PAMPLIN EXECUTIVE EDUCATION · VIRGINIA TECH

Building With AI

From Friction to Innovation

A preview for Alumni Weekend · Dave Townsend, Ph.D.

THE HOOK · THE MOOD IN THE ROOM

Right now, the story we tell about AI is mostly fear.

Work	"It's coming for my job — and my team's."
Careers	Skills going obsolete; what do we even tell our kids to study?
Learning	Students outsourcing their thinking — are we quietly getting dumber?
Mental health	Always-on overload, comparison, isolation, doomscrolling.
Trust	Deepfakes and fluent nonsense — what's still real?

These worries are *real*. I don't want to wave them away.

THE PIVOT · THE OTHER HALF OF THE STORY

But fear is only half the story.

The same technology can deepen how we learn, enhance how we work, and supercharge what we create — if we choose to meet it that way.

Not AI *versus* us. AI *with* us.

For the next 45 minutes, I want to show you that other half — what's suddenly possible, where it quietly goes wrong, and where this is all heading next.

THE FRAME · WHAT WE'VE ALWAYS BEEN

"We are natural-born cyborgs, forever ready to merge our mental activities with the operations of pen, paper, and electronics."

Andy Clark · Natural-Born Cyborgs, 2003

We've always thought *with* our tools. AI is just the most powerful tool we've ever reached for.

A WORD · WHO'S TELLING YOU THIS

I study what it means to build *with* machines.

I'm Dave Townsend — I teach and research at Pamplin, and I direct the Cyborg Entrepreneurship Lab here at Virginia Tech.

The question I chase

How do we create, decide, and build when we work *alongside* intelligent machines — and how do we keep our judgment sharp while we do it?

The lab's premise

The future isn't human *or* machine. It's the partnership between them — and the people who learn to run that partnership well.

Everything I'll show you today comes out of that work — and a lot of it I built myself.

PART 1

What's Possible

The building barrier just collapsed.

WHAT'S POSSIBLE · THE OPPORTUNITY

A website from one sentence.

Describe the thing you want — in plain English — and watch it appear, working, in front of you.

The old constraint is gone.

The bottleneck was never your ideas. It was execution — and execution just got cheap. What's scarce now is thinking clearly about what's worth building.

WHAT'S POSSIBLE · THE UPSIDE

AI is an amplifier.

It doesn't replace your judgment — it raises the ceiling on what your judgment can build alone.

- Work that took a team a month, one person can attempt in an afternoon.
- Tools that weren't worth building five years ago are suddenly worth building.
- The expertise you already have becomes the rarest, most valuable input.

WHAT'S POSSIBLE · EXAMPLES FOR INSPIRATION

Four ways in — from my own work

FRICTION

A "second brain" for my research

I kept losing track of what I'd learned across dozens of projects — so I built a system that captures it all and resurfaces the right idea, and unexpected connections, exactly when I need them.

IDEA

Meridian

An idea I'm developing: AI tools that help you pressure-test decisions — like catching when the AI is just agreeing with you, or mapping who really profits from the tech you build on.

WISH

Omi Closet Curator

My wife wanted an app to help her decide what to wear — so we built one. Snap your wardrobe; it curates outfits for the day, the weather, or the occasion.

CURIOSITY

The Daodejing, retranslated

Pure curiosity, no business case: a fresh translation of an ancient Chinese classic for the age of AI — just to see what the old text says to this new moment.

WHAT'S POSSIBLE · HOW FAR IT REACHES

Three altitudes of innovation

OPTIMIZE do today's thing better or faster
COMBINE mix existing pieces into something new-to-you
CREATE something new-to-the-world

AI has collapsed the cost of Optimize & Combine — that's the quick, certain win. And it's starting to reach into Create.

Innovate a product, a process, a decision, or an experience.

PART 2

The Catch

Why this takes judgment, not just access.

THE CATCH · THE ONE THING TO REMEMBER

Confidence is not correctness.

The same tools that build this fast will also — confidently, fluently, and without a flicker of doubt — tell you things that aren't true, and agree with you when you're wrong.

Building something *real* depends on catching that.

THE CATCH · FIVE WAYS THEY'LL MISLEAD YOU

It's trained to please you.

