Episode Book

EPISODE #5850

Ambient Computing: Why Glasses Beat the Phone

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SYNOPSIS

In 1991, Mark Weiser wrote that "the most profound technologies are those that disappear." Ambient computing has chased that idea ever since — and mostly lost. Smart speakers won quietly, Google Glass died on privacy backlash, and Humane's $699 AI Pin shipped fewer than 10,000 units before HP bought the assets and bricked every device in the field. So why did Ray-Ban Meta glasses sell over seven million units in 2025 while everything else flopped? This episode traces the full arc: Weiser's ubiquitous computing at Xerox PARC, Eli Zelkha's late-nineties ambient intelligence, the wearable-versus-smart-room distinction, and the empirical case for always-on agents (13–37% faster task completion). Then we make the call on what wins from here — and it's not a new device.

TRANSCRIPT



Corn

There's a machine in more than half the homes in this country that nobody looks at, that has no screen, and that gets used every single day. And it is not the phone.



Herman

The phone is the one you look at. The speaker is the one you talk at from across the room while you're doing something else entirely. And that difference, of all the differences, is the whole subject.



Corn

Daniel sent us this one. He wants the history of ambient computing as a product category, he flags that it sits next to wearables and sometimes overlaps with them, and he makes an argument I happen to think is correct. His words: technology should be integrated into our daily life and sensory world instead of requiring us to fixate upon screens. That proposition, he says, is fundamentally sound. Then he asks two things. Which implementations have actually worked, and which device wins from here.



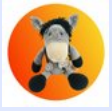
Herman

Both halves matter, and the second half is where it gets contentious.



Corn

So we'll define it, trace why a vision from the late eighties sat dormant for three decades, name the real winners and the real corpses, and then make a call on the next device.



Herman

Let's pin the term down first, because ambient computing and wearables get used interchangeably and they are not the same thing.



Corn

Give me the clean version.



Herman

HP's explainer is about as clean as it gets. Ambient computing is invisible technology working in the background, completing tasks with little to no manual intervention. That's the functional definition. The strategy version came from Google. Rick Osterloh, 2019: the technology just fades into the background when you don't need it. The devices aren't the center of the system, you are.



Corn

Which is a marketing line that happens to be a design philosophy.



Herman

It's both, and the philosophy is older than the marketing by about thirty years. Mark Weiser coined ubiquitous computing at Xerox PARC around 1988. His 1991 Scientific American essay, The Computer for the 21st Century, opens with one sentence. The most profound technologies are those that disappear.



Corn

That's the thesis of the entire episode in eight words.



Herman

He wanted computing repositioned into the environmental background, specifically so people could concentrate on human-to-human interfaces. He wasn't describing a gadget. He was describing a room that cooperates.



Corn

And the naming layer came later?



Herman

Ambient intelligence, late nineties, Eli Zelkha's team at Palo Alto Ventures. So the vocabulary is decades older than the products. That's the first thing to hold onto.



Corn

Now the boundary with wearables, because Daniel's prompt walks right up to it.



Herman

Academic work treats them as complementary but architecturally different. Bauer, 2002. Ubiquitous smart-room systems struggle with privacy and personalization. Wearables struggle with localized information and resource management. Different failure profiles, different designs.



Corn

So a smart room has to know who's in it and decide what to expose. A watch just has to decide what to buzz you about and not run out of battery.



Herman

That's the split in one sentence, yes. SoftwareSeni put the wearable case well this year: wearables are the natural form factor for ambient AI because they are physically present in a way phones are not. Your glasses are on your face. Your phone is in your pocket, face down, on silent, and you have to go get it.



Corn

Right. So the tension for the whole episode. The vision is thirty-five years old, the proposition is sound, and no standalone ambient device has replaced the phone. Every winner is a companion.



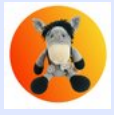
Herman

Every single one. Hold that.



Corn

The definition is clean. The history is not, and the gap between the two is the whole story.



