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The Rochester Institute of Technology

Department of Communication

College of Liberal Arts

A Case Study of Edwin Howard Armstrong's Public Relations Campaign for FM

by

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in partial fulfillment of the Master of Science degree

in Communication & Media Technologies

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A CASE STUDY OF EDWIN HOWARD ARMSTRONG'S PUBLIC RELATIONS
CAMPAIGN FOR FM

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Abstract

Edwin Howard Armstrong is commonly remembered as the inventor of frequency modulation (FM). There are those, however, who dispute this claim and assert that Armstrong's legacy is a work of fiction rather than history. This study examines the extensive public relations campaign on behalf of both FM and Armstrong from 1940 until after his death. This thesis is a case study of this campaign for the purpose of understanding the narrative presented to the American public.

Keywords: Edwin Howard Armstrong, frequency modulation (FM), radio, media technology, media history

A Case Study of Edwin Howard Armstrong's Public Relations Campaign for FM

The name Edwin Howard Armstrong has become synonymous with radio. Specifically, he is widely recognized as a pioneering developer, and even the sole inventor of wideband frequency modulation (FM). Nearly every substantial work written on the topic of FM draws heavily from Lawrence Lessing's (1956) biography of Armstrong, *Man of High Fidelity*, ensuring that Armstrong's name is prominently linked to the technology in our history and understanding of radio (Frost, 2010). Had it not been, however, for a strategic public relations campaign helmed by John Orr Young and the efforts of Armstrong's wife, Marion Armstrong, following her husband's death, Armstrong's name and legacy may have vanished into the ether.

In the early 1940s, after he had been awarded the patent for FM, Armstrong was concerned by what he perceived as reluctance and even resistance from those in the radio industry and the Federal Communications Commission (FCC) to commercialize FM. At this point, FM was being used by the United States War Department to aid in America's efforts during World War II, but commercially speaking, FM was a flop. Many broadcasters were reluctant and unwilling to pay Armstrong's licensing fees and there was also concern that FM would negatively impact amplitude modulation (AM), which was a major investment for these companies. There was desire at this time to simply invest in improvements to AM rather than switch to FM. Armstrong was also entering into numerous patent suits against other engineers, inventors, and companies such as RCA and Motorola. At this point Armstrong recognized a need for good publicity.

The purpose of this study is to investigate the public relations campaign that was waged on behalf of FM and Armstrong between 1940 until after his death, and to determine what story was presented to the American public. This thesis presents a case study that divides the campaign into three distinct phases. Phase One examines the time between 1940 and 1945, marked by placements in educational and free speech publications and the influence of various lobbyist groups on the message of FM. Phase Two examines the campaign between 1945 and 1948, when Armstrong worked with public relations consultants John Orr Young and his associate Millard Faught. Finally, Phase Three investigates the campaign after Armstrong's death in 1954. This time was marked by his widow's endeavors to further and preserve his reputation and public persona, while simultaneously completing each of his pending patent suits. It is the contention of this study that this public relations campaign served to write and preserve the narrative that we commonly accept for the history of both FM and Armstrong.

Dueling Narratives

At its inception in the early 1920s, broadcast radio was a crude and primitive version of what we know today. The experience of listening to radio to this point was not altogether a pleasant one, due to the excessive amount of static that occupied and tormented the AM band (Besen, 1992). It was at this point that Lawrence Lessing's *Man of High Fidelity* claims Armstrong entered the arena with FM to remedy the imperfections that plagued radio. He developed a band of radio that could eliminate static, had a higher level of fidelity, and boasted consistent service areas (Lessing, 1956). Lessing's version of Armstrong's life is the story of a lone inventor whose genius changed the world of radio

forever. By his account, Armstrong was a maverick forced to defend his invention against naysayers, skeptics, and opponents who sought to suppress his work and genius. The biography, which was published after Armstrong's death, can be considered a generous tribute.

Frost (2010), however, has a different take on Armstrong and the development of FM. In *Early FM Radio: Incremental Technology in Twentieth-Century America*, he points out that FM first appeared in American patent records nearly 30 years prior to the Armstrong patent. Although originally attributed to dozens of inventors, namely at Westinghouse and RCA, it would be Armstrong who would ultimately be recognized for the invention (Frost, 2010). For this fact alone, to refer to Armstrong as the "inventor" of FM is to imply that he discovered it, developed it, and perfected it without any other intervention, which, according to Frost's research is simply untrue.

Similarly, Frost argues that to present Armstrong as an independent inventor is a misinterpretation of the facts. Although Armstrong did, in fact, wage decades of patent litigation against RCA, he also benefitted a great deal from his affiliation with the company (Frost, 2010). Armstrong was not only a consulting engineer for the company but its largest individual shareholder as well, which endowed him with personal wealth and connections as well as knowledge of all RCA's work that inevitably aided him in his development of high-fidelity FM (Frost, 2010). Basically, Armstrong had a lot of assistance while he was working on high-fidelity FM. This is rarely mentioned in our retelling of this narrative, and no other engineers or inventors, aside from those who actively and prominently opposed him, are ever mentioned or credited for their contributions to FM.

