

Abstract

Current formal mathematics, being divorced from the empirical, is entirely a social construct, so that mathematical theorems are no more secure than the cultural belief in two-valued logic, incorrectly regarded as universal. Computer technology, by enhancing the ability to calculate, has put pressure on this social construct, since proof-oriented formal mathematics is awkward for computation, while computational mathematics is regarded as epistemologically insecure. Historically, a similar epistemological fissure between computational/practical Indian mathematics and formal/spiritual Western mathematics persisted for centuries, during a dialogue of civilizations, when texts on "algorismus" and "infinitesimal" calculus were imported into Europe, enhancing the ability to calculate. It is argued here that this epistemological tension should be resolved by accepting mathematics as empirically based and fallible, and by revising accordingly the mathematics syllabus outlined by Plato.