

Anatomy and Care of the Native American Flute

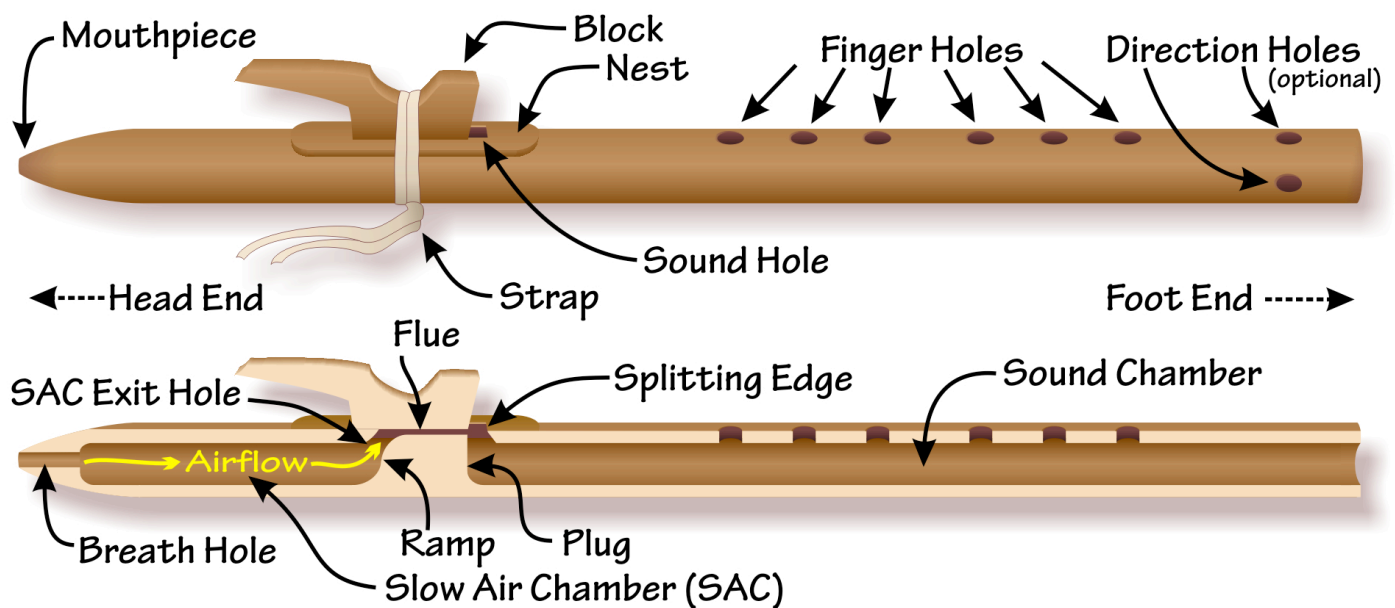
by Jon Norris

Thirty years ago, I bought my first flute. It was the first flute that I had ever seen for sale, and I absolutely had to have it. I listened to flute music on cassette for a few years, and I poured over the instructions on how to make a flute published by Ben Hunt back in the 1950s. However, making my own flute seemed beyond my capabilities at the time. On that fateful day, thirty years ago, the clouds parted, one lone sunbeam lit up that flute on a vendor's table as an imaginary choir sang in my head, and I quickly scraped money together to buy it.

Next came the difficult part, meaning learning about the flute and how to play it. This all took place in 1992, pre-Internet and pre-flute circle, before any instructional books or videos existed to my knowledge. So, I repeatedly listened to those tapes, watched one short video of flute playing that I had recorded onto a VHS tape from a PBS special, and I slowly learned how to make music.

Fast forward to the year 2000. I bought a few more flutes and was becoming more interested in learning how to make them myself. I stumbled onto a Yahoo group created by Dusty Moore of Tsunami Flutes, and I started absorbing as much information as I could. Fairly quickly, the participants in that group developed a common vocabulary for referring to the various parts of these flutes. Some terms came from Lew Paxton Price's series of books. Other terms came from mentors, historians, ethnomusicologists, and more experienced makers in the flute community. Over the last two decades, a few new terms and many variations have popped up. I will try to cover as many of those as I can below.

Native American Flute Anatomy



Native American flute Composite Anatomy.jpg © Clint Goss / CC BY-SA 3.0
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Terminology

Mouthpiece: This is the opening where you blow into the flute. While generally at the end of the flute, some large bass flutes feature a mouthpiece on the side of the flute, in order to be more ergonomically friendly.

Block: This is a separate piece, usually wood, that directs the air from the slow air chamber (SAC) through the flue and across the sound hole to produce sound. This piece is generally tied on, although I have seen multiple instances, both historical and modern, where it is glued in place. Bird is the most common alternate term for this piece, even if the block is not shaped like a bird or is shaped like some other animal. It has also been referred to as baffle, saddle, flue cover, and stop-piece. Many people use the terms totem or fetish, but I personally avoid those as they have specific spiritual meanings within some Indigenous communities. In some flutes, the makers historically used cloth or leather strips wrapped over the flue, instead of using an external block of wood. Those are commonly referred to as "bandage flutes." The Tohono O'odham people make a three-hole flute in which the player uses a finger as the block.

