The timpani, with its roots from ancient times

Timpani are categorized as percussion instruments. Putting aside the fact that even children know how to clap their hands in rhythm, percussion instruments are the most basic forms of musical instruments known to humanity.
Although the timpani plays a major role in an orchestra, its structure is quite simple. A skin (drumhead) is placed over the kettle-shaped body (shell) of the timpani, and the player uses a mallet to strike the drumhead. This causes the drumhead to vibrate, and the vibrations are transmitted to the shell to make the drum resonate with sound. By adjusting the tightness of the head, the pitch of the timpani can be changed, so that the drum can accurately make tones that are distinguishable as "C-D-E". This makes the timpani a pitched percussion instrument.

The *naqqara*, ancestor of the modern timpani

The timpani has its roots in ancient times, and can be traced back to the primitive past. The oldest drum with a plate that could be called a timpani is an artifact from the B.C. era, spanning back more than two millennia. We know that the ancient Greeks, Egyptians, Hebrews and other people used percussion instruments similar to the timpani. In particular, the ancient Greek instruments were called tympanon, which became the origin of the word timpani.
However, the direct ancestor of the modern timpani were the drums used by military bands in the Arab world such as the Ottoman empire, which were believed to have been brought to Europe in the 15th century.

From screw to pedal timpani

Up through around the end of the 16th century, the drumhead of the timpani was generally tied to the shell by using a cord; but from the 17th century, timpani on which the drumhead was fastened to the shell using screws became common. The change to screws made it possible for the timpani to be tuned more easily, and timpani started to be used in orchestras and in church music performances in particular.

At the beginning of the 20th century, the screw timpani was the main timpani used. However, the disadvantage to this method was that the screws had to be turned manually to tighten, which meant that the pitch of the drum could not be changed continuously while playing. In the 19th century, many different devices were introduced to allow the pitch of the timpani to be instantly changed, but they were not widely used.
For this reason, the composers of the 19th century basically used the timpani at a fixed pitch, and thus had to write their music by allowing the players to take a break and retune the instrument as necessary. When it was necessary to play more than one timpani pitch at a time, a corresponding number of timpani were set up.
However, aside from those unique situations, composers generally called for the use of two timpani, each tuned in fourths (for instance, from G to C in the key of C major).

The use of foot pedals to change the pitch of timpani, rather than tuning by hand gained attention from the 20th century. The pedal timpani allowed the timpani pitch to be changed easily, as well as making it possible to play glissandos. Because of this, the role of the timpani in the orchestra has changed dramatically, and is now used even for playing solos, for instance.
Since the pedal timpani became used, making it easy to change the pitch, more music was written that included key changes in the middle of the song. The changes in the instrument, such as its use when playing glissandos by pressing the pedal to change the sound, have had an impact on the evolution of music itself.

From calfskin drumheads to plastic

Calfskin was used for timpani drumheads until the beginning of the 20th century.
From the 1950s, highly durable synthetic resin (plastic) began to be used. However, there are still some players who prefer timpani heads made of calfskin.

The head (skin) is made of calfskin or goatskin

Calfskin has been used from long ago for the head of the timpani, as cowhide was said to be too thick. The skin from one animal was used to make one drumhead. The hard backbone part of the skin passes through the center, and acts as the node of the vibrations. The timpanist of the Vienna Philharmonic orchestra, for instance, uses goatskin heads.

When viewed under a microscope, heads made of animal skin show a more uniform and detailed pattern than that of a plastic head. Animal skin also offers better tone and sound quality, and what's more, even after putting stress on certain part of an animal skin drumhead by drumming and causing it to stretch out, it will eventually revert to just the right shape. Even though the animal that the skin is made from might not be alive, its skin lives on in the head of the timpani. That said, animal skin is susceptible to changes in humidity and temperature; and the skin becomes taut when exposed to light, which raises the pitch. This means that heads made of animal skin require constant adjustment.

Calfskin heads, which naturally snap back into shape even when stretched

Plastic heads: easy to take care of

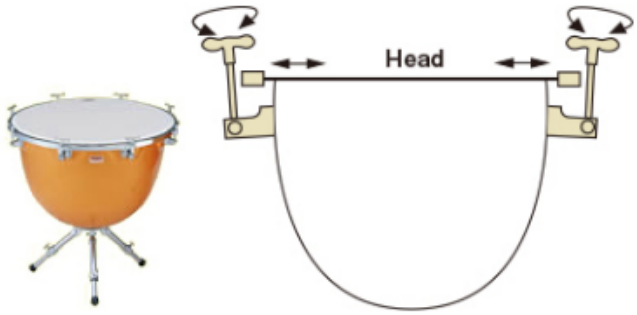
The manufacturer's logo is parallel to the grains

Plastic heads are easier to take care of, since they are not as susceptible to changes in humidity and temperature. As with animal skin, plastic heads need to be attached to the timpani shell in a specific direction. When the plastic sheet that forms the timpani drumhead is stretched out during manufacturing, tiny long grains that are invisible to the eye are formed at a molecular level in the direction that the sheet is stretched. From the standpoint of making the ideal sound, these grains should be facing the horizontal direction of the timpani. The mark that is printed on the drumhead shows the direction in which the head should be attached. Usually, it should be right in front of the player.