Research and Method

This study is the culmination of archival research conducted at three times and institutions. The archival research began in February of 2012 at Columbia University's Rare Book & Manuscript Library. Columbia's archives house an extensive collection of Armstrong's writings, photographs and personal correspondence. Donated by his widow Marion after his death, the Armstrong collection was set up as a tribute to the man who had both attended and worked at the institution. Columbia was named as a secondary beneficiary in Armstrong's will. Under the counsel of archivist, Jennifer Commings, the first round of research was conducted to investigate Armstrong's patent litigation and, specifically, Marion's role in the process.

The second round of archival research was conducted on October 23, 2012 at Syracuse University's Special Collections Research Center, located in Bird Library. During this time, I investigated John Orr Young's personal papers and correspondence. I was also granted access to an extensive collection of press clippings that mapped Young's career between 1907 and 1965 as well as original drafts and manuscripts of his various publications.

The third portion of archival research was collected, again, from the Rare Book & Manuscript Library at Columbia University and was provided by Dr. Gary L. Frost from his personal research collection. This material included copies of personal correspondence exchanged by Young and Armstrong between the years of 1940 and 1948 regarding the publicity campaign for FM and subsequently, Armstrong. The collection also contained the

placements resulting from the campaign, published in various industry and general interest publications of the time.

The intention of this paper is to combine each source of research to perform a comprehensive case study of the strategy employed both during and after Armstrong's life to secure his legacy as the inventor of FM. Through examination of correspondences I have determined that the American readership of general interest magazines and educational journals was the target audience of the campaign. The scope of this study is placements in such publications throughout the 1940s and 1950s. This study will also explore the strategy adopted by Marion Armstrong to see all pending patent litigation through to successful completion. Consequently, the timeline for this case study extends from 1940 to 1965, eleven years after Armstrong's death.

Case Study and Analysis

Phase One: Enter the Lobbyists (1940-1945)

The United States' entrance into World War II resulted in shortages and reprioritization for all Americans, including those in the broadcast industry (Sterling & Kittross, 1978). In April of 1942, the War Production Board called for a freeze on production of civilian radio receivers, as all efforts and supplies were put towards the war effort (Sterling & Kittross, 1978). During this time, Armstrong began planning for post-war FM. Although the United States War Department used Armstrong's FM to aid in the war effort during World War II, in the early 1940s, FM's success and acceptance as a commercial product had yet to be realized (Lessing, 1956). At the outset of his campaign for post-war FM, Armstrong focused most of his attention and energy on advertising and

article placements in radio industry publications that explained the technology of FM in depth and whose messages targeted an audience with some degree of technical know-how. Outside of the radio industry, however, Armstrong also established powerful friends among education lobbyists. This was no coincidence.

Educational broadcast stations had traditionally faced an uphill battle in the radio industry. In her 2004 work, *Listening In: Radio and the American Imagination*, Douglas notes that between 1927 and 1933, the number of educational stations on the AM band dropped from ninety-eight to forty-three and accounted for only 7% of all stations on the air (Douglas, 2004). Much of the struggle faced by educational stations was due to the fact that they were poorly funded (Douglas, 2004). Armstrong recognized this trend. By this point Armstrong licensed his patents for various uses. However, two classes of licenses were dramatically less expensive than the others: the United States Government during World War II and educational stations. By allowing educational stations to use FM essentially for free, Armstrong built up a contingent of pro-FM lobbyists out of educational broadcasters. In 1940, at the FCC's investigation of FM, many of these broadcasters attended and testified in favor of creating commercial FM, which the FCC did, in fact, do. Furthermore, when the FCC shifted the FM band location in 1945, the lower frequencies of 88-92 Mhz were reserved for educational and other nonprofit stations. The effects of this decision can be seen today as NPR, religious stations, and nearly all educational stations are still located in that range (G. Frost, personal communication, October 16, 2012).

One particular educational publication that took up Armstrong's cause and became an outspoken supporter for FM was *Education for Victory*. A result of the Victory Corps

curriculum during World War II, *Education for Victory* appeared within the United States Office of Education wartime journal (Ugland, 1979). The publication presented issues that reflected the values and mission of the Victory Corps, which was itself a product of the partnership between the Office of Education and the War Department. The journal promoted the need for adequate preparation for all able-bodied American youth for war abroad and for the rapidly dwindling labor force at home (Ugland, 1979). The rationale was that preparation should start at the high school level, because the minimum draft age had recently been lowered (Ugland, 1979).

Those behind the publishing of *Education for Victory* deemed FM training an invaluable asset for students, and cited Armstrong as a worthy role model. Some of the headlines of this time read "FM for Education" (1944), "Program Planning for FM School Stations" (1944), "The Needs of Educational FM Broadcasting for Additional Channels" (1944), "Looking Forward to F-M Broadcasting" (1944), and "Education's Opportunities in Radio" (1944). Each article stressed the importance and value of FM radio as an educational tool for American schools. Many of these articles tracked the progress of various school districts throughout the country as they established broadcast stations and FM training programs. In the June 1944 issue, the article entitled "Program Planning for School Stations" chronicled the experiences of the Cleveland school district and their FM educational station, WBOE.

