

## THE ONLY WOMAN IN THE ROOM: HOW ERA, CULTURE, AND SOCIAL NORMS INFLUENCED TWO VERY DIFFERENT WOMEN, HEDY LAMARR AND CAROLINE SEELIG

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### ABSTRACT

This is a reflection upon the life and contributions of two women who never met: Hedy Lamarr and Dr. Caroline Seelig. Born in different countries and generations, their combined life's work has coalesced into a system of innovation that has changed the landscape of communication technology and education, giving rise to positive global change; inevitably, bringing them together for this celebration. A candid sentiment of the influential factors of culture, era, and social norms influencing these women becomes apparent via this presentation of of the milestones of each woman's life and career in parallel with the social and political influences of their geographical space and time. Reflecting on major equality timeline markers in both the United States and New Zealand, the two primary career locations influencing each woman, we witness how each woman's experience unfolded differently. Upon revisiting the unique social and cultural mores influencing two very similar, progressive, and brilliant women, we take special care in revering their accomplishments in their truest context as a reminder of the importance to our continued efforts to identify and remove barriers.

**Keywords:** Education, technology, communication, innovation, LMS, women, role models, Caroline Seelig, Hedy Lamarr

### INTRODUCTION

To present the accomplishments of Hedy Lamarr and Dr. Caroline Seelig through my personal lens would be to evaluate with a different system of values, experiences and opportunities granted due to my personal upbringing in an era and place completely unrelated to either women. As such, there is a need to view both women's accomplishments from the time and place of which they existed to more fairly portray why their performances deserve recognition. Historical milestones for women and minority groups' rights become a hindsight representation of the cultural progress, or lack thereof, within a society. Laws, rights, value systems, and privileges influence social mobility and their passing into legislature comes about with the alignment of cumulative social and political values and attitudes. It is for this reason that a depiction of the political climate of these women's rights of their times will also be considered in parallel with their achievements, as understanding these influences will provide authenticity into the challenges and opportunities influencing the mobility of these and many other women in society.

## A Review of Relevant Literature

The study of social mobility defined by Stephen Aldridge observes “the movement or opportunities for movement between different social groups, and the advantages and disadvantages that go with this in terms of income, security of employment, opportunities for advancement, etc.” (Aldridge, 2001, p. 4). The StudySmarter website discusses two main types of social mobility. The first is *absolute mobility*, which refers to the “total number of people moving from one social class to another” (StudySmarter, 2023), which can be seen when there is large change in mobility for everyone within the economy. The second type is *relative mobility*, which refers to the change in position of one individual as they move up or down in positions of power in society (StudySmarter, 2023). The site goes further to identify six generally agreed upon “factors that affect social mobility” (StudySmarter, 2023), including: “the economic structure of society, an individual’s occupation, their parents’ occupation, social class of origin, gender” and “ethnicity” (StudySmart, 2023). Out of these six barriers, it could be argued that only career choice is influenced by personality, while the other five are either assumed (like gender) or are a result of environmental influence.

To support an egalitarian society, the aim would be to remove all environmental barriers to social mobility, thus leaving only personal choice as a determinant of social mobility. The deduction of what impacts choice of occupation appears to boil down to two main influential factors: 1) genetics and 2) environment (Lim, 2023). Parsing out the differences between personalities is important in determining impact on life choices. However, one study by Weisberg et al. determined that, in alignment with other studies, the similar differences found “are small to moderate” (2011, p. 10), and though this information is important to know in relation to influencing personal choice, the same study was “optimistic” (2011, p. 10) that communication issues between men and women were more likely a result of an adjustable cultural value system than a fixed disposition (Weisberg et al., 2011).

Genetic factors influencing personality are not however, the focus of this article and are not disputed here as a contributor to a person’s mobility in society. Where this article detours is in its attempt to display how influential environmental factors of culture and social norms for the times impacted the social mobility of Hedy Lamarr and Caroline Seelig. Through a brief tour of historical landmarks, we will look at the cultural views of each country through their development of laws and legislation for women’s rights, and through a discussion of how the simultaneous events in the lives of both women gain increased knowledge and awareness of the past, in hopes for progress to reduce barriers for future generations.

