From "Wings of Wire" to "Weaving the Web": Passing the Revolution of Message Transmission in the Past and the Present

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On 7 December 1850, an article entitled "Wings of Wire" appeared in *Household Words*, a family magazine edited by the novelist Charles Dickens since September that year and soon turned out to be one of the best sellers of his time.1 It was written by F. K. Hunt about Electric Telegraph, a new invention to conduct "transmission of hundreds of thousands of words." The article is informative and full of excitements and wonders. According to its author, electric telegraphy is a science that has involved "watching, deep study, thousands of experiments, suggestions, and reasonings; numberless plans and models. . . of thinkers in many countries, in many generations." The telegraphic office of the South-Eastern Company at Tonbridge in London is described, and details about the "codes" and rules for decoding the dispatches are explained. In addition to such factual account, some anecdotes, and in the author's words, "little romances" are given, for example, how a murder's execution was postponed by a message sent by the government, and then when another message to instruct the sheriff to carry it out, how the telegraph office clerk had to drive to the Home Office to have the order confirmed. In fact, in another article before this one, the newly revolutionized way of transmitting message was such a novelty that even the

1 *Household Words* 2 (1850): 241-45.

traditional messenger, carrier pigeon, was called "Winged Telegraph."[2]

Just like a pigeon is called in terms of the new invention, electric telegraph is named "the Victorian Internet" by Tom Standage. Indeed, through the looking-glass of Electric Telegraph of the Victorian age, we seem to anticipate the subsequent revolution of communication technology in the twentieth century, the Internet. Both the technologies of rapid delivery of up-to-date information have changed and are still changing the world for countless people. Standage parallels the Internet with its predecessor, and dwells upon their similarities: both allow people to "communicate across great distances using interconnected networks"; both employ "common rules and protocols"; the way an e-mail message "hops from mail server to mail server towards its destination. . . mirrors the passage of a telegram from one telegraph office to the next."[3] The most interesting parallels between them lie in the social impacts on the public and their reactions to the two inventions, for example, people's expectations, initial skepticism, the misuse of the technologies and security problems, the romantic possibilities, information overload and so on. Readers may be struck by the homogeneous qualities of the two scientific inventions from so different eras.

This paper is to associate the two state-of-the-art inventions of the past and the present--the Electric Telegraph and the Internet--from cultural and humanistic aspects and to show, as a contrast to what happens in our modern time, how some Victorian writers of popular journals speculated about the value of the invention of Electric Telegraph, and how such progress of communication technology made an impact on people.

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2 *Household Words* 1 (1850): 454-56.

3 Tom Standage, *The Victorian Internet: The Remarkable Story of the Telegraph and the Nineteenth Century's Online Pioneers* (1998, London: Phoenix, 2000)193.

It may be helpful if we briefly review how the precursors of our new communication technology developed before we examine the technological subcultures and the sentiments and excitements aroused.4 As is known, people's attempts to have more efficient ways of communicating with each other in far distances started early. As early as in 1746, the French scientist, Abbé Jean-Antoine Nollet conducted his primitive experiment with the help of two hundred monks each of whom held one end of a twenty-five foot iron wire. They discovered that electricity could be transmitted over a great distance, in their experiment, a mile long. The result suggests that the possibility of some media for sending messages faster than a messenger on horseback or in a ship. Then Claude Chappe launched his research into some signaling systems. He began with striking a casserole dish together with two specially modified clocks to send messages, and then replaced the casserole dishes by a pivoting wooden panel. Henceforce, his audible signaling system was changed to a visible one. At first, Chappe called his new system (with the black-and-white panels, telescopes and code books) "tachygraphe" meaning "fast writer" in Greek, but his friend Miot de Mélito suggested the name "télegraphe," which means "far writer."[5] Ever since then, numerous experiments are carried out by researchers and scientists. In 1793, Chappe designed a more improved optical telegraph that can show different letters by its moving arms. Towers are thus constructed and the network built. In Britain, the clergyman and amateur scientist, George Murray also invented a telegraph with six wooden shutters. Then more and

4 The following information about the history of electric telegraph are taken from Standage, *The Victorian Internet,* Dionysius Lardner, *The Electronic Telegraph* (London, 1855), Robert Sabine, *The History and Progress of the Electric Telegraph* (London, 1869), Jeffrey Kieve, *The Electric Telegraph* (1973), John Durham, *Telegraph in Victorian London* (Cambridge: Golden Head Press, 1959) and Robert Bond, *The Handbook of the Telegraph* (London, 1862).

