The Cognitive Revolution

Notes from ‘A $10 Trillion Opportunity’, by Sequoia Capital

5 min read · Just now

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(Source: The $10 Trillion AI Revolution: Why It’s Bigger Than the Industrial Revolution)

TL;DR: Content that follows answers following questions:

- Why AI mirrors the Industrial Revolution but happens in years, not decades
- The massive $10 trillion US services market that’s barely touched by AI
- How work is changing from perfect certainty to massive leverage
- Why “FLOPs per knowledge worker” matters more than you think
- How to size markets in the AI era
- Technical challenges that create big opportunities
- Why academic benchmarks don’t matter anymore
- 5 trends happening right now
- 5 themes worth betting on

The Industrial Revolution Playbook

AI will be as big as the Industrial Revolution. Maybe bigger. But there’s a key difference: speed.

Look at the Industrial Revolution timeline. The steam engine appeared in 1712. The first factory came 67 years later in 1779. That factory didn’t even use steam

power, it ran on water. Then it took another 77 years until we got the assembly line in 1856.

That's 144 years from start to finish.

Why so long? Complex systems need specialization. You can't just take general-purpose technology and expect it to work everywhere. You need to adapt it for specific uses.

Now think about AI. The first GPU was like our steam engine, the GeForce 256 in 1999. AI factories started appearing around 2016 when companies put all the pieces together to produce AI tokens.

But here's the thing. We're not taking 144 years this time. We're compressing that timeline from decades to just a few years.

The companies doing this specialization? That's today's startups. And the ones that haven't been founded yet.

The $10 Trillion Services Market

You've probably seen slides about the cloud transformation. Software spending went from $350 billion to over $650 billion. SaaS grew from a tiny $6 billion slice to dominating the market.

AI will do something similar. But bigger.

The US services market is worth $10 trillion. Right now, maybe $20 billion of that is automated by AI. That's 0.2%. The opportunity isn't just to grab market share. It's to expand the entire market.

Look at specific job categories. Registered nurses: 3.2 million people earning a median of $81,220 annually. Software developers: 1.4 million people at $127,260. Lawyers: 681,000 people at $145,760.

These are huge markets. And Sequoia is already investing in companies targeting them. Open Evidence and Freed for nursing. Factory and Reflection for software development. Harvey, Crosby, and Finch for legal work.

Here's what's interesting. The S&P 500 is dominated by tech companies now. Nvidia sits at over $4 trillion market cap. But you won't find Kirkland & Ellis law

firm on that list. Or Baker Tilly accounting. Even though these firms generate billions in revenue.

AI could change that. We might see large, standalone public companies built around AI services.

Five Investment Trends Happening Now

1. Leverage Over Certainty

Work is changing. Before, you had minimal leverage but 100% certainty about outcomes. Now you get 100x leverage (or more) but less certainty about exactly how things get done.

Take sales. Today, a salesperson manages accounts manually. They track each customer, watch for opportunities, handle re-engagement.

Tomorrow? They use AI agents. One agent per customer. Hundreds of agents tracking progress, spotting opportunities, suggesting next steps. The salesperson gets 1000x leverage. But the AI won’t do things exactly like they would. Sometimes it makes mistakes. That’s where humans step in to correct course.

More leverage. Less certainty. That’s the trade-off.

2. Real-World Validation

Academic benchmarks are dead. ImageNet was great for computer vision research a decade ago. But now, if you want to prove your AI works, you prove it in the real world.

Expo wanted to show they had the best AI hacker. They didn’t just run benchmarks. They went to HackerOne and competed against every other hacker on the platform. They won. Number one in the world.

That’s the new standard. Real-world results matter more than lab scores.

3. Reinforcement Learning

Reinforcement learning finally works. Not just for the big labs building reasoning models. Portfolio companies are using it too. Reflection uses it to train some of the best open-source coding models available.

4. AI in the Physical World

AI is moving beyond screens. This isn't just about humanoid robots. It's about using AI to create processes and manufacture hardware.

Nominal uses AI to speed up hardware manufacturing. They also use it for quality assurance after deployment. AI is getting its hands dirty in the physical world.

5. Compute as the New Production Function

"FLOPs per knowledge worker" is the metric that matters now. Our portfolio companies forecast at least 10x more compute consumption per knowledge worker. Some think it could be 1000x or even 10,000x.

Why? Because one knowledge worker might use dozens or hundreds or thousands of AI agents. Each agent needs compute. The math adds up fast.

This matters for inference companies, security companies, and anyone building tools for this new production function.

Five Investment Themes for What's Next

1. Persistent Memory

AI needs to remember things. Not just for a single conversation, but for weeks or months. And AI needs to maintain its personality and style over time.

Current solutions don't work well. Vector databases and RAG systems help, but they're not enough. Longer context windows help, but there's no equivalent of scaling laws for memory.

This is a major technical challenge. And a major opportunity.

2. Communication Protocols

Remember TCP/IP? It wasn't the finish line for the internet. It was the starting gun. Same thing with AI communication protocols.

Model Context Protocol (MCP) is exciting. But we need AIs that can talk to each other seamlessly.

Think about shopping. Today, you research with AI, then buy through your favorite one-click checkout. Tomorrow, AI handles the entire process. It finds the best prices, executes the purchase, completes the transaction. All because different AIs can communicate properly.

3. AI Voice

Not AI video. AI voice. Video might be ready in a year. Voice is ready now. The quality is good enough for daily use. The latency is low enough for real-time conversations.

Everyone talks about AI friends and companions. But enterprise applications matter too. Logistics coordination still happens over phone calls. Fixed income trading happens over voice with trading desks. AI voice can automate these processes.

4. AI Security

Security matters at every layer. Development, distribution, consumption.

Help foundation model labs develop securely. Make sure distribution channels stay clean. Protect users from accidentally introducing vulnerabilities.

Imagine a consumer following AI instructions to download software through terminal. They might not know terminal well. The AI might not know the software is dangerous. You need AI security agents protecting both the human and the AI.

In the digital world, you could have hundreds of security agents per person. Unlike physical security, you’re not limited by space or cost.

5. Open Source AI

Open source AI is at a crossroads. Two years ago, it looked like open-source models might compete with or beat proprietary models. Today, that looks harder.

But it’s important that open source stays competitive. We need a future where anyone can build great AI products. Not just well-funded giants.

Compressing the Timeline

The Industrial Revolution took 144 years. The cognitive revolution won’t. We’re compressing that timeline from decades to years.

The companies that figure out specialization, memory, communication, voice, security, and open source will define this transformation.

That’s the $10 trillion opportunity. And it’s happening faster than most people realize.

Artificial Intelligence | Cognition | Future | Summary | Investment

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