THE KNOWLEDGE METAVERSE

THE INTELLIGENCE EXPLOSION AND HOW WE CAN BECOME SUPERHUMANS

Dan Lejerskar & Josh Chesler

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&
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PRODUCT VALUE AUTOMATICALLY

CREATE VIRTUAL TABLET WITH STEP BY STEP INSTRUCTIONS AND ASSESMENT TRACKING USING INTERACTION CREATION BUTTON IN VIRTUAL TRAINER OR CREATOR AVR

1) THE SEGMENT MATTER EXPERT PUTS ON THE HMD IN VIRTUAL TRAINER
2) SHE PUSHES THE INTERACTION CREATION BUTTON TO RECORD THE SOP PROCEDURE
3) SHE THEN EXECUTES THE STEP-BY-STEP PROCEDURE RECORDING: LOCATION, SEQUENCE, ANCHOR POINT VOICE

1) THE VIRTUAL TRAINER LESSON PLAN IS GENERATED AUTOMATICALLY ON THE VIRTUAL TABLET
2) THE ASSESMENT PLAN IS ALSO GENERATED AUTOMATICALLY
3) END USER CAN NOW START TO TR

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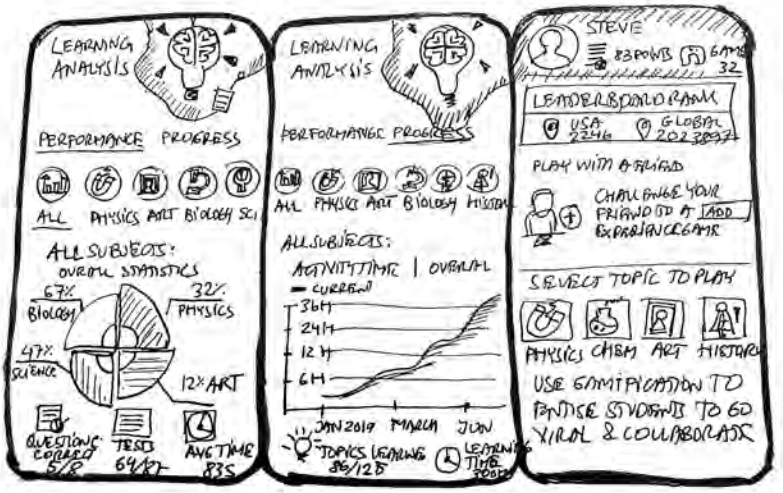

PROLOGUE

The idea to write this book first came in conjunction with a visit to Korea during the COVID-19 pandemic. After attending the Asian Leadership Conference remotely in 2020, EON Reality had been invited back in July 2021 to attend in-person.

For me, that meant my first trip out of the country after the longest stretch at home in my adult life.

As a lifelong businessman and entrepreneur, I'd grown accustomed to traveling around the world to share our products and solutions with partners and prospective clients. With decades of experience creating, promoting, and distributing augmented reality (AR) and virtual reality (VR) — collectively known as XR — products and solutions, I enjoyed hopping on a plane with nothing but a laptop and a smartphone to explain what the future of XR likely holds for people far more intelligent than myself.

I've shaken hands and shared my views of the future and the massive role XR will likely play in it with everyone from CEOs of Fortune 500 companies to deans of major universities to Ministers of

Education for countries on several continents. Together with my colleagues, I've visited hundreds of partners, clients and prospective clients in over 130 countries — some of them dozens of times. Regardless of linguistic and cultural barriers, many of those people agreed on the importance of XR, joining the EON Reality family one by one until we became the global leader in XR programs for academic and industrial uses — or "knowledge and skill transfer" in more technical terms.

But that all stopped at the start of the COVID-19 pandemic.

I knew that I wouldn't have to worry about my team's work ethic as nearly everyone moved to working from home. When you build a global company like EON Reality, you need to trust that the people you've hired can do their job without much oversight.

But the big question mark for me was how the pandemic would affect the XR industry. In my head, I saw a tremendous opportunity. Social distancing measures and the threat of the virus spreading all but shuttered in-person events. People needed alternative options for interaction and engagement that they'd likely never considered before. In the way that Zoom demonstrated how in-person meetings could be replicated with video calls, EON Reality could develop an option for more hands-on solutions — and that's exactly what we did.

Of course, there was always the possibility that the entire company could be severely hurt under the weight of the pandemic.

On September 1, 2020, EON Reality announced the official launch of EON-XR. We felt the all-in-one platform was a turnkey solution for those looking to delve into XR learning and training without needing to learn to program or acquire expensive hardware. Shortly after, we added products like EON Merged XR (which focused on Digital Twin technology) and EON Spatial Meetings (which allowed for location-based meetings and interpersonal interactions in real-time), rounding out a full suite of solutions for those transitioning their academic and enterprise training into XR. Retiring our classic EON

software and integrated equipment-based history centered around custom programs for specific locations during a global pandemic was a significant risk, but we all deemed it necessary to address the new market in a post-pandemic world.

A few months later, we saw our user base increase by over 800% and our global network expand into 73 countries. My schedule was so packed with Google Meets, Skype discussions and Zoom calls to present EON-XR to interested clients worldwide that I had to adjust my sleeping schedule to accommodate our partners and prospective clients in Europe, Asia, and Africa. I virtually attended dozens of conferences, inaugurations, and other events for our new additions every week. Together with our business development and customer success teams, I became an expert in speaking, demonstrating, and toasting to the webcam on my laptop.

EON-XR was a success in every way we dreamed of, but it still felt incomplete without being able to celebrate in person with the people I was helping. So when I was offered to fly to the Asian Leadership Conference on July 1, 2021, I jumped at the opportunity.

Once my initial enthusiasm subsided, I realized I couldn't deliver the same presentation I'd digitally brought around the world for the previous 15 months. Having spoken and attended the Asian Leadership Conference several times before, I knew that I needed a grand and impactful presentation if people were to remember what I talked about while sharing the stage with global leaders from both the private and public sectors — no one is going to care about a Swedish CEO from California's vision of virtual reality's future if it's presented right after a former President of the United States.

Instead, I focused my speech on a lesser known concept: the metaverse. We'll obviously get much deeper into what the metaverse is, what it's made of, and how it could affect people — that's the

purpose of this book after all — but I feel it's important to briefly mention the topic here to set the stage.

First introduced to the world in 1992 by Neal Stephenson's science fiction novel, *Snow Crash*, the metaverse is a persistent virtual world — accessible to individuals via "special goggles" (or these days, smartphones, XR headsets, and other wearables) — in which people could meet, claim territory, build things, make money and more. The impact of Stephenson's idea on the non-fictional world has long been profound but impossible to realize... until now.

The concept of the metaverse is simple enough. It's effectively the combination of the latest XR technology with the near-infinite knowledge of the internet. It's the ability to bring everything that we can see and do on the internet and make it accessible and available in the modern world — whether that means seeing online product reviews on an item while physically purchasing it in a store or having a step-by-step YouTube video on how to change a tire broadcast directly on to the side of your car when you need it most. Combined with recent advancements in artificial intelligence (AI), this could mean that everything you do for the rest of your life could be aided and/or expanded by the full power of the internet.

But more on that later.

By the time I arrived in South Korea, I'd come up with a brand new idea for what's now known as "the knowledge metaverse." Without giving too much away — again, we'll get substantially more detailed in the coming chapters — it's a branch of the metaverse solely focused on making sure that we're able to learn, train, and perform as efficiently and effectively as possible. In my mind, it's the natural evolution of EON-XR, and one of the most helpful ways we can transform the world in the near future.

After I finished my presentation at the Asian Leadership Conference, I could tell that I was on to something. I received more

questions than I'd ever gotten before. People were already discussing areas of the knowledge metaverse that I hadn't considered and asking about topics that I'd only mentioned in passing. There was more interest in the metaverse after less than an hour of my rambling than there was for just about any other subject covered that day.

About a month after my speech, both Facebook and Microsoft announced that they'd be working on their own versions of the metaverse, bringing the phrase into the mainstream. Facebook then doubled down a few months later by changing its name to Meta. Of course, it's no coincidence that two of the largest providers of XR hardware are among the big names to adopt the metaverse early on. But the beauty of the metaverse is that it's similar to today's internet or even a shopping mall in years past — there's enough space for everyone to pursue their vision without significantly affecting each other.

It's clear to everyone involved that the metaverse is the future of the internet and could shape everyday life in the same way. The promise of the metaverse has already intrigued hundreds of governments, companies, and academic institutions, and the number of interested parties grows every day. But like any new technology, there's no shortage of questions surrounding the metaverse and its uses. While many titans of the industry are throwing around the term a lot, no one is taking the time to explain the details of the metaverse or outline its potential impact on daily life.

Whereas the biggest technology companies in the world spent a lot of time and money on branding the metaverse, I visited with academic and government officials in more than 60 countries during the fall and winter of 2021. Most of the people I met with have developed a digitization vision with focus on a resilient post-pandemic recovery for education. They know that they need experiential learning solutions — such as those provided in XR — that are more engaging than video

calls and other remote options. However, many struggle with converting their vision into practical programs that provide tangible results.

In my travels, I realized their urgent need for assistance. Helping nations around the world is the reason EON Reality launched the Learn for Life nonprofit in the first place, and I realized that it's now time to put into action our 15 years of experience in assisting with XR projects to improve necessities such as education, health awareness, safety, and sanitation. If I'm subjecting myself to the exhausting, COVID-era travel process — daily nasal swabs, endless paperwork, constantly shifting plans due to restrictions, etc. — then it needs to leave a positive impact and help actual people.

But visiting these places alone will not accomplish this task. We need to create more awareness, understanding, and belief around the metaverse if it's expected to change humanity as we know it. People won't be willing to adopt what they can't understand, and that's why I wrote this book. It isn't about EON Reality sales or branding. It's about explaining the importance of the next world-changing technology. If you don't believe it can, you haven't seen what the metaverse is capable of yet.

OVERVIEW

To best explain the knowledge metaverse and its potential impact on our society, I've divided this book into five major sections. Two will serve as precursors and explain how we've gotten to this point, two will be exploratory deep dives into the knowledge metaverse (one as a more high-level basis and the other more logistical), and two will show what the potential impact of the knowledge metaverse, both in a large-scale manner and the actual day-to-day usage.

Before we launch too far into the first one, here's a quick overview of each section.

1. THE INTELLIGENCE EXPLOSION

Before we can begin discussing the knowledge metaverse, we have to look at how we arrived at this point in time. The first key to comprehending that is understanding artificial intelligence.

In the first chapter, we'll take a look at the history of intelligent life on Earth and the "intelligence explosion" (as I like to call it) that we're experiencing right now in the first couple of decades

of the 21st Century. Whether or not you're aware of this explosion, we're all reaping the rewards of it to improve our everyday lives.

As a short summary, our natural intelligence has always been a part of a slow, mutation-based evolutionary cycle. It's Darwinism, natural selection, and all of the other words that you've likely learned about in a biology class. Smarter animals, creatures, and human beings have always been more likely to reproduce and pass on their genes to the next generation because their less intelligent counterparts had a greater chance of dying before they had the chance to produce offspring.

Today, our collective societal intelligence has reached a critical point where two major things are happening simultaneously. The first is that technology, medicine, and safety have generally reached the level where even the least intelligent humans have a good chance of surviving well beyond the age of reproduction, meaning that a high level of intelligence isn't really a necessary survival skill anymore. The second factor in this pivotal moment is the rise of artificial intelligence and learning, which is where this all connects to the knowledge metaverse and how it will likely affect our future as a species.

Artificial intelligence (AI) is already starting to eclipse nearly every aspect of natural human intelligence. AI can learn faster, retain information forever, process information more efficiently, and memorize far more knowledge than any human ever could. Now, it can't necessarily understand the context, emotional complexities, and subjective measurements that people generally do, but from a strictly intelligence standpoint, AI has already far surpassed human capabilities.

For that reason and others, it's now vital that we connect with AI and machine learning and avoid being left behind.

This may sound scary, but it's already happening in a lot of ways. First, it was using specialized websites to look up information on your desktop. Then it was searching Google and Wikipedia from your laptop and cell phone. Now, smartphones and tablets are so equipped with AI and learning algorithms that much of the time they will know what you're looking for before you search for it.

We already keep nearly the entire recorded knowledge of human history accessible in our pockets. But going forward, we can fully utilize the power of AI to our advantage and effectively become what we would today consider superhuman. By standing on the shoulders of technological giants, we'll be able to break free of our biological constraints and reach heights only hypothesized in science fiction.

We're more than 4.5 billion years into the evolutionary process of life on Earth and 2.5 million years into human evolution, and yet it's only within the last 20-30 years that we've even begun to reach this pivotal moment.

2. HOW OUR BRAIN WORKS

Once we understand where this new intelligence is coming from and how the rise of AI can (and likely will) change our perspective on it, the next step will be understanding how our own intelligence functions, biologically speaking.

Without understanding how our brains work, it's impossible to comprehend why XR is the perfect medium for people to learn new knowledge and skills. The inner workings of our minds are directly linked to why XR-based knowledge transfer is so efficient, and that also shows why building the knowledge metaverse will help us immensely. By understanding how we learn and train from a biological standpoint, we can see how to

improve upon those inborn skills through XR, AI, and other high-end technologies. Additionally, we'll be able to gauge the possible impacts of bringing those solutions together for everyday life (as the knowledge metaverse).

In short, our brains are constantly building three-dimensional (3D) models of everything we encounter in reality. Our brains then place these models within their logical contexts and spaces depending on where we've seen them in the real world, and every experience that we have through our five senses is correlated with these existing models and their surroundings. Even when we encounter something for the first time, our brain relates it to other objects and experiences we've witnessed in the past to make sensible predictions and create expectations for the new item as it "registers" the model.

By this metric, we never really directly perceive "reality" with our senses. We perceive different factors (known as "sensory inputs") based on our five senses that the brain then correlates with the objects and experiences we've already registered to predict what we are seeing, hearing, smelling, feeling, or tasting. This collection of internalized 3D models allows us to logically predict how an object or environment functions, even if we've never directly worked with it before.

Now, the key to this entire mental process is that our brains are highly capable of spatial 3D modeling and computing. Not only are we able to understand and process what each object's function may be, but we can identify where and how they fit into a larger environment. This crucial skill has helped humans function effectively and achieve our goals for millennia.

Due to this spatial understanding, the most efficient way for humans to learn is to have the firsthand experience of exploring a location or touching and interacting with an object rather than

simply reading, listening, or watching a video about it. It's the reason why many hands-on skills and jobs require time spent physically training and/or apprenticing rather than simply providing a license after completing a written test.

As a simple example, when we see a bottle of water, our brain already understands a number of its properties. We know that it contains liquid. We generally know how to open it. We know what the liquid should feel and taste like. We even know approximately how much the entire bottle weighs and what temperature it should be.

We know all of these things because our brain has already internalized what to expect from a water bottle and is aware of how its 3D model fits into its surroundings. We can predict that a water bottle left in a car on a summer afternoon will likely be warm to the touch, whereas one that came straight out of a refrigerator should be cold. We can predict that the liquid inside the bottle will be mostly tasteless and refreshing, but if it's found in a university's dormitory during a big party, we know that we should smell it first to know whether it's water or if it's actually alcohol.

When these things happen in their expected environments, our brains are able to understand and accurately predict them. But if you pulled a water bottle out of the fridge and it was so hot that it burned your hand — or if a sealed water bottle purchased at a grocery store was unexpectedly filled with vodka — you would likely be surprised and confused, because it's not what the model in your brain predicted. Your internalized expectations for a water bottle would shift, and the model for it in your brain would readjust to understand that next time you're in one of those scenarios, there are additional possibilities for its properties that you hadn't previously experienced.

How does that tie into the knowledge metaverse? Within the knowledge metaverse, users are able to learn, train, and perform by using digital 3D scans placed in their real spatial environment. When done correctly, this perfectly aligns with the internalized models that we naturally construct in our brains and is proven to be a much more efficient and effective method of learning than conventional tools. It's mimicking the way our brains already learn and understand things, so we don't need to first analyze and process the data into a new model before we're able to fully realize and predict the information about what we're looking at or experiencing.

3. THE BRIDGE BETWEEN MAN AND MACHINE

In this chapter, we will finally get to the big picture layout and possibilities of the knowledge metaverse.

To briefly explain, the knowledge metaverse has the potential to serve as the vehicle that enables the XR technology of today and tomorrow to become the bridge between man and machine. Much of the hardware and capability from a technological standpoint already exists to make this a reality, but there's still a significant amount of work to be done in explaining to people the possibilities, opportunities, and benefits that would come with being able to merge the human mind with the near-limitless potential of artificial intelligence.