5 Standage 10.

more experimental electric telegraphs are constructed. In the 1820s, the Danish physicist, Hans Christian Oersted, and the British mathematician and physicist, Peter Barlow, made their breakthroughs based on electromagnetic principles. Then in New York, Samuel F. B. Morse constructed a practical electric telegraph and a signaling code, while William Fothergill Cooke built independently prototypes to send messages over long distances. Cooke then met Charles Wheatstone, Professor of Experimental Physics at King's College London and together they worked out a five-needle electric telegraph, though Wheatstone claimed the invention was mainly his own effort.[6] So far working telegraphs were accomplished. Then telegraph lines were set up; so were offices (fig. 1). The New London and Birmingham Railway Company installed a line one mile long. Operators could read messages by listening to the clicking apparatus. Sending and receiving electric telegraph was a part of everyday life and it resulted in all sorts of anecdotes seen in the papers. At last, telegraphic system was called "The Nervous System of the Metropolis" (see fig. 2).[7]

On 28 August 1850, the first attempt was made to build the cross-Channel telegraphy and in 1852, messages can be sent directly from London to Paris through the submarine telegraphy (see fig. 3). People's feeling about its good prospect was overwhelming. There appears in *Household Words* a poem entitled, "The Great Peace-Maker: A Submarine Dialogue" about the event and the general opinion.[8] In the poem, the Telegraph explains to the fierce and stern-looking sea:

> I am the instrument of man's desire
> To hold communion with his fellow man,
> In distant fields—in other climes afar--

6 For their dispute, see William Fothergill Cooke, *The Electric Telegraph: Was It Invented by Professor Wheatstone?* (London, 1854).
7 *Once A Week,* March 2, 1861; 4: 275-77.
8 *Household Words* 3 (1851): 275-77.

Swifter than flight of migratory bird—
Nay, swift almost as speech from mouth to mouth.

Yet, the sea suggests that man should not "disturb the law/ Which framed humanity, and meted out/ Its time and space." Hearing this, the Telegraph tries to justify man's using their knowledge. It is believed that the invention of Submarine Telegraph can bring about peace and "the spirit of human brotherhood" among all nations, as by this instrument

England whispers India in the ear,
America—north, south—from pole to pole—
And words of friendship may pass round the world
Between the dawn and noon.

At last, the Sea seems to be persuaded, saying in a soften tone

...What God permits,/ I dare not hinder.
I dare not hinder, therefore keep thy place:
And when I roll my surging prayers to heaven,
They shall remember man, and his good works.

In the comic magazine *Punch*, there is also an illustration, "Effect of the Submarine Telegraph; or, Peace and Good Will Between England and France," which represents the hope that Electric Telegraph can bring about world peace (see fig. 4).[9]

In fact, in *Punch* we observe that the invention of Electric Telegraph had inspired all sorts of fancy in the Victorian age. For example, in "Music for Railways," a jolly poem was written as a dialogue between the Kensington station and Great Western station to describe the musical character of the apparatus. The author of "The Capabilities of the Electric Telegraph" speculates about the application of the Electric

9 *Punch* 19 (1849): 117.

Telegraph for domestic purposes.10 There is also a comic little piece, "Education by Electric Telegraph" about how Electric Telegraph could be used by a French master who "could direct his lessons along the line, and the wires laid on to the various schools would communicate to them all the instruction that the French master might be capable of affording."11 This reminds us that today as we spinning the webs into the twenty-first century, universities and schools have been integrating computers into their cirriculum and teaching can be conducted on-line just as the Victorian writer predicted long time ago. Teachers are now able to teach many classes simultaneously in different places without leaving their own districts.

