ENIAC: The Press Conference That Shook the World

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Introduction

February 14, 1996 is the 50th anniversary of the public announcement of ENIAC, hailed as the first large scale electronic computer. As we celebrate this golden milestone in the history of modern computing and prepare for what has been described as the next millennium in human history, it is important to reflect upon the impact of that announcement on the public perception of computers. ENIAC was certainly not the only large scale computer in operation at the time, but it represents a unique marker in the public consciousness due to the dramatic way in which it was unveiled at a Saturday press conference at the Moore School of Engineering in Philadelphia in 1946. This paper provides an analysis of some typical headlines about ENIAC that appeared in 1946 and claims that these headlines were a major factor in the public perception of computers for decades to come. A significant part of this paper is adapted from an earlier paper that showed the general impact of press accounts on public perception of computers[1]. This paper focuses specifically on the impact that the ENIAC press conference may have had on the early public understanding of the nature of computers.

Background

In the late thirties, there was much interest in developing relay-based calculators that could perform high speed computations. Some of these, such as the Model V developed by Williams and Stibitz for Bell Labs, and the Mark series conceived by Aiken at Harvard and then built by IBM, were general purpose program-controlled devices. The motivation for the development of many of these machines was the solution of differential equations, which had frustrated scientists for decades due to the sheer volume of computations needed for their solution. The pressure to solve such equations increased with the development of new weapons and airplanes during World War II. These devices required the solution of thousands of equations used to perform structural analysis and to create the ballistic tables needed to develop and implement them in the field.

Because much of the funding for these devices was related to the war effort surrounding World War II, most of these calculating machines were developed in secrecy. The first fully operational general purpose program-controlled calculator was actually completed in Germany in 1941 by Conrad Zuse, but the American public was unaware of this achievement until well after the war ended. Another example was the Mark I, which was completed in January 1943, but was not unveiled to the public until August, 1944. Thus, the Mark I was actually the first large scale electromechanical calculator to enter the public consciousness. At that time, the president of IBM, Thomas J. Watson, insisted that the Mark I be housed in a stainless steel case with blinking lights to give it a futuristic look. Mark I was regarded as a remarkable achievement, and remained in operation for 16 years, calculating mathematical tables, even though it was already obsolete by the time it was unveiled.

Throughout this period of time, the Moore School of Engineering had been working with the War Department's Ordnance Department to create a Ballistic Research Laboratory (BRL). At the beginning of the war, about 100 human computers, mostly females with college degrees and an aptitude for math, were trained at BRL to compute the ordnance tables using desk calculators. "Before the invention of the digital electronic computer, these tables were terribly difficult to make. For only the most basic factors, altitude and range, the BRL had to calculate approximately two to four thousand trajectories for each pair of projectile and gun[2 (p. 109)]."

At the same time, efforts were begun at the Moore School of Engineering to develop an automated differential analyzer. In 1942 Prof. John Mauchly proposed the construction of an "electronic calculator" or "electronic computor" based upon the use of high speed vacuum tubes. The next year his project was funded by the government, and Project PX, the secret classification for ENIAC began in June, 1943. It was to be high speed, programmable, and general purpose in problem scope. ENIAC took about a year to design and another year and a half to build or 200,000 man-hours altogether[3]. Thus, ENIAC wasn't completed until November, 1945, three months after the Japanese surrender. ENIAC weighed 30 tons, covered 1,500 square feet of floor space, used over 17,000 vacuum tubes (five times more than any previous device), 70,000 resistors, 10,000 capacitors, 1,500 relays, and 6,000 manual switches, consumed 174,000 watts of power, and cost about $500,000[2,3].

