EL REINO DE LO INVISIBLE · EPISODE 14

Alchemists of Reality: What Powers Would Someone Have If They Controlled Matter?

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Imagine waking up one morning to find that, without knowing how, you can**change reality with a thought**. You touch a glass of water, and suddenly, it turns into pure gold. You pass your hand over a wound, and the skin heals instantly. You take a deep breath, and the air around you transforms into pure oxygen, as if the entire world were clay in your hands. Sounds like a comic book superpower, right? But what if I told you that**this isn't just fantasy**? That, in the invisible kingdom, matter*does*obey rules that seem like magic, and that scientists are working right now to unravel them.

In 1989, a physicist named**Paul Chu**did something that left his colleagues stunned. In a Houston lab, he took a common ceramic material, cooled it to temperatures lower than outer space, and**suddenly, that material began to levitate**. It wasn't a magic trick: it was*superconductivity*, a phenomenon where matter loses all electrical resistance and becomes capable of defying gravity. Chu didn't know it then, but his discovery would open the door to an unsettling question:**What would happen if we could control matter at will, like a video game?**

But we don't need to go to high-tech labs to see this power in action. Think of something as everyday as**boiling water**. When you heat a pot, the water molecules start moving faster, colliding like kids in a playground. If you keep raising the temperature, there comes a point where those molecules*break their chains*and turn into vapor. It's the same liquid, but with a change of state, it becomes an invisible gas filling the kitchen. Now, imagine if you could do that**with anything**: turn lead into gold, air into diamond, or even*reprogram*your own body to cure diseases. Sounds impossible? Well, nature already does it.

In 2010, a team of scientists in Japan led by**Teruhiko Wakayama**achieved something that seemed straight out of a fairy tale: they took cells from a mouse's tail,*rejuvenated*them in the lab, and turned them into viable eggs. Those cells, which were once part of ordinary tissue,**transformed into new life**. It wasn't magic; it was*cellular reprogramming*, a reminder that living matter also follows rules we can hack. And if nature can do it, why can't we?

But here's the most fascinating part:**we're already starting to control matter at scales that were once unthinkable**. In 2016, a group of MIT researchers created a material so light it could rest on a dandelion without crushing it, yet so strong it could support the weight of an elephant. They called it*aerographene*, and it's just one example of how science is learning to**design reality atom by atom**. If we keep going down this path, what's stopping us from becoming*modern alchemists*?

But before you start dreaming of turning your coffee into a gold bar, there's a question we can't ignore:**How the heck does this work?**What rules govern this invisible kingdom where matter bends to our will? And, most importantly,**what are the limits of this power?**Because if history has taught us anything, it's that every time humans discover a new way to manipulate reality,*something unexpected always comes to light*.

Are we ready to play god?

The Secret Lies in the Atoms (and How They Embrace)

To understand how someone could control matter, we first need to zoom down to the smallest level of reality:**atoms**. Imagine atoms as microscopic*Lego*pieces. Each one is different: some are round and heavy (like lead), others are light and move fast (like hydrogen). But the most important thing isn't the pieces themselves, but**how they bond together**. Because depending on how these atoms embrace, they can form a diamond as hard as rock or a gas that slips through your fingers.

In 1912, a scientist named**Max von Laue**made a revolutionary discovery: atoms aren't still; they organize themselves into patterns, like an army in formation. We call these patterns*crystalline structures*, and

they're why the graphite in your pencil and the diamond in a ring are so different, even though they're both made of carbon. Graphite is soft because its atoms are stacked like sheets of paper, while diamond is hard because its atoms are intertwined like a steel mesh.**Changing the structure changes reality**.

But how could we manipulate these atomic embraces? That's where things get interesting. In 2004, two Russian scientists,**Andre Geim and Konstantin Novoselov**, played with a piece of graphite using nothing more than adhesive tape.Yes, you read that right:*adhesive tape*. By peeling it off repeatedly, they managed to isolate a layer of carbon atoms so thin it was practically invisible. That's how*graphene*was born—a material 200 times stronger than steel but as flexible as plastic. The most incredible part? Geim and Novoselov won the**Nobel Prize in Physics in 2010**for this discovery, which basically involved*peeling a pencil with tape*. If that's not modern alchemy, I don't know what is.

The Power of States of Matter: From Solid to Plasma in the Blink of an Eye

Now, imagine having the power to**change the state of matter**like flipping a switch. Today, your ring is solid gold; tomorrow, it's a glowing gas floating in the air. Sounds crazy, but in the universe, this happens all the time. In fact,**99% of the visible matter in the cosmos isn't solid, liquid, or gas**—it's something called*plasma*, a state where atoms are so hot they lose their electrons and become an electric soup. Stars, like our Sun, are giant balls of plasma, and without them, life on Earth wouldn't exist.

But we don't need to travel to space to see this. In 2018, a team from the University of Rochester in the U.S. created**the world's most powerful laser**, capable of generating temperatures hotter than the Sun's core. With it, they turned a piece of aluminum into plasma in less than a second. Why? To study how matter behaves under extreme conditions, but also to dream of applications that seem straight out of science fiction:**plasma engines for spacecraft, nuclear fusion reactors, or even weapons that dissolve matter**(yes, like in*Star Wars*).

