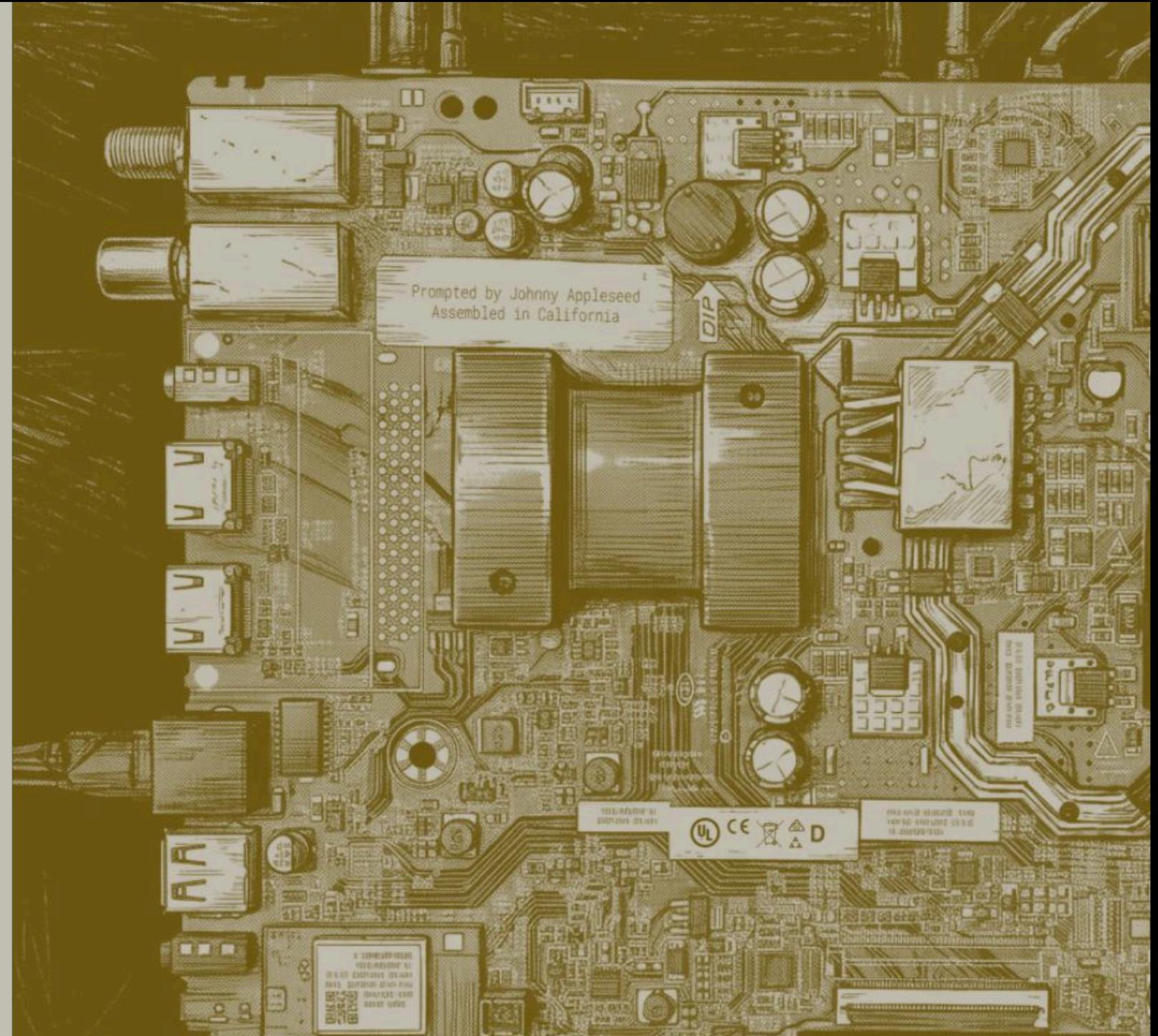


Assembling the Future: Manufacturing + AI

*Visions of Manufacturing in the Age of
Artificial Intelligence*



Baukunst Study Groups

ABOUT STUDY GROUPS

Baukunst Study Groups are short, collaborative projects where participants dive into areas of inquiry at the edges of technology and society. Each Study Group is organized to inspire collective members to share domain knowledge and to apply their brains, bodies, and spirits to wholly new directions.

PAST STUDY GROUPS

001: Mycelium as Mode

002: Contours of CAD + AI

003: Understanding Media

ABOUT BAUKUNST

Baukunst is a collective of creative technologists building companies at the frontiers of technology and design. Our belief is that the most interesting and transformative companies are built not by a ‘genius founder’ but in community with a network of individuals working in concert to pursue a central vision. We apply this perspective to how we inquire and learn.

We investigate, explore, and improvise within a group setting in order to fuel one another’s ideas and elevate the quality of our discoveries.

Baukunst leads pre-seed investment rounds from our \$100M debut fund.

Reach out: hello@baukunst.co

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Francesco Paduano
CTO & Co-founder, *Dobby*; Prev *Dropbox*

INTRODUCTION

Standing on Ground, Facing AI

Everywhere in America there is a new conversation taking place. In venture ecosystems, in closed-room policy circles, in machine shops, and printed in the papers of record, two topics are being discussed: the reindustrialization of America, and the rise of artificial intelligence. One cannot fail to recognize the world-historical nature of these topics and wonder about their intersection. Where the two meet, numerous questions arise. How does AI connect to the production of physical goods? How does it impact the economy? How has it already changed geopolitics? What is “physical AI” or “embodied AI?” Which jobs are threatened, which jobs are safe?

However, much of this conversation has been dominated by geopolitical anxiety —competition with China, industrial policy as national security. While we don’t deny the importance of maintaining a globally competitive economy, the sometimes xenophobic and often hawkish nature of these conversations doesn’t resonate with us as a group. As designers and creative technologists, we’re naturally interested in how AI intersects with the physical. But we’ve spent years working in collaborative international environments to build factories and ship physical products, and we don’t place geopolitical conflict at the center of our concerns. We wanted to approach this topic from an alternative perspective.

We firstly wanted to understand: what is the shape and feeling that manufacturing work takes when integrated with AI systems? How does it integrate with the gritty, manual processes of the shop floor?

And what are its outcomes and values for consumers and for workers across design, manufacturing, and logistics? How does it change end products?

Moreover, we feel the ultimate purpose of a competitive economy is to create greater opportunity and wellbeing for the people of that economy who contribute to it. So how does AI in manufacturing affect the professions available for people to pursue? In which cases does it bring new jobs, and in which does it eliminate them? In which cases can it indeed bring manufacturing capacity back to the US?

From this perspective, we invited a small group together to look at what’s actually working and why, from the perspective of people who are implementing AI in various ways across the manufacturing value chain. This Study Group hosted talks with Baukunst collective members who are working broadly in manufacturing or building AI systems for manufacturing businesses. We also invited experts and practitioners from outside of our ecosystem to share with us how they are utilizing AI and how AI affects issues like labor and unions.

Thanks for reading our findings and for joining us on this journey of understanding,

Tyler Mincey



Source: Katsuhiro Otomo, *Construction Cancellation Order* (1987)

CHAPTER 1

Progress Through Automation

The biggest paradigm shifts in manufacturing have been driven by automation: **the use of machinery or computerized control systems to perform tasks with reduced human intervention.** Beginning in the late industrial revolution, three successive waves of automation have unlocked new manufacturing capabilities, created new kinds of products, and also prompted fears about job displacement, which we'll explore in Chapter 6. Understanding this history helps situate AI within a longer story of manufacturing transformation.

Wave 1

Mechanical automation (late 19th/early 20th c.)

The first wave of automation mechanized the movement of materials through the production process. These systems excelled at repetitive, large scale motions: conveying, lifting, and transferring.

Wave 2

Computer-controlled automation (1970s-2000s)

Computers introduced digital control of complex, precise movements through software rather than mechanical design. This enabled the automation of skilled tasks like machining intricate parts, welding joints, and coordinated motion.

Wave 3

AI-driven automation (2010s to now)

AI is unlocking automation of new kinds. New models add perception and decision-making capabilities that allow machines to handle variability and unstructured environments. In addition to following pre-programmed sequences, AI systems can recognize patterns, adapt to variations in materials or conditions, and optimize their own performance. This extends automation into tasks requiring judgment and real-time assessment.

WAVE 1: MECHANICAL AUTOMATION

WAVE 2: COMPUTER-CONTROLLED AUTOMATION

1880s-1900s

Interchangeable parts systems

Standardized components enabled assembly line production and reduced skilled labor requirements for manufacturing.

1890s-1920s

Electric motors

Replaced centralized steam power with distributed electrical power, allowing flexible factory layouts and individual machine control.

1910s-1920s

Assembly line/ conveyor systems

Continuous flow production dramatically increased output while compartmentalizing labor through task fragmentation.

1920s-1940s

Automated material handling

Mechanical conveyors, cranes, and lift systems reduced manual transportation of goods within factories.

1950s-1960s

Punch-tape programmed machines

Punched tape programming allowed precise, repeatable machining operations without skilled machinists.

1960s-1980s

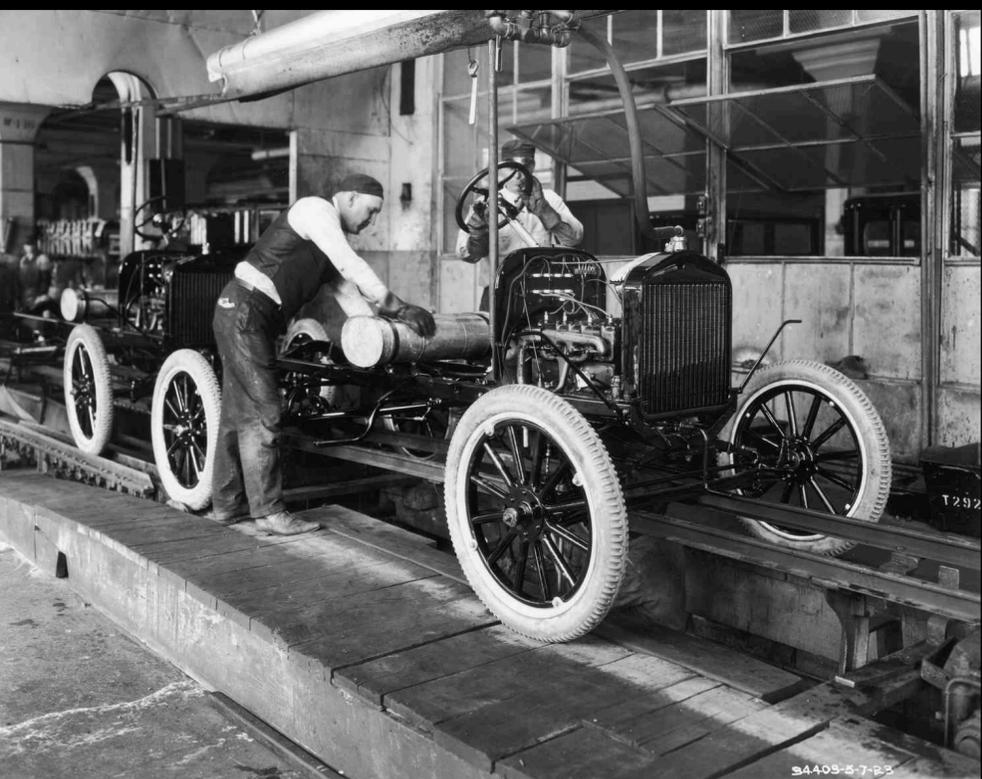
Industrial robots

Programmable mechanical arms like Unimate, the first industrial robot, automated welding, painting, and assembly tasks in automotive and electronics manufacturing.

1970s-1990s

Computer Numerical Control (CNC)

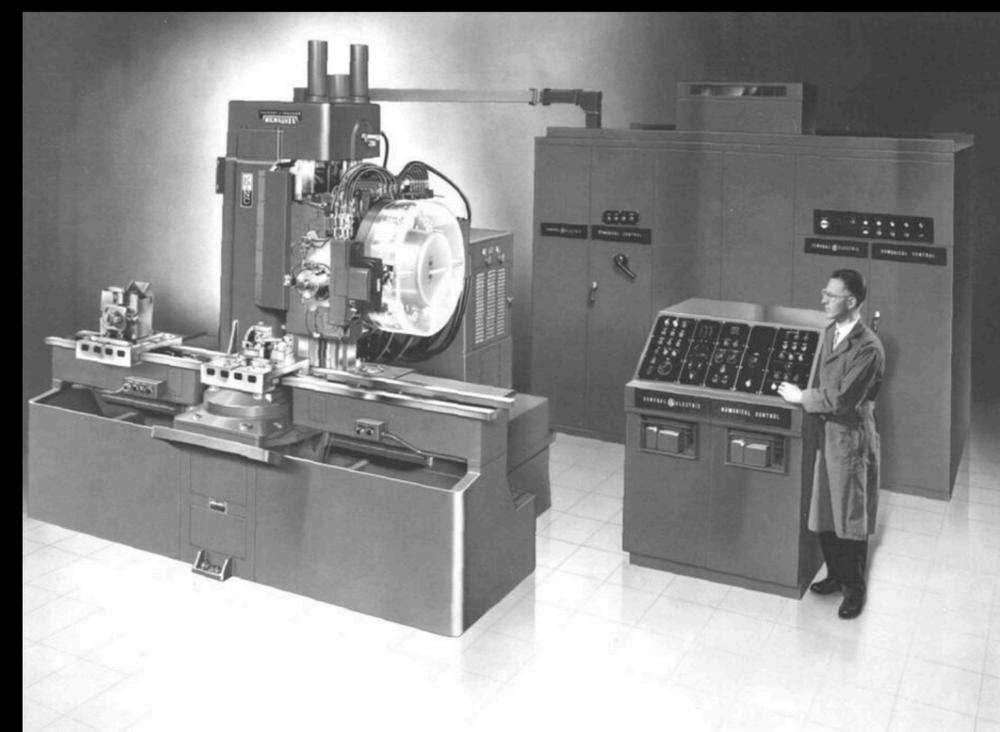
Digital computer control of machine tools enabled complex geometries and rapid reprogramming for flexible production.



