

How ancient soldiers used sound to frighten and confuse their enemies

August 3 2022, by Adrienne Mayor



Alexander driving off elephants with pigs and musical instruments in a detail from a French illuminated manuscript from 1420. Credit: ['Le Livre et le vraye hystoire du bon roy Alixandre,' The British Library, CC BY](#)

As if the tumultuous din of battle is not horrendous enough, over the

ages humans have discovered plenty of ways to exploit sound in warfare. I found an astonishing variety of ancient acoustic weapons while [researching my book "Greek Fire, Poison Arrows, and Scorpion Bombs: Unconventional Warfare in the Ancient World."](#) Deploying sound in war has evolved over millennia, from natural animal sounds and music to today's advanced sonic devices.

Calling a jig in the midst of battle

In antiquity, cavalry horses were trained to endure the [piercing pipe music](#) that led armies to battle. But a clever reversal of this training could spell victory.

In the seventh century B.C., the Kardians of Thrace, who lived in what is now northwest Turkey, were renowned for their cavalry. For entertainment, the mounted soldiers taught their horses to dance to pipes played at drinking parties. Rearing up and pawing the air, the horses kept time to the lively music.

Captured as a boy from Bisaltia in northeastern Greece, a prisoner named Naris heard about the marvelous dancing horses in the Kardian barbershop where he worked. According to the story [recounted by the ancient Greek writer Athenaeus](#), Naris escaped, returned to Bisaltia, and prepared to make war on Kardia.

He had a secret weapon: a piper girl who had also escaped from Kardia. She taught the Bisaltian soldiers songs from Kardian banquets. Naris led his army out against the Kardian cavalry and signaled for his pipers to play. Pricking up their ears at the familiar tunes, the Kardian horses reared up to dance, throwing off their riders. In the chaos, the Bisaltians crushed the Kardians.

When squeals terrorize living tanks

Cavalrymen of classical antiquity accustomed their horses to the clash of bronze weapons. But in the fourth century B.C., when Alexander the Great's successors [brought war elephants from India](#), the animals' trumpeting threw horses into a frenzy.

[Alexander had learned from King Porus](#) during his 326 B.C. Indian campaign that elephants have [sensitive hearing and poor eyesight](#), which makes them averse to unexpected loud, discordant sounds. When Alexander's scouts reported that elephants were approaching, Porus advised Alexander's horsemen to grab up pigs and trumpets and ride out to meet them. The shrill [sound](#) of the pigs combined with blaring trumpets sent the elephants fleeing.

In 280 B.C., the Romans first [encountered war elephants](#), brought to Italy by Greek King Pyrrhus. The riders in the howdah seats upon their backs created an ear-splitting commotion with drums and clanging spears, causing the Romans and their horses to panic.

But Romans noticed that Pyrrhus' elephants were unnerved by high-pitched squeals of swine. Like Alexander, the Romans deployed pigs to deflect Pyrrhus' pachyderms, which contributed to his heavy losses. Later, in 202 B.C., blasts of Roman war trumpets [panicked Carthaginian general Hannibal's war elephants](#) in the Battle of Zama, ending the Second Punic War.

Some commanders tried to obtain an elephant or two to condition their horses in advance of battle. Perseus of Macedon prepared for a Roman attack with war elephants in 168 B.C. by having artisans build wooden models of elephants on wheels. Pipers hidden inside the huge mock-ups played harsh sounds, acclimating the Macedonian horses to the sight and sound of elephants. But Perseus' preparations were for naught. Even

though the mountainous terrain at the Battle of Pydna got the better of the Romans' 20 elephants, [Rome was victorious](#).

War cries and wailing weapons

[Bloodcurdling war cries](#) are a universal way of striking terror in foes. Maori war chants, the Japanese battle cry "Banzai!" (Long Live the Emperor) in World War II, the Ottomans' "Vur Ha!" (Strike), the Spanish "Desperta Ferro!" (Awaken the Iron), and the "Rebel Yell" of Confederate soldiers [are examples](#). In antiquity, the sound of Greek warriors bellowing "Alala!" while banging swords on bronze shields was likened to hooting owls or a screeching flock of monstrous birds.

The Roman historian Tacitus described the hair-raising [effects of the barritus](#), the war cry of Germanic tribes. The Germans devised a simple technique for intensifying the barritus, which began as a low murmur. The chanting became a roar, then rose to a reverberating crescendo as the men held up their shields in front of their mouths to amplify the thunderous sound.

Another technological invention was the [karnyx, the Celtic war trumpet](#). Romans were awed by the eerie, spine-tingling sounds made by the long bronze tube with a wide bell shaped like the [gaping jaws of a fierce dragon, boar or wolf](#). The horn's loud, lugubrious tones "[suited the tumult of war](#)," wrote Diodorus Siculus around 50 B.C. Later Roman troops used the karnyx themselves.

Another early military sound technology was an arrow that created a fearsome noise. "Whistling" or "screaming" arrows (shaojian) made by the horseback archers of the steppes were [described by the Chinese chronicler Sima Qian](#) in about 100 B.C. A small, perforated bone or wood sound chamber—the whistle—was attached to the shaft behind the arrowhead. In battle, the shrieking sound of thousands of whistling

arrows terrified enemies and their horses. [Screaming arrows](#) have been recovered from [archaeological sites in central Asia](#).

Numerous other technologies to produce booming detonations to disorient and frighten enemies were described in ancient Chinese war manuals. These [explosive devices employed gunpowder](#), invented in China around A.D. 850, reaching Europe about 1250.

Sound weapons in the modern era

Music was used during World War II to cause stress and anxiety: The [Soviet army played Argentine tangos](#) through loudspeakers all night to keep German soldiers awake. U.S. loudspeaker teams blasted deafening rock music (including The Doors, Alice Cooper and The Clash) day and night during the [U.S. siege of Panamanian Gen. Manuel Noriega](#) in 1989. In the 2000s, [Americans again deployed aggravating, incessant music](#) in Iraq and Afghanistan.

Sound weapons have their uses off the battlefield, too. [Shopping centers have borrowed the idea](#), broadcasting classical symphonies and [frequencies registered only by teenage ears](#) to keep young loiterers away. In 2022, Australian police [bombed anti-COVID-19 vaccine protesters](#) with recordings of Barry Manilow songs on repeat to break up the crowd.

Recent development of weaponized sound energy is more ominous, often intended for civilian crowd control. Military scientists in the United States, Israel, [China](#) and Russia have unveiled "nonlethal" high-decibel and pulsating high- and low-frequency armaments [designed to assault the senses](#). Examples include hand-held or tank-mounted magnetic acoustic devices, sonic-vibration cannons, and long-range acoustic devices, first used by U.S. forces in Iraq in 2004 and later by police against citizen protests in New York and Missouri.

Since 2016, American diplomats in Cuba, Russia, China and elsewhere have experienced "[Havana Syndrome](#)," associated with mysterious neurological and brain injuries thought to be inflicted by unknown high-powered microwave or targeted sonic energy systems. Sound wave transmitters are not only psychologically toxic but can cause pain and dizziness, burns, irreversible damage to inner ears and possibly neurological and [internal injuries](#).

Since antiquity, human creativity in weaponizing devastating noise to confuse and overwhelm adversaries has progressed from intimidation to the infliction of physical injury.

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