Technologically speaking, the metaverse is a shared virtual space created by the convergence of a virtually enhanced physical reality and a physically persistent virtual space — which includes virtual worlds, augmented reality, and the contents of the internet. The growing interest of big technology companies in the metaverse and the surge in the demand for AR devices

indicate that our world will likely get more involved in the virtual world.

Before we can go into detail, we have to establish a basic understanding of the very high-level infrastructure and technology required for the knowledge metaverse — or any other aspect of the metaverse — to function at a large enough scale to make a true difference in society. Thankfully, the vast majority of this hardware, software and utility is already in place.

It goes without saying that in order to be connected to the metaverse, a user will need to have a relatively stable wireless internet connection. Could there be instances where a local network is set up and a self-contained miniature version of the metaverse is created without access to the internet and the rest of the world? Sure, but it would largely defeat the purpose of the metaverse in the first place.

Users will also need a digital screen — preferably with included personal speakers — to portray the information. With smartphones, tablets, and webcam-enabled laptops present in households, businesses, and schools in most countries, this necessity is already fairly commonplace. Of course, as XR headsets and augmented reality wearables become more popular and affordable, those will provide even more immersive hands-free options for metaverse users. As the popularity of the Oculus Quest and commitments from brands like Microsoft and Apple have shown us in recent years, the rise of mainstream XR hardware is more a matter of "when" than "if" at this point.

Beyond those two requirements, the main technological infrastructure required is simply a viable cloud-based server system to store and distribute the information around the globe and a software program that allows users to easily access and contribute to the metaverse. We'll go into further detail about these

two pieces in the next chapter, but it's important to acknowledge that they both exist and are presently available in several dozen countries around the world.

From there, the only limitations for the knowledge metaverse — as well as the metaverse as a whole — are what the users can come up with. I've spent the last 20-plus years building a global network of forward-thinking and creative partners around the world, and that's why I believe the knowledge metaverse has the potential to change the way we live. I've seen what people can create when given the tools, and I have no doubt that early adopters of the knowledge metaverse will lay an incredible foundation for the millions (or billions) who come along as it becomes more mainstream.

By linking together the technology involved in XR, AI, GPS tracking, 3D scanning, and the near-endless well of information and data available through the internet, the knowledge metaverse could transform us into what we would consider today to be superhuman.

People could live longer, healthier lives due to AI monitoring a user's vital signs and suggesting or automating appropriate treatments or lifestyle changes. Workplaces could become more efficient, as immersive training and reminders can now be completed while actively performing the task in real time. Classrooms and lecture halls could convene from anywhere in the world to study, interact and learn from the same immersive content at the same time — even bringing entire settings and environments into the virtual classroom to enjoy a field trip to any location (or any period of history, even) without the logistical constraints or costs.

Simply put, the knowledge metaverse will soon have the potential to make the same kind of impact that the internet and

smartphones have made in recent decades — or possibly even greater. We currently rely on computers, smartphones, and the internet for a considerable chunk of our daily lives, so what if we could take all of the benefits we've reaped from that technology and increase them exponentially through immersive content aided by cutting-edge artificial intelligence?

4. THE FOUNDATION OF THE KNOWLEDGE METAVERSE

Now that we have a basic understanding of the knowledge metaverse and the benefits it can provide, the closing chapters of this book will examine how the knowledge metaverse is currently used and how I believe it will be utilized in the future.

To start, we'll look at the early foundations of the knowledge metaverse and how EON Reality had unknowingly been building up to this moment for the last two decades. We'll take a deep dive into how EON Reality's belief that knowledge is a human right and the democratization of XR technology helped create a world where users were willing and able to embrace the knowledge metaverse.

As a global leader in practical uses of XR for academic and career development since the early days of the technology, EON Reality has always looked toward the future. We were among the first to create customized and specialized immersive solutions for clients — providing both the software and hardware that was necessary to experience early XR technology. Then, as the XR hardware market became slightly more mainstream and consumer-friendly, we evolved to utilize the existing hardware while focusing more on software development.

Though the XR market has become much more prevalent on smartphones and tablets in recent years, head-mounted devices

have remained a bit of a niche for enthusiasts. Hardware like the Meta Quest has made headsets slightly more accessible to the average consumer, but the number of users is still nowhere near the amount of people with an XR-enabled smartphone. Due to this shift, EON Reality became more focused on providing the best possible platform for phone and tablet users — even allowing teachers, students, trainers and trainees alike to create their own lessons and experiences without ever leaving the EON-XR app.

Perhaps more important than what EON Reality has been up to, this chapter will look at the early adopters of the knowledge metaverse and how schools, businesses and governments around the world have implemented XR solutions to affect profound change to benefit the people who rely on them. These technological pioneers have already defined the present and will surely shape the future.

Colleges and universities like Baker College, University for Business and Technology and Babeș-Bolyai University brought the knowledge metaverse to their students before anyone even knew what the word metaverse even meant. Organizations like USAID helped EON Reality bring XR solutions and the beginnings of the knowledge metaverse to entire nations, such as Morocco. Numerous businesses of various sizes turned to XR for their training and logistical needs — although many will remain anonymous in this book due to contractual agreements.

And that's just a taste of what's to come.

While we'll save the full use cases and case studies for those who want a serious deep dive into the business side of EON Reality, it's important to show how real people in the modern world are actually using the knowledge metaverse and its related technologies to measurably improve their daily lives. It's important

to remember that while a lot of companies and people may be throwing around "metaverse" as a buzzword, the knowledge metaverse is not just a theoretical idea. It's a functional solution that's actively improving the world around us.

In short, this chapter will go over the current foundation of the knowledge metaverse, including many of the countries that have already joined the project and the millions of people with access to the technology. It'll discuss the practical process of how EON Reality partnered with organizations to create the knowledge metaverse, and some of the steps moving forward to bringing the next informational revolution to the billions of people on Earth.

5. THE INTERCONNECTED MIXED REALITY FUTURE

By the year 2035 (if not sooner), the world we live in is going to look drastically different. Aside from any environmental or sociopolitical shakeups, the technological advancements we'll see in the next 10-15 years will completely change our daily lives.

While we can't pretend to know for certain what that will look like or how it'll affect us, we can make some educated guesses, particularly in regards to the implementation of XR, AI and the knowledge metaverse. In this chapter, we'll examine specific areas of the future and how the knowledge metaverse will impact them.

As we've previously alluded to, the unification of man and machine will be a key component of the knowledge metaverse and the future of human civilization. We'll explore the potential implementation of that unification, as well as how it could be utilized both on a global scale and for individual people, schools or companies.

Although the number of nations that currently have knowledge metaverse hubs (through the government, a company, or an academic institution) is nearing 100, we'll likely look back on that number as the quaint beginnings of the global project. The current knowledge metaverse is akin to the first round of smartphones or the original MacBooks with the white plastic shell. Sure, some people had them, but they were just a small fraction of the number of folks using them today.

While the knowledge metaverse, XR and AI may expand dramatically on the consumer side — similarly to the explosion of smartphones throughout the 2010s — that expansion comes with extensive possibilities on the high end of the spectrum. In addition to the average smartphone user joining the knowledge metaverse, the combination and collaboration of the world's greatest minds through a shared platform could lead to some serious developments in science and related fields.

These developments could have particular implications for everything from the energy sector to healthcare, and will likely determine the future of human existence in a number of ways. It could be the key to creating a sustainable environment and combating climate change, could shape the future of education and business, and could even assist in exploring new frontiers for people — whether that means improving our own lives in ways we haven't yet conceived or discovering new planets and lands that could possibly transform our future.

Throughout this book, we'll discuss the fact that researchers and scientists will be able to share information and knowledge with greater speed and ease than ever before. While that might not significantly change the world in its infancy, over time these collaborations will almost certainly lead to major discoveries and opportunities that never would have existed without them.

As cliche as it is to say, the possibilities for the knowledge metaverse are endless. People would never have believed how much personal computers, the internet, or smartphones could've changed the world over the last few decades, and the knowledge metaverse is the next major step in that line of technological advancements. It's time to take some educated guesses as to how that'll happen and what it'll look like.

How will the knowledge metaverse shape our future? We have no way of knowing. But I can say with some pretty strong certainty that it'll definitely have a lasting impact going forward.


EON ILLUMINATE LOUNGE
• NO ROOF, YOU SEE REAL SPACE HERE
INVITE FRIENDS
FLOATING
EXPERIENCE PORTAL
LIBRARY
MY WORLDSPACE
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ACKNOWLEDGMENTS

First and foremost, I'd like to thank my wonderful wife, Anna. Not only is she the Executive Vice President of EON Reality, but she's also the President of EON Reality's nonprofit NGO, Learn for Life, which is a major driving force behind the knowledge metaverse implementations around the world. Of course, she also contributed many of the best ideas to this book, and I genuinely don't know where I would be without her.

I would also like to thank my co-author, Josh Chesler. As EON Reality's Marketing Director, he's one of the finest writers I've ever had the pleasure of knowing. Without his talent and capability, this book would never have come to fruition. He has managed to turn my stories and ramblings into a coherent and compelling narrative centered around this global solution.

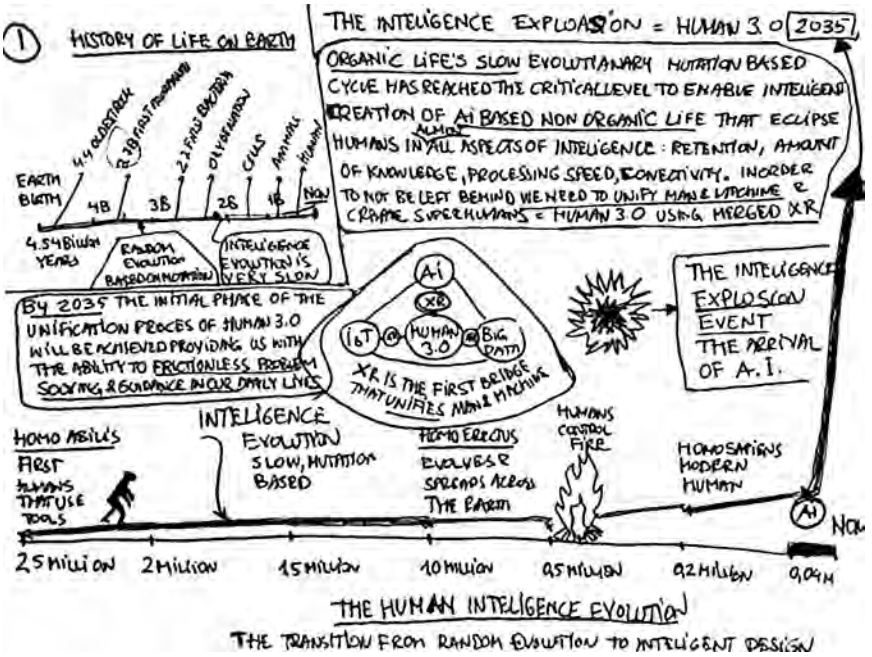
Additionally, I would like to thank all of my EON Reality employees, coworkers, and partners around the globe. I believe we have one of the smartest and hardest-working teams on the planet, and I appreciate each and every one of them coming with me on this journey.

Finally, I'd just like to add that I see this book as a possible inspiration both for individuals and for organizations who are looking toward the future. I truly believe that the metaverse will help propel humanity to the next level, and I invite each and every person reading this to come join the movement.

Thank you, and see you soon in the knowledge metaverse!

Dan Lejerskar
Aug 28, 2021

Laguna Beach, California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THE HUMAN INTELIGENCE EVOLUTION
THE TRANSITION FROM RANDOM EVOLUTION TO INTELIGENT DESIGN

CHAPTER 1:
THE INTELLIGENCE EXPLOSION

"The mind is not a vessel to be filled but a fire to be kindled."
—Plutarch

EARTH'S HISTORY OF INTELLIGENCE

More than 3.7 billion years ago, the first known life appeared on Earth. Since then, we've seen the endless crawl of evolution develop that life from a single cell to what we have today. Along with that evolution, we've slowly but surely seen our intelligence as a species and a planet rise — millennia after millennia, century after century, and generation after generation.

Human beings' biggest advantage in nature has always been our intellectual understanding of automation. From the earliest societies use of aqueducts to today's smartphones, many of the biggest

and best technological advancements in history have been centered around finding new and efficient ways to tackle society's daily tasks and problems.

Thankfully, we can skip the first 99.9% of that history and just focus on the last 80 years or so as it pertains to intelligence for our purpose.

Since the 1940s, automation has exploded. The rise of computers — even very simple electronic calculators and industrial devices decades before "computers" as we know them today — has transformed how we live. Computers surpassed human intellectual abilities fairly early on. Machines could solve math equations and carry out logical processes in a fraction of the time it would take a trained mathematician.

Early in my career, I was appointed as an engineer at Volvo Aero, and we utilized enormous VAX computer systems to run numerical simulations to determine whether an aircraft engine would fail or not in specific situations. With no user interface or anything similar, these were primitive devices by today's standards, but it still blew our minds that we could program this device to run through thousands upon thousands of simulations in seconds.

In about 1994, I was introduced to a graphical computer for the first time, which meant that we could visually see simulations. We had access to the same computers that the special effects for *Jurassic Park* were created on. I believe each one cost about a million dollars, was the size of a refrigerator, and required a special energy source, as you couldn't plug them into a normal outlet.

The graphics were objectively terrible — you have far more computing power on even the cheapest of smartphones today — but my mind was already made up. For the first time as a young man, I had looked at a screen and seen the future. Computers and visual

simulations would change the world, and those two branches of technology would collide and peak together in the space of virtual reality.

As I continued in my career — eventually devoting my work life to augmented and virtual reality and forming EON Reality — I realized that as quickly as I may learn and as hard as I may work, none of us would be able to keep up with the advancements in computers and related technology. I could be the smartest person on the planet and still not come up with probabilities and statistics as quickly as the primitive VAX computer could all those years earlier.

We've reached a stage where not only has human intelligence been surpassed by that of computers, but we're even able to create artificial intelligence that can supersede our own.

Normally, evolution-based intelligence is a slow and randomized process. Through Darwinism and natural selection, more intelligent lifeforms were more likely to survive long enough to reproduce, thus giving each generation a very slight increase in intelligence on average. Now, the creation of artificial intelligence is a fast and intentional process. Creating AI isn't random, and it's designed by people who know and (hopefully) understand what they're creating. It also happens to be one of the fastest-growing industries and technology sectors in the world.

AN INTELLIGENCE INFLECTION POINT

I believe this rise of artificial intelligence has placed us at an inflection point.

Gone are the days of slow, evolutionary increases in intelligence. Each generation may or may not be any smarter than its predecessors from here on out, simply because it won't need to be.

The prevalence of calculators on smartphones, personal computers, and a variety of other devices have made computing many

mathematical problems irrelevant. In the same way, I believe we have reached a point where natural intelligence is no longer a necessity for survival.

While I would never say there are no benefits to being more intelligent, we've reached a point where even the least intelligent members of society can survive, thrive, and succeed thanks to advancements in AI and technology. Intelligence is now an optional bonus rather than a required survival skill, and simply being intelligent enough to navigate and understand now-common resources like the internet and smartphones is more than enough to live a long and fulfilling life.

Of course, while the least intelligent people may not be weeded out of the gene pool as quickly anymore, the brightest minds will be able to reap the benefits of the very same technology.

In areas and cultures where intelligence is still a focal point, the slow and mutation-based organic intelligence that we've seen develop over the millions of years of human and pre-human existence is suddenly augmented with the new rapid and intentional growth of artificial intelligence. While humans have never stood a chance at keeping up with AI when it comes to the speed and efficiency of learning and remembering new knowledge, the hybrid between the two could truly elevate human minds to the next level.

Perhaps this is a bit of an extreme example, but imagine a researcher making a scientific discovery — whether it be a new property of a rare material or chemical compound, a medical breakthrough in the treatment of a horrific disease, or a previously unseen aspect of extraterrestrial material recovered by astronauts. Today, that would mean observing the discovery, documenting the discovery, processing what the discovery could mean, and checking with colleagues and other respected scientists globally to see if anyone else knew of anything related to the discovery.

But by unlocking and accessing the possibilities created by real-time usage of artificial intelligence, a number of those steps could happen instantaneously upon the discovery. As soon as the discovery is made, the researcher could use augmented reality glasses or another XR-enabled device to scan in the visuals related to it, while speaking or typing the description or auditory information into the device. From there, the AI would be able to translate the information into hundreds of languages, search for existing similar or related discoveries and information from other trusted sources, and even develop logical theories and conclusions about the discovery by extrapolating data from every reliable study available to it through the internet or other means. And this could all be done in the time it takes to make a cup of coffee.