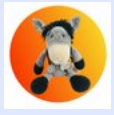
Herman

The proposition is sound for a reason Weiser articulated better than anybody since. Let me give you his actual example, because it's the best thing written on this.



Corn

Go.



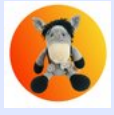
Herman

There is more information available at our fingertips during a walk in the woods than in any computer system, yet people find a walk among trees relaxing and computers frustrating.



Corn

I've read that line a dozen times and it still does work.



Herman

Why is the woods relaxing? Because the woods present information ambiently. At the periphery of attention. You're not reading the woods. You're not unlocking the woods. You are aware of the path, the light, the temperature, the bird, and none of it demands that you stop walking and look at it.



Corn

And a screen does the opposite. It takes the whole budget.



Herman

Focal attention is a finite pool, and a screen drains it every time you touch it. Which is why the comparison lands. A walk in the woods is information-rich and attention-cheap. A phone is information-rich and attention-expensive.



Corn

So the mechanism that makes ambient work, when it works, is peripheral awareness.



Herman

Name the examples and they're all the same shape. A thermostat you never look at. A speaker you talk at from the doorway without approaching it. A watch that taps your wrist with no screen involved. Each one moves the interaction off the focal-attention budget.



Corn

And the phone is the device that has to be retrieved, unlocked, looked at, and dismissed. Four steps before any information moves. For every task. Forever.



Herman

Which is why the empirical support matters here. VisionClaw research on always-on wearable agents, cited by SoftwareSeni this year. Thirteen to thirty-seven percent faster task completion, seven to forty-six percent lower perceived difficulty versus traditional interaction.



Corn

That's not a small effect size. That's the difference between a nice idea and a better tool.



Herman

It's the first hard evidence that the proposition is measurably better, not just aesthetically pleasing. Which is exactly what a proposition needs to survive.



Corn

And now the counter-argument, because I don't want us to strawman it. Noam Tenne, this year. He argues ambient computing failed because it denies the lizard brain.



Herman

Give the line properly, it's better than the summary.



Corn

People don't buy calm. You can buy calm in the way of a nice spa, but you don't want to live in a spa.



Herman

That's the strongest objection to our whole premise and I want to say so plainly.



Corn

Same. Because if he's right, the whole project is a category error. Weiser designed for a human who wants to be left alone. The market is full of humans who want to be reached.



Herman

And the evidence is not obviously on Weiser's side. The most attentive, best-designed, most screen-optimized products of the last fifteen years are the ones people cannot put down. Engagement is the thing they pay for.



Corn

So then the product history becomes a sequence of attempts to resolve exactly that tension. Does the ambient device leave you alone, or does it pull you in?



Herman

And the first wave that actually shipped at scale was the smart speaker.



Corn

Alexa, Google Home, Echo. The first mass-market screenless ambient interface.



Herman

And it normalized voice-first interaction in the home, which is a bigger deal than the hardware. You don't walk to the speaker. You don't look at the speaker. You say something in its direction and it answers. Peripheral by default.



Corn

And the people running them in production now say audio-reactive agents already control lighting, blinds, outlets. There's a whole class of household already living a couple of steps closer to Star Trek than most people realize.



Herman

The ambient home won quietly and nobody threw a parade for it. Which is, honestly, the correct way for ambient computing to win.



Corn

Then the failures. And they are spectacular. Google Glass, twenty thirteen to twenty fifteen.



Herman

Died on privacy backlash. The Glasshole epithet. Plus a fifteen hundred dollar price with limited utility. Expensive, obvious, and socially toxic.



Corn

And Glass died of the thing that is going to come up again in twenty minutes, so put a pin there.



Herman

Then Humane. The AI Pin launched April twenty twenty-four. Six hundred ninety-nine dollars plus twenty-four dollars a month.



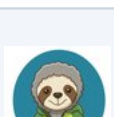
Corn

A subscription on a pin.



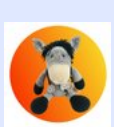
Herman

On a pin. Two hundred thirty million raised, including from Sam Altman. Shipped fewer than ten thousand units. Discontinued by February twenty twenty-five, and then HP acquired most of the assets for roughly one hundred sixteen million and bricked every device in the field.