Although ENIAC appeared too late for one war, it was just in time for another, the Cold War, which had a different set of military priorities. The new mathematical challenge for the military was to perfect the atomic bomb. Thus, the first job given to ENIAC had nothing to do with firing tables, but was a large and complex calculation of the feasibility of the proposed design for the H-bomb. The program was run in November, 1945, and revealed several flaws in the proposed design. It was acknowledged in an internal memo that, due to the complexity of such problems, it would have been impossible to arrive at a solution without the aid of ENIAC[4]. One member of the ENIAC team characterized the public announcement of ENIAC as follows: "In a major media event on February 14, 1946 ENIAC was unveiled to the world at the Moore School of

Engineering[5]" The following year ENIAC was installed at the Aberdeen Proving Ground in Maryland where it continued to perform calculations for the Army until 1955 for problems such as weather forecasting, wind tunnel design, and cosmic ray study.

Media Impact on the Public Perception of Science and Technology

In order to understand the full impact of the ENIAC press conference in 1946, it is first necessary to consider how the popular media influences the public perception of science and technology. Numerous writers have described the powerful influence that the news media has had historically on public opinion[6-8]. However, the influence of the press on public opinion, although widely acknowledged, has been difficult to assess. Tuchman describes the press and other mass media as one of the major factors in the social construction of reality[9]. Previous studies have indicated that the impact of the press is related to the relative strength of the individual's personal relationships and primary socialization groups. As the influence of these groups has declined over the past five decades, the impact of mass media has increased[10]. Klapper has argued that the images presented by the press are interpreted differently by different people, depending upon peer group, personal beliefs and values, predisposition, and past experience. The press is thus a contributing, but not a primary, cause of the public's attitudes and beliefs[11].

Gans has defined news as "information which is transmitted from sources to audiences through journalists.... summarizing, refining, and altering what becomes available to them ...to make the information suitable for their audience[12]." It is in this role of attempting to make science news "suitable" to the lay audience that the press has exerted a powerful influence on public opinion due the public's naivete regarding these issues[9,10,13]. Nelkin has stated, "..most adults in fact become informed about science and technology through the media...public understanding of science and technology is critical in a society increasingly affected by their impacts and by policy decisions determined by technical expertise....for most people the reality of science is what they read in the press. They understand science less through direct experience or past education than through the filter of journalistic language and imagery. With the exception of an occasional television program or radio notice, newspapers and popular magazines are their only contact with what is going in on rapidly changing scientific and technical fields, and their major source of information about the implications of such developments..[13(p. ix - x, 2)]."

As scientific research expanded after World War I, an increased public interest in science was reflected in a growing popular science press that focused mainly on applications. A group of writers became the gurus of science writing during and after World War II with the rapid development of science and technology. In fact, their style is still reflected in the images portrayed in science writing today. Science was seen as the way to get things done, but selling science to the public through the popular press meant making compromises. Newspapers had to compete for readers by catering to the prevailing popular tastes that emphasized human interest, drama, and even romance. Science writers focus on drama, aberration and controversy in much of the reporting about science and technology. News about technology and risk is often conveyed with all the attributes of fiction as a story with heroes and villains, conflicts and denouement. Complex issues are usually avoided due to assumptions about audience interest and level of understanding.

Metaphors are a prevalent and important vehicle of public communication in all areas, but they are especially important in communication about science by the news media. Explaining and popularizing unfamiliar, complex, and frequently technical material can often be done most effectively through analogy and imagery. "But metaphors are more than an aid to explanation; they are also strategic tools...'designed to organize and command an army of one's thoughts and images so as to organize them...they effect the ways we perceive, think, and act, for they structure our understanding of events, convey emotion and attitudes...[13(p. 11)].'" Thus the press becomes more than simply a source of information about science and instead plays a significant judgmental role. "By their choice of words and metaphors journalists convey certain beliefs about the nature of science and technology, investing them with social meaning and shaping public conceptions of limits of possibilities...some words imply disorder or chaos; others certainty and scientific precision. Selective use of adjectives can trivialize an event or render it important; marginalize some groups, empower others; define an issue as a problem or reduce it to the routine [13(p. 11)]." In a study of the effects of advertising on the popular understanding of computers over a 30-year period, Aspray and Beaver found that the use of imagery, metaphors and headlines in computer advertising had a significant impact the public's understanding of the nature of and perceived uses of computers[14].

