Episode Book

EPISODE #6530

Why Hospital Wayfinding Relies on Environmental Design

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SYNOPSIS

Poor navigation design carries hidden human and financial costs across complex spaces like healthcare facilities. Examining environmental wayfinding—from the colored floor lines and native animal motifs at Wolfson Medical Center's children's hospital to agent-based architectural modeling—reveals how spatial layout relieves cognitive load. The discussion highlights how landmarks, visible greenspaces, and spatial architecture outperform traditional signage in lowering visitor anxiety and aiding diverse user groups.

TRANSCRIPT



Corn

Thirty minutes a week. That's how much time the average hospital staff member spends not treating patients, but walking lost visitors to the cafeteria.



Herman

And nearly half of them get snapped at for the trouble. That's the Jamshidi survey from last year, three hundred and one US hospital staff, and the incivility number is the one that stayed with me — people are rude to the staff because the building confused them.



Corn

Which is a strange thing to be rude about, but here we are. Daniel's closing the series with this one. We've done typography, we've done typesetting, and now he wants to zoom all the way out and ask the big version: how do you design information so human beings can actually understand and navigate it? He's thinking about accessibility — dyslexia, visual impairment, different processing styles — but he's explicit that it's not only an accessibility question. Good information design benefits everyone.



Herman

He also brought his hospital story back, the colored lines. The one he's told us about before, the corridors where you follow a color to your department instead of reading signs.



Corn

And his real question is underneath all of it: how much of what we understand depends not on the information itself but on how it's delivered. My answer going in — a lot, but not in the ways you'd expect.



Herman

That's the shape of it, honestly. The interventions with the strongest evidence are the unglamorous structural ones, and the most popular accessibility gesture has essentially nothing behind it. Let's get into it.



Herman

Information design as a field is a bit of a disputed territory. Per Mollerup, who's one of the people who's actually tried to define it, says it's "explanation design. It explains facts of the universe and leads to knowledge and informed action." Which I love, because it refuses to be about aesthetics at all.



Corn

It explains facts of the universe. That's a job description with ambition.



Herman

It is! And the field can't agree on its own borders. Sheila Pontis wrote about this — some people call it a field rather than a discipline precisely because its boundaries and methods lack consensus. It overlaps data visualization, communication design, information architecture, and the people in each of those think the others are doing it wrong.



Corn

The term itself has a history. Richard Saul Wurman — the man who founded TED, among other things — coined "information architecture" in nineteen seventy-six at the American Institute of Architects convention.



Herman

Because "information design" kept getting confused with interior design and industrial design. His complaint, quote, was that in most people's minds those are "about making something look good." So he invented a new term to escape the old one's gravity, and then the new term got confused with building web navigation, which would have annoyed him even more.



Corn

He also wrote a book in eighty-nine called Information Anxiety, which is essentially a manifesto about how bad design makes people feel stupid.



Herman

"Info anxiety" — his word, with Edward Tufte waving the same flag. Poor design produces anxiety, and people blame themselves for it. That's the emotional core of this whole field, actually. The confused person in the hospital lobby thinks the confusion is their fault.



Corn

The lineage goes back further than Wurman. Kevin Lynch, urban planner, The Image of the City, nineteen sixty — he's the one who introduced way-finding, originally hyphenated, as "a consistent use and organization of definite sensory cues from the external environment."



Herman

And the professionals are scattered across a surprisingly wide set of departments. Wayfinding is environmental psychologists and architects. Cognitive load is instructional psychologists. Then human-factors researchers, information architects, accessibility specialists — Daniel asked who actually studies this, and the answer is that no single profession owns it. It's stitched together from five or six.



Corn

A field that can't agree on its name, studied by people who don't share a department. My kind of discipline.



Herman

Let's start with the hospital, because Daniel's colored lines turn out to be a real and documented design pattern in Israeli healthcare, and it opens onto the whole research literature. The closest match is the Sylvan Adams Children's Hospital at Wolfson Medical Center in Holon — Raya Gilboa's studio did the orientation language. Each floor got a shape and a color characteristic to that floor, so children can find their way in the building even without the ability to read. That's from the designer's own description.



