

My Utilitarian Chinese Memento: The History of the Ballpoint Pen

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Made in China

For all intents and purposes, my three-week sojourn through China should have given me an appreciation for the Chinese people and their culture, a more thorough understanding of life under a Communist regime, and perhaps some knowledge of handy Chinese phrases. Indeed, I left the country with all of those things, but I also found myself fascinated with the most mundane of souvenirs: the ballpoint pen, particularly the one that I acquired while studying at Zhejiang University in Hangzhou, China, during a trip with fifty other Cornell students sponsored by Cornell University and the Chinese government. When we arrived for our orientation, we found each place set with an array of official University and government forms. Next to these stacks of paper rested green triangular ballpoint pens filled with blue ink, sporting retractable points, each emblazoned with the university's name, phone number and website. Considering my at-best-rudimentary Chinese language skills, this pen proved quite handy, as I would have been at a loss to ask a hotel clerk or cashier to borrow one. Beyond this small bit of good fortune, I thought little of the pen as I carried it in my pocket throughout the trip until I was making notes on a lecture by one Dr. Wu Xiaobo about the Chinese economy. As he detailed the various aspects of China's post-Mao era economic reforms, he informed us that 80 percent of all of the world's pens are made in China, and 70 percent of

worldwide pen components are made in a particular district, the name of which my sloppy handwriting ironically rendered unintelligible.¹ While the veracity of Chinese economic statistics has been hotly contested recently, and reliable data on Chinese ballpoint pen manufacturing data is all but nonexistent, Wu's remarks nonetheless made me reconsider the oft-overlooked history of the pen that I held in my hands, just one of the billions of ballpoints across the world.

The pens that I buy by the dozen, and that businesses purchase by the thousands, mainly come from China, which today supplies the world with a large portion of its inventory of cheap ballpoints. Even given the dubious nature of Chinese economic statistics, the Chinese have nonetheless capitalized on an insatiable demand for ballpoint pens. An industry trade journal explains: "Ultimately, the history of the pen is about the quest for a low-cost, desirable, practical and quality instrument that people could use comfortably."² The Chinese have especially exploited the ballpoint pen's low cost. One of the few available statistics shows that in 2005 alone, China exported 339 million dollars of ballpoint pens, pencils, and fountain pens to the United States, by far its biggest pen importer, and 973 million dollars of writing instruments to the entire world.³ Upon considering this fact, I realized that in my hands, I held the rarest of objects: a Chinese-made pen actually acquired in China. When I returned to America, I started carrying this pen in a competition with myself to see how long I could use this pen without losing it. Such a game, though, defeats one of the main purposes of a ballpoint pen, namely that it is so cheap and so ubiquitous that its loss barely affects its owner. Remarkably, my pen lasted four months before crumbling in an inky mess under the weight of the textbooks in my backpack. Ruing my carelessness but not shedding a tear, I subsequently turned to the heap of pens in a coffee mug on my desk as my writing implements of choice and carried on with my life.

These ballpoint pens, to which I would normally not give a second thought, in fact encompass two millennia of innovation and experimentation. Out of the frustrations of a journalist in war-torn Hungary arose an object that can be found everywhere from pockets and purses to hotel rooms, offices, and even Apollo 11, on which the seemingly-perfunctory ballpoint pen saved the first men on the moon

¹ Xiabobo Wu. "The Entrepreneurial Rising of China." Lecture, Zhejiang University, Hangzhou, China, 11 January 2010.

²Pip Brooking. "Pull of the Pen," Promotions and Incentives (November/December 2004), 35.

³Icon Group International, "Global Trade Perspective 2005 - Propelling or Sliding Pencils, Ball Point Pens, Felt-Tipped or Porous-Tipped Pens & Markers, Fountain Pens" (San Diego, 2005), 33.

from certain doom. Andy Warhol found another unconventional use for ballpoint pens, deeming their marks elegant enough to use in his famous series of sketches of scenes and people of Southeast Asia.⁴ Even Plato and Carlo Ginzburg have offered their diametrically opposed views on the implications of written words for the human mind, words that people the world over today produce in large part with ballpoint pens. My particular Chinese memento represents just one of an almost unfathomably large number of ballpoint pens that help people across the globe record any conceivable thought for any conceivable reason. However, it is precisely this ubiquity that has limited the literature on the history of the ballpoint pen. Therefore, I have consolidated the fragmented work on the ballpoint pen's place in history in this essay. In doing so, I found that the ballpoint pen forever altered written communication, making writing affordable and accessible to the masses by avoiding the technical deficiencies and expense associated with the previous three millennia of writing instruments.

