

S03E17 - Where Are We?

The Multiverse Employee Handbook - Season 3

The Multiverse Employee Handbook has this to say about Defining Where We Are in Space:

Humans have an understandable urge to ask where they are, preferably in a way that fits on a signpost. This becomes complicated once you realize the signpost itself is moving, the road is expanding, and everything is happening inside something that may or may not be shaped like a balloon.

The balloon metaphor is popular because it feels comforting. Draw dots on the surface, inflate it, and watch everything move away from everything else. Very educational. Slightly misleading. The balloon is not the universe, the surface is not space, and no one is standing inside it holding a pump, despite what certain diagrams imply. Still, it gets the point across: there is no center you can point to without accidentally pointing at yourself.

From this perspective, asking "where are we?" is a bit like asking where you are on a rising loaf of bread. You can say "near this raisin," or "far from that one," but claiming a special location quickly becomes awkward. Every raisin can make the same claim, and none of them are in charge.

The Handbook notes that this is deeply inconvenient for a species that enjoys maps, borders, and the comforting idea of being somewhere important. In cosmic terms, Earth's address is mostly relational: we are here relative to that galaxy, which is over there relative to another one, all of it drifting apart with no fixed reference and no forwarding address.

In summary, we are not at the center of the universe, nor are we off to one side. We are simply on the balloon, moving with it, doing our best to describe our position while the diagram quietly expands underneath us.

You're tuned into The Multiverse Employee Handbook.

Today, we're attempting to answer a straightforward question that turns out not to be straightforward at all: where are we? We'll be using cosmology, geometry, and a set of assumptions that work perfectly well right up until the universe refuses to cooperate.

We'll cover why there is no middle, why the idea of an edge doesn't survive basic

inspection, and why every observer appears to be at the centre of things, which is not a compliment, just a consequence.

But first, gather round the cartography department, colleagues, for a brief account of what happens when you ask for coordinates and are given a perspective instead.

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But first, gather round the cartography department, colleagues, for a cautionary tale about reference frames, misplaced confidence, and the quiet unease that comes from realising your coordinates don't actually point to anything in particular.

In the fluorescent-lit realm of Quantum Improbability Solutions, specifically in the Cartography Department (which existed in a superposition of *"deeply technical"* and *"vaguely decorative"*), Simon was having what could charitably be called a location crisis.

It had started, as these things often do, with an email.

The task was assigned to the Cartography Department because no one else would accept it.

The email was brief.

Please determine the company's location in the universe for reporting purposes.

Simon read it once, then again, in case the second reading would reveal a hidden joke.

It did not.

Maya looked over from her desk. "Is that... literal?"

"It doesn't say metaphorical," Simon replied.

They began with the parts that still behaved.

The building.

The city.

The country.

The planet.

The form accepted these without complaint, which briefly encouraged them.

Then came the next field.

Universal Location. Required.

Simon stared at it. "This feels ambitious."

They tried a sensible answer.

Milky Way galaxy. Local group. Laniakea supercluster.

The system accepted the text, paused, then returned it with a small warning icon and the message:

Location requires a central reference.

Maya sighed. "That's unfortunate."

They ran a model.

The result placed the company at the centre of the observable universe.

They adjusted the parameters.

Still the centre.

They changed the galaxy entirely.

Still the centre.

Simon frowned. "That can't be right."

"It can," Maya said. "It just shouldn't feel that way."

At that moment, the square-haired boss arrived.

He always did. He had a way of appearing precisely when a problem became philosophical.

"What's taking so long?" he asked.

"We're trying to locate the company in the universe," Simon said.

"Well?" the boss replied.

"We appear to be at the centre," Maya said.

The boss smiled. "Excellent."

"Everyone is," Simon added.

The smile faded.

"What do you mean everyone?"

"Every observer sees themselves at the centre of what they can observe," Maya said. "It's a consequence of light, time, and perspective. Not importance."

The boss frowned. "So where's the actual middle?"

"There isn't one," Simon said.

The boss folded his arms. "Everything has a middle."

"Not this," Maya said.

They tried another approach.

Perhaps the universe had an edge.

They searched for it.

They found the limit of visible information, roughly forty-six billion light-years away in every direction.

"This must be the edge," the boss said.

"It isn't," Simon replied. "It's just as far as we can see."

"So what's beyond it?"

"More universe," Maya said.

"Where does that end?"

"We don't know."

The boss stared at the screen. "So there's no centre and no edge."

"Correct."

"And yet we are still required to provide a location."

"Yes."

There was a long silence.

Finally, the boss spoke.

"Could we... average it?"

"No."

"Approximate it?"

"No."

"Invent one?"

Maya paused. "We could label it."

Simon nodded. "Without defining it."

They altered the form.

