

1077-K1-1744

Nathaniel G. Miller* (nathaniel.miller@unco.edu), Campus Box 122, University of Northern Colorado, 501 20th Street, Greeley, CO 80639. *CDEG: Computerized Diagrammatic Euclidean Geometry*.

The use of diagrams in Euclidean geometry is an area in which most informal mathematical practice does not align well with most formal logical and philosophical accounts of geometry. Most people giving informal geometric proofs rely on diagrams as part of their proofs; this tradition, in fact, goes back to Euclid. However, most formal accounts of geometry developed over the last 150 years do not rely on diagrams, and it is often claimed that diagrams have no proper place in rigorous mathematical proofs.

CDEG is a free computer proof system for manipulating and giving proofs with diagrams in Euclidean geometry that seeks to bridge that gap. It is based on a rigorously defined syntax and semantics of Euclidean diagrams. This talk will include a demonstration of CDEG, and a discussion of some of the mathematical, philosophical, and educational implications of such a diagrammatic computer proof system for Euclidean geometry. (Received September 20, 2011)