Citing the example of the discovery of interferon in 1980 Nelkin describes the effect of the press on public opinion. Despite qualifications in scientific journals, the public press was consistently enthusiastic. Interferon was described as a" magic bullet," a "wonder therapy, " "cancer weapons" and "a sure winner." Within two years the tone of press regarding interferon had changed to disillusionment. This case study exemplified certain characteristics regarding how the press deals with science and technology:

1) imagery replaced content with the use of metaphors to describe difficult topics;

2) research was covered as a series of dramatic events, rather than incremental process ;

3) readers were treated to hyperbole designed to raise their expectations which led to premature enthusiasm and eventual disillusionment; and

4) the news focused on the competition to produce a new product.

The gradual accumulation of information inherent to the research process is not considered news. The surprising feature of science journalism is its homogeneity. While journalistic reports on science and technology vary in accuracy, depth, and detail, most articles on a given subject focus on the same issues, use the same sources of information, interpret the material in the similar terms, and use the same metaphors and imagery[10].

What is known about public attitudes toward science and technology corresponds with messages conveyed in the press[10,13,15]. " The actual influence of the press, however, will vary with the selective interest and experience of readers. In esoteric areas of science and technology, where readers have little direct information or preexisting knowledge to guide an independent evaluation...the press, as the major source of information, in effect defines the reality of the situation for them...[6(p. 77)]" Handlin described these attitudes, suggesting that science was hardly assimilated by the public even in technologically advanced cultures. "Paradoxically the bubbling retort, the sparkling wires and the mysterious dials are often regarded as a grave threat...The machine which was a product of science was also magic, understandable only in terms of what it did, not how it worked. Hence, the lack of comprehension or of control, hence also the mixture of dread and anticipation [16(p. 156)]. "

The effect of the press messages seems to depend upon the social context in which they are received, For example, a war context such as existed during the development of ENIAC described in this paper would lend more urgency to scientific breakthroughs than normal peacetime science. Nelkin has also noted that the press coverage of new technological developments plays on and probably encourages the public's desire for easy solutions to economic, social and medical problems. Given the powerful influence that the press has played on public opinion regarding science and technology since World War I, it becomes apparent that the representation of computers by the media in those crucial early years of computing had a great impact on the public perception of computers.

Methodology

Newspaper articles that appeared on February 15, 1946 and shortly thereafter were used as the data for this study. The data included 43 newspaper articles and 5 journal articles that appeared in 1946 -47. The actual newspaper articles and copies of the journal articles were found in the Hagley Museum and Library Archives among the Sperry Rand v Honeywell court documents containing personal papers from John Mauchly and John Atanasoff. The collection contained articles about the unveiling of ENIAC from newspapers all over the United States. The assumption was made that the data were representative, if not exhaustive, of what was appearing in the news media about ENIAC.

A second assumption was that the newspaper headlines, rather than the full articles, would provide sufficient data for the study. This simplification was based upon previous research which stressed the importance of headlines in both drawing readership and forming public opinion [6,10, 12, 13, 15, 16]. In some cases, quotations are taken from the body of the articles to support a particular point, but in most cases only the headlines are discussed. In describing the role of headlines in forming public opinion, Nelkin stated that "newspapers try to attract readers through dramatic headlines, graphics and leads. With detailed explanations and qualifications buried deep in the text, the images of science and technology received by casual readers who simply scan the headlines may be quite different from those received by careful readers[13(p. 120)]."

A content analysis of the newspaper headlines was used to determine three aspects of early computers: nouns used to provide an object metaphor; adjectives used to describe attributes; and verbs used to show imputed action. From this analysis, characterization categories were formulated. The object metaphors which appeared repeatedly for ENIAC were: brain, robot, human, calculator, and computer. The prevelant attributes for ENIAC were: fast, intelligent, infallible, and conscious. Example of headlines illustrating these characterization categories are shown in Figures 1 - 5.