Ford assembly conveyor system



Unimate, the first industrial robot arm



The first CNC mill, developed for aircraft research at MIT

WAVE 3: AI-DRIVEN AUTOMATION

1970s-1990s

Programmable Logic Controllers (PLCs)

Ruggedized industrial computers replaced relay-based control systems for coordinating factory equipment. GE and Siemens are contemporary leaders.

1980s-2000s

Automated Guided Vehicles

Self-navigating carts and vehicles moved materials through facilities following magnetic tracks or laser guidance.

2010s

Collaborative robots (Cobots)

Force-sensing robots work safely alongside humans without safety cages, expanding automation to smaller manufacturers.

2010s-2020s

Computer vision quality inspection

Deep learning systems detect defects and anomalies in products more consistently than human inspectors.

2015-Present

Predictive maintenance systems

Machine learning analyzes sensor data to forecast equipment failures before they occur, reducing downtime.

2015-Present

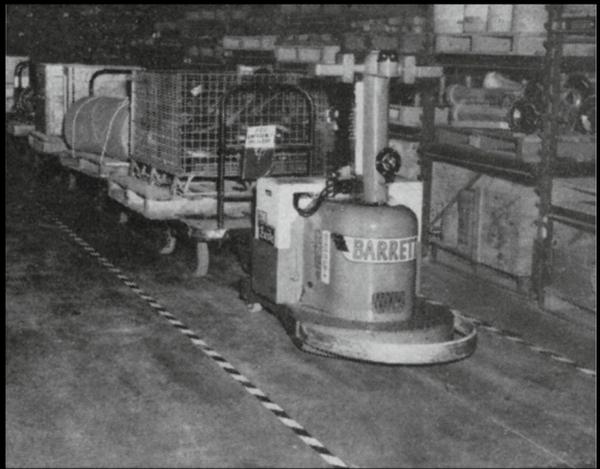
Autonomous mobile robots

AI-enabled robots navigate dynamically around obstacles and humans without fixed infrastructure like tracks.

2015-Present

Generative design systems

AI algorithms create optimized part designs based on performance requirements, reducing material use and engineering time.



Barrett early AGV



Cobot autonomous grasping robot
Source: Cobot



Figure 02 robot working at BMW
Source: Figure

The 3rd Wave of Automation: Manufacturing + AI

The first two waves of automation transformed manufacturing by mechanizing physical actions of increasing complexity and detail. Whether in the case of conveyor systems or CNCs, these systems are deterministic: they do only what they are explicitly coded to do. They cannot react to their environment, adapt to variation, and make judgment calls.

New AI systems unlock perception and decision-making capabilities. They can recognize patterns in unstructured data—the messy documents, images, sensor streams, and natural language communications that are the native artifacts of manufacturing work. This extends automation into tasks that previously required human judgment.

This also makes the third wave of automation the most accessible yet. Previous waves required specialized programming skills (C-code, PLC logic, robotic path planning). AI systems meet people where they are. Robots can learn tasks through imitating human behaviors; shop floor workers can query data in plain English. The interface to manufacturing automation is more approachable than it's ever been.

But manufacturing involves much more than material refinement and physical assembly. Here, AI reaches further than its predecessors, extending from the shop floor to coordinate information, materials, and people across and between organizations.

Procurement, logistics, quality control, design iteration, and customer communication functions run on emails, spreadsheets, phone calls, and PDFs. AI is the first automation technology that can operate effectively in this messier, less structured territory.



AI Across the Manufacturing Value Chain

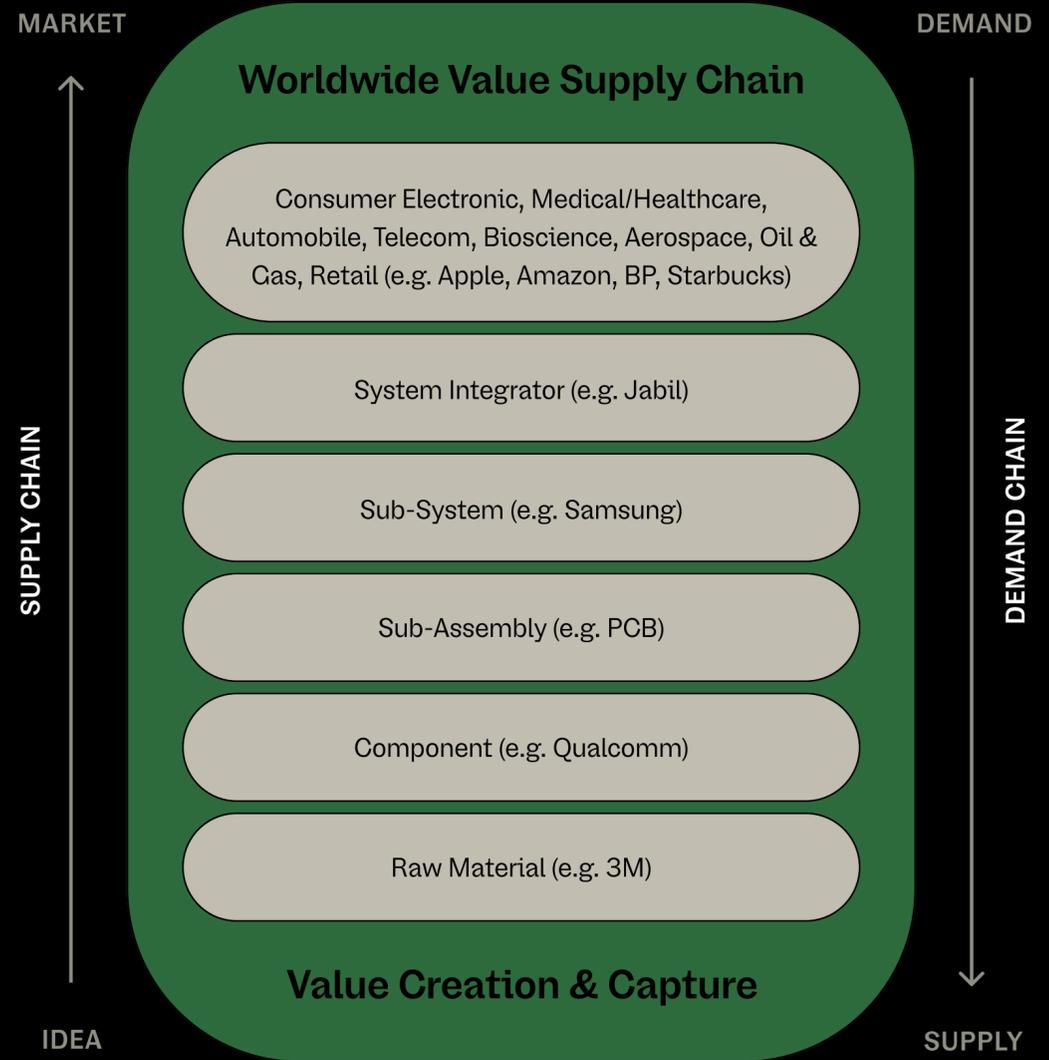


Helen Wang, CEO, *W Consulting Group*
Prev Head of Procurement, *Google X*,
Apple, *Foxconn*

“If you have a customer and you have a supplier that makes your business happen, you’re a supply chain company.”

In our Study Group session on AI in supply chain and procurement, supply chain executive Helen Wang shared a chart demonstrating just how vast the value chain for a single consumer electronics product can be. Thousands of emails, physical manufacturing processes, and purchase orders are roped together across a a worldwide sprawl of legal entities and digital tools.

As AI systems begin to intersect with manufacturing systems, they are seeping into every part of this value chain, accelerating the digitization of manufacturing businesses as well as the deployment of new AI-enabled hardware and factories.



Adapted from Helen Wang

The Spectrum of AI Automation

There are many ways to look at AI, from its raw capabilities to use cases to its eval scores. In our Study Group, we were interested in looking at how manufacturing work changes at different scales or intensities of AI deployment.

In the next four chapters, we'll look at four different ways AI is being deployed to change human work across the manufacturing value chain. These four ways run from the most mature and widely accepted use cases, to the currently emerging, to the most speculative and future-facing. In each chapter, we'll explore case studies and interviews with Study Group participants, as well as established and emerging companies across the manufacturing landscape.



Email inboxes, phone calls, text threads, shop floor databases, PDF attachments, printed reports abandoned in dusty file cabinets. The number of siloed communications spread across the manufacturing world is staggering. There are 30M people in the US that work in manufacturing, supply chain, and logistics, all exchanging mission-critical information.

Imagine living in a world with no update meetings or circling back over email. No missed deliveries from a missed email. No line down situations for out of date work instructions. Where everyone in an organization can have up-to-date information intelligently surfaced right when they need it.

Supply chains are complex systems of goods in transit, machines in motion, processes in flux, and people in dialog. Attempts at getting manufacturing online have been mixed at best, requiring rigid data standards, slow enterprise software builds, and expensive engineering teams... all hopelessly trying to cram messy processes into machine-readable formats.

Modern AI can ingest unstructured, multimodal communications. It can understand intent and monitor data streams in intelligent ways. It can be queried in natural language without a data science degree.

***Modern AI
promises to meet
us where we are.***

Chapter

2

CHAPTER 2

Making Data Come Alive

AI as Context Provider

The earliest and most mature use case for AI—both in a manufacturing context and in general—is as a synthesizer and provider of **context**. Consumer chat tools are already beginning to replace internet search and local document lookup; in industrial environments, AI provides the same power. Its primary function here is to provide an interface to large quantities of unstructured data and contextual material, making that information accessible and actionable. Despite being “low hanging fruit,” this use case drives significant value.

In its role as a context provider, AI reflects an evolution of the use of big data in manufacturing. Discussions around leveraging big data in manufacturing have existed since the digital revolution, but previous attempts often failed because implementation required forcing strict data standards on diverse teams within organizations. Beyond the challenges of gaining traction across large businesses, critical data is often scattered and locked up in privileged-access spreadsheets and emails. Moreover, once data is collected, you still need highly specialized data scientists with manufacturing subject matter depth to help turn raw data into actionable insights.

AI has proven able to transcend these historical limitations with its ability to handle diverse data types and convert unstructured data into queryable information instantaneously.

AI as API: The Democratic Interface

We refer to this shift as “AI as API” because it democratizes the interface for understanding big data. Instead of requiring employees to be trained in SQL queries and specialized data analysis skills, AI systems allow non-technical users to query data in their native language. Ease of access enables data sharing across entire organizations in ways that were not previously possible.

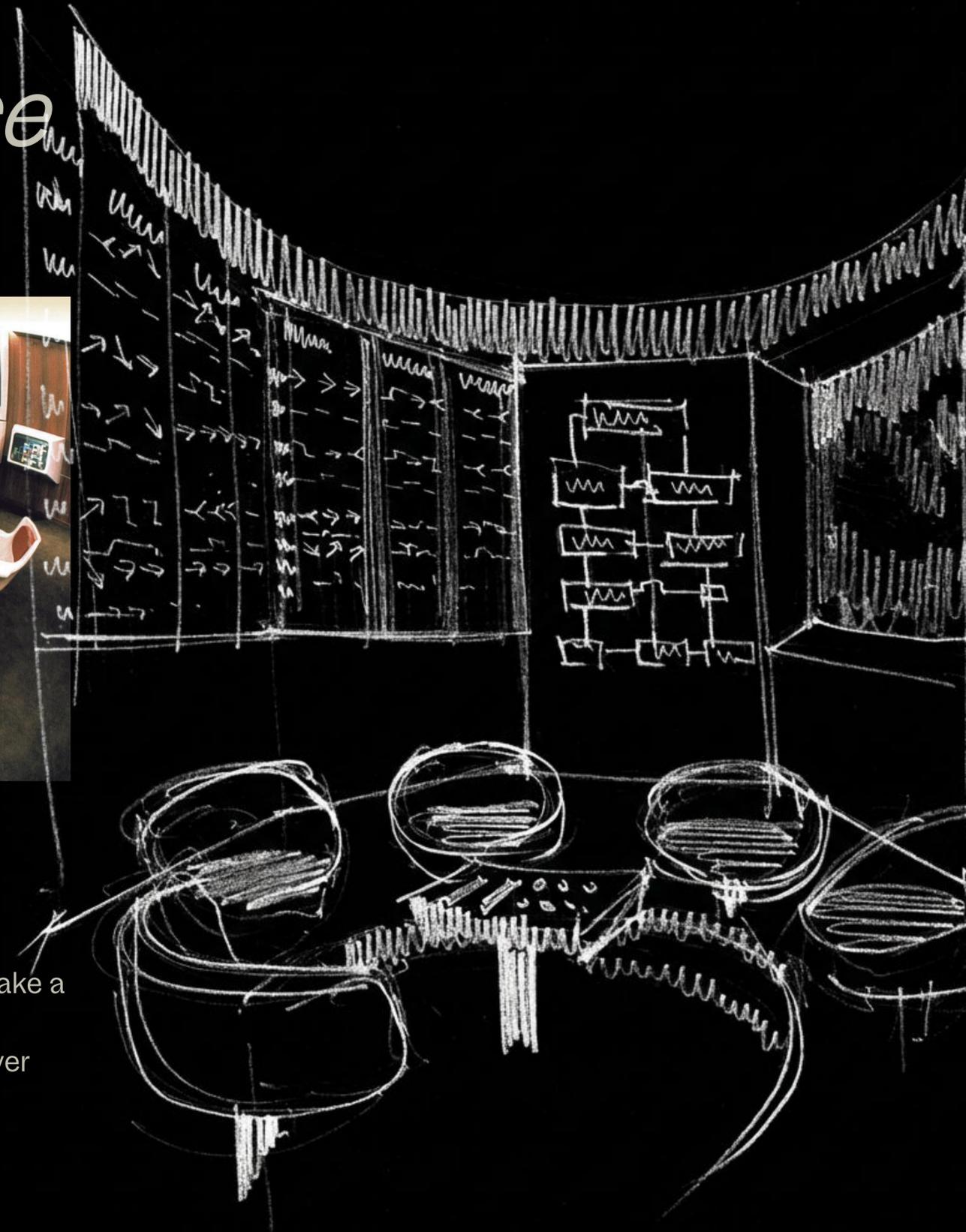
GROWING A KNOWLEDGE BASE

One function of AI as context provider is to establish an organization-wide intelligence layer. This layer rolls up institutional documents, R&D knowledge, process standards, experience-based expertise, code documentation, and real-time data based on company communications into a central knowledge base that continuously grows.



