

# What Can Metaverse Planners Learn from Italo Calvino's Invisible Cities



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We are still at the dawn of the Metaverse, the next wave of the Internet. The current “mainstream” Metaverse platforms serve as experimental containers to host the wildest dreams of virtual worlds where we are supposed to unleash the imagination. However, from a spatial design perspective, they have so far been lame and ordinary. Without the constraints in the physical world, how do we draft the urban blueprints in the metaverse? I believe metaverse planners can find inspiration from Italo Calvino's *Invisible Cities*, in which he revealed a poetic and mathematical approach to “urban planning” in the imaginary worlds.

## About Invisible Cities

*Invisible Cities* is a novel by Italian writer Italo Calvino, published in 1972. It is a short book, like a piece of jewelry made with fragments of dreamland. You can start reading it from any page, and

each chapter is like a dream, short, bizarre, and traceless but with endless aftertaste. The book consists of brief prose poems, describing a series of verbal reports that the traveler Marco Polo makes to emperor Kublai Khan, telling fantastical stories about the cities that he's visited.

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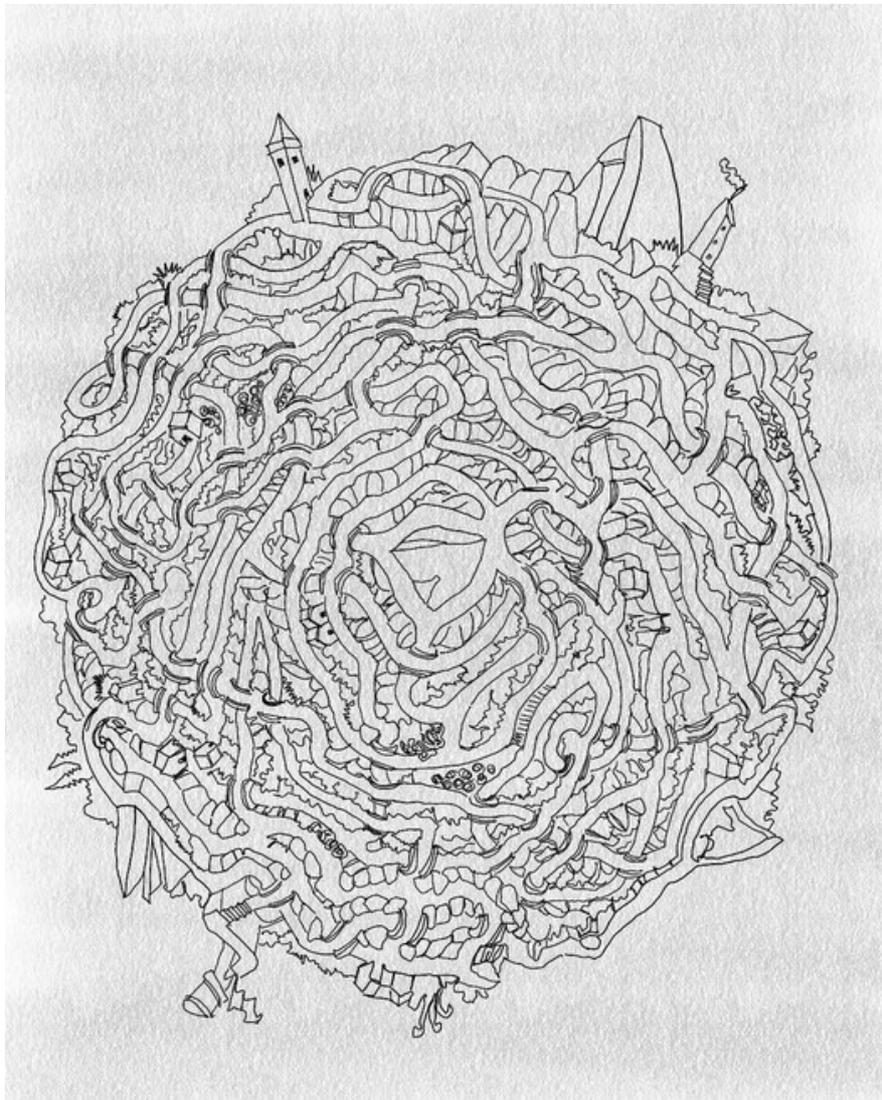
*What is the city today, for us? I believe that I have written something like a last love poem addressed to the city, at a time when it is becoming increasingly difficult to live there. It looks, indeed, as if we are approaching a period of crisis in urban life; and Invisible Cities is like a dream born out of the heart of the unlivable cities we know. -- Italo Calvino*

Over eleven thematic groups, Marco describes a total of 55 fictitious cities, all women's names, to give rise to a reflection which holds good for all cities in general. With poetic imagery and geometric rigor, Calvino intertwines various elements in the catalog, "Cities and Memory", "Cities and Desire", "Cities and Sign", "Thin Cities", and "Trading Cities"... Through this means, the city forms a huge intricate labyrinth, with countless alleys and intersections intertwined, and readers are caught in this vortex and cannot extricate themselves. By rearranging the elements, like combinations and permutations, you can construct dozens of cities with different characteristics.

Let's travel through Calvino's cities to discover the meanings of cities, and get inspired while building the metaverse.

