

Maverick Mansions | Mars

Neurons.

Imagine a city ... like a living organism. For start ... we will start with the "cells". And will build it up to a complex system. A system that relies on modularity, safety, predictability. A conservative approach. In spite of being modular and predictable ... it will bring "chaos". This seemingly untamed and decentralized structure will give us the ability to act super fast. It can also provide fast economic growth.



Copy what worked out the best.

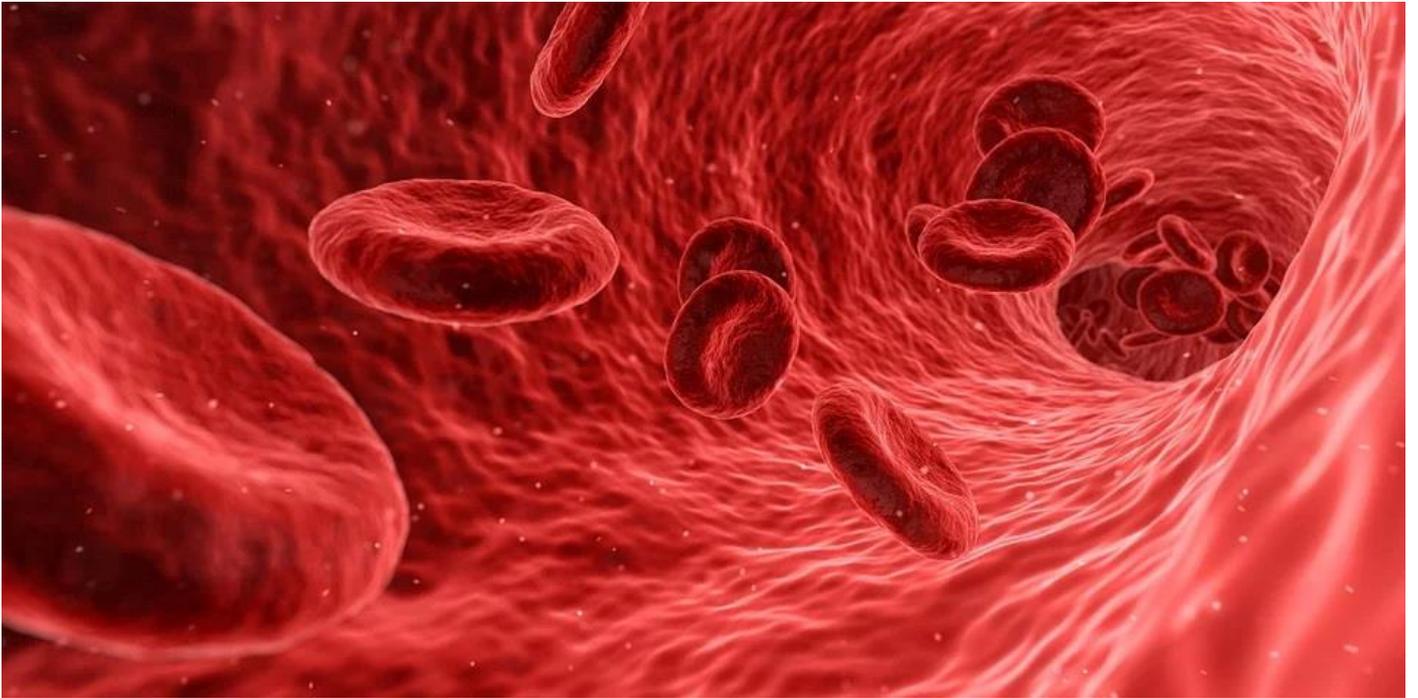
Ant colonies or spores of fungi dominate Earth. They have no match. We might consider learning from their infrastructure. Underneath the surface everything is "constant" & "predictable". Imagine a neuron like tunnel system beneath the surface of Mars. None of: wind, storms, landslides, dust and endless door openings.

None of extreme temperature fluctuations that causes micro cracks and in time turns everything into dust. (like in the Sahara, or Mars itself ... the famous dust storms on the red planet are not a coincidence). No dew point, none of extreme thermal bridges caused by temperature fluctuations.

None of the changes every few hours. We want to avoid disasters. We want constant, predictability and safety. Endless layers of glazing to preserve heat and stop dew point would almost block out the already weak Sun. Sand storms are not helping our greenhouses either.

The heating system would be overpowered by peak points.

Temperature differences & the finest dust in the wind destroys everything in time. Going out ... needing more space suits ... more machinery, more air. More doors. Dubai-like highways, cleaned and maintained day and night.



Arteries | nature's caves.
Imagine interconnected arteries like caves.



[Click to play video.](#)

The interconnectedness of neuron like tunnels would end traffic jams and avoid clogging in key points. Basically, not the location itself matters the most ... but the speed we can get there. In case of a bomb, terrorist attack epidemic ... portions can be shut down easily. Decentralizing should be essential. Meanwhile the notion of the center would fade to a point.



[Click to play video.](#)

Tunnels are predictable and scalable. Keeping it narrow at first ... and when technology advances we can go wider and wider. As an example: building 200m wide domes instead would be gambling in a way. It would hold back economy.

Smaller projects / modularity can help us to advance with literally tens of thousands of projects from day one. We can get away with not waiting for central infrastructure at all. We can start to connect parts immediately ... like neurons. Adding connections later is quite easy.

I'm continuing with an absurd idea here. Why a flat apartment in Brooklyn or Shenzhen is better than our natural environment? What is real or natural? What is the habitat we really strive for? Maybe a [Takashi Amano](#) like [aquascapes](#) could be an inspiration. Bits of nature ... [nature trails](#) in our case?

Within this interconnected neuron cave system is possible.

Waking up on a tropical beach ... surfing the "Bahamas". A downhill ride in the French Alps. Maybe the jungle in Borneo. A blizzard in Norway or wetland in the Netherlands. All within our reach. A short walk away. We do it already here on Earth. Think about the [high Line in New York](#)



[Click to play video.](#)

What is home? Think about: tunnel vision. We mostly focus on what's near us. In a dense area ... filled with trees and bushes. the immediate surrounding covers maybe 80 percent of our sight. Everything near us needs to be detailed, real. The surrounding can be a "poster" , "digital screens". In time virtual reality can kick in.

