Box 8

Hypergeometry

Gauss and his student Riemann insisted that the physical universe must be characterized by an anti-Euclidean hypergeometry. Such notions of hypergeometry cannot be directly visualized; nevertheless, when the higher functions associated with physical action, such as elliptical and Abelian functions, are represented in the complex domain, the essential physical-geometrical characteristics of these hypergeometries become clear. As both Gauss and Riemann emphasized, such hypergeometries are never flat, but are characterized by a changing curvature and an increasing density of singularities.

Figures 1-3 are Gauss's representative drawings of such negatively curved hypergeometric manifolds. **Figures 4-6** are Riemann's illustrations of the spherical form of such hypergeometries. **Figure 7** is Riemann's representation of a negatively curved hypergeometry.

—Bruce Director

FIGURE 1

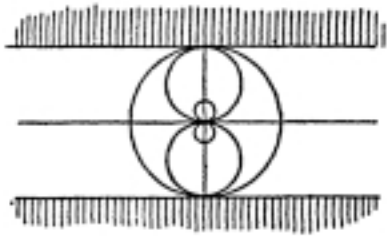

FIGURE 2

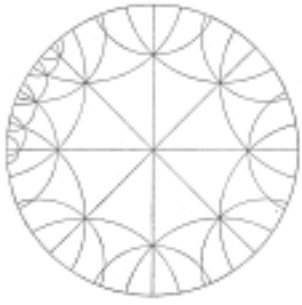

FIGURE 3

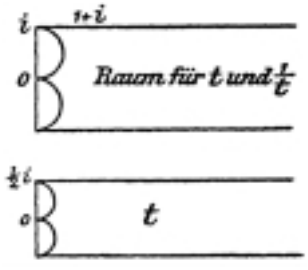

FIGURE 4

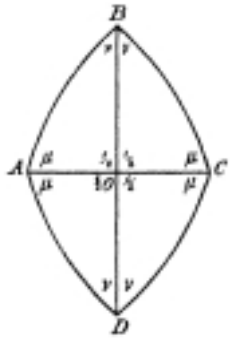

FIGURE 5

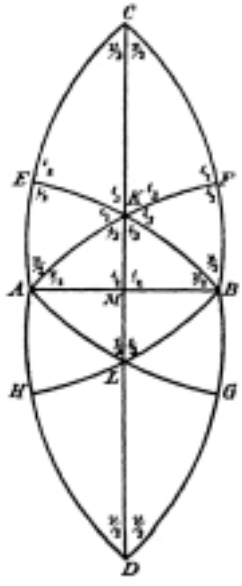

FIGURE 6

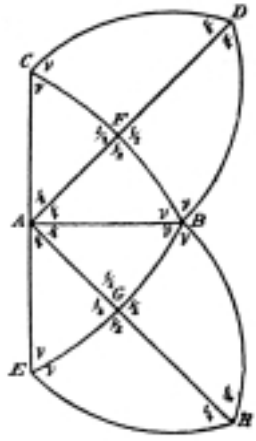

FIGURE 7