THE LINEAR CITY

According to Gilles Gauthier

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1. Linear City

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“The Linear City promises humane and sustainable living spaces for our planet, reconciling high urban density with the complete preservation of ecosystems.”

Our current cities and their transportation networks are the legacy of a bygone era. Today, technological advancements offer us an unprecedented opportunity to reinvent the way we live and travel.

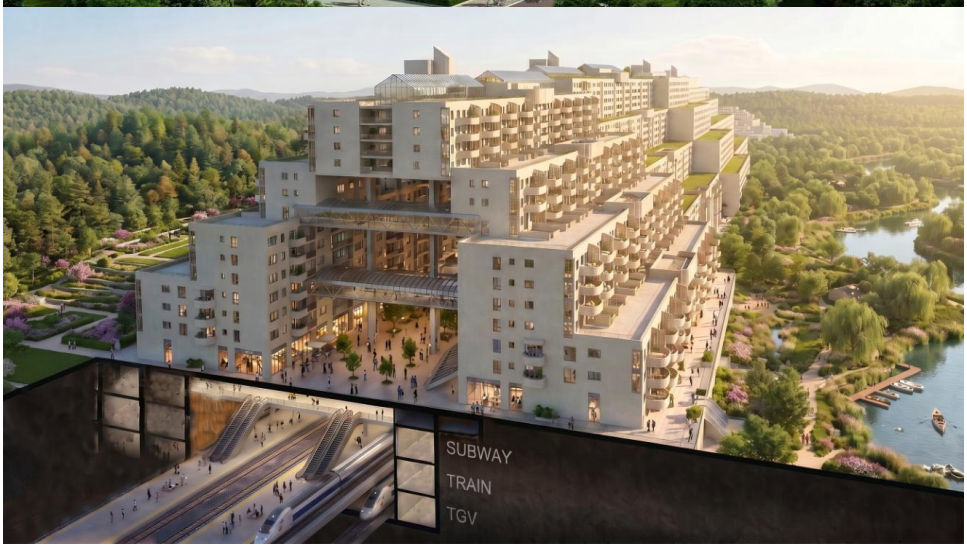
The Linear City proposes a progressive transformation of our territory to finally reconcile urban vitality with the serenity of nature:

- **A 95% reduction in urban sprawl** to restore ecosystems.
- **An underground transportation network** faster and more efficient than personal automobiles.
- **A reinvented neighborhood life**, inspired by the friendliness of traditional villages to break social isolation.
- **A concrete response** to the housing, mobility, and climate change crises.

2. Reimagined Architectural Design

This architectural model steps away from impersonal constructions to favor a welcoming and highly livable design. Residential buildings, ranging from 12 to 16 stories in height, are designed in 4-level terraced steps, offering each residence a private terrace and access to a semi-private swimming pool.

The backyard transforms into a true natural park, providing beauty, tranquility, and fresh air. The Linear City winds harmoniously through landscapes, incorporating a wide diversity of architectural styles.

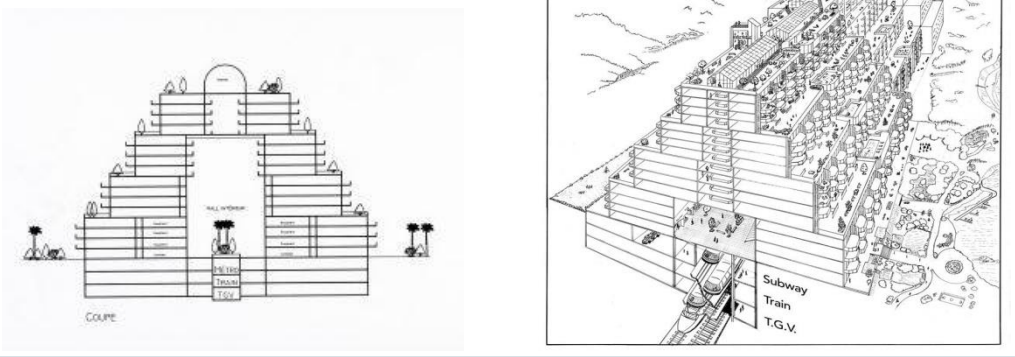


And could even be presented in this form:

3. Integrated and High-Performance Transportation Network

Innovation relies on a three-tier interconnected transportation system (subway, passenger train, and high-speed rail/TGV) located directly beneath the buildings. This configuration allows every resident to reach a station in less than a five-minute walk, while simplifying complex transfers. In just a few minutes, residents can reach their workplace, a new environment, or the city center.