The various styles of timpani

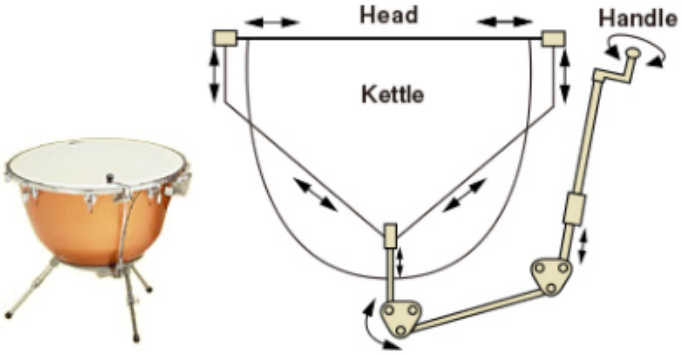
Hand-tightened:

The drum is tuned to the necessary pitch by tightening the tuning bolts by hand.



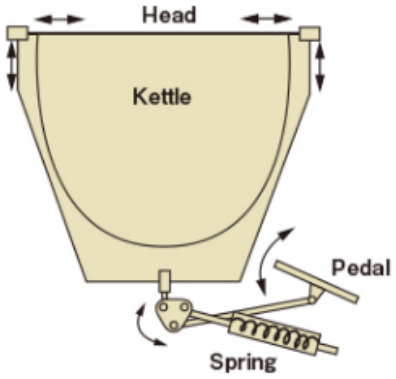
Handle-type:

The pitch of the drum is changed by rotating a tuning handle. Since the handle must be rotated several times each time the player wants to change the pitch, this type of timpani is not suitable for music requiring instantaneous pitch changes or glissandos.



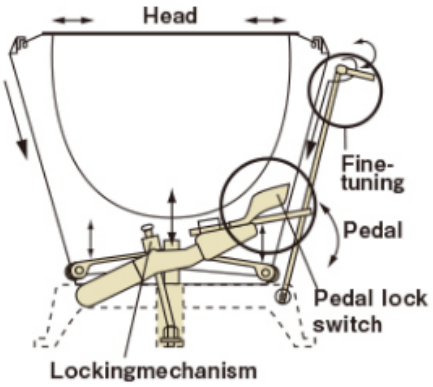
Pedal balancing spring-type:

This type of timpani is suitable for more advanced performance, including glissandos. As the tension of the pedal spring and head is balanced, the pitch can be maintained, even when the player releases their foot from the pedal.



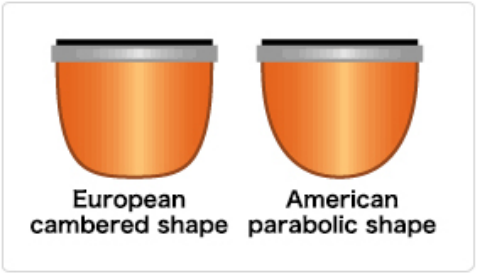
Pedal lock-type:

Drumheads made of animal skin tend to drift in pitch with changes in temperature and humidity. The pedal lock-type timpani offers two kinds of locking mechanisms (a ratchet and a clutch) to stabilize the pitch, and the player uses a handle to fine-tune the pitch after stabilizing.



Two types of kettles: European and American

Timpani from Europe, with Germany at its center, often feature kettles with an overall straight shape and an angular base. On the other hand, after the timpani was brought to the U.S., many were made with round-shaped, hemispherical kettles. Timpani used in Japan are mainly round-shaped as well, as the earlier timpani used there came from the United States.



Using the above information, complete the following questions in this packet

- **Use full sentences**
- **When you are finished save the document to turn in to me when I return**

1. Creative thinking: What do you think the MAIN role of the timpani in an orchestra is? (This doesn't come from the reading - I'd like to hear your own thoughts.)

2. How does the timpani change pitch?

3. Where did the timpani come from? In what era? Who began using timpani first?

4. How has the way timpani are tuned changed over the years?

5. What type of heads are used on timpani? Has this changed over the years? How?

6. What are four styles of timpani? What are the differences? What are the similarities?

7. In what ways are American timpani different form European timpani?

8. What does your group find most interesting about the timpani?