INTELLIGENT INFORMATION DELIVERY

Rather than waiting for a user to query data or make a report, AI enables alerts and functions based on natural language prompts. “Let me know whenever we are running at less than 80% efficiency.”



Case Study: DSBJ

DSBJ is a leading high tech manufacturer of PCBs, displays, telecom equipment, and electric vehicle subsystems based in China. In a recent internal report shared with Baukunst, DSBJ leaders described how they use AI to share context across the organization.

AI KNOWLEDGE BASE

Integrates enterprise documents, R&D knowledge, engineering processes, and tacit expertise into a central, secure repository, while standardizing terminology.

Employees have access to a company-wide AI agent for Q&A and knowledge retrieval.

PREDICTIVE MAINTENANCE

Automated collection of equipment failure data enables AI to predict machine failure patterns and prevent downtime.

AI DOCUMENT PROCESSING

Automated processing and translation of sales documents, processing thousands of documents across 20 global customers.

SMART DOCUMENTATION

Automates the extraction of manufacturing process parameters from documentation.

For large industrial enterprises, understanding how to best leverage AI is becoming a top priority at the executive level. Incumbent enterprises already have the advantage of large IT teams and massive datasets, as well as the earned insight as to where there's most leverage in their existing businesses to apply data science. AI can play to their strengths.

These companies are rapidly forming tiger teams of existing internal IT leaders and new AI experts to test third party tools and develop internal AI systems.

Case Study: Flex

Flex is one of the world's largest electronics contract manufacturers. Ranjit Vijani, VP of AI Strategy at Flex, spoke to us about their adoption of AI.



Ranjit Vidhani, Head of AI Strategy, *Flex*
Prev *McKesson, GE Healthcare*

“We use LLMs on top of manufacturing data, allowing shop floor workers to essentially ‘have a conversation’ with the system. We also look at specialized solutions in legal, where we spend a lot of money on outside counsel. We have AI solutions that we’ve invested in that really helps bring all of that muscle in-house.”

Case Study: Software Defined Automation

PORTFOLIO

Software Defined Automation (SDA) is a company dedicated to advancing Industrial DevOps for automation engineers, with a comprehensive solution for managing programmable logic controllers. SDA is transforming how engineers interact with and maintain their automation systems, enabling factories to increase uptime and maximize productivity.



Typical Programmable Logic Controller

SDA AND AI AS A CONTEXT PROVIDER

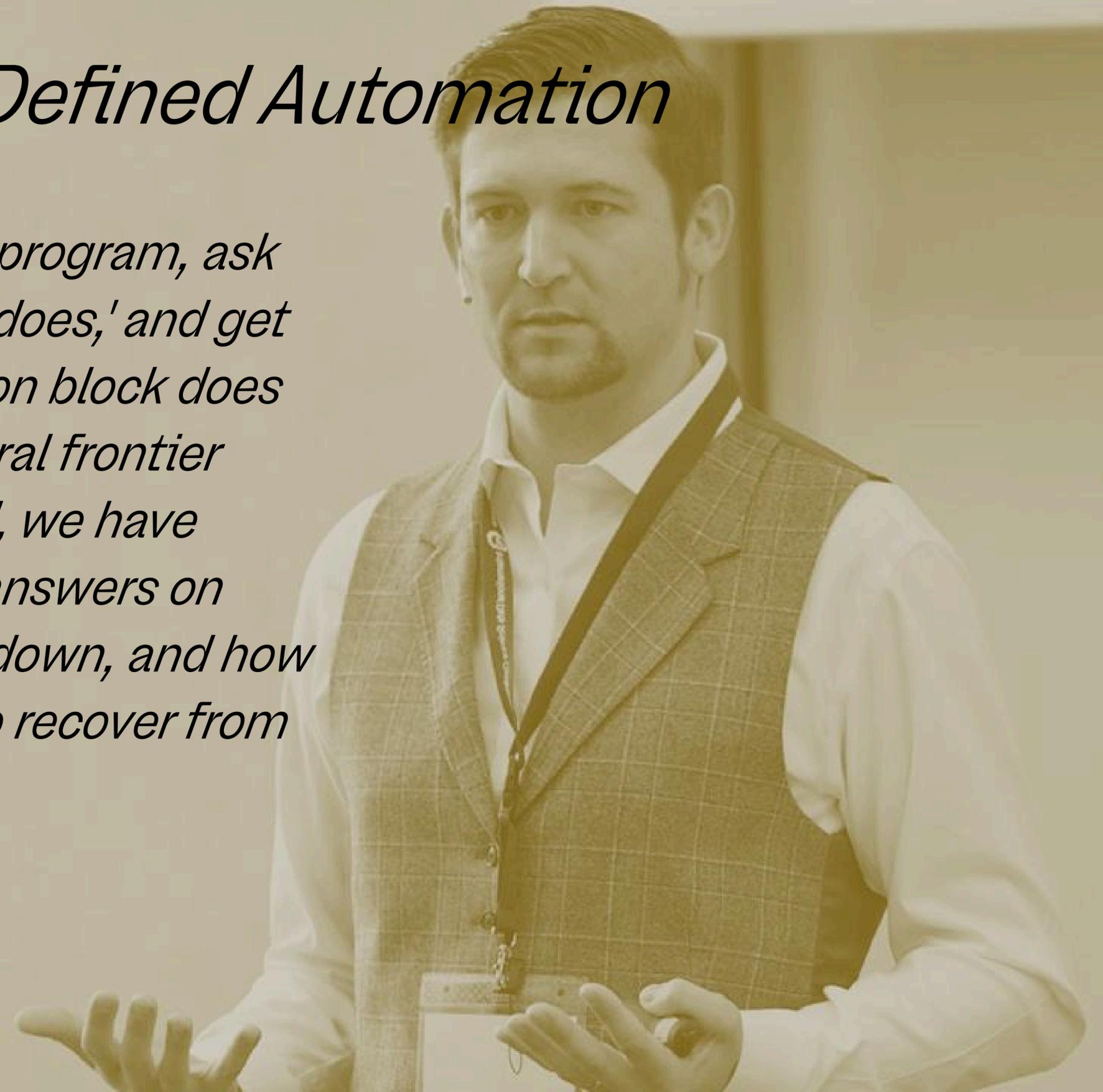
SDA utilizes AI to provide context and understanding of complex legacy code bases, addressing the difficulties automation engineers face in interpreting proprietary PLC code. Their platform is able to take binary files from major PLC vendors like Siemens or Rockwell, which previously required expensive proprietary software to read, and display them in plain text or graphical programming languages.

In addition, SDA integrates generative AI to produce detailed, functional descriptions of code blocks in human language, and explain their dependencies within the rest of the PLC program. One SDA customer saved approximately \$250,000 with SDA's automated documentation of an unfamiliar European PLC brand's codebase, avoiding the need for expensive external consultancy.

Case Study: Software Defined Automation

"We can take an industrial controller program, ask it 'please explain what this function does,' and get an AI explanation of what that function block does in a much higher quality than a general frontier model would deliver. Moving forward, we have agents that give very sophisticated answers on specific requests like 'Why is line A down, and how to bring it back up'—reducing time to recover from hours to minutes."

Josef Waltl, Co-founder & CEO, SDA
Prev AWS Industrial, Microsoft Azure IoT/Mfg, Siemens



Reality Check



Andrew Ng, Co-Founder, Coursera,
Prev Google Brain

What's hype and what's real?

What are the biggest challenges in realizing the potential of this modality of AI?

“Many AI businesses are searching for moats. A data moat strengthens your defenses if the data is hard to replicate. But if a business offers direct access to a ML model's output (like many LLMs), competitors can use that output as labeled training data, circumventing the moat.

While a data moat can be helpful, I find people tend to overestimate its strength. The engineering recipe of training on someone else's API output also raises technical, business, and legal questions.”

<https://x.com/AndrewYNg/status/1645868326449741824>

AI AS CONTEXT PROVIDER: CHALLENGES AND OPPORTUNITIES

AI as Context Provider is the most mature AI use case so far, but there are still open questions for companies building knowledge based tools. And inside manufacturing organizations, there are a few technical and non-technical requirements for this strategy to be successful.

Trust & Security: As AI handles sensitive organizational context, achieving maturity requires confidence in how the tool maintains data privacy and security.

Technical Needs: To maximize utility, the system needs to be able to ingest pretty much every valuable piece of data. This necessitates the development of bigger context windows, performant inference, and effective cache mechanisms.

Pricing & Profitability: Companies are experimenting with both monthly rate based models and usage based models. For other companies, revenue-based enterprise pricing may be more appropriate.

In America, we've always honored the tinkerer, the inventor, the mechanic, the riveter. But American manufacturing in decline, we've lost our way.

Why did shop class become low-status, vocational school a backup plan? Who wants their kids to work in a factory? Today these jobs face a will gap as much as a skill gap. Reclaiming what we've lost depends on changing the narrative.

Powerful tools can be more than productive, they can be inspirational. Chopping wood by hand is a chore, wielding a chainsaw is badass. Pushing a lawn mower is back breaking, driving a riding mower is a blast, remote controlling a robot lawnmower feels like a video game.

AI is rapidly changing what one person can do. In software engineering, a single developer now ships what used to take a team. Now more than ever, what you can build is limited only by ingenuity. And the leverage is exhilarating. You feel it the first time an AI tool finishes your thought or generates the boilerplate you were dreading.

That same feeling is coming to manufacturing—tools that make the mundane, repetitive, and laborious automatic. They'll make an industrial designer feel like a wizard, and let a process engineer test a hundred variations before lunch. They'll lead to jobs with software-like economics that don't require writing a line of code.

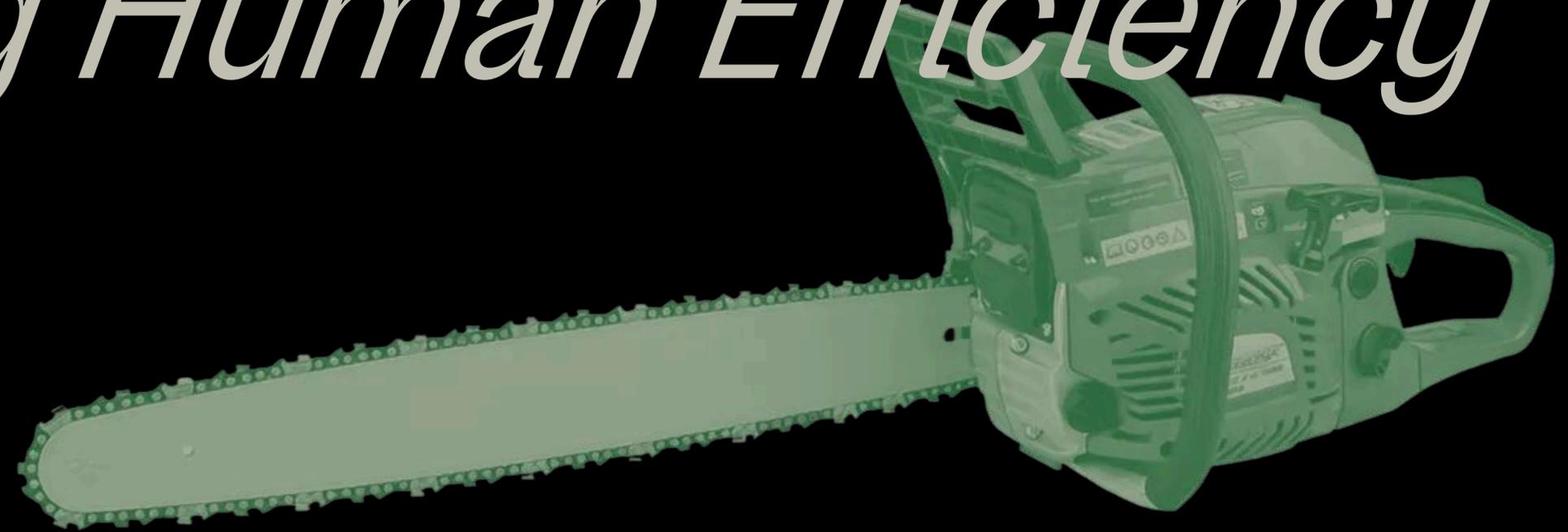
Chapter 3

Soon we'll remember how it feels to build.

CHAPTER 3

Augmenting Human Efficiency

AI as Force Multiplier



In contrast to AI that merely synthesizes, interprets, and presents data, augmentation involves using AI to drive actions. AI-enabled tools can dramatically increase both the quantity and quality of an individual's output.

Economist David Autor distinguishes “collaboration tools” from “automation tools”: while pure automation eliminates the need for expertise (e.g., a dishwasher), collaboration tools, such as a stethoscope or a chainsaw, act as force multipliers that rely on human know-how to be useful. This approach automates part of the work, while human workers retain agency and remain in control of the overall system and outcome.

The most powerful tools can turn drudgery into excitement. Riding lawnmowers make cutting the grass feel like a go-cart; GitHub Copilot brings autocomplete to coding tasks, allowing engineers to write functions nearly as soon as they think of them. In this chapter, we'll look at AI tools in manufacturing contexts that operate similarly.

Shifting from Context to Action

EVERY TOOL IS NOW AN AI TOOL

Digital tools are the foundation of modern manufacturing work, including Manufacturing Execution Systems (MES), Enterprise Resource Planning (ERP) systems, and inventory management systems. These tools are being transformed by AI, integrating capabilities such as AI-based Optical Character Recognition (OCR) and predictive planning into enterprise software.