A Brief History of Writing Instruments

The ballpoint pen has become an essential accessory, a writing utensil ideal for taking anywhere. It fits in a pocket or a purse, will not leak and writes in quick-drying ink, a monumental improvement over the writing implements of centuries past. Even before the invention of the first quill pens, "The Babylonians impressed their cuneiform characters in clay tablets with a wedge-shaped instrument; the Greeks and Romans chiseled inscriptions on stone monuments and wrote with a stylus on wax-coated tablets." Three thousand years ago, both the ancient Chinese and Egyptians were writing their calligraphy and hieroglyphics, respectively, with brushes.⁵ Quill pens followed shortly thereafter, emerging between 250 BC and 68 AD, during which time the Dead Sea Scrolls were at least partially written with quills.⁶ Quills were often made from the feathers of geese, though any relatively large bird would suffice, and the feathers were subsequently shaped into a sharp point for writing. Many scribes would carve their own quills, though professional pen cutters would sell their wares on the streets of Europe, and later, North

⁴ Lyle Rexer, "The Pen: Mightier Than You Thought," *The New York Times*, April 13, 2003, p. 2.31.

⁵ Joe Nickell, *Pen, Ink and Evidence: A Study of Writing and Writing Materials for the Penman, Collector and Document Detective* (Lexington, Kentucky, 1990), 3.

⁶ Kitty Burns Florey, *Script and Scribble: The Rise and Fall of Handwriting*, (Brooklyn, New York, 2009), 31.

America. However, quills often clogged with dried ink and the points dulled quickly, requiring constant sharpening.⁷ Even given these glaring problems, pen technology did not skip directly from feathers to the ubiquitous pieces of plastic carried in pockets, purses, briefcases and backpacks worldwide. In between the quill and the ballpoint pen, the introduction of metal to the realm of writing instruments made pens more durable and eventually, more accessible to the masses.

From ancient times until mass-production of metal-tipped pens began in the 19th century, any writing instrument beyond a quill remained a novelty. In 1700, a century before mass production of metal-tipped pen, one Roger North wrote a letter to his sister in which he told her, “You will hardly tell by what you see that I write with a steel pen...When they get the knack of making them exactly, I do not doubt but that government of the goose quill is near an end.”⁸ North appears among the first to realize the advantages of a metal-tipped pen over quills. First patented in 1803, the metal pen held ink far better than the quills used for centuries before.⁹ However, the user still had to dip the metal pen in ink before beginning to write. Dip pens also produced uneven ink distribution on the paper, as characters inscribed just after dipping would be much darker than those produced just before the pen required another dip. The nib (the technical term for the point) could also scratch or rip the paper when the ink ran out.¹⁰ As such, the more portable fountain pen and ballpoint pen would eventually surpass the steel-tipped pen by eliminating many of these drawbacks. Nonetheless, in the early 18th and 19th centuries, these steel-tipped pens offered the advantage of points that would not dull nearly as quickly as quills, which often had to be re-sharpened until the quill literally disappeared. Metal nib pens helped pave the way for the more advanced fountain pen, as pen manufacturers perfected a nib that was flexible and sturdy, rather than stiff and brittle, as quills and the first metal dip pens were.¹¹

With improved nibs, the advancement of writing instruments still faced one major challenge, namely the integration of ink and writing instrument into the same container. The fountain pen, today considered a quaint relic relegated to collectors and formal signing ceremonies, rose to prominence in the late 19th and early 20th centuries by addressing this very issue. The underlying logic behind the fountain pen appears deceptively simple: put the ink in a reservoir above the point, producing a portable, self-contained and durable writing instrument. However,

⁷Nickell, *Pen, Ink, and Evidence*, 5-8.

⁸As cited in *Ibid.*, 9.

⁹Florey, *Script and Scribble*, 48.

¹⁰Nickell, *Pen, Ink and Evidence*, 18.