## A Brief Introduction to Two Pioneers

Upon first learning of Hedy Lamarr and Dr. Caroline Seelig’s contributions, the sheer determination and self-regulation with which they persevered through life to achieve their goals elucidated their extreme passion and deviation from the norm. Evidently both women demonstrated exemplary achievements, taking risks, pushing boundaries, and setting achievements, thus providing avant-garde role models for their times. Lamarr passed on January 19th, 2000, but the digital world is inundated with commentary on her life as an actress that moved from Austria to the United States and later becoming an inventor, presenting elements of Hollywoodized complexity mostly unknown to the everyday person (Pool, 2021). Developing a legacy firstly via her acting, it was one of her innovative ideas that initiated the revolution of how communication technology was designed, creating a positive impact for the lives of millions, or perhaps billions, of people. Tantamount to Lamarr is the life of Dr. Seelig, who devoted 30 years of her life to advancing innovation in online distance learning (ODL; Open Polytechnic Kuratini Tuwhera, 2022). Highlighting the

passion, challenges, and pursuit of innovation in the field of communication and online, distance, flexible learning (ODFL) by Lamarr and Seelig is a privilege and an honour.

## THE TIMELINE OF HEDY LAMARR

### Start at the Beginning

In 1914 Hedy Lamarr, née Hedwig Eva Maria Kielser, was born (Cheslak, 2018). This was the year that Great Britain declared war against the Germans and WWI had begun (Lindsay, 2014). Lamarr was the only child born to “a well-to-do Jewish family” (Cheslak, 2018) living in Austria at the time, where the influences of her father and mother seemingly ricocheted throughout the course of her life’s work. Her father was a bank director (Cheslak, 2018) and, as discussed in a documentary by Angela Dean, coached her curiosity with the discovery of the “inner workings of different machines” (2021). Conversely, her mother focused on developing her exposure to the arts with piano and ballet lessons at an early age (Cheslak, 2018). Wikipedia states that at this time in Austria, women’s suffrage was beginning and, after the war was over in 1919, permission was granted for women to vote. However, as there were concerns about how women’s votes would “affect the political landscape” (Wikipedia, 2023a) women and men voted using different colored envelopes until 1930 (Wikipedia, 2023a). Born in a time when women’s voting rights (hence, “opinions”) were still considered questionable, Hedy Lamarr maintained her independence of thought, and followed a career path of her own choosing.

### The “Becoming” of Hedy Lamarr

In 1930, at 16 years of age, Lamarr’s acting talent was established as she took her first role in a “small German film called *Geld auf der Straße* (“Money on the Street”)" (Cheslak, 2018). Two years later, Lamarr took a provocative role in the film, *Ecstasy*, where her unorthodox performance of an orgasm gained controversial popularity, as this was likely the first time such acting was ever broadcasted (Dean, 2021). A comprehensive documentary done about the life of Hedy Lamarr by Angela Dean showed that Lamarr later reflected on her reaction to this early performance in her career, as she resolved to find redemption with a conclusive, “I’ll show them” (Dean, 2021). Her incitement to immediately absolve her name spawned her role in Fritz Kreisler’s musical *Elizabeth of Austria* (Dean, 2021), where her performance tempered her previous tendentious reputation and eventually introducing her to her first husband in 1933, popularly known as an “Austrian munitions dealer, Fritz Mandl” (Cheslak, 2018).

Already off to an exhilarating start at 19 years of age, Lamarr’s life snowballed on a Hollywood sized scale as her marriage to Mandl proved to be “unhappy” (Cheslak, 2018) and unstimulating (Dean, 2021), as her role of the happy hostess wife entertaining and learning details of business meetings (Cheslak, 2018) proved unfulfilling. Lamarr described her role as “a doll” or a “thing,” some object of art which had to be guarded and imprisoned—having no mind, no life of its own” (Cheslak, 2018). A fundamental shift in her life’s course corroborating her innovative potential was her escape from Mandl as she dressed as a look-alike housekeeper and fled on bicycle. This life turn took her to refuge in England with family friends (Dean, 2021) in 1937 (Cheslak, 2018), where she met the end of her life as she knew it.

