Intellectual Property Rights:
As they pertained to Edwin H. Armstrong

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The idea for intellectual property rights was originally conceived as a protective mechanism for inventors to keep others from stealing their ideas. Since intellectual property is not a tangible item, proving ownership and safeguarding are exceedingly difficult. The court must rely on documentation and data collected during the design as proof of ownership. There is no better example of limits of intellectual property law as in the life of Edwin H. Armstrong.

Edwin Armstrong was born in New York in 1890. As a young boy Armstrong was stricken with rheumatic fever. Since he had to be home he listened to a lot of radio programs, and became increasingly interested in the work of Marconi. Armstrong read every book he could find on the subject of wireless communication. In 1913 a 23-year-old Armstrong made his first contribution to the world of radio. Armstrong experimented with positive feedback. He realized that given enough feedback, the poorly operating triode vacuum tube could be made into a stable oscillator perfect for transmitting. Additionally, if the triode was given less feedback, the tube became a more sensitive radio receiver, more sensitive than any other tube at that time. Since he was young, Armstrong did not know the value of intellectual property rights. Although Armstrong did patent his regeneration techniques, he did not include all the documentation about his making this important discovery.

The inventor of the audion tube Lee De Forest read about Armstrong's work with regeneration and immediately started his own research into regenerative techniques. Unlike Armstrong, De Forest made careful notes on the characterizations and each step of the regenerative process, building a wealth of documents.

De Forest patented every variant of Armstrong's technique during his development. Then in 1920, De Forest proceeded to attack Armstrong's patents using his body of documented evidence. Backed with AT&T's money, De Forest brought the case of the intellectual property rights to regeneration in front of the Supreme Court. In a battle, which lasted 14 years, De Forest eventually won the rights to regeneration, breaking Armstrong's patents and stealing the credit Armstrong so rightly deserved.

Although Armstrong had lost his patent, he began to learn what he could about intellectual property rights law. Armstrong vowed that no more of his ideas would be stolen. As a result Armstrong was careful when presenting his inventions. Before he announced them, he enlisted the help of lawyers and a publicist, who helped in the naming of his next two inventions, the superheterodyne circuit and the super-regenerative receiver. With his patents for superheterodyne secure, Armstrong went about selling the rights to Westinghouse. Similarly he sold the rights of the super-heterodyne receiver to RCA. Armstrong's carefulness had paid off; his inventions had made him exceedingly wealthy. Unfortunately they also made him increasingly wary. For his next invention Armstrong resorted to tremendous secrecy. Armstrong used his own development money to work on Frequency Modulation (FM). Armstrong developed FM transmitter and receivers and had FM fully functioning by 1933.

Armstrong presented FM to RCA, which already invested heavily into AM. RCA feared that the rise of FM would be the death of AM. In order to buy some time to do their own research on FM, RCA petitioned the FCC to give FM's

frequency assignment to Television. “However their attack on FM was so obvious, that the FCC chairman, instead gave the whole band from 44-50 MHz to FM. This would have been TV channel 1, which is why it’s still missing from the TV. He also required TV sound be carried as FM.” (Lessing P.85) This was a victory, but before Armstrong could return to developing FM, World War II erupted and Armstrong returned to military service. During the war Armstrong allowed the Army to use FM, royalty free.

At home, RCA continued pressuring the FCC and in 1945 convinced the FCC to change FM’s band from 44-50 MHz to 88-108 MHz. RCA knew that this would make all of Armstrong’s receiver obsolete and allow them time for their own development of FM. After this defeat, Armstrong set about redesigning all of his systems. He had them operating at the higher frequencies by 1948, but this would be Armstrong’s last great engineering achievement. During this time RCA had been building FM receivers using Armstrong’s ideas with out paying him any royalties. Worse yet Armstrong’s patents were about to run out.

In 1949 Armstrong brought a patent infringement suit against RCA. RCA purposely dragged out the suit, “ They kept Armstrong on the stand for an entire year with irrelevant questions.” The ultimate insult came from David Sarnoff, who claimed RCA developed FM by themselves without any help from Armstrong. RCA kept the case in court until all of Armstrong’s licenses had expired, and he was nearly broke from legal bills. All this was too much for Armstrong and in 1954 he committed suicide.

One can conclude from the story of Edwin H. Armstrong that we cannot truly secure the rights of an individual in this capitalist society. Although the laws of intellectual property rights remain in place they cannot work to protect the individual unless we change our social perception. A society that believes companies to be the true innovators of science cannot protect the intellectual property of an individual. It is clear that as a nation we need to reevaluate the importance of individual's contribution to science, and revise our views to better protect the inventor. If there remains fear that intellectual property can be stolen, there will be far less openness and growth in science. It is also important to understand the role ethics plays in science, ensuring that credit is given where it is deserved. Only in so doing can our intellectual resources not become stifled.

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