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Dissolve of Living Space: Living Space Under the Development of Metaverse

Wenting Feng

Nuo Lyu

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Feng, Wenting and Lyu, Nuo, "Dissolve of Living Space: Living Space Under the Development of Metaverse" (2022). *Architecture Thesis Prep*. 432.
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Dissolve of living space

Living space under
the development of Metaverse

Research book made by:
Wenting Feng & Nuo Lyu

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INTRODUCTION

The metaverse is a new type of virtual-real Internet application and social form resulting from the integration of multiple new technologies, which provides an immersive experience based on extended reality technology and a mirror image of the real world generated by digital twin technology, builds an economic system through blockchain technology, closely integrates the virtual world with the real world in terms of economic system, social system, and identity system, and allows each user to produce and edit content ." The metaverse is a growing, evolving concept, with different players constantly enriching the world in their own way.

The metaverse is not just an independent and parallel virtual world, but its significance and value lies in the interaction with the real world, and in the interaction empowers the development of the economy and improves life experience.

01

ABOUT METAVERSE

CONCEPT OF METAVERSE

Metaverse is a network of virtual environments and virtual spaces, where people can come together and interact. Many consider it to be the successor to their Mobile internet.

Humanity may soon spend more time in these virtual worlds than in the physical world. It is important that these virtual spaces are beautiful and habitable for all.

At this point in time, the metaverse is generally made up of somewhat-immersive XR spaces in which interactions take place among humans and automated entities. Some are daily interactions with augmented-reality apps that people have on their computers and phones. Some are interactions taking place in more-immersive domains in gaming or fantasy worlds. Some occur in “mirror worlds” that duplicate real-life environments.

54% of these experts said that they expect by 2040 the metaverse WILL be a much-more-refined and truly fully-immersive, well-functioning aspect of daily life for a half billion or more people globally.

Experts warned that these new worlds could dramatically magnify every human trait and tendency – both the bad and the good. They especially focused their concerns on the ability of those in control of these systems to redirect, restrain or thwart human agency and stifle people’s ability to self-actualize through exercise of free will, and they worried over the future freedom of humans to expand their native capacities.

HISTORY OF METAVERSE

1960

Cyborg

In the context of space exploration and the space race being in full swing, two American scientists: Manfred Kleins and Nathan Klein together proposed that in the future, humans might be able to use high-tech machinery to strengthen their bodies and thus better adapt to the harsh environment of outer space. They named this with Cyborg (Cyborg).

1973



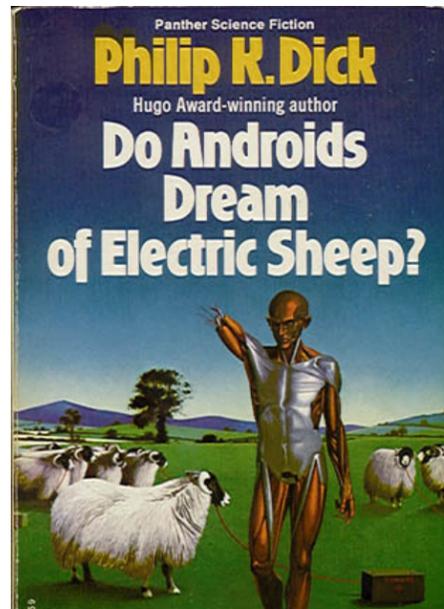
Community Memory

A strong, free, non-hierarchical channels of communication—whether by computer and modem, pen and ink, telephone, or face-to-face—are the front line of reclaiming and revitalizing our communities.

—Community Memory Project One

1960-1970

Cyberpunk

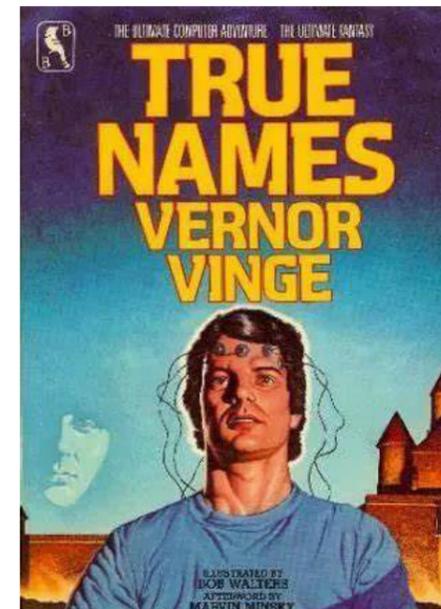


The main line of cyberpunk style is to reflect the strong contrast between the highly advanced human civilization and the fragile and small human individuals, while the outside world and the inside, steel and flesh, past and future, reality and illusion and other contradictions are intertwined in it. Seemingly opposing, but linked together.

Cyberpunk literature is strongly anti-utopian and pessimistic. They usually focus on the small people at the bottom in the future era of advanced technology, depicting the decadence of society and human decay under the appearance of a peaceful world, and making pessimistic predictions about the future.

Do Androids Dream of Electric Sheep,
Philip K. Dick,
1968

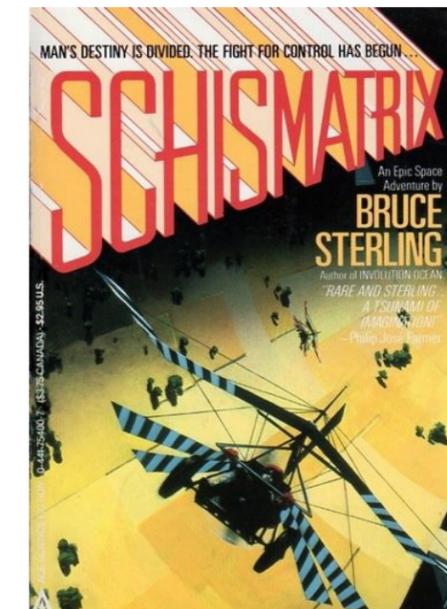
1981



True Name,
Vernor Vinge,
1981

A 1981 science fiction novella by American writer Vernor Vinge, a seminal work of the cyberpunk genre. It is one of the earliest stories to present a fully fleshed-out concept of cyberspace, which would later be central to cyberpunk.

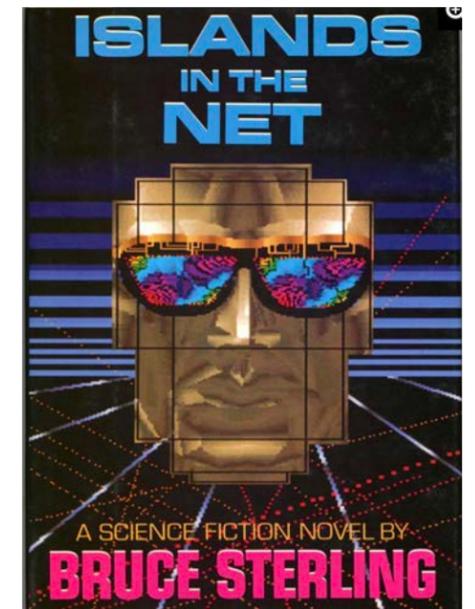
1985



Schismatrix,
Bruce Sterling,
1985

A science fiction novel, it was Sterling's only novel-length treatment of the Shaper/Mechanist universe. Five short stories preceded the novel and are published together with it in 1996.

1988



Islands in the Net,
Bruce Sterling,
1988

A 1988 science fiction novel offers a view of an early 21st-century world, apparently peaceful, with delocalized, networking corporations. The protagonist, swept up in events beyond her control, finds herself in places that are off the net.

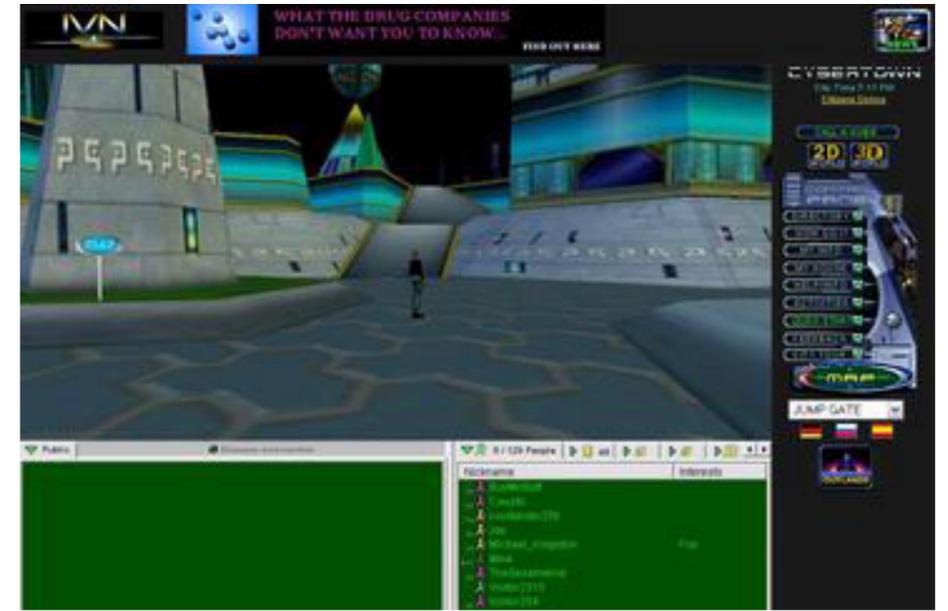


1990s

Metaverse During 90s century

CyberTown, 1995

Cybertown was a free (changed to pay per year in 2002), family friendly, online community. There were places (chat rooms) available either through a 2D or 3D chat environment. Users were able to have jobs within the community, earning virtual money called CC's (CityCash) that could be used to buy 3D homes and items. Each user was allowed a free 2D home and could locate it within any of a number of colonies subdivided into neighborhoods and blocks.



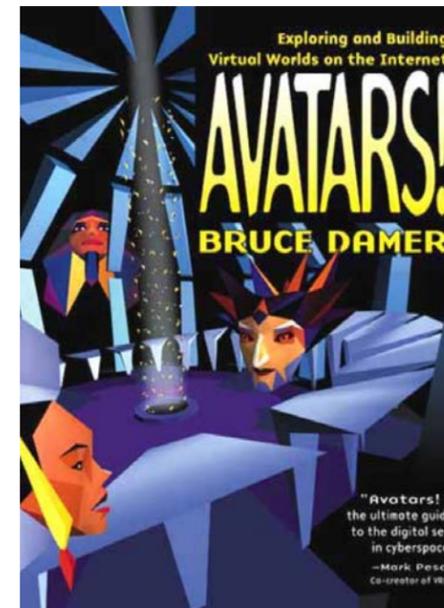
1990s

Metaverse During 90s century

AlphaWorlds

AlphaWorld, the first public virtual 3D environment in which users could build their own structures. They have mapped AW's virtual space using a well-known mapping interface- Google Maps.