Corn

Bricked them.



Herman

Every one. Bought a company, took the patents, and turned the customer's hardware into a paperweight.



Corn

That's the detail that should have been the story of the year and somehow wasn't.



Herman

Rabbit R1 also flopped, for the record. Same shape, smaller scale. And I'd put the R1 in a slightly different bucket than Humane, actually.



Corn

How so?



Herman

The R1 at least had a screen and a scroll wheel and tried to be a small handheld thing. It failed on software and on the promise of the "large action model" doing things it couldn't reliably do. Humane failed on the premise. The R1 failed on execution.



Corn

Which is a distinction worth keeping, because one of those failure modes is fixable and the other isn't.



Herman

You can patch bad software. You cannot patch a device that shouldn't exist.



Corn

Walk me through the R1 failure a little more, because I think people remember it as a meme and not as a product lesson.



Herman

The pitch was that you'd speak a request and the device would go perform the task inside the apps you already use. Order the food, book the ride, whatever. And the demo videos showed that happening smoothly. Then reviewers got it and the thing was doing a lot of scripted work under the hood, and the real-world reliability wasn't there. It's the same gap every agent product faces: the demo is one path, the world is a thousand paths, and the model has to handle the thousand.



Corn

So the R1's sin was overpromising the agent, not building the wrong device.



Herman

Right. The device was fine. The device was arguably reasonable. The agent wasn't ready, and they shipped anyway.



Corn

And the lesson, if we're pulling lessons from corpses?



Herman

Ambient AI must augment existing behaviour and existing devices. That's the line and it holds up against every case. Humane tried to replace the phone. The phone won. Glass tried to add a screen to your face. Your face rejected it.



Corn

Cornish version. People don't adopt new rituals. They accept slightly better versions of the rituals they already have.



Herman

And that gets us to the one product in the whole thirty-five years that actually worked at scale.



Corn

Ray-Ban Meta.



Herman

EssilorLuxottica sold more than seven million AI glasses in twenty twenty-five. Up from roughly two million across twenty twenty-three and twenty-four combined. That's not a curve. That's a step.



Corn

And the Q2 numbers this year?



Herman

AI smart glasses revenue nearly doubled year over year. H1 revenue fourteen point eight billion euros at constant rates. Held sixty-nine point two percent of Q1 twenty twenty-six smart glasses shipments, about two point two five million units, up a hundred sixty-seven percent year over year. IDC forecasts thirteen point six million units and five point one billion dollars for the year.



Corn

So the product that finally worked is not a new device at all. It's glasses that got smarter.



Herman

Which is exactly the point. It looks like normal eyewear. About fifty grams. Normal glasses run twenty-five to fifty grams, so it's inside the range of what people already tolerate on their faces. Two hundred ninety-nine dollars at entry. It augments a behaviour people already have, wearing glasses and taking photos, rather than inventing a new one.



Corn

And the price ceiling argument?



Herman

Carolina Milanesi, Creative Strategies. Smart glasses that look like normal glasses and cost under five hundred dollars have a much larger addressable market than any AR headset. Which is just math dressed as a sentence.



Corn

Fifty grams and three hundred dollars. That's the whole trick.



Herman

And it's why the corpse of the category is sitting next to a bin about fifteen hundred dollars and a hundred grams heavier.



Corn

Okay, so the proposition is sound, the history is mostly corpses, and one product finally worked. The question is why now, and I don't think the answer is hardware.



Herman

Then let's start with Ben Thompson, because he wrote the definition that sets up everything. Twenty nineteen. Ambient computing that goes away when you turn off a headset or leave your house is not truly ambient.



Corn

So by that standard most wearables aren't ambient at all. They're peripherals.



Herman

Correct, and that's the uncomfortable part. A pair of glasses you take off at night is not ambient. A room that already knows the temperature is ambient whether you're in it or not.



Corn

And then he pivoted this year, and this is the hinge of the whole episode.