But here's the wildest part:**you already control states of matter without realizing it**. Every time you boil water, freeze an ice cube, or blow on your hands in winter to warm them, you're playing by the same rules that govern stars. The difference is that, until now, we could only do it with heat or pressure. What if we could do it with our minds?

The Reprogramming of Life: When Cells Become Clay

If you thought controlling inanimate matter was impressive, wait until you see what happens when**living matter comes into play**. In 2006, a Japanese scientist named**Shinya Yamanaka**made a discovery that earned him the Nobel Prize in Medicine: he found a way to*reprogram adult cells*to revert them to a stem cell-like state, capable of becoming any tissue in the body. It's like taking a crumpled piece of paper, smoothing it out, and suddenly having it transform into a bird, a tree, or a human heart.

Yamanaka used just four genes, which he called*Yamanaka factors*, to erase the cells' memory and return them to their original state. In 2014, his team achieved something even more incredible:**rejuvenating mice**. They injected these factors into the animals' skin, and not only did the mice regain the elasticity of their youth, but their internal organs also regenerated. Imagine what this could mean for humans:**curing Alzheimer's, repairing severed spinal cords, or even reversing aging**.

But, as always, there's a dark side. In 2018, a Chinese scientist named**He Jiankui**used this same technique to edit the DNA of two human babies,*Lulu and Nana*, before they were born. His goal was to make them resistant to HIV, but the experiment sparked a global scandal. Why? Because manipulating living matter isn't like changing the state of a metal:**we're playing with the very essence of life**, and a mistake could have unpredictable consequences.

Materials That Defy Physics: Aerogels, Metamaterials, and Invisibility

If you thought atoms and cells were the pinnacle, wait until you meet**materials that seem straight out of another planet**. In 1931, a scientist named**Samuel Kistler**invented*aerogel*, a material so light that 99% of its volume is air. If you held a block of aerogel in your hand, it would look like a ghost: almost invisible but capable of supporting the weight of a brick. Today, NASA uses it to trap comet particles in space, but it's also being tested for**insulating homes, filtering contaminated water, or even stopping bullets**.

But the most mind-blowing are*metamaterials*, structures designed to do things nature never imagined. In 2006, a team from Duke University in the U.S. created a material that**bends light in unnatural ways**, making objects appear invisible. Yes, like Harry Potter's cloak. It works because metamaterials have patterns smaller than the wavelength of light, allowing them to*trick our eyes*. Today, this technology is used in mobile phone antennas and ultra-thin lenses, but the dream of real invisibility is getting closer.

And then there's*graphene*, the material we mentioned earlier. Not only is it stronger than steel and more flexible than plastic, but it also**conducts electricity better than copper**and is almost transparent. In 2020, scientists from the University of Arkansas discovered that graphene can*generate clean, unlimited energy*just by vibrating at room temperature. Imagine a world where your devices never need charging, where solar panels are as thin as paper, and where buildings repair themselves.**That's the power of controlling matter**.

The Limits of Power: What Could Go Wrong?

So far, everything sounds like a bright future, but history has taught us that**every new power comes with new dangers**. Take nuclear energy, for example. In 1942, Enrico Fermi built the first nuclear reactor in a Chicago basement, proving we could unleash the energy of the atom. Less than three years later, that same technology was used to destroy Hiroshima. Today, nuclear energy gives us clean electricity, but it also reminds us that**controlling matter is a double-edged sword**.

The same goes for genetic editing. In 2012, scientist**Jennifer Doudna**discovered the CRISPR technique, which allows us to edit DNA with unprecedented precision. With it, we could eradicate genetic diseases, create drought-resistant crops, or even bring back extinct species. But we could also**create deadlier viruses, design custom babies, or alter entire ecosystems without knowing the consequences**. In 2019, Doudna said in an interview:*'We have the power to change evolution, but we don't know if we're ready for it.'*

And then there's the matter of**dark matter**, that mysterious 27% of the universe that doesn't emit light or interact with normal matter but holds galaxies together. Scientists still don't know what it is, but if we ever figure out how to control it,**we could open doors to unknown dimensions or create wormholes for time travel**. Or, who knows,*unleash something we can't control*.

The Future: Are We the Next Alchemists?

So, what powers would someone have if they controlled matter? The list is as long as it is terrifying:

- **Transmutation**: Turning one element into another, like lead into gold or air into water.
- **Regeneration**: Healing wounds, regenerating organs, or even reviving dead tissue.
- **State manipulation**: Freezing water with your mind, vaporizing metals, or creating plasma at will.
- **Invisibility**: Bending light to become invisible or creating optical illusions.
- **Supermaterials**: Creating structures stronger than steel, lighter than air, or capable of self-repair.
- **Control of life**: Reprogramming cells, editing genes, or even creating life from scratch.

But, as Spider-Man's uncle said,*'With great power comes great responsibility.'*The question isn't whether we can control matter, but**whether we're ready for the consequences**. Because once we open Pandora's box, there's no going back.

In the next episode of*The Invisible Kingdom*, we'll explore something even more unsettling:**What if we discover that reality itself is a program, and we're the hackers?**But that, dear explorers, is a story for another day.

For now, the next time you see a glass of water, a piece of metal, or even your own skin, remember:**all of that is matter, and matter obeys rules we're only beginning to understand**. What if the next alchemist is you?