LIFE-CYCLE STUDIES

Ballpoint Pens

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Overview
Argentina was the cradle of the ballpoint pen, America its nursery, and France its intensive care unit. Ballpoints were first patented in 1888 and then another 350 times, without making their mark, by 1935. That’s when Hungarian newspaperman László Bíró and his chemist brother Georg began tinkering with a prototype. Then they met the president of Argentina at the beach. He invited them to build a plant in his country, which they did in 1943. The brothers sold a few pens there and ran out of money.

But the idea had finally caught on. Milton Reynolds, an American businessman adept at making and losing fortunes, was inspired by an early Bíró pen. Advised by his lawyers that he could ignore Bíró’s patent, in late 1946 Reynolds began production, selling the output through Gimbel’s department store in Manhattan. The store sold 10,000 of them the first day, at US$10 apiece (about US$105 in 2005). That success stimulated a frenzy of competition involving some familiar names (Eversharp, Parker). But the resulting plunge in prices, along with the pens’ unreliability and leakiness (the spur for the pocket protector), drove the market to the point of collapse.

It was revived in the early 1950s by Patrick Frawley (Papermate brand) in the United States and especially by Marcel Bich (Bic) in France. Frawley introduced the retractable tip and no-smear ink. Bich focused on the basics, studying every ballpoint on the market. The result was the Bic Cristal, a six-sided, clear-barreled disposable commodity pen: simple, plain, dead reliable, and cheap. Today it is the world’s iconic ballpoint. Bic claims to have sold over 100 billion altogether, currently perhaps 20 million every day.

Manufacture
Over the years pens have been made of feathers, wood, steel, aluminum, platinum, leather, hand rubber, bakelite, celluloid, and even deer antler and buffalo horn. Modern ballpoint pens are mostly made of plastic, derived from petroleum, and a small amount of metal.

The Cristal has only a few parts. A ball is formed from tungsten carbide powder, vitrified with additives to near-diamond firmness, and abraded to produce a smooth-rolling shape. The ball is seated in a brass housing, the housing joined with a plastic ink cartridge, and this assembly inserted into a plastic barrel, plugged, and capped. The ink in the cartridge consists of dyes (pigments, lacquers, or soluble chemicals) for readability and novelty, a liquid vehicle, and additives to ensure stability and uniformity. Total cost of materials, according to the website www.howstuffismade.org: one-hundredth of a U.S. cent. Retail price at office supply stores: about 10 cents. Not a bad markup.

Disposal
Nonrefillable ballpoints are designed to be thrown away. The billions of commodity ballpoints manufactured in the last 60 years add up to a lot of plastic, metal, and solvents, but discarding them one at a time seems inconsequential. Recycling efforts balk in the face of the low value of the article. Using quality refillable pens, which can last for years, clearly reduces the impact, although in some places the refills themselves are classified as hazardous waste. Maybe takeback laws (extended producer responsibility) are the answer for the disposables: buy them by the box, which becomes a prepaid mailer to send the empty pens back to the plant. The Retractable Pen Act?