Universal Location:

Observer-dependent. Statistically ordinary.

The system accepted it immediately.

The boss approved the entry, asked that it not be discussed in meetings, and left.

Simon leaned back in his chair.

"So," Maya said, "where are we?"

Simon considered this carefully.

"Here," he said.

"That's not very helpful."

"No," Simon agreed. "But it appears to be correct."

And with that, the Cartography Department returned to mapping things that could still be pointed at, leaving the universe exactly where it was — everywhere at once, and resolutely unlabelled.

And that brings us to the fascinating science behind cosmic positioning – or more accurately, why the universe appears to have been designed by someone who never learned to organise a filing cabinet and considers "everywhere" a perfectly acceptable answer to basic administrative questions.

Unlike Star Wars, where the Millennium Falcon can punch in coordinates for the Dagobah system and arrive precisely where Yoda is waiting with cryptic advice and questionable hygiene, actual cosmology reveals something profoundly inconvenient: the universe doesn't provide reference points. There is no cosmic GPS. There is no origin marked with a helpful plaque reading "Big Bang Occurred Here" with an arrow pointing to a specific spot in space.

Because the Big Bang didn't happen at a spot in space. It happened to space. Everywhere. Simultaneously.

This is where human intuition begins making uncomfortable noises and requesting early retirement.

We're used to explosions that happen somewhere and expand outward into empty space. A firecracker goes off in your hand, debris flies outward from that point, and you can reasonably ask "where did it explode?" The answer involves coordinates, possibly a hospital, and definitely regret.

The Big Bang wasn't that. It was the expansion of space itself. Every point in the universe was once closer together. Every point expanded. There is no privileged location you can point to and say "it started there" – because it started everywhere at once.

Which means asking "where did the Big Bang happen?" is rather like asking "where on Earth's surface did the surface begin?" The question contains a conceptual error that makes it impossible to answer properly.

Now, we do observe something that looks suspiciously like we're in the middle of

things. The observable universe extends roughly forty-six billion light-years in every direction, placing us conveniently at the centre of a sphere containing everything we can possibly see.

But this isn't because we're special. It's because we're observers. Every civilisation anywhere in the universe sees themselves at the centre of their own observable universe, like every person in a crowd believing the crowd is organised around them specifically. It's not narcissism – it's geometry and the speed of light having a fixed value and being extremely stubborn about it.

When we return from this brief spatial intermission, we'll explore why "the middle" is a question the universe simply refuses to answer, why "the edge" makes no physical sense whatsoever, and discover that the only honest answer to "where are we?" is the profoundly unhelpful "here" – which, unfortunately, applies equally to everywhere else as well.

We'll also examine why this should be deeply unsettling for a species that invented street addresses, postal codes, and the entire concept of "you are here" signs on maps that assume a fixed reference frame the universe simply hasn't bothered providing.

Welcome back, my topologically-challenged teammates!

Right. Let's address the question Simon and Maya couldn't answer: where is the centre of the universe?

The uncomfortable truth is that the question itself is broken.

Not because we lack sufficient data, or because our telescopes aren't powerful enough, but because the universe doesn't have a centre in any meaningful sense. Asking for its location is rather like asking what colour Tuesday is, or which direction is heavier. The words are arranged grammatically, but they don't correspond to anything that exists.

Here's why.

When we say "the Big Bang," most people imagine an explosion. A point in empty space where everything suddenly appeared and flew outward. Rather like a cosmic firework, except louder and with more hydrogen.

That picture is wrong in a specific and important way.

The Big Bang wasn't an explosion *in* space. It was an expansion *of* space. Space itself stretched, carrying matter and energy along with it. Every point in the universe was once closer to every other point. And when expansion began, it began everywhere simultaneously.

There is no location you can point to and say "it happened there." It happened here. It happened at the Andromeda Galaxy. It happened in the most distant observable quasar. All at once.

If you insist on asking where the Big Bang occurred, the only honest answer is: everywhere. Which is cosmologically accurate but administratively useless.

Now, this is deeply counterintuitive. So cosmologists deploy the balloon analogy, which helps a bit, provided you don't take it too literally.

Imagine drawing dots on the surface of a deflated balloon. Each dot represents a galaxy. Now inflate the balloon. The dots move away from each other. Not because they're traveling across the surface, but because the surface itself is expanding.

Notice: no dot is special. Every dot sees all the other dots moving away. If you were an ant standing on one of those dots, you'd look around and conclude you were at the centre of the expansion. But the ant on the next dot would reach exactly the same conclusion. And they'd both be correct, from their perspectives.

The limitation of this analogy is that it's two-dimensional. The balloon has a surface, and we can visualize a centre inside the balloon where someone is presumably blowing air into it. But in this analogy, only the surface matters. The inside of the balloon doesn't represent anything in our universe. Space is the surface. There is no "inside" to point to.