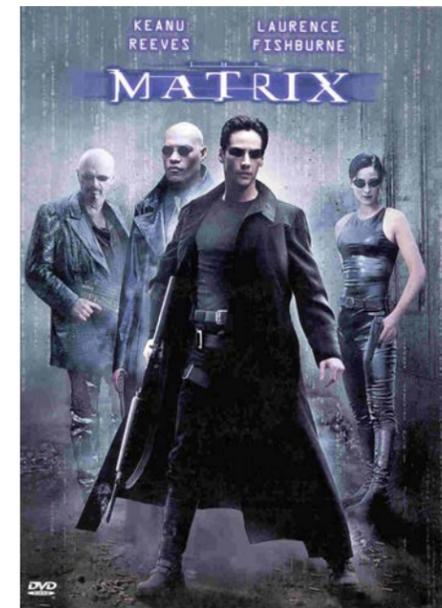
1997



Avatars!, Bruce Damer, 1997

This book is a personal avatar starter kit, designed to serve as a reader's travel guide as they become a citizen of many different kinds of virtual worlds on the Internet. The author designed the book for the general user of the Internet to make these worlds worth visiting.

1999



The Matrix, directed by the Wachowskis, 1999

The Matrix is a 1999 science fiction action film that depicts a dystopian future in which humanity is unknowingly trapped inside the Matrix, a simulated reality that intelligent machines have created to distract humans while using their bodies as an energy source.

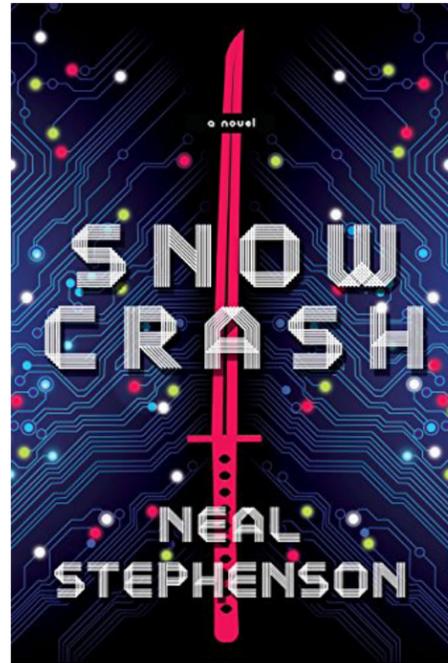
2000



Habbo, founded in 2000

Habbo (formerly Habbo Hotel) is an online community aimed at teens and young adults. It is owned and operated by Sulake, a Finnish company. Users on Habbo can create a character and build and design rooms, chat with other players, take care of virtual pets, create and play games and complete quests.

1992



Snow Crash,
Neal Stephenson,
1992

Invention of Metaverse

The story of "Snow Crash" is set in the United States in the near 21st century. At that time, American society is completely corporatized, with the government collapsing and relegated to second-rate businesses that run the show for the big conglomerates and corporations. The main character, Heero, is a born hacker and Japanese samurai and pizza delivery man who makes his living by delivering pizzas for the mafia. When the deadly avalanche virus, begins to overcome hackers and threaten virtual reality itself, Heero becomes the one to subdue the virus.

Snow Crash was more of a dystopian view of the future and didn't put the metaverse in a positive light. Author Neal Stephenson coined the term metaverse as a kind of next-generation virtual reality-based internet. One way to achieve status in Stephenson's metaverse was by technical skill, which was represented by the sophistication of a user's avatar.

Technologies are employed in this fictional world and help define it. Among these, the most famous one would be: Metaverse.

Stephenson's "Metaverse" appears to its users as an urban environment, developed along a single hundred-meter-wide road, the Street, that runs around the entire 65,536 km (216 km) circumference of a featureless, black, perfectly spherical planet. The virtual real estate is available to be bought and buildings developed thereupon. Access to the metaverse is through L. Bob Rife's global fiber-optic network, which grew from a collection of small cable television franchises into a global telecommunications monopoly and superseded the traditional telephone system.

1995



How to build a metaverse,
Joe Flower,
1995

How to build a metaverse

Web address

By late May this year, they released their first version, VRML 1.0. It didn't allow for interactivity (you can't pick something up and play with it) or behaviour (no doors open when you approach). There were no avatars (cyberspace representations of people), no multiple users (you can't see anyone else), no animation (the trees don't move, nor smoke curl up into the sky), and absolutely no sound. But for the first time, the online world had developed a protocol that would allow people to build virtual realities in cyberspace.

Navigation aid

The only difference is that since the Street does not really exist – it's just a computer-graphics protocol written down on a sheet of paper somewhere – none of these things is being physically built. They are, rather, pieces of software, made available to the public over the worldwide fiber-optics network. When Hiro ... looks down the Street and sees buildings and electric signs stretching off into the darkness, disappearing over the curve of the globe, he is actually staring at the graphic representations – the user interfaces – of myriad different pieces of software ...

Another world

In a world in which networked, interactive, multiuser 3D has become easy, high-resolution, relatively inexpensive and widespread, all sorts of uses for VRML arise. Consider these scenarios:

- An architect walks her clients through a building. The building does not exist yet – in fact, it's just a rough draft, an idea. The architect is in San Francisco, her clients are in New York and Toronto. In Louisville, people interested in a new public square and shopping area in the planning stages sit down at their computers, or at terminals in public kiosks in malls and office buildings, and take a stroll through the design.
- An art teacher takes her students on a tour of the Parthenon in its original glory, pointing out the friezes and the proportions of the columns. She clicks on the statue of Athena and a brief text appears, describing the statue's enormous size and unusual decorations. Down the hall, a history teacher troops his students into the Battle of Gaugemala, and science teachers fly their classes into a molecule, the ventricles of a living heart, or the fury of a supernova.

2003

Croquet: A Collaboration System Architecture

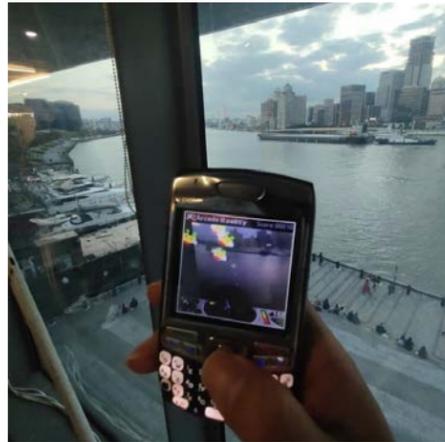
Croquet is a computer software architecture built from the ground up with a focus on deep collaboration between teams of users.

Croquet is a totally ad hoc multi-user network. It mirrors the current incarnation of the World Wide Web in many ways, in that any user has the ability to create and modify a "home world" and create links to any other such world.

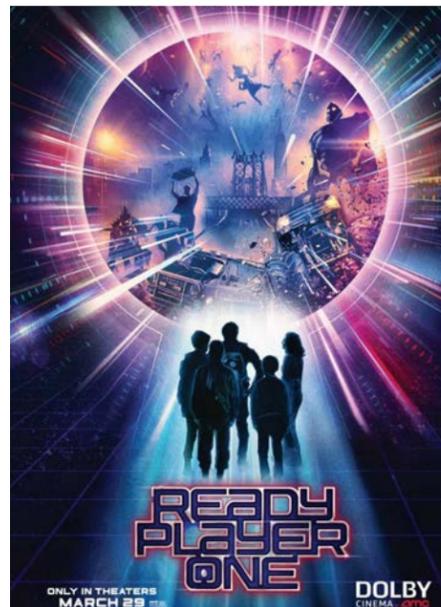
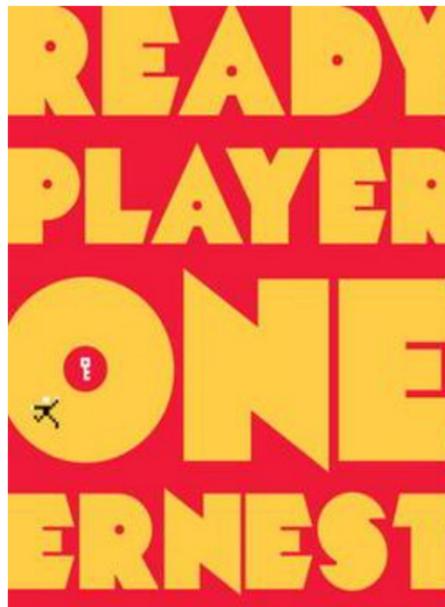
2007

Arcade Reality

Space Invaders vs. Shanghai
Space Invaders is a fixed shooter in which the player moves a laser cannon horizontally across the bottom of the screen and fires at aliens overhead.



1997



Ready Player One, Ernest Cline, 2011

Ready Player One is a 2011 science fiction novel. The story, set in a dystopia in 2045, follows protagonist Wade Watts on his search for an Easter egg in a worldwide virtual reality game, the discovery of which would lead him to inherit the game creator's fortune. A film adaptation, screen written by Cline and Zak Penn and directed by Steven Spielberg, was released on March 29, 2018.

2017

VR Chat

VRChat is an online virtual world platform. It allows users to interact with others with user-created 3D avatars and worlds. VRChat is designed primarily for use with virtual reality headsets but is also usable without VR in a "desktop" mode designed for either a mouse and keyboard or gamepad.



2021

Horizon World

Horizon Worlds (formerly Facebook Horizon) is a free virtual reality, online video game with an integrated game creation system developed and published by Meta Platforms. On this multi-player virtual platform, players move and interact with each other in various worlds that host events, games, and social activities.



2021

VR Working Tool

vSpatial, immersed, Rumii, Engage



EXISTING PRACTICES OF METAVERSE

Mona's Renaissance metaverse competition



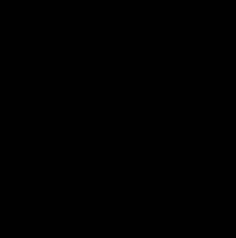
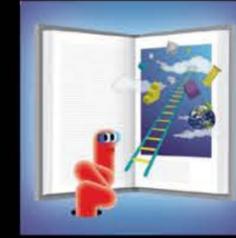
Bit.Country 3D Architect Competition



AIM DESIGN COMPETITION- 2022 First Metaverse Design Competition



Citic Press Metaverse Design Challenge 2022



Lantern Project #1



Metaverse Design Competitions. 2020-2022

Nowadays, there are many existing competitions trying to collect people's ideas to design the metaverse.

Many companies began designing and investing in the metaverse early on, and a wide variety of virtual worlds and virtual products have been produced as a result. From avatar for personal use, space for indoor activities, and public development worlds, concept objects of all sizes have been designed.

large

SIZE

small

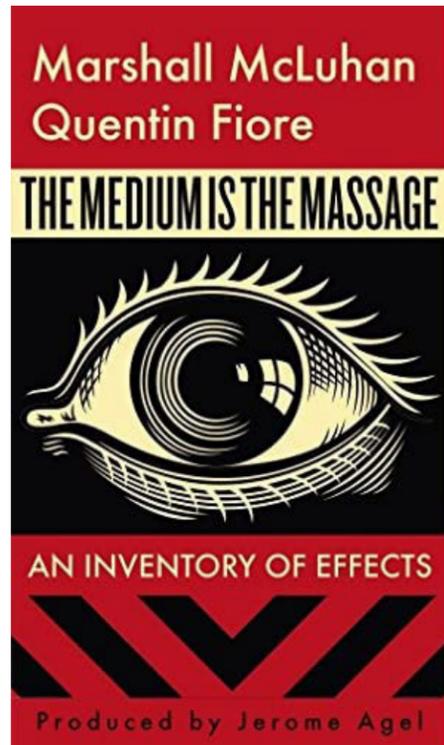


private

ACCESSIBILITY

public

Metaverse & Media



McLuhan, Marshall,
and Quentin Fiore.
The Medium Is the Massage.
New York: Random House,
1967.

