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## Betting on the Future of Moore's Law

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Material science is the basis of all semiconductor technology, says former Intel Chairman of the Board Craig Barrett. And during his 35-year stint with one of technology's most established firms, Barrett has learned that Moore's Law (Intel founder Gordon Moore's prediction that the number of transisters in an integrated circuit will double every 18 months) is still applicable now, 40 years after it was written. And though it will eventually have to change, it will likely remain relevant for another 15 years or more.

**Transcript**

Material science was at the basis of all of the things going on with semiconductors; the manufacturing, the technology, printing, smaller transistors the lithography, etc. The other thing that I found quite intriguing was in fact, that there was this thing called "Moore's Law". How many of you have heard of Moore's Law? How many of you read the original article in 1965 on Electronics Magazine? That's what I thought; oh - one. Anyway, Gordon Moore, founder of Intel but he really had written the paper about Moore's Law when he was at Fairchild, was really the head of the R&Deffort there. He just noticed that integrated circuits started in about 1960; it was now 1965. Five years later, you notice a certain trend. And if you plotted the number of transistors per integrated circuit over a five- or six-year period, it will look like it was a log, a plot or a linear plot and a log scale. So, it meant that you were doubling every 18 months or so in terms of transistors and transistors related into functionality performance of a bunch of other things. If you read the article, it says very simply, "Hey, I've made this observation. It can't possibly last but it's interesting that it has gone on so far and maybe it can last for another five years or so.

But nothing continues to double for very long in nature." And I then had the pleasure when I was working in Intel of interacting with Gordon Moore for 35 years. And every year I would ask him about Moore's Law, and every year he would say it's going to die soon. And we are now 40-some years later and it's still going. And it's pretty cool that it looks like it's going to go for another 15 years or so. So, Moore's Law will probably end up having 60 years or so of history before you have to change that basic transistor structure. It will change; there's no question about that, just as vacuum tubes died when transistors came along. Transistors will die when the next electronic switch comes along. We just don't know what it's like. You're doing a lot of research here at the University on that. It's a great entrepreneurial effort.

Something will have to happen. But Moore's Law is very interesting. And the pursuit of Moore's Law has been interesting for the last 35 years.