



The Talking Leaves

by Rayna Green

Sequoyah (or George Gist or Guess) was a Cherokee trader, a silversmith, a blacksmith, an artist, and a Cherokee speaker who neither read nor wrote English. But he saw the power of those who could communicate using the “talking leaves.” It inspired him to invent one of the few known (and used) writing systems created entirely by an individual. He analyzed his native language, designed a writing system to represent it, and taught Cherokees to use it. Sequoyah’s “syllabary” proved a major tool in the Cherokee battle for survival at a time when Cherokee lives, lands, and cultures were under siege.

[Read more . . .](#)

Rayna Green is a Curator at the National Museum of American History.

Image: Portrait of Sequoyah holding his syllabary, by Charles Bird King. Courtesy of National Portrait Gallery, Smithsonian Institution.



Notes from the Director

The dazzle of modern information and communication technologies can blind us to the almost unfathomable roots of invention. If you want to see how deeply invention reaches into our common human past, just visit the Smithsonian’s National Museum of Natural History, or any comparable museum, for that matter. Their anthropology storerooms are typically bursting with stone tools, weaponry, baskets, canoes, dog sleds, and all manner of ingenious devices of indigenous peoples going back to the dawn of mankind—no surprise if you recognize that invention is a quintessential human trait.

The 19th-century Smithsonian ethnologist Otis Tufton Mason made just this point in a lifetime of collecting and writing on “primitive” technologies of the Native peoples of the Western Hemisphere. While he accepted contemporary anthropological distinctions between “savage” and “civilized” cultures, he firmly believed in the continuity of technical developments. A specialist in Indian basket making, he was also the author of such studies as *The Origins of Invention: A Study of Industry among Primitive Peoples* (1895).

At the centennial celebration of the U.S. patent system in 1891, Mason reminded inventors of their debt to anonymous prehistoric forebears: “There never was a time when man was not an inventor.... The ancestor of the steam plow is the digging stick of savagery, a branch of a tree sharpened at the end by fire. The first sewing machine was a needle or bodkin of bone, with dainty sinew thread from the leg of an antelope.” He illustrated his theme with a variety of artifacts from the Smithsonian collections, tracing, for example, an evolutionary line of development from prehistoric timekeeping devices to modern watches.

Time inevitably robs these ancient tools of their breath of human life. However, a visit to the Smithsonian’s National Museum of the American Indian across the National Mall documents the living legacy of Native American invention. First, begin with the building itself, designed by

Canadian architect [Douglas Cardinal](#), a Native American featured in one of our early Lemelson Center programs. The building's flowing lines showcase his love of nature and the aesthetic influence of his Blackfoot heritage. But they also illustrate his affinity for the latest technologies. To overcome complex technical problems associated with these wave-like forms, Cardinal pioneered the application of advanced computer programs to architecture.

Inside the Indian Museum, one finds a number of exhibitions bearing directly or indirectly on the culture of innovation. I was especially fascinated by [Ramp It Up](#), a recent small but forceful display on skateboarding, which turns out to be an indigenous sport originating in Hawaiian surfing. Ocean surfing evolved into "sidewalk surfing" in California, which gave us modern skateboards and skateboard competitions. But the most interesting part of the exhibit concerned the birth of Native American "skateboard culture," a seamless blend of workmanship, technological invention, and art. Highlighting this theme was a series of lavishly decorated skateboards that express the youthful vigor and social consciousness of their makers. Presentations such as this irrefutably demonstrate that, prehistoric or modern, invention has always been embedded in the lives and culture of Native Americans.

Best regards till next month,
Arthur Molella
Jerome and Dorothy Lemelson Director



Have You Seen?

Native Americans, especially the Navajo and the Hopi, were expert weavers and dyers long before the arrival of Europeans. Read about the [history of Navajo weavers](#) and learn more about the [use of plants to create dyes](#) in the [Whole Cloth section of our website](#). This curriculum for middle- and high-school students examines the history, technology, science of production, and consumption of textiles.

Image: Illustration of a Navajo woman weaving a belt. From Navajo Weavers by Washington Matthews (Third Annual Report of the Bureau of Ethnology to the Secretary of the Smithsonian Institution, 1881–82, by J. W. Powell, 1884, p. 384).



Trivia Challenge

In each edition of *Prototype*, we offer a question about an invention or inventor that you and your friends and family can try to answer. Sometimes the answer can be found on the Lemelson Center's website, where you can also learn a little more about the subject. Email your answer to us at prototype@si.edu along with your name and mailing address. Each month we'll select winners randomly to receive a small prize from the Center.