### Meanwhile, Attitudes across the Ocean

While in England, Lamarr met an American, Louis B. Mayer, who was the co-founder of MGM studios (Dean, 2021), and his nearly immediate intrigue with her decidedly cemented her

future in Hollywood. Granted, the Civil Rights Act prohibiting discriminatory behavior based on race, color, religion, national origin, or sex, would not be passed for almost another 30 years in the U.S. (National Women's History Alliance, 2023). Hence, Mayer's low-balled offer of \$125 weekly to act for him in Hollywood, one quarter of what she finally settled on, was not entirely surprising. Granted, she did agree to change her name to Hedy Lamarr. This was all done in a time when she "didn't speak a word of English" (Dean, 2021). Kudos to you, Hedy, for by-passing those barriers when you championed the art of salary negotiation as a non-English speaking, female immigrant in the 1930s.

To fathom Lamarr's struggle for mobility upon entering the United States, we must also consider her social and political environment to develop a more authentic depiction of her position. WWII saw further increase of women in the workforce, hence there was a demand to make laws more amenable to women's needs. In 1936, not long before Lamarr moved to the United States, one single type of birth control was legalized. However, it was not until 1965, that married couples would be allowed to use them and, in 1972, there would be a right to privacy in their use (National Women's History Alliance, 2023). While Hedy did have three children, she was "a single mom in the 40's" (Dean, 2021), yet still managed to meet the hectic demands of a Hollywood actress. Hedy's son, Anthony, was quoted in Dean's documentary as saying that his mother "worked like a racehorse" (Dean, 2021), and was given pills to stay awake and to sleep. The same documentary recounts where Betty Davis called it "the slave system," saying they, as actresses, "were owned" because extensive contracts bound them to the studios' demands (Dean, 2021). It was not until 1978 that the Pregnancy Discrimination Act prohibited discrimination against pregnant women (National Women's History Alliance, 2023) as there were very few concessions made for working and pregnant mothers at that time. Lamarr's work followed the natural ebb and flow of show business, but the 1940s may have been her busiest years when she starred in movies such as *Boomtown*, *Come Live with Me*, *Comrade X*, and *Ziegfeld Girl*, working six day weeks and many hours per day (Dean, 2021).

### **Actress by Day, Inventor by Night**

Perhaps what truly separated Lamarr from others in her field was her love of invention that she engaged in during her limited spare time. A brief relationship with Howard Hughes, who sought to improve airplane designs, may have ignited her love of invention and he shared his researchers with her to support her inventions. Lamarr had an invention space at home and at work, too, where Howard made her a small setup to tinker in during breaks while on the film set. Hedy's creative mind combined ideas from fish and bird books that allowed her to invent a wing design to increase plane speed, since she thought that airplane wings should not be "square" (Dean, 2021). Hughes was later quoted to have called her "a genius" (Cheslak, 2018), but her genius did not end there. Her next design was for Coca-Cola, which was unavailable during the war, so she made a pill dissolve in water to replicate the drink. Lamarr later claimed laughingly in an interview that this was "one of" her "boo-boos" (Dean, 2021) as she recalled "every state has different strengths of water" (Dean, 2021). causing the tablet to sometimes dissolve on the bottom, middle, or top of the glass (Dean, 2021). A forgivable oversight for a hobbyist, untrained inventor, yet imagine her potential if she had formal engineering training. It would not be until 1972 that discrimination in educational programs receiving government supports would be prohibited, and again later, in 1974, where the Women's Educational Equity Act "fund[ed] the development of nonsexist teaching materials and model programs that encourage[d] full educational opportunities for girls and women" (National Women's History Alliance, 2023).