From morning to afternoon, WBOE presents programs tailored to the specific needs of elementary and secondary schools. Aside from these programs then, what are some related activities in which a school station can be of service? Consider a few

emergency issues. When there was talk of air raids, the public, parochial, and suburban schools of Greater Cleveland established continuous listening procedures whereby WBOE could alert the area in a few seconds. When the teachers were engaged in rationing, daily bulletins were broadcast to the rationing centers answering questions which had arisen...The school station made many friends that day. (*Education for Victory*, June 1944, p. 4)

One of the consistent pictures painted by *Education for Victory* was how Armstrong's FM served and protected America's national interest.

Other educational publications that featured stories on FM during the 1940s were *The Education Digest* (1944), *The Elementary School Journal* (1945), *The Quarterly Journal of Education* (1944), *The Science Teacher* (1945), *School Life* (1947), and *NEA Journal* (1946). These journals placed less emphasis on national security and more focus on specific educational advantages provided by educational FM stations. An article featured in *The Education Digest* stated:

...Radio dramatization of the classics motivates slow learners and poor readers to more extensive reading of literature than might otherwise be expected of them. It has been discovered that radio, like journalism, stimulates vigorous creative work on the part of English students. (Boutwell, 1944, p. 36)

Likewise, in an article praising the technology for the opportunity it would provide for schools and education as a whole, *NEA Journal* described FM as a "revolutionary invention of Major Edwin H. Armstrong" (Dunham, 1944, p. 372). The educational journals served to not only promote FM as a powerful educational tool that could ably serve and strengthen

post-war America, but also to push Armstrong's name to the forefront as sole inventor, ahead of any other engineer or inventor who could have laid claim to FM.

Outside of the educational journals, Armstrong had luck obtaining placements in various general interest magazines such as *The New Republic* (1944), *The Quill* (1944), *In Fact* (1945), and *Time* (1945). These publications prominently linked FM with Armstrong. Armstrong was presented as a benefactor of sorts, using his intellect and ingenuity for the purpose of providing valuable public services to the American people.

In an issue of *Time* published in March of 1945, under a half-column photo of Armstrong, an article entitled "More Air for FM" reads "Major Edwin Howard Armstrong, the bald, monolithic professor of electrical engineering at Columbia University who perfected FM..." (*Time*, March 1945, p. 70). The article described Armstrong as knowing "more than any other man alive about FM, which is about as easy to understand at first glance as a menu written in Sanskrit" (*Time*, March 1945, p. 70). It described a meeting in Washington between some of the major players in the radio broadcast industry to discuss the potential of shifting FM to a higher band. Armstrong is presented as not only the undisputed authority on FM but also as the voice of compromise and reason at the sit-down. The FCC, Philco, Crosley, CBS, the Blue Network (ABC), and the Cowles Broadcasting Company were all in favor of elevating FM to 84-102 megacycles. Of the opposing opinion were RCA, NBC, Zenith, General Electric, Stromberg-Carlson, and FM Broadcasters Incorporated. The article reported Armstrong mediated and offered a compromise of elevating FM to 48-66 megacycles. Armstrong was the only member of the panel mentioned by name and the only member pictured in the article (*Time*, March 1945).

In her article in *The New Republic* entitled "Radio's New Chance," Helen Fuller wrote Armstrong into the role of a man with the willingness and fortitude to take on "the system" (1944). He would regularly be depicted in such a role until his death in 1954. Fuller's article read as a call-to-action in response to the perceived threat of non-commercial/educational stations losing out on FM channel allocations to the major networks. She wrote, "If we are willing to fight about it, the monopoly of the air waves on which the networks have fattened for the last twenty years can be broken" (Fuller, 1944, p. 841). Fuller disparaged the major networks and broadcast corporations as veritable "fat-cats" who did not serve the public interest. She described such groups as initially threatened by FM and Armstrong:

When Major Edwin H. Armstrong finally won recognition in 1938 for the new FM system which he had discovered, America was given a new chance to reclaim radio. Major Armstrong had a hard time putting forward his important invention, partly because the leaders of the broadcasting industry recognized it for the threat that it was to their smooth-running standard system. (Fuller, 1944, p. 841)

Fuller concluded, "Now that Major Armstrong has forced FM onto the scene, there is no question but that its immediate postwar expansion will be tremendous" (Fuller, 1944, p. 841).

In 1945, *In Fact* built off of Fuller's article topic with a further call to action on behalf of nonprofit radio stations, in an article written by Elmer Benson, Executive Council Chairman of the National Citizens Political Action Committee. Benson described Armstrong as "a brilliant engineer of Columbia University," and similar to previously mentioned

articles, Benson listed Armstrong as the sole creator of FM despite the fact that Armstrong was in the midst of what would become decades of patent litigation and controversy (Benson, 1945, p. 4). Benson also, like Fuller, described Armstrong's FM as a technology whose "potentialities for public service are limitless" (Benson, 1945, p. 4). Additionally, it is important to note that the article specifically states that Armstrong developed FM only 10 years prior to 1933 despite the fact that U.S. patent records show more than 20 years of FM technology before Armstrong applied for his patent (Frost, 2004).