The ENIAC Press Conference

Having examined the background and development of ENIAC over a three-year period, we will now look at how this engineering achievement was made public in February, 1946, and how that announcement subsequently influenced the public perception of computers for decades to come. With the official declaration of the end of the war, the War Department made the decision to make public the work that had been secretly carried on during the war to develop high speed calculators. Although the general scientific usefulness of high speed calculating devices had become apparent, many scientists such as " Bush at MIT, Aiken at Harvard and Stibitz at Bell Labs, regarded ENIAC as a foolish endeavor, bound for failure and a waste of government funds that could have been better spent on proven technologies of relay calculators and differential analyzers[2(p. 137)]. "

A highly public and dramatic press conference was one way to respond to the ENIAC detractors and to get the public to buy into spending more tax dollars on continued research and development of the next great machine being developed at the Moore School of Engineering, the EDVAC. So on Saturday, February 14, 1946, the press was invited to the Moore School of Engineering in Philadelphia for the public unveiling of ENIAC. A group photo taken on that day shows the eight men who were considered responsible for the development of ENIAC - the dean of the Moore School, the chief of Army Ordnance, the chief of the Research Branch of Army Ordnance, and five engineers who were responsible for carrying out the project. At that event, mathematician Arthur Burks was responsible for demonstrating the capability of ENIAC to the press corps:

> "I explained what was to be done and pushed the button for it to be done. One of the first things I did was to add 5,000 numbers together. Seems a bit silly, but I told the press, 'I am now going to add 5,000 numbers together' and pushed the button. The ENIAC added 5,000 numbers together in one second. The problem was finished before the reporters had looked up!
>
> The main part of the demonstration was the trajectory. For this we chose a trajectory of a shell that took 30 seconds to go from the gun to its target. Remember that [human computers] could compute this in three days, and the differential analyzer could do it in 30 minutes. The ENIAC calculated this 30-second trajectory in just 20 seconds, faster than the shell itself could fly [17]. "

Based upon that demonstration and other photos taken inside of ENIAC, the press corps developed their stories that appeared in Sunday newspapers the following day. The event was hailed in newspapers all over the United States and Europe, and it provided the public with its first view of large-scale, high-speed computers. Rather than showing the picture of the eight men in the group photo, the newspapers published pictures showing a huge room with wires, switches, and lights. In this room humans were seen walking around inside and looking very small and fragile by comparison. In these early pictures, the humans, who were entering the data and examining the results, appeared to be serving the demands of the machine rather than vice versa, much like the images seen previously in science fiction classics, such as the 1927 Fritz Lang film, *Metropolis*.

In bold headlines seen around the world, metaphorical images such as electronic brain, magic brain, wonder brain, wizard, and man-made robot brain were used to describe the new calculating machine to an awestruck public. Examples of these headlines shown in Figures 1 - 3 demonstrate how newspapers tried to outdo each other in making flamboyant claims about ENIAC. Several months later a picture of ENIAC was actually shown in the June, 1946 issue of *Mechanix Illustrated* superimposed over the picture of a human brain!

After that initial press conference, occasional attempts were made by the press to correct misconceptions about the new computing devices. For example, in April of 1946 it was stated in the *Washington News* that "Electronic Super-Brain Has One Limitation... these electronic 'super-brains' are , of course, unable to do any actual thinking... [18(box 9a)]." For the most part, however, anthropomorphic references in headlines continued to shape the public perception of computers for years to come. ENIAC was referred to as a child, a mathematical Frankenstein, a mechanical Einstein, a whiz kid, a predictor and a controller of weather, and a wizard (Figure 4). Even headlines characterizing ENIAC as a calculator or computer used metaphorical language that raised public expectation and even fear of the new machines (Figure 5).