### **The Necessity of Lamarr's Innovation**

In Dean's documentary, Lamarr's son, Anthony, reflected upon his mother's attitude, "In times of crisis most of us feel powerless, but few discover in themselves unexpected strength, and Hedy being Hedy, she said 'I'm gonna do something about that'" (Dean, 2021). In 1940 she met George Antheil whose distaste for Hitler and creative mind (Pool, 2021) aligned perfectly with her interests to "combat the axis powers" (Cheslak, 2018). A tragedy at that time, when a German U-boat sunk a passenger ship and killed 293 people, motivated Lamarr to work with Antheil where she wrote in her journal that she "tried to think of some way to even the balance for the British" (Dean, 2021) and she thought that "a radio controlled torpedo would do it" (Dean, 2021). The German U-boats continually evaded the allies' torpedoes because they were able to jam the single frequency guiding it. The genius of Lamarr truly came to light when she determined that the frequency must continually change, or hop, which would inevitably make the tracking of the signal more challenging (Pool, 2021). Antheil had a unique background in aligning pianos by synchronizing them using "punched tape" (Pool, 2021). They determined that the same idea should work to align radio frequencies with two perforated rolls managed with "calibrated clockwork motor drives to switch the signal between the transmitter and torpedo" (Pool, 2021). As a result, the drives would be set off at the same time when a pin released as the torpedo was fired (Pool, 2021). In this way, the communication from the transmitter to the torpedo was protected such that, even if one segment of the transmission was intercepted, the frequency would continually change and hop to the next frequency, continuing the communication with the torpedo (Dean, 2021). Through switching the frequency, the Germans would not be able to log onto a single frequency as before, allowing the British to increase their success rate with their torpedoes. Karl-Arne Markstrom, a Union Radio Scientific Internationale member and consultant for command and control systems stated that, "frequency agility" (Pool, 2021) was not a new idea but that he was not aware that "anyone had thought of using it to protect communications" (Pool, 2021). Lamarr's work in partnership with Antheil developed the idea to use frequency hopping technology for communication to thwart enemy torpedoes, but also laid the groundwork for today's Wi-Fi, GPS, and Bluetooth technology (Pool, 2021).

### **Lamarr's Achievements**

Lamarr's richness of beauty impacted the global economy, and at a young age, her currency was strongly connected to it. Her contributions to the economy via her Hollywood movies and even before Hollywood, her films, and acting productions as a teen in Austria, already had great economic impact. People wanted to see Lamarr, yet her established value conflicted with her natural interests. Hedy expressed in an interview how she loved and was "good at" (Dean, 2021) chemistry, while Dean's documentary also acknowledged that "in a different era she might very well have become a scientist" (2021). Where today the aim is to grow into your desired choice of career, Hedy was unable to disconnect from her first assigned part in society and, as such, her environment was unable to comprehend her complex nature, confining her to a limited role in society.

It is a good testament of the times that the woman best known as the "mother of Wi-fi" (Cheslak, 2018), never received financial gain for her invention (Cheslak, 2018), yet her clever design will live on, deeply impacting information accessibility, and advanced communication methods on a global scale. Though it was her brilliant mind and perhaps her extraverted nature that contributed to her accomplishments, her environment definitely played a part in her inability to advance in her field.

To fairly address Lamarr's achievements, it is vital to highlight that she and Antheil did eventually get a design patent in 1942 and, while Antheil marveled at the compact size of its design, the U.S. Navy did not give it consideration, declaring that it was "too heavy"

(Pool, 2021). Pool noted that “the Navy wasn't willing to take the work of an actress and a pianist seriously” (2021). Due to her Austrian heritage, they documented it as “property of an enemy alien” (Pool, 2021). The dismissal of their shelved invention was not terminal, for it was later used in the 1950s for a sonobuoy invention that detected submarines and communicated with planes using sonar, and again in 1962, when US naval ships used frequency-hopping to guide their torpedoes in the Cuban Missile Crisis (Pool, 2021). Two awards were finally given to Lamarr, first “the American Electronic Frontier Foundation’s Pioneer Award” (Pool, 2121) in 1997 and then, fourteen years after she died, Lamarr was “inducted into the National Inventors Hall of Fame for helping to create an early form of wireless communications” (Pool, 2021). When the world was ready to listen, her contributions were finally acknowledged.