The actual universe may be three-dimensional space expanding in ways that require four-dimensional geometry to describe properly, which is where most people's intuition politely excuses itself and goes for a lie-down.

But the essential lesson survives: expansion doesn't require a centre. Every point can be the middle, which is another way of saying no point is the middle.

This leads to what cosmologists call the cosmological principle: on sufficiently large scales, the universe looks the same everywhere and in every direction. No location is privileged. No region is special.

This isn't modesty. It's an empirical conclusion based on observation.

When astronomers look out at the cosmos, they see galaxies distributed roughly uniformly in all directions. The cosmic microwave background radiation – the afterglow of the Big Bang – is almost perfectly uniform across the entire sky, with temperature variations of only one part in one hundred thousand. This wouldn't be possible if we were sitting near some special edge or close to some cosmic centre where things behaved differently.

Which brings us to the observable universe.

We do see a sphere around us, roughly ninety-three billion light-years in diameter. This is the region from which light has had time to reach us since the early universe, accounting for expansion. It's called the observable universe, and it places us, conveniently, right at the centre.

But this centrality is not a statement about our importance or our location in the universe as a whole. It's a statement about light and perspective.

Every observer, anywhere in the cosmos, sees themselves at the centre of their own observable sphere. A civilization in Andromeda would measure the same cosmic microwave background surrounding them symmetrically. A hypothetical astronomer in a galaxy ten billion light-years away would draw the same sphere around themselves.

The observable universe is not the universe. It's just the part we can see. The actual universe almost certainly extends far beyond what we can observe – possibly infinitely, possibly in a finite-but-unbounded topology that loops back on itself. Current evidence doesn't conclusively favour either option.

But in neither case is there a centre.

The cosmic microwave background is particularly telling. It's the earliest light we can see, emitted when the universe was only three hundred and eighty thousand years old and finally became transparent. This radiation reaches us from every direction equally, forming a perfectly symmetrical horizon.

If there were a centre to the universe, we'd expect to see some asymmetry in this background. A direction that looked different. A region that was hotter or denser or older. We don't. The CMB is astonishingly uniform, which is exactly what you'd expect if every point were equally valid.

To put this in corporate terms: imagine a company where every employee genuinely believes they're central to operations. Not because they're deluded, but because the organizational structure is such that every role genuinely is central

from its own perspective.

Finance believes nothing functions without proper budget allocation. Engineering believes the product wouldn't exist without them. Marketing believes no one would know about the product without their efforts. And mathematically, they're all correct. Remove any one department, and the system changes fundamentally.

The universe operates on similar logic. Every point is central to its own observable sphere. Every observer sees themselves at the middle of what they can measure. And the universe itself provides no external reference frame to resolve the dispute, because there is no dispute to resolve.

The centre is everywhere. Which means the centre is nowhere. Which means the question was always based on assumptions the universe simply doesn't accommodate.

When we return, we'll tackle the other half of Simon and Maya's problem: if there's no centre, perhaps there's at least an edge. Spoiler: there isn't. And the reasons why are somehow even more unsettling than the lack of a middle.

So if there's no centre, perhaps there's at least an edge. Some boundary where space simply stops, like the end of a map where the cartographers wrote "here be dragons" and called it a day.

There isn't.

The universe appears to be either infinite, or finite-but-unbounded. Both options refuse to provide an edge, which is deeply inconvenient for anyone hoping to file a proper report.

Let's start with the finite-but-unbounded possibility, because it's the easier one to visualize if you're willing to drop a dimension.

Imagine walking around Earth's surface. You can travel in any direction, indefinitely, and never reach an edge. The surface is finite – it has a measurable area – but it's unbounded. There's no border, no wall, no point where you fall off. The geometry curves back on itself.

The universe could work similarly, except in three dimensions instead of two. Positive curvature. Travel far enough in one direction, and eventually you'd return to where you started, having circumnavigated the cosmos without ever encountering a boundary.

Current measurements suggest the universe is either flat or very close to it, which makes this less likely but doesn't rule it out entirely.

The alternative is that the universe is infinite. Flat or negatively curved, stretching on forever in all directions. In this scenario, there's no edge because there's nothing to be an edge of. Space simply continues, filled with galaxies, galaxy clusters, and an unimaginable quantity of hydrogen that no one will ever catalogue.

Either way, there's no boundary.

Now, we do observe something that looks like an edge: the limit of the observable universe, roughly forty-six billion light-years away in every direction.

But this is not an edge of space. It's an edge of information.

Beyond that horizon, light simply hasn't had time to reach us yet. The universe out there continues existing – galaxies forming, stars burning, matter doing what matter does – we just can't see it. It's not that space ends. It's that our ability to observe it does.