Nest: This is the surface upon which the block or bird sits. The nest and the bottom of the block are generally flat, but I have seen a few modern makers use matching curved surfaces. In keeping with the bird analogy, another term for this part of the flute is the roost.

Strap: Typically made of leather, the strap ties the block onto the nest. Some makers use other materials like shoelaces, paracord, hair ties, and rubber bands.

Sound Hole: Possibly the most important feature of the flute, this hole is where air from the flue begins to oscillate, creating sound waves. Among makers, this is also commonly called the true sound hole or TSH.

Finger Holes: These are the holes that the player covers and uncovers to play various notes. These are also sometimes referred to as playing holes, tone holes, or stops.

Direction Holes: These holes are near the foot-end of the flute and are not covered by the player. They serve roughly as the acoustic end of the flute, allowing the maker to fine tune the fundamental pitch of the instrument. This allows for additional decorative length, like in the case of a carved animal head. In some traditions, four holes are used to honor the four directions. However, I have also commonly observed flutes with one, two, and eight of these holes. Some makers use longer slots instead of small holes, and I have even seen flutes with holes carved into other unique shapes like squares, triangles, lightning bolts, and leaves. These holes are commonly referred to as “tuning holes” and occasionally as “wind holes.”

Head-End: This is the end of the flute closest to the mouthpiece. It is also referred to as the north end or proximal end.

Foot-End: This is the end of the flute farthest from the mouthpiece. It is also referred to as the south end or distal end.

Breath Hole: This tube allows air to pass from the mouthpiece into the slow air chamber. While flutes generally have a fairly small breath hole, some flutes, especially those made of cane or bamboo, may have a very large open end the same size as the slow air chamber. This part of the flute is sometimes referred to as the “blow hole.”

Slow Air Chamber (SAC): This is the first chamber in the Native American flute’s two-chamber design. The player’s breath enters the slow air chamber, which helps to stabilize the air flow, thereby removing turbulence. This chamber is sometimes referred to as the “compression chamber” or “upper chamber.”

Plug: This is the barrier between the two chambers of the Native American flute. It is also called the wall. It can be an integral barrier, such as a solid wall left when carving out a wood flute, or a natural node left in a piece of river cane or bamboo. In other instances, the wall is made from a plug, commonly wood or cork, that is inserted and properly positioned after the flute has been hollowed out.

Ramp: This area helps air to transition from the slow air chamber into the flue. In some flutes, it appears as a smooth ramp that provides a gentle transition. In other flutes, it may simply be a straight vertical wall.

SAC Exit Hole: Air flows through this hole from the slow air chamber directly into the flue.

Flue: This is a small channel that allows air to pass under the block to the sound hole. In many flutes, the flue is a shallow slot carved into the nest, although it can also be carved into the bottom of the block. As a third option, it can appear as a slot cut in a spacer plate or gasket that sits between the block and nest. The flue has many alternate names, such as duct, windway, air channel, or focusing channel. In recent years, the term “track” has been popularized by a series of Youtube videos.

Splitting Edge: This is a fairly sharp edge on the distal side of the sound hole that is hit by the airstream coming out of the flue, creating the oscillations that result in sound generation. It is also referred to as the cutting edge, sound edge, knife edge, blade, labium, or fipple edge, even though “fipple” is a misnomer. In many cases, the splitting edge is created by carving a bevel into the distal edge of the sound hole. However, if the flute uses a spacer or gasket underneath the block, the edge of the slot in the spacer may form the splitting edge. Another popular technique seen in older flutes was to attach a small piece of metal, often referred to as a fipple shield, over the distal end of the sound hole, slightly pressing the metal down into the hole to form the splitting edge. Both the spacer and fipple shield constructions allow the player to adjust the size of the sound hole, tweaking the tone of the flute, and in some cases making the flute warble. While this part is commonly called the “splitting edge” or “cutting edge,” it is not actually splitting the airstream. When the air hits it, the air stream begins alternating between going above and below this edge in a wave pattern. This causes the air column inside the flute to vibrate, thereby creating sound.

Sound Chamber: Also called the bore or resonating chamber, this is the second chamber in the Native American flute’s two-chamber design. In this chamber, the oscillations created at the sound hole cause the air column to vibrate, creating sound. The length and diameter of the sound chamber determine the fundamental pitch of the flute. As finger holes are uncovered, the length of the vibrating column of air gets shorter, creating a higher range of sound.

Proper Care and Maintenance

While the Native American flute is a fairly simple instrument to maintain, here are a few suggestions to follow. With basic care and maintenance, your flutes will last for generations.

Dealing With Moisture

Native American flutes are primarily made of wood, river cane, or bamboo. The enemy of an instrument crafted from natural materials is moisture. Depending on how the flute has been designed, crafted, and finished, there are a variety of problems that are caused by excessive moisture or excessive dryness.

