1125-A0-1082 **Jeff Buechner*** (buechner@rci.rutgers.edu). Computers, mathematical proof, and the nature of the human mind: a surprising connection. Preliminary report.

Although the use of computers in mathematical proofs antedates the Haken-Appel proof of the four-color theorem in 1976, it was Haken and Appel's proof that created a stir among mathematicians, philosophers, and computer scientists. Was their proof of the four-color theorem a genuine mathematical proof? At that time, Thomas Tymoczko established a conceptual framework for thinking about this issue, and subsequent discussion employed his framework, although some argued that it was deficient. I will argue that a line of thought mentioned (but not developed) by some commentators is necessary for understanding the use of computers in mathematical proofs. In particular, the consensus view of how computers work (accepted by computer scientists, mathematicians, and philosophers) makes it impossible to understand how computers function in mathematical proofs. I will show why this is so by connecting the consensus view of how computers work with a consensus philosophical view about the nature of the human mind. I will close with a speculation about how we might make progress in understanding how computers work, mathematical proof, and the nature of the human mind. (Received September 14, 2016)