

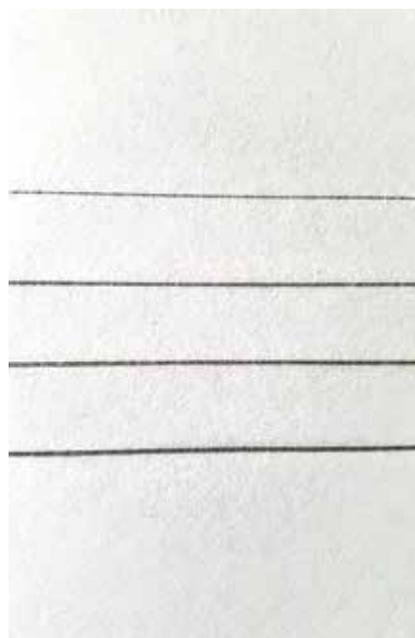


An assortment of some of the many mechanical pencils available today. At left is a disposable, non-refillable pencil. At center are several refillable, click-style pencils with features including removable erasers, storage areas for extra lead, and soft, comfortable grips. At right and at top are claw-style holders, with features including built-in sharpeners and grade-indicator wheels.

The Nuts and Bolts of Mechanical Pencils

Mechanical pencils fill the shelves of schools and offices. They're an inexpensive, commercially manufactured product sold by the dozen. They're often designed to be as eye-catching as sugarless gum—and as disposable. It's not surprising that many artists have never given them a serious thought, but high-quality mechanical pencils can now be found in abundance in art stores. It's all too easy to dismiss their potential—and to overlook their impact on drawing.

The origins of mechanical pencils are linked to the discovery of graphite. It was a dark and stormy night, as the story goes, in Cumberland, England, in 1564. A heavy storm toppled a huge old oak tree, roots and all. The event changed history.



Lines drawn with mechanical-pencil leads in widths of (from top) 0.3mm, 0.5mm, 0.7mm and 0.9mm.

The next morning, curious peasants came to investigate. In the depths of the enormous pit where the roots of the tree had been, they found something dark and rock hard. To their amazement, they discovered that chunks of it could be used to make marks, among other applications. It soon became apparent that the newly discovered “blacklead” (also called “wad” or “plumbago”) was better for writing and drawing than anything else available. Its marks were less fleeting than those of charcoal or chalk. They did not fade like ink. And unlike metalpoint lines, they were erasable—rubbing with breadcrumbs made blacklead marks disappear, as if by magic.

Soon the material was being mined and sold. Chards were chiseled into sticks and wound with string to be unraveled as needed. Thin slivers were covered with wax, pushed into hollow reeds or encased in wood or metal tubes, making it cleaner and easier to work with. Only a year after the storm Conrad Gesner, a highly reputed Swiss scholar, wrote of the existence of a new lead-holding device, a forerunner of both wooden and mechanical pencils. He speculated that the blacklead at the core of the pencil might be antimony.

The actual composition of the material remained a mystery until the late 18th century when it was discovered to be neither lead nor antimony but rather a form of carbon. The substance was renamed “graphite” (from the Greek for “write”), but even now the terms “lead” and “graphite” are often used interchangeably, and the

NOTE:

Mechanical pencils have many other names, especially overseas. These include *propelling pencils*, *automatic pencils*, *drafting pencils*, *technical pencils*, *click pencils*, *clutch pencils*, *pacer pencils*, *leadholder pencils* and *pen pencils*.

writing rods of mechanical pencils are still called “leads,” a source of occasional confusion.

In the 18th century *porte-crayons*, extenders with metal claws designed to grasp chalk or graphite sticks, became fashionable writing and drawing implements. In their wake followed countless variations that evolved into the diverse family of mechanical pencils available today. Some designs were crude, others ingenious. Examples of all sorts of mechanical pencils can be found in antique stores, not to mention old desk drawers.

In the late 18th century Nicolas-Jacques Conté (1755–1805) began combining powdered graphite and clay to produce pencil leads with varying levels of hardness. In modern times, plastic polymers have been added to the mix, allowing the manufacture of extremely thin leads

in sizes ranging from 0.2 to 0.9 millimeters. With these thin, sturdy sticks of graphite, contemporary mechanical pencils were born.

Today mechanical pencils are available in a plethora of designs, sizes and even colors. Whatever the model, mechanical pencils are distinguished from other pencils in that their cores are not bonded to their outer casings, allowing the cores to be manually or mechanically manipulated, extended, retracted, removed and replaced.

Some mechanical pencils expel or retract leads through a thin tip.

Self-Portrait
by Mark Gonzales, 2016, graphite (0.7mm 2B mechanical pencil), 7 x 5.



Others grip leads with a metal claw, and still others utilize side clickers that push leads forward at convenient lengths. Many have hollow bodies for storing extra leads. Some have attached erasers. Simpler, less expensive designs come in fixed

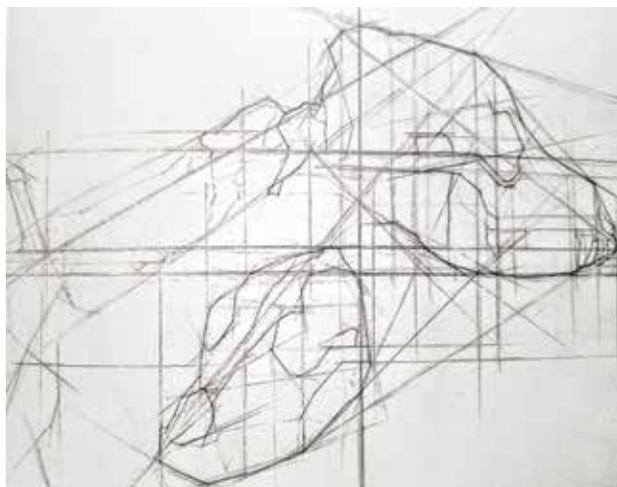


A collection of antique mechanical pencils by Mabie, Todd & Co., circa 1870. A wide variety of historical mechanical pencils can be seen online at the “Mechanical Pencil Museum,” legendaryleadcompany.com. PHOTO: JONATHAN V. VELEY