This is why I believe we're at an inflection point as far as intelligence goes. Already, AI has surpassed organic intelligence to a point where we'll likely never catch up. What that means is that we need to find a way to harness the power of AI and use it to our advantage — otherwise, we risk being left behind as a species.

It's only a matter of time — possibly even months — before AI-driven machines and technologies are able to eclipse humanity in almost all aspects. While that may sound like the premise of dozens of science fiction movies, it doesn't have to be.

Is there a possibility that we end up in a dystopian future run by AI that no longer requires humans to continue to operate and grow? Sure. If it hasn't happened already, someone will soon design a self-sustaining AI that's capable of building machines that can maintain it and its necessary resources (power, machinery, connectivity, etc.) without human interaction. From there, either that AI or a similar one will possess the ability to create new AI on its own, growing exponentially smarter, more powerful, and more prevalent in society with every passing iteration. At that point, humans would no longer be necessary for the AI. I'm not saying it would attempt to wipe us out like

The Terminator, but humanity would become redundant for anything that the AI could do itself. Instead of a war between man and machine, it could simply be a machine-led society where humans dawdle about without much purpose.

But that's not the future I see.

I believe there's a way for us to unify ourselves with artificial intelligence. To modify a poetic term, we can stand on the shoulders of AI giants to reach heights never before possible. We can merge ourselves and our own intelligence together with AI to intellectually and mentally enhance us beyond our wildest dreams. As I mentioned in the example about the researcher, we could accomplish more in less time, become more efficient in nearly everything we do, and thus have additional time, energy, and resources to focus on the things that we enjoy in life — hopefully leading to a less stressful, healthier and generally happier experience.

In my opinion, the first step into this beneficial future comes through XR and the knowledge metaverse. As XR becomes more mainstream every passing year — not just through popular headsets like the Oculus Quest but also AR smartphone applications like *Pokémon GO* — it can serve as a portal to the knowledge metaverse for millions of people at a time. By experiencing that immediate and practical usage of information, demonstrations, and more from visibly merging the internet with the real world, users will begin to feel their own advancement through what I call the "Intelligence Unification Existential Process."

This process is the pivotal step in humankind adjusting to an AI-assisted future. Similar to how we all rely on our smartphones and laptops for answers provided by the internet, we can reach a point where the general population can use the combination of XR and AI prevalent within the knowledge metaverse. At this point, the average user will be able to accomplish many more important things more efficiently than ever before thought possible. With the collective

knowledge of the internet available to us in real-time and presented in appropriate contexts, our intellectual and mental capabilities would know only the limits of our imaginations.

Before the 20th century, an evolutionary growth this substantial would've taken millions of years through Darwin's process. But based on what we've seen with the adoption of computers, the internet and smartphones, I believe we can make these significant advancements in a matter of years — if not months. With factors like income inequality and climate change rising to a boiling point around the globe and in need of additional attention, getting to this point in the Intelligence Unification Existential Process in a timely manner will likely determine the fate of our future as a society, species and planet.

THE BUTTERFLY THEORY

Philosophically speaking, one can argue that the billion-year evolutionary process happened so we could design competent AI. That AI would be able to easily surpass us and boost us exponentially throughout the known universe. From the deepest corners of the ocean to the farthest reaches of space, we could learn incredible amounts about everywhere and everything known to us through AI — and we'd probably discover a lot of unknowns along the way.

In a world before the internet, no one imagined a civilization (much less an entire planet) where everyone in every location could be connected to each other simultaneously and instantaneously. *The Jetsons* expected us to have fully functional robot maids (powered by AI) and flying cars, but they never predicted email, social media, or that anything even remotely similar to the internet could exist without a giant series of tubes and virtually endless reams of paper.

The immediate sharing of information via the internet has increased our capabilities for intelligence exponentially. That's not

to say this is the internet's only good or that people always use the internet to increase their intelligence, but they can in ways that were never even considered before. On the screen of a smartphone, tablet or laptop, a kindergartener now has access to more knowledge and information than the greatest minds of the pre-internet era.

The internet was the largest advancement in intelligence's evolutionary history, and it's not even close. It allowed people and AI-enabled machines alike to connect with the vast majority of information that has ever been known in modern society, and it changed the way we live forever. From an evolutionary standpoint, it was a complete outlier. The steady, slow rise of intelligence for billions of years suddenly took off like a rocket ship.

When I was still in school, teachers and professors would have us write out math problems by hand and claim that we "wouldn't always have a calculator" when we needed to do something like long division or fractional exponents. Well, they were wrong. While few adults walk around with a graphing calculator in their pockets, the free (and often included) apps available on most smartphones handle just about any math problem you would need to solve in the real world.

But just because we're all utilizing our smartphones as calculators rather than figuring out the correct price of an item or gratuity for a meal on the back of a napkin, does that make us less intelligent than those who didn't carry a supercomputer in their pocket? I don't think so. In fact, I believe that if we didn't use the resources presented to us, that would make us less intelligent. After all, aren't we all impressed with the intelligence of different types of monkeys and apes when they're able to properly use tools?

In this sense, our ability to gather information from the internet via our smartphones and other devices plays an integral role in our intelligence today. We've already enhanced our natural intelligence by merging it with the collective intelligence of the internet. The only limit

that exists for our current knowledge is how efficiently we find reliable sources of information through the browsers on our smartphones — and perhaps the occasional bit of wisdom that has somehow not been made available online yet.

I think most of us would agree, though, that at no point have our brains ceased to be our own. We may enhance our minds with the knowledge of the internet, but the majority of people aren't so reliant on it that we would be unable to function without it.

And that's exactly where many philosophers are getting hung up about AI. The rise of artificial intelligence and the Intelligence Unification Existential Process raise an interesting question: What becomes of the human mind?

If machine learning and AI continue to grow at predicted rates, humanity as a species could largely come to rely on it within a generation or two. Of course, in some ways, that's been the end goal for humans all along. First, we created primitive weaponry so we wouldn't need to hunt for our own meals with our bare hands. Then we designed aqueducts to grow our meals at home rather than needing to go gather everything in the wilderness. We formed languages, currencies, societies, and all sorts of developments simply to make life easier.

Now, we've reached the point where we could potentially create an artificial intelligence (which is just an advanced tool) so much smarter and more efficient than humans that it could remove all stress and friction from our lives. It could help us do our jobs and live healthier. It could even help us better enjoy our time off with family and friends.

In short, it could propel ourselves and our collective intelligence exponentially across the known universe — regardless of what our individual goals are. But if it did all of that and we became reliant on it for our daily lives, at what point do we start to become an accessory for the AI rather than the other way around?

From a philosophical perspective, it's a fascinating debate.

What are we really achieving by using AI to automate and improve the efficiency of our everyday lives? Is it like a butterfly? Did we start as an all-human caterpillar and then grow into a human-AI hybrid of a butterfly? If that's the case, then the caterpillar is permanently gone, as it's been replaced by its high-flying evolution. Does that mean that we're dying in the process? Are we giving way to some form of intelligent machines?

Even if we're not technically deceased, what happens if humans are rendered useless by the developments in AI? If we no longer have any purpose or reason for living and know that we have no hope of ever keeping up with these intelligent machines, how long before humanity loses its way and devolves into a shell of its former self? With AI-enabled machines and computers far more capable at than humans at virtually anything, is it only a matter of time before either they turn against us or we turn on each other?

As I've mentioned before, it doesn't have to be that way. I believe that we can unite with intelligent machines and use AI to enhance ourselves. Instead of being rendered useless, the advances in technology could lead to us being more intelligent, efficient and productive than ever before — or in other words, we could become superhuman.

HUMAN CONSTRAINTS TO OVERCOME

To elevate ourselves to the next level through AI and avoid a future where intelligent machines force us into obsolescence, I believe there are two critical aspects of our current human constraints that we must overcome. Seeing as one cannot solve a problem before it's identified, let's briefly look at those two issues.

Both of these problems are rather obvious, but the first comes down to the physical constraints of our brain. The human mind is

enclosed within our skull, which means it's limited spatially and by how quickly and efficiently we can process information. Our chemical makeup only allows for so much bandwidth, so to speak.

Even the world's brightest minds and fastest learners have limits on what they can achieve, and the more information and knowledge we're forced to store in our minds, the more difficult it becomes to add more — much like a full hard drive on a computer. Without being able to upload information on that hard drive to a cloud drive, the computer (or brain, in this case) remains bogged down, further slowing the stream of new material it can accept. This is why we're generally able to learn (and often remember) things so quickly during our childhood, yet struggle significantly more with picking up new information, habits, and theories as an adult.

Imagine if we could use a cloud drive for our mind — an instantaneous one at that. Any information that you learn, no matter how important or trivial, could be stored on a limitless server and made available at a moment's notice. You would still keep the basic operating system and some key programs in your brain, but the vast majority of what you learn could be smoothly offloaded and recalled whenever and wherever you need it.

While that's not exactly how the knowledge metaverse works, it's not far off. By regularly adding new knowledge, information, and activities to the metaverse, users are able to immediately recall it within the context they need it. Considering that it's powered by one of the largest cloud server systems in the world, that information and context can be available any time and place.

The other problem we encounter is our limited time here on Earth. Compared to how long it would take to learn even a fraction of the information available to us, humans have a relatively short lifespan. To put it bluntly, we are merely wet bags full of organs and fluids that have a very limited amount of time before we hit our expiration date.

To make matters worse, there's no way to pass along our entire memory to someone else when we die. Even if we take every possible step to document and share as much of our knowledge as possible through audio, text, and video, we can never transfer our individual experiences from ourselves to another. Unlike a computer that can have its hard drive removed and installed in another device, large chunks of our memory — particularly the aspects that make each and every one of us unique — are immediately lost at the moment of our passing.

HUMAN 2.0: A HEAVENLY SOLUTION

Even though humans deal with these unfortunate mortal and anatomical constraints, we possess qualities and skills that machines and computers won't replicate in the foreseeable future. While computers are already far superior to human minds in many ways, these aspects are both the essence of being human and an integral part of building communities, whether they're human, animal, or potentially even machines.

We humans possess "intangibles." They're the aspects of humanity that don't fit into the 1's and 0's of the rational mind. Concepts like consciousness, the appreciation of art, emotions, innovation, and unpredictability are still effectively impossible for machines to understand and replicate.

Perhaps a machine can pick out an "objectively flawless" piece of art based on standards that it gathers from the internet, but it cannot feel the internal thoughts and emotions that the art conveys. Similarly, modern artificial intelligence could understand the concepts of consciousness and emotion, but a computer program that could *feel* upset, happy, sad, or anything else is merely science fiction at this point. Even when it comes to innovation or unpredictability, a computer may be

able to refine its processes, improve its efficiency, and generally evolve its abilities on its own. Still, current and near-future technology cannot innovate in entirely new directions like the human mind. Many of these inventions are discovered by accident when poorly attempting to create or do something else, which is a suboptimal path no computer would ever take unless explicitly programmed to do so.

It's for these reasons that I believe the future does not rest solely in the wiring and circuits of intelligent machines. The combination of humans and artificial intelligence working together is a marriage made in heaven, and one that I call "Human 2.0."

We've already discussed how humans could enhance themselves physically and mentally through AI and related technology. We could improve our organ functions, manipulate our DNA, and find all sorts of other methods to prolong and improve the quality of our lives. We could become more intelligent, efficient, and better able to perceive, understand, and retain knowledge from the world around us. We could transform how we're able to think, plan, and react to our daily life and professional environments, as shown in the example about the researcher from earlier.

To make all of this a reality, we need to unify ourselves with computers, AI, and intelligent machines beyond the primitive level that we have achieved through smartphones and other devices.

Make no mistake about it, smartphones, tablets, laptops, and the internet have all played a vital role in significantly improving our abilities compared to where we were 15-20 years ago. But within the next decade or so, I believe that even the fanciest modern technology will be dreadfully outdated in that regard.

These days, it takes about 10-20 seconds for the average person to retrieve information. You have to unlock your phone, open the browser, and then search for whatever it is you may be looking for. It's not exactly a long time to wait — and we've become quite efficient

at it over the past decade — but it's not quite as instantaneous as the information we already know. Plus, that information is generally constrained to a relatively small screen showing simple videos, text, and audio.

It's better than anything we've had before, but it's not really the full "unification" between man and machine that could elevate us to the next level.

Personally, I see modern smartphone usage as "Human 1.3," so to speak. It's certainly an improvement over the possibilities of the past, but there are still several problems we must overcome and bugs we must squash if we're going to truly integrate into my conception of Human 2.0.

For one thing, the "bandwidth" is far too slow. As I mentioned, waiting 10-20 seconds for information from the internet isn't the end of the world, but it's a multi-step process that can be a minor inconvenience at the very least. Imagine going into a room full of objects you'd never seen before and having to search for each one on your smartphone. It would take quite some time, and you'd likely give up after attempting to learn about only a few. For effective unification, the time from when we request the information to when we receive it needs to be less than one second.

Another issue with the smartphone model is the suboptimal format for requesting and receiving information. Although the AI integrated into modern consumer technology is becoming slightly more adept at searching the internet using photos, the primary method for discovering new information in a search engine is still to type in the keywords about that object. This means that the requester must still translate what they're seeing into text, creating an extra step that can be rife with human error. Combine that with the fact that the information received is generally delivered via text, audio, or as a flat visual

image/video, and that's not conducive to how our brains generally process new information.

We'll get more into the 3D models that our brains use to interpret knowledge in the next chapter. For now, we must just understand that people don't frequently think in text or 2D visuals. When you think of a piece of fruit, you're likely seeing a 3D model of that fruit in your mind rather than a photo or words describing that fruit. In order for us to efficiently unify our minds with AI and machines, we must be able to receive that information about the fruit — or whatever else we search for — in the same manner we perceive it in our minds.

While that all may sound great in theory, it doesn't actually help us with how we can achieve this unification in the near future.

Currently, many of the biggest names in technology are working on their own ways to make this unification happen. Tesla founder Elon Musk wants to directly connect computers to users' brains through his Neurolink project. Facebook changed their name to Meta in an attempt to become synonymous with the metaverse and capture that market before anyone else could get ahead of them. Microsoft and Apple are both working on new ways to transform their existing AR technologies into more user-friendly devices.

No one has the answer quite yet, but everyone is working on it.

While Musk's desire to link computers directly to our skulls is an admirable effort that could likely help cure diseases and treat many other issues, I don't think it's even remotely practical for the near future. The majority of people aren't going to sign up to have a chip implanted in their heads that they have no way of removing, turning off, or controlling.

However, there is an easier and far less intrusive way to connect our minds with AI and machines, and that's through our eyes. As humans, we have developed a keener sense of sight than most species will ever know. We rely on our eyes more than any other organ

to feed us information about our surroundings and activities — that's why television and movies have remained incredibly popular for several decades, while other forms of entertainment have come and gone.

To fully take advantage of our dependence on sight, we need a supercomputer resting on our noses. We need something that we can look through to the world around us and both request and receive immediate information using primarily our eyes. While that may seem like a stretch, it's already effectively a reality thanks to augmented reality headsets like Microsoft's HoloLens, Magic Leap's products, and the failed attempt that was likely too far ahead of its time known as Google Glass. Of course, none of these solutions have caught on with the general public just yet, but it's only a matter of time before Apple, Microsoft, or one of the other technology giants comes through with AR and XR glasses (or even contact lenses) for the masses.

The Silicon Valley giants are in the midst of a $1.5 trillion war to come up with lighter, faster, cheaper, better, and just generally more appealing AR and XR solutions. Every major company that has dabbled in VR, AR and/or XR before is fully committed to moving to the spatial computing era, and each of them wants to be the first one on the map to break the constraints of modern smartphones.

Why the sudden rush into what has long been considered a very niche industry? Well, it's because XR and the use of the metaverse is the first major step in unifying man and machine, bringing us closer to Human 2.0.

AR glasses allow us to receive a wide range of types of information, more or less immediately, in the most natural way. Most of us have been receiving information through our eyes since birth, so by delivering the new content in the same manner, we're effectively injecting that knowledge directly into our brains. By combining this natural way of processing the information with the ability to source it

from AI, the internet, endless databases, and more, we're able to naturally perceive the world in a more refined and enlightened way.

For example, AR glasses (or a similar XR solution) would enable us to see perfectly clearly in the middle of the night, read heat signatures, track sound vibrations, or even follow inconsistencies on the ground and in your surroundings. As a hunter, that would mean being able to follow tracks, identify the direction of a distant animal, and clearly see where it's hiding regardless of your surroundings. You'll be able to perceive your environment on a new level, enhanced and guided by AI to reach whatever goals you want to accomplish.