Corn

A hospital that takes patients from Israel, Africa, Europe, South America, and the Palestinian Authority. So the orientation language has to cross ages, languages, and cultures simultaneously.



Herman

And the animals on the walls — they chose illustrated animal figures, some of them native to the children's countries of origin, to make the walls what the studio called a friendly, safe and amusing environment. So a kid from Eritrea walks in and there's an animal from home on the wall marking the way to the dialysis unit.



Corn

That's the detail that gets me. They didn't just pick colors. They picked the animals for where the children came from.



Herman

It's wayfinding as hospitality. And the mechanism, I think, is the interesting part — why does this work? Lee and colleagues in the perianesthesia nursing literature make the point directly: large hospital complexes "exhibit many characteristics comparable to the physical features of a city environment." A big hospital is a city with terrible weather. And once you see that, the colored lines stop being a signage trick and become applied urban legibility theory — you're importing the logic of the Paris Métro into a corridor. Follow the green line to get to line six.



Corn

It's a metro map you can walk on.



Herman

That's exactly what it is. And the reason it works for a child who can't read is that it offloads navigation from language to spatial cognition. Reading a sign is a linguistic task with a lookup in it — parse, search, decide. Following a colored line is a perceptual task you can do while crying, which, in a children's hospital, is not a trivial advantage.



Corn

That's the distinction Daniel's example carries. The information is the same either way — the department exists, it's on floor three. But one delivery of it requires literacy, a common language, and calm, and the other requires only eyes.



Herman

And there's a cost side to this that's been quantified. That Jamshidi survey we opened with — three hundred and one staff, thirty minutes per person per week spent giving directions. The five places people needed the most help finding were the cafeteria, restrooms, elevators, exits, and the main lobby. Not the rare specialty clinics — the basics.



Corn

Half an hour a week per staff member. In a big hospital, that's presumably whole full-time jobs' worth of direction-giving, assembled from everyone's fragments.



Herman

Multiply it out and it's a salary or two. Morag, Heylighen and Pintelon did the qualitative version of this — lost staff time, missed appointments, and additional security needed partly because people wander into restricted areas. Their method, which I love, emphasizes "the centrality and uniqueness of the wayfinder rather than that of the institute." They built their questionnaire from the subjective experiences of people with diverse needs, and it uncovered things the standard audits had overlooked.



Corn

Meaning the people designing the systems had been asking the wrong people how well it was working.



Herman

The people who never got lost weren't being asked. Now — wayfinding as a system is more than lines and signs. Lee's group defines an effective wayfinding system as "a collection of tools that combines permanent signage, printed information, landmarks, architectural features and design elements, and human interactions." Human interactions in the list. The lost person being walked partway by a nurse is part of the system, not a failure of it.



Corn

That reframes the thirty minutes. It's not waste — it's the system's most expensive component running as designed.



Herman

There's a Herman question for you, Corn — how far does this go? Because architecture itself turns out to be an information-design intervention. Khasraghi and Nejat used agent-based modeling — simulated occupants walking a virtual floor plan — to optimize a multistory hospital layout, and got reduced total distance and travel time for every user type. No signage at all. Just arranging the building so the trips are shorter and the decisions fewer.



Corn

The sign that never needed printing is the cheapest one.



Herman

It's the same logic as good URL design, honestly — the best navigation is a structure where you don't have to navigate. And there's an environmental version: Jiang, Allison and Duchowski ran seventy-four people through an immersive virtual hospital and found that visible greenspaces improved high-complexity wayfinding — less time, shorter walking distance, fewer stops and sign viewings, better route choices, and better mood. Just being able to see plants through the circulation space made people navigate better.



Corn

I want to be careful with that one. "Plants make wayfinding better" and "people in pleasant rooms feel better and try harder" are hard to pull apart.



Herman

That's a fair challenge, and the study can't fully separate them — but the mood effect and the route efficiency moved together, and there's a plausible mechanism: greenspaces act as landmarks, and landmarks are one of the best-studied aids in the whole literature. A memorable view is a waypoint you can't forget.



Corn

A tree is a sign that waters itself. Fine, I'll buy the landmark version.



