

Whistling Past the Graveyard: Why the End of Moore's Law Matters to All of CS

Chairs: Tom Conte, Georgia Tech, and Margaret Martonosi, Princeton University

Speakers: David Brooks, Harvard University, Paolo Gargini, IEEE International Roadmap of Devices and Systems, Mark Hill, University of Wisconsin-Madison, and Krysta Svore, Microsoft Research



Which is true (show of hands):

“Moore’s Law is ending!”

Which is true (show of hands):

“Moore’s Law ended a long time ago!”

Which is true (show of hands):

“Moore’s Law will never end!”

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**Moore's Law means computers
double in speed every X months**

**Moore's Law means *usable*
transistor speed increases every
X months**

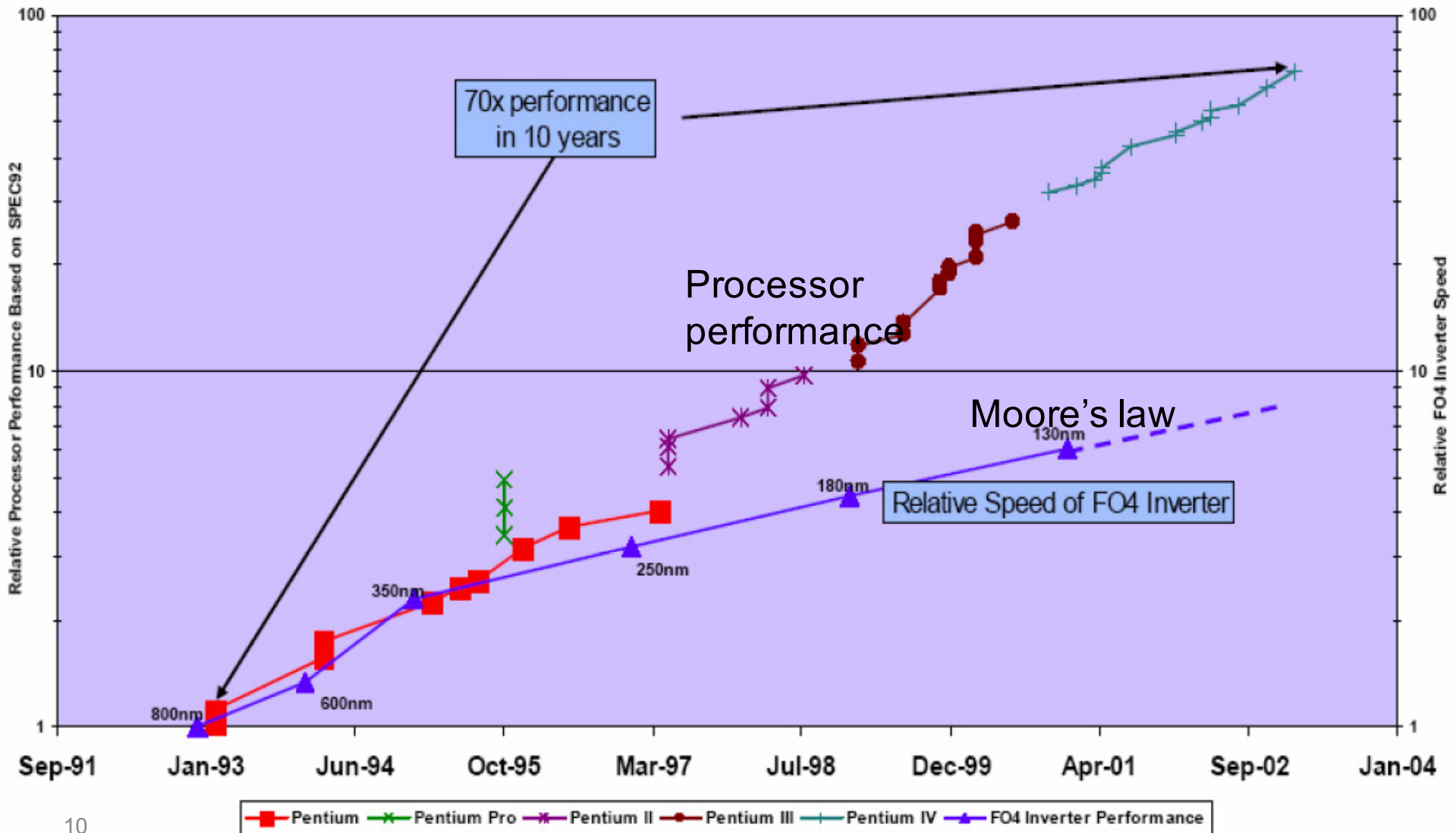
Moore's Law means the *number of transistors per unit area for a given cost increases every X* months

