

For those of us that fly in and out of Humboldt County we all know the drill trying to get home – arrive early for Homeland Security and then sit in LAX or SFO for hours because of delays. I've tried to look at the delay as an opportunity to chat with a stranger but have you ever tried to engage anyone who has a cell phone, ipad or laptop. Since electronic communication seems to trump face-to-face engagement I was recently given lots of time to reflect on where we are in this digital revolution.

The Industrial Revolution started around 1750 in England with the invention of the steam engine. That invention and all the inventions that followed created the fastest and biggest social transformation in human history. It allowed us to overcome the limitations of muscle power and generate massive amounts of useful energy at will. The point that really hit me while sitting amongst a sea of electronic devices was, that revolution took around 250 years but the computer revolution started when I was graduating from HSU in 1965 and I think it is fair to say that the vast majority of us didn't have a clue that it was happening

In 1965, Gordon Moore, a co-founder of Intel, made a prediction in Electronics magazine that electronic circuit computing power would double every year for at least 10 years. What that meant was that computing power in 1975 would be 500 times more powerful than it was in 1965. Well guess what, Moore's Law, as it is now referred to, has been working for half a century and it doesn't appear to be slowing down much. The doubling time is now considered by those in the field to be about 18 months. Some in the tech field feel Moore's Law is coming to an end in the next 10 to 15 years. I wouldn't bet on it!

The question that intrigues me is where are we in this digital revolution where we are harnessing brain power rather than muscle power. Starting with the number one on a chessboard and each succeeding square represents a doubling, when you reach square 32, the end of the first half of the board, the number is 4 billion – exponential growth is a powerful concept. On the second half of the board things really become hard for any of us to imagine and we entered the second half of the board in 2006.

The accumulated doubling of Moore's Law and the ample doublings still to come, gives us a world where supercomputer power becomes available to toys in just a few years, where ever cheaper sensors enable inexpensive solutions to previously intractable problems and science fiction becomes reality.

It has never been a better time to be a worker with special skills or the right education but conversely there has never been a worse time to be a worker with limited skills to offer employers. Computers, robots, and other digital technologies are acquiring skills and abilities at an extraordinary rate and technological progress is going to leave some people behind, perhaps lots of people, as it races ahead over the coming decades.

By the way the number at the 64<sup>th</sup> square is 18 quintillion, whatever that is.