COMMON AI TOOL CATEGORIES IN MANUFACTURING

QA: Visual quality inspection and defect monitoring with optical AI

Design: Generative AI for design, converting CAD + drawings, DFM + spec iteration via models

Procurement: Agentic supplier research and outreach

Revenue Forecasting: AI analysis of varying customer payment behaviors in accounts receivable

Predictive Maintenance: Sensor data analysis to forecast equipment failures and prevent downtime

MES: Real-time production tracking and simulation with AI-optimized workflows

ERP: Intelligent resource planning across procurement, inventory, and operations

INDUSTRIAL AUTOMATION SOFTWARE 2025-26 FUNDING ROUNDS

Tulip (\$120M): No-code frontline operations platform

Vention (\$110M): Cloud-based manufacturing automation platform

CoLab (\$72M): Collaboration software for manufacturers

MaintainX (\$150M): Work order & maintenance management software

Invisible AI (\$100M): AI for analyzing factory floor movement

First Resonance (\$30M): Factory OS for complex hardware manufacturing

Case Study: Dobby

PORTFOLIO

Dobby is an AI assistant for logistics operations. Today Dobby focuses on automating workflows for freight forwarders.

Dobby aims to simplify the incredibly manual and heavy process of moving shipments, which often involves hundreds of emails for a single container and exposes operators to high risks of missed deadlines and errors. A logistics professional using Dobby is able to track an order of magnitude more shipments and flag potential issues early.

Dobby reads every shipping email and extracts the most important information about a shipment to keep freight forwarders aware of its status and flag issues. The platform plugs directly into their customers' existing inboxes without requiring changes to their existing workflows.

An early Dobby use case has been monthly reporting. Freight forwards track explanations for shipping exceptions and extra charges. Today, that means a lot of back-and-forth with operations, plus time spent digging through email threads to verify and document what actually happened. With Dobby aggregating all shipment communication, managers can get answers through a simple Q&A flow. Work that used to take days now takes a couple of hours.

But Dobby also exemplifies how actions build on top of context: deep understanding means accurate prediction of the next action. Of the hundreds of emails that need to go out in a day, many can be drafted by Dobby, then reviewed and sent by operators. This is automation with a human in the loop.

Contextual Organization: Dobby organizes all data and communications about each shipment into a clean timeline or snapshot, making it easy to search for answers or track shipment status.

Intelligent Monitoring: Dobby monitors shipments, tracks missed steps, and alerts the team to urgent issues.

Data Extraction and Automation: Dobby automates the movement of data between emails, spreadsheets, and PDFs, which eliminates significant manual work and sources of error.

Dobby Co-founder Francesco Paduano

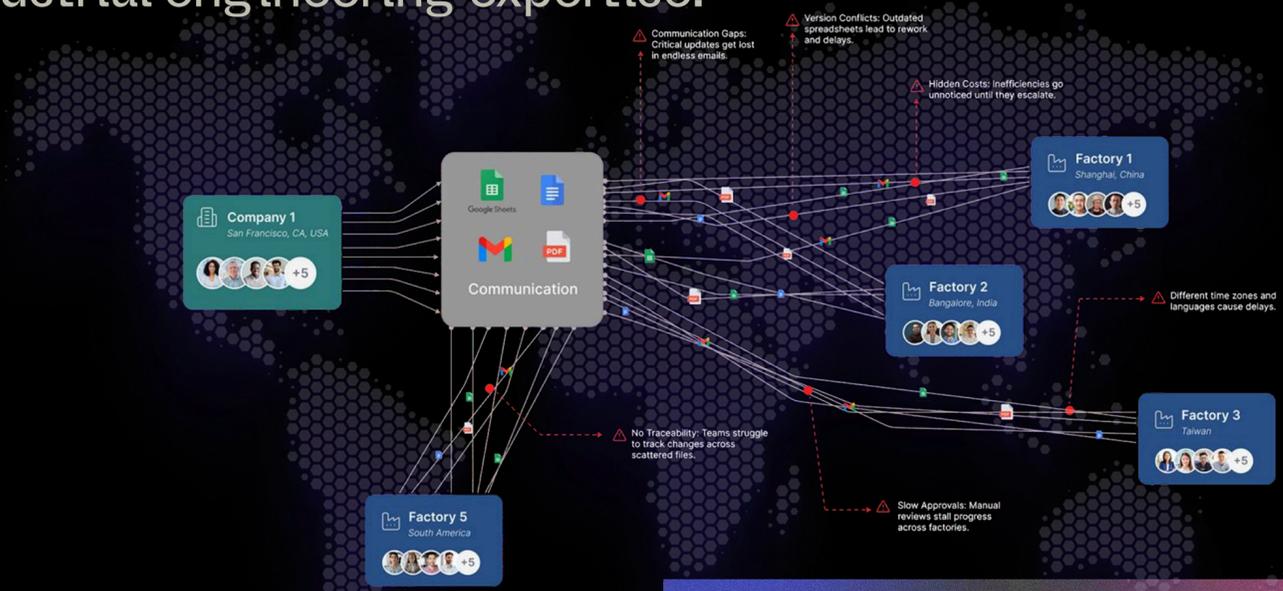
“With AI, there are a lot of opportunities here to make life easier for freight forwarders, to automate a bunch of their work and reduce the risk of making mistakes. We came in strong with a lot of ideas when we started talking to our first potential customers and our pilots, and we soon understood that generally, people do not want to adopt new tools. We need to design a user experience where the user feels they're still in control, and Dobby can be just an assistant that helps them do the work.”

Francesco Paduano, CTO, *Dobby*
Prev Engineering, *Dropbox*, *Meta*

Case Study: Plasiv

PORTFOLIO

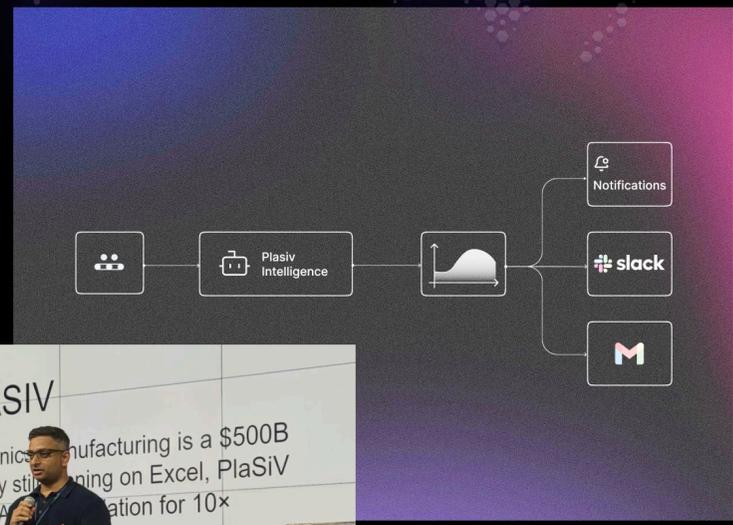
Plasiv, currently operating in stealth mode, is focused on transforming contract electronics manufacturing by building a tool to augment industrial engineering expertise.



Plasiv stands for “Planning, Simulation, Validation.” Like its name, the platform combines several core disciplines—Industrial Engineering, AI, simulation, and factory data analytics—into one connected system. It helps industrial engineers design efficient processes, helping reduce costs and prevent production delays before they occur. Plasiv focuses its optimization efforts on the upstream process design phase, which offer greater opportunities for cost reduction.

Simulation and Optimization: Plasiv allows engineers to simulate the impact of changes before deploying them to the shop floor, eliminating the need for specialist simulation teams and minimizing costly trial-and-error on the shop floor.

Predictive and Prescriptive Action: Plasiv super powers industrial engineers, making common workflows effortless. It continuously feeds in data from assembly line performance, analyzes how systems behave, predicts potential bottlenecks, and automatically suggests preventive actions.



Case Study: Plasiv

“In 1911, Frederick W. Taylor defined how collaboration and scientific planning create better factory systems. Those principles still hold, but in electronics manufacturing, execution was outsourced while engineering decisions became fragmented. Plasiv brings those principles back together, using software to plan, simulate, and validate how modern factories actually run.”

Kishan Chalumuri, Founder & CEO, *Plasiv*
Prev Industrial Engineering, *Apple, Caterpillar*

How Much to Automate? With Robert Karklinsh

Robert Karklinsh is the CEO of Elastium, a lights-out additive manufacturer of sneakers based in the US. We interviewed him on how he uses AI as a new manufacturer.



Robert Karklinsh, Co-founder & CEO, *Elastium*

BAUKUNST: When you think about the future and AI capabilities across the stack, where are you most excited about potentially plugging it into your business?

ROBERT KARKLINSH: I would say productivity. If I have 10 AI assistants at the level of a merely competent supply chain specialist or a junior engineer, it'll be a game changer for us. There's so much stuff in hardware development which is just boilerplate, which is not intelligent problem-solving. It's going into catalogues, asking suppliers what the price is. A huge part of our business is stuff that any intelligent person hates to do.

I'm more skeptical about letting AI do engineering. I know companies are trying to build new CAD software based on AI, but my honest opinion is it's not going to work. I'm not an AI skeptic, but here I become a Yann LeCun guy who thinks we're lacking a huge piece of the puzzle.

BAUKUNST: Reading between the lines of what you're saying here, it sounds like even if the AI was starting to be capable of some of those basic engineering decisions, you value your hands-on involvement there and it's not on your wishlist to automate.

ROBERT KARKLINSH: Yes, because you lose understanding of what you're doing in this way, eventually. Let's imagine an AI capable of creating some simple assemblies. Cool, so you have your assembly, and maybe you can even generate a bulb and send it to production. But nobody can now understand how this assembly was designed. What was the core idea behind it? And what are the potential risks of these particular decisions? I don't want to lose any understanding of these things, even if AI can potentially do this.

The Scope of the AI Opportunity With Helen Wang

Helen Wang is a seasoned supply chain executive and board member with an influential career establishing end-to-end supply chain ecosystems for complex products ranging from Apple's inaugural iPhone to Google's self-driving car. She currently teaches at the University of California, San Diego.

BAUKUNST: How should we think about the impact AI can have in the supply chain part of manufacturing businesses?

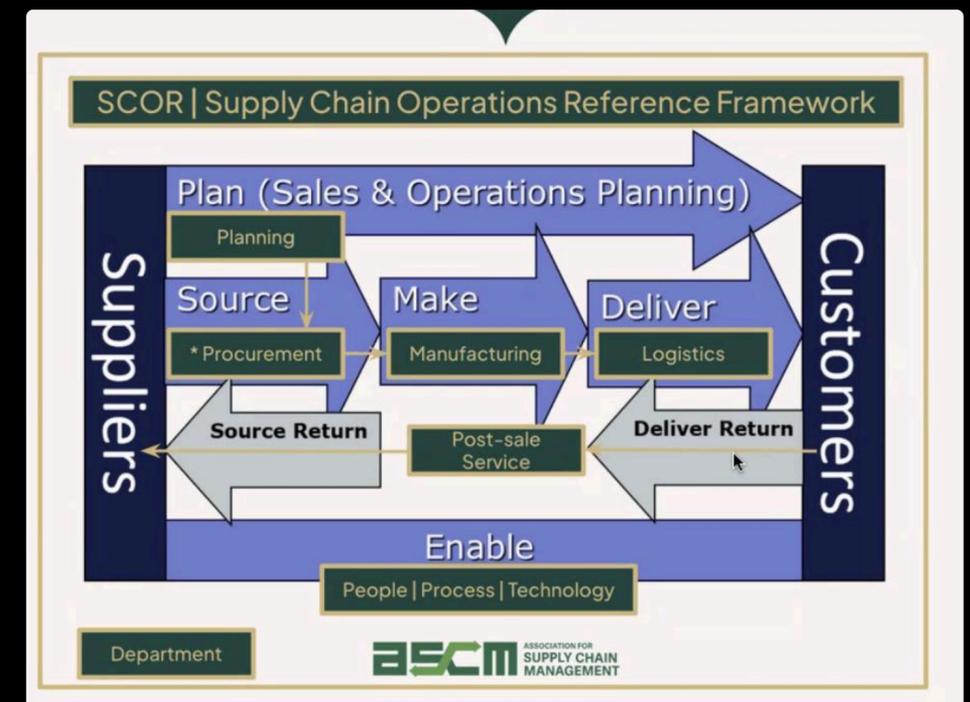
HELEN WANG: Supply chain management is resource management. In software companies the cost of goods sold can be around 30-40%, but it can be up to 70-80% of the cost structure in manufacturing businesses. If you're spending money, that's part of the procurement function, which is responsible for sourcing. If up to 80% of a company's resources is managed by the supply chain team, think about how important that is to company survivorship and P&L!

So what type of people, processes, and technology do you need in order to make this system efficient and optimized?

BAUKUNST: What other low hanging fruit in the overall supply chain space do you suspect AI might be especially helpful with?

HELEN WANG: I would say planning is an area. If you could forecast a little better, it's going generate so much more P&L impact. Sourcing has a lot too—geopolitical risk, climate risk... Every company has a different risk appetite, so once you have the system running and AI integrated, you can have an intelligent conversation and enable the decision maker.

We supply chain executives keep talking about these, but we haven't really seen anyone come to us and present something so promising that it will work for us.



Source: Helen Wang

Reality Check



David Autor, Daniel (1972) and Gail Rubinfeld Professor of Economics, MIT

What's hype and what's real?

What are the biggest challenges in realizing the potential of this modality of AI?

“In many cases, automation's actually out of reach, but collaboration is within reach and valuable. Unsuccessful automation can often backfire.”

AUGMENTING EXPERTISE: CHALLENGES & OPPORTUNITIES

As AI is increasingly used for human augmentation, organizations need to address questions of maturity and model ownership. While generic models provide a good baseline, the real value in this space lies in verticalized expertise: creating unique, specialized data sets and fine-tuning models to handle the nuances of specific industry or factory process.

Generalizability: How generalizable is AI? Some founders tell us that foundation models are already highly effective in industrial contexts with only a little prompting. Do companies need to be training their own models, or can they use off-the-shelf ones? And if so, how much should they be paying?

Vertical Data: The volume of data required for the most valuable tasks does not exist at internet scale like natural language data. The future gold rush is in capturing and augmenting use case-specific data and specialized knowledge.

Knowledge Preservation: Businesses run on tacit knowledge and deeply internalized processes. Introducing black boxes, even highly capable ones, runs the risk of destroying the process knowledge that makes organizations run effectively.

We just can't find enough people.

Skilled workers are aging out of the workforce. The younger generation wasn't told manufacturing was a viable path. Every time a senior engineer retires, knowledge walks out the door.

We need more collaborators. AI is stepping up to fill this gap. Virtual teammates that handle complete tasks, learn from demonstration, and get better over time.