### **A REFLECTION ON THE STRENGTH OF WOMEN – FOR THE TIME**

People of today may not be able to easily relate to the nuances impacting the daily lives in a time when many rights were not yet granted to women. Back then, socialization of women favored proper comportment over academia, and “encouraged a polished young lady to hide her intellectual prowess for fear of frightening away suitors” (Wikipedia, 2023b). While Hedy did not share the rights of men, her acting and invention career highlighted how she used her natural skills to work within an environment that was not always aligned with the progressive ideas of a pioneering, inventive woman. Her high tolerance for risk and her economic privilege allowed her to pursue non-traditional roles when women were just beginning to work outside the home, while her disagreeable nature negotiated her four times her original salary offer with Mayer. Lamarr’s life position evolved to a place of increased empowerment, despite mobility limitations. This, combined with her innovative mind and curiosity, encouraged her to push her inventions through social and political barriers of which many of us cannot fathom.

Upon facing the U.S. Navy with George Antle, she was quite aware of her limitations within society. The idea that a Hollywood movie actress could possibly contribute to the United States Navy military weapons defence system was alien, and challenged the ideals and power structure that existed at the time. Her audience, conditioned to watch her films, were not yet ready to listen, and responded to her invention by taking the invention and leaving her with the petty insult of calling her an “enemy alien” (Pool, 2021). The unconditioning of a society takes time, and generations of value systems do not change simply because new laws are passed.

Having strong female role models allows us to see our own potential, and it is perhaps something that Hedy did not have. We may all do better with a trail blazing mentor such as Liz Burge, another female pioneer interviewed by Bainbridge and Wark (2023), who understood the politics of navigating the system. Liz discussed the challenges faced in ODL as she described her method of dealing with “men who don’t think that women are as clever as they are” (Bainbridge & Wark, 2023, p. 48). She stated that she learned fast that “it always paid off to talk to the boss, who has to say yes or no, and tell them how they will be positioned in the activity” (2023, p. 48). Liz made it clear that she was “always careful about that so they know that they’ve had a good slice of the pie, even though I did all of the work” (2023, p. 48). It was clear to Liz that, to minimize problems, she needed to “make sure that everybody who needs to be involved can get something out of it in the end” (2023, p. 48). It was perhaps the most insightful as she concluded, “And I make it very important if I’m standing out launching something or I’m telling people something new that’s going on, I’m always very careful to make sure that the people sitting in the front row and the people in the very back are saying, “Yes, we did this!” (2023, p. 48). Born in a later time, the women of Liz Burge’s and Caroline Seelig’s era were navigating the system, a function that Lamarr’s generation was just beginning to figuring out.

### **Fast Forward to the U.K.**

Indeed, the remarkable life and achievements of Lamarr propelled her into an exclusive subset of the population. While her invention and acting career was coming to an end, across the globe in the United Kingdom, Caroline Seelig was beginning her professional career as a research biologist. Her growth in this field led her to branch into teaching secondary school and, in a later interview with Bainbridge and Wark (2023), she reflected on how a “wanderlust” gradually prompted her to move to New Zealand. Dr. Seelig adeptly began navigating her career path through various senior management roles throughout four of New Zealand’s polytechnique institutions. This style of educational institution originated in New Zealand during the 1880s, and was designed to deliver skilled trades and technical skills for learners joining the workforce immediately following grade school (Pollock, 2012). The New Zealand Ministry for Women published a timeline of women’s suffrage celebrating that, around this time in 1873, the Employment of Females Act secured standards for working conditions for women. Shortly thereafter in 1893, New Zealand’s women became the first in the world to receive voting rights in general elections in a self-governed country (Manitu Wahini: Ministry for Women, 2018) thus raising the bar for the suffrage movement across the globe. In comparison, it would be almost 30 years later that this right was granted to the women of the U.S. (National Women’s History Alliance, 2023).