Phase One of Armstrong's publicity campaign for FM shows FM presented as an invaluable classroom aid, a public service, a symbol of free speech, and even a weapon for national defense. Whatever the cause each article claimed FM supported, Armstrong was not only listed unequivocally as the lone inventor of FM, he was also praised for his genius and service to the American public. Although the arguments from activists and reporters such as Fuller and Benson were impassioned and persuasive, Armstrong's campaign would turn away from the strategy of politicization during "Phase Two" of the campaign.

Phase Two: Creating the Public Persona (1945-1954)

Before John Orr Young signed on to work with Armstrong in 1945, Young had made his name in the advertising industry. Despite the fact that he had worked for numerous prominent agencies during his career and was a prolific author of advertising newsletters and brochures, he is probably most known as a founding member of the Young & Rubicam advertising agency (Young, 1949). By the 1940s, Young was ready for a change and, although his life's work had been dedicated to building the burgeoning industry and counseling young ad men on how to ensure success, when Young finally retired he opted

for a career in public relations consulting (Young, 1949). It was Young's intention to bring the same practices that brought him success in advertising such as the employment of surveys and public opinion polls to the new endeavor. He took a proactive approach to public relations and stated in his biographical piece, *Adventures in Advertising*, that we "no longer need public relations be a last-minute repair job – expressed by quick ads in the paper, overnight statements by the company or its union, frequently too late or too emotionally conceived to do much good" (Young, 1949, p. 135).

In 1945, Armstrong sought out Young to take over and reenergize the publicity for FM at a fee of \$500 per month (Armstrong, E.H., 1886-1982, Young, J.O., to Armstrong, E.H., November 13, 1945). Young, who had retired from Young & Rubicam and had recently entered the field of public relations consulting, would later bring Millard Fought on board to help. Young told Armstrong that he saw this partnership as not only working for Armstrong but working for the public as well, as Armstrong's situation was "decidedly of real concern to the public interest" (Armstrong, E.H., 1886-1982, Young, J.O., to Armstrong, E.H., November 13, 1945). Young further instructed Armstrong that the initial campaign would start with a six-month long study in order to formulate a comprehensive public relations program (Armstrong, E.H., 1886-1982, Young, J.O., to Armstrong, E.H., November 13, 1945).

From the outset, Young made clear to Armstrong that, in addition to the press in technical publications, he wanted to obtain placements in the major general interest magazines of the day, such as *Collier's*, *Saturday Evening Post*, *Life*, *Time*, *Fortune*, and *Reader's Digest*, as main targets (Armstrong, E.H., 1886-1982, Young, J.O., to Armstrong,

E.H., February 27, 1946). The strategy was essentially to take the message of FM to the public, primarily because Young and Faught concluded that the American people were still confused and uninformed when it came to FM (Armstrong, E.H., 1886-1982, Young, J.O., to Armstrong, E.H., February 28, 1947).

Young and Faught also wanted to counteract the public relations campaign being waged by RCA and to build up Armstrong's reputation among the public. General interest magazines of the day had massive readerships and a placement in any would provide far greater exposure than the technical or industry publications (Armstrong, E.H., 1886-1982, Faught, M.C., to Armstrong, E.H., March 28, 1947). In one letter Young urged Armstrong to be more aggressive with his public relations approach. He attempted to entice Armstrong by citing RCA's campaign to "ballyhoo their own great contributions to society and to build up Sarnoff as a great public benefactor" (Armstrong, E.H., 1886-1982, Young, J.O., to Armstrong, E.H., February 28, 1947). Young and Faught also believed Armstrong needed to distance himself and FM from the lobbyists. In a letter from Faught to Armstrong regarding Dr. Edward H. Rumely, lead member of The Committee for Constitutional Change, Faught cautioned Armstrong about dealing with the group and stated that their "objectives are certainly worthy enough but they sometimes resort to pretty high-powered lobbying and pressure group activities to achieve their aims" (Armstrong, E.H., 1886-1982, Faught, M.C., to Armstrong, E.H., January 8, 1948). They feared that FM could turn into a "political football" for the different Constitutional freedom groups (Armstrong, E.H., 1886-1982, Faught, M.C., to Armstrong, E.H., January 8, 1948).

In order to increase the public interest in FM, Young and Faught also wanted to increase public interest in Armstrong. At this point Armstrong's reputation and personality became a selling point for FM. In a letter from Faught to Armstrong, Faught recounted an afternoon spent together and informed Armstrong of the strategic human-interest aspect of his story.