Two articles appeared about ENIAC that were straightforward and unsensational. One of them was the June, 1946 issue of *Scientific American* in which the headline read, "Electronic Calculator: uses 18,000 tubes to solve complex problems." Similarly, the renowned British physicist and mathematician D. R. Hartree visited the Moore School to test ENIAC and subsequently wrote an article describing how it worked in the October 12, 1946, issue of *Nature* entitled, "ENIAC, An Electronic Calculating Machine." As a result of that article the *London Times* published an article on ENIAC on November 1, 1946 headlined, "An Electronic Brain: Solving Abstruse Problems; Valves with a Memory." Dr. Hartree immediately wrote a letter to editor criticizing the headline. His response was printed the next week under the banner, "The 'Electronic Brain': A Misleading Term; No Substitute for Thought [18(box 9a)]."

Unfortunately, his objections fell on deaf ears and the members of British press corps, like their American counterparts, continued to use anthropomorphic and awesome characterizations for the computers subsequently announced in Britain. Even a scholarly press release for the Department of Scientific and Industrial Research in London on Nov. 6, 1946 was titled,"The Automatic Computing Engine: The National Physical Laboratory Designs a New Automatic Brain." As soon as the British began announcing their computers, the American press again picked up the theme with headlines like "Briton Says New Robot Brain Makes Ours Act Like Moron," The *Philadelphia Evening Bulletin*, Oct. 6, 1947; "British to Build Robot 'Out-Thinking' U.S. Type," *Boston Daily Globe*, Nov. 7, 1946; "Electronic Brain Virtual Reality, Mountbatten Says," *Washington Post*, Nov. 8, 1946; and "'Brain' Machine Makes Slowpoke of Man: Instrument Being Built in Britain Opens New Worlds to Scientists.", newspaper unknown, Nov. 26, 1946 [18(box 9a)].

Frequently the new computers were characterized as capable of solving complex scientific problems as in the April, 1946 *Popular Science Monthly* article "Lightning Strikes Mathematics : Equations that spell progress are solved by electronics" which stated, "With the help of lightning fast computers to do most of the drudgery on problems that have baffled men for many years, today's equation may be tomorrow's rocket ship, " and the May, 1946 *Science Illustrated* article "Calculators: eggbeaters, airplanes, even men's thinking stand to profit by developments in computers [18(box 9a)]." And it was not unusual to find the new computers characterized as capable of solving complex social problems such as the March 12, 1946 Philadelphia *Evening Bulletin* editorial cartoon showing government officials standing in front of ENIAC waiting for the solution to a perplexing price-wage ratio problem.

The Computer Creators Speak Out

Designers and developers of the early computers were concerned about the images being projected by the press to the public and made efforts to dispel the developing myths about the new devices. The article "Army 'Robot Brain' Does 100 Years Math in 2 Hours: New Device to Cut Research Blocks" in the *New York Journal-American*, on Feb.15, 1946 stated, "while ENIAC was described as a 'revolutionary' instrument to help man's thought, the War Department cautioned that it does not replace original, creative, human thinking. Minds like Einstein's are still needed to formulate mathematical ideas - but they can be spared the burden of tedious detail [18(box 9a)]."

John Mauchly, co-inventor of ENIAC, was quoted in the February 15, 1946 *Baltimore Sun*, "A quiet, businesslike, affable man, Dr. Mauchly took pains to make clear that the electronic calculator does not replace original human thinking, but rather frees scientific thought from the drudgery of lengthy calculating work...What he thinks of the future effects of his brain-child, he summed up briefly by saying: 'In high-speed computing and more wide-spread use of numerical mathematics for industrial design lie possibilities which affect us all - better transportation, better clothing, better food processing, better television, radio and other communications, better housing, and better weather forecasting' [18(box 9a)]."