¹¹*Ibid.*, 9-10.

regulating the flow of ink when writing and ensuring that the remaining ink stayed in the reservoir proved extraordinarily difficult. While in 1809, the inventor Folsch perfected a valve for opening and closing the reservoir, the inks of the day caused numerous problems when employed in fountain pens. The fundamental problem stemmed from the inks' compositions. The earliest inks, invented three centuries previously in China, were made of solids suspended in fluid.¹² Ink industry magnate F. Grant Schleicher cites Venetian ink maker Canneparius' formula for ink to be "one pound of (linseed oil) varnish and juniper gum, thoroughly mixed one ounce [sic] of lampblack."¹³ Lampblack, made from soot, in combination with the viscous linseed oil and juniper gum, would clog fountain pens as they passed through the reservoir and nib.¹⁴ By 1860, an ink emerged that would flow through the pen, dry quickly on top of the paper and remain visible over many years.¹⁵ Armed with this new ink, T.E. Waterman patented his pen, which forced both air and the new ink through the pen, to produce an ink bubble at the nib, allowing for much smoother writing.¹⁶ To this day, the Waterman Company continues to produce fountain pens for the high-end and corporate markets.¹⁷ However, modern fountain pen production pales when compared to the almost universally adopted invention of Hungarian newspaperman Laszlo Biro.

Laszlo Biro's Ballpoint Pen

While elegant and functional, Waterman's pen lacked the practicality that would place Biro's brainchild in offices, schools and shops all across the world. Biro, "dabbled in medicine, hypnosis, the oil industry, motor racing and painting," and yet rose to fame through an

¹²Francois Delamare and Bernard Guineau, *Colors: The Story of Dyes and Pigments*, (New York, 2000), 24.

¹³ Francis Grant Schleicher, *Notes on the History of Ink Making*, (Long Island City, New York, 1981), 2.

¹⁴ George Fischler and Stuart Schneider, *Fountain Pens and Pencils: The Golden Age of Writing Instruments*, (West Chester, Pennsylvania, 1990), 11; "Lampblack," *Encyclopedia Britannica*, 2010. Available at [Encyclopedia Britannica Online](https://www.britannica.com/entry/lampblack).

¹⁵ Nickell, *Pen, Ink and Evidence*, 10.

¹⁶ J. M. R. Collingridge, A. J. Hobbs, L. G. Hogg, S. F. Hull, G. E. Roe, M. Van der Stricht, and M. West, "Ink Reservoir Writing Instruments 1905-2005," *Transactions - Newcomen Society for the Study of the History of Engineering and Technology*, (77. 1, 2007), 73.

¹⁷ Brooking, "Pull of the Pen," 35.

idea that dawned on him while standing in a printing shop in Budapest. He noticed the quick-drying ink used to print newspapers and considered how the same principle could be applied to pens, which still faced the problems of leaky ink and nibs that scratched the paper.¹⁸ Not even Waterman's pens were failsafe because they could still suffer damage to the nibs and to the other intricate components that regulated ink flow.¹⁹ Biro sought to overcome these difficulties with a pen that employed the ink he saw in the print shop. Ultimately, this ink proved to be too thick for a fountain pen, forcing Biro and his brother to design a pen suited to this ink.²⁰ The ensuing creation deposited ink onto the paper with a tiny metal ball bearing resting below a reservoir of the viscous, fast-drying ink that Biro saw in the print shop. As the user passes the pen along the paper, the ball picks up ink from the cartridge and as it rolls, the pen deposits the ink on the sheet.²¹ This technology exceeds previous pens in that, "There is none of the nib flooding which would occur with inviscid ink in the same arrangement...Equally, with no trapped air space in the reservoir, there are none of the expansion surges experience with fountain pens."²² Even though Biro had created a superior pen, his timing could not have been worse for further refining and selling the pen in Hungary. Biro patented his ballpoint pen design in Hungary on June 15th, 1938 only to flee the country when Hungary sided with the Nazis in the Second World War.²³

As a Jew, Biro realized the danger of remaining in Nazi-allied Hungary and left the country with his brother for Argentina at the invitation of Argentinean President Augustine Justo shortly after receiving the ballpoint pen patent.²⁴ In 1944, the brothers began producing and selling their ballpoint pen under the name Eterpen in

¹⁸David Smith, "It's 70 today, but Our Favorite Pen Just Keeps Rolling Along: A Bulk Order from the RAD Helped to Give the Biro ballpoint a Flying Start Towards World Dominance," *The Observer*, June 15, 2008, p. 17.

