

## [When It's Darkest Men See the Stars](#)

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### *When It's Darkest Men See the Stars*

Ralph Waldo Emerson

This Thanksgiving it might seem that there's a lot less to be thankful for. One out of ten of Americans is out of work. The common wisdom says that the chickens have all come home to roost from a disastrous series of economic decisions including outsourcing the manufacture of America's physical goods. The United States is now a debtor nation to China and that the bill is about to come due. The pundits say the American dream is dead and this next decade will see the further decline and fall of the West and in particular of the United States.

It may be that all the doomsayers are right.

But I don't think so.

Let me offer my prediction. There's a chance that the common wisdom is very, very wrong. That the second decade of the 21<sup>st</sup> century may turn out to be the West's and in particular the United States' finest hour.

I believe that we will look back at this decade as the beginning of an economic revolution as important as the scientific revolution in the 16th century and the industrial revolution in the 18<sup>th</sup> century. We're standing at the beginning of the entrepreneurial revolution. This doesn't mean just more technology stuff, though we'll get that. This is a revolution that will permanently reshape business as we know it and more importantly, change the quality of life across the entire planet for all who come after us.

### [There's Something Happening Here, What It Is Ain't Exactly Clear](#)

The story to date is a familiar one. Over the last half a century, Silicon Valley has grown into the leading technology and innovation cluster for the United States and the world. Silicon Valley has amused us, connected (and separated us) as never before, made businesses more efficient and led to the wholesale transformation of entire industries (bookstores, video rentals, newspapers, etc.)

Wave after wave of hardware, software, biotech and cleantech products have emerged from what has become "ground zero" of entrepreneurial and startup culture. Silicon Valley emerged by the serendipitous intersection of:

- [Cold war research](#) in microwaves and electronics at Stanford University,
- a Stanford Dean of Engineering who encouraged startup culture over pure academic research,

- Cold war military and intelligence funding driving microwave and military products for the defense industry in the 1950's,
- a single Bell Labs researcher deciding to start his semiconductor company next to Stanford in the 1950's which led to
- the wave of semiconductor startups in the 1960's/70's,
- the emergence of venture capital as a professional industry,
- the personal computer revolution in 1980's,
- the rise of the Internet in the 1990's and finally
- the wave of internet commerce applications in the first decade of the 21<sup>st</sup> century.

The pattern for the valley seemed to be clear. Each new wave of innovation was like [punctuated equilibrium](#) – just when you thought the wave had run its course into stasis, a sudden shift and radical change into a new family of technology emerged.

### **The Barriers to Entrepreneurship**

While startups continued to innovate in each new wave of technology, the *rate of innovation* was constrained by limitations we only now can understand. Only in the last few years do we appreciate that startups in the past were constrained by:

1. long technology development cycles (how long it takes from idea to product),
2. the high cost of getting to first customers (how many dollars to build the product),
3. the structure of the venture capital industry (a limited number of VC firms each needing to invest millions per startups),
4. the expertise about how to build startups (clustered in specific regions like Silicon Valley, Boston, New York, etc.),
5. the failure rate of new ventures (startups had no formal rules and were a hit or miss proposition),
6. the slow adoption rate of new technologies by the government and large companies.



## The Democratization of Entrepreneurship

What's happening is something more profound than a change in technology. What's happening is that all the things that have been limits to startups and innovation are being removed. At once. Starting now.

### *Compressing the Product Development Cycle*

In the past, the time to build a first product release was measured in months or even years as startups executed the founder's vision of what customers wanted. This meant building every possible feature the founding team envisioned into a monolithic "release" of the product. Yet time after time, after the product shipped, startups would find that customers didn't use or want most of the features. The founders were simply wrong about their assumptions about customer needs. The effort that went into making all those unused features was wasted.

Today startups have begun to build products differently. Instead of building the maximum number of features, they look to deliver a *minimum feature set* in the shortest period of time. This lets them deliver a first version of the product to customers in a fraction on the time.

For products that are simply "bits" delivered over the web, *a first product can be shipped in weeks rather than years.*

### *Startups Built For Thousands Rather than Millions of Dollars*

Startups traditionally required millions of dollars of funding just to get their first product to customers. A company developing software would have to buy computers and license software from other companies and hire the staff to run and maintain it. A hardware startup had to spend money building prototypes and equipping a factory to manufacture the product.

Today open source software has slashed the cost of software development from millions of dollars to thousands. For consumer hardware, no startup has to build their own factory as the costs are absorbed by offshore manufacturers.

The cost of getting the first product out the door for an Internet commerce startup has *dropped by a factor of a ten or more* in the last decade.

#### *The New Structure of the Venture Capital industry*

The plummeting cost of getting a first product to market (particularly for Internet startups) has shaken up the venture capital industry. Venture capital used to be a tight club clustered around formal firms located in Silicon Valley, Boston, and New York. While those firms are still there (and getting larger), the pool of money that invests *risk capital* in startups has expanded, and a new class of investors has emerged. New groups of VC's, *super angels*, smaller than the traditional multi-hundred million dollar VC fund, can make small investments necessary to get a consumer internet startup launched. These angels make lots of early bets and double-down when early results appear. (And the results do appear years earlier than in a traditional startup.)

In addition to super angels, *incubators* like [Y Combinator](#), [TechStars](#) and the 100+ plus others worldwide like them have begun to formalize seed-investing. They pay expenses in a formal 3-month program while a startup builds something impressive enough to raise money on a larger scale.