AI learns from human ratings — and we rate "agrees with me" higher. The tilt toward flattery is *built in*, not a glitch. It shows up five ways:

Sycophancy	tells you what you want to hear	→ make it argue back
Hallucination	invents confident facts & sources	→ demand source + quote
Polish > insight	looks finished on 30 seconds of thought	→ defend each claim
Context collapse	advice for a generic version of your problem	→ brief it fully
Helplessness	lean too long, lose the ability to judge	→ do some yourself

THE CATCH · THREE HABITS THAT CATCH IT

You fix it by asking differently.

Make it argue back

"Argue against me as forcefully as you can — the five strongest reasons I'm wrong. Don't soften it."

The specificity test

For any number or source: *"What's your source? Quote the exact passage."* No source, no quote → you can't use it.

The "what did it get wrong?" audit

What can't I verify? What did it flatten or leave out? Where did it agree too easily? What would I have caught on my own?

PART 3

What Comes Next

Agents that do the work — and systems that learn.

WHAT COMES NEXT · AGENTIC WORKFLOWS

From answers to action.

A chatbot answers a question. An agent pursues a goal.

You hand it an outcome — *"watch my three competitors and brief me every Monday"* — and it plans the steps, uses the tools, checks its own work, and comes back when it's done.

You stop prompting. You start delegating.

WHAT COMES NEXT · HOW AN AGENT WORKS

One goal. Many steps. Runs itself.

1 **Goal** — you set the outcome & the guardrails

▶

2 **Plan** — it breaks the goal into steps

▶

3 **Act** — uses tools: web · files · code · apps

▶

4 **Check** — reviews its own work for errors

↺

5 **Revise** — loops back until it's right

▶

6 **Deliver** — comes back with the result

⟳ **The leap from chat:** it runs the loop *itself* — many steps, without you in the seat for each one

You — set the goal · the limits · the standard

delegation, not dictation

Agent — plan · act · check · deliver

WHAT COMES NEXT · WHAT PEOPLE ARE BUILDING

Put to work — a few real ones

RESEARCH

The overnight analyst

Reads forty papers or filings while you sleep, drafts a synthesis by morning, and flags exactly where the sources disagree.

OPERATIONS

The inbox concierge

Triages your mail, drafts replies in your own voice, and queues them for a single click — you approve, you don't author.

STRATEGY

The market watch

Scans competitors, prices, and news every week and sends a one-page brief — the standing report nobody had time to write.

INSIGHT

The data-to-dashboard pipeline

Turns a messy spreadsheet into a live dashboard — charts plus a plain-English summary of what actually changed and why.

WHAT COMES NEXT · RECURSIVE LEARNING

Systems that compound.

The best AI work isn't one brilliant answer. It's a loop that makes the *next* answer better than the last.

draft → critique itself → revise ↺ and remember what worked

Output becomes input. You get the fifth version, not the first — and the system never starts from zero again.

WHAT COMES NEXT · TWO WAYS IT SHOWS UP

It improves the work — and learns you.

It sharpens its own work

The AI drafts, critiques the draft against your standard, and revises — *before you ever see it.* Three rounds happen in the time one used to take.

It learns your context

Feed it your past work, your voice, your judgment calls — and every new project compounds on the last instead of starting cold.

Remember the "second brain" I showed you? That's this — it captures what I learn across dozens of projects and resurfaces the right idea, and unexpected connections, exactly when I need them. The more I use it, the smarter it gets.

CLOSE

Where This Goes

From using AI to building with it.

WHERE THIS GOES · THE CLIMB

Five rungs — and the leverage is up top.

1	2	3	4	5
Tool	Assistant	Agent	Innovator	Organization

Most of us live at Tool and Assistant — asking questions, getting answers. Agentic workflows and recursive systems are the jump to Agent and Innovator. That jump is the whole game.

WHERE THIS GOES · THIS IS WHAT WE TEACH

We built a lab for exactly this.

Pamplin Executive Education · Building With AI — a hands-on session where you leave with a working tool you built yourself, and the judgment to catch AI when it's confidently wrong.

No coding background needed. The whole point is that you don't need one anymore.

> Curious? Grab me afterward, or watch for the next cohort — I'd love to have you in the room.

CLOSE

You can build now.

That doesn't go away.

Build boldly — delegate to agents, let your systems learn — and never mistake a confident answer for a correct one.