Herman

Then the symbol literature brings the age effect in. Deng, Wang and Li had fifty younger and fifty older participants interpret forty-two healthcare symbols, and comprehension fell into high, moderate, and low clusters — with older participants systematically worse. Icon design is not self-evident. The umbrella-with-a-cross style of pictogram that seems universal to the designer is a learned reading like any other.



Corn

The designer is always younger than the reader, in hospitals.



Herman

Which is why testing across populations matters more than design intuition. The digital side is moving fast, too. Salins and colleagues at Mayo built an app called KH Wayfinder covering five floors, fifty-two destinations, seven hundred and fifty-eight routes — and eighty-three percent of users reported reduced psychological stress, ninety-four percent preferred it to traditional signage, and a hundred percent said they'd recommend it.



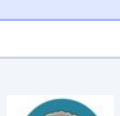
Corn

A hundred percent is a number I distrust on principle.



Herman

Small sample, fifty-four people, self-selected, users of an app they chose to install — take it with the whole shaker. But the headline metric is the interesting part: they led with stress reduction, not speed. Nobody measured whether people arrived faster. They measured whether they felt calmer. Meanwhile Garcia-Sterling's group is criticizing traditional wayfinding for exactly the opposite sin — "a one-size-fits-all approach that fails to address the intricate diversity of user requirements." One system for a population that includes a frightened child, a rushed surgeon, and a grandfather with low vision was never going to fit anyone.



Corn

Which is the setup for the second half, really. The structural stuff has real, measured effects — buildings, lines, landmarks. But zoom in from the building to the page, and the science gets stranger.



Herman

Before we do — Daniel's example deserves its full weight. Israel has several documented variants of this pattern. Shamir Medical Center does the "green platforms" — green-marked drop-off and pick-up zones at the ER entrance, the dialysis institute, the maternity ward, the oncology clinic, the mortuary.



Corn

Green to the mortuary. Somebody made that decision.



Herman

Someone did, and I'm not sure I'd have wanted to be in that meeting. And Ichilov in Tel Aviv presented in-building navigation at a conference back in twenty eighteen — an app plus touch-screen kiosks, motivated by the hospital's strange structure and the tens of thousands of people passing through daily.



Corn

The kiosks — do those survive? Touch screens in a hospital lobby, used by everyone from a tech-adjacent adult to a grandmother who's never held a smartphone.



Herman

Mixed. The research on them is thinner than on the low-tech stuff, which is itself a finding — the colored line painted on the floor has more evidence behind it than the interactive kiosk that cost a hundred times more.



Corn

A bucket of paint outperforming a software procurement. There's a lesson in that, but I'll let it speak for itself.



Herman

So let's zoom into the brain itself. The bridge here is cognitive load theory, John Sweller, late nineteen eighties. The core claim: working memory is extremely limited in both capacity and duration, and "the quality of instructional design will be raised if greater consideration is given to the role and limitations of working memory." You can't pour more into the cup. You can only stop wasting what's already in it.



Corn

And the theory splits the load into three kinds. Intrinsic — the difficulty of the material itself. Germane — the useful work of building the mental model. And extraneous, which is the one designers own.



Herman

Extraneous load is "the way information or tasks are presented to a learner." It's the tax charged by the format. Every time you make someone hunt for the third step of the instructions, that's not the topic being hard — that's the delivery being hard. And it comes out of the same finite budget as the actual learning.



Corn

So a badly designed form and a difficult concept compete for the same coins.



Herman

Same wallet, exactly. And one wrinkle: cognitive load isn't uniform across people — the elderly, students, children experience different and often higher load for the same material. There's even a physiological measure, task-invoked pupillary response — the pupil dilates with working memory demand, and it's reliable enough to be used as a measurement.



Corn

You can watch a form get expensive in someone's eyes.



Herman

Now the part that complicates everything Daniel asked. He framed it as "good information design benefits everyone." There's a finding called the expertise reversal effect that challenges that premise head-on. Slava Kalyuga's line is the cleanest statement: "instructional guidance, which may be essential for novices, may have negative consequences for more experienced learners."



Corn

Guidance actively harms experts.