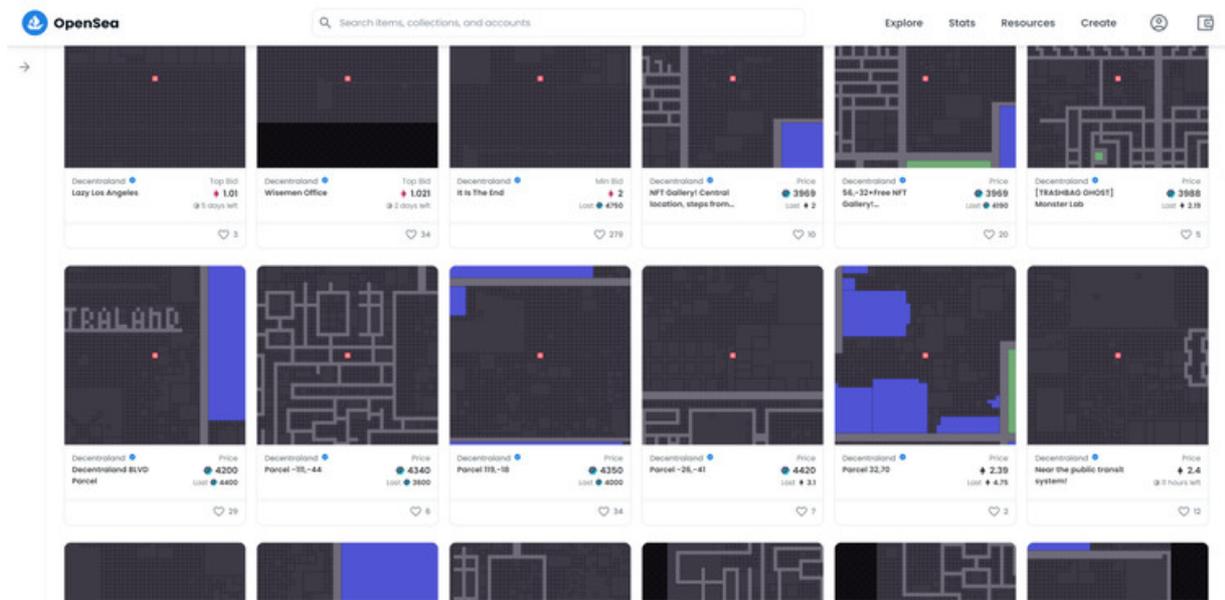
## Cities and Desire

**The Appearance of a City is Shaped by Our Desires**

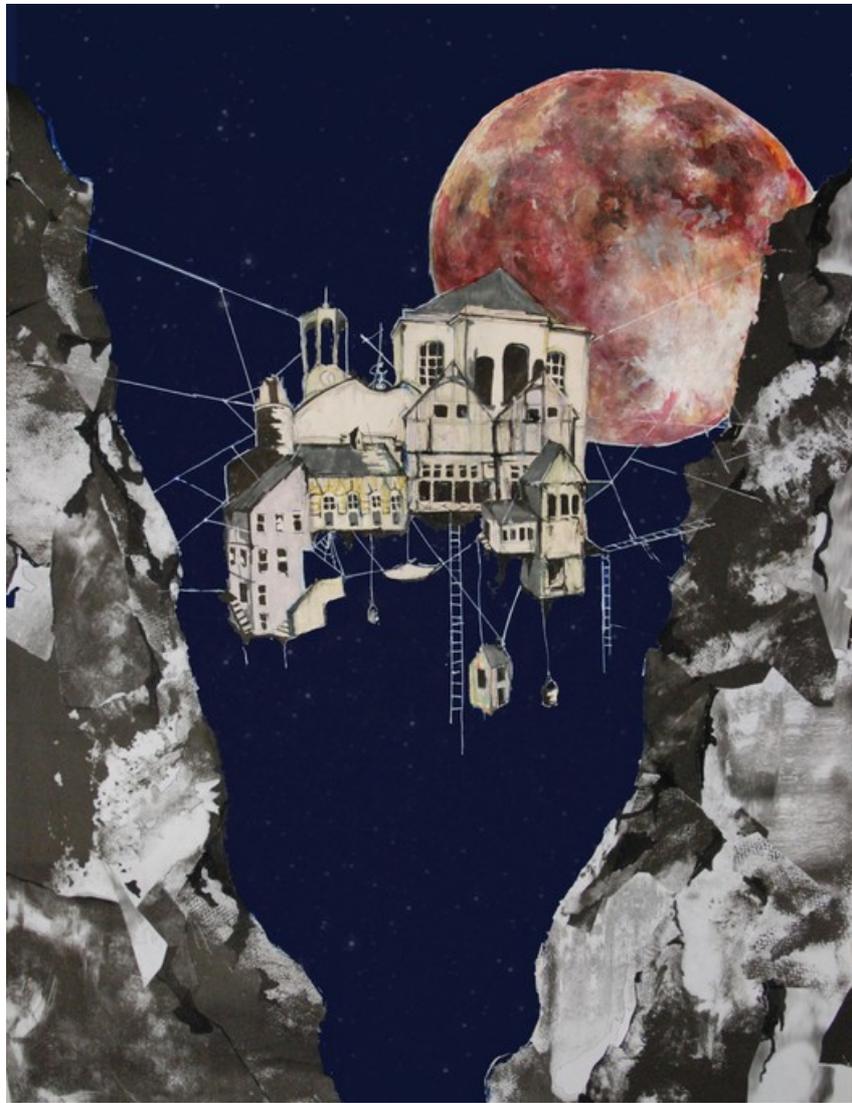


*From there, after six days and seven nights, you arrive at Zobeide, the white city, well exposed to the moon, with streets wound about themselves as in a skein. They tell this tale of its foundation: men of various nations had an identical dream. They saw a woman running at night through an unknown city; she was seen from behind, with long hair, and she was naked. They dreamed of pursuing her. As they twisted and turned, each of them lost her. After the dream they set out in search of that city; they never found it, but they found one another; they decided to build a city like the one in the dream. In laying out the streets, each followed the course of his pursuit; at the spot where they had lost the fugitive's trail, they arranged spaces and walls differently from the dream, so she would be unable to escape again. -- Zobeide, Cities and Desire 5*

Zobeide, a city with streets as puzzling as a maze, is shaped by men's desires. In order to pursue the naked woman in their dreams, they turned the city into an ugly trap. If we take a look at the layouts of some metaverse platforms, we can see the opposite pattern. They adopt a grid system with plots of land distributed on a horizontal plane. This allows for property to be easily parcelled and sold. The maps of these metaverse platforms are also shaped by desires. With speculation and profit in mind, are we only going to see big and small boxes in the metaverse?