### **Transition to ODL**

Upon moving to New Zealand, Dr. Seelig entered an Academic Management position at Tai Poutini Polytechnique in Greymouth where her growing interest prompted her to obtain a Masters of Educational Administration. She later transitioned to the Eastern Institute of Technology in Hawke’s Bay and then the position of Deputy Chief Executive at Nelson Marlborough, which is a vocational training facility that mostly delivered traditional classroom style teaching. It was here that she started working with ODL as the organization started transitioning course materials and resources online using Moodle. This may have been the turning point where Dr. Seelig recognized herself “enjoying the flexibility and power of online learning” (Bainbridge & Wark, 2023, p. 332). In her interview with Bainbridge and Wark, she reflects back on her insights and the potential of ODFL, recognizing that learners want “flexibility...choice, and...personalization” (p. 334). She recognized that traditional classroom-based institutions were trying to become more flexible, but at the same time, were “going against the very culture” (p. 335) of its primary service (2023), which was traditional face-to-face learning in a classroom. This was a contradiction that she knew needed to be resolved to maximize resource utilization and learner potential.

After spending nine years at Nelson Marlborough (Stuff, 2009), Seelig moved to the Open Polytechnique of New Zealand, as Chief Executive (Bainbridge & Wark, 2023) where she spent 14 years before completing her tenure in 2022 (Open Polytechnic Kuratini Tuwhera, 2022). Cadwallader et al. reported that this Polytechnique differed in that it was a “specialist provider of ODFL” (p. 1), with over 70 years of experience delivering vocational educational training (VET; 2019). As was captured in the Marlborough Express, its national portfolio required the maintenance and building of effective global opportunities, alliances with polytechniques, and the industry training sector supporting almost 30,000 learners from over 40 countries. Dr. Seelig’s enthusiasm for the transition was evident and her culmination of experience, qualifications and disposition aligned her with what she recognized to be “the fastest-growing area of education in the world” (Stuff, 2009).

### **Rising to the Challenge**

Dr. Seelig's transition to ODL came at a time when New Zealand was searching for solutions to the nationwide shortage of skilled workers and the financial struggle faced by the country's VET institutions and polytechniques. The Education Minister called for a transformation of the entire ODL structure in a way that optimized the use of technology to maximize opportunities for existing workers and those just beginning to enter the workforce (Cadwallader et al., 2019). This was a challenge that Dr. Seelig understood well, realizing that the transformation of the Open Polytechnique of New Zealand (OPNZ) ODL program was necessary to support the reform of the New Zealand's vocational education and training (VET) system.

### **Living the Transformation**

The Open Polytechnique originated as a specialized institute delivering trade-based courses using primarily text-based delivery methods to returning war veterans (Bainbridge & Wark, 2023). Dr. Seelig was aware that advancements in technology allowed formerly non-ODL institutions to begin to offer ODL programs in an attempt to gain market share by appealing to part time adult learners, who were the primary staple customers for ODFL institutions, such as OPNZ. Dr. Seelig also recognized the broader influences impacting the problem for ODFL providers including, troublesome technologies, funding limitations, globalized education, and the changing needs for learners. This required a review of how ODFL was delivered to ensure that it was competitive in meeting the needs of learners and organizations within this changing environment (Seelig et al., 2019).

### **Design and Innovation at The Open Polytechnic**

Upon first moving to the Open Polytechnic, Dr. Seelig promptly began the first part of the setup to convert libraries of print-based materials to a digital format for upload into the learning management system (LMS). This was a monumental task for an organization offering more than 100 programs, requiring volumes of content and data to be transferred. However, this was a small task in comparison to the second part of the institution's transition, which required transforming the models for teaching, learning, delivery, assessment, and practice to align with work areas to ensure support for the work culture and environment (Seelig et al., 2019). In addition, Dr. Seelig was making plans to develop a new LMS (iQualify) to align current learner needs with ODFL priorities. The organization set out to work with other partners, organizations, government groups, and other educational institutions, so that the context of vocational educational training (VET) could be customized by learners to maximize the community of learning (Bainbridge & Wark, 2023).