AI colleagues will be virtual collaborators that we'll work with. They'll talk to us, meet us where we are, fit into our form factors and workflows we already use: chat interfaces, voice, dashboards, existing equipment. And they'll give single experts the reach of a team.

They promise an incredible work ethic, infinite patience, and collective memory. They can be repositories of institutional knowledge, learned once and remembered across all instances for all time. They can train and be trained, both a store of expertise and steward of talent development.

There will be new job opportunities too—building these systems, training them, supervising them. Intelligent systems need shepherding and skill development. If we do this right, we'll be proud of our new colleagues, enjoy the work we do together, and find training them rewarding.

Chapter 4

CHAPTER 4

AI Colleagues

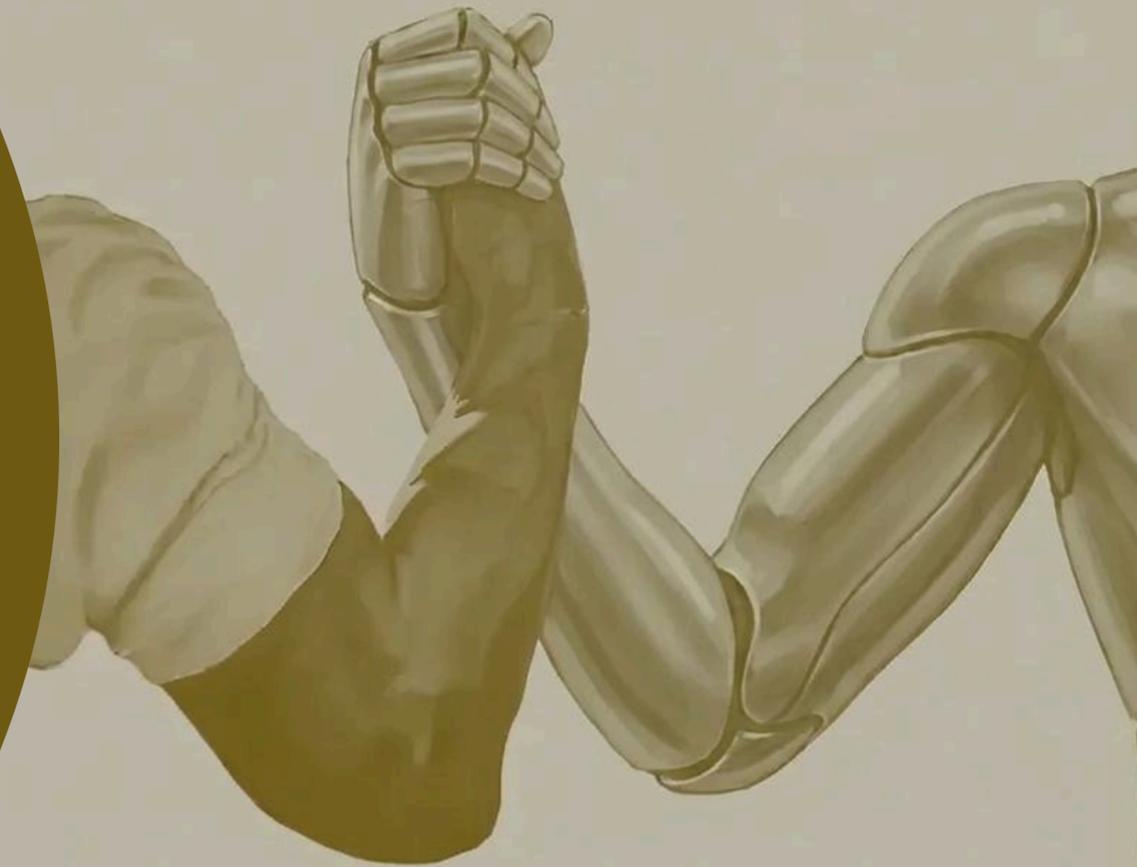
Transforming Jobs

Many manufacturing jobs today are a mixture of human tasks (i.e. strategy, relationship building, people management, concepting) and manual routines (data entry, comparing documents, sending forms). So far, we've looked at cases where AI augments human capacities by automating specific subroutines and tasks. Now we'll examine advanced cases where AI agents or groups of agents can take on full jobs alone. We call these AI colleagues.

An AI colleague is a system capable of taking on an entire job autonomously: the human specifies the desired outcome, and the AI devises a plan of action, executes against it, and then recursively evaluates whether it meets the success criteria.

This capability is driven by technical advancements in training technique, model design, compute, and improvements in context window and AI memory. The AI is equipped with both planning and perception capabilities, adding complex reasoning to execution.

This approach fundamentally changes the nature of human work in two ways: performance of the automated routines becomes administration of AI colleagues, and significant time is freed up to work on strategic and relational tasks.



From Tool to Teammate

What makes a system more of a “colleague” than a tool? Three features differentiate this kind of AI deployment.

1. Completeness of Task Scope: Force-multipliers help with parts of a job; colleagues handle entire workflows end-to-end.

In a procurement context, this might look like an instruction to find opportunities for 2% cost savings on a part across the supply chain. An AI colleague might research using an existing database of parts, crawl the internet for suppliers, find their contacts, and reach out to get a quote.

2. Agency and Judgment: A shift from "AI suggests, human decides" to "AI executes, human reviews." A paradigm shift is underway in software engineering, with a significant portion of code likely produced by AI and reviewed by humans before the end of 2026.

Continuing our procurement story, the AI colleague might return with 5 quotes from competing vendors, along with a comparison of their advantages and disadvantages. The procurement manager then might choose which supplier she wants to work with, organizing an IRL meeting with them to build a closer relationship.

3. Learning and Adaptation: Like humans, colleagues improve through experience, imitation, and feedback loops of learning.

After the procurement manager chooses a supplier, the AI colleague updates its model of her preferences. She values domestic suppliers with shorter lead times over the absolute lowest price. Next quarter when searching for a different part, it weights these factors accordingly, and over time becomes competent in this company's specific procurement style.

Case Study: Threaded Manufacturing

PORTFOLIO

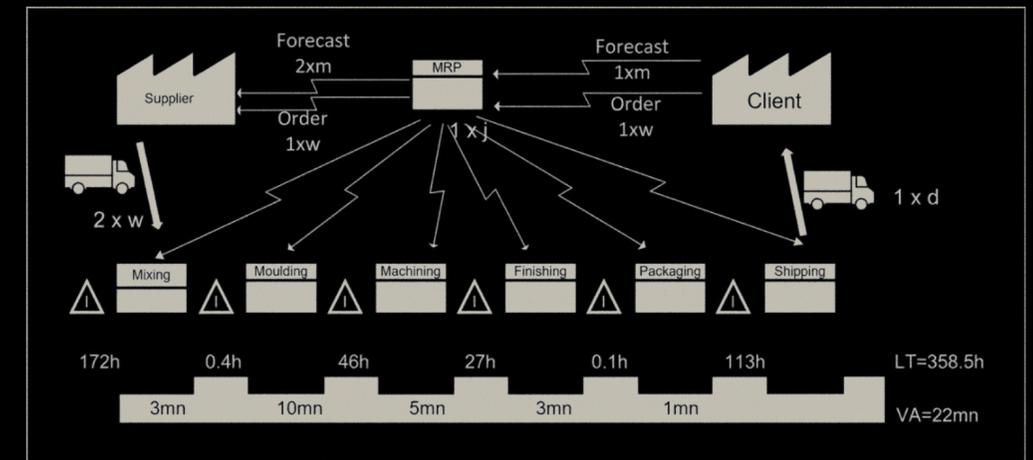
Threaded builds tools for agentic industrial engineering. They are developing a digital environment for industrial engineers to work in tandem with AI collaborators.

Threaded defines the source code for a manufacturing system. It describes manufacturing value streams in machine readable formats and collects previously offline data in one place, creating a fully digital environment where AI industrial engineers can join human ones in a collaborative way.

Instead of static work instruction documents, work instructions are digitally “threaded” together with tools, parts, and processes to form an executable system. Embedded in the system is an AI agent capable of generating updates, actions, and analysis.

IDE for Manufacturing: Threaded's platform is a collaborative, visual MES tool where manufacturing teams can map out, understand, and collaborate on their systems. The platform threads together instructions, tools, parts, and processes into a value stream map much like the ones used on shop floors around the world.

Agentic Industrial Engineering: Threaded embeds AI that can analyze processes, assess root-cause issues, and suggest improvements to manufacturing processes.



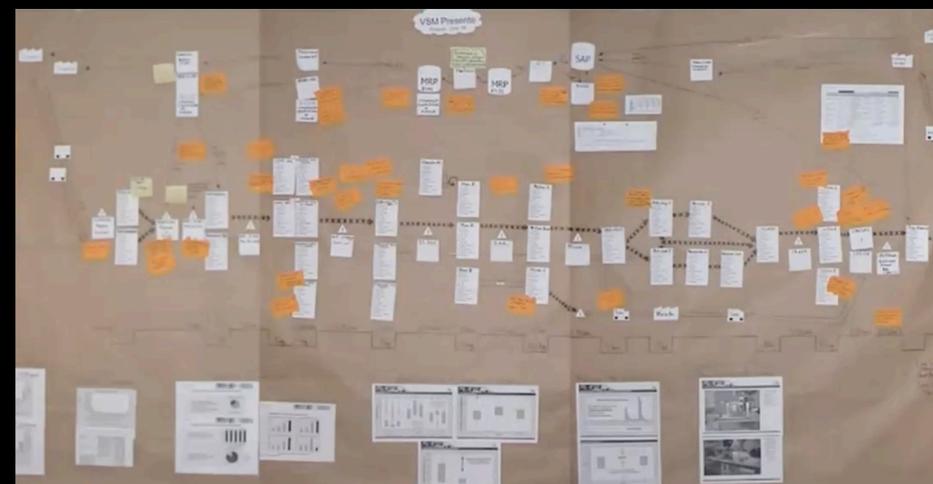
Example Value Stream Diagram

Threaded Co-founder Braden Ball



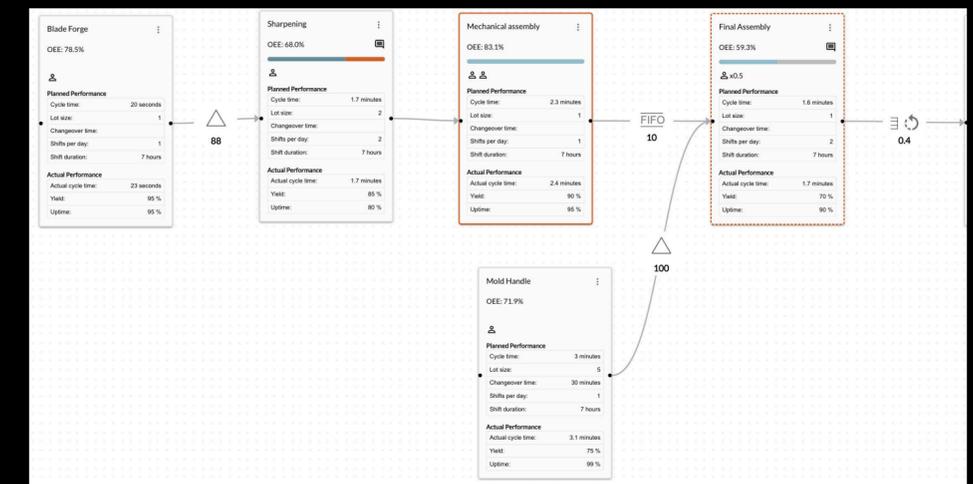
“Software engineers have integrated development environments, things like Cursor and Windsurf where humans and AI can collaborate in context. Manufacturers need the same thing. Humans and AI need to be able to understand our industrial systems in a shared context.”

Braden Ball, Co-founder & CEO, *Threaded Manufacturing*
Prev *Rivian, Carbon, Tesla*



Paper-based value stream map typical to many factories

Source: *Threaded Manufacturing*



Threaded's digital value stream map

Physical AI: Training Robotic Colleagues

If AI colleagues in the digital realm can take on full jobs, what about those in the physical realm? Capable, multi-purpose robots have been a sci-fi dream in manufacturing, but may finally be close to realization with capacities for learning unlocked by emerging AI advances.

ADVANCEMENT IN MODELS & TRAINING TECHNIQUES

Classical robotics approaches depend on an interdependent stack of localization + state estimation, perception, path planning, control, and hardware interfaces. This has worked with well defined tasks and controlled environments, but has been challenging to engineer reliably in less controlled environments and highly variable tasks.

New AI-based approaches leverage world models to generate large volumes of synthetic training data, and tools like Isaac Lab and Omniverse to run tests and perform reinforcement learning in simulation.

Trained robots run Video Language Action (VLA) or behavior models that take high level goals and directly map sensor data to actuator controls. These models can learn tasks through imitation learning or behavior cloning, where a human demonstrates the task via video or motion data.

AUTOMATION FOR HIGH-MIX TASKS

Like their digital counterparts, AI colleagues in the physical realm are capable of planning and executing complex multi-step tasks, here in terms of converting high-level instructions into articulable actions and joint commands for the robot's limbs.

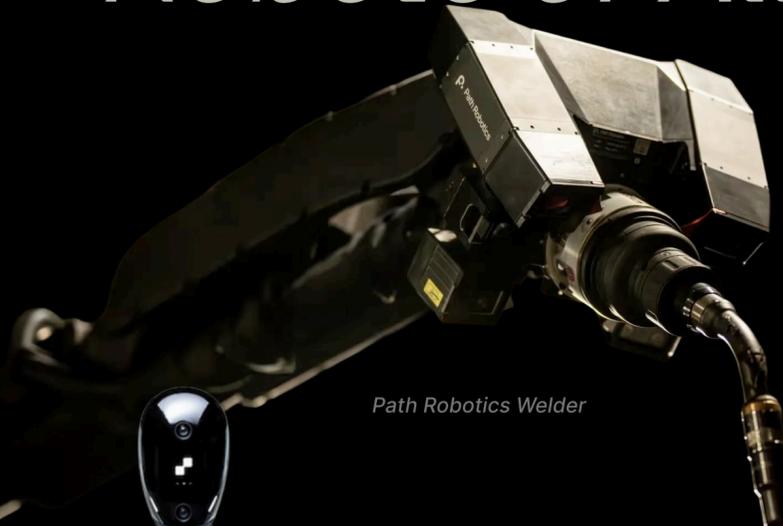
Where prior generations of algorithms for robotics enabled intuitive waypoint identification or even autonomy within specialized scopes, the new bots can adapt to novel objects and dynamic environments. This is necessary to achieve the status of a generalized specialist, such as a robot that understands a factory layout and can perform dexterous manipulation tasks like assembly or mixed-box packaging and movement "out of the box" in any setting.