Talking about the metaverse feels a lot like talking about the internet back in the 70s and the 80s. As the building blocks of the new form of communication were being laid down, it sparked speculation around what it would look like and how people would use it.

Everyone was talking about it but few knew what it really meant or how it would work. Looking back, it didn't turn out exactly as some people imagined.

“The metaverse is a 3D version of the Internet and computing at large”

– Mathew Ball (a venture capitalist and angel investor who's written a series of essays about the potential and structures of the metaverse)

Thus, to see Metaverse's connection with Media is also important for us to have better understanding of the Metaverse.

“The medium is the message”

- The way (the actual ground and services) that we send and receive information is more important than the information itself.

- McLuhan is writing about the effects of the mass media on our life. But he wasn't talking about the content—the information itself, he was talking about the form—the technologies that provide you with content.

- He was not saying that content is inconsequential. He was saying that when we pay too much attention to it, we ignore the power of form in shaping our experience. So, if you don't understand the medium, you don't fully understand the message.

“A medium is not something neutral. It does something to people, it takes hold of them, it rubs them up, it massages them it bumps them around.”

— Marshall McLuhan Speaks Special Collection: The medium Is the message

“It is impossible to understand social and cultural changes without a knowledge of the workings of media.”

Verbal Distribution

Prehistoric Era

Specific forms:
songs, legends, chats

Features:
single-sensory (auditory),
very small amount of information,
very narrow distribution (face-to-face),
not easily preserved (instantaneous delivery),
unreliable (unavoidable distorted)

Text/Graphic Distribution

Pre-Industrial Age (Before 1700) & Industrial Age (1700S to 1930S)

Specific forms:
1. Bamboo scrolls, stone carvings, handwritten books,
paintings

2. books, newspapers, magazines, photographs, posters

Features:
single-sensory (visual),
smaller amount of information,
narrower distribution (circulation of copies),
easy to retain (by physical storage),
more reliable (may be distorted)

Electronic Distribution

Electronic Age (1930S to 1980S)

Specific forms:
radio, television, film, telephone

Features:
dual-sensory (audio-visual),
large amount of information,
wide distribution (where electricity is available),
easy to save (electronic storage),
more reliable (have high threshold to publish)

Web-based Distribution 1.0

Electronic Age (1930S to 1980S) & New/Information Age (1900S to 2000s)

Specific forms:
blogs, forums, video, audio, e-books, games

Features:
dual-sensory (audio-visual),
large amount of information,
wide distribution (electricity and network with equipment is
available),
extremely easy to retain (electronic storage),
unreliable (very low threshold for publish)

Web-based Distribution 2.0

New/Information Age (2010-now)

Specific forms:
social media, mobile APP

Features:
computer access → mobile access (APP),
one-way communication → multi-way interaction,
graphic information → audio-visual information

Web-based Distribution 3.0?

In the Future...

Specific forms:
Metaverse

Features:
computer/VR device access,
highly interactive (user-user),
audio-visual information (can even include sense of touch/
taste/smell),
easy to save (electronic storage),
everyone could be the potential user/creator

Features:
single-sensory (auditory),
very small amount of information,
very narrow distribution (face-to-face),
not easily preserved (instantaneous delivery),
unreliable (unavoidable distorted)

Features:
single-sensory (visual),
smaller amount of information,
narrower distribution (circulation of copies),
easy to retain (by physical storage)

Features:
dual-sensory (audio-visual),
large amount of information,
wide distribution (where electricity is available),
easy to save (electronic storage),
more reliable (have high threshold to publish)

Features:
dual-sensory (audio-visual),
large amount of information,
wide distribution (electricity and network with equipment is available),
extremely easy to retain (electronic storage),

→ Possible Future:
 computer/VR device access,
 highly interactive (user-user),
 audio-visual information (can even include sense of touch/taste/smell),
 easy to save (electronic storage),
 everyone could be the potential user/creator

People discovered fire, developed paper from plants, and forged weapons and tools with stone, bronze, copper and iron.

- Example Forms of Media:
- Cave Paintings (13,000 BC)
 - Clay tablets in Mesopotamia (2400 BC)
 - Papyrus in Egypt (2500 BC)
 - Acta Diurna in Rome (130 BC)
 - Dibao in China (2nd Century)
 - Codex in Mayan Region (5th Century)
 - Printing press using wood blocks (220 AD)

People used the power of team, developed machine tools, established iron protection, and the manufacturing of various products (including books through the printing press)

- Example Forms of Media:
- Printing press for mass production (1900)
 - Newspaper-The London Gazette (1740)
 - Typewriter (1800)
 - Telephone (1876)
 - Motion picture photography/projection (1890)
 - Commercial Motion pictures (1913)
 - Motion picture with sound (1926)
 - Telegraph
 - Punch Cards

The invention of the transistor ushered in the electronic age. People harnessed the power of transistors that led to the transistor radio, electronic circuits, and the early computers. In this age, long distance communication became more efficient.

- Example forms of media:
- Transistor radio
 - television (1941)
 - Large electronic computers
 - Main computers - i.e. IBM 704 (1960)
 - OHP, LCD projectors

The internet paved the way for faster communication and the creation of the social network. People advanced the use of Microelectronics with the invention of personal computers, mobile devices, and wearable technology. Moreover, voice, image, and sound data are digitalized. We are now living in the information age.

- Example Forms of Media:
- Web browsers: Mosaic (1993), Internet Explorer (1995)
 - Blogs: Blogspot (1999), Wordpress (2003)
 - Social networks: Friendster (2002), Multiply (2003)
 - FB (2004), Instagram, Microblogs: Twitter (2006), Tumblr (2007)
 - Video: Youtube (2005), Augmented Reality/Virtual Reality
 - Video chat: Skype (2003), Search Engines: Google (1996)
 - Yahoo (1995), Portable computers - laptops (1980), netbooks (2008)
 - Tablets (1993), Smartphones, Wearable technology
 - Cloud and Big Data

Pre-Industrial Age (Before 1700)

Verbal Distribution → Text/Graphic Distribution

Industrial Age (1700s to 1930s)

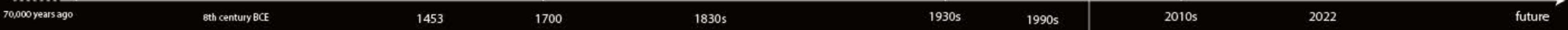
Text/Graphic Distribution

Electronic Age (1930s to 1980s)

Electronic Distribution

Internet Age (after 2010s)

Web-based Distribution



Manual transcriptions

Printing Technology

New/Information Age (1900s to 2010s)

**APP
Creation of the social network**

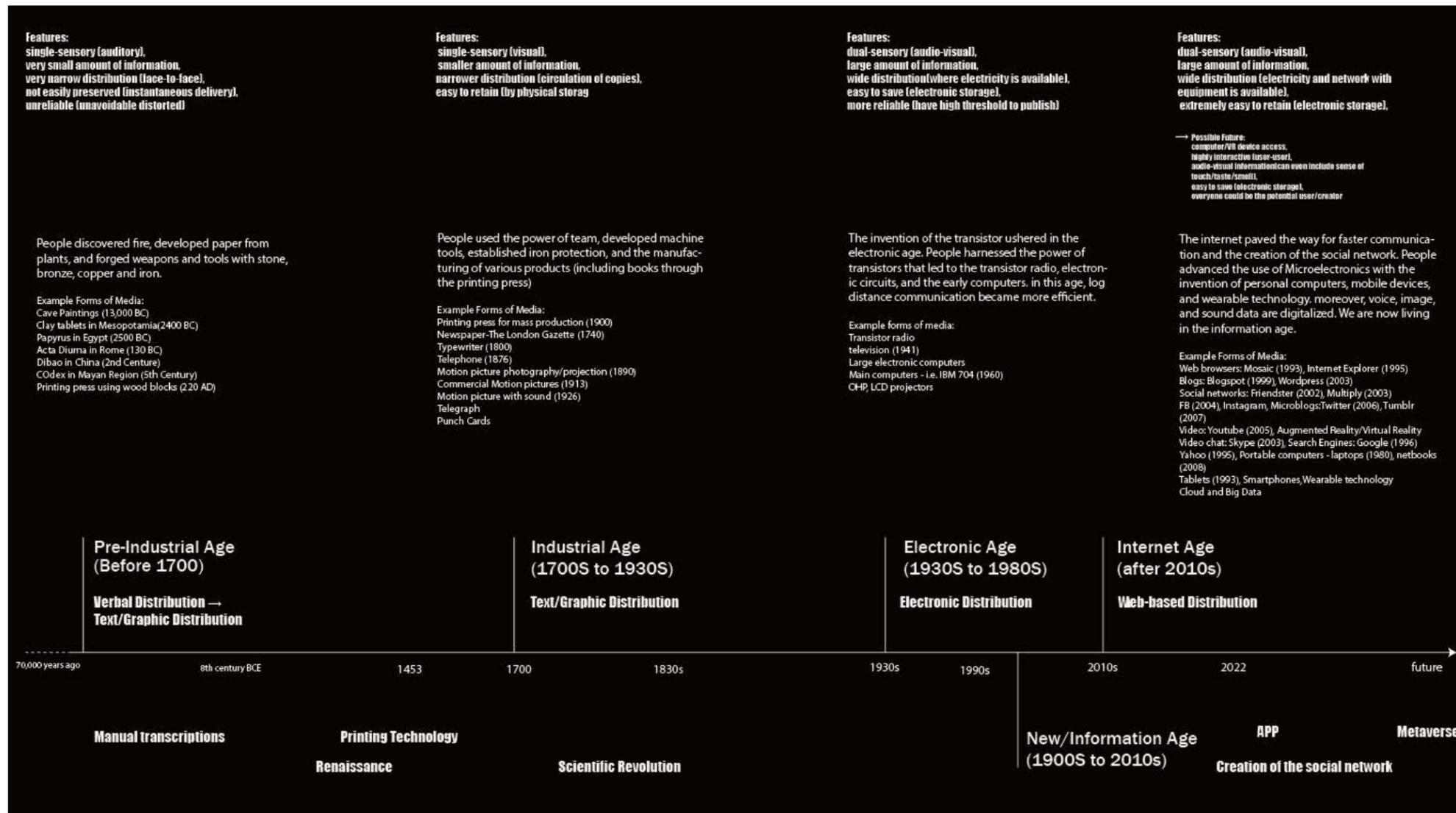
Metaverse

Renaissance

Scientific Revolution

Creation of the social network

Metaverse & Media



Development of the Media Timeline

This timeline helps us to see how the features of the media had changed throughout the time. It enables us to make our prediction of the Metaverse as a major media guided future.

The process of technological development is irreversible, it allows people to be more connected to each other through the Internet.

The Metaverse will eventually become a popular medium in the future, therefore affecting all aspects of people's lives.

The Metaverse is a growing, evolving concept, with different players constantly enriching the world in their own way.

The Metaverse is not just an independent and parallel virtual world, but its significance and value lies in the interaction with the real world.

02

OUR THOUGHTS ABOUT METAVERSE

Phase I

What are the questions we hope to address?