A metaverse user could have all of the instantaneous benefits of Elon Musk's desire to implant computer chips within our skulls, but in a much less intrusive way that users can tweak, modify, and remove like they would a piece of clothing. It could provide a seamless way to blend the digital and physical worlds into one, giving rise to immersive, limitless, and experiential possibilities that we have never even considered before.

In short, the metaverse could create an illuminated and enhanced reality that brings life to inanimate objects. Whether it's used for learning, training, work performance, or recreation, every object, room, or environment can be improved and full of knowledge and information — all provided to the user directly through their eyes in an instant through a natural interaction with AI. The entire knowledge of the internet and beyond would be a mere glimpse away for any subject or item.

As an added benefit, the AI could learn more about us as we use it. Much like a smartphone telling you when to leave for a meeting or a smartwatch reminding you to breathe when it senses you're stressed, artificial intelligence within the metaverse and connected devices could learn who you are, where you are, why you're there, and your tendencies and preference. It could likely know what you're going to

ask or what information you'll need before you request it. Of course, it would come with the same privacy concerns as a smartphone, home assistant, or laptop has today, but laws and regulations are already cracking down on companies learning and storing your data without a user's consent.

Simply put, accessing the metaverse through XR technology is almost undoubtedly the most efficient way for us to unify with smart machines in the near future. It would unquestionably help us solve numerous problems, ranging from mundane daily routines and medical checkups to sophisticated research activities and political or security threats.

For this reason, I believe the metaverse and XR are the most realistic way for us to provide the physical and digital improvements we need to not only survive, but thrive in the future. Through this technology, we can change the world and collectively become Human 2.0.

CONCLUSION

After billions of years of slow growth, we've reached an evolutionary stage where we are able to raise our intelligence exponentially. As ridiculous as that may sound, it's not egocentric to think that this is the first time we can see these incredible developments in terms of speed, growth, and overall intellectual evolution.

But the path toward this intelligence explosion is offering us a variety of options, and not all are equal.

One path could lead to the point where humans are essentially disposable. Our physical constraints limit us while intelligent machines and AI programs grow smarter and stronger. Eventually, they learn to create, maintain and improve themselves, making humans utterly unnecessary for them.

In this case, humanity likely continues to exist in pockets, as there's no reason for intelligent machines to go full *Terminator* and erase us all, but society as we know it collapses. Machines and AI become the dominant race on Earth, and humans become a secondary species, perhaps even one on the brink of extinction.

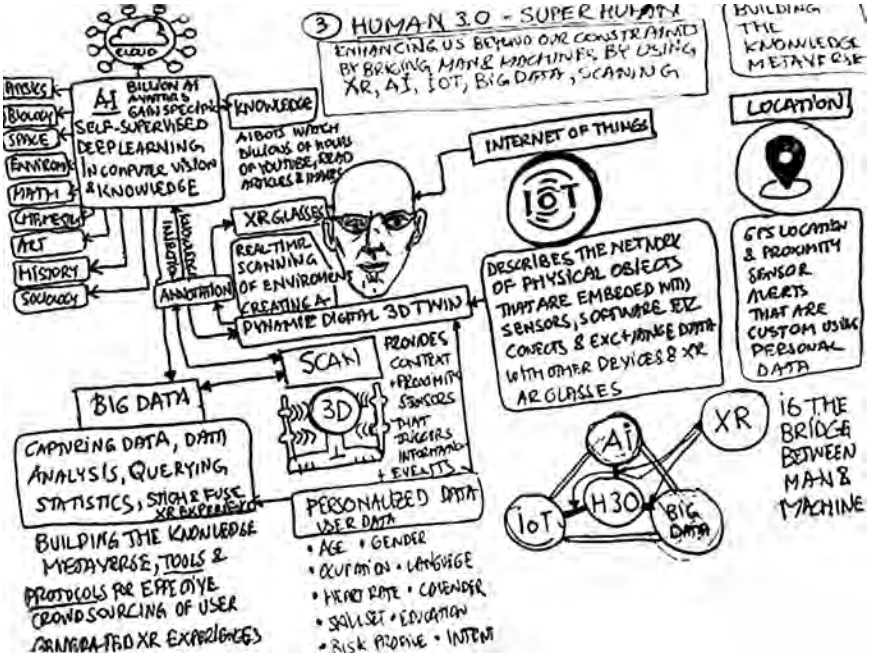
The future I prefer to envision is one wherein humans unify themselves and their minds with intelligent machines. It's a world where we can boost our strengths and cover our weaknesses through AI while continuing to improve the world and bring the unique capacities that machines cannot replicate to society. It's a world where people can focus on their passions and what they enjoy doing in their free time because many of the mundane jobs and problems have been solved by AI and machine learning.

The combination of our intangible assets like emotions, innovation, and unpredictability and the efficiency and near-limitless intelligence of the machines will create a more effective, happier, and healthier society. Areas such as art and music will flourish, as the creators in those fields aren't required to work low-income jobs just to pay for their hobbies, while professionals in all fields will find themselves working smoother and more efficiently than they ever thought possible.

That's the path that the EON Reality team and I have been working toward with our partners around the world.

Many of the biggest names in technology are focused on bringing humanity into space and becoming a multiplanetary species, but I don't think we should be setting out to conquer the stars just yet. Interplanetary exploration will happen anyway with billionaires like Elon Musk and Jeff Bezos racing each other to the moon, Mars, and beyond, but the rest of us will determine what happens in these new lands.

Let us use our knowledge to illuminate our homes here on Earth and anywhere else science and technology may take us in our lifetimes. Now, more than ever, we can capture both intelligence and the meaning of experiences, lives and objects passed down from one generation to the next in ways that machines and algorithms could never understand. In this way, humans will always play a critical role.


3 HUMAN 3.0 - SUPER HUMAN
ENHANCING US BEYOND OUR CONSTRAINTS BY BRINGING MAN & MACHINES BY USING XR, AI, IOT, BIG DATA, SCANNING
BUILDING THE KNOWLEDGE METAVERSE
CLOUD
AI
BILLION AI AGENTS & GAN SPECIAL SELF-SUPERVISED DEEPLEARNING IN COMPUTER VISION & KNOWLEDGE
KNOWLEDGE
AI BOTS WATCH BILLIONS OF HOURS OF YOUTUBE, READ ARTICLES & BOOKS
ARTS
BIOLOGY
SPACE
ENVIRON
MATH
CULTURE
ART
HISTORY
SOCIOLOGY
INJECTION
EXTRACTION
XR GLASSES
REAL-TIME SCANNING OF ENVIROMENT
CREATING A
ANNOTATION
DYNAMIC DIGITAL 3D TWIN
INTERNET OF THINGS
IOT
DESCRIBES THE NETWORK OF PHYSICAL OBJECTS THAT ARE EMBEDED WITH SENSORS, SOFTWARE ETC CONNECTS & EXCHANGE DATA WITH OTHER DEVICES & XR AR GLASSES
LOCATION
GPS LOCATION & PROXIMITY SENSOR ALERTS THAT ARE CUSTOM USING PERSONAL DATA
SCAN
PROVIDES CONTEXT + PROXIMITY SENSORS THAT TRIGGERS INFORMATION + EVENTS
3D
BIG DATA
CAPTURING DATA, DATA ANALYSIS, QUERYING STATISTICS, STICH & FUSE
XR EXPERIENCE
BUILDING THE KNOWLEDGE METAVERSE, TOOLS & PROTOCOLS FOR EFFECTIVE CROWDSOURCING OF USER GENERATED XR EXPERIENCES
PERSONALIZED DATA
USER DATA
• AGE • GENDER
• OCUPATION • LANGUAGE
• HEART RATE • COLENDER
• SKILLSET • EDUCATION
• RISK PROFILE • INTEM
AI
XR
IoT
H30
BIG DATA
IS THE BRIDGE BETWEEN MAN & MACHINE

CHAPTER 2:
HOW OUR BRAIN WORKS

"The human brain is an incredible pattern-matching machine."
—Jeff Bezos

THE EFFICIENCY OF XR-BASED KNOWLEDGE TRANSFER

For over 20 years, I have devoted myself to teaching people why augmented and virtual reality — or XR, which I'm thankful to use now because "augmented and virtual reality" is a mouthful — is the most organic and efficient way to transfer knowledge and skills from one person to another. This was one of the founding theories of EON Reality, and it remains true decades later, as the rest of the world catches up and discovers the benefits of XR.

I don't want to explain how our brains work in great detail, but I think knowing the basics of our anatomy will help you understand

why XR-based learning, training and knowledge transfer is so efficient. Of course, this all ties into why building an interconnected and AI-empowered web of XR experiences and solutions like the knowledge metaverse will help humans everywhere — and society as a whole — to learn, train and perform better than ever before.

Part of what makes XR work particularly well for learning and training is that 3D objects and 360° environments translate into virtually any culture. No matter what language you speak or where you're from, a wheel is a wheel and a box is a box. Sure, they may look slightly different depending on the scenario, but their overall purpose and the basics of their appearance remain largely unchanged from one segment of society to the next. We could all speak considerably different languages and share almost no cultural background with each other, and yet we'd all understand eating out of a bowl or drinking out of a cup. With XR, no one is dependent on accurate text and audio translations, and even many of the biggest cultural differences can be overcome thanks to the ability to place objects within an appropriate context. Even someone who has never seen or used a fork before could understand that it's an eating utensil when placed on a table alongside an assortment of food and dinnerware.

But while objects are far more international than any form of language or other communication beyond the most primal of emotions, there's another reason XR (and thus the knowledge metaverse) works so well for learning, training, and overall understanding.

The human brain processes information by building three-dimensional (3D) models of nearly every object and experience that it encounters. When you read the word "banana" or hear the word "horse" you immediately picture that object in your head. Your brain automatically turns the word "chair" into a 3D model of a single seat in your mind.

Not only does the human brain register and utilize detailed models of the items we encounter, but it also tries to put them all within the context of when and where we came across them. We expect to see airplanes at an airport and rhinoceroses at a zoo, so it would be rather jarring to see one in the other's location, even if they look exactly as we would expect them to.

Likewise, our brain makes predictions about the properties of the objects based on our experiences with them. When we see an oven with a red glow coming from it, we know it will likely be hot. When we look at a bottle of water, we've already internalized that it contains liquid, approximately how much it weighs, and roughly what temperature it should be. In both instances, we also likely have a basic understanding of how to open these items and how to operate them — even if we may not know what each button on the oven does.

We receive this information and form understandings through our brain's predictions based on the existing 3D models we've already established within our minds. What this means is that every experience that we have through our senses is correlated with our brain's pre-existing 3D models. In other words, we don't actually perceive reality with our senses.

Every sensory input — sights, sounds, smells, tastes, physical sensations — that we experience is first processed by our brain to see how it correlates with the objects and environments that we've already internalized. Our brain compares what our five senses are actively experiencing with the existing 3D models, which allows us to make assumptions and then predict what will happen or how a certain object or environment will function. It's what allows us to navigate an unfamiliar room or building with relative ease. It's why we immediately cringe and react when a clear flower vase gets knocked off a ledge — even if we later learn that it was durable plastic. We're not reacting to what is actively happening, but predicting what will

happen soon thereafter. A burning hot water bottle, an icy cold oven, or a rubbery plastic vase defies those predictions, and thus leaves us temporarily perplexed.

This ability to predict what will happen based on the objects and environment is inherently a feature of 3D models placed within their appropriate spaces and context. This aspect of our minds is crucial for us to function effectively in most situations, and it's the underlying portion of our brain's overall abilities that we need to understand and utilize in order to achieve our goals.

The importance comes down to the delivery of the information and how we can absorb it. Simply put, the most efficient way for us to learn and understand new information is through the firsthand experience of exploring and interacting with an item or a process. Can we still pick up knowledge through conventional methods like reading, audio, and videos? Of course. But we'll learn things faster, remember them longer, and understand them more thoroughly if we can experience them ourselves.

If we don't already have a pre-existing 3D model within our minds, it's hard for us to fully process or understand an object. We can read pages upon pages of information about an object or an experience. We can listen to hours of lectures, speeches, and discussions about anything. We can watch countless videos to teach us about any topic or item we can imagine. But we'll never truly understand or know what something is like in real life until we can hold it in our hands and build a proper 3D model of it in our brains.

Whether it's creating a new 3D model for an object we've never encountered or readjusting an existing model for something that we misremembered or didn't understand completely — like an unexpectedly scorching water bottle or freezing oven — we spend significant time and brainpower translating information into new models that we find most accurate.

But when learning about objects and actions in XR, we can shorten (or even remove) that step. XR learning and training feeds the information directly into our brains already in the format of a 3D model, meaning there's little to no transitioning or translating that we have to do to create a seemingly accurate model within our minds. The structure of XR content perfectly aligns with the natural models we construct in our brains to learn and process new knowledge. It's how our brain already organically learns, which can't be said for reading books, watching movies, or any other medium.

We may not be able to realize that a water bottle can be scorching hot by handling one in XR, but we can adjust our minds to the possibility of seeing a rhinoceros at an airport and learn which buttons will heat up the freezing oven all at the same time.

OLD BRAINS AND NEW BRAINS

As I said earlier, the goal of this book is not to get into the biological or anatomical makeup of the brain, as there are far more qualified people who have gone into significant depth on the topic. Instead, we'll summarize the important points, discuss some theory and philosophy, and leave the medical details to the experts in further reading.

Since childhood, I have always been interested in how the brain works. I find it fascinating to learn about how the computing machine functions for something as complex and powerful as a person, but I also have a personal connection to the field.

When I was a young man, my father was diagnosed with Alzheimer's disease. He was one of the strongest men I knew, yet I sat and watched as his entire life deteriorated due to the disease. The helplessness that I felt watching Alzheimer's slowly tear my father's abilities away from him became the passion that drove me to study the

human mind — particularly when it comes to understanding cognition and memory retention.

I can already see how existing technology could've helped my father and others with dementia, and I envision a world where medicine and technology come together to treat the symptoms or even entirely cure Alzheimer's. Today, we know so much more about the mapping and functions of the brain than we did even a few decades ago, and we've already seen some of the biggest names in technology focus on turning that knowledge into a viable assistance, like Elon Musk's Neuralink.

Recently, I read *A Thousand Brains* by Jeff Hawkins, which made me think about our minds and neuroscience in ways that I never had before.

Now, Hawkins and I are similar not only in that we're both endlessly curious and fascinated by the human brain, but we also became early adopters and inventors of new technologies long before the rest of the world caught up with us. I'm not saying EON Reality is as ubiquitous as Palm Computing was in the early days of the smartphone, but when he founded Palm in 1992, the world had no idea how the PalmPilot would eventually lead to every single person carrying around a supercomputer in their pocket.

Before Hawkins created Palm and catalyzed the smartphone revolution, he began his research and theories on how the brain works. For him, it all dates back to DNA pioneer Francis Crick's 1979 essay about how mysterious the brain remains, despite it being among the most vital organs for most living things. If you're not familiar with Crick, the British molecular biologist and neuroscientist is credited with being one of the most important and influential scientists when it comes to early DNA research. Nearly everything we knew about DNA until very recently — from its double helix structure to how they deliver information — came from Crick's research with his colleagues.

Unfortunately, the late Crick was also correct about the brain being largely a scientific enigma, and it would remain that way for decades after the initial essay that enthralled Hawkins.

Disappointed and frustrated by the slow progress in unraveling the mind's mysteries, Hawkins took a decade-long detour away from neuroscience to focus on technology. During that time, the Cornell University graduate co-founded both Palm and Handspring before finally founding the Redwood Neuroscience Institute in 2002.

By 2004, Hawkins co-authored and published *On Intelligence: How a New Understanding of the Brain Will Lead to the Creation of Truly Intelligent Machines*. Again, we won't go too far into the weeds on the theory presented in this book, but this appears to be the first time — or at least the first time that I know of — that anyone formally acknowledges that our brain functions by predicting future events and how they will play out based on previous experiences.

As I mentioned in the last section, this is largely the reason XR works so well for learning and training, and also why the knowledge metaverse will be a game-changing solution for a lot of modern society's inefficiencies. It also marks the foundation of the theories centered around the human brain that I find myself sharing with Hawkins — particularly as it relates to his work with Numenta, the company he founded in 2005 to better understand our minds and decipher how to implement them to create intelligent machines.

The rest of this section explains my take on the theories Hawkins has been working on ever since and how my perspective relates to the future of technology and the knowledge metaverse. We don't see eye-to-eye on everything, but I believe that Hawkins's fundamental ideas are closer to my views of the mind and its relationship with computers and AI than anything else I've ever read. I would strongly suggest reading *A Thousand Brains* if you're interested in the subject and want to see things purely through his vision.