## Cities are not Necessarily Built on (Limited) “Lands”



*If you choose to believe me, good. Now I will tell how Octavia, the spider-web city, is made. There is a precipice between two steep mountains: the city is over the void, bound to the two crests with ropes and chains and catwalks. You walk on the little wooden ties, careful not to set your foot in the open spaces, or you cling to the hempen strands. Below there is nothing for hundreds and hundreds of feet: a few clouds glide past; farther down you can glimpse the chasm's bed. This is the foundation of the city: a net which serves as passage and as support. All the rest, instead of rising up, is hung below: rope ladders, hammocks, houses made like sacks, clothes hangers, terraces like gondolas, skins of water, gas jets, spits, baskets on strings, dumb-waiters, showers, trapezes and rings for children's games, cable cars, chandeliers, pots with trailing plants. Suspended over the abyss, the life of Octavia's inhabitants is less*

*uncertain than in other cities. They know the net will last only so long. -*

*Octavia, Thin Cities 5*

Octavia is a city built on a spider web. In the book *Invisible Cities*, there is Armilla, a city made only of water pipes; there is Baucis, a city built on the cloud; there is Isaura, a city built upon deep vertical wells; there is Valdrada, a city of mirrors and reflections; there is Olinda, a microscopic city which gradually spreads out until one realizes that it is made up of lots and lots of concentric cities which are all expanding...

Archigram, an avant-garde architectural group formed in the early 60s, proposed cities that moved, *Walking City* imagines a future in which borders and boundaries are abandoned in favor of a nomadic lifestyle among groups of people worldwide. Inspired by NASA's towering, mobile launch pads, hovercraft, and science fiction comics, Archigram envisioned parties of itinerant buildings that travel on land and sea. Like so many of Archigram's projects, *Walking City* anticipated the fast-paced urban lifestyle of a technologically advanced society in which one need not be tied down to a permanent location. The structures are conceived to plug into utilities and information networks at different locations to support the needs and desires of people who work and play, travel and stay put, simultaneously. By means of this nomadic existence, different cultures and information is shared, creating a global information market that anticipates later Archigram projects, such as *Instant City*.

Cities are not necessarily built on "lands". Why do we need "lands" in the metaverse? Also, the limited supply of virtual lands created a man-made scarcity that drives the price to soar, increasing the bar for the general public to participate in the creation of metaverse.

## **Cities and Memory**

### **City Archetypes**

*"There is still one of which you never speak." Marco Polo bowed his head. "Venice," the Khan said. Marco smiled. "What else do you believe I have been talking to you about?" The emperor did not turn a hair. "And yet I have never heard you mention that name." And Polo said: "Every time I describe a city I am saying something about Venice."*

In one key exchange in the middle of the book, Kublai prods Polo to tell him of the one city he has never mentioned directly — his hometown. Polo’s response: “Every time I describe a city I am saying something about Venice.” *Invisible Cities* pays close attention to the ways in which travel and experiencing new things influence how a person sees the world, ultimately suggesting that a person’s perception of their surroundings is subjective and individualized, informed entirely by their memories, perspective, and experiences — in Marco’s case, his memories of Venice.

“Thus there are psychoanalytical critics who have found the deep roots of the book in Marco Polo’s evocations of Venice, his native city, as a return to the first archetypes of the memory.” If all the imaginary cities in the novel are just iterations of “Venice”, how do we design the archetypes of the metaverse?

Let’s go back to the real world for a second to discuss the archetype of a city. Manhattan, through the advent of elevators and the steel frame and the concentration they brought, was the archetype of the Metropolis, fusing a “culture of congestion.” In Las Vegas, the vacuum effect of the automobile and highway created “vast expansive texture: the mega texture of the commercial landscape,” making it the archetype of the American suburb.