One of the most unforgettable sketch in *Punch* is the one about a married couple who are no longer "on speaking term" and the author proposes that their communication can be promoted by Electric Telegraph (see fig. 5).12 According to him, having such an instrument in their apartment, the wife and the husband can convey to each other by sending short messages to each other, such as "When do you mean to get out of your ill-humour?" and "I'm ready to make if up, if you are" without using irritating tones. This way the husband and wife tend to have reconciliation. Other fanciful ideas about the applications of Electric Telegraph in everyday life are rendered in "Talking by Electric Telegraph," including using the machine to take orders in the coffee-houses, to help the Queen to deliver her annual speech, and to help the speakers in the House of Commons to prevent their drowsiness (see fig. 6).13 There is also a cartoon about taking crime swiftly by the aid of Electric Telegraph as the murderer would very often be "hung upon wires" (see fig. 7)14 It refers to the arrest of the murderer, John Tawell, on 3 January 1845. As it happened, Tawell was on the

10 *Punch* 9 (1845): 21.
11 *Punch* 10 (1845): 205.
12 "Electric Telegraphs for Families," *Punch* 11 (1846): 253.
13 *Punch* 15 (1848): 94.
14 "Swift and Sure," *Punch* 17 (1850): 114.

run under disguise, but the police were able to catch him with the aid of electric telegraph. 15 Interesting "chit-chat by telegraph" is imagined. 16 For example, there is the conversation between a tailor in London to Debtor in Paris:

Q: You call yourself a gentleman?
A: Certainly. Gentleman at large. Ha! Ha!
Q: And I dare say, you think you've done me?
A: Hope so. England expects every man to do his tailor.
Q: One word, do you ever intend to pay me?
A: _____ (A line, but no answer).

As Dionysius Lardner remarks in his treatise on the electric telegraph, "fact stands higher than fiction in the scale of the marvelous; the feats of Aladdin are tame and dull; and the slaves of the lamp yield precedence to the spirits which preside over the battery and the boiler."17

Now if we look at many journalistic reviews of today's most ingenious invention on the Internet, W3C, invented by one of the most important leading scientists, Tim Berners-Lee (1955-), we may find they seem to recapture similar narratives aroused by the Electric Telegraph in Victorian Age. Berners-Lee's *Weaving the Web* (1999) echo stories of building electric telegraphs in the Victorian age. Today's problem of congestion of information in the web and the consequent delay were nothing new; similar plots happened in the telegraph system in Victorian London before. We see the character in the famous cartoon by John Leech saying, "It is now six o'clock and we are in Fleet Street, and this message was only sent from Oxford Street yesterday afternoon at three!" In fact, we can draw a parallel between the dull and meaningless telegraphic messages described in "The Railway Telegraph"18 and the

15 Standage 51.
16 "Chit-Chat by Telegraph," *Punch* 18 (1850): 13.
17 Dionysius Lardner, *The Electronic Telegraph* (London, 1855) 116.
18 *Punch* 7 (1844): 51.

junk mails on the Internet. Also while we are concerned with flirtation or sex on the Internet, we must not forget that a century ago, there was already on-line romance or on-line courtship happening among the young operators. Ella Cheever Thayer's novel, *Wired Love: a Romance of Dots and Dashes* (1879) is based on such relationship. In many respects, Electric Telegraph is just like the Internet: essentially, both enable people to transcend the boundaries. Their pros and cons presumably are the consequences of such transcendent nature. Now though the widespread use of the electric telegraph had soon declined after telephone was invented and used by most people, old electric telegraph proved to be one of the most important mechanisms and media for information dissemination and human interaction in the history of technology; it anticipated the next generation of scientific revolution in computer science. As our modern scientist puts it, "the most pressing question for the future of the Internet is not how the technology will change, but how the process of change and evolution itself will be managed."19 Today while we encounter the change and transition, the challenges and the complex networking activities the computer brings about, we may for a moment in retrospect look at what happened in the Victorian age when the technology of telegraph was just developing and influencing common life, because the history of the past often sheds light on the history of the future.

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19 Barry M. Leiner, et al, "The Past and Future History of the Internet," *Communications of the ACM* 40 (1997): 108.

Fig. 1. From Dionysius Lardner, *The Electric Telegraph* (1855), p. 113.
Fig. 2. From "The Nervous System of the Metropolis," *Once A Week*, March 2, 1861.
Fig. 3. From Dionysius Lardner, *The Electric Telegraph* (1855), p. 145.
Fig. 4. From *Punch* 19 (1849): 117.
Fig. 5. From *Punch* 11 (1846): 253.
Fig. 6. From *Punch* 15 (1848): 94.
Fig. 7. From *Punch* 17 (1850): 114.