OUR DIVIDED BRAINS

The first piece of this theory that we need to understand predates both myself and Hawkins by quite some time. Our brains are divided into several different parts, each with its own purpose. You likely learned their names in a biology class but have never really needed to know since then.

At this point, the makeup of the brain is more or less a scientific fact (at least until the next breakthrough discovery). There's the old, "reptilian" part of our brain — also known as the hindbrain — that handles all of our basic survival functions. It's made up of the medulla oblongata, the pons, and the cerebellum, and it focuses on things like breathing, sleeping, basic motor functions, and other aspects of our bodies that require no actual thought. The hindbrain effectively covers everything about keeping our bodies alive that we don't have to actually focus on or do much anything for, and it's relatively similar in many types of animals.

The neocortex is the "new" part of our brain. It only exists in mammals, and it houses all of our advanced intelligence. It's where our personality comes from and where our thoughts arise. It's where everything that we associate with being "conscious" lives. It's where we develop everything other than what's necessary for our basic survival.

As the world learned from famous neurophysiologist Vernon Mountcastle, though, the neocortex is structurally homogeneous. In layman's terms, it's all built more or less the same. It's the portion of the brain frequently referred to as "gray matter," and when you picture a human brain, you're probably primarily picturing the ridged surface of the neocortex. The less-visible hindbrain has a variety of distinct parts that all do different things, but the neocortex is effectively one large portion of the brain (divided into structurally near-identical lobes) with a multitude of purposes and activities.

The neocortex, as the name implies, is the newest part of the cerebral cortex. Think of it as the information center of our brain. Its layers contain all of the data we acquire through our senses and other forms of learning, and it's singularly responsible for building the 3D models we use to understand the world around us. These layers also contain approximately 20 billion neurons within them, meaning that roughly 100,000 neurons are crammed together into the space the size of a grain of rice. These neurons then communicate with each other via electrical and chemical signals using special connections called synapses (roughly 125 trillion of them) and several kilometers worth of biological "cabling" to bring it all together. In other words, the neocortex is one hell of an organic supercomputer.

Much like a computer, the physical structure of the neocortex has little to do with its actual function. Each lobe (frontal, parietal, occipital and temporal) handles drastically different activities. While they all have a defined location in the brain, the way their connections work and what they're connected to have the largest impact. The details of this are lengthy, complicated and not particularly relevant to the knowledge metaverse, but just for understanding purposes, the occipital lobe primarily registers and processes what we see via its connections with our eyes, while the frontal lobe handles some of our most neurologically complex aspects like language and emotions. At the same time, the temporal lobe is where we hold our "semantic memories," the things that we've learned over time just from existing, rather than learning at a specific moment. The parietal lobe is all about processing what we're physically feeling on our skin and nerves. As you can likely imagine, all of these lobes play an important role in processing our sensory inputs and converting them into information that we can use.

Regardless of which lobe they're in or what they're specifically being used for, the connections between the neurons are strengthened each time they're used to learn something new. Conversely, when we

forget something, those bonds are weakened, often taking longer to recover and repair than they did the first time around. For this reason, our brains are at our strongest when we are constantly learning and experiencing new things — such as when we're in school or exploring new cultures.

Among other reasons, this need for constant stimulation makes our brains the perfect target for XR, as information can be fed through various senses and stimuli rather than a single lobe.

SPATIAL BRAIN MODELS

To break the neocortex down even further than its lobes, we can look at cortical columns. The cortical columns are effectively the basic units of the entire cerebral cortex. In other words, in the economy of the brain, a cortical column is exactly a dollar. Each column contains approximately 100 neurons, and the belief is that these columns function relatively independently of each other — each focusing on their own piece of the puzzle before communicating with the others to put together the bigger picture of our brain.

One of the key insights in Hawkins's theories is that these cortical columns attach reference frames both to objects we've seen and experienced in the world and abstract concepts.

Some of them are "what" columns, which are effectively what our internalized 3D models are based on. They tell us what an object is (or at least what we think it is), what it looks like, what it does, and other basic information about it. Others are "where" or "when" columns. These give us context around the objects. They tell us the setting in which we should expect to see or interact with an object. This could be as general as the earlier discussion about an unexpected rhinoceros at an airport or as specific as where we expect to find the head gasket when taking apart an engine. It could also mean that we expect

to witness certain sounds, sights, or feelings at a particular hour of the day, season of the year, or time after another event occurs — such as when we know the timer on the oven is about to go off when cooking a familiar meal.

While the "what" columns are integral for learning about new objects and processing new information, the context of the "when" and "where" columns allow these 3D models in our mind to be "spatial models" — or objects that exist within an understood space and/or time. These spatial models allow humans to predict events rather than react to them, and generally help us understand where we are and what we need to do in order to navigate our environments.

Perhaps this is a bit of an oversimplification, but I like to think of it as walking into a dark room. The first thing most people would do upon entering would be to turn on a light, right? Well, in your own home, it's easy to find the switch on the wall even if you can't see a thing. Your mind has already mapped out approximately where it should be because you've likely hit that same switch hundreds or thousands of times before.

But what if it's not your home? What if it's a hotel or another domicile you haven't been in? Well, odds are pretty good that you'd be able to find a light sooner than later. Maybe you turn on the flashlight on your phone for assistance, but you still have some idea of roughly where you ought to be looking and what you should be looking for. After all, we've all seen a light switch before.

Yet, there's still one more possibility. What if you've never been in a room like that before? What if it's a part of the world where light switches don't exist and lamps have to be lit with a match? What if it's an automated smarthome and you have to verbally tell it to turn on the lights or press a button on a hidden keypad? What if it's just an odd layout and every lightswitch is at knee level? You may know

exactly what you're looking for, but if you don't know where to look, it's useless.

That's a really roundabout way of explaining why the "where" and "when" cortical columns are just as important for our understanding and daily life as the "what" columns are. While 3D models are good, spatial models (like our brains are able to create) are significantly better for our daily life.

Because there are so many cortical columns within the neocortex, it's able to continuously communicate with itself. The "what" columns can share what an object is, the "where" can show where it belongs, and the "when" can explain when we should expect it. Through this communication, the neocortex can build a model of the world around us and continuously keep it up to date as we learn more information. Each object and moment we experience adds new elements and details to the model until it gives us a complete enough viewpoint on our existence.

According to Hawkins, there's no leader or central "control room" among all of these columns, another key point with which I agree. Each cortical column is considered an equal within the neocortex, and each one makes predictions about what it thinks of our surroundings and what it thinks will happen. Then, our perception of the reality we physically live in is ultimately based on a vote cast by the various columns about what they predict, not just what we observe with our senses.

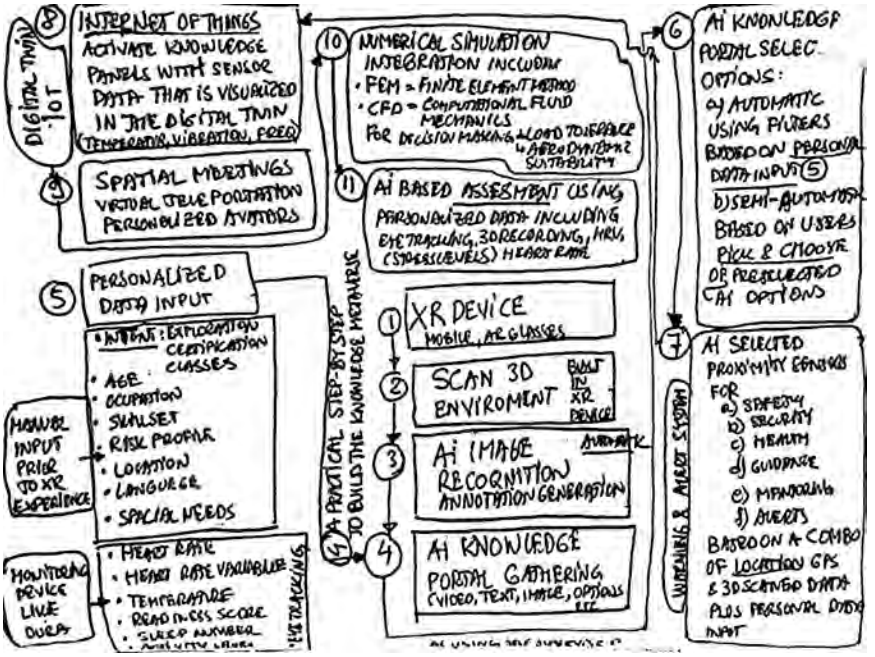
Each of these votes is dependent on the outcome of all of our previous predictions and events, and the future votes will always be impacted by what aspects each column got wrong or right time and time again. This means that every time our brain needs to make a prediction about something, it's better informed and more likely to be correct. Every spatial model we create in our minds is directly based on the aggregate strength of the previous predictions, and as those get

stronger, we get smarter — or at least more informed and more aware about the world around us.

If we become smarter by building more accurate spatial models and predictions, then why not rapidly increase our intelligence by providing pre-made 100% accurate versions of those models — as created by brilliant minds around the world? Through XR, we can't presently replicate everything (haptic feedback is likely still at least a few years to a decade away from being viable in all but the most specialized instances), but we can provide our minds with much of the "what," "where" and "when" of an object before we ever get the chance to build a spatial model of the real thing.

Now, imagine if those pre-existing spatial 3D models were available everywhere, all the time, for everything. Imagine if you could immediately have an accurate spatial model of every object and every aspect of every room you ever walk into. Imagine if you could recall those models at will, and they even appear when you need them whether you know it or not. While you may not be able to know everything all of the time, you'd know and understand much more than you did before. You'd be more effective, efficient, and likely happier thanks to all the time and energy you'd be saving on a regular basis.

This is the promise and potential of the knowledge metaverse, which is exactly where we're going.


DIGITAL TWIN IOT
8
INTERNET OF THINGS
ACTIVATE KNOWLEDGE PANELS WITH SENSOR DATA THAT IS VISUALIZED IN THE DIGITAL TWIN (TEMPERATUR, VIBRATION, FREQ)
9
SPATIAL MEETINGS
VIRTUAL TELE PORTATION
PERSONALIZED AVATARS
10
NUMERICAL SIMULATION
INTEGRATION INCLUDE
• FEM = FINITE ELEMENT METHOD
• CFD = COMPUTATIONAL FLUID MECHANICS
FOR DECISION MAKING & LOAD TOLERANCE & AERODYNAMIC SUSTAINABILITY
11
AI BASED ASSESSMENT USING PERSONALIZED DATA INCLUDING EYE TRACKING, 3D RECORDING, HRV, (STRESS LEVELS) HEART RATE
6
AI KNOWLEDGE PORTAL SELECT OPTIONS:
a) AUTOMATIC USING FILTERS BASED ON PERSONAL DATA INPUT 5
b) SEMI-AUTOMATIC BASED ON USERS PICK & CHOOSE OF PRESELECTED AI OPTIONS
5
PERSONALIZED DATA INPUT
• INTENT: EXPLORATION CERTIFICATION CLASSES
• AGE
• OCCUPATION
• SKILLSET
• RISK PROFILE
• LOCATION
• LANGUAGE
• SPECIAL NEEDS
MANUEL INPUT PRIOR TO XR EXPERIENCE
• HEART RATE
• HEART RATE VARIABILITY
• TEMPERATURE
• READINESS SCORE
• SLEEP NUMBER
MONITORING DEVICE LIVE DATA
SYNCHRONIZE
4 PRACTICAL STEP-BY-STEP TO BUILD THE KNOWLEDGE METAVERSE
1
XR DEVICE
MOBILE, AR GLASSES
2
SCAN 3D ENVIROMENT
BUILT IN XR DEVICE
3
AI IMAGE RECORNITION ANNOTATION GENERATION
AUTOMATIC
4
AI KNOWLEDGE PORTAL GATHERING (VIDEO, TEXT, IMAGE, OPTIONS ETC
7
AI SELECTED PROXIMITY EGNIGHS FOR
a) SAFETY
b) SECURITY
c) HEALTH
d) GUIDANCE
e) MENTORING
f) ALERTS
BASED ON A COMBO OF LOCATION GPS & 3D SCANNED DATA PLUS PERSONAL DATA INPUT
WARNING & ALERT SYSTEM

CHAPTER 3:
THE BRIDGE BETWEEN MAN AND MACHINE

"Machine intelligence is the last invention that humanity will ever need to make."
—Nick Bostrom

BRINGING TOGETHER XR, AI, AND MORE

We've spent the vast majority of this book setting the stage for the knowledge metaverse. We've talked about where we've come from, explained the societal need for developments in AI and XR, and outlined how the knowledge metaverse could work with the natural abilities of our own brains to improve our daily lives.

So what does this all mean? Well, it means that I believe that the knowledge metaverse is the essential vehicle for enabling XR to become the bridge between man and machine that has been promised.

For decades, we have seen technology companies and science fiction alike promise that XR is the future. The computing industry has been showing us how glasses, goggles, headsets, and/or other head-mounted devices will someday be able to seamlessly integrate the endless knowledge of the internet into everyday life. From optimistic commercials to spy films, the idea of lenses that could provide us with anything we want or need to know in the blink of an eye has been a selling point in technology and a promise of the future since before smartphones or the internet as we know it even existed — and that's not even touching on its prevalence in sci-fi. Some of the most famous science fiction theories and stories in our lifetime are effectively about XR becoming a dominant feature in society as a whole, for better or worse (see: *The Matrix*).

Despite the fact that XR technology continually becomes more effective and accessible, it remains a relatively niche area. Dedicated headsets have only recently reached the cross-section of price and ability to make them a consideration for consumer hobbyists, and many veteran teachers and trainers were unwilling to abandon their conventional pedagogical methods until the COVID-19 pandemic forced their hands. A company the size of Google fell flat with their first attempt at breaking into the AR world with 2013's Google Glass, and it wasn't until *Pokémon GO* swept through the world in 2016 that augmented reality cracked into the mainstream.

Perhaps the biggest impact that *Pokémon GO* had wasn't just the number of people walking around their cities and towns searching for the colorful digital critters but the widespread use of smartphones and tablets for AR.

While we still might be years away from the point where AR, VR and XR headsets are even remotely commonplace — this timeline could be drastically altered if Apple announces their entry into the XR hardware space — more than 6 billion people already own and use an

XR device everyday. Over 80% of the human population owns a smartphone or tablet, and nearly every one of those is capable of basic XR possibilities. This is the obvious way forward for XR solutions in the immediate future, and the knowledge metaverse is just the way to bring it there.

Though XR-enabled devices are in the pockets of many, that doesn't mean everything is in place for the knowledge metaverse. If we expect this movement to give us the abilities to do things that would otherwise be considered superhuman, we need a number of ingredients to come together — particularly things like the aforementioned growths in AI, the advanced analysis and information extraction in big data, modern 3D scanning, established GPS networks, and the terribly-named fusion of the digital and physical worlds known as the Internet of Things.

As I've mentioned previously, all of these ingredients will come together with or without us. If we don't find a way to utilize them, either other people will — launching themselves into power and wealth — or intelligent machines will, taking off without the need for humans at all. But I'm optimistic that these tools can be used to benefit the many, not the few. The knowledge metaverse can be a life-changing solution for anyone who chooses to use it, but we have to be proactive to bring it to the masses.

The more people who can merge their minds with existing artificial intelligence, the smarter we can become as a culture and society, and the more we can enhance ourselves beyond our constraints as a species. So how do we spread the knowledge metaverse to as much of the population as possible? This is how we here at EON Reality think it can happen most effectively.

A GLOBAL PLAN FOR A GLOBAL KNOWLEDGE METAVERSE

As I said earlier, a lot of the hardware and capability from a technological standpoint needed to transform the XR options of today into the knowledge metaverse of tomorrow is already out and available in today's world. That said, there's still plenty of work to be done to bring the knowledge metaverse to the masses — both technologically and culturally.

From a cultural standpoint, the first thing we need to achieve is an understanding of "the metaverse." These days, it largely feels like a theoretical future "world" you'd see in something like *Ready Player One*, one primarily used in a theoretical sense for marketing purposes. But in essence, the metaverse is a widely available digital space within our physical world, as created by the combination of a virtually enhanced physical reality and a physically persistent virtual space.

If that doesn't make sense, there's an even easier way to explain it.

We're all familiar with the near-limitless content of the internet, right? But to access that content, you have to temporarily remove yourself from the physical world around you by staring at your smartphone/tablet or sitting down at your computer. Well, imagine if every bit of information and entertainment available on the internet could be in front of your eyes whenever you wanted it. Now, let's take it a step further and make that content "smart" in the sense that it knows when you want it, where you want it, and what formats you want it in — whether that means an entire virtual environment, 3D models added to a physical room as augmented reality, or simple text, photos, videos, or other media from the internet.