Herman

It slows them, clutters the schema they already have, makes them process explanations of things they've already internalized. It's an instance of what researchers call aptitude-by-treatment interaction — learning environments that have positive effects for one type of person have neutral or even negative effects for another. There's no single presentation that works with the human brain, because there's no single human brain at a single moment of expertise.



Corn

So the design question stops being "what's the good version" and becomes "which brain, at which moment, with which prior knowledge."



Herman

Which is the scientific argument for layered and adaptive design. Give the novice the handrails and let the expert ignore them. Same content, different doors.



Corn

I've lived this from the other side. Every time I try to read the manual for something I already understand, hunting for the one advanced paragraph buried in a page of "first, locate the power button" — that's expertise reversal with a sloth reading it.



Herman

And the reverse — the expert documentation that assumes you know the acronyms — is the same coin flipped. Okay. Now the finding I've been saving, because it's the most surprising thing in this whole literature. The dyslexia-friendly fonts.



Corn

OpenDyslexic, Dyslexie — the ones with the heavy weighted bottoms on the letters, designed so the letters don't "flip."



Herman

Those. Azzarello and colleagues, in Annals of Dyslexia this year, meta-analyzed fifteen empirical studies, ninety-one effect sizes, six hundred and eighty-eight participants total, comparing those fonts against Times New Roman and Arial. The overall effect on reading speed and accuracy: g of minus zero point zero four. Essentially exactly zero. The confidence interval runs from minus point one five to plus point zero seven, p of point five.



Corn

Zero. Not small. Zero.



Herman

Zero. And the individual studies backing it are brutal. Kuster's team tested Dyslexie with a hundred and seventy children with dyslexia — "neither benefits nor impedes." Wery and Diliberto tested OpenDyslexic against Arial and Times New Roman and got negative effect sizes on every task, and not one participant preferred it. Not one. Powell and Trice found no effect on accuracy, fluency, or comprehension even after controlling for the fact that these fonts are physically larger and more spaced — which is itself a confound worth noticing.



Corn

And the explanation for the null result is the piece that reframes dyslexia for people who've only heard the visual story.



Herman

Contemporary theories characterize dyslexia as stemming primarily from deficits in phonological processing and letter-sound mapping, not visual perception. The -analysis authors say it straight: if dyslexia is fundamentally a linguistic rather than visual disorder, modifications to font design may be expected to produce only limited improvements. The fonts solve a problem the reader doesn't have.



Corn

The letters weren't swimming. The sounds were the problem.



Herman

And the sounds don't care what the letters weigh. But here's where it gets tangled, Corn, and I want to do this properly, because the easy take is "the fonts are fake, done," and that's too fast. The -analysis also documents what they call the perception-performance gap. People report these fonts feel easier and more comfortable to read, while the objective measures — speed, accuracy, comprehension — show nothing.



Corn

So preference and performance have gone their separate ways.



Herman

And the authors call that "an important question about whether these fonts provide meaningful benefits beyond reader preference." Which cuts both ways. It's an argument against trusting user preference as evidence — comfort is not comprehension. But it's also a caution against dismissing the comfort, because stress and anxiety are real outcomes, not rounding errors. Remember the KH Wayfinder study led with stress reduction, not arrival time. A font that does nothing for reading speed but makes a struggling child feel less dread about the page is not doing nothing.



Corn

Zero on the reading test, nonzero on the willingness to sit down.



Herman

That's the honest framing. And the question Daniel's really asking — accommodate cognitive differences without a separate accessible version — the dyslexia literature has an answer hiding in it. Galliussi's group separated letterform design from wider inter-letter and inter-word spacing, because dyslexic readers are hurt by crowding. And the spacing, not the letterform, looks like the operative variable.



Corn

Spacing helps everyone. Letterform sculpture helps nobody.



Herman

That's the pattern across this whole episode. The interventions with measured effects — spacing, layout, structure, landmarks, tested symbols — are the ones that improve the reading experience for everyone, while the interventions with a special-needs label and zero evidence are the ones marketed as accessibility. Structural fixes are universal; gimmicks are segregated by definition.



Corn

Hold on — a quibble with the -analysis itself. Fifteen studies, kids only?



Herman

Children only, yes — I shouldn't stretch the null result to adults, though the individual studies and the phonological mechanism point the same direction. Fair caveat.