¹⁹ "Pens: Writing with a Flourish - A Fine Ballpoint, Roller-Ball, or Fountain Pen Makes a Thoughtful Gift. Plus: Quality Problems with Fountain Pens," *Consumer Reports* (1997), 49.

²⁰ Smith, "Our Favorite Pen," p. 17.

²¹ Hal Weitzman, "Laszlo Biro and the Ballpoint Revolution," *Financial Times*, May 26, 2007, p. 54.

²² Collingridge et al., "Ink Reservoir Writing Instruments," 74.

²³ Smith, "Our Favorite Pen," p. 17.

²⁴ Collingridge, et al., "Ink Reservoir Writing Instruments," 80; Weitzman, "Laszlo Biro," 54; David John Cole, Even Browning, and Fred E.H. Schroeder, *Encyclopedia of Modern Everyday Inventions* (Westport, Connecticut, 2002), 33.

Argentina. The Royal Air Force, which maintained a presence in Argentina at the time, noticed the pen and ordered 30,000 for its pilots.²⁵ The ballpoint pen has both a “reservoir and writing point [that are] exposed to the same external pressure (atmospheric) and changes of that pressure produce no surges, i.e. no inky coat pockets on aircraft at altitude.”²⁶ This innovation vaulted the ballpoint beyond all previous pens because ballpoint pens did not face the ink flow problems that plagued fountain pens and steel-tipped pens, allowing the ballpoint to work properly in virtually any situation. One Paul C. Fisher even designed a modified ballpoint for NASA, patenting the “space pen” in 1965, just in time for the first manned Apollo missions to the moon, pressurizing the ink cartridge to let the ink flow in zero gravity. When Apollo 11 astronauts Neil Armstrong and Buzz Aldrin found their lunar module ignition switch damaged, leaving them potentially stranded on the lunar surface, they used one of these pens as an improvised replacement switch, allowing them to safely return to Earth.²⁷ While an unintended use for the ballpoint pen, the Apollo 11 incident and the ballpoint’s presence on the Apollo missions underscores its practicality and versatility, characteristics that made the ballpoint pen a very profitable item for various entrepreneurs.

Long before Chinese manufacturers churned out massive quantities of ballpoints like mine, Biro and others capitalized on the newfound utility of the ballpoint pen. American entrepreneur Milton Reynolds wanted to duplicate Biro’s design but could not since Biro had sold the rights to a joint venture between Eversharp Incorporated and the Eberhard Faber Pencil Company. These companies faced a post-war production delay, and could therefore not produce the first American ballpoints until 1946. Reynolds in 1945 thus began selling the Reynolds Rocket, a modified version of Biro’s ballpoint that would not violate patent laws. The pens retailed for \$12.50, an unimaginably high price for a ballpoint pen even in today’s dollars. Nonetheless, Reynolds sold 10,000 pens from Gimbel’s Department Store in New York City on the first day alone.²⁸ The high prices would not last long as Biro too had recognized the potential market for his pen. His next move would ensure that he alone would hold credit as the ballpoint pen’s inventor. In 1950, Biro sold his patent to Frenchman Baron Marcel Bich for two million dollars. Bich represents the link between Biro’s inventive genius and the ballpoint cheap ballpoint pens of today. Bich dropped the ‘h’ from his name and started the Bic Company to begin mass-producing

²⁵ Smith, “Our Favorite Pen,” p. 17.

²⁶ Collingridge et al., “Ink Reservoir Writing Instruments,” 74.

²⁷ Florey, *Script and Scribble*, 53.

²⁸ Collingridge et al., “Ink Reservoir Writing Instruments,” 81.

cheap ballpoint pens. Today, Bic sells fifteen million pens each day worldwide, or a staggering five and a half billion pens per year, to say nothing of the other various brands of ballpoints on the market from comparable brands like PaperMate and office supply store generics, to the more upscale brands like Cross and Parker.²⁹