Nobody could tell the exact where is the line between real and made up. The 80-20 rule. We get most of the results with less effort. In short: bikinis on Mars instead of space suits. Notice the following images could be replicated quite easily in a tunnel.



[Click to play video.](#)

Real rocks, bushes, "Kilimanjaro" in the background. Endless meadow and grasslands. Or the ocean itself. Why not? Sure, here and there it might be "pixelated" but it's almost as real as it can be. Landscapes with very close and far objects are the easiest to make look real. All within a tunnel. White water rafting in New Zealand.

Kayaking near the glaciers in Alaska. Wetlands fishing ... in Netherlands.
It can be done with today's technology.

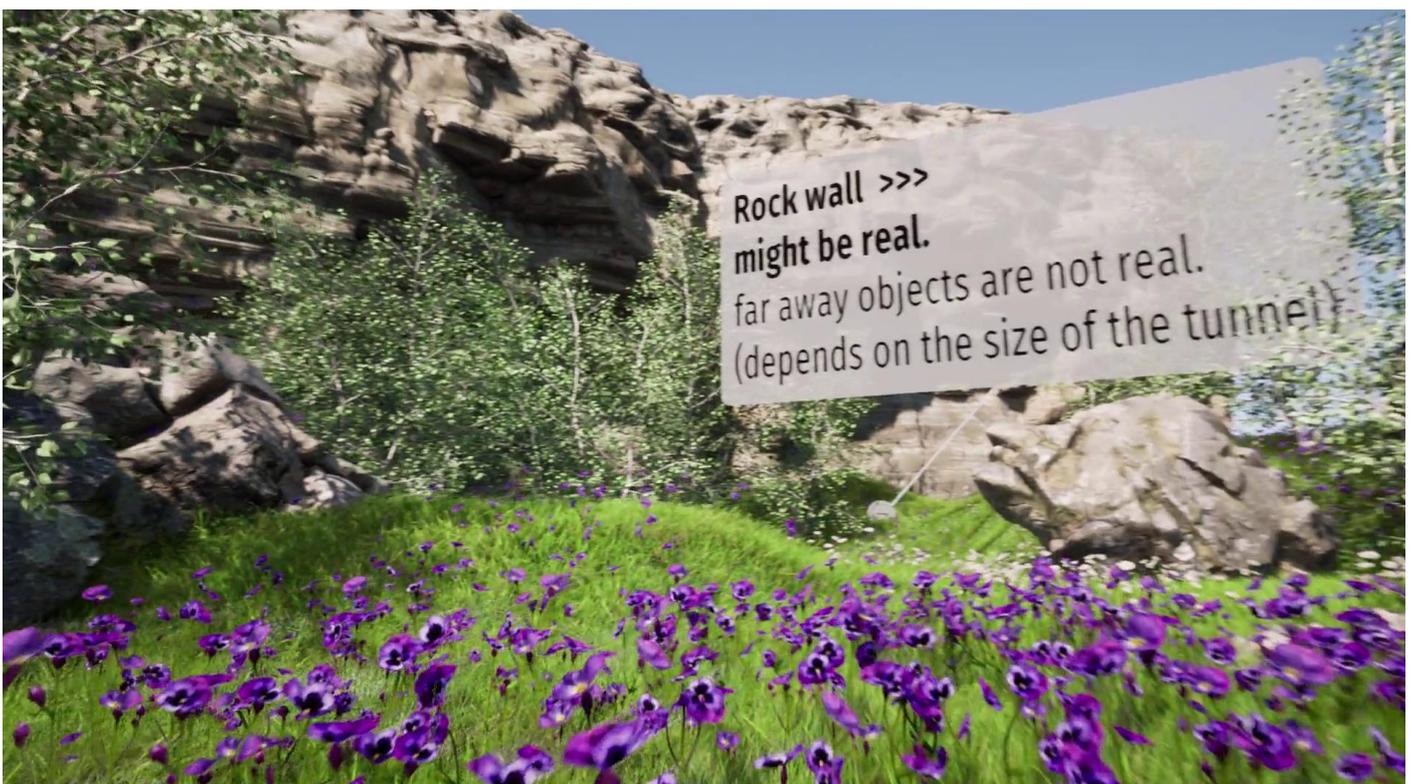
On the images. Where would be the line between real or projected? A better question. Would it feel real? The bugs, the grass, the smell of the forest, the fog, the blizzard. They are real. Palm trees shattered on the tropical beach with the whitest sand possible. Moonlight and expensive wine. First the tunnels are simple: Martian concrete walls with led lights. In time: screens, displays than virtual reality to expand the "real" near us.

Madison Avenue.

Does a Madison Avenue apartment feel like Earth? Feels like home? Do we still crave for a trip in Hawaii in the weekends? Do we envy Leonardo Di Caprio filming "the Beach"? Do our senses decide? Like smells, lights, textures? Within the film "[Jumper](#)": the hero can teleport himself on every part of the globe in a second.

Imagine Rock climbing with a finger. A few minutes later the more than perfect waves. Getting "stuck in air" with a downhill bike. It would skyrocket space tourism. Sure ... we start with small diameter tunnels, aquaponics, breeding snails. Then: raising chickens, goats, building up soil, climb trees. Going wider and wider with tunnels.

Most everyday activities ... even extreme sports could fit within the tunnels quite easily. In spite of my enthusiasm ... unfortunately I'm quite pessimistic about the Volvo Open. Fast forwarding to one of the widest tunnels.



[Click to play video.](#)

Energy | Infrastructure

Fusion and similar advanced technologies are not within our reach for now. Unboxing it like an IKEA furniture is highly unlikely. In case of a malfunction: shipping a simple "chip" would take months. Best case. Thinking of a centralized construction with "thousands upon thousands" of trained elite scientists ... even at a 1 million city stage sounds like "lets grab it" and "you carry it" in a way.

We want solutions for the now.

Here on Earth: monopoly situations regarding infrastructure was and still is a mistake. Letting entrepreneurs handle medium and large projects would create the healthiest competition. A way faster growth. Economy will strive: that means more taxes as well. Win – win for everybody.

Decentralizing would provide speed, healthy competition, less corruption, job safety and stability. Within this 3d wire mesh system it's more forgiving to fail and it's easier to correct errors. A decentralized, mostly privately built and maintained infrastructure, would bring exponential growth. Getting into solutions in a moment.