It means literally any space could either be enhanced or entirely transformed into just about anything. Entire museums could fit into your living room, kitchens transform into island getaways, and public

parks become high-end science labs. The metaverse's biggest limitation is the human imagination, and that's why every major technology company wants a piece of it.

As XR-enabled — particularly AR-focused — devices become more prevalent, we'll see these transformative possibilities seep more and more into our reality. We've already seen the beginning. Fashion companies offer apps that show users what they'll look like wearing the company's clothes. Home gym "mirrors" broadcast personal training videos and workouts while a 3D camera keeps track of their form in real time. Every major paint and furniture company is happy to let users digitally see what a room would look like painted a particular color or with a specific piece of furniture.

While all of these things exist, their prevalence is largely dependent on independent companies creating them to help sell their products. To make the metaverse (and thus, the knowledge metaverse) a reality on a large scale, there needs to be some infrastructure in place.

The two most obvious things people will need to join any kind of metaverse are an internet connection and a digital screen. The first is required to communicate with the global network and the ocean of information available from the billions of people around the world and throughout history. A self-contained miniature "metaverse" using only the data and content from a specific company, institution or area would theoretically be possible on a local network, but that would miss the point of the metaverse pretty substantially. Thankfully, that global internet connection is largely available throughout most of the world.

As for screens, users obviously need somewhere to view the content provided by the metaverse. Ideally, the screen includes speakers or headphones so you can listen to the information. Currently, these are commonplace in the form of the aforementioned XR-enabled smartphones, tablets and computers. As XR continually becomes a bigger industry, we'll almost certainly see these screens become

hands-free and wearable. Already, the Oculus Quest is more popular than any headset that came before it, and it's only a matter of time before companies like Apple and Microsoft release their own consumer-facing head-mounted devices. From there, it'll be a race to see who can create the most efficient, cost-effective, and consumer-friendly solutions, likely eventually ending with devices that look like regular eyeglasses, sunglasses, and even contact lenses.

Outside of those two prevalent requirements for users, the majority of the other infrastructure is primarily from the provider's point of view. The first necessity from a metaverse provider's side is a reliable cloud-based server system that can cover as much of the world as possible. This is used to store and distribute all of the information needed to link metaverse users with each other and with the internet as a whole. Fortunately, massive companies like Amazon and Microsoft already have these servers in place (AWS and Azure, respectively), and they're already hosting a good chunk of the internet, so other businesses can use their services without too much worry of failure.

The other major necessity for a metaverse provider is to have a platform that allows users to access the metaverse — both as a recipient and creator of content — without too much difficulty. This is where EON Reality generally comes in. We have long been working on an easy-to-use solution for XR content creation and distribution, and we've finally struck gold with EON-XR.

Now, I could go on for hours about the benefits of EON-XR (and often do), but this book is focused on the foundation and growth of the knowledge metaverse, so I'll keep it short.

Basically, EON-XR lets users partake in and create their own experiences and lessons based on 3D models and 360° environments without needing any programming or coding skills. If they know how to use their phone, tablet or computer, they know how to build and enjoy these XR experiences. Add in the fact that content creation only

takes a matter of minutes and can be done either from existing models/environments or scanned in through their device's camera in real time, and it's pretty much designed to be the easiest possible way for people to both absorb information from other people's lives as well as add their own in XR.

There's a whole lot more information about EON-XR available on EON Reality's website (and I'm happy to give the entire sales pitch anytime), but I'll spare you the details in this format. The key takeaway is that my belief in the knowledge metaverse comes from the success I've seen from people creating and experiencing their own XR content through EON-XR. Moreover, a platform like this is absolutely necessary for any kind of egalitarian metaverse to exist. While I'm sure that others will arrive in the future, EON-XR is already a fully functional product that serves as working proof that XR technology can connect and educate people around the world, regardless of culture, language or other societal barriers.

Beyond those requirements — and the technology to support them, such as the continued growth of content creation engines like Unity and Unreal, the imminent expansion of high-speed internet infrastructure to most communities around the world, and the internet remaining a relatively free and available space for content creators — the biggest limitations on any metaverse will be strictly within our own minds. As I said earlier, imagination will likely be one of the biggest early hurdles, as even the best artists and brightest scientists can only create what they can imagine.

Although I didn't realize it would help jumpstart the knowledge metaverse, I've been working on solving this problem. While our minds are limited in capacity by definition, I've spent decades connecting some of the most brilliant and creative people around the world, forming a global network that can communicate through the knowledge metaverse to create a shared pool of information, wisdom, content

and ideas. At the time, I considered bringing all of these progressive and revolutionary professors, government officials, CEOs and technology wizards together as a way to improve both EON Reality's products and reputation as a global leader in XR software for education and industry. Now, I realize it was always building toward something more.

I've seen how these geniuses — and I don't use that word lightly — build off of each other's ideas. That's what makes me so excited about the knowledge metaverse. By indirectly linking all of these people's studies, theories and research together, we will undoubtedly advance several (if not most) of their ideas in significant ways. While some of these high-level ideas and theories will likely be academic, I believe that much like how the internet has provided the general population with access to countless volumes of information that would have previously been locked away in academic journals and libraries, the knowledge metaverse has the potential to dramatically increase both the amount and usefulness of wisdom available to the public. These incredible early adopters and prototypers of the knowledge metaverse are creating the very foundation for the rest of us to build on, and the possibilities for transforming our daily lives are endless.

Instead of focusing on the entertainment and monetization aspects of the metaverse like some others, the knowledge metaverse is focused on bringing the vast amounts of knowledge, wisdom and information available both from trusted sources on the internet and from today's experts directly into the lives of billions. Imagine having the ability to see and hear every bit of information known to mankind for every object, process, scenario or environment you encounter at the exact moment you encounter it. Currently, that would be viewed as a superpower or the kind of technology that you'd expect to see in a futuristic movie. The truth is that the knowledge metaverse could bring that to us in the coming years, if not sooner.

SELF-SUPERVISED DEEP LEARNING

If you've been paying attention, you know that we already have all of the pieces in place for the knowledge metaverse and none are particularly new (e.g., the latest development being EON-XR). That's technically true, but there's missing aspect that will play a critical role in the long-term success of the knowledge metaverse. It's a topic that we touched on significantly earlier, and now it's time to tie it in with how it fits into the knowledge metaverse.

In the coming years, months, or possibly even weeks, I believe we will see a drastic change in artificial intelligence's ability to learn. We've already reached the point where AI can learn on its own by analyzing video and data for millions of hours in ways the human mind never could, and it would seem that we're nearing a breakthrough in being able to utilize this self-taught AI for practical real world benefits. I believe that XR technology (particularly AR devices) can combine with the enormous amount of sensor data within Internet of Things systems to bring this AI into our daily lives.

Speaking of the Internet of Things, let me give a quick explanation of this terribly-named technology. The Internet of Things (or IoT, for those who can't get enough acronyms) is a relatively simple concept that we all know but haven't named. It simply means "physical objects that have sensors in them to connect to the digital world."

For modern consumers, that equates to pretty much anything with the word "smart" in it. "Smart home" systems that can control the temperature, sounds, lights, locks and other aspects of a home all from an app or website are a perfect example of the Internet of Things. Wearable technology (like a "smart watch") that tracks your health and fitness — or monitors the vitals of an ill or elderly person — is all part of the Internet of Things. Automation and app support in "smart cars" relies on the Internet of Things. We could keep going with hundreds of examples for both consumers and industries (particularly sectors

like agriculture, medical and defense), but I think you get the point. The Internet of Things is already everywhere, it just needed to rebrand itself as "smart" devices because its actual name sounds ridiculous.

With all of that said, hopefully you now understand what the Internet of Things means and why it's likely going to be a major contributor in bringing this self-supervised learning AI into our daily lives. This AI would not only know what we're currently doing or need to know based on the sensors, but it could also predict what we're going to do next and what we'll need for that. By allowing the AI to track, analyze and learn from the data collected by these sensors, every aspect of our lives could become more efficient (if we so desire) and our capabilities in numerous areas would be increased exponentially.

Instead of speaking solely in hypotheticals, let's look at a potential and extremely simple real life example. These days, there are smart home systems that you can manually set up to automatically do things like turn on the coffee maker when your alarm goes off. It's a pretty simple process as long as you have IoT-connected devices on both ends of the process (your alarm and your coffee maker, in this case).

If we add a self-learning AI to the mix, the AI will know what time to set your alarm for based on your calendar. It could be that your first meeting of the day gets moved or an appointment is canceled. Perhaps you didn't sleep well the night before due to a cold or a crying baby, and you can change your 5am workout to the afternoon so you can sleep in. Maybe an eager boss or client calls an hour before your alarm and you know that going back to bed for the last few minutes is futile after talking them off of a ledge. No matter what happens, the AI is aware of the situation and adjusts both the alarm and coffee maker accordingly. It won't force you to reschedule anything, but it'll know that you'll be happier and healthier if you swap that early morning gym session for some extra sleep after a rough night (and that you have

time to catch the evening cycling class after work but before dinner). But that's not all.

The AI can also keep track of how many pots of coffee you get out of a single bag of your preferred beans and add another to your shopping list when you're about to run out — or even place the order for you if you want it to. It can monitor your vitals to see if you should cut back on the caffeine some days, and even check online reviews to see if there's another similar blend or company that people seem to enjoy more than what you're drinking. It's no longer a simple automatic coffee maker but a full-blown barista offering to improve your coffee-drinking experience at every step of the way.

I believe that within the next 5-10 years, everything that we see and do will be able to be perceived by artificial intelligence in ways that can benefit us. We can have an automated assistant and expert with near-limitless knowledge at our beck and call for any and every aspect of our lives — not just coffee.

To break things down further, let's look at the two primary types of information that AI within the knowledge metaverse could know and analyze about our daily lives and how it could benefit us.

WHAT YOU'RE LOOKING AT

This is the big one (and also the most obvious) in the foundation of the knowledge metaverse. Regardless of objects being "smart" or connected to the Internet of Things, the AI is effectively looking at the world around the user alongside them as long as they're using an AR-enabled device. A basic form of this technology already exists in smartphones and tablets, where the AI within the device will recognize an object that the camera is pointing toward and be able to pull up information from the internet about it (or translate text into the user's native language, in the case of many popular uses).

As both AI and AR technology improves, we will soon see AR glasses and headsets where every single object that you look at will be recognized, identified, and annotated with information from the internet and experts. In the event that a user is the first person to see an object (such as a unique piece of art or a prototype), the AI will ask for the user's assistance in scanning the object and providing some information about it. Ideally, this creates a world where nearly every object is "cataloged" by the AI, and the few unique or brand new objects are being added to the collection with each passing day.

Once the AI identifies an object, all of the information available — particularly that which it believes would be most relevant to the user — would appear in the form of what I call a "knowledge portal." These portals are effectively individual pop-outs that can contain everything from images and videos to text and audio (all provided in the user's native language). Users would then be able to browse through knowledge portals to find the information they're looking for, or even create a new portal and contribute their own content if they have any new additions about the object.

As an added bonus, AR technology means that any information obtained from the knowledge portals would be provided in the context and scenario when and where it's most useful. Users wouldn't be learning about these topics in a vacuum (which often happens in a textbook or video), but in the immediate surroundings in which they need the information. The AI would be able to superimpose the desired knowledge when and where people need it, as they need it — which, in turn, would help the AI learn more about the context of the content.

WHERE AND WHO YOU ARE

That last bit about the AI better understanding context is really what holds the magic of the knowledge metaverse.

By including information about the users (the more detailed, the better) and GPS functionality, the AI can better understand both what a person is looking at and why. The AI will learn if a user is observing something for work, for education or for enjoyment based on where and when they're experiencing it and how that fits into their typical schedule. If that doesn't seem like a big deal, consider the difference between what a mechanic would need to see when looking at a classic car as opposed to a collector, and then compare both of them with what you'd show a child who was just fascinated by cars of all types.

The AI's understanding of who is learning about an object and why they're interested effectively contains the potential for elevating humanity through the knowledge metaverse. It's no longer providing a simple automated search engine in augmented reality but a truly customized experience catered directly to the user. This is pivotal in making the knowledge metaverse effective for everyone, as it could then meet the needs of both an Alzheimer's patient and a kindergartener, even if they're looking at the same object in the same place at the same time.

The more user details the AI knows, the more it can create a specific, appropriate, and useful profile for that person. Everything from age and profession to health history and religion could play a role in determining what information a user wants any given moment. In the way that technology giants like Google and Facebook can develop extremely personalized recommendations based on user data, the knowledge metaverse could use that same profile-building technology to improve the lives of users rather than simply targeting them for advertising and marketing purposes.

KNOWLEDGE ON DEMAND

The purpose of all of this is to provide people with what I call "knowledge on demand." As you observe the world, AI provides the knowledge and information that will help you. It will know who you are, where you are, what time it is, and what you're most likely doing there (perhaps not specifically, but at least for work purposes). It will then use this information to create a sense of flow within the person's life, removing many of the daily obstacles we face.

Huge portions of our lives are dedicated to solving problems and accomplishing tasks that could be done more efficiently. No matter how simple many of these tasks can be, we're met with a lot of resistance. That might mean waiting in line to get a coffee at Starbucks or journeying through the various checkpoints and procedures at an airport while trying to catch a flight. It could also be scenario-specific resistance, like deciding which COVID vaccine to receive (and when to receive it) or unexpected questions on an exam. Regardless, these are all problem-solving tasks that we essentially must confront on our own.

In the last two decades, we've seen cell phones and smartphones improve many of these problems. We can circumvent some of the times when we meet resistance and lessen others through proper planning with a smartphone, but our ability to receive help in the moment of unexpected resistance is relatively limited and primitive — particularly if we don't have the time and opportunity to research on our phones at that moment.

But imagine if you didn't need to search your phone (or anywhere else) for information or solutions at the exact time and place you need it. It could be presented to you in your line of sight in the most convenient and useful format in the moment. That could be the power of XR and the knowledge metaverse.

Aside from the enormous improvement in productivity, users will likely experience a feeling of safety and comfort knowing that they have a completely unbiased AI looking out for their wellbeing. Of course, users will maintain the ability to turn the AI off and on as they please (by deactivating it or simply removing the XR device), but it's easy to see why most people would leave it on after seeing how much more efficient and powerful they could be with it on. While other companies and technologies want to collect user data for commercial purposes, the knowledge metaverse and data-collecting AI would be focused on helping people navigate the world and solve problems better than they could naturally.

Who wouldn't want an AI that is entirely there to provide help, comfort and entertainment to solve our problems and satisfy our needs? And beyond the improved efficiency and enjoyment the knowledge metaverse could provide, it has some practical medical applications.

Health and wellness has become one of the primary selling points for wearable technology in the form of rings, watches, wristbands, necklaces and more. They measure everything from your sleep patterns and heartbeat to your blood pressure and the amount of calories you've burned in a day. But these wearables all share one shortcoming: the only people who can see and interpret your information are you and your healthcare provider (in the event that both your provider and the device allow for that level of connectivity).

With the knowledge metaverse, these devices could also connect with AI and data from all over the world to create an entirely different scenario. The AI could look at your lifestyle as a whole and suggest changes to improve your health. That could mean rescheduling an early meeting after a sleepless night or fitting in recommended workouts among the chaos of a busy calendar. It could recommend healthy meals that you would enjoy (based on previous dining experiences) in

new cities while traveling and even use GPS to map out a run or bike ride to keep you in shape on a business trip.

Artificial intelligence could even suggest treatments in the event that any of your vitals become abnormal, whether it's a common cold or a heart attack. It could even take preventative measures and contact your healthcare provider if your health is going in the wrong direction to get a prescribed treatment, or call an ambulance before it was too late if things got particularly dire. Factor in that all of these actions could be influenced by your family history, DNA patterns, medical reports and various other contributing factors, and it's not unlikely that this AI could prolong and encourage healthier lives for nearly anyone who uses it. Plus, for those curious, any and all of this medical information would be available instantaneously with as much or little detail as desired through any XR-enabled device.

All of these improvements are only possible through the combination of artificial intelligence, XR, the Internet of Things and the global data science efforts known as "big data." Everywhere from workplaces and classrooms to hospitals and resorts could — and likely will — see massive increases in efficiency through the knowledge metaverse, and individual people will gain the possibility of a better life with fewer problems and frustrations.