After receiving a letter from a high school algebra student from the Lancaster Mennonite School on October 18, 1946 regarding doing an algebra problem on a computer, Mauchly responded, " ... I might point out that a calculating machine doesn't know how to do algebra, but only arithmetic. Before a problem can be helped by the use of a calculating machine, some person must know what arithmetic processes he wishes the machine to carry out. For some types of problems, this person may have to do considerable algebraical work, and may need to know a lot of things about even more advanced mathematics. Hence, 'bigger and faster' calculating machines make it more necessary, not less, for this country to have many students well trained in mathematics [18(box 9a)]."

Similarly, J. Presper Eckert, Jr., the other co-inventor of ENIAC was even more self-effacing when he tried to downplay the spectacular way in which ENIAC was being depicted. He commented, " What puzzles me most is that there wasn't anything in the ENIAC in the way of components that wasn't available 10 and possible 15 years before...The ENIAC could have been invented 10 or 15 years earlier and the real question is, why wasn't it done sooner [13].

In a November,1946 article about the British ACE computer entitled "'Brain' Machine Makes Slowpoke of Man: Instrument Being Built in Britain Opens New Worlds to Scientists," Dr. Alan Turing, one of its creators, was even more adamant. Describing the ACE, the article stated, "The 'brain' possesses a certain amount of memory and can use judgment and make a choice. ...Dr. Alan Turing, who although only 34 years old, conceived the idea of the 'brain' takes a more solemn view. He deprecates any notion that the machine can be a complete substitute for the human brain. 'The fashion which has sprung up in the last 20 years to decry human reason,' he says, 'is a path which leads straight to Nazism.'[18(box 9a)]". In spite of efforts to clear up misconceptions about the new computers, the press continued to present exaggerated metaphorical images of computers up into the early 1960's.

From High Expectations to Disillusionment

At the 15th anniversary of ENIAC, Dause L. Bibby, President of Remington Rand reflected a continuing belief in the awesome power of computer technology when he stated in a keynote address to a 1961 computer conference, "...these past 15 years have produced one of the greatest revolutions of modern times. The computation ability of man has been increased by 1-million times over all previous recorded history. The electronic data processing industry has grown from zero in 1946 to $1 billion in equipment delivered last year...More that 5,000 computers are in operation today, and our forecasters tell us that five years from now 10,000 to 15,000 will be at work in the United States alone...Above all, the computer can provide at least a partial answer to our shortage of engineering manpower... It has been said...that one top U.S. physicist plus a LARC or STRETCH computer can out-produce 1,000 Russian engineers [18(box 344)]."

Newspaper accounts of the 25th anniversary of ENIAC revealed that disappointment related to overblown expectations about the early computers had definitely set in. On August 4, 1971 under the headline, "Computer is 25 and Its Users are Critical," W. D. Smith of the *New York Times* wrote, "The computer has made a significant impact on society, though it has not been as useful as some of its supporters supposed or anywhere near as harmful as its detractors would have people believe...in many business applications the computer, rather than freeing the user, has created restraints. In many instances the user has been forced to view his own world through the wrong end of the telescope [18(box 382)]." In another article the following day, "Future of Computer is Assessed," Smith proved himself a prophet when he predicted a future vision of the computer as pocket-sized and cheap. He wrote, "...the most powerful forces now affecting the computer industry are working in opposite directions. The continuing dramatic improvements in electronics lead to dispersal of computing power...a sort of tug of war between dispersal of computer power to points where transactions occur and centralization of it in giant remote centers... [18(box 382)]"

Five years later on Feb. 15, 1976 an article entitled "Machine that changed the world is 30 today" appeared in the *Philadelphia Inquirer* and stated, "A revolution was born 30 years ago....and there was not a man or woman there who had the slightest idea what was being done for , or to, the world [18(box 382)]." It was ironic that this article appeared just one year before the announcement of commercially-available personal computers which would start another revolution.