Standard Bots, an American manufacturer of robot arms and bi-manual, roving robots is one company making these training techniques available to manufacturers.

Source: Standard Bots

Robots of All Kinds



Path Robotics Welder



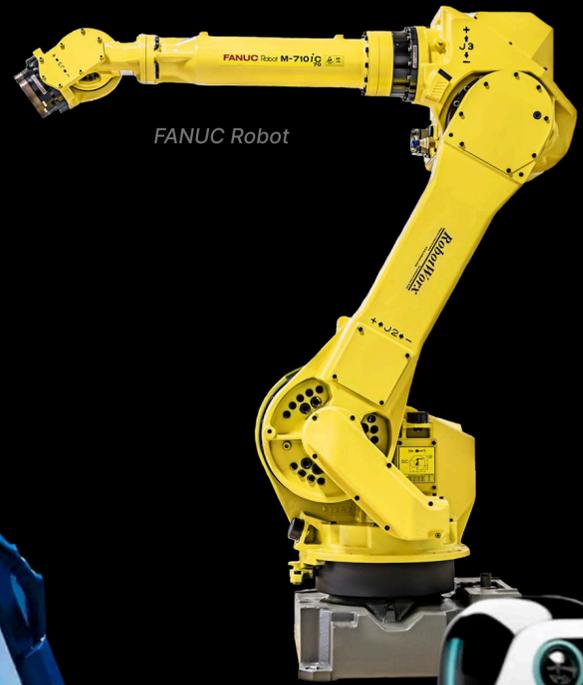
Sage STAR-SageMan



Universal Robots UR15



Galbot



FANUC Robot



Figure



Agility Robotics



Standard Bots Core



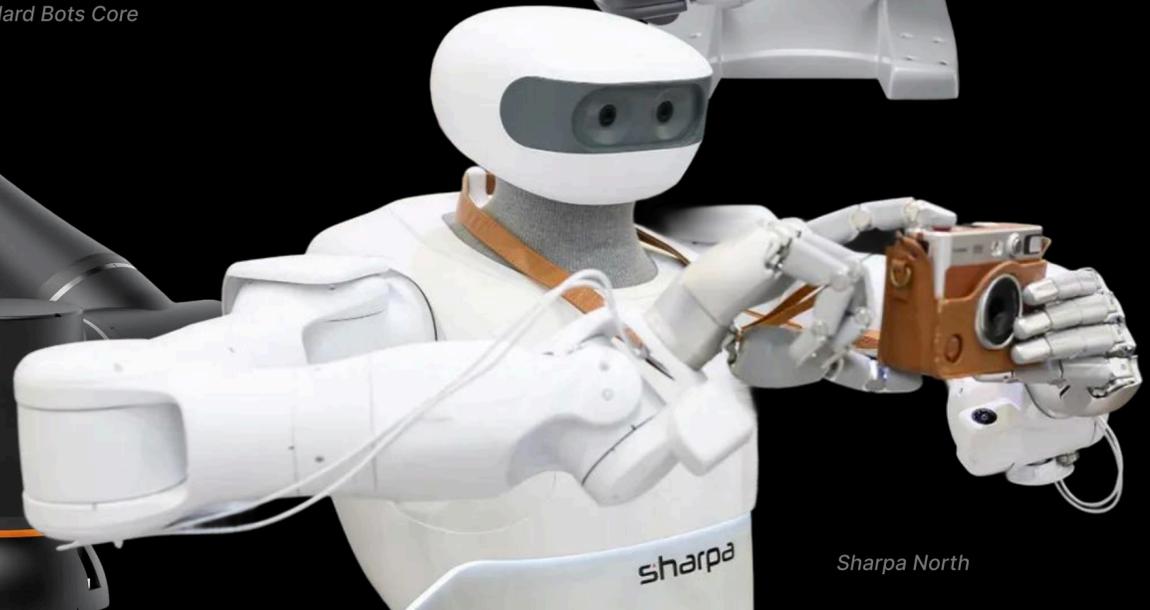
ABB YuMi Cobot



Boston Dynamics Stretch



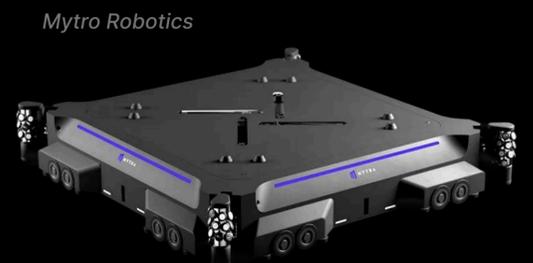
Hexagon AEON



sharpa North



Boston Dynamics



Mytro Robotics

NVIDIA's Spencer Huang on Robotics



Spencer Huang, Product Lead
for Robotics, NVIDIA

“Robotics is probably the next \$10 trillion industry. Between labor shortages, offshoring, and reshoring, these are all things that are starting to impact the way that we look at how robotics can help us in the workforce. We feel that robotics are going to be doing just the same as other AI, where it's there to augment and assist humans in the near term.”

ROBOTICS & MANUFACTURING 2025 FUNDING ROUNDS

HUMANOID ROBOTS: \$3.5B

Including Figure (\$1B), Apptronik (\$403M), Agility (\$400M), 1X, UBTECH

PHYSICAL AI / FOUNDATION MODELS: \$2.5B

Including Physical Intelligence (\$600M), Skild AI (\$1.4B), Dyna (\$120M)

SURGICAL / MEDICAL ROBOTS: \$1.5B

Including Neuralink (\$650M), CMR Surgical (\$200M), ForSight (\$125M)

INDUSTRIAL / WAREHOUSE AUTOMATION: \$1.5B

Including Mytra (\$120M), Field AI (\$405M), Dexory (\$165M), Mind Robotics (\$110M)

OTHER (DRONES, AGRITECH, SERVICE): \$1B

Including Infravision (\$91M), Shinkei (\$22M),

Reality Check

What's hype and what's real?

What are the biggest challenges in realizing the potential of this modality of AI?



Sera Evcimen, Founder & Principal, *Pratik Development*
Prev *VEIR, Forge, Techstars*

“A very common critique of digitization that comes up is: how do you see adoption working out with people who are very used to pen and paper?”

AI COLLEAGUES: CHALLENGES AND OPPORTUNITIES

Many digitization efforts have failed in the factory context, for numerous reasons. Traditional data-driven initiatives often did not align with idiosyncratic methods, artifacts, and language already used in shop contexts. And if highly skilled teams with deep process knowledge don't trust a new tool, they work around it.

AI colleagues potentially heighten these tensions, as workers may be hostile to systems they perceive as replacing their job.

Threaded provides one positive example of how to build for manufacturing contexts: respect the human-machine interface of the factory. The whiteboard-based value stream map is an analogue interface already used by factories all over the world to ship products of all kinds. Threaded is starting by bringing this familiar UI into a digital context. Likewise, AI is presented through a chat interface as a limited collaborator and thought partner.

When an entire tech stack comes together there's a sum greater than the parts. When context flows freely, when tools multiply our capabilities, when AI colleagues work beside us, something else emerges. The factory becomes a system that thinks.

This is AI-native manufacturing. AI woven through every layer: design, procurement, production, quality, logistics. Each part feeding the others, data becoming insight, insight flowing where it's needed.

What becomes buildable? When iteration is cheap, we can make things that weren't worth making before. Products too customized, too complex, too low-volume for traditional economics.

What does material abundance actually look like? Maybe it's light bulbs that cost a penny. Maybe it's replacement parts for machines that went obsolete decades ago. Maybe it's products designed for one person, manufactured on demand, delivered in days.

By owning the full stack, you can connect intent to outcome, learn quickly, and prioritize change. You can capture the full value chain and reinvest in continual improvement, developing differentiated tech-driven expertise.

Sometimes progress is only made when someone is willing to do the full job.

Chapter

5

Vertical integration not only leads to the most aspirational outcomes, it might be the fastest path to get there.

CHAPTER 5

AI-Native Manufacturing

Vertical Integration Across the Stack

The culmination of these AI-manufacturing intersections is their integration across entire business value chains, from procurement to highly automated factories. We call this AI-native manufacturing. This is a strategy where intelligence is woven into every layer of the business stack, synthesizing across many data sources with intelligent agents capable of taking automated action and managing complex tasks at every level, effectively creating a factory with a brain.

When every part of the stack is agentic, from design and manufacturing to procurement and logistics, dramatic changes occur. Products improve at rapid pace with real-time feedback loops between customer experience and design solutions. Deployment becomes highly scalable because the reliance on specialized human expertise is minimized.



Vertical Integration: Greater Than the Sum

AI-native manufacturing is in a nascent state today, but it's already possible to imagine how linking together context, action, and AI agency can create totally new kinds of manufacturing environments.

Machine-Native Communication: When humans are in the loop at every stage, information has to be rendered in human-readable formats (drawings, specs, emails, spreadsheets). Each of these translations is lossy and slow. When AI intermediates the entire stack, the system can communicate with itself in whatever format is most efficient.

Integrated Design: Manufacturing processes are highly interdependent. An AI-native vertically integrated system facilitates integrated design. This means that all interconnected parts of the system can make opinionated tradeoffs toward a design solution.

Data & Value Capture: A core reason for vertical integration in the context of AI is data ownership and utilization. Because AI makes big data significantly easier to process and utilize, capture of data that might otherwise remain with outsourced manufacturers has immediate value.

Case Study: Atomic Industries

Atomic Industries, a company focused on autonomous engineering, exemplifies the necessity of vertical integration to achieve full-stack automation. Atomic's work centers on automating complex engineering routines, beginning with injection molding, from mold design to tool making. Aaron Slodov, Co-founder of Atomic, outlines why owning the entire stack is mandatory for this vision.



Aaron Slodov, Co-founder & CEO,
Atomic Industries and Reindustrialize;
Prev Remesh

“One: vertical integration is the only way you get full data capture and feedback. Two: it’s the only way that you can capture the most value. Third: you need vertical integration for full automation of the problem scope. And fourth: capital formation around businesses like this is easier when it’s vertically integrated. These businesses are very rare in terms of how much capital they can absorb.”

Case Study: Nimble Precision

PORTFOLIO

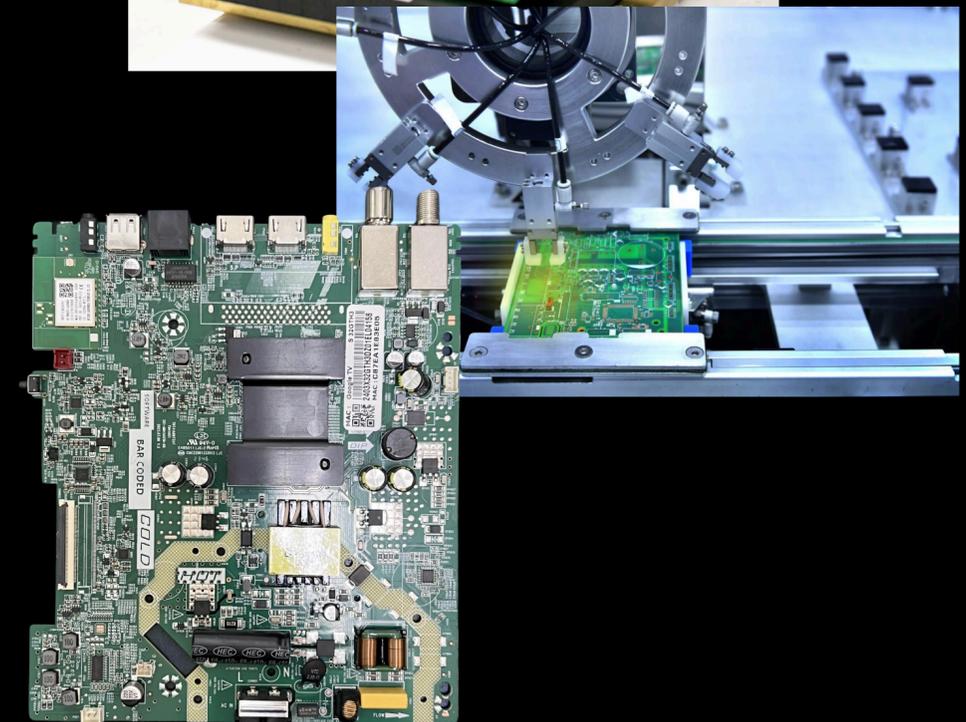
Nimble Precision, founded by repeat entrepreneur Jeff McAlvay, is building a software-first lights-out electronics factory to make hardware iteration as fast as software iteration.

From the quoting process to the factory floor, there are rampant opportunities for AI to transform the workflows of modern manufacturing. Nimble is taking advantage of these to build a vertically integrated, lights-out PCBA factory.

Manufacturing Tradeoffs at Design Time: DFM is typically a slow human-powered process allowing few iterations. Specs get passed down between stages of a supply chain, with feedback coming back piecemeal, resulting in a design that is manufacturable but not necessarily optimal. By having a software based connection between these stages, Nimble is able to get visibility into manufacturing interdependencies to evaluate tradeoffs and discover the optimal design.

Closing the Loop on Design Intent: When working with contract manufacturers, data remains siloed, making iteration challenging. Nimble's system captures high level-specs, detailed designs, and as-built manufacturing data, meaning both teams and AI can quickly learn from their design choices, understand outcomes, and iterate effectively.