While Biro's choice to sell his patent to Bich launched the ballpoint into such widespread use as to become seemingly mundane in its ubiquity, Biro was only one of many trying to solve the problems of fountain and dip pens. The historical record in fact shows that the Biro brothers were not the first to design a ballpoint pen. As early as 1888, American leather tanner John Loud designed a pen similar to Biro's for marking cattle hides, as the ball bearing could mark the leather's surface without piercing the material, as a fountain pen nib might.³⁰ Two Czechs, inventor Frank Klimes and industrialist Paul V. Eisner, were producing a ballpoint in Prague as early as 1935.³¹ Yet even as these various ballpoints emerged alongside Biro's, the populace still preferred the fountain pen and other instruments. In the 1940s, as Reynolds' pen hit the market, fountain pens remained the writing instrument of choice in elementary schools. Educators commonly introduced fountain pens to pupils in the third grade, after the students had mastered basic writing skills with pencils.³² Ballpoints, which are proportioned more like pencils than fountain pens, never entered educators' consciousness, even as the masses clamored for Reynolds' pen. Two years before Otto's report, the same journal, *Elementary School Education*, published an article on handwriting education that even mentions crayons as a viable instrument for teaching handwriting, but makes no allusion to the ballpoint, which sold in immense quantities in the same year as this report's publication, and two years before Otto's article.³³

Regardless of educators' ignorance of the ballpoint pen, Biro shrewdly managed his invention, ensuring its modern preeminence in the world of writing. Biro and his brother were the most astute businessmen among the various pen inventors. They succeeded where Loud, Klimes, and Eisner failed, by catching the attention of the Royal Air Force, and later, Bich in France, as well as Eberhard and Eversharp in the United States. Additionally, the Royal Air Force was not the only government

²⁹Smith, "Our Favorite Pen," p. 17.

³⁰ Cole et al., *Encyclopedia of Everyday Inventions*, 33.

³¹ Nickell, *Pen, Ink and Evidence*, 22.

³² Henry J. Otto, "The Use of Ink and Fountain Pens in Elementary Schools," *The Elementary School Journal*, (48.7, 1948), 379-384.

³³ Ada R. Polkinghorne, "Current Practices in Teaching Handwriting," *The Elementary School Journal*, (47. 4,1946), 218.

agency intrigued by the new pen. The United States State Department obtained the pen's specifications, and sent them to numerous designers for bids, including Eberhard, one of the American companies to buy the rights to Biro's invention.³⁴ After the Biro brothers sold Laszlo's patent to Bich, the French business mogul proceeded to advertise through the new medium of television in 1952.³⁵ Television lent a modern aura to the Bic pen as ads for the ballpoint pen signaled to consumers that the ballpoint pen heralded the onset of a new, technologically advanced age, just as television did. Therefore, regardless of who actually deserves credit for inventing the ballpoint pen, Biro not only developed a technically sound writing instrument, but also entrusted his design to a company that could market his pen properly. Selling the patent to Bich ensured that the world would consider Biro the proper inventor of the ballpoint pen, because from his initial design rose the Bic Company, the largest producer of ballpoint pens in the world.³⁶

The Ballpoint Pen in the Digital Age

The ballpoint pen represents the pinnacle of the development of writing, making the production of the written word affordable, portable and accessible to the masses. Many writing purists argue, however, that the widespread adoption of Biro's pen has caused a precipitous decline in societal esteem for the art of writing. The arguments about the virtues of writing and penmanship have continued for millennia. Plato warned of the ancient Greeks that, "Their trust in writing, produced by external characters which are no part of themselves, will discourage the use of their own memory within them."³⁷ Plato's fears still resonate today. We pick up a pen often to make notes, jotting down small things of which to be reminded later: lecture notes, shopping lists, and annotations. Nonetheless, while writing may detract from our immediate memory, the written word, by virtue of its permanence, ultimately enhances our consciousness in preserving thoughts externally for later recollection. Even renowned historian Carlo Ginzburg weighed in on this subject in his attempt to show an "epistemological model...towards the end of the nineteenth century, in the humanities." Ginzburg writes, "This internal curtailing of the discipline was expressed by two decisive historical milestones: the inventions of writing and printing." Ginzburg references

³⁴ Cole et al., *Encyclopedia of Everyday Inventions*, 33.

³⁵ *Ibid.*, 34.

³⁶ Brooking, "Pull of the Pen," 36.

³⁷ As cited in Dennis Baron, *A Better Pencil: Readers, Writers and the Digital Revolution*, (New York, 2009), 1.