Wood is naturally porous and hydrophilic, so in its raw state it will absorb moisture that is present in the air until it reaches equilibrium with the environment. It will also absorb moisture that has condensed and accumulated inside the slow air chamber and the flue due to playing. While some makers seal the wood using a variety of different finishes to prevent varying degrees of moisture absorption, some do not. Excessive moisture inside the flute can cause the wood to swell, possibly causing cracks to develop at glue seams in the slow air chamber. Moisture can cause the wood grain to raise in the flue and on the bottom of the block, decreasing air flow and increasing the chance of the flute "wetting out." Also, excess moisture that remains inside the flute can contribute to mold growth. After a session of playing, it is typically recommended that the player remove the block from the flute to allow it to dry more thoroughly. The player can help accumulated moisture to drain by tapping the mouthpiece on a cloth, or by gripping the flute and swinging it to expel moisture from the mouthpiece. Although, if you choose to do this, please hold on tight and watch where you are swinging your flute. I have seen flutes hit against furniture, or accidentally thrown across the room. One enterprising maker recently released a flute dryer, which blows air through the mouthpiece. Although, I have not personally tested its effectiveness.

On the opposite end of the spectrum, excessive dryness can also cause problems, especially with bamboo and river cane flutes, as they are prone to cracking. In very dry climates or in situations where a furnace is being used to keep the home warm during the winter, the player might consider using a humidifier to keep the air within the home from becoming too dry.

Temperature Issues

Another factor to consider is temperature. While the temperature will significantly affect the pitch of the flute, that is not the only concern. Blowing warm, wet air into a cold instrument will cause moisture to quickly condense inside the flute, contributing to "wet out." I have seen many players over the years hold a flute under their arm while telling a story to warm it up. I know at least one player who keeps their flutes on an electric heating pad while performing, to warm them up. At the same time, if it is freezing outside and you have just received a flute that has been sitting in a delivery truck or on your porch all day, give it some time to acclimate. At the other extreme, it is not advisable to store flutes in a hot vehicle during summer.

Also, rapid temperature changes can be problematic, especially with river cane and bamboo flutes. Playing a bamboo flute outside in the winter can be a recipe for disaster, as that shock can cause the instrument to crack. I have also heard of at least one cane flute that was played for a while and then laid down on a cold surface, causing an immediate split down the length of the instrument.

Maintaining the Finish

When it comes to maintaining your flute, this is rule number one: ALWAYS ask the maker what he or she recommends for that particular flute. What works for one flute may damage another flute, depending on the finish that was initially used.

For the outside of the instrument, if the flute has been finished using natural oils and waxes, it may need to be waxed or oiled on occasion. There is no set time period to do this. Just use your best judgment. If the surface of the instrument looks dry, it could probably use a coat of a food-safe wax or oil. There are many products on the market that can work, including butcher block oil, beeswax, and others. Personally, I am partial to the line of flute-care products from Tree of Life Designs (www.treeoflifedesigns.com). Their products are handmade in small batches by a flute maker, specifically for use on flutes. While I have seen various people recommending this over the years on Facebook and in videos, I would not personally use food oils like olive oil, coconut oil, etc., as they can go rancid. If the flute is finished with a modern, hard finish like polyurethane, lacquer, or a glossy resin, it likely does not need any outside maintenance. In some cases, using an oil on some shiny finishes can cause them to delaminate and chip off, so always ask the maker first before using any products.

While some wind instruments do need to be oiled inside on occasion, that is not necessarily the case with Native American flutes. Many modern makers seal the inside of their instruments to prevent moisture absorption, so attempting to oil the bore will just make an oily mess. If the maker does recommend oiling the bore, again, be sure to use quality oils that will not go rancid.

Killing Germs

Over the years, especially at festivals and flute circles, I have observed various attempts to sanitize instruments. While isopropyl alcohol will kill many germs, it can also damage the finish on a flute, as it is a solvent. In the case of shellac, it can remove the finish entirely. I am only aware of one maker who regularly recommends using alcohol to clean their flutes, which features a proprietary finish. Various essential oils like lavender and tea tree have antiseptic properties, but they are too harsh in their concentrated state. Once diluted in a carrier oil, they can be used to clean the mouthpieces of flutes that use compatible finishes. Yes, once again, always ask the flute's maker first.

Additionally, COVID-19 is now a concern if a flute is being played by multiple people. While most of us are not sharing our flutes these days, I know that an awful lot of flutes have been bought and sold over the last few years. I am certainly not a medical professional, but based on what I have read, disinfectants that will kill COVID molecules need to be in direct contact with the surface being cleaned for several minutes to be effective. Disinfecting both the inside and outside of a flute would be a complicated process and could potentially damage both the finish and the wood itself. However, research shows that COVID molecules can only survive on a wood surface for up to four days. The easiest solution is to simply set a flute aside for a few days until that window has passed. In a case where a player is purchasing a new flute, if it is being shipped that window usually passes while the flute is in transit.

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