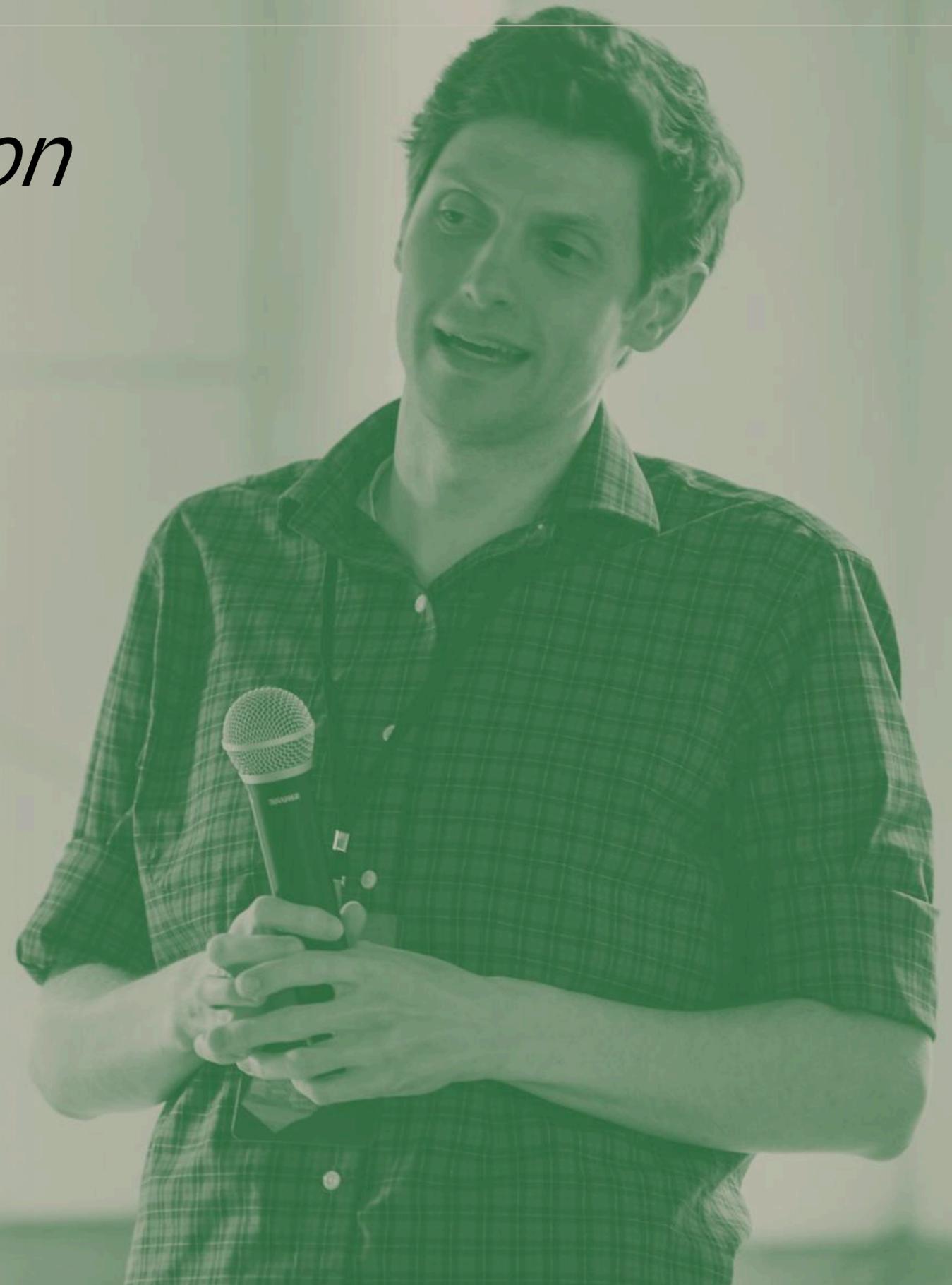
Speed and Dynamic Response: Vertical integration vastly increases the speed of design and feedback over outsourcing. Manufacturing can react dynamically as requirements change. If designs change, software can compute the difference, react dynamically, and keep the manufacturing process moving. Processes that would require flying out for an on-site article inspection can instead be done in hours.



Case Study: Nimble Precision

Our vertically integrated approach to digitizing the industry delivers highly differentiated customer experiences. Given the new toolset available, we've found that thinking critically about ways we can have people be reviewers or editors instead of doers has been a very effective strategy.”

Jeff McAlvay, Founder & CEO, *Nimble Precision*
Prev *Tempo Automation*



Reality Check



Brett Adcock, Founder, *Figure, Archer, Cover*

What's hype and what's real?

What are the biggest challenges in realizing the potential of this modality of AI?

"We can't outsource AI for the same reason we don't outsource actuators, batteries, or electronics - it's too critical to performance"

LLMs are getting smarter yet more commoditized. For us, LLMs have quickly become the smallest piece of the puzzle, the much harder part is designing new AI models that allow for high rate robot control (robots working in the real world)

Figure's AI models are built entirely in-house, making external AI partnerships not just cumbersome but ultimately irrelevant to our success."

https://x.com/adcock_brett/status/1887224104778093017

AI-NATIVE MANUFACTURING: CHALLENGES AND OPPORTUNITIES

AI-native manufacturing represents the most ambitious vision for AI in the physical world, but it is also the most capital-intensive and technically demanding. While companies like Atomic and Nimble demonstrate early signal, there are significant barriers to achieving full vertical integration at scale.

Capital Intensity: Vertical integration requires owning machines, facilities, and entire supply chains simultaneously. The upfront investment is substantial, and the payback period is long compared to software-only plays.

Market Timing Risk: The vision of fully agentic factories relies on technologies that are advancing rapidly but are unevenly mature. Moving too early can lead to substantial sunk costs on training or hardware (e.g. inference chips).



Source: Charlie Chaplin, *Modern Times* (1936)

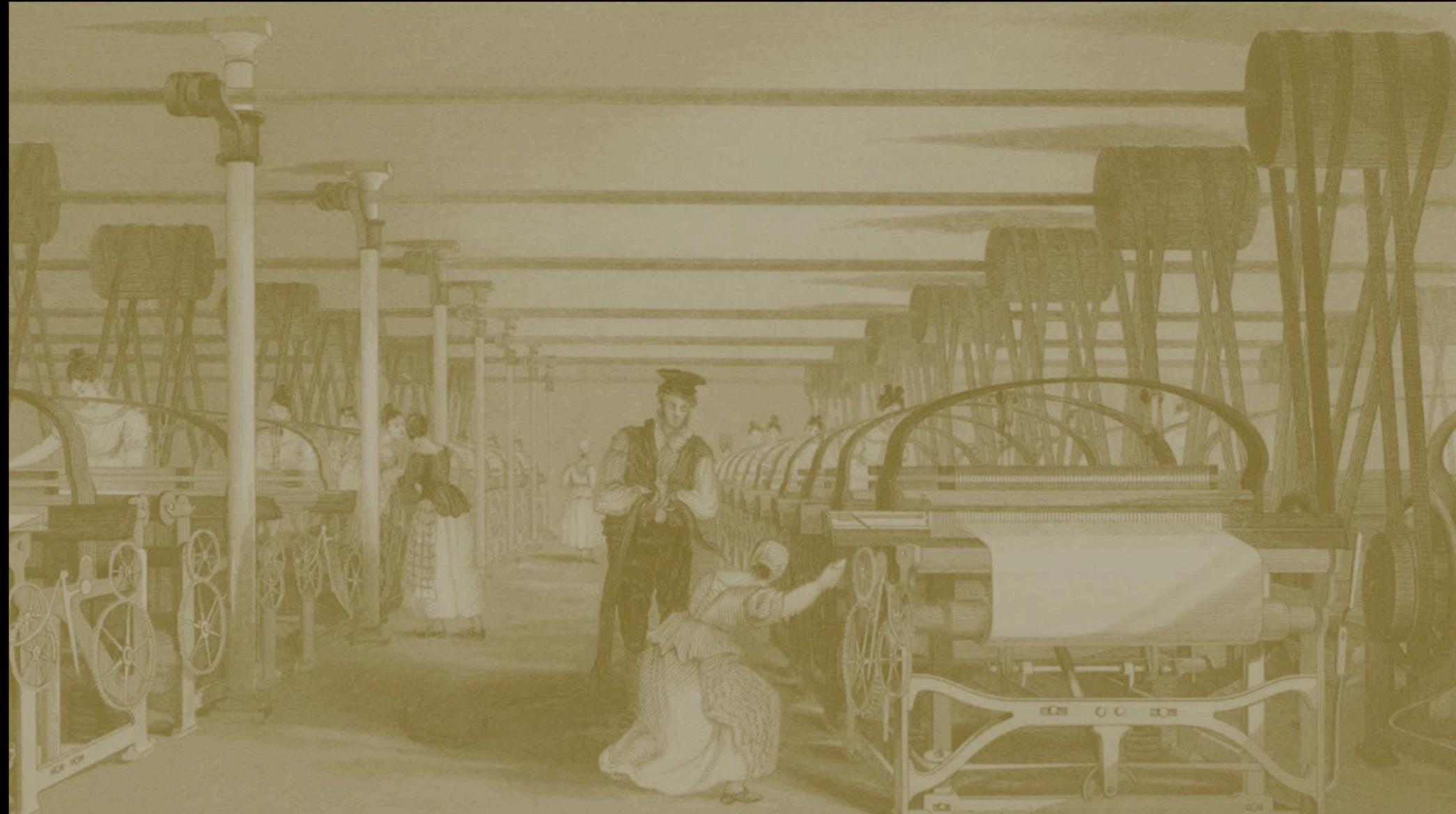
CHAPTER 6

AI, Labor, and Jobs

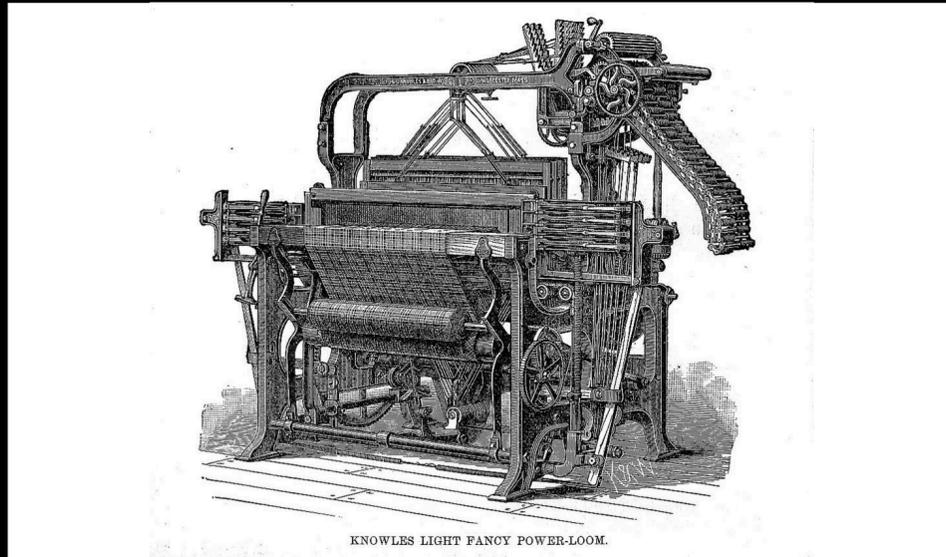
AI is already affecting the labor market, enabling businesses in law, consulting, accounting, and software engineering to do more with less. Layoffs have increased across these professions, and many in the software world report that junior engineering jobs have disappeared, replaced with vibe coding.

But as yet, there's no such thing as "vibe engineering." Building complex physical products, even in the case of our hypothetical vertically integrated factory, requires a vast amount of human know-how, production knowledge, and execution capacity. So how will AI affect jobs in manufacturing?

The conventional wisdom is more automation means fewer jobs. The history of how automation affects employment, however, is complex and varied. Sometimes automation improves employment, as cost reductions expand demand and transform work, rather than eliminate it. We invited labor experts David Autor (MIT) and Roy Bahat (Bloomberg Beta) to speak with us about how automation and AI are interacting with labor.



Case Studies in Job Transformation



POWER LOOM

When Edmund Cartwright patented the power loom in 1785, many predicted it would eliminate weaving jobs entirely. The Luddites famously destroyed looms in protest as handloom weaver wages fell. Yet by the end of the 19th century, there were four times as many factory weavers as at its beginning.

Greater output per weaver reduced the price of cotton cloth, significantly expanding demand. The nature of weaving work changed alongside new technology: from skilled artisans doing piecework in cottages, to factory workers tending to multiple machines.



ATM (Automated Teller Machine)

ATMs were first installed in the United States in the 1970s, and by the mid-1990s banks had deployed over 400,000 machines. As the number of tellers required to run a bank branch decreased, banks opened more branches. The teller's role also transformed: cash handling became less important and human interaction more important, as tellers became part of "relationship banking teams" selling mortgages and financial services.



ACCOUNTING

VisiCalc, the first electronic spreadsheet, launched in 1979 and immediately collapsed the time required for financial modeling. What once took a team of clerks working for days could suddenly be completed in minutes.

There are 400,000 fewer accounting clerks than in 1980, but 600,000 more full accountants. What was automated was arithmetic, freeing accountants to do more strategic work: financial advising, analysis, and interpretation. The profession grew as businesses could afford more sophisticated financial planning.

How Will AI Affect Manufacturing Employment?

Two of our subject matter experts expressed different perspectives on how AI will affect manufacturing employment in America.



**AARON SLODOV, CO-FOUNDER OF
ATOMIC INDUSTRIES**

“The macro pressure will force a lot of smaller manufacturing operations to close, unfortunately. I think it'll benefit larger conglomerated companies way before it does smaller ones. It's way too hard for smaller companies—SMBs are very challenged in adopting new technology, and in the capital formation required for that.”



**ROBERT KARKLINSH, CO-FOUNDER OF
ELASTIUM**

“AI can actually create more jobs because it's the only way some manufacturing can be brought back to the United States. If a robot can, for example, stitch uppers for shoes, then it is bringing production here that doesn't even exist in United States. And each such robot will require a team of engineers who are programming it and who are doing maintenance. This creates completely new jobs.”

The Case for AI-Driven Job Creation

Companies like Elastium and Nimble already demonstrate that smaller, highly efficient manufacturing businesses can thrive and compete in the AI era. From an economic theory perspective, there are three reasons to believe that AI-driven job creation is possible.