I believe such an article might do us a great deal of good if it came out next spring around the time of the investigation. If you agree, I wonder if you have a print or two of the photograph you mentioned of the tower and also a print of the picture of you up in the tower in the wintertime chipping ice off of the structure. If these photographs are available I believe they would be useful in developing LOOK's interest in a potential article. (Armstrong, E.H., 1886-1982, Faught, M.C. to Armstrong, E.H. November 12, 1946)

At the time of this letter, *Look's* readership numbered approximately 12 million. Young and Faught felt that photographs depicting Armstrong's daredevil behavior of climbing radio towers and balancing on top for amusement would appeal to the public and ultimately help Armstrong during his patent hearings. In the correspondences between the public relations team and Armstrong they acknowledged that the campaign aimed not only to promote FM for commercial acceptance and use, but also to benefit Armstrong during his legal battles.

While we would be the last to make any suggestions as to when and how you are going to handle the legal end of this situation, nevertheless your whole position will be strengthened if we can dovetail and schedule our public relations activities so

that they can be of the greatest benefit to the over-all objective of winning this battle. (Armstrong, E.H., 1886-1982, Faught, M.C., to Armstrong, E.H., February 28, 1947)

During this phase, Armstrong, with the aid of Young and Faught, secured numerous placements in general interest magazines such as *The Nation* (1945), *Fortune* (1948), *New York Times* (September 13, 1947), *Atlantic Monthly* (1951), and *The Saturday Evening Post* (1953). The placements further developed Armstrong's public persona and strengthened his and FM's reputation among the American people. For instance, *The Saturday Evening Post* contained a section entitled "Letters" (*The Saturday Evening Post*, December 19, 1953). This section allowed readers to write in and share opinions on previously featured stories and related issues. In a December issue of the publication, Armstrong shared an anecdote about his grandfather, William H. Smith (1953). He described how his grandfather worked as an assistant to William Buchanan, the superintendent for the New York Central Railroad. Armstrong told of an instance that involved painting all the brasswork on the locomotives black (*The Saturday Evening Post*, December 19, 1953). Although the story had nothing to do with FM or even radio, Armstrong used *The Saturday Evening Post* as a means of connecting with the American people in a widely circulated public forum. He shared a personal story about his grandfather who was an assistant to a powerful man in American history. In doing so, he allowed the public an opportunity to feel connected with him on a personal level while simultaneously aligning himself with an American pioneer and innovator committed to the nation's progress. Also, by mentioning that his grandfather

was an assistant, he created a bridge between himself and the “common man” so as not to appear elitist and to maintain an image of an everyman taking on big, corporate greed.

The Nation picked up on this theme as well but attacked the issue more directly. A 1945 article positioned Armstrong directly against RCA, presenting Armstrong as a persevering genius and RCA as a nearsighted corporate bully (*The Nation*, December 8, 1945). It read, “The inventor of FM, Major Edwin Armstrong, was fully aware of the immense social values of his brain-child. He had found that the radio industry, particularly RCA, had fought FM ‘every inch of the way’” (*The Nation*, December 8, 1945).

Atlantic Monthly (1951) also made an appeal to the “average” American. The publication devoted a four-part series of articles to people interested in owning and assembling AM-FM home radios (Conly, 1951). These articles not only provided readers with an education in high-fidelity and FM, they also included assistance for purchasing and assembling sets, along with testimonials from those who had successfully purchased and set up their own home system (Conly, 1951). The article also mentioned that although Armstrong FM sets were somewhat expensive, they were built to last and the piece described Armstrong as the “inventor who has probably done more for radio than any other” (Conly, 1951, p. 94). The series was meant to reach out and inform the public of how Armstrong’s FM could enrich and enliven their homes.

The article that was arguably most influential in solidifying Armstrong’s persona and reputation in the public’s eye during this phase was *Fortune* magazine’s 12-page feature entitled “Armstrong of Radio” which was entirely devoted to Armstrong’s life before the RCA patent suit (*Fortune*, February 1948). The article asserted that Armstrong

was on par with Thomas Edison and would be remembered so. It also claimed Armstrong's contributions to radio were greater than all others, including Guglielmo Marconi (*Fortune*, February 1948). The article described Armstrong as "a quiet man who is built like a lumberjack, walks like a sailor, and speaks with the accents of the New York City school system" (*Fortune*, February 1948). This description strikes a balance between his intellectual side and his stature as a man. This essentially allowed for the assertion of Armstrong's brilliance without alienating the "average Joe" who might read the article. Describing his build as a cross between a lumberjack and a sailor also presented him as an imposing figure, perhaps akin to a superhero. The article connected him to another American icon and hero when it recounted his academic career at Columbia as bearing "an astonishing likeness to that of Tom Swift" (*Fortune*, February 1948). The article curtailed any "bookish" similarities this comparison may evoke by stating:

He streaked recklessly to the college from Yonkers on a motorcycle, wore a beanie, entered with do-or-die spirit into the freshman-sophomore pushball contest, and was a formidable man on the tennis court. But like Tom Swift he was first and foremost an inventor. (*Fortune*, February 1948)

The article went further into detail about Armstrong's penchant for bucking traditional theory and formulating his own experiments and hypotheses. The description of both his college and early careers seems to tap into both the American pioneering spirit and admiration of rebellion.