Gold mechanical pencil by Mabie, Todd & Co., ca. 1870. PHOTO: JONATHAN V. VELEY

MATERIAL WORLD



Study for Man's Best Friend

by Sherry Camhy, graphite (0.3mm HB mechanical pencil), 16 x 20.



Man's Best Friend (Study of Dog Skulls)

by Sherry Camhy, graphite (mechanical and wood pencils), 16 x 20. Work in progress.

sizes, while more complex pencils are adaptable to different leads with systems to indicate the different sizes and graphite grades. Metal pencil “extenders” that can securely hold large leads more than 0.5mm thick—which require special sharpeners—may not fit within a more limited definition of “mechanical pencils,” but many artists use these larger leads in conjunction with smaller ones for large work.

Like traditional drawing pencils, mechanical-pencil leads vary in hardness from 9H (the hardest) to 9B (the softest). An HB lead falls in the middle of the scale. Note that some pencils intended for writing, rather than art, use a different scale, from 1 to 4, with higher numbers being harder. Keep in mind too that the exact hardness of any pencil will vary by brand.

Artists can use mechanical pencils exclusively or can alternate between them and traditional pencils to great advantage. Among the strengths of mechanical pencils are their fine points, which in many cases are so thin that they do not need to be sharpened, unlike traditional pencils. No standard pencil, no matter how well sharpened, can compete with the

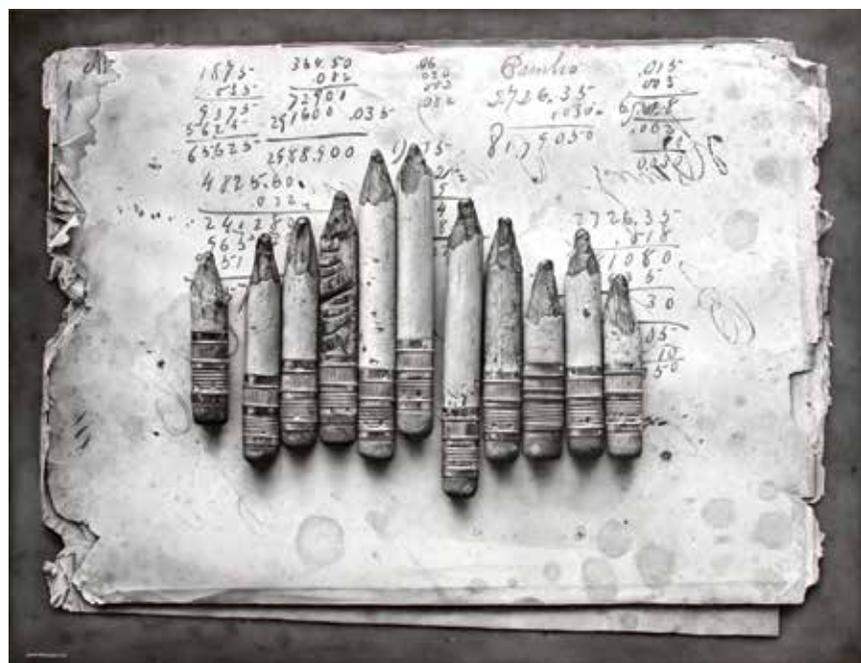
point of a 0.2mm lead. With mechanical pencils, small details such as the pupil of an eye are easily conquered.

A mechanical pencil is easy to control, and its lines are consistently thin, dark and sharp, whereas a traditional pencil's marks will vary in width and value with the slightest change of pressure. This uniform line quality has a unique beauty and can

Class of '54

by John Whalley, 2007, graphite (mechanical pencil), 43½ x 56½.

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help to maintain the integrity of the picture plane. And though mechanical pencils are often thought of as an essentially linear medium, they need not be. In my *Study for Man's Best Friend* the thin, light lines of a 0.3mm lead helped me develop the underlying unity of the composition. For the finished drawing I patiently built up large, dark areas of tone with 0.7 and 0.9mm leads, which allowed me to complete the drawing without muddying areas by smudging.

Many accomplished contemporary artists use mechanical pencils, whether as their primary tool or in conjunction with others. Mark Gonzales uses disposable mechanical pencils to create his complex images. Costa Vavagiakis uses a hatching technique with a 0.9mm HB lead for precise control over areas of carefully defined form and luminous shadows,

which are difficult, if not impossible, to achieve any other way. He says he relishes never having to stop and sharpen a pencil. John Whalley, meanwhile, uses an array of mechanical pencils with leads ranging from 4H to 4B in conjunction with graphite powder applied with stumps or steel wool.

It can be difficult to ascertain what artists have used mechanical pencils, because so often the medium is simply listed as “graphite.” But from the variety and quality of mechanical pencils available today and from the examples seen here, it's apparent that serious artists are giving serious consideration to mechanical pencils, with remarkable results. ❖



Darya XX

by Costa Vavagiakis, 2015, graphite (mechanical pencil with 0.9mm HB lead), 17 x 14.