Describe why Moore's Law continues to advance and discuss the physical limitations of this advancement.

Moor'e simply observed that we're getting better over time at squeezing more stuff into tinier spaces. Moore's Law is possible because the distance between the pathways inside silicon chips gets smaller with each successive generation. While chip plants (semiconductor fabrication facilities, or fabs) are incredibly expensive to build, each new generation of fabs can crank out more chips per silicon wafer. And since the pathways are closer together, electrons travel shorter distances. If electronics now travel half the distance to make a calculation, that means the chip is twice as fast.

But the shrinking can't go on forever, and we're already starting to see three interrelated forces—size, heat, and power—threatening to slow down Moore's Law's advance. When you make processors smaller, the more tightly packed electrons will heat up a chip—so much so that unless today's most powerful chips are cooled down, they will melt inside their packaging. *Voltage scaling reduces -dynamic- power consumption.*

And while these powerful shrinking chips are getting hotter and more costly to cool, it's also important to realize that chips can't get smaller forever. At some point Moore's Law will run into the unyielding laws of nature. While we're not certain where these limits are, chip pathways certainly can't be shorter than a single molecule.

And this lead to:
- *Voltage scaling cannot prevent leakage power loss.*
- *Voltage scaling is limited due to noise or threshold voltage.*