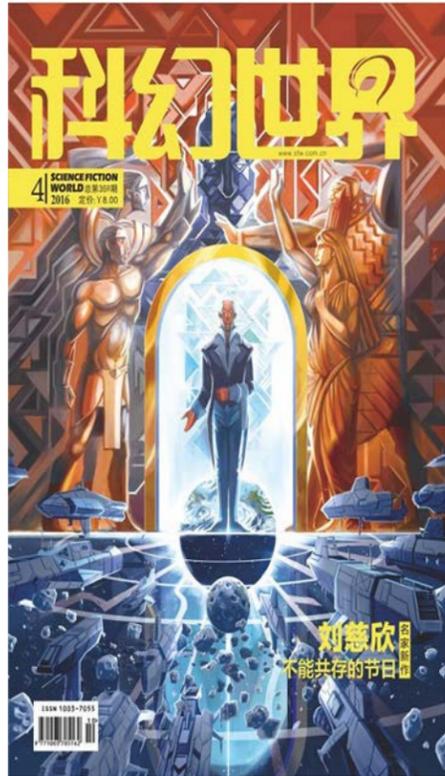


In the Metaverse-(extremely) dominated future, if human beings all moved to “live” in the virtual world, will they still be interested in what’s happening in the reality?

We are not trying to create living spaces in the Metaverse, we used those architectures to cast our doubts about the division between the virtual world and the real world.

At the first step, we want to apply the Story telling as a technique and form, to present our critic toward the use of Metaverse.

Preliminary Inspirations



Cixin Liu,
“Festivals That Cannot Coexist”,
Science Fiction World,
April 1, 2016,
pp. 17-25.

The inspiration for this phase of our thinking about the metaverse came from a short science fiction novel called "Festivals That Cannot Coexist".

This novel was written by Cixin Liu, a famous Chinese science fiction writer, and published in a science fiction literary magazine. The story is about the observations of an alien named "G" about Earth's civilization, which records various meaningful dates at the macro level, such as the date of the first mitotic division of Earth's living cells, the date when species move from the ocean to land, the date when apes began to walk upright, etc... On April 12, 1961, G observed the launch of the first human rocket into outer space, and it was very happy about it, because G thought it was the first step for human civilization to establish contact with other intelligent civilizations in space, and therefore it named this date as "Birth Festival". But on October 5, 2050, G observed the completion of human construction of virtual worlds, and witnessed the transformation of human desire from exploration of the universe to virtual immersion, so G disappointingly named this day "Abortion Festival".

Cixin took this story to throw out his view on the connection between technological progress and civilization: civilization must get out of the cradle of its home planet and expand outward to find a way out; an inward-looking civilization, living as an uploaded consciousness and electronic data, is, in his opinion, a way of living without dignity.

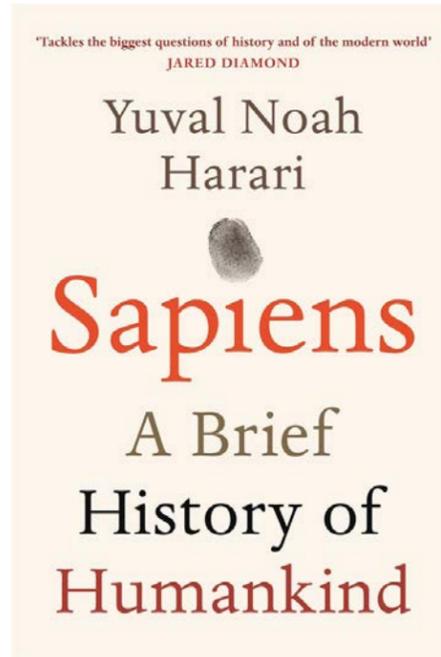
The metaverse is a wonderful concept, but mankind still needs to have the Down-to-earth attitude.

"The virtual world of the future is indeed heaven, in which everyone is indeed God, and its beauty is beyond any imagination. I only imagine the real world at that time. At first, the reality will be less and less, the virtual paradise is so good, who still want to stay in the miserable reality, are scrambling to upload themselves. The Earth gradually becomes a sparsely populated place, and finally, there is no one in reality, the world back to the way it was before the emergence of humans, forests and vegetation cover everything, large groups of wild animals roaming and flying freely just in a corner of a continent, there is a deep basement, which runs a large computer, computer in which live tens of billions of virtual humans." Such an image was taken as poetic by scientists at the time, but little did they know that this was the precursor to the end of mankind: everyone became God in his own world and forgot that he had already disappeared from the world, becoming only a string of binary numbers saved in the computer.

“If humans are relocated to the virtual world, will we still look up at the stars?”

— Cixin Liu

Preliminary Inspirations



Sapiens:
A Brief History of Humankind
Yuval Noah Harari,
2011

“Science and the Industrial Revolution have given humankind superhuman powers and practically as have politics, daily life and human psychology. But are we happier?”

Did the wealth humankind accumulated over the last five centuries translate into a new-found contentment?”

Technological progress has certainly brought a lot of convenience to people's lives, making modern life smoother and more secure than before. However, in this book, the author's attitude towards technological progress is that it does not make people happier. Because we can't evaluate the past life with the expectation of modern people, the past people's living environment and ours have a huge difference, and people would have a set of values. So even without the various products or new entertainment activities brought by modern technology, people living in past could still have the same happiness as our modern people. Based on this view, we can assert that in the future, the prosperity of the metaverse will not necessarily make human life better.

“But the most important finding of all is that happiness does not really depend on objective conditions of either wealth, health or even community. Rather, it depends on the correlation between objective conditions and subjective expectations.”

The book also mentions that human happiness is linked to subjective conditions and subjective expectations. In other words, social and cultural backgrounds and personal expectations change at different times. People in the future under the extreme development of the metaverse may feel very happy with their lifestyles, but they may not be happy at all by modern standards of judgment.

Preliminary Inspirations



Collage
VR Chat "Parallel Worlds"

In the game VRChat, there're many worlds uploaded by its users. Some of the worlds could be somehow considered as replica of the real world. We used 2 worlds, "Paralle Hongkong" and "Parallel New York City", as experiments to do a collage to see the effects. In these 2 collages, we tried to show a possible way to construct the Metaverse as a replica of the existing world to conserve culture.



Collage
Mixing Culture World

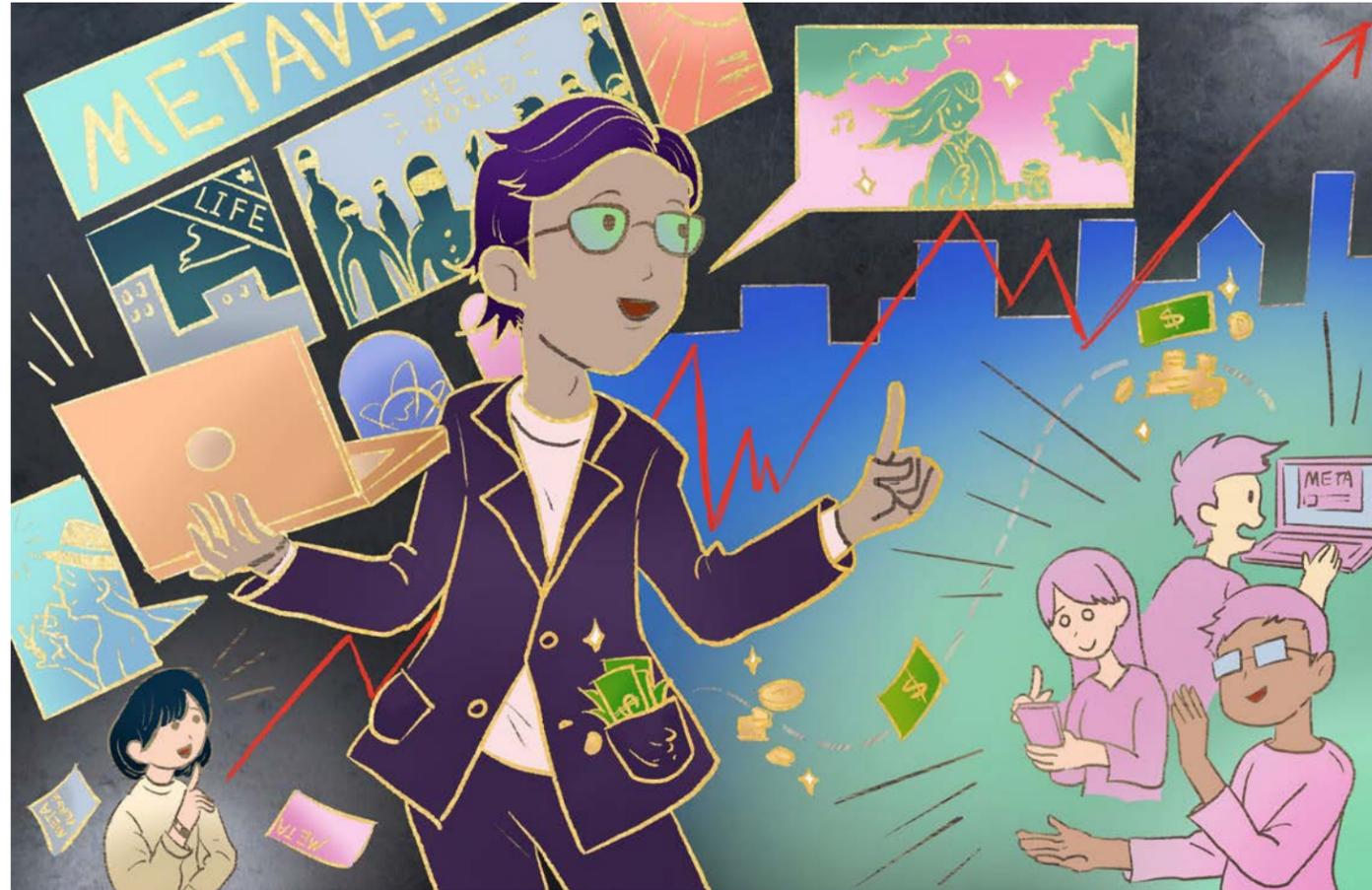
The original concept of Metaverse was to collect multiple civilizations into a single world, and we use the concept of multiple cultures as a collage to illustrate our imagined city of mixed cultures.



AI Arts (Mid Journey)
City be dominated by different
extreme ideas

In this sense, we envision the metaverse as a media to present a distinct social problem or emotion, each city was packed with an emotion, and we hope that in the future, people will be able to utilize the metaverse to experience the emotions of the cities.

Initial Story: Extremely developed Metaverse



Storyboard 01

Our initial thought toward the use of Metaverse in the future is not optimistic. We envision that it is because of the capital investment and propaganda that eventually made the metaverse so popular. And because of that, people will be pushed by capital and have to accept the fact that Metaverse has already become a populated media.