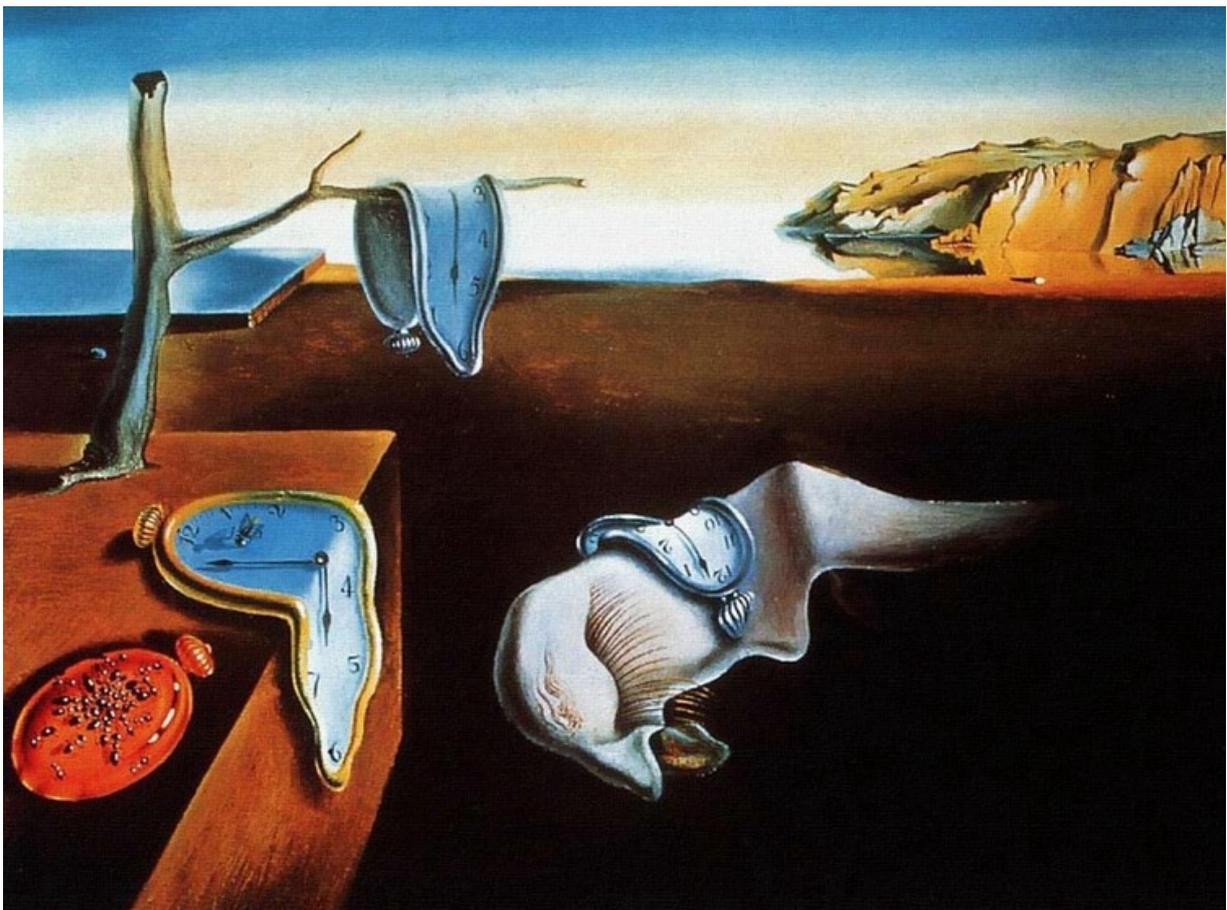


To create a new archetype in the imaginary world, you can always heavily modify and combine existing cities and urban configurations, following the example set by Half-Life 2. Famously, even Terry Pratchett's Ankh-Morpork was based on Tallinn, Prague, and had bits of 18th century London, 19th century Seattle, and early 20th century NY thrown in.

## **Familiarity and Surrealism**

In his 2012 book, *Building Imaginary Worlds*, media theorist Mark J.P. Wolf says that fictional worlds often “use Primary World [ie real world] defaults for many things, despite all the defaults they may reset”. In other words, because everything in the metaverse is built from scratch, technically you don't actually have to reference the real world in your designs. But many people choose to do so anyway. They plump for familiar architectural characteristics in their virtual buildings because it makes it easier for participants to feel immersed.

Are users satisfied with just the familiar objects in the metaverse? I believe users are looking for something beyond everyday life, something they can relate to but different, fresh, weird, and confusing...



Art movements like Surrealism provided us with a formula, composing real, ordinary objects in strange, unexpected ways, just like in a dream. For a moment, the mind is confused, and the power of surrealism is that it breaks the mind.

For example, take Dalí's Persistence of Memory: a barren landscape covered in a bunch of melting clocks... and possibly a platypus...

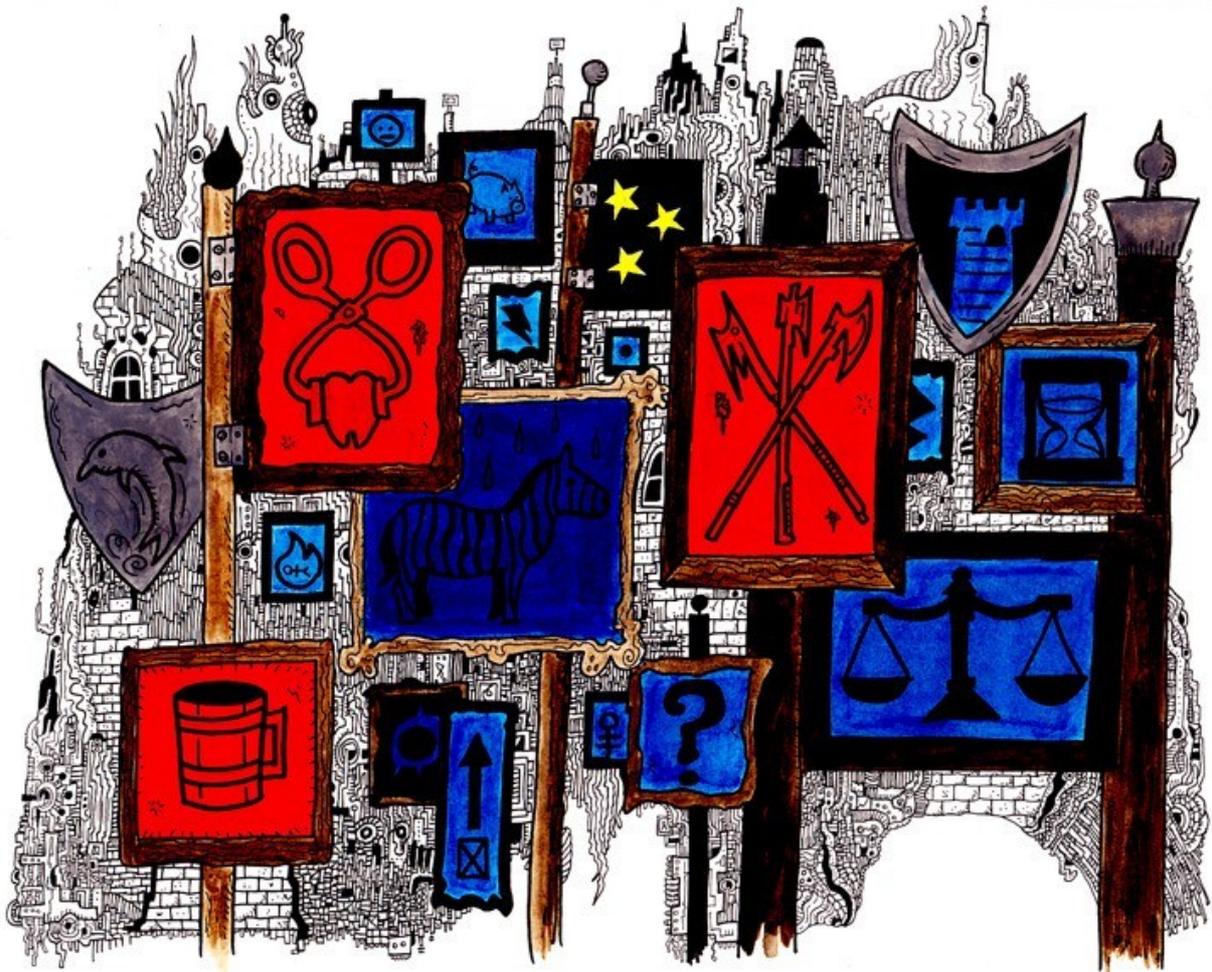
Let's try this dreamwork approach:

1. Manifest Content: Sure, we can certainly recognize the objects in this painting — real things like a tree, clock faces, a pocket watch, ants — and yet they are illustrated in very strange ways, making them feel at once real and unreal.
2. Latent Content: Beneath the surface of these objects lies the symbolism — the clocks seem to be melting, distorting their faces. Perhaps this could represent how memory becomes distorted over time.