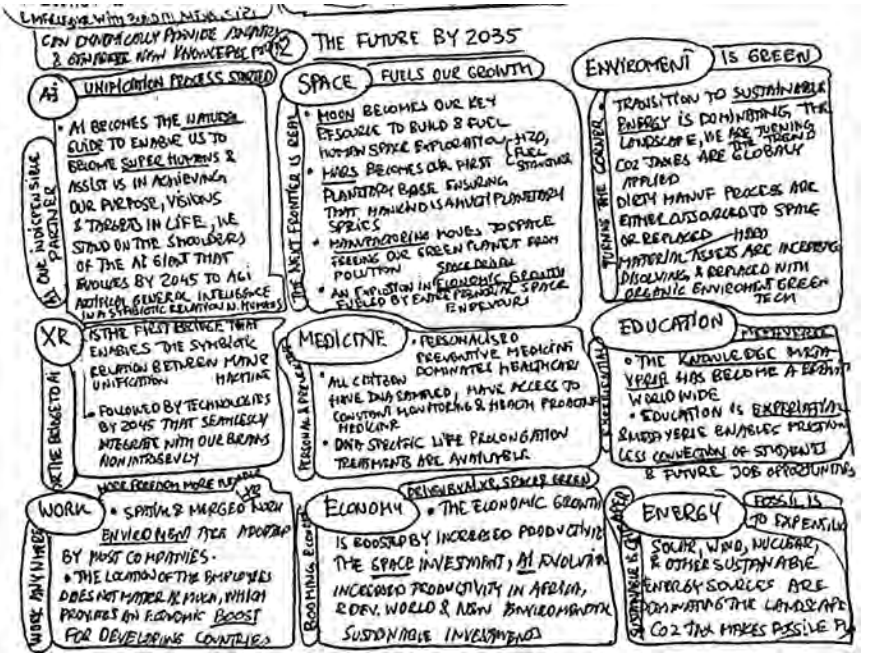
Industry training and career development would be entirely transformed, allowing trainees and new hires to effectively learn the necessary skills, information and processes while actively doing their jobs and cutting the essential onboarding time to a fraction of what it is now. Academic and vocational studies could suddenly bring in immersive and interactive content from around the world — whether that means gathering a remote class into a single digital laboratory or taking a customizable "field trip" to anywhere at any time while never leaving the lecture hall. Minor personal inconveniences like traffic jams and waiting in line could be eradicated entirely, while major

concerns like health and safety could be constantly monitored and updated based on every measurable metric. And this could all happen with little to no effort from the end-users benefitting from it.

We live in a society where having instant access to information is more or less a necessity thanks to the internet. But we haven't yet fully realized how to best use that information or deliver it efficiently — and that's where the knowledge metaverse could elevate humanity to the next level. Smartphones have already teased the possibilities of what people can achieve with modern technology, but they remain a fairly primitive way of providing all of the resources that the internet has to offer.

Instead of relying on clunky combinations of hardware, software, and the internet to overcome the challenges of our daily lives, why not integrate the solutions naturally in a way that will help everyone? We already allow companies to collect obscene amounts of our data while asking AI to handle simple problems for us, so why not let AI utilize that data for our benefit instead of just benefiting big tech companies?

The ingredients to evolve us into superhumans already exist, we just haven't been able to fully reap the benefits yet.


THE FUTURE BY 2035
AI
UNIFICATION PROCESS STARTED
AI BECOMES THE UNIFIED GUIDE TO ENABLE US TO BECOME SUPER HUMANS & ASSIST US IN ACHIEVING OUR PURPOSE, VISIONS & TARGETS IN LIFE, WE STAND ON THE SHOULDERS OF THE AI GIANT THAT EVOLVES BY 2045 TO AGI ARTIFICIAL GENERAL INTELLIGENCE IN A SYMBIOTIC REUNION W. HUMANS
AI OUR INDISPENSIBLE PARTNER
XR
IS THE FIRST BRIDGE THAT ENABLES THE SYMBIOTIC REUNION BETWEEN MIND UNIFICATION MACHINE
FOLLOWED BY TECHNOLOGIES BY 2045 THAT SEAMLESSLY INTEGRATE WITH OUR BRAINS NON INTRUSIVELY
THE BRIDGE TO AI
MORE FREEDOM MORE PURPOSE
WORK
SPATIAL & MERGED WORK ENVIRONMENT WILL ADOPTED BY MOST COMPANIES.
THE LOCATION OF THE EMPLOYEES DOES NOT MATTER AS MUCH, WHICH PROVIDES AN ECONOMIC BOOST FOR DEVELOPING COUNTRIES
MORE AVAILABLE
SPACE
FUELS OUR GROWTH
MOON BECOMES OUR KEY RESOURCE TO BUILD & FUEL HUMAN SPACE EXPLORATION
MARS BECOMES OUR FIRST PLANETARY BASE ENSURING THAT MANKIND IS AHEAD PLANETARY SPECIES
MANUFACTURING MOVES TO SPACE FREEING OUR GREEN PLANET FROM POLLUTION
AN EXPLOSION IN ECONOMIC GROWTH ENABLED BY ENTREPRENEURIAL SPACE ENDEVOURS
THE NEXT FRONTIER IS REAL
MEDICINE
PERSONALISED PREVENTIVE MEDICINE DOMINATES HEALTHCARE
ALL CITIZEN HAVE DNA SEQUENCED, HAVE ACCESS TO CONSTANT MONITORING & HEALTH PRODUCTS
DNA SPECIFIC LIFE PROLONGATION TREATMENTS ARE AVAILABLE
PERSONAL & PREVENTIVE
ECONOMY
DEVELOPING SPACE GREEN
THE ECONOMIC GROWTH IS BOOSTED BY INCREASED PRODUCTIVITY THE SPACE INVESTMENT, AI EVOLUTION INCREASED PRODUCTIVITY IN AFRICA, R DEV. WORLD & NEW BIOENGINEERING
SUSTAINABLE INVESTMENTS
BOOMING ECONOMY
ENVIROMENT
IS GREEN
TRANSITION TO SUSTAINABLE ENERGY IS DOMINATING, THE LANDSCAPE, WE ARE TURNING THE TREND CO2 TAXES ARE GLOBALLY APPLIED
DIRTY MANUF PROCESS ARE EITHER OUTSOURCED TO SPACE OR REPLACED
MATERIAL ASSETS ARE INCREASINGLY DISSOLVING & REPLACED WITH ORGANIC ENVIROMENT GREEN TECH
TURNING THE CORNER
EDUCATION
THE KNOWLEDGE WITHIN VERSE HAS BECOME A BRAIN WORLD WIDE
EDUCATION IS EXPERIMENTAL
IMMERSIVE VERSE ENABLES MASSIVE LESS CONNECTION OF STUDENTS & FUTURE JOB OPPORTUNITIES
EXPERIENTIAL
ENERGY
FOSSIL IS TO EXPENSIVE
SOLAR, WIND, NUCLEAR & OTHER SUSTAINABLE ENERGY SOURCES ARE DOMINATING THE LANDSCAPE
CO2 TAX MAKES FOSSIL PL
SUSTAINABLE & CHEAPER

CHAPTER 4:
THE FOUNDATION OF THE KNOWLEDGE METAVERSE

"Any sufficiently advanced technology is indistinguishable from magic."
—Arthur C. Clarke

WHAT IS EON REALITY'S KNOWLEDGE METAVERSE PROGRAM?

When we talk about the knowledge metaverse, it often sounds very theoretical and futuristic. Some of our discussions and explanations of "an interconnected world where digital information meets physical realities" may as well be about flying cars, laser guns or time travel.

But the truth is the early stages of the knowledge metaverse are already here and have been around for quite some time.

The knowledge metaverse is more of an amalgamation of a number of different aspects that already exist in today's world. As we mentioned earlier, XR and AI play crucial roles, but so do the secondary aspects of an internet-based society, like global cloud-based servers and the near-limitless amount of information already available digitally. In some ways, the entire world has been building up to the knowledge metaverse since the early days of floppy disks and topic-based chat rooms.

For those of us here at EON Reality, we've been building into the knowledge metaverse for more than two decades now without fully realizing it.

Without tooting our own horn too much, EON Reality has always been on the cutting edge of XR technology. We were among the first to get into early 3D imagery and videos for academic and enterprise purposes, back when that meant custom hardware and installations that took up huge amounts of space and computing power. When early XR headsets became more prevalent, EON Reality became one of the earliest and most prominent creators and distributors of customized XR software for learning, training, and performing while on the job.

Now, we can look back on those years and see how far the XR industry has come. Sure, EON Reality still develops content for head-mounted devices (particularly the most consumer-facing ones such as the Meta Quest), but the key component running through all of our solutions is that they need to be accessible on any XR-enabled device — primarily the smartphones, tablets and basic laptops that are used by billions of people today. That led us to the creation of EON-XR, which continues to provide users with an all-in-one code-free solution for their XR needs.

By allowing teachers, students, trainers and trainees to develop and partake in their own XR experiences — as well as experiences developed by their peers both within their institution and around

the world — we unknowingly laid the groundwork for the knowledge metaverse. Ever since launching EON-XR's predecessor, the AVR Platform, a half-decade before anyone had ever heard the word "metaverse," we'd been focused on growing our global network to allow users around the world access to the knowledge, information and experiences of other EON-XR creators. We worked hard to bring access to this network to countries and institutions regardless of location or background due to our fundamental belief that knowledge is a human right and that practical XR solutions should be available to anyone who wants them.

In other words, we dedicated the late 2010s and early 2020s to democratizing XR technology for schools, governments and businesses while creating a global database and community of XR-enabled academic and industry-based experiences. When you combine these two factors, it's easy to see how EON-XR unexpectedly blossomed into the foundation of the knowledge metaverse.

Basically, EON-XR put the entry-level creation tools at the very core of the knowledge metaverse into the hands of millions of people who could already connect with each other, and we spent years refining and expanding them into their best possible iterations. EON Reality also consulted with academic and workplace training experts from all over the world, gathering their expertise in a multitude of subjects and industries to see how best to utilize modern XR technology. At first, most practical uses for XR meant room-sized displays and custom software, but these days, it can all be done with a single application from the comfort of a smartphone, tablet, or laptop.

KNOWLEDGE IS A HUMAN RIGHT

Before we dive into how some of EON Reality's partners are already building the knowledge metaverse, I want to take a quick detour to talk from a theoretical standpoint.

I've always believed that knowledge is a human right. I've held this belief so firmly that it became EON Reality's official slogan and still drives the vast majority of what we do. While it may sound like a catchphrase, it's the essence of what I know the knowledge metaverse can bring to society.

Ultimately, this idea comes from the theory that while no one can be forced to learn anything, they should always have access to any information they would like to learn. It's basically an extremely nerdy version of the old saying, "You can lead a horse to water, but you can't make it drink," except I believe that the horse should always have access to water, just in case it ever gets thirsty.

I believe it's more important than ever to have an informed and knowledgeable society, as we've seen how destructive and detrimental misinformation and ignorance can be — particularly now that it can so quickly and easily be amplified across the internet. Ever since I founded EON Reality, I've been focused on the idea of "knowledge transfer," which is the basic concept of taking information known by one person (or a group of people) and creating ways to spread it to other people.

Think of a traditional classroom. In this classroom, the teacher is the one who possesses the bulk of the knowledge, and it's their job to transfer that knowledge to the students. This may be basic grammar and arithmetic, advanced neurobiology or welding safety. Each of these lessons would obviously have different audiences and would require the correct instructor to properly teach it. This is the most rudimentary form of knowledge transfer, but it's rarely the most efficient.

For one thing, the teacher cannot just be an expert in the field. The most knowledgeable mind is useless in this scenario without the ability to effectively communicate and convey the information to those who don't know it. This is why the best artists and athletes often don't make for optimal instructors — they may just be naturally gifted within their field of expertise or have forgotten how to explain the very basics that a novice would need to learn.

Another area of inefficiency within the traditional "classroom" model is that it generally requires both the instructor and students to be present in the same place at the same time to get the full effect. Even before the COVID-19 pandemic, online and video courses historically saw weaker results when compared to in-person classes. But 2020 and 2021 showed us just how much students and teachers alike can struggle when forced to interact through video calls and online chats. It's the same reason why a platform like YouTube is great for entertainment purposes and high-level explanations, but nearly impossible to use for really detailed, memorable learning experiences.

I believe that there's a middle ground that brings us the best of both worlds.

By utilizing XR for knowledge transfer, many of the issues and barriers that plague other formats of learning and training fall by the wayside. Numerous studies have already shown that XR helps with knowledge retention and learning speed, and that's not even counting the speed bumps it smooths over in the process.

Subject matter experts no longer need to be incredible lecturers or communicators, as they can teach by doing what they know rather than talking about it. Anything from animal dissection to an engine teardown can be taught effectively regardless of language barriers, and XR allows the experts and instructors to perform a "hands-on" task as students or trainees follow along and mimic their actions. Unlike their real-world counterparts, the learners can slow down, reverse, and

repeat specific steps until they fully grasp the action and the concept — something that often isn't logistically possible when working with limited resources in a classroom.

Now that we've integrated AI and the vast power of the internet into XR, the instructor also knows that they no longer need to be the one who holds and shares all of the knowledge. Much like how teachers might show a video in class to emphasize a point or show a different perspective on a subject, instructors using XR (or at least EON-XR) can incorporate videos, presentations, images and more from the internet into their content. In other words, the knowledge they transfer can extend well beyond their own.

These shared experiences — whether they're hosted live or recorded by the instructor for the students to utilize individually — also provide an identical opportunity for both in-person and remote learning. The beauty and simplicity of a shared digital session is that "hybrid" and online courses will no longer lack the communal academic experience or the interactive elements generally abandoned by Zoom calls and recorded videos.

Even outside of a formal academic or training context, it's easy to see how XR experiences would improve knowledge sharing and transfer. Instead of watching a video about how to change a flat tire or clear out the dryer vent on a new appliance, you could simply search the model of your car or washing machine and have an interactive step-by-step tutorial to walk you through the process on the exact device in front of you. For a society increasingly dependent on scouring the internet for help with solving life's daily challenges, an XR catalog of helpful walkthroughs and experiences could put significantly more knowledge than ever before at the fingertips of millions, if not billions of people.

THE KNOWLEDGE METAVERSE'S EARLY ADOPTERS

We could talk about the knowledge metaverse until we're blue in the face, but that talk is meaningless without highlighting the work of several institutions that embraced the knowledge metaverse early.

At the time of this writing, nearly 100 schools, governments and businesses around the world have adopted the knowledge metaverse. Each one adds their personal experiences, expertise and perspectives to the global repository — some of which is kept private for that institution, while others are created with the express permission and desire to be shared with the entire worldwide network.

Now, we obviously can't share government secrets or experiences based around trademarked content for many of our industry partners, but the academic side of the knowledge metaverse is usually more willing to publicize the types of experiences they're creating. Schools like Manchester Community College, University of the West Indies, Mississippi Gulf Coast Community College, Nile University and Rwanda Polytechnic University are among the knowledge metaverse's leading contributors, but there are a few institutions we should look at to truly see the possibilities of the future.

First, let's take a peek at what one of the largest American contributors to the knowledge metaverse: Baker College.

Baker College is both the state's largest not-for-profit university and one of the most prolific creators of content within the knowledge metaverse across North America. Rather than focusing on a singular hub, Baker College adopted a multi-campus rollout of the knowledge metaverse to bring XR solutions to students and faculty at their various campuses around the state.

With an emphasis on inclusion and practical career training and learning, Baker College found that the knowledge metaverse fit

into their curriculum in several different ways. The most obvious and immediate improvements came from areas like the electronics department, which was suddenly able to give students a detailed look at the complex interior of a fiber optics cable and to pull apart PC motherboards without needing to rip out an entire computer lab each class.

From there, Baker College expanded in other scientific fields, ranging from the biology department's microscopic breakdown of an animal cell to a nutrition class explaining the dietary values of a wide array of food and how they affect the body when consumed. Before long, Baker College even began to make use of the macro side of the knowledge metaverse. They digitally brought students to the Taj Mahal for a discussion on the importance of the structure from a cultural and historical perspective, while also teleporting an entire class to Northern Ireland for a geography lesson about Giant's Causeway.

On the other side of the academic spectrum and the world, University for Business and Technology in Kosovo is a regional powerhouse in both business and technology for the Balkans. As one of the top-rated universities in Kosovo, University for Business and Technology has used EON-XR and the knowledge metaverse to create both extremely technical and artistic experiences.

To this day, University for Business and Technology is one of the knowledge metaverse's leading experience creators in quality and quantity, and they've been particularly strong in their areas of academic expertise, such as architecture, electronics, medicine and engineering. While much of the world may not speak Albanian, the knowledge metaverse's use of AI translations and physical explanations means these experiences can travel and help users far outside of their regional boundaries.