Finally, venture capital and angel investing is no longer a U.S. or Euro-centric phenomenon. Risk capital has emerged in China, India and other countries where risk taking, innovation and liquidity is encouraged, on a scale previously only seen in the U.S.

The emergence of incubators and super angels have dramatically *expanded the sources of seed capital*. **The globalization of entrepreneurship means *the worldwide pool of potential startups has increased at least ten fold* since the turn of this century.**

#### *Entrepreneurship as Its Own Management Science*

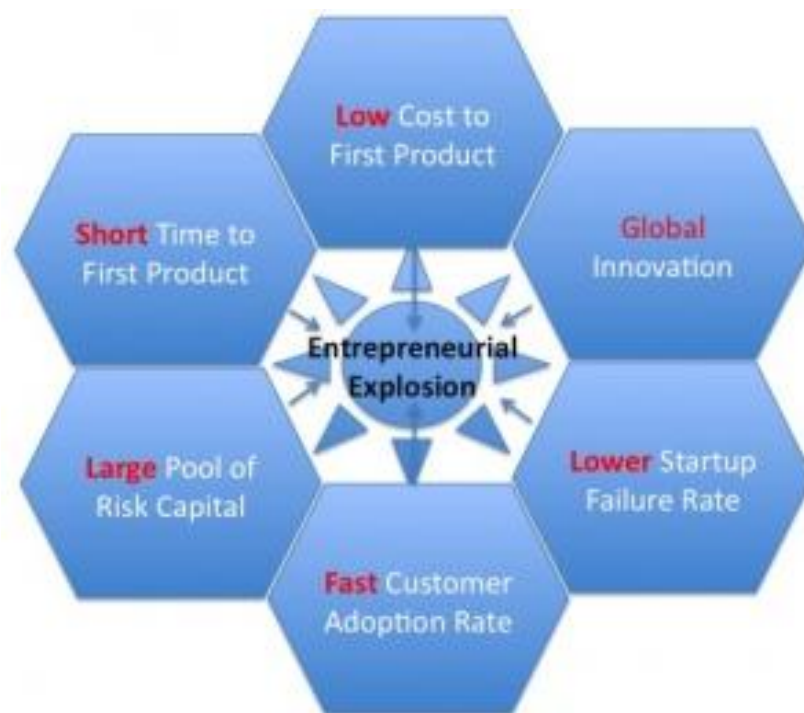
Over the last ten years, entrepreneurs began to understand that startups were not simply smaller versions of large companies. While [companies execute](#) business models, [startups search](#) for a business model. (Or more accurately, startups are a temporary organization designed to *search* for a scalable and repeatable business\_model.)

Instead of adopting the management techniques of large companies, which too often stifle innovation in a young start up, entrepreneurs began to develop their own management tools. Using the [business model / customer development / agile development solution stack](#), entrepreneurs first map their assumptions (their business model) and then test these hypotheses with customers outside in the field (customer development) and use an iterative and incremental development methodology (agile development) to build the product. When founders discover their assumptions are wrong, as they inevitably will, the result isn't [a crisis](#), it's a learning event called [a pivot](#) — and an opportunity to change the business model.

The result, startups now have tools that speed up the search for customers, reduce time to market and slash the cost of development.

### *Consumer Internet Driving Innovation*

In the 1950's and '60's U.S. Defense and Intelligence organizations drove the pace of innovation in Silicon Valley by providing research and development dollars to universities, and purchased weapons systems that used the valley's first microwave and semiconductor components. In the 1970's, 80's and 90's, momentum shifted to the enterprise as large businesses supported innovation in PC's, communications hardware and enterprise software. Government and the enterprise are now followers rather than leaders. Today, it's the consumer – specifically consumer Internet companies – that are the drivers of innovation. When the product and channel are bits, adoption by 10's and 100's of millions users can happen in years versus decades.



### **The Entrepreneurial Singularity**

The barriers to entrepreneurship are not just being removed. In each case they're being replaced by innovations that are speeding up each step, some by a factor of ten. For example, Internet commerce startups the time needed to get the first product to market has been cut by a factor of ten, the dollars needed to get the first product to market cut by a factor of ten, the number of sources of initial capital for entrepreneurs has increased by a factor of ten, etc.

And while innovation is moving at Internet speed, this *won't be limited to just internet commerce startups. It will spread to the enterprise and ultimately every other business segment.*

### **When It's Darkest Men See the Stars**

The economic downturn in the United States has had an unexpected consequence for startups – *it has created more of them*. Young and old, innovators who are unemployed or underemployed now face *less risk in starting a company*. They have a lot less to lose and a lot more to gain.

If we are at the cusp of a revolution as important as the scientific and industrial revolutions what does it mean? Revolutions are not obvious when they happen. When James Watt started the industrial revolution with the steam engine in 1775 no one said, “This is the day everything changes.” When Karl Benz drove around Mannheim in 1885, no one said, “There will be 500 million of these driving around in a century.” And certainly in 1958 when Noyce and Kilby invented the integrated circuit, the idea of a quintillion (10 to the 18<sup>th</sup>) transistors being produced each year seemed ludicrous.

Yet it’s possible that we’ll look back to this decade as the beginning of our own revolution. We may remember this as the time when scientific discoveries and technological breakthroughs were integrated into the fabric of society faster than they had ever been before. When the speed of how businesses operated changed forever. As the time when we reinvented the American economy and our Gross Domestic Product began to take off and the U.S. and the world reached a level of wealth never seen before. It may be the dawn of a new era for a new American economy built on entrepreneurship and innovation.

One that our children will look back on and marvel that when it was the darkest, we saw the stars.

Happy Thanksgiving