### **Data Analytics**

In alignment with the aforementioned transformations, Dr. Seelig recognized the power of data analytics to provide necessary feedback to learners, trainers, partners, and organizations to enable them to better support learners' performance. While older ODFL models sometimes lost printed assignments in the mail or received them for grading with little knowledge of learners' performance issues, iQualify offered data analytics feedback immediately. This way, relevant stakeholders could identify data regarding advancement in a course, time spent in a content area, how some learners compare with other learners, if assignments or activities are completed or submitted, and how often learners log in. This immediate data access allows the organization to determine not only who is struggling, but also what they are struggling with—hence, allowing it to be proactive with support and augmenting learner chances of success. There is also a predictive feature that allows input



data to be compared with other demographic information to “help predict learner success based on data from previous learners’ results” (Seelig, 2018, p. 14). Dr. Seelig acknowledged that this potentially poses some ethical concerns and questions that need to be further discussed, and requires the implementation of policies to ensure adherence to consent and privacy laws on personal information (Seelig, 2018).

### **The Power Of ODFL**

Dr. Caroline Seelig oversaw the redesign of ODFL at OPNZ to meet the varied needs of learners and organizations by seeking to understand and meet changing global demands (Seelig et al., 2019). Through the process, Dr. Seelig recognized that one of the biggest challenges for ODFL was how it was viewed and, as such, it was compared to traditional face-to-face learning using evaluation rubrics that conveyed success metrics used for traditional classroom-based learning. Despite this unfair system of measurement, in her interview with Bainbridge and Wark, Dr. Seelig shared that the ODFL program at OPNZ “tripled...qualification outcome” (p. 337) and increased completion rates by about ten percent, thus raising its statistics to meet those of traditional classrooms (2023). However, Dr. Seelig understood that the power of distance education was much broader than performance metrics. She recognized how other countries used ODL in powerful ways; for example, in cases where women cannot talk to male teachers, or where ODL is the only learning option in some war-torn countries. She also saw that ODL continues to shine in the case where education is given to students who may never otherwise receive it due to “religious persecution” (Bainbridge & Wark, 2023, p. 338). Dr. Seelig recognized that the power of ODFL lives in “the anytime, anyplace, anyone, any pace” (Bainbridge & Wark, 2023, p. 334) functionality, and that it challenges the barriers of traditional classroom-style teaching, opening doors for accessibility, opportunity and social mobility for all persons in society (Bainbridge & Wark, 2023).

### **Suffrage: U.S. versus N.Z.**

In 1914, New Zealand’s Public Servants Association demanded “equal pay and privileges” (Manitu Wahini: Ministry for Women, 2018) for women in the workforce, almost 50 years before the U.S. (National Women’s History Alliance, 2023). The value of 50 years of progress is seen in Dr. Seelig’s innovative work in ODFL, which used distance education tools to increase access to education and improvement of numeracy and literacy for New Zealand’s inmate population (Seelig & Rate, 2014). Dr. Seelig’s work put forth the design and implementation of a customizable LMS for its learners and partners that was “intuitive” (p. 332) and fostered social education, while being versatile and able to report personalized data on its learners (Bainbridge & Wark, 2023). Cadwallader et al., in recognizing the need to meet global educational demands, funding constraints, and skilled trades shortages, noted that OPNZ was re-structured with the potential to support “radical reform of a national network of VET” (2019, p. 1), innovating optimal delivery strategies for learners, organizations and other partners at a national level.