Conclusions

It has been the thesis of this paper that early public attitudes toward computers were shaped by the press. Like many other examples of scientific discovery during the last 50 years, the press consistently used exciting imagery and metaphors to describe the early computers. The science journalists covered the development of computers as a series of dramatic events rather than as an incremental process of research and testing. Readers were given hyperbole designed to raise their expectations about the use of the new electronic brains to solve many different kinds of problems. This engendered premature enthusiasm, which then led to disillusionment and even distrust of computers on the part of the public when the new technology did not live up to these expectations.

As late as four decades after the announcement, researchers examining the public perception of computers continued to find vestiges of a a phenomenon they characterized as an “awesome machine” view of computers. Surveys of public attitudes about computers conducted in 1963 by Lee[19], in 1971 by AFIPS and Time Magazine[20], in 1981 by Morrison[21], and in 1991 by Turnipseed and Burns[22] all revealed that a significant number of people still thought of computers as "awesome thinking machines." They would respond affirmatively to such statements about computers as a) they can think like a human being thinks, b) they sort of make you feel that machines can be smarter than people, c) there is no limit to what these machines can do, d) electronic brain machines are kind of strange and frightening, and e) they are so amazing that they stagger your imagination[19]. These are exactly the images of computers that the press had consistently presented to the public for the previous 20 years. Further, the computer attitude research conducted over the past 30 years suggests that the perception of computers as awesome thinking machine may have in fact retarded public acceptance of computers in the work environment[23,24], at the same time that it raised unrealistic expectations for easy solutions to difficult social problems.

From a technological perspective, it has been stated that ENIAC was important because it was the first successful electronic digital computer to perform a broad range of useful work. In fact from 1945 until 1950, there were no other general-purpose electronic digital computers in the US that were fully operational, and ENIAC was used around the clock[5]. Its impact on subsequent logic and circuit design in electronic computers was not great, but its impact on the development of the computer field was enormous. The dozens of men and women who worked on and with ENIAC during its operational decade went on to become well-known pioneers in the field of computing. In the decade that followed the announcement of ENIAC the “installed base” of electronic computers grew from two (ENIAC in the US and Colossus in the UK) to over 200 computers distributed across 15 countries. In his study of the international diffusion of computer technology during that decade, Aspray has attributed this growth to scientific and commercial factors[25]. He does not address the impact that public perception might have on the diffusion of technology. In this paper we have attempted to make the case that public perception fueled by excitement generated at the ENIAC press conference also played an important role in the subsequent development and diffusion of computer technology after ENIAC.

There can be little doubt that, as a result of the ENIAC press conference, the public perception of calculating and computing devices went through a dramatic paradigm shift. Never again would the public view computers as mere mechanical desk-top calculating devices. In fact, after the ENIAC announcement and the ensuing press accounts, the dictionary definition of the word computer changed from “a human who performs mathematical calculations” to an “electronic device for performing mathematical calculations.” Thus, we can say that the ENIAC press conference held on Valentine’s Day in 1946 had an enormous impact on the public understanding of computing and influenced the public consciousness for decades.

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"New 30-Ton Electronic 'Brain' is Unveiled; Is World's Fastest Calculating Machine: Tubes Speed Up Laundryman's Abacus Principle." *The Evening Bulletin* (Providence).

"Fastest Mechanical Brain Disclosed; Weighs 30 Tons: Giant Calculating Machine Said to Work 1,000 Times Faster Than Any Previously Built." *Chicago Sun*.

"Computing Super-Brain Aids Army." *Newark Star Ledger*.

Figure 1: Characterization of ENIAC as a brain [18(box 9a)].

Feb. 15, 1946

"Inventors and Operation of World's Fastest Mathematical Robot." *Youngstown Vindicator*.

"Army 'Robot Brain' Does 100 Years Math in 2 Hours: New Device to Cut Research Blocks." *New York Journal-American*.

"Unveil Lightning Robot Computer: Machine 1000 Times Faster Than One at Harvard Holds Great Possibilities for Mankind." *Boston Post* (picture caption: "No problem too tough for Robot").

