The Importance of Failure for the History of Technology

by

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In 1984, Federal Express, one of the most innovative and admired American corporations, launched ZapMail, an advanced fax service. In 1986, Federal Express stopped ZapMail after losing over $300 million. Most histories of the firm do not mention this embarrassing incident.

Failure is a neglected and important part of the history of technology. Most histories study success. Yet failure is normal for technologies and businesses. Companies and people that promote new technologies do not expect to fail, but many, if not most do.

There are two basic types of failure:

— failure of new technologies to succeed (e.g., Thomas Edison's concrete houses and fax machine)
— failure of old technologies to compete successfully against new technologies (e.g., film versus digital cameras)

This paper focuses on the first type of failure. New technologies face several challenges:

— technological: Will the technology work as expected?
— operational: Can users use it?
— competitive: Will alternate approaches work as well or better?
— economic: Is the new technology affordable and less expensive than the competition?
— financial: Is there enough money to bring the technology to market?
— environmental: Will the prevailing social, political, and economic conditions help or hurt the new technology? What happens if they change (e.g., the dot-com collapse crushed the short-term prospects of every internet start-up, regardless of its feasibility).

Many, if not most, technologies went through several unexpected iterations before a commercially viable version emerged.   One of the more interesting American examples is the steamboat, attributed first to Robert Fulton and his Claremont in 1807. The reality is that several inventors –; including John Fitch, James Rumsey, and John Stevens –; preceded him, but failed primarily due to a lack of resources and American-made steam engines that proved inadequately powered and unreliable. Learning from their mistakes, Fulton used British engines and allied himself with Robert Livingstone, who provided essential economic and political support.

Failure is an integral part of a technology's evolution, a part that should not be forgotten or excluded.   Just as a honest biography is more interesting and valuable than an admiring hagiography, so too does the history of technology benefit from a full understanding of its subject.   A complete history demands study and analysis of not only the roads taken, but also the roads not taken and the roads unsuccessfully taken.