*The mind loves the unknown. It loves images whose meaning is unknown since the meaning of the mind itself is unknown.-- René Magritte*

## **Cities and Signs**

### **Ways to Convey Meanings**



*Finally the journey leads to the city of Tamara. You penetrate it along streets thick with signboards jutting from the walls. The eye does not see things but images of things that mean other things: pincers point out the tooth-drawer's house; a tankard, the tavern; halberds, the barracks; scales, the grocer's. Statues and shields depict lions, dolphins, towers, stars: a sign that something — who knows what? — has as its sign a lion or a dolphin or a tower or a star. Other signals warn of what is forbidden in a given place (to enter the alley with wagons, tourinate behind the kiosk, to fish with your pole from the bridge) and what is allowed (watering zebras, playing bowls, burning relatives' corpses) Your gaze scans the streets as if they were written pages: the city says everything you must think, makes you repeat her discourse, and while you believe you are visiting Tamara you are only recording the names with which she defines herself and all her parts.*

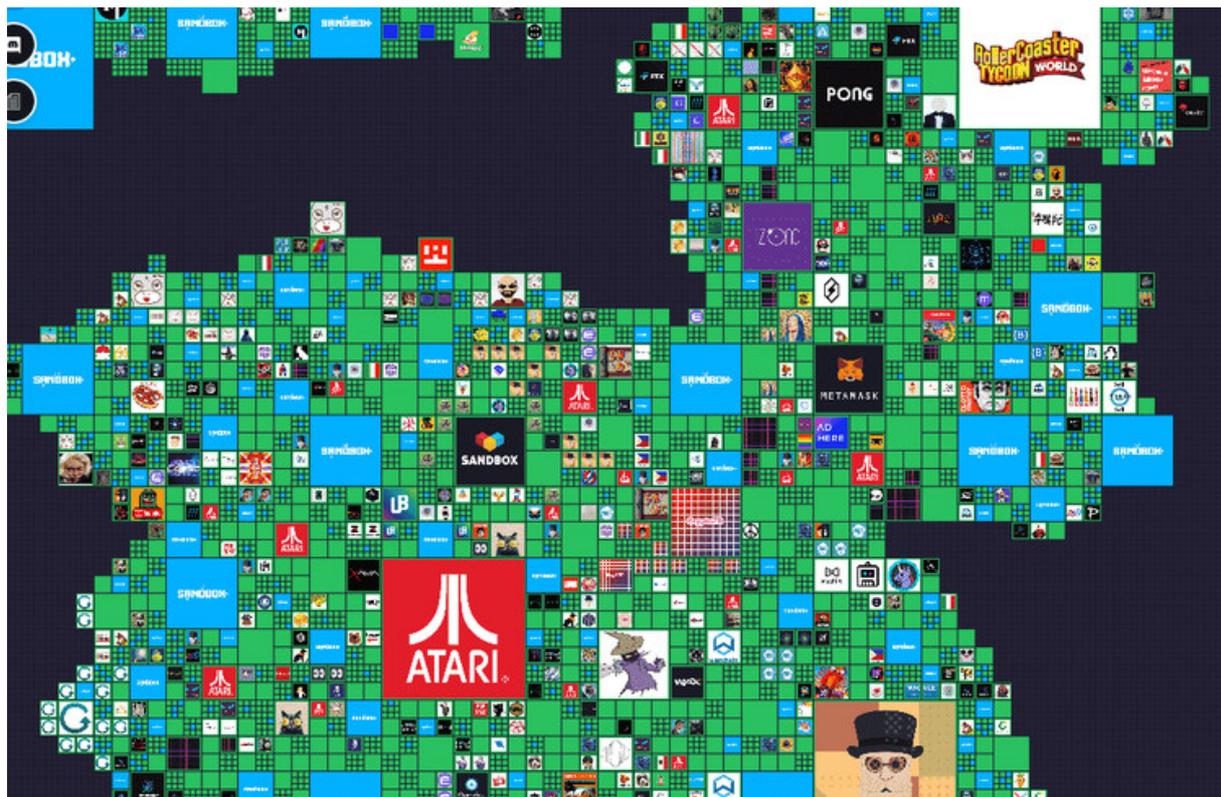
*However the city may really be, beneath this thick coating of signs, whatever it may contain or conceal, you leave Tamara without having discovered it. - Tamara, Cities and Signs 1*

Tamara reminds me of Las Vegas, a city built from scratch in the middle of the desert. Las Vegas was regarded as a “non-city” and as an outgrowth of a “strip”, along which were placed parking lots and singular frontages for gambling casinos, hotels, churches and bars. According to the book *Learning from Las Vegas* by Robert Venturi, Denise Scott Brown, and Steven Izenour in 1972, “Passing through Las Vegas is Route 91, the archetype of the commercial strip, the phenomenon at its purest and most intense. We believe a careful documentation and analysis of its physical form is as important to architects and urbanists today as were the studies of medieval Europe and ancient Rome and Greece to earlier generations. Such a study will help to define a new type of urban form emerging in America and Europe, radically different from that we have known”. With the rise of Las Vegas, we see the return of symbolism and the rise of pop culture references in architecture and city planning.



