



Atas VC Whitepapers

# The Future of Manufacturing



# Investing In the Manufacturing Renaissance

Global dynamics are rapidly shifting the centers of manufacturing. This presents a unique opportunity to not only increase throughput, but adopt technology.

## The Renaissance

When French historian Jules Michelet coined the term renaissance in 1855, I don't think he had any idea that a couple hundred years later we would be using the term to talk about the new opportunity of manufacturing in America. Part of this is not precisely a new opportunity either, but a resurgence in capital interest, infrastructure investment, and technology adoption caused by geopolitical tension with China.

There have been more than enough papers about [reshoring](#), [the tailwinds for American Dynamism](#), and broadly [why manufacturing needs to reinvent itself](#).

No reason to reiterate all of those tailwinds, but realistically aging infrastructure, tension with China, post-COVID supply chain disruptions, and American capex investment will drive massive changes for our heavy industry. Some of these trends also indicate that America should invest in exporting manufacturing technology to friendly countries; as Vietnam and Mexico increase as manufacturing superpowers, the future manufacturing mix will look very different than it does today. Specifically, though, I'm most excited about a few technologies. The adoption of scalable robotics, novel chemicals and materials platforms, and applied AI and IoT.

## AI and IoT

AI and IoT is a category that many VCs lost money on in the last 20 years. I am not completely sure that it's going to be different yet. I hope it does, though. My thesis with AI, specifically generative AI is that it won't have any real impact on the industry, but that the acceptance and access to AI in an easy-to-digest format (i.e., ChatGPT) will catalyze the adoption of "dumb" AI, or the old generation of AI that at least to some extent failed. Knowledge of the technology will decrease fears of adoption, and combined with improvements made to technology like computer vision, we have a new ability to pursue supply chain observability, process optimization, and the many other technologies that previously failed.

## Robotics

Robotics hasn't exactly been a cash cow for venture either. This is because VCs frequently underwrite robots that can just solve a problem instead of necessarily solving a problem better. A frequent example of this I see is with robots using 6-axis arms to solve problems in the construction industry. The issue with this being that by the time you factor in maintenance, replacement cost, there's not really a good advantage to switching to these cost-wise over just paying for manual labor.



Most robots cannot be produced at high volumes, and so can never reach an economy of scale that would actually allow them to cost compete with manual labor. One can easily solve for this by adding a critical design review to the diligence process and evaluating sources of materials/future supply chain constraints and limitations before investing.

## Novel Chemicals and Materials

Finally, what in my opinion is the no-brainer application, using AI or new scientific developments to create platforms for chemicals and materials. Current combinatorial chemistry is woefully inefficient. New materials and new inventions frequently spin out of universities. Bridging the commercialization pathways here or finding increasingly better platforms that scale themselves will be an instant source of alpha.

## The Upshot

There's a quote that's tossed around in VC: "it's not a VC's job to predict the future."

This job is quite literally gambling on many occasions, but it's gambling with an informed data set, more of setting lines instead of placing bets themselves. I like to think that venture capital is akin to the job of a pollster and poll analyst like FiveThirtyEight than it is gambling. You take in the signals of the current world and find the best way to solve for how you get there. I can't predict the future, but here's where I'd bet, we end up in 20 years. Because what is venture capital without making wildly wrong assertions and then backing them up with anecdotal data.

**The Future of Manufacturing** to me looks like: nearly fully automated manufacturing lines. Continued limited adoption of additive manufacturing, however the emergence of more automated subtractive manufacturing, casting, etc. Most observability will be automated, and AI abstracted to optimize manufacturing processes. New chemicals and materials will power the evolution of energy and launch us into a greener and higher-performance economy. Circular economy will eventually find its home as the waste streams and consumer sentiment around recycling find resurgence. And finally, we'll see our first true billion-dollar robotics exit.

I don't know if any of that will happen. But I'll be behind some small portion of capital allocators investing in it one way or another.

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