Standard Modeling Languages

• C code for compact models
  – is like doing graphics in HPGL (or on graph paper)
  – is like writing documents in PostScript
  – is like using a hammer instead of a nail gun

• Why is Matlab so popular?
  – Allows engineers to write at a high level of abstraction, and not get bogged down
  – Enables efficiency and fewer errors
  – Lets engineers concentrate on the real problems and not details of solution
Standard Modeling Languages

• C code is not standard for every simulator, but Verilog-A is!
• Capability to re-use blocks is exponentially enabled by Verilog-A
• Allows arbitrary generation of “golden” results by running directly
  – this is a huge advance over publishing limited test results with a model
  – noise, transient, HB, … not provided
• The only way to go
Impediments

• Fracturing model developers by anointing a plethora of competing languages as standard
  – we need to all use only one, Verilog-A

• Barrier to introduction to the compact model development club is removed
  – still need a “bozo” filter …

• Anarchy: gives modeling groups the ability to deliver equations, not just model parameters
Why not used now?

• Infrastructure for compact modeling in high level languages is immature
• The light bulb is only just going off for many people
  – CS knowledge varies widely in EEs
  – lots of misconceptions and lack of understanding of basic concepts
• It takes years for changes like moving from C to Verilog-A to happen
My Experience

• I personally find that once I get used to a language I do not like to change
• I have personally defined or helped define several versions of languages for compact model definition
• After seeing Verilog-A, I completely switched to that and have no desire to use anything else