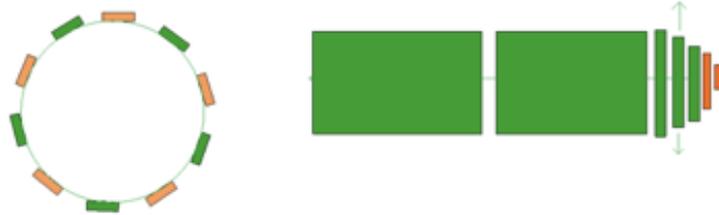
Notice this quite narrow tunnel. The background is left empty and simplistic to underline how unnoticeable it is. Be it bare "concrete" or projected landscape.



[Click to play video.](#)

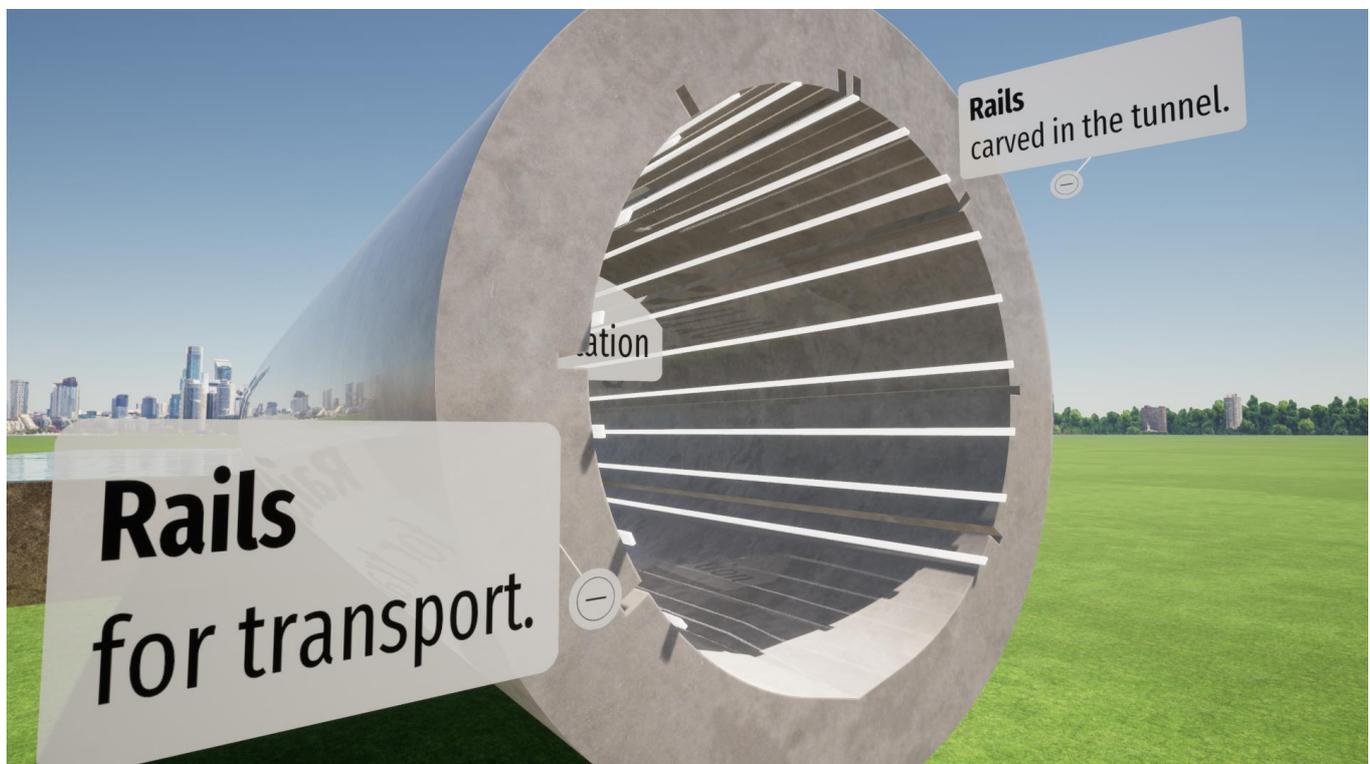
Construction.

Fortunately, we have plenty iron on Mars. Actually, it's the finest quality. It seems we can compact soil into bricks. None chemistry involved. [Martian soil](#) could give us stronger materials than the [bricks](#) we have here on Earth. Using lots of metal sheets and metal cables would be a great ... cost effective choice. Maybe versions of 3d printed [martian ferrocrete](#)



