A Pipe Organ’s “Organs”

Layperson Summary

Pipe organs have been described as the king of all instruments. Perhaps because they have the capabilities of producing an extensive range of musical sounds, as well as being some of the world’s most beautifully designed objects. The organ’s transformation from a small, primitive instrument to one that became large and grand spans over just half a millennia and is primarily apparent in their aesthetic and architecture. The morphology of the pipe organ however, is not only apparent in its external design, but also in the internal mechanism: that is the system of parts that allow air to enter specific pipes and produce sound. Beginning in the form of simple mechanics, as levers and rods, the pipe organ’s insides changed with the introduction of technologies such as pneumatics and electricity. However, despite the advancement of a pipe organ’s internal systems and the utilization of these technologies most organs built today still resemble those built centuries earlier. The external architecture of the instruments does not use these technologies as tools to experiment with design. This thesis will research the history of the pipe organ, looking at its development as an instrument and as from a formal and aesthetic point of view as an architectural object. It will incorporate the design of a small pipe organ that reflects and illustrates the internal mechanism, using the Storrs Salon as its site. The organ’s aesthetic will consider the architectural context and accommodate a transparent design logic, consistent with the ideas and attitudes of contemporary architecture. The final presentation of the thesis will include a graphic explanation of the
research, a brief demonstration of the instrument’s mechanics, followed by a short concert of organ music, featuring pieces from the Baroque to the present.

A Brief History of the Pipe Organ

Most people would associate the pipe organ with churches and Christian liturgy. It is often used to accompany traditional hymns and choral music. However, the concept for this instrument first appeared long before stones were laid for Europe’s great cathedral and even before Christianity itself. The Ancient Greeks developed the organ in its most basic form and used water as a primary way of generating wind pressure.

According to James Cook at Birmingham Southern College, an instrument must have the four following components in order to be considered a pipe organ: pipes that produce sound, a chest that stores wind under pressure, a mechanism for producing air pressure, and a keyboard to control the access of wind to the pipes. These four basic components first appear together in the Greek hydraulis, invented in the 3rd century BCE. The pipe organs that we see and hear around the world today are evolutions of this ancient instrument that reflect changes in technology and the ambitions of the instrument to serve in liturgy, as an accompanying sound, and as a solo instrument.

After the fall of the Roman Empire, the technology of the pipe organ was lost to the Western world and unknown until the 8th century AD, when the Byzantine Emperor Constantine reintroduced it to the European continent. The pipe organ still had a long way to go before becoming a constant in almost every church. It wasn’t always a welcome addition to Christian liturgy. The Catholic Church disapproved of the playing of instruments during mass in its early history and this certainly applied to pipe organs. It