1047-53-271 **Bruce M Solomon*** (solomon@indiana.edu), Math Department, Indiana University, Bloomington, IN 47405. *Compact convex central cross-sections make surfaces quadric.* Preliminary report.

In 1918, Blaschke showed that when the planar cross-sections of a convex surface $S \subset \mathbf{R}^3$ are all centrally symmetric, S must be quadric. His argument, though short, was purely local, and required convexity of S in an essential way. We prove a complementary—and fundamentally global—analogue:

Suppose a complete smooth surface $S \subset \mathbf{R}^3$ has two properties:

- *It cuts some plane transversally along a strictly convex loop.*
- *All strictly convex cuts of this type have central symmetry.*

Then S is either quadric, or S is the cylinder over a centrally symmetric oval.

As an application, we derive the existence of skew-loops—loops having no pair of parallel tangent lines—on all negatively curved tubes except the hyperboloid, which has none. (Received January 30, 2009)