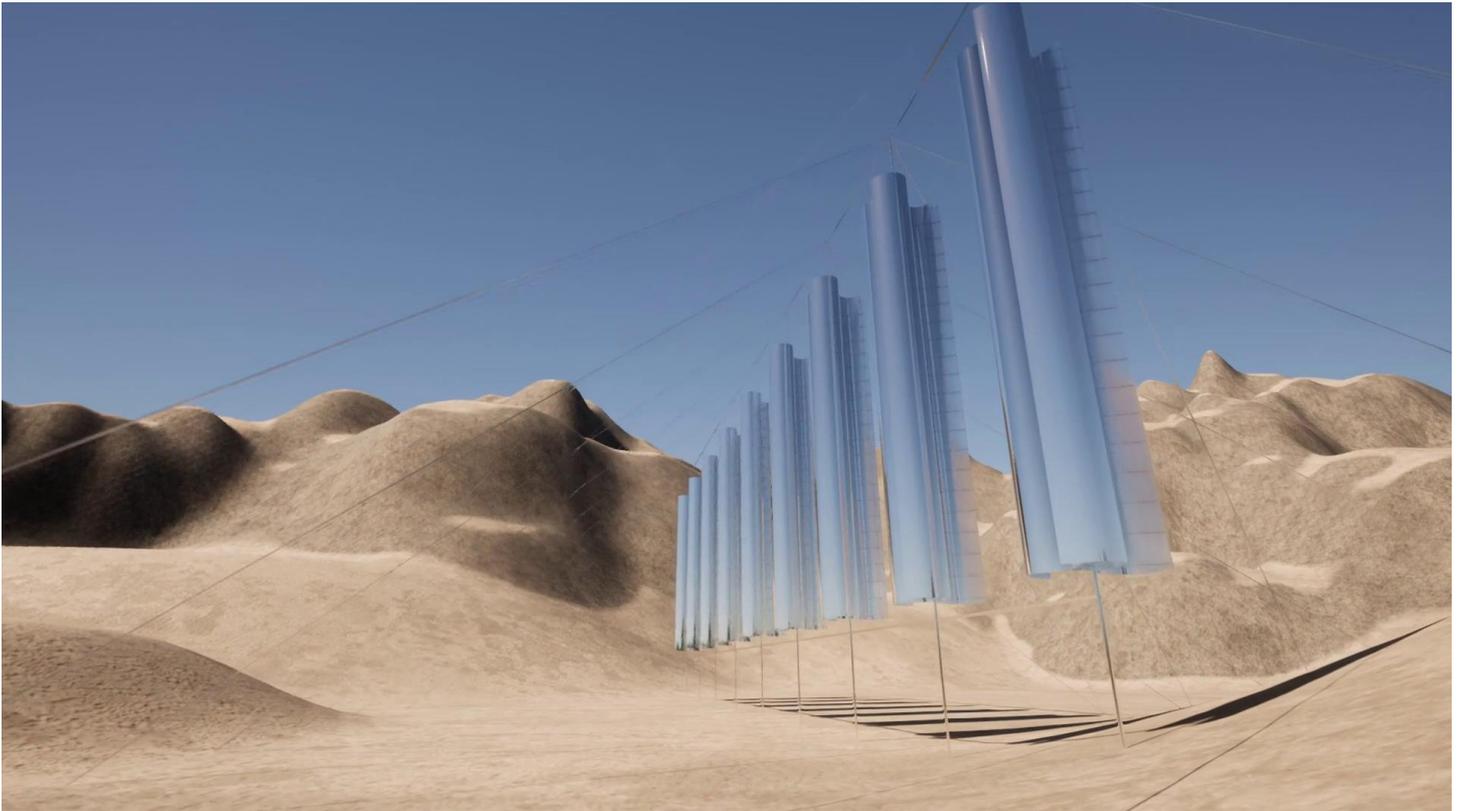
That's a sketch of a boring machine. The front of the boring machine could dig and compact the earth. Compacting the earth would stabilize it immediately. We dig first ... than like earth worms: we push into the walls with a great force. Putting pressure at a small section at once wouldn't demand that much energy on our part. A "sonar" might help us to go around huge rocks. (Or we just carve into it).

Flexible ... train like structures could take sharp turns. The drawing with the circle represents the section. Tank like wheels would help the machinery to go up ... and down easily at any inclination. It can push into the pre compacted terrain and let it loose. Boring larger sections with the total absence of (immediately applying) "martian concrete" could speed up the process.



Notice "inverted rails" within the walls. Robots and platforms can use it for travel. They can switch lines and positions easily. They could stop to work on a section. The 2-way traffic wouldn't be a problem at all. In terrariums they use electric cables to heat up the soil. A cheap, fast, reliable solution. We might use it as well.

Energy source



[Click to play video.](#)

Thin metal sheets and thin cables. Sent from Earth in the beginning ... then manufactured on Mars. This design can "grab" the wind quite well. Almost no materials needed. Lack of "gravity" and extreme winds would let us go with even a taller ... and lighter design than on this example.

Piling down metal bars in the ground. The thin metal blades are shaped this way with metal cables. Robots could assemble it without any problem. Valleys and hilltops would be a great choice (be it at the Poles or at the Equator).

Solar panels positioned on/within the rotating blades would remain clean. Dust free. Solutions like this could decentralize our energy demands. In case of a disaster ... 99.999% remains in a flawless state. Hundreds of firms could make, develop, sell, compete providing energy, water, minerals as well. This kind of competition would be promising for the end consumer and for the economy as well.

Because the infrastructure (and 3d roads) are underground ... there is plenty of space to move around freely on the surface. We could position city's everywhere. Especially near mountains ... to harness the wind. If we find the right minerals needed to feed plants, constant winds, water sources we are ready to build a new settlement.



[Click to play video.](#)

Pressure difference could provide us limitless and predictable energy. Air finds the shortest route to equalize pressure. Compared to Earth: on Mars the day and night temperature fluctuation is a lot bigger. (like here in the Sahara). At mountain side that intensifies even more.

Hot and cold air in constant motion. Imagine not just windmills within valleys ... but digging an actual tunnel through a mountain as well.

Air would act like a liquid. Most of the air would want to equalize pressure between 2 valleys. A constant, predictable and low-cost energy source. A wind turbine. A few robots could clean up the system periodically to keep it clean of dust.

The tunnel can't be really long. The inside temperatures could mess up the phenomena. (however, we might tap into that as well). We will need tall ... but a narrow chain of mountains running parallel with the equator.

Technology's to store energy.

In Switzerland [compress air](#) in a tunnel. When electricity is needed ... they just start to release the compressed air. Running up and down [weights on a mountain slope](#) could achieve similar results.

On Mars the cheapest and simplest version would be simply piling/drilling metal bars in the ground. Building a simplified "ski lift" with rocks on it. Sand storms, temperature differences will not affect the structures to much. [Kinetic flywheels](#) could be an option for the indoors.

Tunnels

In time technology advances. We will be able to dig wider and wider. Imagine parallel, multi-level 3d interconnected framework built up from tunnels. The possibilities are endless. A sketch to show the main idea. We'll zoom into them on the next page. For now, just notice the scale. Within relatively small openings we can fit in "skyscrapers" or a forest.