Las Vegas is a city built with desires and inclusiveness. The most distinctive feature is the display of wealth and the pursuit of wealth. In Las Vegas, the precepts of modern architecture like space and form are not the main consideration, they have a different priority, communication—a sign and symbol that can convey information directly to potential customers to stimulate them to pursue wealth, consume, and gamble! Las Vegas has no historical roots, it is an inclusive city in which

there is no value authority, no religious authority, no academic authority, and the freedom and will of individuals and groups are maximized. This sounds a lot like the metaverse, doesn't it?



So far, many metaverse platforms are grid systems parked with signs(Logos). How to communicate with potential users and build your presence intelligently in this virgin territory? In order to convey meanings, architecture before the modern movement used decoration, often in a profound way. Modernists eschewed such ornament, relying only on form, volume or structural elements, and buildings in Las Vegas rely on imagery and signs. Designers today still struggle with whether or how to use ornamentation in contemporary architecture. Metaverse could learn from the past or create a new system to communicate to the users.

### Identity of “Elsewhere”

*If on arriving at Trude I had not read the city's name written in big letters, I would have thought I was landing at the same airport from which I had taken off. The suburbs they drove me through were no different from the others, with the same little greenish and yellowish houses. Following the same signs, we swung around the same flower beds in the same squares. The downtown streets displayed goods, packages, signs that had not changed at all. This was the first time I had come to Trude, but I*

*already knew the hotel where I happened to be lodged; I had already heard and spoken my dialogues with the buyers and sellers of hardware; I had ended other days identically, looking through the same goblets at the same swaying navels.*

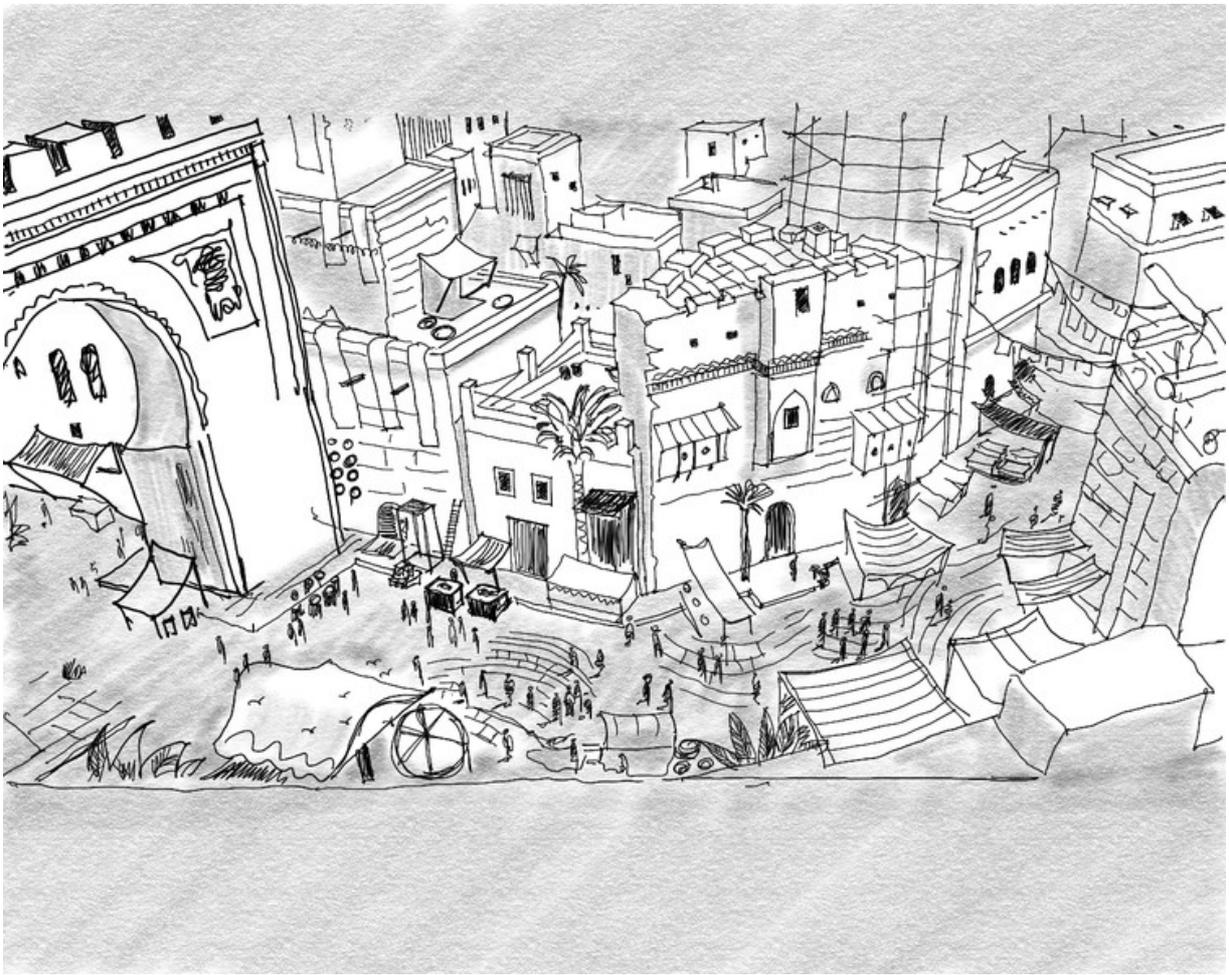
*Why come to Trude? I asked myself. And I already wanted to leave. “You can resume your flight whenever you like,” they said to me, “but you will arrive at another Trude, absolutely the same, detail by detail. The world is covered by a sole Trude which does not begin and does not end. Only the name of the airport changes.” -Trude, Continuous Cities 2*

Trude, the undifferentiated city which is steadily covering the surface of the earth, is everywhere. Marco Polo's travelogue was about continents of the “elsewhere”, now that there is no longer any “elsewhere” in the world, and the whole world is becoming more and more uniform (and for the worse).