### **Seelig’s Achievements**

As a result of the transformative effect that Dr. Seelig’s vision has had, The Open Polytechnic was recognized for the Commonwealth of Learning Award of Excellence for institutional achievement in 2013 (Bainbridge & Wark, 2023). Dr. Caroline Seelig humbly acknowledged, that “The distinguished award is a wonderful recognition of the excellence in design and innovation that exists across the open polytechnic, that combined with the approach and expertise of staff, creates an environment focussed on learner success.” (Open Polytechnic, 2022).

In addition to that, Dr. Seelig worked with the New Zealand government to develop solutions within the Open Polytechnique to support prisoner rehabilitation to increase literacy and numeracy levels for inmates. The Open Polytechnique recognized the unique situation in providing education to the inmate population and worked to develop four qualifications to support successful rehabilitation into society that was recognized by the Department of Corrections. The programs were designed to build upon each other, and feedback reported from the educators within the penitentiary noted elevated levels of self-esteem among participants, who before “had never achieved success in education during their lives” (Seelig & Rate, 2014, p. 3).

The contributions made through the efforts of Dr. Seelig through the Open Polytechnique extend beyond New Zealand’s inmate population to society at large. For instance, Dr. Seelig oversaw the implementation of new designations for ākonga students, meeting industry requirements in such areas as “social work, teacher education, financial services, health and wellbeing, information and communication technology, and te reo Māori” (“Open Polytechnic Kuratini Tuwhera, 2022). In addition, overseeing the implementing of the iQualify LMS, with tools that provided data analytics to monitor learner performance, offered a huge benefit. This added to the monumental feat of the Open Polytechnique performance levels “that [were] amongst the best in the world” (Open Polytechnic Kuratini Tuwhera, 2022) within ODL institutions. The achievements earned the Open Polytechnique the 2022 Excellence for Institutional Achievement from the intergovernmental organization, the Commonwealth of Learning (COL; Open Polytechnic Kuratini Tuwhera, 2022).

## CONCLUSION

Hedy said it best, “the minds of people are far more interesting than the looks” (Dean, 2021). Her statement reflects her personal value system within which her environment enslaved her; an unrecognized genius, with potential to innovate and solve problems on a global scale. Yet the leadership of her time was not ready to give credence to the minds of women. A different time and place, and years of progress between their countries, Dr. Seelig was heard, and her country’s value system supported her vertical mobility, allowing her passion and innovation to flourish in alignment with the New Zealand Government’s priorities. She was able to support the transformation of the VET system in a way that leaves a global impact. Most women struggle to navigate the idiosyncrasies of vertical mobility within society. These two women clearly encountered different experiences, yet both had the strength to stand alone, the only woman in the room, speaking in their own voices, sharing the brilliance of their ideas, leaving behind their eternal legacy for the world to avail. Although Dr. Seelig’s innovations came almost 70 years after Lamarr’s, her achievements have elevated the caliber of ODFL for learners and organizations globally, through the optimization of design and customization of features integrating distance education into the work force, supporting the growth and development of skilled personnel in the trades.

Where nature and nurture influenced the life and success of Hedy Lamarr, we must pay homage to those among us with such impactful accomplishments. Lamarr’s and Dr. Seelig’s contributions benefit us all. Thus, we need to understand the context within which women exist, we need to revere, and to lift each other. There is also a need for women to learn to accept their accolades, to seek them when they are due, even if it is not women’s natural instinct, as women are doing an injustice to themselves by not doing so. Through this challenge, women and society, will grow.

Hedy Lamarr and Caroline Seelig are two women with similar ambitions, curiosity, and potential, yet completely different environmental influences and historical outcomes. It was not my intention to dispute the influence of personality upon social mobility, but rather

to convey how different eras, cultures, and mores influenced the social mobility of both women. Hundreds of years of conditioning and laws do impact a culture's value system; this value system influenced each of these women's mobility differently. Where Lamarr struggled to be heard, Dr. Seelig's voice transcended layers of positive influence on a global scale. This presentation aims to create awareness of the influences carried through the ages in hope of reducing social barriers for future generations.

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