China in his premise that the medium of communication does not fundamentally alter the idea expressed. He writes:

One need only think of the crucial function played by intonation in oral literature, or by calligraphy in Chinese poetry, to realize that the concept of text I have just mentioned is tied to an extremely significant cultural choice. That this selection was not determined by the mere substitution of mechanical for manual means of reproduction is demonstrated by the well-known example of China, where printing did not break the link between literary text and calligraphy.³⁸

Ginzburg's choice of China as an example of the fundamental integrity of a text, regardless of its medium, strikes an ironic chord in the story of the ballpoint pen. Even as the Chinese exemplify the intrinsic value of human thought, modern China produces more ballpoint pens than any other country in the world. As the pen and other writing instruments evolved, so too did the adoption of the written word by the masses. Dennis Baron writes, "Each new development in writing technology—the move from clay to pencils, from manuscript to printed page, from notebook to typewriter, from pencils to pixels—led to the expansion of the authors club, not just those who copy texts, but those who create them."³⁹ These developments, coupled with the rise of the modern inexpensive Chinese-made ballpoint pen, would undoubtedly strike immense fear into Plato about the impending and accelerating demise of memory. Ginzburg and Baron, though, would only see an expanded realm of tools for converting ideas to indelible memories. Nonetheless, the pixels of which Baron writes would appear to threaten the ballpoint pen's longevity. Indeed, I wrote this essay with minimal assistance from my beloved Chinese ballpoint, only using it for the minimal tasks of jotting down library call numbers, revising drafts, and underlining passages in printed articles. However, even though composed largely digitally, this essay preserves ideas for posterity, serving the same purpose as the printing press and Chinese calligraphy. The ballpoint pen, by virtue of its ubiquity, ease of use, and affordability, simply facilitates memory and ideas, rather than undermining them. Ginzburg was right and Plato had nothing to fear.

Even in the digital age, and Plato's qualms about the demise of memory notwithstanding, the handwritten word still dominates our collective consciousness of composition. Kitty Burns Florey points out in her analysis of the evolution of handwriting that "the vocabulary of writing in ink with a pen on paper persists...people still 'turn over a new

³⁸ Carlo Ginzburg, *Clues, Myths, and the Historical Method*, trans. John and Anne C. Tedeschi, (Baltimore, 1992), 96, 107.

³⁹ Baron, *A Better Pencil*, 11.

leaf and try to avoid a 'blot' on their record. Books continue to be 'penned by' their authors."⁴⁰ The association between the pen and the written word endures, even in an age where writers primarily compose digitally with the advent of the personal computer. Robert B. Waller Jr., director of the Writing Instrument Manufacturers Association, speaks for the dissenters of digitized text when he claims that word processing has eliminated the "sincerity and individualism expressed through the written word."⁴¹ Similar critics also assailed the ballpoint pen at its inception. Mariana Biro, Laszlo Biro's daughter, explains that her father "used to hear people say that the ballpoint was ruining writing skills. He would smile and say, 'Well, writing comes from the heart. If we can help the hand to perform the task, what is so wrong with that?'"⁴²

Biro's remark encapsulates the legacy of the ballpoint pen. Widely available for about twenty-five cents each, today's Bic pens represent the epitome of writing accessibility and simplicity.⁴³ Whereas fountain pens and quills remained the domain of the wealthy, and therefore literate, the ballpoint pen has become so inexpensive that writing has become accessible to anyone with a quarter to spend, or even more commonly, anyone who enters a bank, hotel or other business that distributes pens as advertisements. Back in China, Zhejiang University seemingly understood the power of pens in a literate society, handing them out to American students in the hopes of enticing us, or perhaps those who would find our pens lost and lying around the Cornell campus, to partake of the graduate studies and scholarships for foreign students repeatedly pitched to us during our stay. Carrying the Zhejiang University pen around with me in America for four months before its demise may not have achieved this goal. Nonetheless, this promotional pen that I received stemmed from two millennia of writing innovation. The mass appeal of a pen with fast-drying ink that would not smear, leak, or fade turned Biro's ballpoint pen into an essential tool for anyone with even the smallest thought or piece of information worth recording. Even as e-mail replaces the handwritten letter, and text messages overtake passing notes between students in class, ballpoint pen sales rise each year.⁴⁴ Biro's invention endures because with a ballpoint pen, anyone can

⁴⁰ Florey, *Script and Scribble*, 119.

⁴¹ As cited in Baron, *A Better Pencil*, 17.

⁴² As cited in Smith, "Our Favorite Pen," p. 17.

⁴³ *Ibid.*

⁴⁴ Baron, *A Better Pencil*, 50.

commit words to paper with neither financial nor mechanical encumbrance, assuring the preservation of human thought, ideas, and memory even amidst constantly evolving writing technologies.

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