All cities have a soul, a character, that is expressed in the symbolic dimension. As the variety of their symbols and symbol carriers is abundant, very different configurations of symbols or symbolic patterns can be found in cities. These symbol carriers can be as diverse as layout, statues, monuments, landmarks, street names, murals, graffiti, rituals, festivities and so on. The identities of the metaverse can also be distinguished through the symbol carriers that upon us to define, like the recognizable urban layout, meaningful storytelling based on specific user groups, memorable social events and public engagement...

## **Trading Cities**

### **Trading Not Just NFTs**



*You do not come to Euphemia only to buy and sell. but also because at night. by the fires all around the market, seated on sacks or barrels or stretched out on piles of carpets, at each word that one man says — such as “wolf,” “sister,” “hidden treasure,” “battle,” “scabies,” “lovers” — the others tell, each one, his tale of wolves, sisters, treasures, scabies, lovers, battles. And you know that in the long journey ahead of you when to keep awake against the camel’s swaying or the junk’s rocking. you start summoning up your memories one by one, your wolf will have become another wolf, your sister a different sister, your battle other battles, on your return from Euphemia, the city where memory is traded at every solstice and at every equinox. - Euphemia, Trading Cities 1*

Euphemia, the city where memory is traded at every solstice and at every equinox, ultimately represents the essence of trading urban centers in connecting people and ideas, rather than just goods.

Euphemia reminds me of Paris in the 1920s. At the time it was the epicenter of culture, embracing extravagance, diversity and creativity. Artists, poets, writers, musicians, and dancers, flocked from all over the world to Paris. One of the messages from the movie *Midnight in Paris* is that almost everyone wants to escape from the present and needs to find a golden age of their own, metaverse could act as time machines to take us to any “golden ages” in history, or create our current golden age to facilitate rich social, artistic and cultural collaborations.

Current metaverse platforms are mostly just showcased to display “goods”. “Seeing people use an environment for something, towards something, accomplishing a goal that impacts real life, I think that would be my dream,” said metaverse architect untitled,xyz, he envisions the metaverse to be “a space where you can have a protest... where you can create art rather than just showcase it. I think that would be my hope, that these environments, it’s not just a static thing that then hosts something you visit once and you leave...But if it’s a true public space where you can go, like Union Square or Barclays Center and have a protest or something, that has real-world implications, I think that’s something that can enhance everything.”

## **Structure, Pattern, Variety and Wholeness**

### **A Mathematical Approach to Constructing a City**

*Kublai Khan had noticed that Marco Polo’s cities resembled one another, as if the passage from one to another involved not a journey but a change of elements. Now, from each city Marco described to him, the Great Khan’s mind set out on its own, and after dismantling the city piece by piece, he reconstructed it in other ways, substituting components, shifting them, inverting them... “And yet I have constructed in my mind a model city from which all possible cities can be deduced,” Kublai said. “It contains everything corresponding to the norm. Since the cities that exist diverge in varying degree from the norm, I need only foresee the exceptions to the norm and calculate the most probable combinations.”*

*“I have also thought of a model city from which I deduce all the others,” Marco answered. “It is a city made only of exceptions, exclusions, incongruities, contradictions. If such a city is the most improbable, by reducing the number of abnormal elements, we increase the probability that the city really exists. So I have only to subtract exceptions from my model, and in whatever direction I proceed, I will arrive at one of the cities which, always as an exception, exist. But I cannot force my operation beyond a certain limit: I would achieve cities too probable to be real.”*

The dialogue between Kublai and Polo reveals how they interpreted cities, and suggested a mathematical approach to constructing a city. The cities could be dismantled into elements and reconstructed through combination and permutation. The cities could also be calculated as probabilities diverged from the “norm”, by tweaking the “abnormal elements”.

What are the elements in the cities? In the classic urban design book *The Image of the City*, American urban theorist Kevin Lynch introduces and describes five elements — nodes, paths, districts, landmarks and edges — that give shape to the mental representation of the city. The pattern or structure of the interrelations among five elements shaped the identity or character of cities.



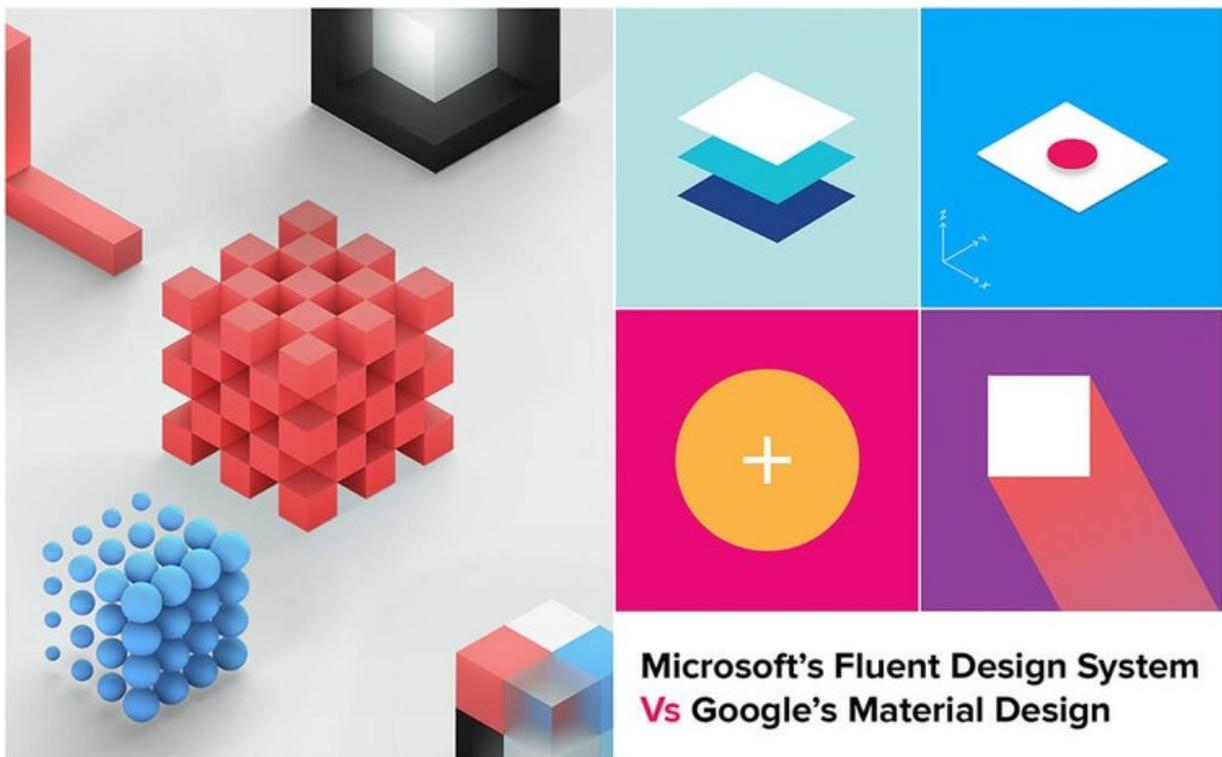
The study of interrelations of elements, and how a ‘complex visual whole’ is organized could be considered a “pattern”. According to Christopher Alexander, in *A Pattern Language: Towns, Buildings, Construction*, patterns describe a problem and then offer a solution. Alexander claims that ordinary people, not only professionals, can use the pattern language approach to successfully solve very large, complex design problems. In software, Alexander is regarded as the father of pattern language movement.