Storyboard 02

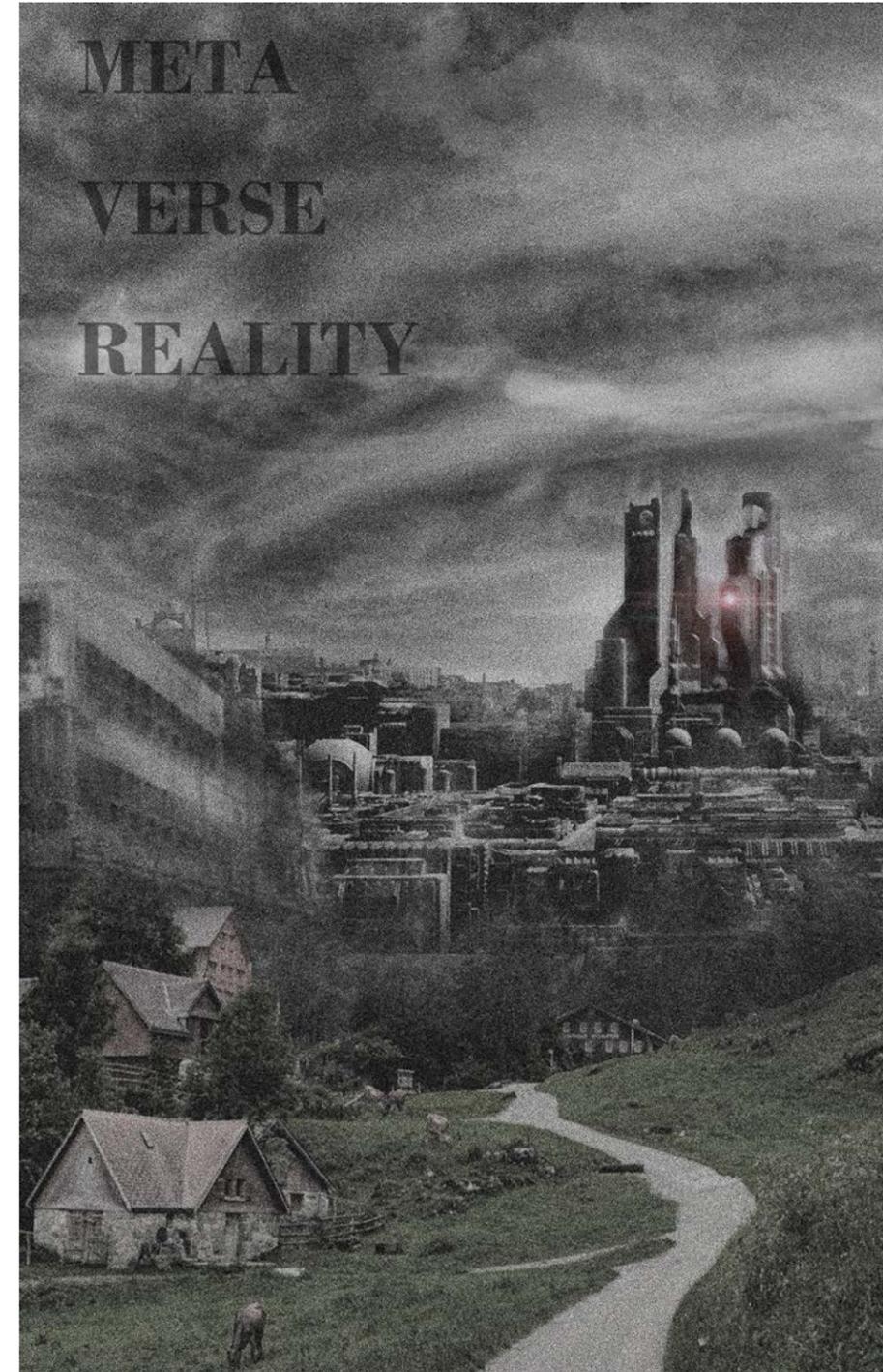
In such a world, once you want to enter the metaverse you have to connect to professional equipment and lie into the special pod in order to connect to the virtual world. In that virtual world, what you can do is almost indistinguishable from reality. Working, living, entertainment and all kinds of such things are available. Only, the use of the metaverse also has a price. The energy generated by the activities you perform in the metaverse will eventually be taken away from the capital, in reality, to sustain them to survive.

Initial Story: Extremely developed Metaverse



Storyboard 03

We envision a future of extreme meta-universe growth, in which all humans will have completely joined the metaverse and their awareness will be kept in a big container, represented by the tower in our imagined design. When humanity has abandoned reality in its entirety, the future will be characterized by lifeless cities.



Storyboard 04

Despite the fact that most people have joined the metaverse and the actual world will be abandoned, a tiny number of individuals have survived since they have not kept up with technology, and they will continue to live normally in this world. This is the best satire for excessive technology.

Initial Story: Extremely developed Metaverse



This is an extreme assumption for human beings to join the metaverse, people choose to enter the meta-universe since the environment has been so poor that people can't live normally, people can only enter the meta-universe to cut energy and food consumption.

Initial Story: Extremely developed Metaverse



At the end of the story, people are losing their desire to continue connecting to the reality life.

The improvement of the virtual-based technology and product industry should help with social development. It should not become an excuse for individuals or groups to stop exploring reality.

Metaverse might be considered a great concept that is worth for people to explore more. However, we cast doubt on the Metaverse-guided future—will it becomes an obstacle to the exploration of reality? (people might only obsess with the virtual world, rather than the real world)

03

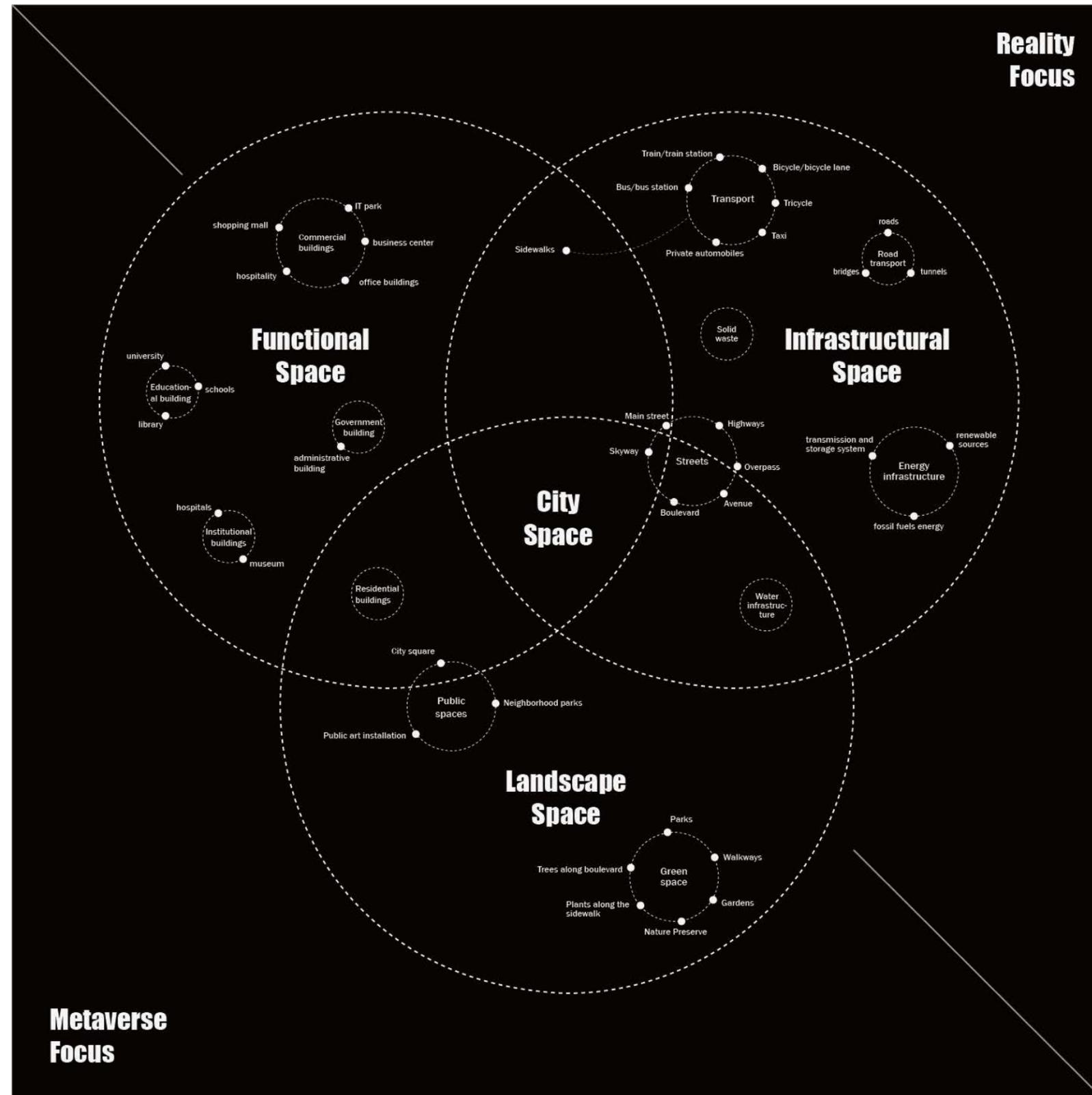
OUR THOUGHTS ABOUT METaverse

Phase 2

What are the questions we hope to address?

With more research on the metaverse and feedback from our professors on our ideas, we continue to think about our themes and the issues we want to highlight. At the end of the previous section, we saw the different focus between the metaverse and reality. Therefore, we used this as an entry point for more investigation. Perhaps in a future where the metaverse is so prevalent, this media also has the power to influence reality.

Initial Story: Background Settings



Reality vs. Metaverse

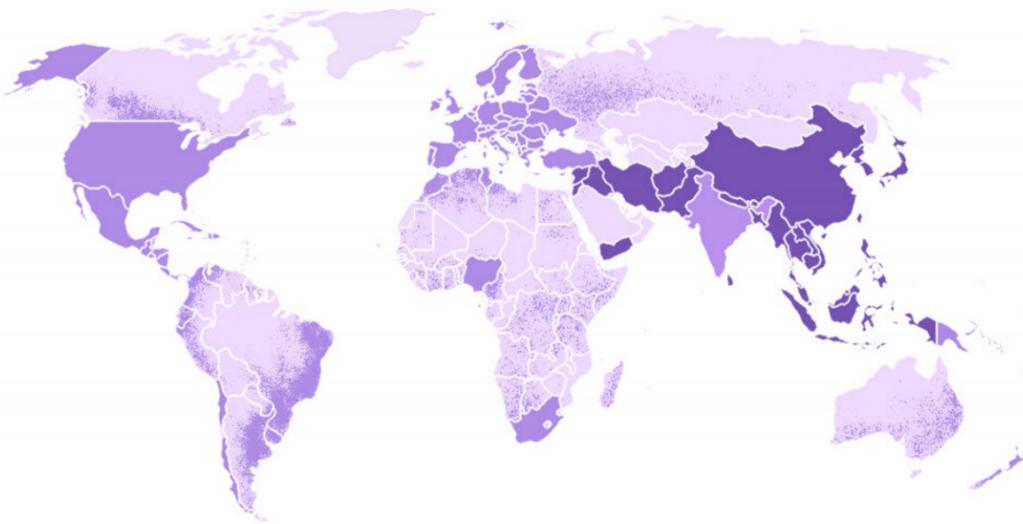
Different focus between Reality world and Meta world.

We next examined what aspects of the design for the metaverse should be focused on. If a city in a metaverse is designed, some elements that are important in real life, such as Infrastructural space, may become less important. Because in a virtual world there is little need for factories that produce energy, or roads that connect different areas. However, functional space and landscape space will still be retained.