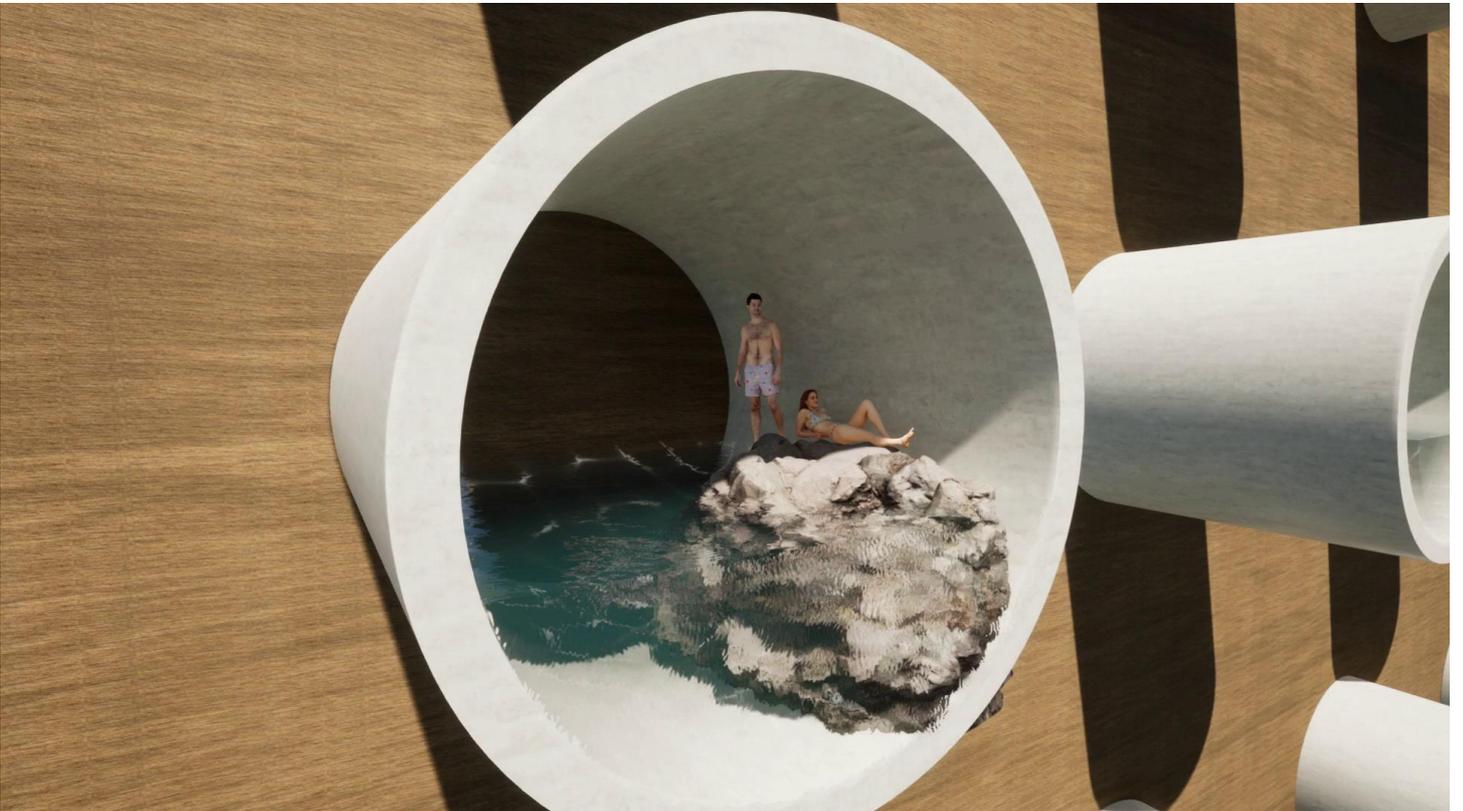
[Click to play video.](#)

Tunnel examples

Most agricultural activities, transportation, lifts could fit within smaller, cheaper tunnels. Complex social activities would fit in wider ones. Interconnecting them would make it feel more open. Even more open than walking in a crowded city (here on Earth). Point to point connections would let us avoid key points and rush hours. The whole ... million-person city would feel more like a "mountain village" or a "deserted island". Decentralizing traffic and infrastructure would keep the perceived density low.



All tunnels - [Click to play video.](#)



Tunnels A - [Click to play video.](#)



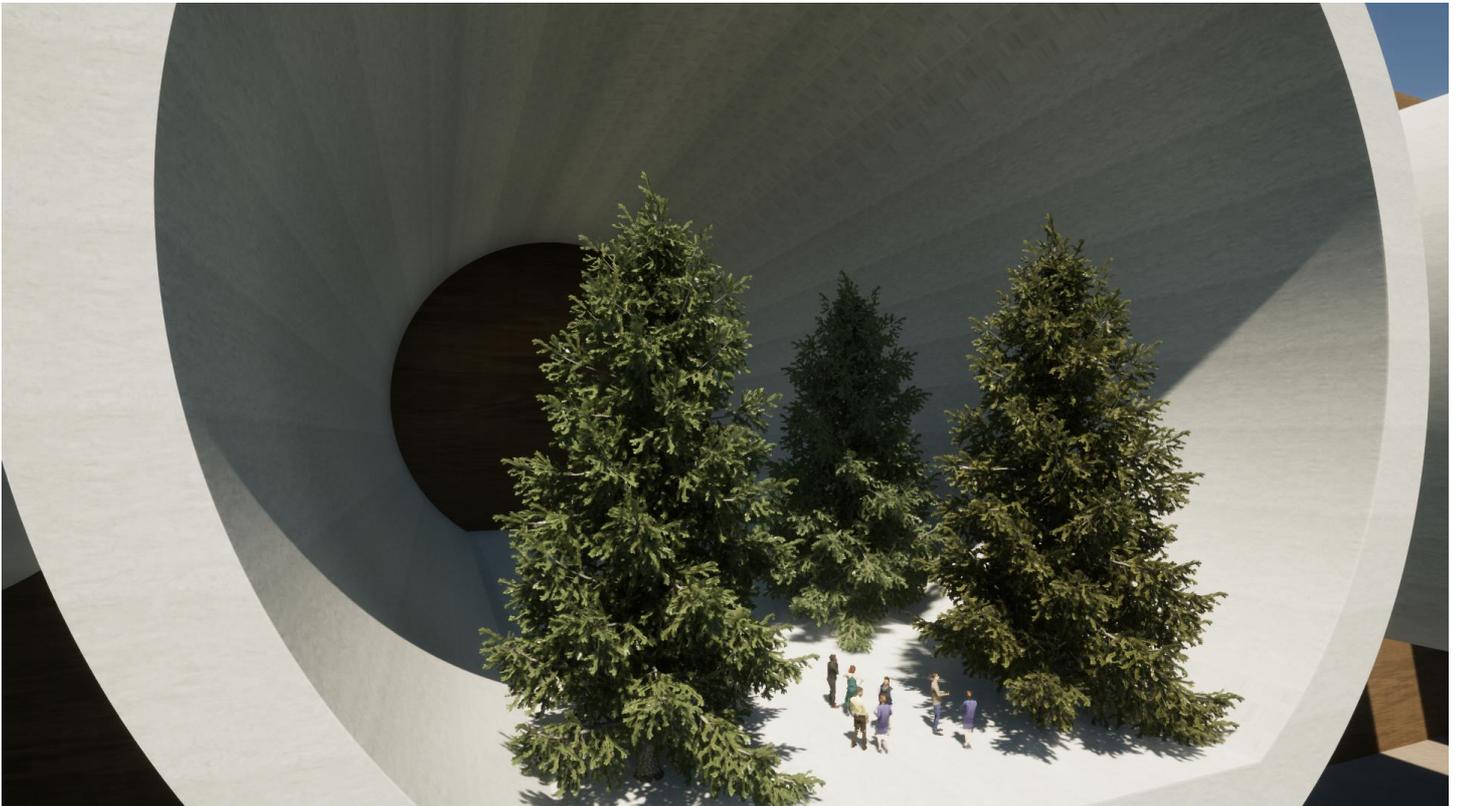
Tunnel B - [Click to play video.](#)