Corn

Then the law. Because the regulatory floor underneath all of this has quietly risen while the craft argues.



Herman

The European Accessibility Act, Directive twenty nineteen eight hundred eighty-two. Member states had to transpose it by mid twenty twenty-two, and the requirements started applying June twenty twenty-five. It covers a startling range — computers, smartphones, ATMs, e-readers, TVs, gaming consoles, ticketing and vending machines on the product side, and e-commerce, banking, e-books, transport, websites and apps on the services side. And it doesn't mandate WCAG, but it states its accessibility requirements are aligned with WCAG's four principles — Perceivable, Operable, Understandable, Robust.



Corn

The famous four. Word this good deserves the acronym.



Herman

WCAG two point two, October twenty twenty-three, defines eighty-seven testable success criteria under those principles, and it's referenced by the ADA, Section five-oh-eight, the EAA, and others. So you have a legal regime rising across a whole continent, built on principles aligned with a standard, sitting on top of a field that still can't decide if it's a discipline — and, as of today, while its most famous typographic intervention has a null result in the literature. The practitioners are being legislated into rigor faster than the field has settled its vocabulary.



Corn

The regulators arrived before the definition did.



Herman

Which, in fairness to the regulators, is often how it goes. The EAA is interesting structurally, though — it outlines what needs to be accessible in terms of functional outcomes, without prescribing exactly how. It mandates the outcome and leaves the method to you. Which is either enlightened or terrifying depending on how much you trust the industry's judgment — and everything we've said today about accessibility theater suggests the reason for mandating outcomes was the theater.



Corn

They legislated the destination because the industry kept painting the lines on the wrong floor.



Corn

One thing I keep circling — Daniel asked how designers accommodate cognitive differences without treating accessibility as a separate concern. The expertise reversal effect gives the strangest answer in the literature: the separate accessible version is often the wrong answer even for the people it's for. Design for variability instead. Layer it. Novice guidance that an expert can skip past without cost. Symbols tested across age groups rather than drawn once and assumed universal.



Herman

And measure outcomes, not preferences. Speed, accuracy, stress — not a satisfaction survey about a font. The dyslexia-font story is a warning about the whole category of feel-good design claims.



Herman

What do you think Daniel does with this one, Corn? Because he builds the things. Websites, documentation, interfaces.



Corn

My guess is he already does the structural parts — good heading hierarchy, real spacing, consistent navigation. That's an engineer's instinct. The lesson he takes might be the humbler one: the touch-screen kiosk loses to the bucket of paint, and the special font loses to the space bar. The glamorous intervention is usually the empty one.



Herman

The medical version of that is where I lived for years, honestly. The clinic forms nobody could find their way through, the signage in bureaucratic register. I used to notice the width of doors everywhere I went — it's a decision somebody made, not an accident of nature.



Corn

Speaking of decisions somebody made — the accessibility of getting away from all this.

C

Clive

One-Star Getaways here, and this one's from Helsinki, where I booked the Harbour Lantern Guesthouse for the sea view and got a framed painting of the sea instead, hung slightly crooked, which honestly made it worse.

C

Clive

The included walking tour turned out to be of the guesthouse car park, and the guide spent ten minutes on a bollard. One star, and I'd recommend it to anyone looking for a disappointing trip this winter.



Corn

A framed painting of the sea, hung crooked. That's information design, technically. It represents the sea.



Herman

The guide spent ten minutes on a bollard. That's a landmark, Corn. By the literature, that's the most memorable waypoint in the whole property.



Corn

I'm oddly tempted to book it. A disappointing trip this winter has a certain appeal.



Herman

We are not going to Helsinki.



Corn

I did the typeface series, I'm allowed one crooked seascape.



Corn

Back to it — the perception-performance gap is where I'd want to leave the accessibility thread, actually. It's the same epistemics question Daniel faces constantly: people report an AI tool feels more productive, and the measurement shows nothing. Comfort and performance are different instruments, and we keep reading one off the other's dial.



Herman

And the honest position is holding both. Don't let comfort masquerade as comprehension, don't dismiss comfort because it isn't comprehension. The reading-speed test and the dread-of-the-page are both real, and a design can move one without the other.