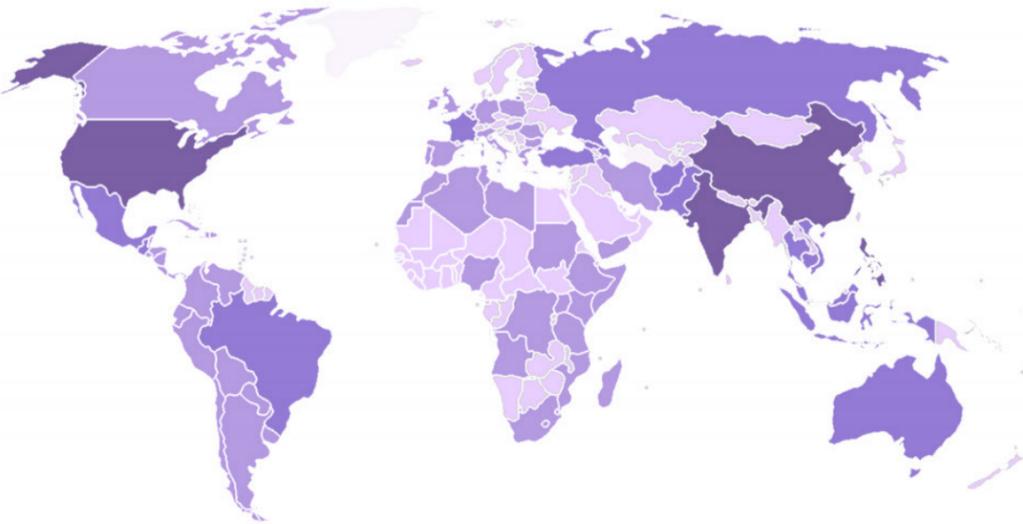
The information mentioned above is explained in this diagram. The diagram contains the three main elements of urban design, functional space, landscape space, and infrastructural space, also including typical buildings in urban design. The closer the element is to the bottom left corner, the more likely it is to be retained in the metaverse.

Environmental condition in Reality

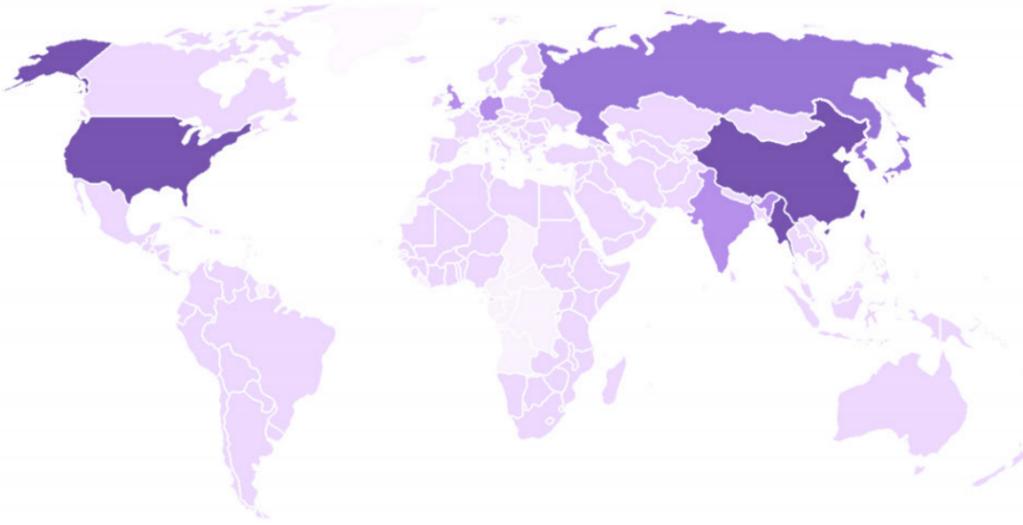
World Transportation Coverage



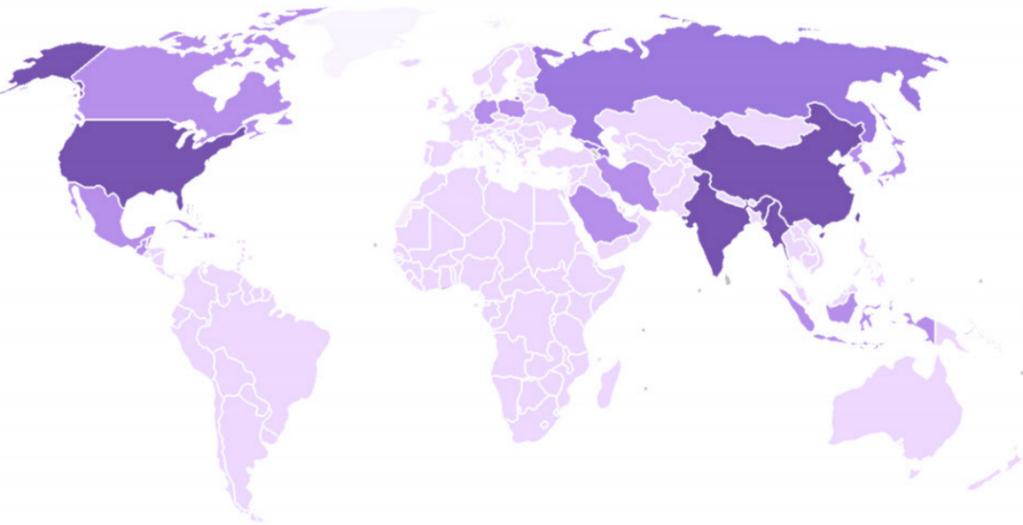
Total Number of Natural Disasters Reported Per Country in 20 Years



2022 Global Industrial Output



Global CO2 Emissions (kiloton)



We began studying the actual environment in the midst of the project, concentrating on the influence of human activities on the current environment. According to our findings, human travel and industrial emissions are the leading contributors of global warming and natural catastrophes.

Environmental condition in Reality

Global Environmental Problems



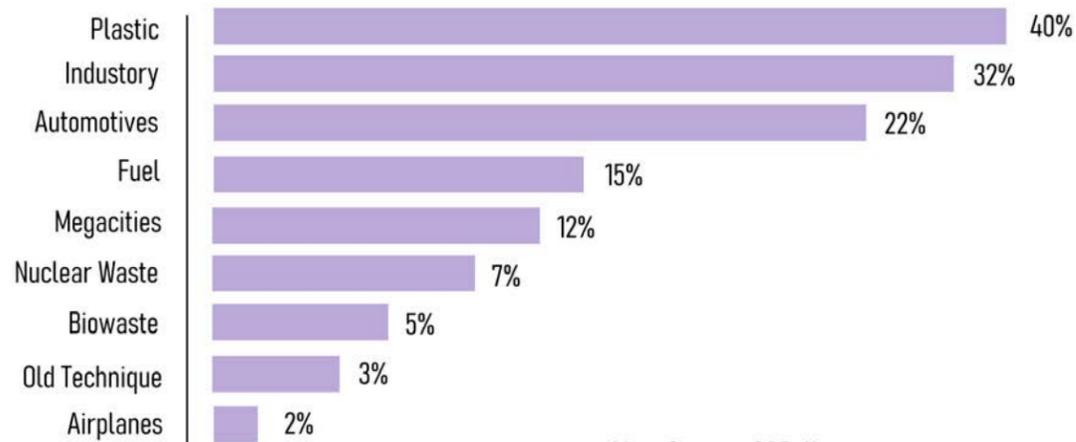
Air Pollution



Water Pollution



Soil Pollution



Main Sources Of Pollutions

CCAC secretariat, "World Health Organization Releases New Global Air Pollution Data," Climate & Clean Air Coalition, May 2, 2018, <https://www.ccacoalition.org/en/news/world-health-organization-releases-new-global-air-pollution-data>.

According to the research, air quality improved dramatically in the short term in highly polluted cities that were closed due to the outbreak, demonstrating that human activities and transportation may have a big impact on our urban and residential environments.



The India Gate war memorial in New Delhi, India, on October 17, 2019. Anushree Fadnavis/Adnan Abidi/Reuters



The India Gate war memorial in New Delhi, India, on April 8, 2020, after a 21-day nationwide lockdown. Anushree Fadnavis/Adnan Abidi/Reuters



New Delhi, India, on November 8, 2018. Anushree Fadnavis/Adnan Abidi/Reuters



New Delhi, India, on April 8, 2020. Anushree Fadnavis/Adnan Abidi/Reuters



The usual smog in Los Angeles, California. David McNew/Getty Images



The San Gabriel Mountains are visible in Los Angeles, California, on April 14, 2020. David McNew/Getty

Sudhakar Srivastava et al., "21-Day Lockdown in India Dramatically Reduced Air Pollution Indices in Lucknow and New Delhi, India," Bulletin of environmental contamination and toxicology (U.S. National Library of Medicine, June 3, 2020), <https://pubmed.ncbi.nlm.nih.gov/32495123/>.

Environmental condition in Reality

What Can Metaverse Solve?