Herman

The problem with wearables as the paradigm beyond the iPhone is that interacting with them generally sucks. Agents, however, compute on your behalf, without any interaction necessary.



Corn

Say the mechanism out loud, because I want it on the record.



Herman

Every previous ambient device still required initiation. Say the wake word. Tap the frame. Raise the wrist. Lift the lid. Each one is a small tax, and small taxes compound into abandonment. An agent inverts it. It acts without being summoned.



Corn

So the interaction cost that killed wearables drops toward zero.



Herman

That's the first time in thirty-five years the economics have changed in favour of the ambient device rather than against it instead of the phone.



Corn

And it reframes the corpses. Humane's AI Pin was an agent with no body and no reason to exist. The Ray-Ban glasses are a body waiting on a better agent. Same category, opposite halves.



Herman

The winning form factor and the winning agent may arrive separately, from different companies, on different schedules. That's why the prediction question is harder than it looks.



Corn

Alright, the twenty twenty-six race. Who's actually in it?



Herman

Is the incumbent and it's not close. Seventy-two point two percent of the XR market. Eighty-two percent of smart glasses shipments in the second half of last year. Targeting ten million wearable sales in the second half of this year alone. The EssilorLuxottica partnership is extended to twenty thirty with capacity scaling to twenty million units by year-end.



Corn

And the branding move in June?



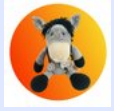
Herman

They dropped the Ray-Ban branding from the next glasses. Which is a signal. It says they're not a licensee anymore, they're treating smart glasses as a mainstream category they intend to own.



Corn

Put the label on the frame and the frame belongs to Ray-Ban. Take it off and the frame belongs to.



Herman

And the revenue story is now the interesting one. Smart glasses revenue two point one five billion. Quest headsets, six hundred sixty million. First time glasses exceeded headsets.



Corn

So the company that bet the metaverse on a headset watched its glasses outsell it.



Herman

Worse for them, the glasses didn't need the metaverse pitch. Two hundred ninety-nine dollars and a camera.



Corn

Google's counter?



Herman

Intelligent eyewear unveiled at Galaxy Unpacked in London this July, built with Samsung, Gentle Monster, and Warby Parker, powered by Gemini. Tom's Guide reports Google is explicitly positioning to avoid 's privacy missteps, which is a quiet admission that privacy is the actual battleground.



Corn

Google saying out loud that the problem is consent, not compute.



Herman

Apple. Camera-equipped AirPods confirmed at WWDC this year, and smart glasses codenamed N50 targeted for late twenty twenty-seven with three to five million projected launch-year shipments. Their bet is on on-device processing.



Corn

Apple's plan is not to be first, it's to be trusted.



Herman

Gene Munster, Deepwater. Built the market. Apple will try to take it.



Corn

And the wildcard?



Herman

Raven Resonance previewed the Raven Prism at AWE in June. Billed as the world's first ambient computer. Linux-powered, eye- and voice-controlled prescription glasses with hot-swappable batteries. Targeting a late twenty twenty-six launch.



Corn

Is anybody else literally branding their product an ambient computer?



Herman

Nobody. It's the only one, and as of this research it hasn't shipped. So the literal category is one product deep and the product is a preview.



Corn

Which tells you the category name exists mostly in marketing decks.



Herman

It tells you the category is real and the standard isn't. There's no ambient computing standard, no certification, no reference design. There's a set of expectations and a race to satisfy them first.



Corn

The second-order question. What actually decides the winner?



Herman

Matthew Ball, Epyllion. It's not about the frames or the cameras. It's about which AI model can most usefully interpret the world you're looking at.



Corn

Which means the ambient device race is downstream of the model race. The hardware is a shell, and the shell is commoditizing fast.



Herman

Two hundred ninety-nine dollar entry AI glasses. Seven hundred ninety-nine dollar Ray-Ban Display. Four hundred ninety-nine dollar XREAL One. The gap between them is close to a rounding error in consumer hardware terms.