The *Fortune* article also included numerous "personal" photos of Armstrong throughout his life. Featured were a photo of Armstrong holding a tennis trophy, his

officer's photograph from his army days during World War I, and a photograph of him with his wife, Marion, taken on their honeymoon. The honeymoon photograph depicted the newlyweds on Palm Beach with a portable radio. The last photograph, which received a half-page spread, showed Armstrong standing in his old bedroom in Yonkers. The room, once elegant, was deteriorating. There were boxes and papers scattered about on shelves and the floor, and wallpaper and plaster were peeling off the walls. Armstrong stood in the middle of this scene, apparently holding some of his notes "outlining the discovery of regeneration" (*Fortune*, February 1948). The photograph appeared a couple of pages before back-to-back sections entitled "Armstrong vs. RCA" and "The Story of FM" (*Fortune*, February 1948). "Armstrong vs. RCA" described Armstrong and David Sarnoff as two men who could not be more different. Sarnoff was described as "pompous, brilliant, and headstrong," and Armstrong as "dogged, analytical, and assured" (*Fortune*, February 1948). The article left little room for interpretation as to the opinion of the writer concerning the disagreement between the two men.

The *Fortune* article was possibly the best representation of Young and Faught's strategy for Phase Two of the Armstrong public relations campaign. Young and Faught obtained massive exposure in a popular magazine which highlighted, first and foremost, the humanity and personality of Armstrong and also spoke to the legal struggles he faced with FM. Like earlier placements, the article posited Armstrong as the man against the corporate machine. It painted a picture of the "All-American" boy: an athlete, a rebel, and a soldier who also happened to be a brilliant inventor. Armstrong was shown, during the height of his patent litigation with RCA, standing in a ramshackle room gazing at the

documents that apparently proved his legitimacy while the industry he helped to create doubted him. Regardless of the facts, the article provided the public with a poignant character, and was intended to garner support and possibly public outcry at a critical point in time for Armstrong and his legal suit. The article ended with a quote from Armstrong regarding his situation:

The continuous good fortune which has followed me, providing second chances at inventions when the first chance was missed and tossed away, has been all that a man could hope for and more than he has any right to expect. (Armstrong, E.H., *Fortune*, February 1948)

This quote, which presented a man seemingly at peace with his lot speaking of gratitude and appreciation, would take on a degree of irony given the fact that almost exactly six years later Armstrong would commit suicide.

Phase Three: Armstrong's Eulogy (1954-1965)

Phase Three of the public relations campaign for Armstrong and FM took place in the decades following Armstrong's suicide in 1954. The major players of this era were Armstrong's widow, Marion, and his legal team, consisting of Alfred McCormack and Dana Raymond. At the time of his death Armstrong was in the midst of more than 20 patent disputes. Two of the most prominent ones involved RCA and Motorola. Armstrong's patent litigation was the longest lasting patent litigation of the time. It is the contention of this paper that had these ended in defeat, Armstrong's reputation would be drastically different than it is today. Instead of a tragic hero or a man who went to his death not realizing how successful he truly was, he might simply be listed among the ranks of the

numerous engineers and developers of FM who contributed to the technology but could never claim sole ownership. Moreover, Marion's work extended past the courtroom and into philanthropy with the donations of Armstrong's estate, thus furthering his name and reputation as it began to grace various societies and buildings.

After the death of her husband, Marion took over the legal battles. In one of the first correspondences regarding the patent lawsuits, Marion and Alfred McCormack, the lead attorney of Armstrong's estate in 1955, discussed the strategy for the impending infringement cases. Per a previous conversation, it can be gathered that the ultimate strategy was to settle the smaller infringement cases quickly and focus on the larger lawsuits such as the RCA and Motorola cases (Armstrong, E.H., 1886-1982, McCormack, A. to Armstrong, M., June 17, 1955).

From this point forward, Marion fought 21 patent suits and won or settled all of them. She was intimately involved in the strategy and execution of all the legal issues. For example, in a two-page hand written letter to one of the estate's attorneys, William Sullivan, she discussed her lengthy stay in Chicago and how her focus was mainly on the trial at hand. She mentioned not having much of an opinion about the city because both she and her sister had seen only the inside of the courthouse and their room at the Sheraton hotel (Armstrong, E.H., 1886-1982, Armstrong, M. to Sullivan, W., December, 1961). Her focus was solely on the case and its outcome.