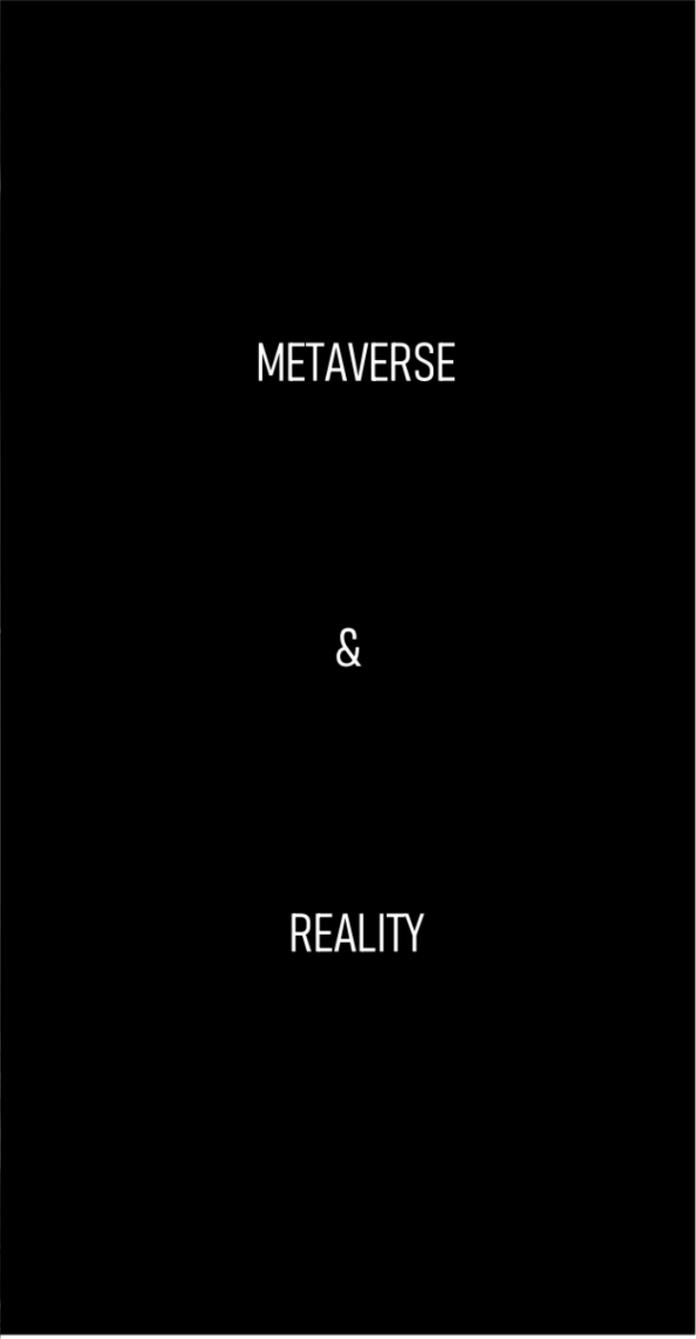
We Can Change Our World



Lower Pollution



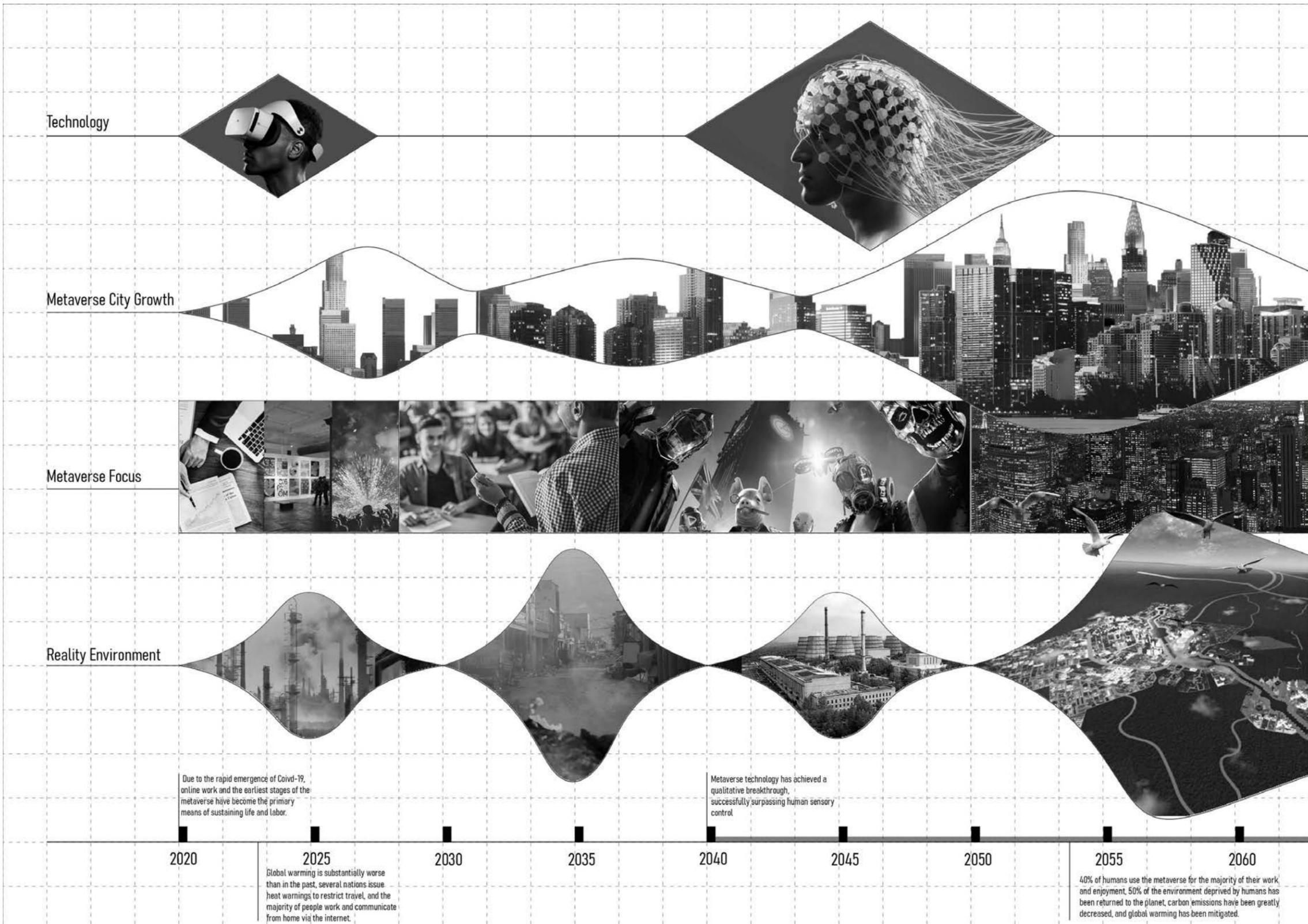
Lower Nature Dmage



New Posibility

This also makes us consider what the metaverse may offer to humanity and our globe, and the influence it can have on the environment can already be predicted.

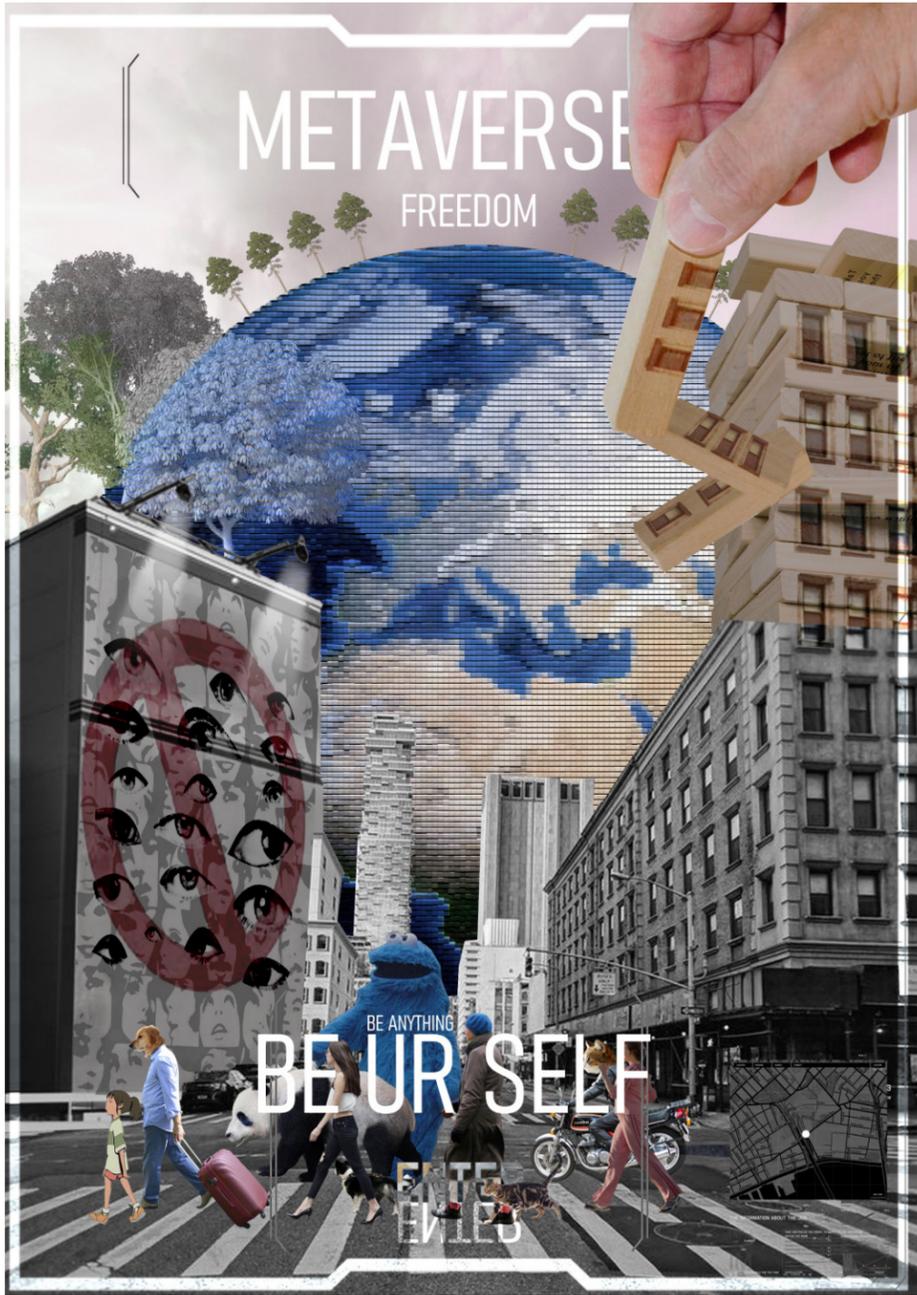
Metaverse & Reality changes in future



After research and various ideas, we can create and imagine a timeline of the development of the metaverse and changes to the real world, beginning with VR devices, the metaverse will gradually cover exhibitions, large concerts, education, management, entertainment, etc and will eventually become an integral part of our lives.

Metaverse will become the second life for many. As technology advances, an increasing number of people join the meta-universe, our planet will gradually become an oasis, the meta-universe will gradually expand as the actual world progressively shrinks, and new urban patterns will emerge.

Possible Future: Invite people to Metaverse



As a totally free and open universe, the metaverse is capable of accepting and creating a world that is not dependent on birth in order to attain real equality, in which all individuals may truly be themselves.



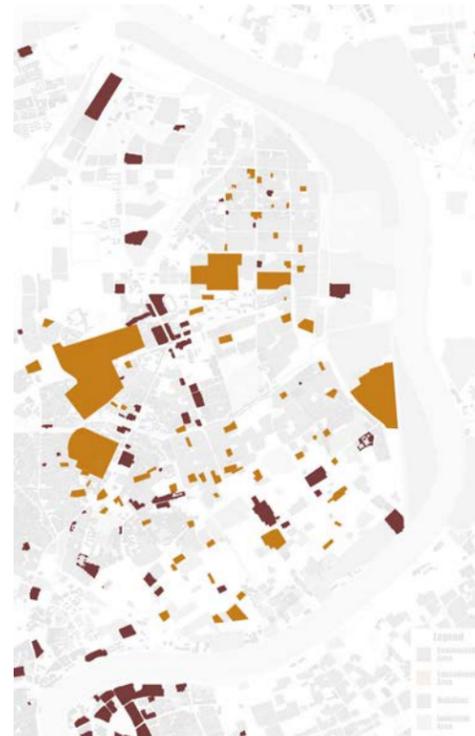
When individuals can enter the metaverse through a brain machine, it's easy to see how the metaverse may be a whole new experience for those with impairments or congenital handicaps. In this world, all congenital flaws may be compensated for, and everyone has the opportunity to fulfill their goals.