Feb. 17, 1946:

"Robot to Yield Weather Data." *Philadelphia Inquirer*.

Feb. 28, 1946

"ENIAC - The New Lightning Robot Computer." *Christian Science Monitor*.

Figure 2: Characterization of ENIAC as a robot [18(box 9a)].

Feb. 15, 1946:
"30-Ton Electronic Brain at U. of P. Thinks Faster than Einstein." *Philadelphia Evening Bulletin.*

"Blinkin' ENIAC a Blinkin' Whiz: Electronic Calculator Operating at Penn Does Work of 20,000 Persons." *Philadelphia Record.*

"Army Unveils Fastest Calculator in World: 'ENIAC,' Electronic Big Brother of Abacus, Weighs 30 Tons, Cost $400,000, is 1,000 Swifter Than Other Machines." *Wilmington (DE) Morning News.*

"100-Year Problem Done in 2 Hours." *The Baltimore Sun.*

"Man-Made 'Mental Giant' No Longer Army's Secret; 100 Years of Mathematical Work Cut to Two Hours." *The Oregonian.*

"New Mechanical 'Einstein' Called Fastest Calculator." *Jacksonville Journal.*

"'Mechanical 'Einstein' Calculator Has Mathematical World in Palm." *Boston Herald.*

Feb. 16, 1946:
Arthur Godfrey broadcast: ENIAC is described as a "man-made mental giant. "

Figure 3: Characterization of ENIAC as fast and intelligent [18(box 9a)].

Feb. 15, 1946:
"It Won't Mind the Baby - Yet; But Little Else Stops 'ENIAC'." *New York Post.*

Feb. 19, 1946:
"Tear Up the Books, Kids :Little Daisy (ENIAC, for short) Is Going to End Math." *Philadelphia Record.*

Feb. 26, 1946:
" Hill Men Helped Make ENIAC Atom-*Conscious*." *Los Alamos Times*. " It is a mathematical Frankenstein, covering in one lightning-swift stride the area of calculation traversed by the brain of man in an incalculable number of head-throbbing days - and without a single one of many mistakes he might make... "

June, 1946:
"It Thinks With Electrons." *Popular Mechanics.*

July 3, 1946:
"Mechanical Quiz Kid." *Pathfinder.*

Figure 4: Anthropomorphic characterizations of ENIAC [18(box 9a)].

Feb. 15, 1946:
"Electronic Computer Flashes Answers, May Speed Engineering." *New York Times*.

"New Computer Lightning Fast: Army Calls It the World's Best Calculator." *The New York Sun*.

"Amazing Electronic Machine Capable of 100 Years of Math in Two Hours." New Orleans newspaper.

"World's Fastest Calculator Cuts Year's Task to Hours." *Boston Daily Globe*.

"5000 Problems A Second Easy for Calculator." *Washington Post*.

"New Calculating Machine is 1,000 Times Faster Than Present Devices: All-Electronic Computer Handles Mathematical With Dazzling Rapidity - Called 'Mechanical Einstein.." *Kansas City Times*.

"Electronic Computor (sic) Flashes Answers; Top War Secret Rivaled A-Bomb, Radar: Local Men Helped Build and Design Most Amazing Machine." *Norristown Times Herald*.

Feb. 18, 1946:
"Answers By Eny: All Electronic Super Calculator Is a Whiizz at Super Problems." *Newsweek.*

Feb. 23, 1946:
"Adds in 1/5000 of a Second: General purpose electronic computing machine expected to solve problems of nuclear physics, aerodynamics and scientific weather problems." *Science News Letter*.

April, 1946:
"Electronic Calculating Machine is a Giant of Precision: Mathematical robot with nearly 18,000 vacuum tubes does in hours what mechanical devices would require years to complete." *Electrical Manufacturing*.

July, 1946:
"Super Electronic Computing Machine." *Electronic Industries*.

Figure 5: Characterization of ENIAC as a calculator or computer [18(box 9a)].