

The Science and Technology of the Fire

The Fire is contained by co-centric circles. It is all about the circles. First, the land is prepared into a nice flat open field, clear of overhead trees or branches. In the center of these **festival grounds**, the **Fire Pit** is dug. It is dug while walking around it in a circle. The pit is conical in shape, not cylindrical. The walls slope gently down into the middle, they are not vertical cliff walls. The center of the pit is the deepest part. The dirt that is removed from the pit is piled up around the perimeter, in a raised circle of dirt. Around this **Dirt Circle**, a path is beaten, an area clear of all flammables, where the **Fire Tenders** can safely walk. This area is frequently bathed in water. Around this **Water Circle** is a circle of stones, carefully arranged so that the four cardinal directions are clearly and accurately marked. And around the **Stone Circle** is circle of grass, for the dancers to prance.

Around the **Grass Circle** is a circle of wooden benches: a divider between the mobile dancers and the stationary drummers. Around the **Wood Circle** is a circle of drummers. And around the **Drum Circle** is a **Great Circle** of spectators and participants.

The fire begins underground, being assembled in the central **Fire Pit**. The fuel is natural wood and detritus. We try not to kill anything, nor to burn anything that is vibrant and green. We do seek that which is already dead, withered branches and leaves, brown and dry. We start small, with kindling, and build up gradually into a bonfire.

The fuel is consistently added in an inverse conical structure, the highest point being the center. These two conical shapes, the lower negative **Fire Pit** mirrored above by the positive **Fuel Cone**, join at their widest points along the horizon.

This carefully constructed complex of co-centric circles, is quite sophisticated in its aerodynamics.

The shape of the **Fuel Cone** and **Fire Pit** creates a spherical **Fire Ball** that burns just about the horizon line, half above ground, half below ground. The laws of thermodynamics explain the rising heat from top-dead-center of the **Fire** pulling up the air flow. The **Dirt Circle** forces the incoming ground flow to accelerate slightly as the wind rises up and over the little ridge. The very circle shape ensures that regardless of which direction the wind might be blowing at any particular moment, the Fire will get fed the necessary air flow. The **Water Circle** soaks into the ground, and vaporizes there, from the underground heat. This creates a pressurized thermal barrier, that seals in the heat like a giant thermos. Above the **Water Circle**, the evaporating vapors prevents the ambient temperature from rising above 100 centigrade, keeping the path of the **Fire Tenders** cool and safe. The convection of the air flow ensures that the outer edges of the fire are at the bottom where the direction is inwards and cool; while the hottest air and fiery sparks rise safely from the center, floating high above the crowd and cooling in the air before falling in contact with anyone. The **Stone Circle** protects the dancers in the **Grass Circle**, separating them from the inner and hotter **Water Circle** where the Fire Tenders walk.

It is all very complicated and precise and sacred, and I would like to thank Bridgid, Prometheus, Augni, Zeus, Hephaestus, Rabbit, the Bantu Elders, Scout Leaders, Native Medicine Keepers, Shamans, Yogis, Park Rangers, Engineers and PyroTechnicians who have taught me these important rituals and dates.

It is important to note that once upon a time the **Wild Fire** burned in this part of the world and would perform an important role in the ecosystem, clearing out undergrowth and removing strangling vines to allow hardier trees to grow and flourish. Some species of pine have evolved to sprout from seed only when fire is present. With our **modern civilization** we no longer permit the **Wild Fires** to exist, and this has thrown the natural order out-of-balance. I try to unite the two opposing forces of nature and civilization by building a **Controlled Fire**, while feeding it only the same fuel that a **Wild Fire** would have taken. Thus safely simulating the long gone natural cycle of life, and helping maintain a healthier environment in our Park. *I think like Augni living on the Reservation.*