Tunnels C - [Click to play video.](#)



Tunnels D - [Click to play video.](#)



Tunnels E - [Click to play video.](#)

Food | the tunnel

A mega-project to mimic nature [Biosphere 2](#) didn't work out on Earth. Unfortunately, dozens upon dozens of unpredicted problems appeared. Inhabitants needed to walk out of the sealed enclosure. We can't risk with projects like this on Mars. We want to avoid unpredictability.

The lack of a powerful Sun, sand storms that can last for days (if not weeks) can add to the problem. Complicated fittings and several layers of glazing to deal with the dew point & extreme temperature differences dim the light even more. A single crack, hard hit ... can cause devastating consequences in matter of seconds.



[Click to play video.](#)

Going underground is worth considering.

In this video I have tried to consider and condense a few ideas into one tunnel. Monocultures is not the best idea. It drains out soil and it's an invite for pests and disease. We need to build up soil not to destroy it. We did that on Earth already.

Biodiversity and migrating animals (on free range pastures) like: goats, sheep, rabbits, chicken could mimic nature. Birds, bugs, earth worms, hopefully bees! This way diseases vanish. We can build, healthy nutritious, natural soil and therefore food. Just think about on our depleted farmlands, full of chemicals. This could be better.

Robots running up and down the carved rails could manage all the "heavy lifting". Planting trees, picking up the tomatoes from aquaponic systems. Robots and A.I. can add a few extra crabs, frogs, to a flood and drain system to deal with the clogging. Robots can feed or catch fish in the wetlands. They can heat scan / follow behavioral pattern of goats to figure out if they need medical consultation.

[Snails on hemp canvas](#) for start (to extend surface area) could cover basic protein needs. They can feed on lettuce, dandelion, greens, cucumbers, carrots.

Earth worms, bees & ants.

Building blocks of life itself. Without pollination we are in a great trouble.

Birds. Birds can travel seeds, essential microorganism for composting ... fungi.

Clover.

Most plants can't extract Nitrogen directly from the air. Legumes, especially clover can extract it from the air. They deposit it in the ground. Other plants will be able to use it in time. It's great for pastures.

Pasturing sheep, goats, chicken, rabbits, ducks on clover fields would build up soil lighting fast. We could plant fruit trees in no time. The more species / the more bacteria present ... the more stability.

Hemp

With hemp we could cover our needs related to: textiles, rope, clothing, paper, oil, bio plastic, oil-based paints, creams, moisturizing agent, cooking oil, insulation, biofuel and plastics. It can be mixed with other fibers like flax, cotton or silk. Seeds can be eaten raw, sprouted or in powder form. Beverages like: hemp milk and tisanes is an option as well. Hemp oil its full of saturated fats.

Ducks.

Ducks can feed aquaponic systems. Way less sensitive than fish. From feathers we can make pillows. Diversity is the key.

Algae

We started to have success with growing [algae](#). Soon it will be a proven, reliable solution.

Reed.

Extraordinary material to clean wastewater in a wetland environment.

[Mangrove](#) is an extraordinary environment to breed fish and black soldier flies.

[Black Soldier flies.](#)

They "sterilize" and transform organic matter like: dead animals, poop, leftovers before it starts to rotten into food. It's the most efficient, easy, cheap, reliable, organic method to convert waste into the finest quality feed. They outcompete house flies and keep everything clean and safe.

Fish.

Most farmed fish are fed with other fish. Fortunately, recent studies shown that these carnivorous species seem to respond exceptionally well to a plant diet: white sea bass, walleye, rainbow trout, cobia, arctic char, yellowtail, atlantic salmon, coho salmon. For biodiversity nature trails could be filled with fish as well. Way Better than monocultures.

Oyster.

Within nature trails ... oysters can clean up water. It will be crystal clear.

Crabs

Crabs can be paired with flood and drain aquaponic systems and nature trails. Great food source. They prevent the "clogged", anaerobic parts of the ecosystem. They keep things healthy. Crayfish not to be forgotten.

Mushrooms.

"made" for the tunnels. They can produce massive quantities of high-quality food.

