway, in spite of him being 33 and her being only 18. Mandl himself was half-Jewish, but he insisted that our young actress convert to Catholicism as part of the marriage.

Mandl was a very controlling person. He forbade her from any further acting, and tried very hard to buy up all existing copies of *Ecstasy*. The only bright spot in her life was exposure to the leading scientists and techies of the day, a connection made because of Mandl's arms business.

Like her character in *Ecstasy*, our heroine found herself in a loveless marriage with a man almost twice her age. This time, there wasn't an affair or suicide, but she disguised herself as a maid and fled to Paris, taking with her the valuable jewelry she had amassed as a rich man's wife.

She made her way to London, where she managed to meet Louis B. Mayer, head of MGM, who was scouting talent abroad. He made her an offer to be in MGM films, but it wasn't enough money, so she turned him down. However, she cannily arranged passage on the same ship that Mayer was taking home to New York. She "ran into" Mayer on board, and impressed him enough for him to quadruple the offer she had declined. This time she accepted.

Mayer was very taken with her, and knew her beauty would be a box office bonanza for MGM. [He would promote her as the “most beautiful woman in the world.”] But he worried about her reputation from *Ecstasy*. And, let’s face it, her real name, Hedwig Kiesler, was not very “Hollywood.” She shortened her first name and chose as her new last name of a well-known silent film star.

We know her as Hedy Lamarr.

Her initial roles in the USA were as a “glamorous seductress of exotic origin,” not exactly a stretch. Her first few films were stinkers, but by 1940 she began to appear in top-rank films with A-list stars, and was in several big-budget films in the first half of the 1940s.

Her on-screen persona was quite different from her real life. She did not like to appear in public, and didn’t seem to understand or relish the trappings of stardom. She married a producer named Gene Markey in 1939, but had an affair with an actor named John Loder, the result of which was a son, adopted by Lamarr in 1941 when she married Loder.

When WWII came, Ms. Lamarr wanted to be a member of the National Inventors Council, but was rebuffed with a sniff and a “you can better serve the war effort as a beautiful movie star pushing war bonds.” Sexist, but at first perhaps true; she sold \$25 million in bonds during on ten-day period (and that’s in 1941 dollars; it’d be 14 times that today!).

Lamarr left MGM in 1945, and to the dismay of the Hollywood big shots, she formed her own production company and began producing films. The first two made money, but were not huge commercial successes.

She divorced Loder in 1947, and would marry three more times. The first was a former band leader, the second a Texas oilman who would later marry Gene Tierney, and the last was her divorce lawyer, a marriage that lasted only two years. After her sixth divorce (1965), she remained single for the final 35 years of her life.

She had her greatest film success in 1949, when Cecil B. DeMille cast her as Delilah opposite Victor Mature as Sampson. *Sampson and Delilah* was the highest-grossing film in 1950 and was nominated for five Academy Awards, winning two of them. She had a few other successful films, but after the first few years of the 1950s, her career declined. [One of the films in this period was ill-received flick by a young Irwin Allen, 1957’s *The Story of Mankind*. The [plot](#) was silly, and the casting weird; Harpo Marx portrayed Isaac Newton! Allen would later produce such shlock classics as *Lost in Space*, *The Time Tunnel*, and *Voyage to the Bottom of the Sea*. I loved them then as a kid, but cannot watch them today.]

Lamarr’s later life was somewhat turbulent, including a lawsuit over her “auto”biography, *Ecstasy and Me*. She lost the suit. What got her on my Air and Space this Week’s radar screen was her non-role in Mel Brooks’ *Blazing Saddles* (pardon while I chuckle at the mental image of Mongo decking the horse). There was a running gag through the film where Harvey Kormann, playing the corrupt Headly Lamarr, kept testily correcting the many who called him “Hedy.” Ms. Lamarr sued over that one, too, and lost.

Hedy Lamarr became increasingly reclusive, and she passed away on January 19, 2000 of heart disease, at age 85.

What set Hedy Lamarr apart from other movie stars of the day was related to her interest in technology. During WWII, after being rejected by the National Inventors Council, she kept

thinking about technology, especially military technology. I've mentioned in previous installments of Air and Space this Week the difficulty the U.S. Navy was having with its torpedoes. A torpedo of that era was a fire-and-forget weapon that had to run, run straight in the direction and depth set before launch, and go boom when it got to the target. Ours could run reliably, but that was it. What was really needed was a functional torpedo and a way of actively guiding it to the target.

Hedy had heard that attempts had been made to build a torpedo radio guidance system that could send signals to alter the torpedo's course after launching, but that such signals could be "jammed" by the target. She reasoned that if the sender and receiver of such signals could shift signal frequencies at random but synchronized amounts and intervals, the jamming would not be able to keep up and the torpedoes would hit as guided.

She contacted a tech-oriented composer friend, George Antheil, and together they designed such a system and built a prototype good enough to justify it being awarded a U.S. patent, granted on August 11, 1942. She used her real name at the time on the application, Hedy Kiesler Markey, so the Patent Office wouldn't trash the application out of hand as coming from a Hollywood actress.

The technology could have really helped in the second half of the War, and Lamarr and Antheil generously offered it to the U.S. military at no cost, but the Navy was rather busy, and had a real Not-Invented-Here attitude.

Frequency-agile communications and detection systems came into general use in the late 1950s. Naval ships and sonobuoys used a variation on Lamarr's design in the early 1960s, including the Cuban Missile Crisis.

Today, the spread-spectrum technology Hedy inspired played an important role in the development of Wi-Fi technology, and is presently in use in the Blue Tooth technology so familiar to all of us. The Canadian company, WiLan, acquired a major interest in her original patent, the only financial compensation she ever received for this remarkable invention.

Since her death, Hedy Lamarr's contributions to technology advancement have been receiving a lot more attention, including two off-Broadway shows, a book, a 2017 documentary, and several shows on the Discovery Channel and similar outlets. She was inducted into the Inventors Hall of Fame in 2014.

So the next time you use your cell phone or a blue tooth device, say "thanks" to her achievement. But don't ever call her "Headly!" For more, see:

- <http://www.women-inventors.com/Hedy-Lamarr.asp>
- National Inventors Hall of Fame: <https://www.invent.org/inductees/hedy-lamarr>
- <https://www.cnet.com/news/bombshell-shatters-myth-of-wi-fi-bluetooth-inventor-hedy-lamarr/>

And, didja know, *Batman* co-creator, Bob Kane, modeled the Catwoman character in part after Lamarr, and Wonder Woman Gal Godot will executive [produce and star](#) in an upcoming Showtime Limited Series about the life of Hedy Lamarr!

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