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Faxed

The Rise and Fall of the Fax Machine

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ers learned how PT could transmit drawings, specifications, and other graphics. Regardless of the audience, the results universally proved “almost negligible.”⁶³

This misplaced optimism of expanding PT from newspapers to other applications ran aground on the shoals of unfamiliarity and high cost. Very few businesses could justify paying ten to one hundred times the cost of a letter or telegram to save time or send an image. Instead, AT&T reported that domestic and international PT transmissions consisted primarily of “press pictures of groups of people, damaged buildings, aeroplane and train wrecks, sporting events, and other types containing considerable detail.” Non-picture traffic consisted of financial data and advertisements transmitted “with barely sufficient quality to assure legibility at the receiving end.”⁶⁴

A market of news photographs meant long periods of quiet alternated with sudden spikes of saturation. In Britain, faxed photographs, both private and public, grew from 387 in 1931–32 to 796 in 1938–39, and averaged nearly 600 photographs annually.⁶⁵ The abdication of Edward VII generated one-quarter of 1936 British traffic in three weeks. Like Europe, Japanese PT traffic was “relatively small, except in the case of some notable event.”⁶⁶ For special occasions, such as a royal wedding, PTTs arranged extra equipment and close international coordination to minimize delays.⁶⁷ For the 1936 Olympics, Japanese and German engineers cooperated to radio wirephotos between Berlin and Tokyo, an impressive technical and propaganda feat commemorated by an illustrated photoletter from Adolf Hitler to Nippon Electric.⁶⁸ Reflecting the Nazi emphasis on visual propaganda, German circuits carried 12,000 wirephotos in 1938, nearly 1,100 abroad.⁶⁹

Some PTTs justifiably feared losing telegram traffic, the essence of their monopolies, if businesses sent photographs of coded messages instead. Although British tests showed that a message had to be at least seventy words before PT became more economical, the fear was occasionally justified. Coded pictures reduced telegraphic traffic from Java to Holland and comprised a significant part of pre-Depression New York–London radiophoto traffic.⁷⁰

Even before land-based PT networks, photographs had bridged the Atlantic Ocean via underwater telegraph cable and radio. The attraction was obvious: compared with a ship, a faxed transmission arrived days earlier. Pride of place for the first transmission went to the Bartlane system of coding pictures developed by the *Daily Mirror*'s Harry G. Bartholomew and Maynard D. McFarlane. In 1920, Bartholomew, who became the paper's chairman in 1944, transmitted two pictures to the *Daily Mirror* from the America's Cup yacht race. A selenium cell classified every spot on the negative by tone and turned it into a ten-letter group. These groups were telegraphed to London and converted back into a photograph.

With each line cranked forward by hand, preparing one photo took thirteen hours to produce what the paper admitted were “imperfect and not wholly accurate” pictures. Nonetheless, this represented a stunning technological achievement.⁷¹

The evolution of this system exemplified the long distance between the demonstration of a concept and actual commercialization. Not until 1925 did Bartlane images regularly cross the Atlantic. The problem was not resources (researchers at AT&T informally learned development cost over \$250,000), but reliably transmitting a photograph with enough resolution to satisfy readers.⁷² Failed negotiations to use the Marconi's Company's radio circuits meant that Bartlane photos traveled under, not over, the Atlantic Ocean via Western Union. Through April 1939, 438 photographs had crossed the Atlantic, approximately one every two weeks.⁷³

Western Union replaced the Bartlane system in April 1939 with its own higher resolution cablephoto service, which cost only \$91,000 to develop. Reflecting wartime coverage, clients paid approximately \$70 per image to transmit more than 800 photographs—one a day before halted by American entry into the war.⁷⁴

The first successful radiophoto experiments occurred in Europe with Danish watchmaker Thorvald Andersen transmitting photos from Copenhagen to the London *Daily Express* in August 1920. Reflecting the interests of newspapers, the first pictures were of a monarch, a political leader, and an actress: King George, Lloyd George, and Irene Vanbrugh. European and American firms soon developed commercial services.⁷⁵

Research on transatlantic radio facsimile began at General Electric, a parent of RCA, in 1923. According to company folklore, the president, Owen D. Young, wondered why a newspaper could not be transmitted across the Atlantic Ocean as easily as a conversation in one “zip,” but he then demurred, “Not being an engineer, I am not interested in details; that is your job.” David Sarnoff offered a different genesis tale of Young touring RCA's Radio Central and telling Sarnoff that he wanted to see a full message or newspaper “flashed” instead of dots and dashes for transcribing. A technical expert then said, “It is splendid to have an imagination utterly unrestrained by any limitations of technical knowledge.” Regardless of which—or both—tale proved true, company officials promptly took the hint.⁷⁶

Under the guidance of General Electric's Ernst F. W. Alexanderson, Richard H. Ranger sent the first photograph over the RCA transatlantic radio circuit on November 30, 1924. Ranger moved to RCA, and RCA Photogram Service commenced from New York to London on May 1, 1926.⁷⁷ Even for the 1920s, the quality of the images was poor. Nonetheless, RCA expanded service (including Berlin in 1932 and Moscow in 1941) while improving speed and transmission quality.⁷⁸