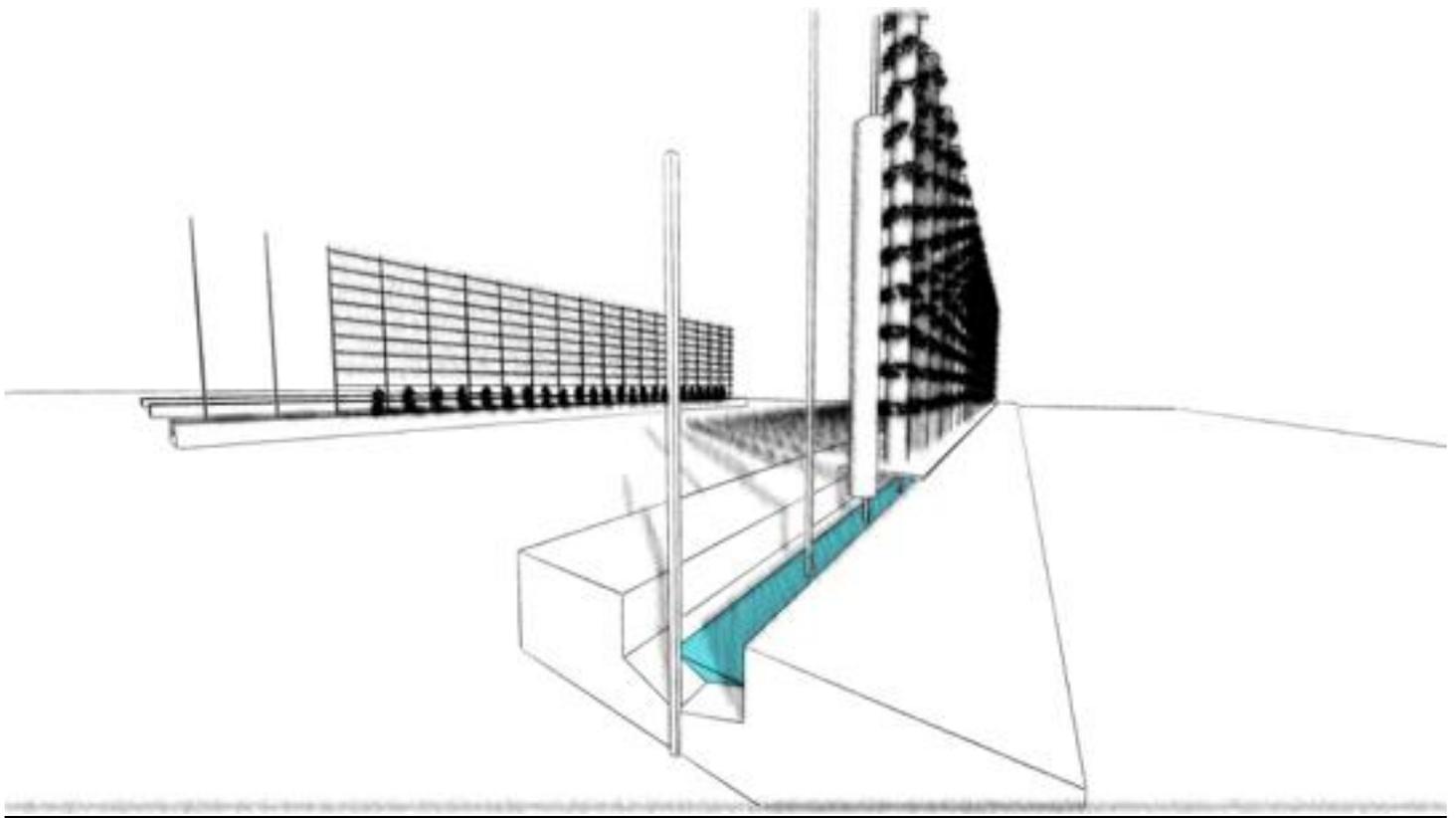
Red wiggler.

While earth worms wait ... red wiggler jumps on food while it's fresh. They clean up the mess before it could rotten or carry pathogens. No deadly bacterial diseases or e-coli. [They build up soil.](#)

[Mealworms](#) for a food source.

Flood & drain aeroponics.

A few months back I wrote an article about how to build the most versatile and cheap aeroponic or flood and drain system. A "carved" niche in a concrete floor to gather or hold water ... with a metal bar in the middle. Blue is the water and yellow the growth medium. [The blueprints.](#)



[Click to open.](#)

Minerals

Minerals needed for plants are abundant in the Martian soil. However unfortunately we need to eliminate some toxic elements as well.

Co2

Plants dry mass is mostly built up from carbon. CO₂. Pasturing animals on crops, mushrooms could feed the plants in a natural way. Offices, schools shopping centers positioned near industrial food tunnels would compensate the high demand on both sides.

Co₂ is heavier than air. It would accumulate at the bottom. To avoid the usage of "1 trillion" fans a (valley like) microclimate could be the solution. We just need to make sure there are temperature differences along the length of the tunnels. Air will ventilate naturally. Moisture or excessive dryness would equalize naturally without doing anything in particular.

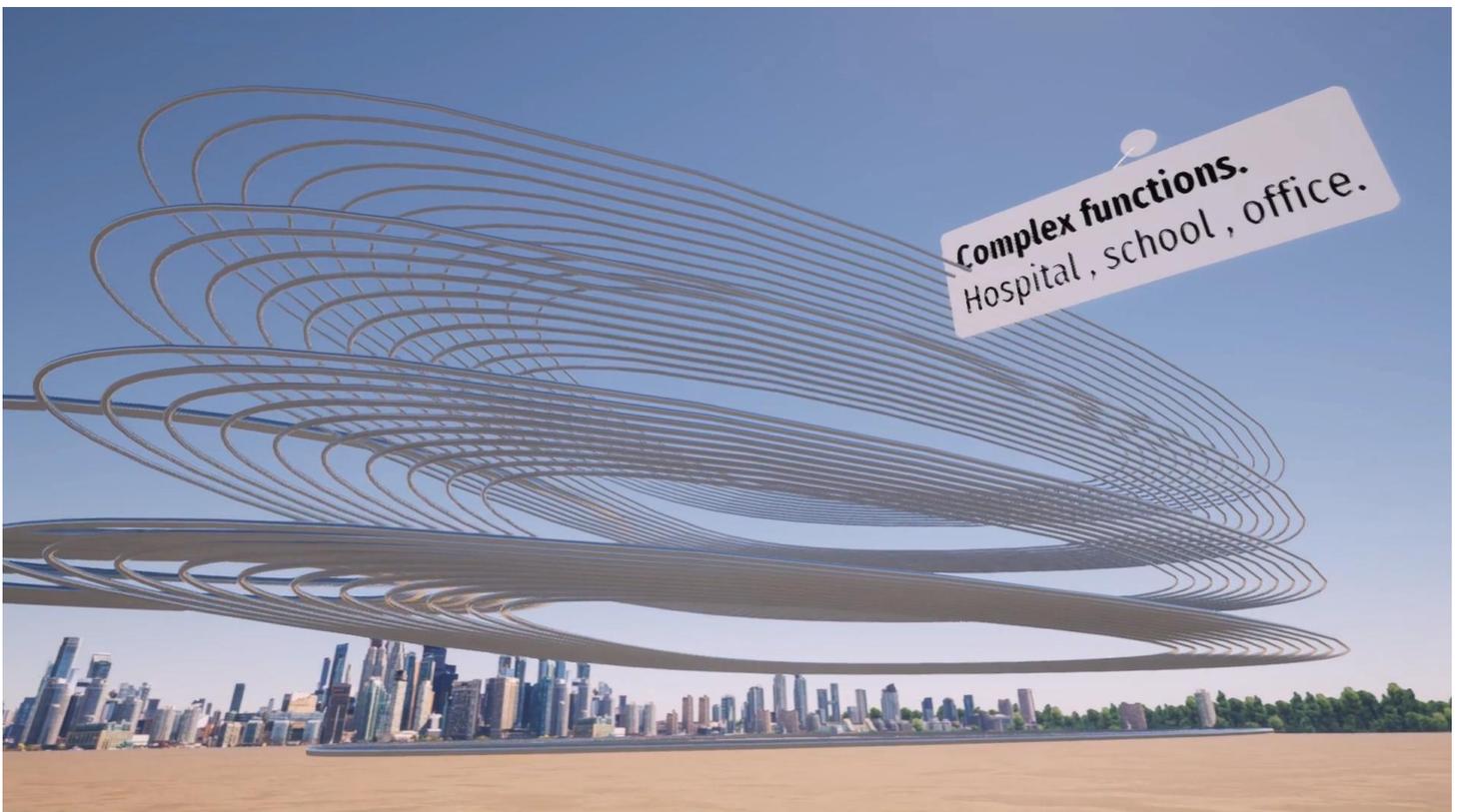
Last year I built a few machines that from decaying organic matter (be it plants, or toxic animal waste) produces heat, water and co2. The extra co2 skyrockets plant growth at most species. Meanwhile sterilizes everything at hospital grade. It builds up soil in days instead of months or years.

