1035-05-1237 **Doron Zeilberger*** (zeilberg@math.rutgers.edu), Mathematics, Hill Center, 110 Frelinghuysen Rd., Piscataway, NJ 08540, and **Thotsaporn "Aek" Thanatipanonda** (thot@math.rutgers.edu). *Computer-Generated Conjectures(!) and Proofs(!!) in Combinatorial Game Theory.*

The rapidly growing activity of experimental mathematics is still, to a large extent, a straightforward (albeit far-reaching) extension of the usual mode of paper-and-pencil research, where the pencil just got so much quicker and sharper and the paper so much larger. In order to take full advantage of the great potential of computers, we should learn to kick some old habits, like trying to "understand" what is going on. If we humans can "understand" something, then it can't be very deep. Rather than try to understand mathematics, we should do our best to meta-understand it, by designing algorithms (and meta-algorithms!) for computers to do everything by themselves:generating data, of course, but then going on to formulate conjectures, followed by (fully automated!) proofs.

We admit that our computers can't prove the Riemann Hypothesis yet, but they sure can prove some intriguing conjectures of Jeff Erickson about the game "Toads and Frogs". The only way our computers can prove these simply-stated (i.e. "beautiful" to human eyes) conjectures, is by making many other "ugly" (to humans) conjectures, and then proving them simultaneously.

The full details are available from

www.math.rutgers.edu/ zeilberg/mamarim/mamarimhtml/tf1.html . (Received September 19, 2007)