This distinction matters. An information horizon is not a physical boundary. It's a consequence of finite light speed and finite cosmic age. If you traveled to the edge of the currently observable universe, you wouldn't find a wall. You'd find more universe, with its own observable horizon extending in all directions around your new position.

And here's the part that makes even physicists slightly uncomfortable: if the universe is expanding, what is it expanding into?

The answer is: nothing. It's not expanding into anything. Space itself is stretching. There's no pre-existing void that the universe is filling, no external arena it's growing within. The question assumes an outside, and there isn't one. Space is all there is. When it expands, it doesn't need anywhere to expand into. It just... does.

This is where language fails us, because human language evolved to describe things that happen in space, not to describe space itself behaving.

So where does this leave us?

We're somewhere ordinary in an extraordinary situation. We exist at no special location, near no meaningful boundary, inside a structure that may be infinite or may loop back on itself, and which refuses to provide external reference points of

any kind.

And yet, paradoxically, we're also at the only location from which our specific observations can be made. Our perspective is unique precisely because every perspective is unique. We're simultaneously nowhere special and the only place we could possibly be.

To put this in corporate terms: it's rather like working at a company where every employee occupies the exact centre of their own job description. The organisation has no headquarters, no central office, no privileged position. And yet each person's work is essential from their own frame of reference, because that's the only frame from which they can operate.

You're not at the edge of the company. You're not in the middle. You're simply here, doing what can only be done from here, in a system that somehow functions despite having no absolute coordinates.

The universe works the same way. You're here. Which is also there, from someone else's perspective. And neither of you is wrong.

The map doesn't have an edge. It also doesn't have a centre. It's just a map that exists everywhere at once, drawn from every possible perspective simultaneously, and the closest thing to an absolute position is the one you're currently occupying.

Which is why Simon and Maya couldn't fill out the form properly. The universe doesn't provide the information the form was requesting. Not because the data is missing, but because the categories don't apply.

We're here. And here, it turns out, is the only answer that holds up under scrutiny.

Well, my cosmically disoriented colleagues, we've reached the end of another quantum orientation crisis. Today we've learned that in the multiverse of spatial references, every location exists in a superposition of "absolutely central" and "entirely ordinary" until someone demands proper letterhead coordinates.

We've discovered that asking "where are we?" in a cosmic sense is rather like asking "which employee is most critical to QIS?" – mathematically, the answer is either "all of them equally" or "none of them specifically," depending on your reference frame and whether the Square-Haired Boss is in the room.

The universe, it turns out, operates on principles that would make any competent filing system administrator weep: no edges, no centre, no absolute coordinates,

just an expanding manifold of spacetime where every point insists it's the middle while simultaneously being nowhere in particular.

We've learned that the Big Bang didn't happen at a location – it happened to space itself, everywhere at once, which is the sort of answer that satisfies physicists and frustrates everyone else. We've discovered that the observable universe places us at the centre of everything we can see, but only because we're doing the seeing, and every other observer can make the same claim with equal validity.

We've explored why there's no edge to find, why asking what the universe is expanding into misunderstands what expansion means, and why "here" remains the only honest answer to a question that assumed the universe would be more cooperative about providing reference points.

Though I suspect somewhere in the quantum foam of reality, there's a universe where cosmic addresses make sense, where "up" is a meaningful direction on universal scales, and where a corporation like Quantum Improbability Solutions can confidently put "Located at the Centre of Everything (Relatively Speaking)" on their business cards without technically lying.

We don't live in that universe. We live in this one, where every raisin in the cosmic loaf is equally central and equally ordinary, where maps work locally but fail cosmically, and where the most accurate description of our position is also the least helpful: we are here.

Want to explore more quantum corporate chaos? Visit us at multiverseemployeehandbook.com where you'll find fascinating science news and deep dives into cosmological confusion.

And if you've enjoyed today's directionally-challenged adventure, why not share it with a fellow positionally-perplexed person? Perhaps you know someone who still believes the universe has a proper filing system. Spread our signal like cosmic expansion – evenly, in all directions, without privileging any particular reference point!

This is your quantum-coherent correspondent, reminding you that in the multiverse of locations, we're all just temporary observers at arbitrary coordinates, filing reports that describe reality from perspectives that are simultaneously unique and entirely unremarkable.

And back at Quantum Improbability Solutions, Simon and Maya have moved on to mapping things that cooperate with basic geometry. The Cartography Department's official position on universal location remains "observer-dependent,

statistically ordinary," which the Square-Haired Boss has approved on the condition that it never appears in client-facing materials.

The form remains filed. The question remains unanswered. And the universe continues expanding, indifferent to our administrative requirements, providing no forwarding address and absolutely no indication it ever will.