Compared to traditional composting it doesn't produce methane or laughter gas (that's harmful to plants and us as well). It saves fortunes on chemicals, pesticides and on minerals as well. Nothing to burn, explode or rotten. It might be handy on Mars as well. A chart with the first ... the smallest machine. [The blueprints.](#)

Water vapors.

Plants evaporate lots of water. In a small enclosure that could cause mold and diseases. [Dew point](#) is the way to collect the extra humidity quite easily (and cheap). High temperatures & saturated air needs just a few degrees difference. A cooler water pipe would collect all of the extra moisture. Simpler than literally billions of dehumidifiers.

Socio cultural



[Click to play video.](#)

The more we repeat an idea /construction the more cheaper and accessible it becomes. This so-called receptiveness opens the doors for millions. Therefore by definition the more chaotic untamed and undistinguishable it becomes, if it makes sense. We go wider and wider. No need to reinvent the wheel from scratch every given time. With these tunnels we can fail fast with zero or low risk ... therefore we can evolve really fast.

This repetitiveness would be anything but boring. It would bring an untamed chaos and diversity we can't even imagine. Some will want to spend time on the outside. The beach among palm trees ... surfing monster waves maybe. Martian cuisine and shopping. We'll never know who wants what. And we shouldn't.

We shouldn't decide. Demand should do decide. This neuron like infrastructure can take on tens ... if not hundreds of thousands of construction sites from day one. All seeking the end consumer attention. So, they will diversify it to the maximum extent.

If a cluster needs “horseback riding” or “pink dolphins slash unicorns” it’s done. It fits within the infrastructure. Nobody wants copy-paste star trek like corridors. Instead of shooting for a few mega-structures with wide openings and trillions in cash upfront ... we might let our ego down and play it safe.

Hundreds of mostly self-sufficient clusters would do the job. The safer the better. Decentralizing and making it modular will let entrepreneurs “jump in” right from the start.

Climbing trees at 72? Residence for the elderly sounds daring enough?
Rock climbing with a finger? Who transports the first goat colony to sell milk?



[Click to play video.](#)

We need to provide easy ... safe investment platforms. To take out the risk factor. Repetitive tunnels in constant environment is a good example for that. Where "things can't go wrong". Everybody wants to hear that. Idealizing here but: this way we'll have instant "limitless" money & growth. We need competition for the end consumers attention. Opening up game to everybody would naturally drive healthy win-win situation and it will lower the prices.

Within this wireframe ... you'll be able execute on a dream quite easily. Be it as an investor, visionary, construction company or entrepreneur. You'll find your place among the myriad of opportunities. Notice that a 1 million city ... (built this way) ... won't take up lots of space. However, it would feel quite "abandoned". Like a small “mountain village”.

In case of an epidemic or a disaster ... this decentralization 3d neuron like system is a safe way to go. Lack of key points and interconnectedness builds up safety and speeds of growth. The concept of a city center wouldn't be that accentuated. Real estate and land prices will equalize. This “untamed” decentralized (3d) growth will bring along a fair-play competition ... therefore stability in every area. Be it electricity, mining water, minerals, transportation, tourism or real estate.



[Click to play video.](#)

Note* this narrow scene could be among the first nature trails ... (we passed this level of technology). Notice I exaggerated with the simplicity of the background.

One city is too small to talk about politics and government of the whole planet. Nonetheless we might think about the following idea. Unfortunately, ... we as a species have a proven history in aggressiveness to accumulate land and riches.

Giving it away would be the best option. Like E.U. project. Simplified: you can use the land for xx years if it brings economic growth. If you don't do as promised you fail the right to use it. Every domain like travel, real estate, offices should have their own contract for the "lease/usage". The more parties, constructions at site doing their own thing, the less risk to start war. Why would we? If we can build "easily".

A billionaire invests in "Hudson yards" ... another will sell ice cream on the main avenue. And anything in between. It must be easy for all of us. Within this 3d infrastructure its space for everything. We can double, triple, quadruple "Broadway" anytime. Almost in the same place. A parallel tunnel almost always fits. We definitely need taxes, police, healthcare.

Cities could act like countries. Every city having its own rules and slightly, or heavily different taxation system. This way even cities compete for attention. This keeps corruption, monopoly even lower in an organic way. It's not about utopia or idealization. It's about the market. It was always about the market. The market always decided and always will. We shouldn't think about that. We just need to create a wireframe that can keep up with the lightning fast growth. The purest ideas will strive.

Transportation in space.

Imagine a space ship. Parallel "tunnels" from modules in the middle filled with water, food, cargo. And a rotating torus/as circulating around the center to achieve rotational gravity. Structures like this could help us travel to Mars in great numbers. Like Oasis of the Seas where the transportation is the destination itself. Bigger animals could be shipped this way.