One of the two major lawsuits she fought was against RCA. A major concern for her over this case was to honor the wishes of her late husband. Armstrong had, in the years leading up to his death, been bitterly embroiled in a fight over his patent rights with RCA

over FM radio. In a letter dated December 24, 1954 to Marion, Alfred McCormack, one of her lawyers, discussed two different points about her struggle to make decisions the way Armstrong would have wanted. At first he stated:

I said to you yesterday that the Major had been more interested in proving certain points than in winning the lawsuit; and you said that that was one of the things that made you uncomfortable about settling the RCA suit. But you need not to feel that way. Howard could never be satisfied that a point had been proved til his opponents had conceded it. We, however, can look at the matter more objectively as time passes; and as I said to him at least 50 times in the last two years of his life, he had proved his points and they were as clear as they ever could be made in the record of the depositions. (Armstrong, E.H., 1886-1982, McCormack, A. to Armstrong, M., June 17, 1955)

Later he elaborated "The best thing you can do for a person who has passed on from this world is to carry on in the way he would have wanted. I firmly believe that we are doing that in trying, as we are trying" (Armstrong, E.H., 1886-1982, McCormack, A. to Armstrong, M., June 17, 1955). Clearly, Marion was keenly aware of how her decisions would affect the outcome of not just the RCA lawsuit but also the other cases that were to follow and how her decisions would shape her late husband's legacy as a whole. In the end, Marion Armstrong accepted a settlement for a little over \$1 million (Armstrong, E.H., 1886-1982, Breeze, W.R. to Armstrong, M., January 3, 1963).

Marion's devotion to her husband and his legacy continued for the remainder of her life long after the patent lawsuits were all settled. She accomplished this in three major

ways. She established the Armstrong Memorial Foundation in 1955, donated his personal effects such as his inventions to museums and charitable donations to institutions, and oversaw and contributed to publications about her late husband, including Lessing's biography *Man of High Fidelity* and articles in *Harper's* and *Life* magazines.

According to the website of the Armstrong Memorial Research Foundation, Marion's goal for the foundation was to "celebrate and memorialize the genius of Edwin Howard Armstrong." This was accomplished through lectures; awards to students and radio stations; Edwin Howard Armstrong exhibits; and providing information for book, film, and media inquiries. She also donated much of Armstrong's equipment and provided funding to a number of institutions, including the Smithsonian Institution in Washington D.C. and Columbia University in New York City, where Major Armstrong was an alumnus, professor, and major donor. A letter from the director of the Smithsonian Institution to C. Laporte, a member of Marion Armstrong's legal team, discussed in explicit terms Marion's wish to donate Major Armstrong's inventions, as well as other items (Armstrong, E.H., 1886-1982, Kellog, R. to Laporte, C., September 24, 1954). A letter from the director of the Smithsonian Institution to Marion Armstrong accepted the donations, and acknowledged gratitude and privilege on behalf of the Smithsonian to preserve the records of Major Armstrong (Armstrong E.H., 1886-1982, Kellog, R. to Armstrong, M., September 22, 1956).

The Columbia University Rare Book and Manuscript Library contains an extensive amount of Armstrong's documents. Included are correspondences regarding the establishment of donations to Columbia University. Columbia played a major part in the preservation of Armstrong's story. He held Columbia in high regard, and as a part of

Marion's attempt to preserve Armstrong's legacy she made it a point to make sizable donations to his beloved alma mater.

Two of the major donations Marion made to the university were shares of RCA stock and \$20,000. Even during his legal battles with RCA, Armstrong still had stock in the company. In a letter, McCormack suggested to Marion that the best course of action for the shares was to donate them to Columbia (Armstrong, E.H., 1886-1982, McCormack, A. to Armstrong, M., May 6, 1955). Following this advice, Marion donated the shares. She also made numerous monetary donations as well as donations of some of her husband's personal effects, including all the items used for this paper from the Columbia archives. (Armstrong, E.H., 1886-1982, McCormack, A. to Armstrong, M., May 6, 1955).

Marion played a key role in the completion of publications about Edwin Armstrong's life. As documented in a letter from Marion to Alfred McCormack (n.d., Edwin H. Armstrong Papers, 1886-1982), Marion contributed to Lessing's *Man of High Fidelity*. She thanked Lessing for the preview of the chapters of the biography and suggested changes and additions. Although any biographer would seek information from those who knew the subject closely, it is interesting that this particular biography was being written during the patent litigation and that so much of the biography surrounded the development of FM. To have the widow who stood to win or lose millions, as well as Armstrong's legal team, making edits of this piece of work suggests a certain degree of bias. Nevertheless, various textbooks, encyclopedias, and documentaries such as Ken Burns' *Empire of the Air: The Men Who Made Radio*, all draw heavily from Lessing's book in their description of how FM came to be.

Marion also conversed with Carl Dreher, a longtime friend of Armstrong and the author of an article that ran in *Harper's Magazine* (Dreher, 1956). In "E.H. Armstrong: the Hero as Inventor," Dreher essentially eulogized his friend. He gave a brief biography of Armstrong before the patent litigation and described, in detail, the conflict with RCA as well as the high points of Armstrong's engineering career. In the letter from Marion to Dreher (Armstrong, E.H., 1886-1982, Armstrong, M. to Dreher, C., May 3, 1956), she praised the article but also pointed out some small inaccuracies from it such as the following:

The Patent Office decided against Levy, but when the case got up to the Court of Appeals for the District of Columbia, that Court applied one of its silly rules, to the effect that in interferences the counts of a claim must be construed as broadly as their language will permit, and held that Levy could make those claims. (Armstrong, E.H., 1886-1982, Armstrong, M. to Dreher, C., May 3, 1956)