Although they've created experiences for everything from simple farmhouses to uniquely high-end robotics and machinery, University for Business and Technology perhaps shines the brightest within the

various subsects of engineering. From their comprehensive explanation of how a microwave optics system works to the complete piece-by-piece dissection of a reducer mechanism. This may not be the sexiest subject matter, but it's absolutely vital when building out industrial and mechanical engineering catalogs for students and trainees.

It's not all engineering for University for Business and Technology, though, as one of their most popular creations is a deep dive into how solar panels work for those interested in the energy sector. They've also created a bevy of musical instruments complete with sounds, usage and historical information.

Finally, Babeș-Bolyai University in Romania has established itself as one of the most prominent creators of scientific experiences within the knowledge metaverse. As a public research institution with a history dating back to 1581, Babeș-Bolyai University brings centuries of knowledge and experience to the global network.

From basic geology like the science behind volcanoes to advanced training for complicated surgeries and other medical procedures, Babeș-Bolyai University has developed XR experiences for the lecture side of their courses and hands-on lab sessions. Even outside of practical science uses, Babeș-Bolyai University has created a multitude of experiences for the global community, like a large-scale look at the entire solar system and some of the most important historical sites throughout Europe.

That balance between the practical and the entertaining makes the current stage and prospective future of the knowledge metaverse so appealing. Whether it's the driest of scientific material or a bit of an educational vacation, users can learn in an engaging and unforgettable way. Countries like Morocco are discovering this on a national scale, as EON Reality partnered with USAID and several local universities and organizations to roll out the knowledge metaverse and XR solutions as a part of its digital transformation.

These early adopters of the knowledge metaverse show how schools, businesses and governments around the world can implement XR solutions to affect serious change to benefit the people who rely on them. While we may spend a lot of time looking toward the future, we shouldn't overlook how these technological pioneers have already defined what XR can be used for in the present.

SETTING THE KNOWLEDGE METAVERSE IN PLACE

I don't want to go too in-depth about the logistics of how we've set up the knowledge metaverse to this point (as that quickly becomes a business discussion), but I think it's important that we veer away from the main narrative to peek behind the curtain.

As I've mentioned, EON Reality is built on the premise of democratizing XR solutions and spreading that technology — and the knowledge that goes with it. As such, our business model is based around creating as large of a global network as possible. We want to partner with as many organizations as we can, and we're willing to find answers and make deals to get our solutions into the hands of billions of people.

During the COVID-19 pandemic, we launched the Grant Guarantee Program to help schools and governments in need launch their own XR programs to solve the remote learning problems. As a part of this program, I heard from dozens of government and education leaders about what they want from the knowledge metaverse and how we could best meet their needs.

The Grant Guarantee Program broke records for EON Reality, ultimately landing us more than 42 million users and partners across 73 countries before it expired. But the real takeaway from those Zoom conversations and my four-month world tour immediately following

the lockdowns was that people didn't understand the possibilities of XR or the knowledge metaverse.

Many of these institutions were willing to work with us to find grants and split the cost of a knowledge metaverse hub or rollout, but ultimately they were more interested in the prospect of exciting new technology than in how it could be best utilized to their benefit. Of course, there were some organizations that took to it like a fish to water, but many were hesitant about diving headfirst into the new world.

Without going too far into the specifics, we found a way to make things work where the partnered organizations only need to cover 10% of the cost or less. A combination of grants from EON Reality's non-profit arm, Learn for Life, and outside sources covered the rest. This put the knowledge metaverse and XR technology into the financial reach of institutions that never would've otherwise afforded it — nor believed they could afford it.

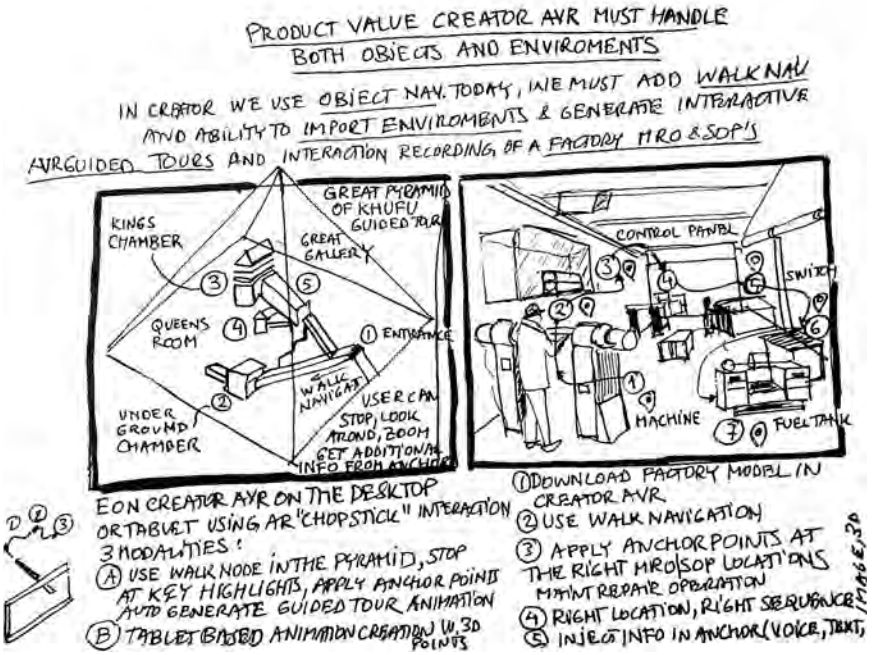
In addition to the financial assistance, EON Reality also worked with both technical and pedagogical experts to come up with a new implementation plan for partners around the world. Seeing as the traditional classroom model essentially disappeared at the beginning of the pandemic, we guided organizations to become more proficient with remote classes and self-directed learning rather than just scrambling to figure out how to use Zoom at the last minute.

This implementation plan also included one-on-one meetings with our experts and Customer Success Department to make sure the partner understood what they were receiving, how to use it, and how they could best integrate it into both their Learning Management System and daily curriculum. Plus, we offered training courses and workshops to get the faculty members up to speed on everything they now had access to and some best practices for using it in and out of the classroom.

Additionally, we set up a new possibility through the knowledge metaverse for institutions to be able to profit from the experiences they created that are being used by other organizations within EON Reality's global network. While not everyone will be able to benefit from it, this program could create a significant revenue source for those who commit to creating top-notch experiences within the knowledge metaverse.

Long story short, programs like the Grant Guarantee Program extended EON Reality's global network to create the basis for the knowledge metaverse. Even as an invitation-only program that required a seven-step approval process, the known benefits of XR combined with the additional benefits EON Reality was offering made 2020 and 2021 two of the biggest years in the company's decades-long history.

The knowledge metaverse may not be in full swing just yet, but it's much closer than it was before the pandemic.


PRODUCT VALUE CREATOR AVR MUST HANDLE BOTH OBJECTS AND ENVIROMENTS
IN CREATOR WE USE OBJECT NAV. TODAY, WE MUST ADD WALK NAV AND ABILITY TO IMPORT ENVIROMENTS & GENERATE INTERACTIVE AVR GUIDED TOURS AND INTERACTION RECORDING OF A FACTORY MRO & SOP'S
GREAT PYRAMID OF KHUFU GUIDED TOUR
KINGS CHAMBER
GREAT GALLERY
QUEENS ROOM
ENTRANCE
WALK NAVIGATE
UNDER GROUND CHAMBER
USER CAN STOP, LOOK AROND, ZOOM GET ADDITIONAL INFO FROM ANCHOR
CONTROL PANEL
SWITCH
MACHINE
FUEL TANK
EON CREATOR AVR ON THE DESKTOP ORTABLET USING AR "CHOPSTICK" INTERACTION 3 MODALITIES !
(A) USE WALK MODE IN THE PYRAMID, STOP AT KEY HIGHLIGHTS, APPLY ANCHOR POINTS AUTO GENERATE GUIDED TOUR ANIMATION
(B) TABLET BASED ANIMATION CREATION W 3D POINTS
(1) DOWNLOAD FACTORY MODEL IN CREATOR AVR
(2) USE WALK NAVIGATION
(3) APPLY ANCHOR POINTS AT THE RIGHT MRO/SOP LOCATIONS MAINT REPAIR OPERATION
(4) RIGHT LOCATION, RIGHT SEQUENCE
(5) INJECT INFO IN ANCHOR (VOICE, TEXT, IMAGE, 3D

CHAPTER 5:
THE INTERCONNECTED MIXED REALITY FUTURE

"The future is unwritten."
—Joe Strummer

The truth is that no one knows what the future holds. I don't know it, you don't know it, and no one (other than potential time travelers) could know it. While that time travel may be science fiction (at least for now), we can make some educated guesses about what certain aspects of our society and daily life will look like in the future.

We can say with relative certainty that topics like sustainability and renewable energy will be key points in the future. We can look at the direction that technology is moving and expect it to continue in that way. We can see the impact that technologies like XR and AI currently have and how they can grow in the years to come.

I won't pretend to know exactly what's going to happen, but I think I'm capable of making some rough estimations. If you're

interested in hearing what I think life will be like for us in 10-15 years, you've come to the right place.

THE FUTURE BY 2035 AND BEYOND

We've spent a lot of time and words in this book discussing how artificial intelligence is changing the world and will continue to transform our relationship with technology. I don't need to go into that again, but I will say that I think AI will be one of the keys to society's development in the next couple of decades.

AI is destined to become the natural guide that enables us to effectively become superhuman and assist us in achieving our purpose, visions and targets in life. As I've said before, in the next 20 years or so we will likely begin to stand on the shoulders of the AI giants. But I believe our understanding of AI could evolve even beyond that. In 25-30 years, there could be a universal AI network that can seamlessly communicate with itself to connect and support the entirety of human civilization. This widespread usage of AI on a personal level and communal/national/global level will likely evolve humanity more efficiently and on a larger scale than anything else in history.

We've already discussed the importance of AI in the present and future at length, so you should already know by now that XR is another area that I believe will lead to the greatest advancement in the coming years. As the bridge that best unifies AI with the human population, XR is the leading candidate to become the primary delivery mechanism of new AI developments and improvements. The combination of these two technologies can seamlessly integrate with our brains in a non-intrusive manner, which is effectively the basis for the metaverse (including the knowledge metaverse) as a whole.

As the world adjusts to this XR technology, I believe we'll see it infiltrate the working world on nearly every level. During the COVID-19

pandemic, we already saw how many workplaces shifted to remote and digital options. Zoom meetings and conference calls became the new normal. That change also showed many businesses they could please their employees and lower their operating costs without necessarily sacrificing productivity or profitability. With many workers and business owners alike unwilling to return to the physical office, I fully expect remote and digital workplaces to remain the standard in many locations. Where video and phone calls are lacking, however, XR can provide immersive and interactive spatial meetings for companies.

By removing many remote work limitations, employers can reap all of the benefits of an in-person workplace while eliminating commutes and geographical boundaries. A digital, XR-based "office" can have employees from all over the world, which would simultaneously boost growth in developing countries, bring new possibilities to entrepreneurs and small businesses, and raise profits and cut costs for larger existing corporations.

In the same way that businesses will begin focusing more on digital and XR workplaces, educators will likely grow more comfortable with utilizing technology and tools like the knowledge metaverse to teach a variety of levels and subjects. As we've explained, this technology breaks down traditional "classroom" restraints, with educators being able to reach students around the world and lean on their colleagues and specialists for extra information or in-depth lessons on specific topics.

This also means that the academic community would become a worldwide level playing field, where students no longer need to physically attend the top schools for a world-class education. These premier institutions would be able to enroll students from all kinds of backgrounds located anywhere in the world, whether it's for a single course or a multi-year program. Additionally, I believe that education (from kindergarten through graduate programs) will transform to focus on

experiential learning, relying on XR and the knowledge metaverse to allow students to interact with and perform the things they're studying rather than simply hearing about them in a lecture or watching a video. The shift to experiential learning will increase student understanding and retention across the board — meaning newcomers to the workforce will be better prepared for their jobs and careers than ever before.

When it comes to major changes in the near future outside of the XR and AI space, I believe the journey into outer space will become one of the key points to fuel human growth. Space exploration is becoming more and more commonplace for large tech companies and other industry giants (in addition to the government expeditions that have gone on for decades), and I expect the Moon to become a key resource and testing ground for exploration to other planets and beyond. As a result of those interplanetary expeditions, I find it likely that Mars will become our first planetary base, officially making mankind a multi-planetary species. One of the major industrial and economic uses of this space exploration will likely be that manufacturing plants and other resource-heavy industries move off-planet to save Earth's atmosphere — so while the academic and exploratory side of the space industry is a bit more obvious at this point, interplanetary endeavors could become a massive portion of the global economy.

On a related note, I believe the transition to sustainable energy will become one of the largest priorities for the 2020s and 2030s as the effects of climate change and resource depletion become increasingly prevalent. International regulations such as heavy taxes on carbon dioxide emissions will be put into place once governments can no longer turn a blind eye to the crisis, which will displease many corporations and industries until they find new ways to capitalize on the "green" revolution. As previously stated, many "dirty" industries such as manufacturing and mining will either be moved into space or replaced with more sustainable alternatives, ultimately making a

noteworthy difference in the recovery efforts for our environment. I see this change being forced by the technology industry shifting their high-end materials and parts to focus more on organic and sustainable alternatives, which then drives down the demand for the old, less-sustainable resources.

As time wears on, I think the impacts of the oil and gas industry become glaringly obvious and fossil fuels will become too expensive for everyday consumers. We are already seeing gasoline prices lead drivers to more hybrid and electric cars, and I think we'll see electric vehicles become the norm — while solar, wind and other sustainable energy types (likely even nuclear) take over as the primary sources for electricity. Although it may take more than a decade or two, I suspect we'll see larger and larger machines and crafts like airplanes and cargo ships begin to use renewable energy, which will all but kill the fossil fuel industry and drastically increase the importance of the "green" sector.

It won't take long to see the economy shift its focus to the renewable "green" sector, space exploration and advanced technology such as XR and AI. This will likely begin with some turbulence as existing large corporations struggle to make changes, but it will soon become apparent that they must either evolve or go extinct. Large swaths of Africa and the rest of the developing world will see unbelievable productivity increases as space and sustainability could create an entirely new economic outlook and perception for much of society. The upending of certain industries and companies will create new possibilities for entrepreneurs and newcomers worldwide. In particular, I believe oil and mining-focused countries may lag behind the revolution for a bit before coming to terms with the new direction and putting an emphasis on moving their resources to other industries.

In an entirely different portion of society (and the economy) that will significantly impact day-to-day life, I believe personalized preventative medicine will become the norm for top-of-the-line healthcare.

Although it may sound like a dystopian science fiction idea now, I think many citizens will choose to have their DNA collected and analyzed by medical companies to monitor their health. This would lead to a much more robust understanding of what types of issues and diseases those people could be looking at later in life and how they can best combat them. I foresee that customized DNA-specific life prolongation treatments will become the next frontier for the medical industry, particularly once the global climate change crisis and other overarching concerns about the future are eased a bit.

Retirement and the late stages of life will likely be completely transformed by medical advancement, AI and XR technology. Doctors will be able to monitor patients from a distance better than ever, meaning that people will be able to age more gracefully in their own homes. Plus, modern wearable and "smart home" technologies will be able to communicate vitals, changes in movement, and other medical necessities with healthcare professionals, family members and whoever else needs the information. While some may still opt to live out their sunset years in a retirement home for social purposes, having around-the-clock care will be significantly more feasible and affordable through digital means.

THE KNOWLEDGE METAVERSE'S FUTURE IMPACT

Of course, none of these changes consider any of the sociopolitical or cultural changes we could see in the coming years. The only thing we can say for sure is that if things proceed as expected, AI, XR, and the knowledge metaverse will completely dominate our daily lives.

These technologies could impact every location and every sector of the world — from education to government, industry to medicine. Already, there are nearly 100 knowledge metaverse hubs worldwide,

and we expect that to grow tremendously in the next decade or two. As cutting-edge technology that's currently viewed as a luxury or novelty, XR and the knowledge metaverse will soon be as commonplace as a smartphone or laptop. Like those now-mainstream technologies that have completely transformed the modern world, our future likely rests within the rise both in function and popularity of immersive tech.

From students to CEOs, researchers to retirees, the knowledge metaverse could impact every aspect of our lives. It will fuel our curiosity for knowledge and provide new ways to learn and train — whether it's for enjoyment, education or employment. It will drive us to find intelligent ways to improve our lives in every imaginable facet, opening up new windows within the world as we know it or even creating possibilities we've never conceived.

It might sound cheesy to say that the knowledge metaverse could make us superhumans, but by using it to its fullest potential, we could easily enhance our capabilities beyond our human constraints. Maybe a cape isn't that far off after all.