JEVONS PARADOX

In manufacturing, AI dramatically reduces the cost of design iteration, process optimization, quality control, and supply chain coordination. When these costs fall, it becomes economical to manufacture things that previously weren't worth building—products too complex, too customized, or too low-volume to justify traditional tooling and setup. Net new product categories mean net new employment.

ERODING ECONOMIES OF SCALE

Earlier generations of robotic automation incurred huge fixed costs and setup times, requiring specialized workers like simulation engineers. These economics favor large factories and mega-companies that can amortize investment across massive production runs. AI can bring those costs down, making smaller companies more competitive and enabling a more distributed manufacturing landscape.

IMPROVING JOB QUALITY

Traditional manufacturing has a barbell structure: high-paid engineers and low-paid line workers, with little in between. AI will eliminate the most routine and dangerous work first. At the same time, AI colleagues make more challenging work—process optimization, quality analysis, design iteration—accessible to people without extensive engineering credentials, potentially rebuilding the middle of the wage distribution and attracting more talent into manufacturing work.



Deploying AI for Collaboration, not Automation

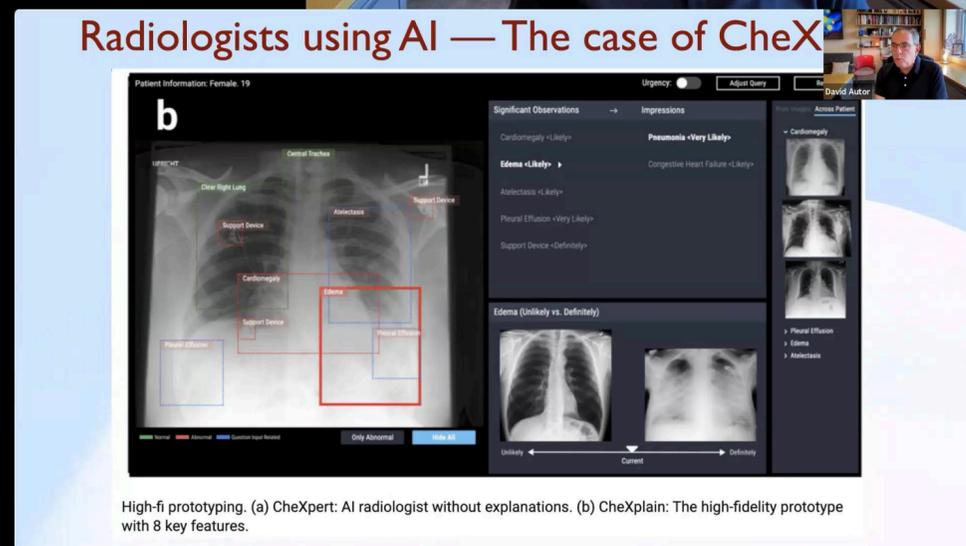
In Chapter 3 we introduced David Autor's framework of "collaboration tools," which retain human agency and control of an outcome, versus "automation tools" designed to replace human input. David offered two cautionary examples of what happens when automation succeeds in the wrong way.

WHEN AUTOMATION FAILS

ChexPert is an AI radiology tool examines chest X-rays and flags likely diagnoses: edema, pneumonia, fluid. On its own, it performs as well as two-thirds of radiologists.

When ChexPert was introduced in controlled experiments, radiologists using the tool made worse judgments than radiologists working alone. When the AI was uncertain, they were uncertain too—they were looking at the same complex case. When they were confident and the AI disagreed, they overrode it. Neither instinct was correct.

The underlying problem was that ChexPert was designed to automate rather than collaborate. There was no way to ask and discuss "what are you looking at?"—it simply offered a prediction.



IN AN INDUSTRIAL CONTEXT

We agree with Robert Karklinsh's comments, quoted in Chapter 3. To prevent catastrophic outcomes and worse-than-normal performance, tools need to be designed to constantly require some level of human input and expertise. Doing so retains a role for human employment, retains the possibility for skillful mastery, and ensures that someone always knows how a manufacturing system is designed.

Consider visual inspection systems. An ML model flags defects on a production line. But when it disagrees with the experienced worker holding the clipboard, who wins? If the technology was installed to replace the worker, they have every incentive to prove it wrong. If it was installed to require their understanding, they have incentive to learn when to trust it.

CHAPTER 7

The Creative Technologist

In the Rise of AI

As America has grown up to become the economic powerhouse it is today, each stage of its development has seen different kinds of manufacturing archetypes. The tinkerer and inventor: Alexander Graham Bell. The precision machinist: Linus Yale Sr and Jr (of Yale Locks). The great industrialist: Henry Ford. The mechanic: Robert Yates.

The unfolding of AI into the world of manufacturing suggests that a new archetype of manufacturing leader will soon be born. Who is that person, equipped with knowledge, super-powered by intelligent tools, the conductor of an orchestra of colleagues made of carbon and silicon, who will create the future factories for an increasingly interconnected and planetary society?

At Baukunst we champion the **creative technologist**. A design-minded specialist with a generalist's worldly ease and ambition, the creative technologist is best positioned to use AI to transform the work of physical production. This is true at all scales. From the small machine shop to the engineering institute, from advanced government labs to the largest industrial factories, from the machinist's union to the lone mechanic on the wind farm.

The creative technologist is the architect of a beautiful machine, bringing capital, knowledge, human sensitivity, and machine intelligence into perfect coordination. They're building pieces to the puzzle, from AI tools that help the world's biggest manufacturers save billions, to AI collaborators that pair design in tandem with human ingenuity, and everything in between.



What Should We Build?

AUGMENTATION & COLLABORATION

Throughout this report we've discussed tools that augment human capacity, and AI that collaborates rather than replaces humans. The most exciting opportunities for us are tools that:

- Enable more people to do high pricetag work, rather than automating existing work or lowering its cost.
- Let experts do more of what they already excel at, more efficiently.
- Empower people to do their ideal jobs, rather than mundane and repetitive busywork.

DOING THE WHOLE JOB

Building with AI means building in ways that could only be done in 2026—orders of magnitude more efficient at every step. Vertically integrated manufacturers can lead the way to the next generation of moonshot products.

How can we build a 10¢ lightbulb? A \$10 shoe? A \$10,000 car? Can we build things that make everyday life feel tangibly better and more abundant?

*Amplified
Expertise*

*Visionary
Veterans*

*Owning
the Stack*

*Imagination
Empowered*

COMPANIES BUILT BY MANUFACTURING VETERANS

Recent reshoring hype has brought many fresh faces into the world of manufacturing and physical AI. But we're most excited to hear how technologists with years of manufacturing experience are understanding AI opportunities. We often find that career professionals are best-positioned to build companies around the biggest problems in manufacturing today.

TOOLS THAT SPARK THE IMAGINATION

What imagination-grabbing tools would solve the will gap? Make less attractive jobs feel cooler and more powerful, individually and collectively?

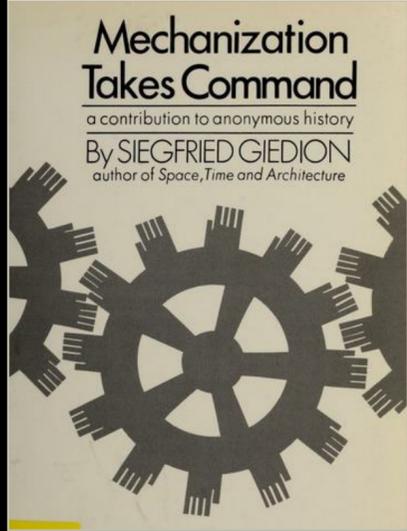
Baukunst is a collective of creative technologists advancing the art of building.

Our inaugural \$100M venture fund is dedicated to leading pre-seed investments in companies at the frontiers of technology and design.

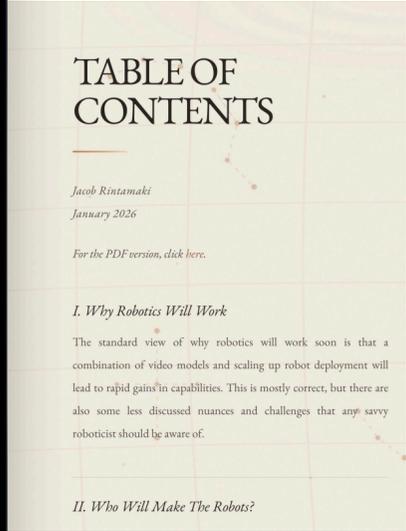
The logo graphic consists of three overlapping circles in a vibrant orange color, arranged horizontally. The circles overlap in the center, creating a continuous, rounded shape. The text 'Baukunst' is centered within this graphic in a large, bold, black, italicized serif font. Below it, the tagline 'The Art of Building' is centered in a smaller, black, italicized serif font.

Baukunst
The Art of Building

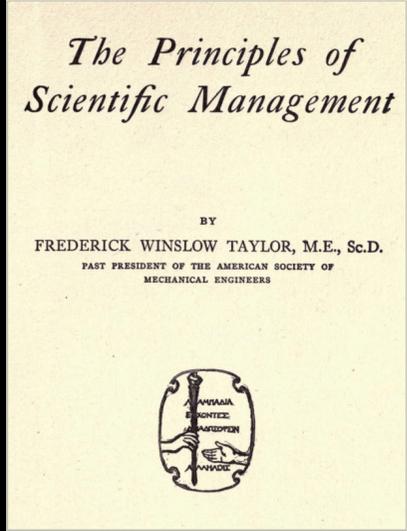
Good Reads & Additional Resources



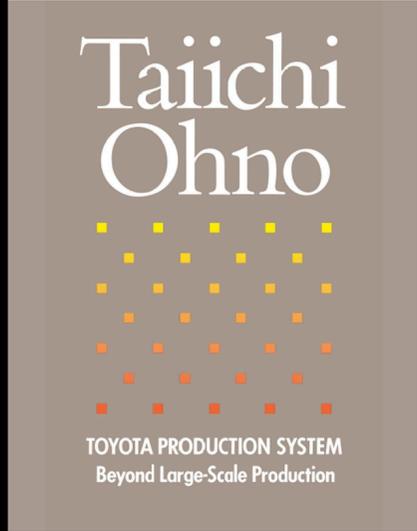
Mechanization Takes Command by Sigfried Gideon



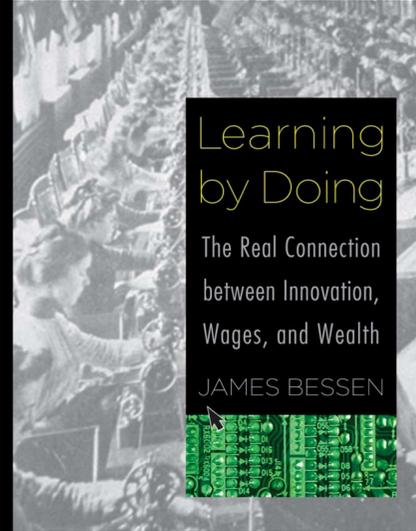
The Final Offshoring by Jacob Rintamaki



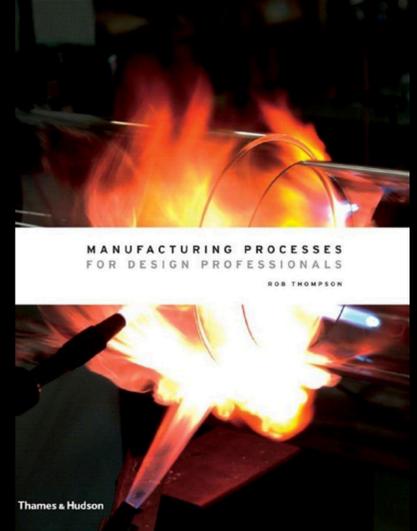
The Principles of Scientific Management by Frederick Taylor



Toyota Production System by Taiichi Ohno



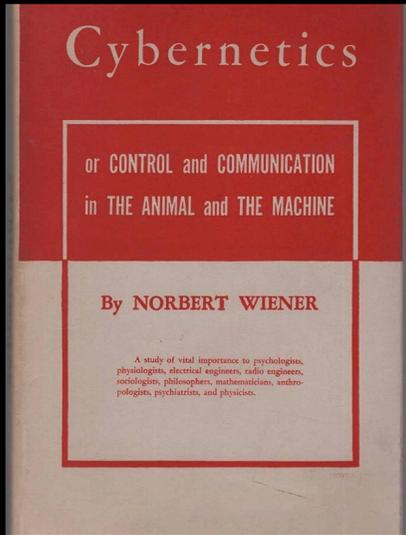
Learning by Doing by James Bessen



Manufacturing Processes for Design Professionals by Rob Thompson



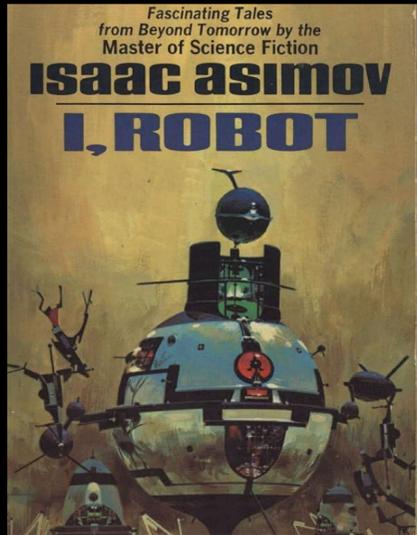
A Better Way to Think About AI by David Autor



Cybernetics by Norbert Wiener



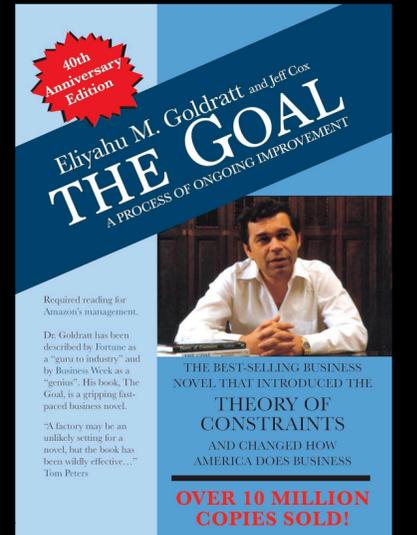
How It's Made



I, Robot by Isaac Asimov



Dwarkesh Podcast on AI by Dwarkesh Patel



The Goal by Eliyahu M. Goldratt

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