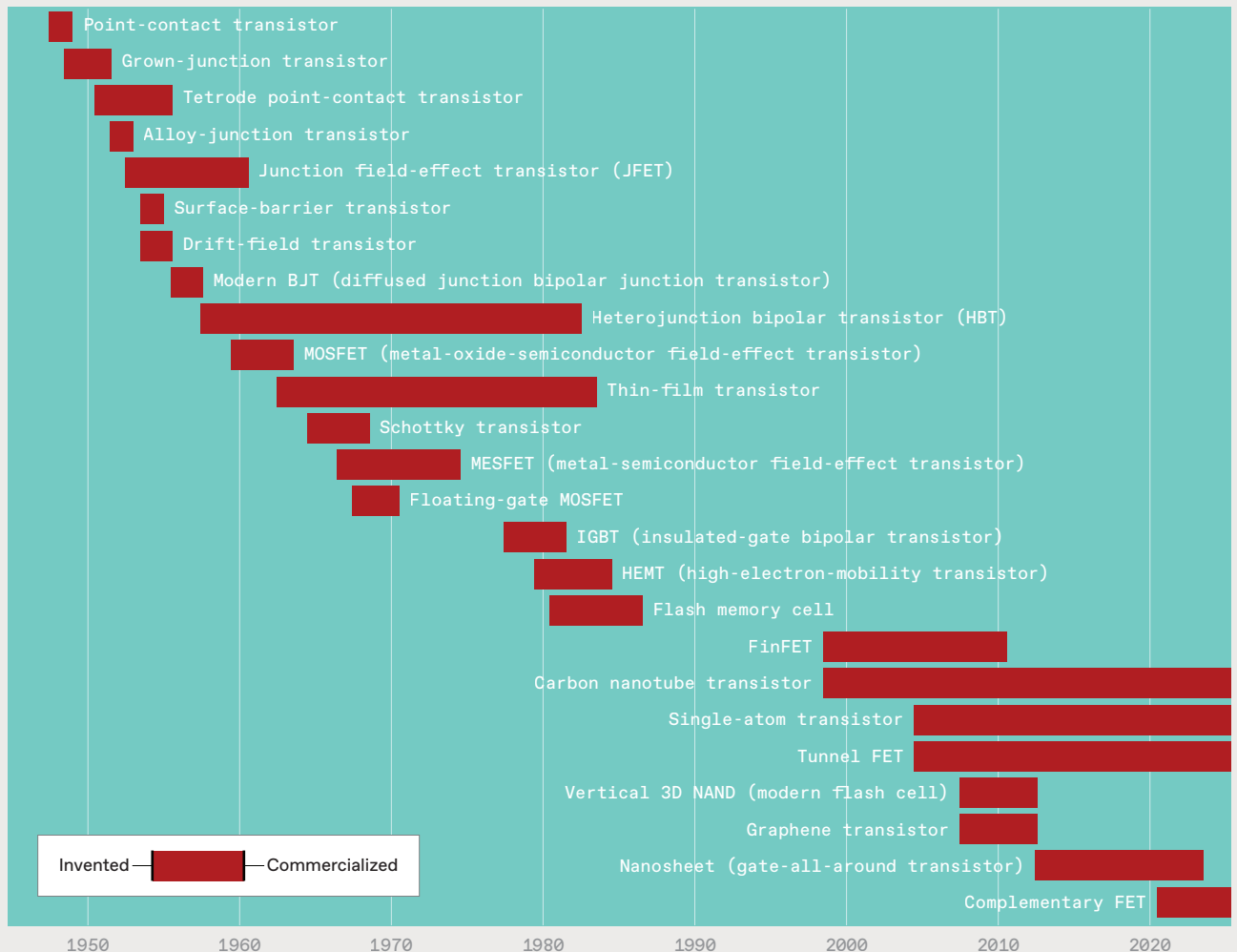


You just can't reinvent the transistor enough times.



THE ULTIMATE TRANSISTOR TIMELINE

The transistor's amazing evolution from point contacts to quantum tunnels

by **Stephen Cass**

EVEN AS THE INITIAL sales receipts for the first transistors to hit the market were being tallied up in 1948, the next generation of transistors had already been invented (see “The First Transistor and

How it Worked,” p. 24). Since then, engineers have reinvented the transistor over and over again, raiding condensed-matter physics for anything that might offer even the possibility of turning a small signal into a larger one.

But physics is one thing; mass production is another. This timeline shows the time elapsed between the invention of a number of transistor types and the year they became commercially available. To be honest, finding the latter set of dates was often a murky business, and we welcome corrections. But it's clear

that the initial breakneck pace of innovation seems to have slowed from 1970 to 2000, likely because these were the golden years for Moore's Law, when scaling down the dimensions of the existing metal-oxide-semiconductor field-effect transistors (MOSFETs) led to computers that doubled in speed every couple of years for the same money. Then, when the inevitable end of this exponential improvement loomed on the horizon, a renaissance in transistor invention seems to have begun and continues to this day. ■