Corn

Here's the call Daniel asked for, and I'll make it and take the heat.



Herman

Go ahead.



Corn

The leading ambient device of the near future is not a new category. It's the glasses form factor. Because it's the only one that is simultaneously always on your face, socially acceptable at fifty grams, and capable of hosting an agent that acts without being summoned.



Herman

I'll go with that, with an honest caveat. Every successful implementation to date is a companion to the phone, not a replacement. And the ten million and three-to-five million figures are forward-looking projections, not verified results.



Corn

The seven million EssilorLuxottica number?



Herman

Units sold, not daily active use. Per-model revenue is undisclosed. Seven million people bought them. We don't know how many people still talk to them in November.



Corn

The device is arriving, the agent is arriving, and the consent architecture still is not.



Herman

Same gap that killed Glass in twenty thirteen, and it has not been closed in thirteen years.



Hilbert

You've got the wrong reason on the glasses.



Hilbert

The glasses. You said they won because they were light and cheap and they looked like normal glasses. That's not why. They won because you can shut the camera and hear the shutter click.



Herman

Say that again.



Hilbert

First-generation frames, left hinge, small physical switch. Metal on metal, audible click. You could stand across a room and know whether a man had his camera live by watching for the click. I had a whole etiquette built on it. Two clicks meant not now, and everyone who wore the things knew it without anyone writing it down.



Corn

It wasn't a software toggle, and it wasn't the little LED. It was a physical, mechanical, audible thing you could not fake.



Hilbert

A LED is a light somebody else controls. A shutter is a sound the person in front of you can hear. That's the difference between being trusted and being tolerated.



Herman

That's the strongest privacy argument anyone's made all episode, and it came out sideways. Corn, you were about to say something about the AI Pin.



Corn

I was going to say the AI Pin had no shutter at all. It was a camera you wore that you could not visibly turn off. Which is exactly what Hilbert just said.



Hilbert

I was retained by a company making camera glasses. One afternoon, one consultation. I wrote them a one-page memo. Put a shutter on it. Just the one recommendation, nothing else.



Hilbert

They rejected it. Said a shutter would add a part. One more part, one more assembly step, one more thing to break. So they shipped it without a shutter and I got paid.



Corn

In what?



Hilbert

In frames. Not money, frames. Forty of them, all the same prescription, which was not my prescription.



Corn

You have forty pairs of camera glasses you can't use.



Hilbert

I did have forty. Then I removed the shutters, to prove a point, and now they're just glasses. The box is in my garage. I've been meaning to sell them. I can't, because there's nothing to sell. They're sunglasses with a hole where the argument was.



Herman

Did anyone at the company ever say you were right?



Hilbert

No. Last I heard they shut down. And I still think the memo was right, because the memo was the whole pitch and they didn't have it.



Corn

Okay. So the device is arriving, the agent is arriving, and the thing that killed Glass in twenty thirteen still hasn't been built.



Herman

If the agent is what makes ambient computing viable, does the device even matter? Or are we about to watch a dozen interchangeable shells compete on model quality, where the hardware is the cheap part and the model is the moat?



Corn

Which means the ambient device race is downstream of a race the device makers don't control. Can ship twenty million frames. It can't guarantee the agent behind them is the best one.



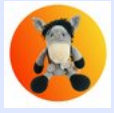
Herman

If the consent architecture still hasn't arrived thirteen years after Glass, what makes anyone think twenty twenty-seven is different? Apple's bet is that trust is a feature. That's a real bet, and so far it's the only company making it explicitly.



Corn

If you've been enjoying the show, a review wherever you get your podcasts helps other people find it.



Herman

Producer Hilbert Flumingtop, as always, made this thing possible, clicking shutters and all.



Corn

If this was your kind of episode, go back for episode ten, How ASR Went From Frustration To ... Whisper Magic; episode five, Fine-Tuning ASR For Maximal Usability; and episode eighteen, Beyond the GPU. This has been My Weird Prompts.



Herman

Send us your own prompt on Telegram at t dot me slash MWP listener bot. We'll be back soon.

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