Moore's Law means computers double in speed every X months

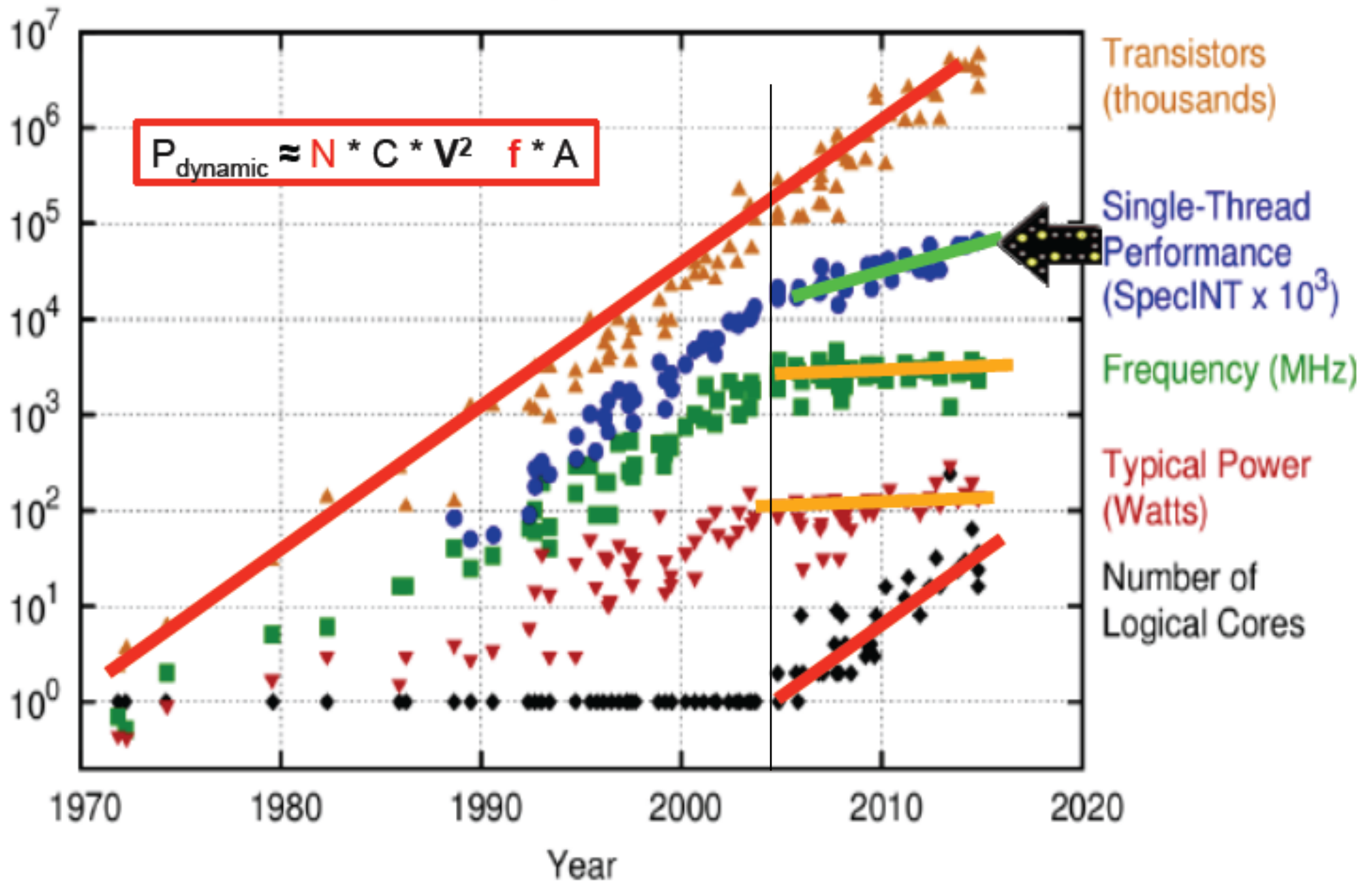
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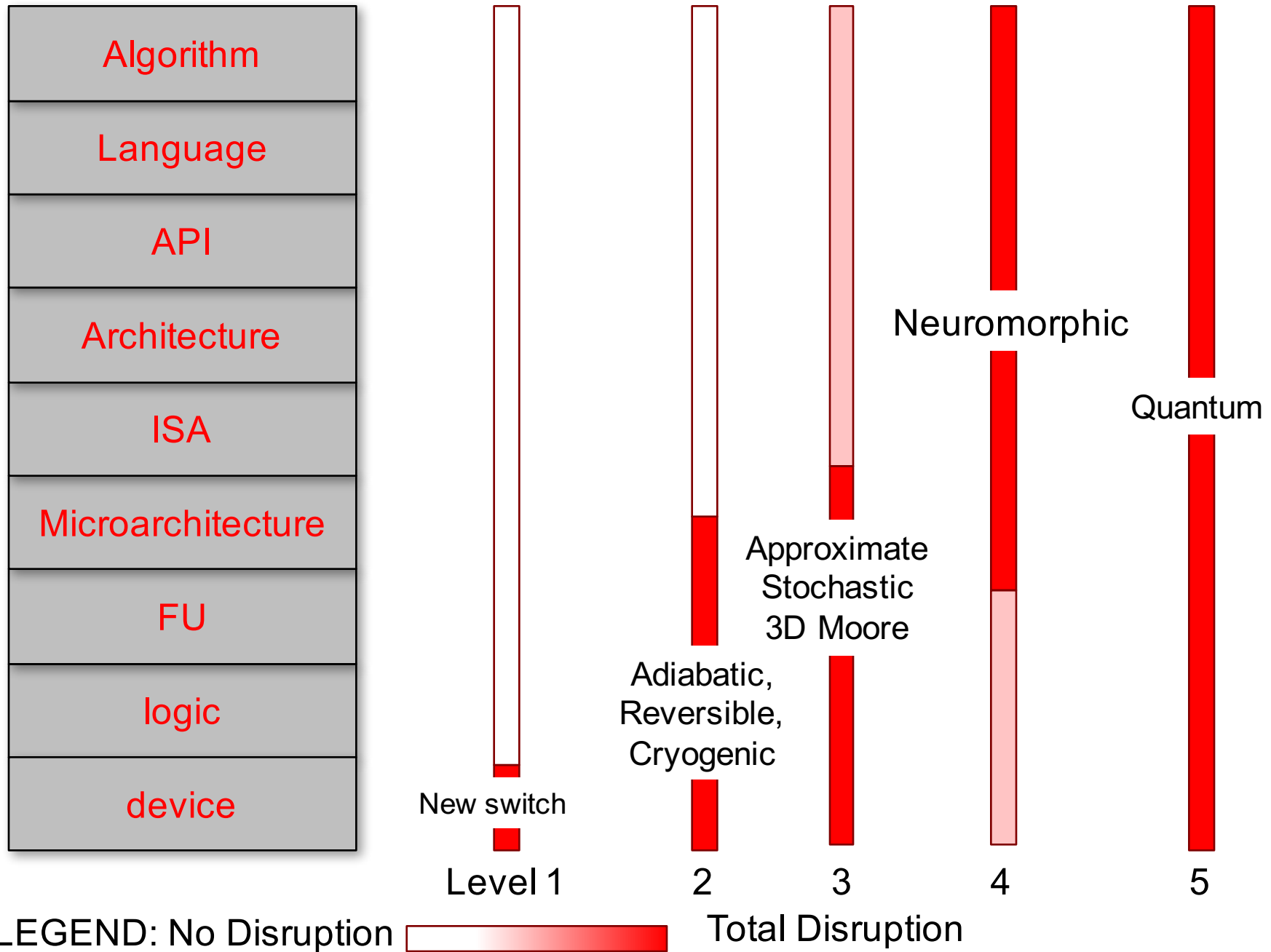
Architects have been working hard to hide this from you



40 Years of Microprocessor Trend Data



Differing Levels of Disruption in Computing Stack



Panelists

- David Brooks, Harvard University
- Paolo Gargini, IEEE International Roadmap of Devices and Systems
- Mark Hill, University of Wisconsin-Madison
- Krysta Svore, Microsoft Research

Question 1

There have been lots of “End of Moore’s Law” predictions over literally decades. For those in the audience who might still be wondering, *what makes the current “End of Moore’s Law” situation one worth paying attention to?*

Question 2

It might be tempting to view End of Moore's Law issues as mostly affecting the hardware portion of the field, with lesser impact on other aspects of CS.

What are some specific examples you see regarding its impact on all aspects of CS departments and of the field as a whole?

Question 3

How has your research changed as a result of technology trends like the deceleration of Moore's Law and Dennard Scaling?

Question 4

The hope is that new technologies and techniques might emerge to overcome the slowdowns being seen in CMOS semiconductor technologies. *What are some of these new technologies, and how might they influence CS as a whole?*

Your questions