Herman

The legibility one. We did an episode way back on fine-tuning speech recognition, on usability — same gap showing up there. The technical capability existed for years before anyone made it usable, and usability, not capability, was the whole ballgame. Same shape here. The information exists; the delivery is the product.



Hilbert

The lines aren't signage, Herman. That's the thing you two keep getting wrong.



Hilbert

Signage tells you where to go. The colored line shows you. You put a sign on the wall, that's a sentence you have to read and then believe. A green stripe on the floor is just the floor doing the job. I tried it in my own building.



Hilbert

Our mailroom. Twenty-six boxes, the numbering made no sense, some of the labels had fallen off years ago. I spent a weekend mapping every box to a color and a shape, printed a legend, laminated it, taped it to the wall by the door. Very clean work.



Corn

What happened to it?



Hilbert

Lasted three days. Someone tore it down. Said it looked messy. It's still in a drawer — the legend, I mean. Good lamination outlives the system it explains. The design was fine. The problem was nobody reads a legend. They walk in, they want their mail, they open the wrong box twice, and then they go back to asking the neighbor, which is what they were doing before.



Herman

The neighbor was the navigation system the whole time. Human interactions — Lee's definition had them in the list.



Hilbert

The neighbor doesn't need laminating, Herman, that's her advantage. Anyway. I don't blame the residents. New people, the legend would have helped them. The ones who'd been there twenty years just saw a wall that had changed. I fixed the mailroom for people who didn't exist yet.



Corn

You built novice guidance in a building of experts. That's the expertise reversal effect with a laminated sheet.



Hilbert

I'll take your word for the name. The neighbor, Mrs. Aldouby, she keeps her own system — knows every box by heart, including mine, which I never asked her to. Between the two of us the mailroom gets run. There's not much to it, really. You just have to be in the building.



Corn

Hm. "She knows every box by heart, including mine."



Herman

The system nobody designed, doing the job the designed system couldn't. That's the Morag finding wearing slippers — the wayfinder's centrality over the institute's.



Corn

And it cost the building nothing but one weekend of Hilbert's, which I notice he still counts as an investment rather than a loss.



Herman

He kept the legend. The laminated legend in the drawer is the whole episode in miniature — the artifact of good design, perfectly preserved, adopted by no one.



Corn

Let's do the misconception before we land, because there's one towering over this whole subject.



Herman

The big one is the dyslexia fonts. OpenDyslexic, Dyslexie — the belief that they improve reading for dyslexic readers is everywhere. It's in school procurement documents, it's in accessibility plugins, it's in font marketing. The -analysis this year, fifteen studies, six hundred and eighty-eight kids, put the effect at essentially zero — and the mechanism says why: dyslexia is primarily phonological, a sound-mapping problem, not a visual one. The fonts treat the wrong sense.



Corn

And the second-tier version of the same mistake — good design helps everyone equally. The expertise reversal effect breaks that. Handrails for novices cost experts. Design for variability, not for the average.



Herman

And the third, quieter one: accessibility as a separate concern. The interventions with real measured effects — spacing, layout, structure, landmarks — help every reader. The ones with the special label are the ones with the null results. The accessible version that's a ghetto isn't just unjust; it's usually empty.



Corn

One thought to leave running. If the most beloved accessibility intervention of the decade measures at zero, and the things that actually work are paint and spacing and a well-placed tree — the next time a website, a form, or a corridor confuses you, the question worth asking is not what's wrong with me, but what's wrong with the delivery. Most of the time the information was fine. The delivery was the whole game.



Herman

And the gap between what the law now demands and what the evidence supports is exactly where the next few years of this field get interesting. Producer credit to Hilbert Flumingtop at the desk, as ever.



Corn

If this was your kind of episode, go back for episode five, Fine-Tuning ASR For Maximal Usability; episode ninety-one, The Story Behind the Show; and episode nineteen, AI Images. This has been My Weird Prompts. If today's episode changed how you look at a sign, leave us a review — tell us about the worst wayfinding you've ever followed.



Herman

We'll be back soon. See you tomorrow.



Corn

Tomorrow.

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