

WHY WE WILL HAVE NO IMITATORS

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We have developed a unique hardware architecture and supporting software. This architecture is demonstrably better than existing products. Why haven't strong competitors fielded the same ideas?

BOUNDARY LOGIC

- a diagrammatic formalism, not a symbolic formalism
- diagrammatic tools have been actively suppressed for over a century
- it takes a multidisciplinary perspective to understand it
- it takes a software expert to implement it to give it value
- it takes an EDA application to maximize its value
- it takes others (management, EEs, funders) to bring it to market
- no one else has dedicated a career to understanding it
- no one else has been supported for a decade to develop it
- those who have popularized it have poor reputations

BOUNDARY LOGIC EDA SOFTWARE

- deeply nested circuits are thought to be a bad idea (too slow)
- algorithms for deep nesting must pass through many gates
- logical transparency is obscured by a diversity of gate types
- using non-representation is avoided, misunderstood, and condemned
- circuits create an illusion that wiring and logic are different
- exact algorithms suggest that Boolean techniques are very difficult
- knowledge priesthoods have a vested interest in maintaining complexity
- EDA tools are not build on a formal foundation
- focusing on logic creates an artificial partition
- algebraic logic is not well understood
- arithmetic logic is not well understood
- EDA addresses logic to the exclusion of architecture

COMESH HARDWARE

- a multilevel block architecture
- requires codesign with BL to justify fine-grain choices
- requires codesign to understand multilevel place and route
- requires a memory-based perspective to maintain speed
- has been iteratively discovered
- uses many elements which were abandoned decades ago
- deeply integrates logic and wiring

place and route looks too difficult to conventional techniques
deep optimization is not considered an architectural solution
reconfigurable hardware approaches miss software reconfigurability

INERTIA

semi-conductor companies are expanding rapidly
there is no time to explore exotic options
exotic options do not offer backward compatibility
successful companies do not disregard their current products
the need for exotic new techniques has only just surfaced
exotic options are not cost justified

existing architectures are wedded to symbolic approaches
existing architectures are historically wedded to two-level approaches
no academic tools exist to directly address multilevel optimization
academic research is very political