

## Historical Notes: The Fantastic Lives of Hedy Lamarr

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Recently I watched a very interesting and well-evidenced documentary film about Hedy Lamarr (born Hedwig Eva Maria Kiesler, 1914–2000) on the BBC iPlayer [1]. It was a heart-warming account of the life of this extraordinary woman, whose image for many people is forever defined by her appearance. Hedy is known to many only as a Hollywood star rather than a refugee or an inventor. Indeed, that is how she came to be famous. At the same time, she was herself aware of the image that others had of her – and capitalised on it in her cinematic undertakings. By all accounts an immensely intelligent woman, Hedy took things that came to her and made the best of them. It was, of course, not always easy. Of Jewish origin, she was first married to an arms manufacturer in pre-World War II Vienna. Some years later, when she went to live in the US, she raised many millions to help the Allies’ war effort. In this period, she met a musician, George Antheil (1900–1959), an American composer of German origin, and they began working on a patent that lies at the heart of wifi and Bluetooth technology.

met her first patron – Louis B. Mayer, the then head of MGM Studios. She possibly remembered this trip that saved her from the Nazis when she came up with the idea of making a weapon that could destroy enemy ships. Torpedoes at that time could be intercepted as they were radio-controlled. Lamarr and Antheil developed the idea of using a frequency-hopping system that would randomly change the signal between the control centre and the torpedo, thus making interception impossible or highly unlikely. Antheil, who was a musician interested in mechanical pianos, came up with the idea to control such a frequency-hopping sequence using an instrument similar to a mechanical piano.

You can still see the patent – it was filed on 10 June 1941 and registered on 11 August 1942 [2]. However, the patent did not meet with the approval of the US Navy – perhaps the fact that Lamarr was originally from Austria and that Antheil’s parents were German immigrants may have played a role in this. Of course, Lamarr was also Jewish, but never made that public. During the time when she invented this idea and registered the patent, she was stateless. She renounced her Austrian citizenship in 1938 but wasn’t naturalised until 1953. It seems that for one reason or another, this patent was not used at the time. Thus, it expired and was used by the US Navy only in 1962, during the Cuban crisis [3].

However, that is not the end of the story. In 1997, the Electronic Frontier Foundation gave her an award for this invention and in 1998, WiLAN, a wireless technology developer, acquired 49% of the marketing rights of her patent from Lamarr for an undisclosed amount of stock. It would be an understatement to say that I was pleased to hear about that: she certainly deserved the recognition for her invention.

At the IMA, we have celebrated her life and achievements by naming a Prize for Knowledge Exchange in Mathematical Sciences after her ([ima.org.uk/awards-medals/ima-hedy-lamarr-prize/](http://ima.org.uk/awards-medals/ima-hedy-lamarr-prize/)). It is every generation’s task to remind us of the people who have contributed to humanity in their many ways, particularly those who may not have been recognised or accepted in their own time. As I was learning about Lamarr, I was struck to see how she seemed to have had all the bad and good luck bestowed upon her at the same time. However, what I found particularly poignant is her remembrance of the country and city of her birth: in some of the last moments of this documentary, she speaks about how much beauty there was in Vienna, and how life was joyous when she was a young girl. Of course, that was before the rise of the Nazis and World War II. Etched in my memory is something she said at the very end of this film and which begins with her view of the world [1]: ‘People’, she said, ‘are unreasonable, illogical and self-centred. Love them anyway.’

### REFERENCES

- Dean, A. (2017) *Hollywood’s Brightest Bombshell: The Hedy Lamarr Story*, [tinyurl.com/BBC-Lamarr](http://tinyurl.com/BBC-Lamarr).
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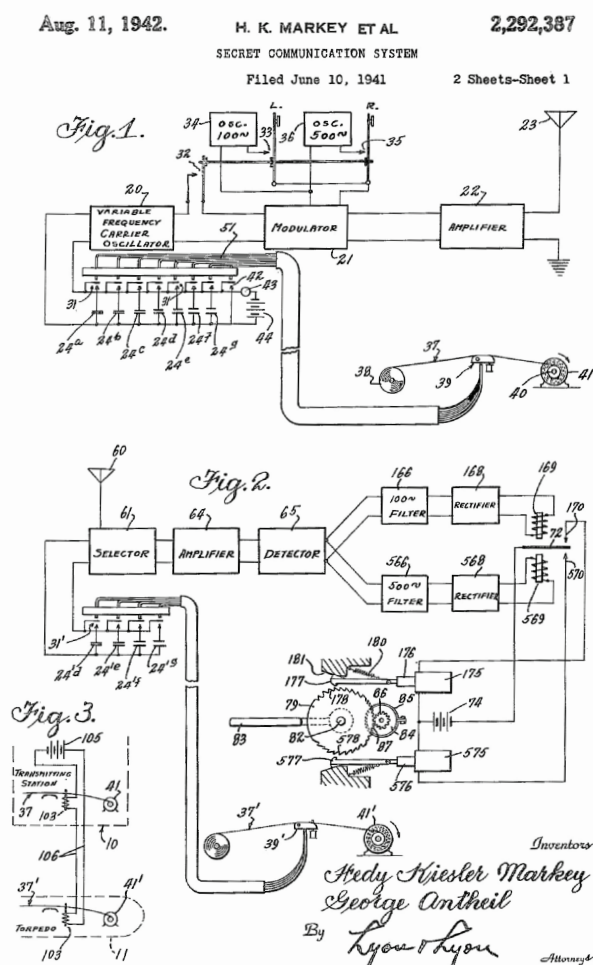


Figure 1: A page from Lamarr’s patent [2].

The idea originated with Lamarr, although this has been disputed many times – perhaps she could not have known it being a woman or perhaps she learnt about it from others? Lamarr, of course, travelled to the US on a ship: it was here that she, in fact,