*A person with a pattern language does not need to be an “expert”. The expertise is in the language. He/she can contribute to planning and design because they know relevant patterns, how to combine them, and how the particular piece fits into the larger whole. -- Christopher Alexander, A Pattern Language*

## **Design Systems for the Metaverse**

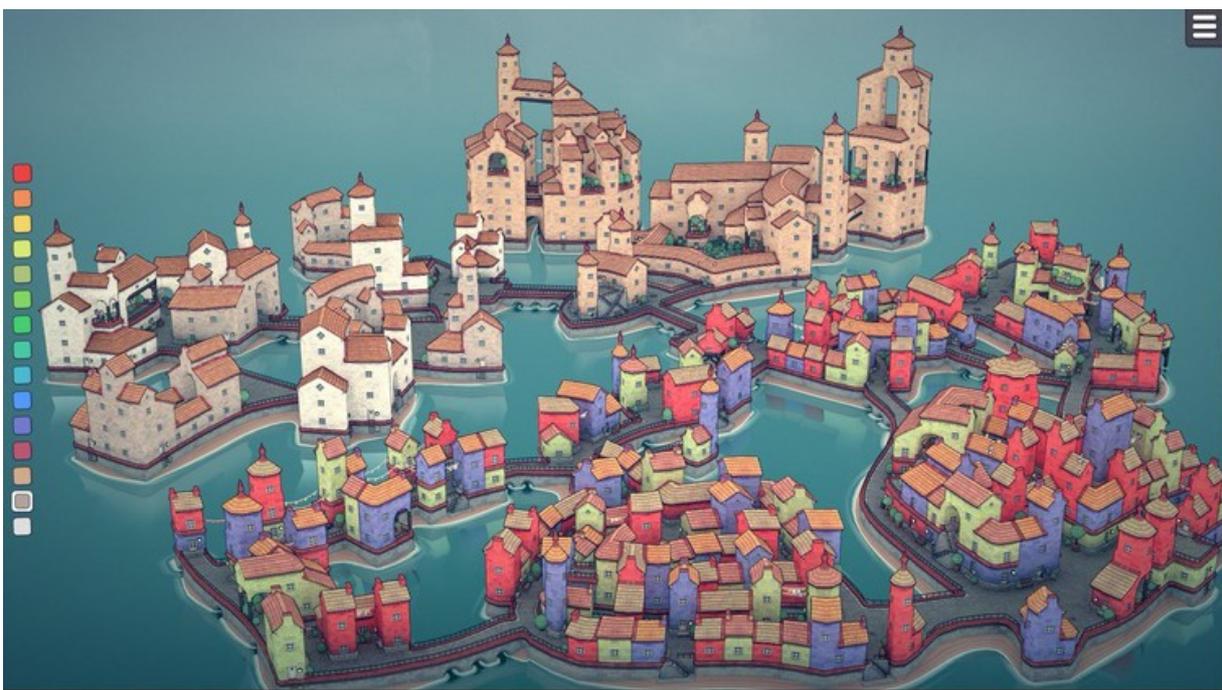
*Kublai was a keen chess player; following Marco’s movements, he observed that certain pieces implied or excluded the vicinity of other pieces and were shifted along certain lines. Ignoring the objects’ variety of form, he could grasp the system of arranging one with respect to the others on the majolica floor. He thought: “If each city is like a game of chess, the day when I have learned the rules, I shall finally possess my empire, even if I shall never succeed in knowing all the cities it contains.”*

With elements(components) and patterns in mind, many tech companies have come up with design systems to facilitate design and development prototyping for their digital products. A design system is a collection of reusable components, guided by clear standards, that can be assembled together to build any number of applications. It’s about reusability, product identities, guidelines, and best practices.



Design systems like Material design is a great example of 2D internet, designers and developers can use the predefined components so they don't need to start from scratch while making the applications for different devices. When it comes to the metaverse, how to envision design systems for the 3D internet?

The game industry has developed many techniques for worldbuilding, creating the rules and structures of the imaginary world. Townscaper, one of my favorite indie games, in my opinion, is a great example of the design system. Users can click randomly and generate beautiful cities based on the constraints that tiles have, similarly to solving a Sudoku.



The Matrix Awakens, an open-world video game developed by Epic Games, generated a world of 15.79 kilometers, larger than downtown Los Angeles, 7000 buildings and many other assets, with procedural techniques like shape grammar, wave function collapse...etc

Design systems for the metaverse are still a new topic. With the nature of the richness of 3D worlds, we'd see various systems with different themes, for different use cases.

*“Cities, like dreams, are made of desires and fears, even if the thread of their discourse is secret, their rules are absurd, their perspectives deceitful, and everything conceals something else.”*

Thanks for reading this far. Let's revitalize the missing poetic life in the Metaverse, to dream the impossible dream, to reach the unreachable star.