Thank you to everyone who entered the October challenge and congratulations to Rebecca R. of Alexandria, Virginia, who, among others, knew that the Quartermaster Corps, the army's traditional supply and service branch, met the challenge of outfitting a force that would eventually total more than 8.3 million troops during World War II. The Office of the Quartermaster General in Washington created the Military Planning Division, and within it a Research and Development Branch, to coordinate the production and fielding of a new generation of food, clothing, and equipment. During the course of the war, this very talented group of soldiers and civilians (aided by industrial and university laboratories) spearheaded the development of everything from mukluks and arctic sleeping bags to rot-resistant boots and mosquito-proof jungle hammocks. Read more about the [Quartermaster Corps' innovative gear](#) for the combat soldier's life in the

field on our website.

This month's question: Which innovator's passion for natural fibers and textiles, and an equally passionate commitment to protecting and preserving the environment, led to the development of the first commercially spinnable, naturally colored cotton?

Image: S.Sgt. Orville Koeheer inspecting his new footgear "somewhere in France." Designed by the Quartermaster Corps, the waterproof "shoe-pac," with its warm felt innersoles, protected soldiers from frostbite and trench foot. Courtesy of U.S. Army.



From the Archives

The Bobcat Company story is a tale of individuals who took simple ingenuity, independence, and innovation and improvement ... and applied them to the problem of removing turkey manure from a barn. The early roots of the Bobcat machine lie in the farming heritage of central Minnesota and the North Dakota plains with two blacksmith brothers, Louis (b. 1923) and Cyril (b. 1922) Keller. What started with the can-do, make-do ethos of the farm grew into the global compact-equipment industry that would be synonymous with the name Bobcat.

Starting from scratch and using odds and ends for parts, the Keller brothers developed a small tractor-like machine that was highly maneuverable and capable of carrying heavy loads in a bucket in the front. The system they developed for "transmitting power from a power unit to propulsion wheels, drive shafts and the like, and in particular to a transmission system for self-propelled vehicles having independently rotatable propulsion or drive wheels" earned the Kellers U.S. Patent 3,151,503.

Melroe Manufacturing, a North Dakota agricultural equipment firm, invited the Kellers to join the company and develop their idea further, and this became the now-familiar "front loader." Development of the first Melroe loader prototype (M60) began in November 1958 and was completed in early 1959. The prototype incorporated the Keller patented drive design that was used on various Bobcat models until 1982.

Deliberately setting out to create a line of compact equipment, Melroe Manufacturing started with loaders and moved on to mini track loaders and attachments. Bobcat products have reduced human labor and increased the speed of many agricultural, construction, shipping, manufacturing, and landscape projects. In 1958, approximately 20 loaders were built and by the 1960s, the total number of units was in the few thousands. In the 1970s, 10,000 loaders were being manufactured a year. Today, Bobcat produces approximately 40,000 loaders a year.

The name "Bobcat" originated in 1962 with Lynn Bickett of Gould, Brown and Bickett, a marketing agency in Minneapolis. Allegedly, Bickett found the word "bobcat" in the dictionary, and noted that it is a North American mammal that is "tough, quick, and agile." These traits perfectly described the Melroe loader to the agency and the Bobcat slogan, "Tough, quick, and agile," was born.

The Bobcat Company Records, 1940s–2009, document a postwar invention process and American manufacturing system through the case study of a dynamic machine, the Bobcat skid-steer loader. The records focus primarily on Bobcat's products, marketing, and advertising through product literature, photographs, advertisements, posters, newsletters, and audiovisual materials.

For more information about the Bobcat Company Records, contact Alison Oswald at oswald@si.edu.

Alison Oswald, Lemelson Center Archivist

Image: Sign welcoming participants to a Bobcat Company sales meeting in Chandler, Arizona, 1970. From the Bobcat Company Records, Archives Center, National Museum of American History.



Inventive Ideas for Schools and Families

The northern Plains Indians used nearly every part of the buffalo. They used the meat for food, of course, but the Indians also used the hooves, fur, and teeth of the animal to make clothing, tools, and other household necessities. Play the [What Can You Make from A Buffalo? matching game](#) to learn more about the inventiveness of the Plains Indians!

Image: A Plains buffalo. From the website "[Tracking the Buffalo: Stories from a Buffalo Hide Painting](#)," National Museum of American History.



Our Podcast—Prototype Online: Inventive Voices

Clifton Poodry is a biologist and director of Minority Opportunities in Research at the National Institute of General Medical Sciences. In this podcast, Dr. Poodry discusses growing up on the Tonawanda Seneca Indian Reservation in western New York, and the value of mentorship in helping young people draw on their own creativity to nurture an interest in science. [Tune in!](#)

Image: Clifton Poodry congratulating a student at the Society for the Advancement of Chicanos and Native Americans in Science annual meeting in 2007. Photo courtesy of Clifton Poodry.

Prototype, November 2009

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Contact us at prototype@si.edu.

General Smithsonian Visitor Information: 202-633-1000

There's more online:

[Lemelson Center website](#)

[National Museum of American History Frequently Asked Questions](#)