INFORMATION PIONEERS: EPISODE THREE

HEDY LAMARR

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ARCHIVE FOOTAGE begins over:

ADVOCATE (V.O.)
Let me set the scene. Hollywood. 1940. The Golden Age of movies. Paramount. MGM. DeMille.

It’s girl meets boy.

She’s Hedy Lamarr: a smart, ambitious, beautiful actress. He’s a handsome, rebellious piano player and is living next door. They hit it off and fall...

In the STUDIO:

ADVOCATE
...into deep conversation. Because this isn’t your usual girl meets boy. This is girl meets boy - and girl tells boy about a revolutionary invention she’s working on that she hopes will strike a blow to Hitler and help turn the tide of the war in Europe.

This is no Tinsel Town fantasy. It’s the story of how you get to be watching this film, online, right now.

Let’s Flash Back: Vienna, Austria. Early 1930s. Our young actress Hedy, clever - four languages under her belt - feisty and independent, has already made headlines and film history by performing cinema’s first nude scene. Her domineering husband, now a powerful arms dealer in league with Hitler and Mussolini, isn’t exactly thrilled.

But Hedy isn’t going to be silent arm-candy anymore. She bravely takes her life in her hands, running away to make a new start.

ARCHIVE FOOTAGE illustrates:

ADVOCATE (V.O.)
Discovered by Hollywood, Hedy was soon box office dynamite, playing opposite legends like Clark Gable and Spencer Tracy. She was a mega-star, known as the “most beautiful woman in films”.
(MORE)

ADVOCATE(CONT'D)

Not a problem for Hedy, who said it was easy for a girl to be glamorous -- you just had to “stand still and look stupid.” But Hedy was far from stupid - and she had no intention of standing still. She was ready to do what she really wanted.

In the STUDIO:

ADVOCATE

Jump To Summer, 1940 and Hedy’s chance seemed to have arrived. Using her knowledge of military engineering - that first marriage had taught her plenty - she was developing a revolutionary idea and ready to abandon the movies to become an inventor.

Her neighbour, George Antheil, was about to lend a hand. A self-styled ‘Bad Boy of Music’, Antheil had made his name in Europe as an off-the-wall composer, creating music with automatic player-pianos and... well, aeroplane propellers. He and Hedy had many things in common: both were multi-talented, both knew how to cause a scandal, both loathed the Nazis.

ANIMATION illustrates:

ADVOCATE (V.O.)

By now, back in Europe, torpedoes were proving a decisive weapon in the war. Hedy knew from her married life in Austria that efforts to make torpedoes more effective using radio control - rather than actual wire - were plagued by problems. This was because:

-- a signal broadcast on one frequency was unreliable, prone to interference and could easily be intercepted or jammed by the enemy.

Hedy’s breakthrough idea was:

-- to transmit the signal in a pseudo-random pattern so it flittered continuously from frequency to frequency at split second intervals.

-- If a receiver were synchronised to exactly the same pattern then it would pick up the entire message...

(MORE)

ADVOCATE(CONT'D)

-- while those listening would simply intercept the occasional blip, the main signal remaining intact.

Using this technique a high altitude plane could steer the torpedo from above. But how would the transmitter and the receiver work? Cue the piano player.

-- paper rolls, slotted with holes, like those Antheil used to coordinate the automatic player-pianos in his music, could ensure the frequency transmission would stay in sync.

-- put one in the transmitter, send the other off in the receiver, trigger them at the same time and start broadcasting.

-- the system would even operate over 88 wavelengths... The same number of keys on a piano. ‘Frequency Hopping’ had been created.

Back in the STUDIO:

ADVOCATE

Incredible. And all this time Hedy’s holding down a day job as a Ziegfeld Girl for Busby Berkeley alongside Judy Garland.

The National Inventors’ Council were keen and, after more development, Hedy and George patented the idea as a ‘Secret Communication System’, and gave it to the U.S Navy entirely free to help the Allies. It could’ve changed the war - and Hedy’s life...

...until the top military brass put the brakes on. A Hollywood starlet and piano player? Inventors? The idea - and people behind it - were dismissed out of hand. Impractical. Unworkable. Hedy was told to stick to showbiz and use her famous face to raise money for the war effort.

ARCHIVE FOOTAGE illustrates:

ADVOCATE (V.O.)

So how did U.S Battleships achieve secure communications in the late 50s and during the Cuban Missile Crisis?

(MORE)

ADVOCATE(CONT'D)

How were drone planes controlled during military campaigns? Using a system based on Frequency Hopping. New technical knowhow - electronics replacing the paper rolls - had put the idea centre stage. Hedy wasn’t mentioned. By then her patent had expired. So had her box office status. And Antheil had passed away in 1959.

Now we have to Flash Forward - because ‘Spread-Spectrum Technology’ which works on the same basic principles Hedy outlined, is now also used:

-- to carry information from satellites orbiting the earth, for the military and our GPS systems

-- *And* was at the heart of the mobile phone revolution.

Back in the STUDIO:

ADVOCATE

Hedy lived just long enough to finally receive recognition for her work with an award, in 1997, from the Electronic Frontier Foundation. Inventor’s Day is celebrated in Austria and other countries now on Hedy’s birthday. And her idea is still evolving.

ARCHIVE FOOTAGE illustrates:

ADVOCATE (V.O.)

If you’re watching this film right now on a wireless connection... Then that is, in part, thanks to Hedy Lamarr.

And of all the many roles she played, that of inventor is probably the most amazing.

END