Possible Future: Reality city's changes



Shanghai, Yangpu District

Reality vs.
Metaverse



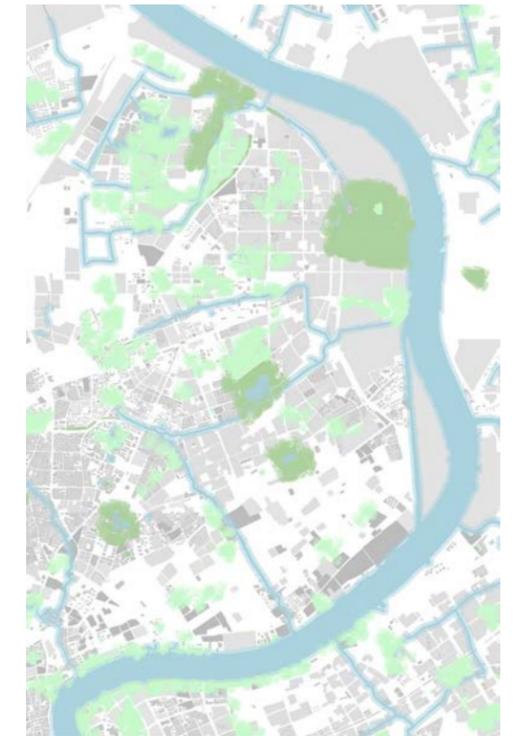
Necessary elements to keep in the Metaverse city planning

Reality
World (now)



One possible way to organize spaces in Metaverse

Metaverse
World (future)

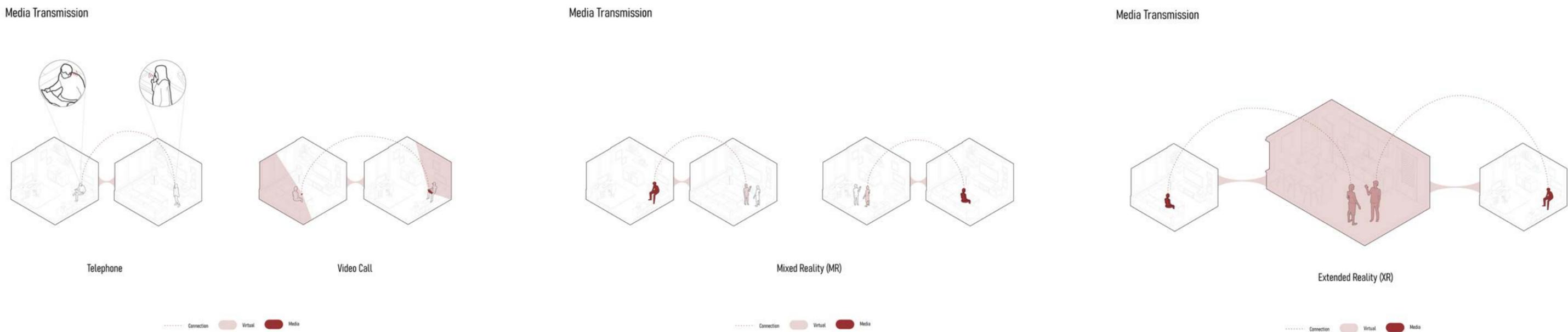


Possible future: expansion of the nature space

Reality
World (future)

According to our vision, in the future, after the use of the metaverse becomes popular, we will spend a lot of time working, living and playing in the metaverse. The space needed in reality will be reduced by the use of the metaverse, and public buildings will be retained or not depending on the nature of the building. Because the focus of human life shifts from reality to the metaverse, energy and material consumption will also be reduced, and environmental problems can be properly alleviated. The nature in the real city will also be expanded by the reduction of the land needed by human beings. Therefore, the spread of the metaverse not only changes the living space of humans, but also brings more natural space back to the city.

Possible Future: Changes of Meida



With the change of media, the exchange of information between people has become easier and faster. Since the advent of cell phones, it has been possible to share information instantly even if you are not in the same space. With the maturity of video call technology, we are sharing auditory information and receiving visual information at the same time. Not only our voice, but what we've see becomes virtual information.

Perhaps in the near future, technology will enable the development of mixed reality, allowing people to project their own appearance while talking on the phone. Even if the callers are far apart in reality, the projection will allow people to communicate and interact in the same space.

So, we guess that in the more distant future, as the metaverse technology is completed, there will be changes in people's interactions and communication. The metaverse will be used as a media, that has highly accessibility and widely used media that allows to bring people to a virtual space for interaction. This also means that real-life space may become less important.

When the mobile phone replaces letter paper, when the development of video calls, and when the emergence of holographic projection, the advent of each communication medium also signifies the relationship's presentation of the space behind them. After the advancement of technology, the future medium of communication will be able to bring people closer together and enable the future realization of a life in Metaverse.

04

GOAL FOR NEXT STEP

What are we going to design?

Metaverse will become a new lifestyle for the public.

It has huge potential in development, attracting people to use it.

The development of technology will eventually affect people's way of life, and the advantages of the metaverse will make the majority of the world's population closely connected to each other through the Internet and virtual space. Although the construction of the world in the metaverse can change a lot, there is only one real world, and it will change according to the changes in people's habits.

Perhaps, for us, we can start from the changes in real life to present the impact of the metaverse on the future of human life.

CHANGE OF THE LIVING SPACE

Time Period



Middle Ages
(late 5th to the late 15th centuries)



Age of Enlightenment
(17th and 18th centuries)



Industrial Revolution
(17th to late 20th centuries)



Morden Life
(after 20th centuries)

General happiness for the public

- Food and clothing are ensured
- Innovations in methods of production
- Religious beliefs & "superstition"
- "the late medieval scholar have regarded himself as free (particularly in the natural sciences) to follow reason and observation wherever they led"

- Food and clothing are ensured
- Innovations in methods of production
- Learning of knowledge
- Explosion of philosophic and scientific activity

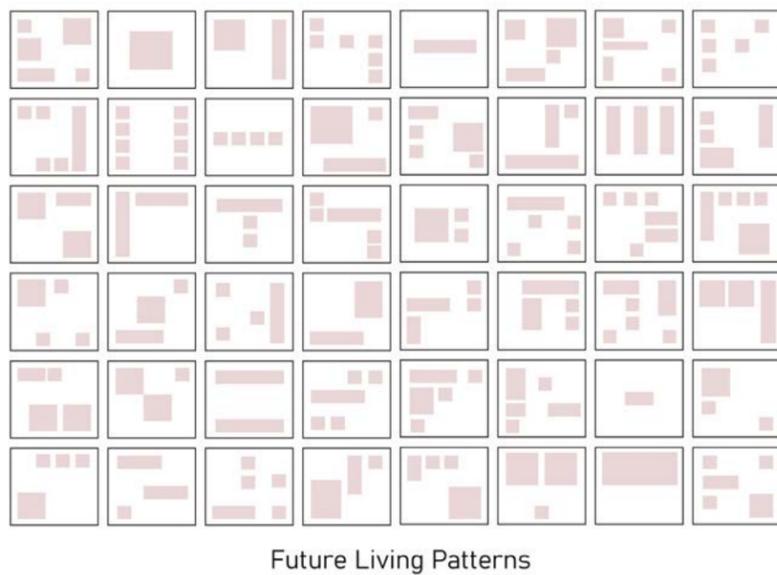
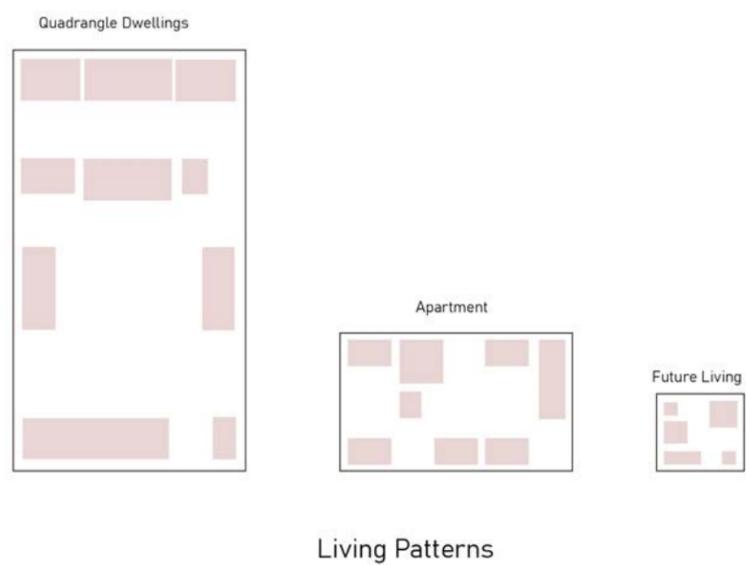
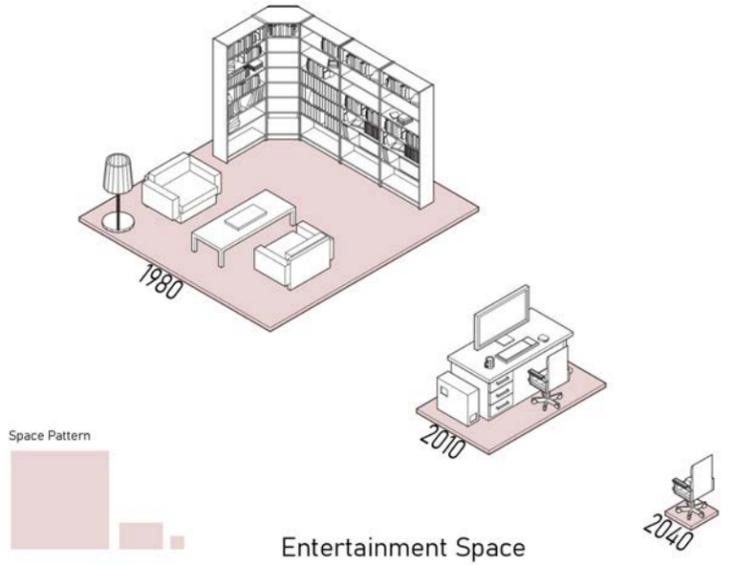
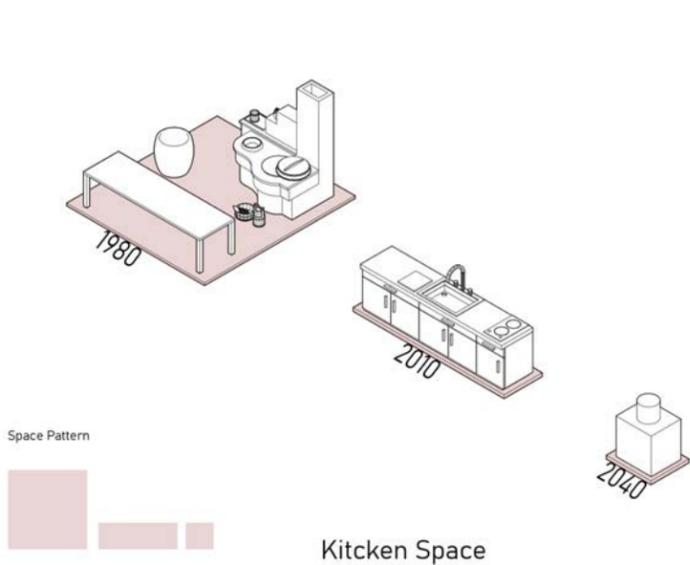
- Stable food supplies
- Economic growth brought job and working opportunities
- Life expectancy of children increased

- No longer worry about lacking of food, clothing, and housing resouces.
- Everyone get opportunity to study
- Access to Modernist art



The relationship between people's living conditions and their LIVING SPACE is also closely linked. With the development of productivity and urbanization, people's living conditions are becoming better and better. The size of dwellings is also becoming smaller and smaller.

CHANGE OF THE LIVING SPACE



The technological advance is evident in our everyday usage of the process of change, as well as in the spatial changes. When technology progresses, people's demand for appliances and space will reduce in reality, and based on this premise, we can predict a future pattern of life and living, and cities will change significantly owing to the shrinking living places. We aim to continue this study and create a imagination of the future lifestyle and future living patterns.

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