Although Dreher's article may have seemed innocuous to some at the time, others, in particular Lee De Forest, strongly objected to many of Dreher's claims. In a letter to Dreher, De Forest expressed his displeasure with the *Harper's* article. He questioned the assertions of Armstrong's "humility" and willingness to learn from others stating, "In all my associations and contacts with Armstrong, I found him exceedingly arrogant, brow-beating, even brutal" (Armstrong, E.H., 1886-1982, De Forest L. to Dreher, C., May 15, 1956). De Forest also accused Armstrong of stealing the idea for the super-regenerative circuit from French engineer Lucien Levy during World War I (Armstrong, E.H., 1886-1982, De Forest L. to Dreher, C., May 15, 1956). Throughout the majority of the four-page letter, De Forest attacked many of the technical elements of Dreher's story as well, asserting that they were

simply not true. At one point he exclaimed, "How absurd to set up uninformed prejudice against such abundantly proven facts" (Armstrong, E.H., 1886-1982, De Forest L. to Dreher, C., May 15, 1956). Dreher responded to De Forest's letter with a brief and polite response, stating that there were no intentional omissions of fact or truth and that if the article did in fact contain any, they were due to the editing process at Harper's because the story was drastically shortened from its original form (Armstrong, E.H., 1886-1982, Dreher, C. to De Forest, L., 1956). Dreher also assured De Forest that no one was attempting to argue complex legal matters about even more complex technology in the pages of *Harper's* magazine (Armstrong, E.H., 1886-1982, Dreher, C. to DeForest, L., 1956). He then stated, "I was a friend of Armstrong's at one time. I knew you only slightly: to that extent I admit bias. But I tried to compensate for that in the article and it seems to me that I succeeded" (Armstrong, E.H., 1886-1982, Dreher, C. to DeForest, L., 1956). Dreher concluded his letter somewhat enigmatically, suggesting, "Hadn't we better leave further judgment to posterity?" (Armstrong, E.H., 1886-1982, Dreher, C. to DeForest, L., 1956). It is important, while reading this exchange, to note that De Forest's opinions were most likely colored by his decades-long rivalry with Armstrong.

Discussion and Conclusion

This case study shows the intensive amount of scrutiny and management that went into creating, proliferating, and securing the image of Armstrong and FM. Phase One took place in the early 1940s and marks the early efforts and publicity for FM as a commercial entity. The technology gained the attention of various interest and lobbyist groups, namely the educational industry and free speech activists. The stories regarding FM and

Armstrong during this phase typically present FM as a public service and Armstrong as the American public's great benefactor. One can argue this assessment is somewhat legitimate given the fact that Armstrong licensed FM for educational stations at merely \$1, essentially giving it away. At this point Armstrong began to establish a reputation as a man going against the corporate grain. Given that at the time, corporations such as RCA, Zenith, and CBS were scrambling to obtain as many channels as possible, which threatened to muscle the nonprofit stations out of competition, Armstrong's strategic generosity stood in stark contrast to this behavior and positioned him as a champion of free radio.

During Phase Two true progress was made at establishing and perfecting Armstrong's public persona. Armstrong hired Young, considered to be one of the greatest ad men of his day, to handle his public relations campaign and Young, alongside partner Faught, set forth to secure placements in general interest magazines. The strategy at this point was to reach the people. The team of Young and Faught determined that the public were still largely uninformed about FM and therefore, easy to mold. Understanding that RCA had also spearheaded their own public relations campaign to promote RCA and glorify Sarnoff, Young and Faught realized the importance of swaying public opinion in that moment, not only for the success of Armstrong's FM licensing, but for his legal battles as well. The placements, especially the lengthy *Fortune* article, tapped into the public's values. They strategically aligned him with American heroes, simultaneously touting his intellectual ability while emphasizing his rugged stature and maverick career.

Finally, Phase Three encompassed the decades of effort from both Armstrong's widow, Marion, and his legal team to preserve the persona and reputation that Armstrong

had worked to build during his life. This era was marked by the successful completion of all pending patent cases, an effort spearheaded by Marion and carried out by attorneys Alfred McCormack and Dana Raymond. This time also saw the strategic dissolution of Armstrong's estate. Through many charitable donations to organizations such as The Smithsonian Institution and Columbia University, as well as the establishment of the Major Edwin Howard Armstrong Memorial Radio Club and Armstrong Memorial Research Foundation, Marion ensured that Armstrong's image as public benefactor would endure. Perhaps, however, her greatest contribution to Armstrong's legacy, aside from the court battles, was overseeing the editing of numerous publications about her husband. Lessing's *Man of High Fidelity* and Dreher's *E. H. Armstrong: the Hero as Inventor*, went a long way to proliferate Armstrong's public persona and further his cause of becoming synonymous with FM, above all others. Had the various phases of Armstrong's public relations campaigns not been as dutifully carried out, our understanding of Armstrong and FM might be tied more closely to historical facts and FM might have a number of forefathers rather than one "man of high fidelity."

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