This system aims to significantly reduce dependence on automobiles and the costs associated with road infrastructure. It also integrates freight distribution and essential services into the lower levels. High-speed rail lines (TGV) as well as passenger and freight trains serve the city while running along parallel tracks to take advantage of the landscape and minimize impact on the urban environment.



Cross-section of the triple underground transportation network

4. Revitalization of Social Life

To combat social isolation, the creation of shared spaces is essential. The heart of the community revolves around a central building within a cluster of seven buildings, housing approximately 3,700 residents. Here you will find the subway station, local shops, administrative services, as well as daycare centers and schools. Every subway stop becomes a shared living space, featuring bistros, bakeries, and community areas. Furthermore, the shared terraces of these buildings offer recreational zones, thereby fostering a true sense of community belonging.

5. Progressive and Modular Transition

The deployment of the Linear City begins with the construction of a first building on the outskirts, connected to an existing city. The successive addition of new buildings allows for the gradual formation of a neighborhood, then a village, and finally a new city. This development can be paused or resumed based on demographic needs, making it a major asset for urban planning.

This mode of living also addresses housing crises, energy and water overconsumption, reducing the cost of living as well as challenges related to global warming and pollution.

6. Ecology and Environment.

Reducing the ecological footprint is essential in the face of current environmental crises. While a traditional city occupies an average of 200 m² of land per inhabitant, the Linear City requires only 20 m². By concentrating housing within a 100-meter-wide strip, the city preserves the landscape, leaving space for forests and biological corridors. This approach contributes to the protection of agricultural land, natural landscapes, and biodiversity.

This approach responds to the environmental urgency highlighted by organizations such as the WWF (World Wildlife Fund), by slowing the destruction of ecosystems.

7. Conclusion

The "urban sprawl" model has become unsustainable and will not be able to accommodate the 9.6 billion people projected by 2050.

The Linear City represents a realistic and relevant solution for establishing efficient public transit, achieving a 95% reduction in land use, and fostering social life. Of course, any other solution that achieves these goals would be welcome.

Envisioning a “city that winds through our most beautiful landscapes” is not merely an aesthetic aspiration, but indeed a logical and beneficial choice for everyone. The real question no longer lies in our need for change, but in how quickly we can adopt such a model.

This project requires close collaboration among all key stakeholders: political decision-makers, planning professionals, and investors-entrepreneurs. Together, we have the power to build a sustainable future, and it is our collective responsibility to preserve our planet for future generations.

All major transformations in history—whether the transition from animal traction to the automobile or the advent of the Internet—were first driven by a minority of visionaries before becoming an obvious reality for the whole world.

Today, all that is needed is a first "Prototype": an initial module of 7 buildings. As soon as citizens see their neighbors living in the heart of a natural park, eliminating their commute times, and increasing their purchasing power, they will realize the tangible benefits of this choice for the future.

To accelerate this transition, my copyrights are offered free of charge as Open Source. The Linear City Standard is thus freely accessible to all partners wishing to initiate a first

development. Please feel free to contact me to obtain technical documentation for your architects and professionals.

8. Architectural Programming

8.1 Building Organization

Each building can accommodate up to 328 residences, with a height ranging from 12 to 16 stories, slightly staggered from one another to avoid a monotonous alignment.

- **Housing:** Each unit features a private terrace, visually secluded from neighbors. Concrete construction ensures optimal soundproofing and fire resistance.
- **Level / Section:** A group of 38 units shares a semi-private terrace (swimming pool, park, play areas), forming a small community of nearly 70 residents. These levels include protected areas for children, visible and monitorable from the terraces. Each floor features mailboxes, a fire station, and four waste chutes (recyclables, deposit items, compost, and general waste).
- **Upper Rooftop Terrace:** The roof turns into a neighborhood park complete with a community room, a lookout belvedere, and play areas. A pedestrian path connects the buildings, promoting conviviality among neighbors.
- **Basement:** Storage spaces, fitness rooms, shared DIY workshops...

8.2 Landscape Architecture

Surrounding landscape architecture incorporates recreational activities: bike paths, parks, pedestrian walkways, private vegetable gardens, sports facilities, historical monuments, and dedicated public spaces. It could also accommodate a few buildings that the structural grid of the linear city cannot accommodate.

8.3 Commercial Sector

The base of the building can accommodate commercial floors, creating architectural diversity. On the ground floor, various shops and businesses are located, while the upper levels are reserved for offices and manufacturing space, allowing residents to live directly above their place of work.

BUILDING WITH COMMERCIAL FLOORS

8.4 City Organization into Modules

 Base Module (7 buildings): Grouping approximately 3,700 inhabitants, this module justifies the need for a subway station, a primary school, a daycare, a bistro, and local convenience stores.

 Municipal Scale: A cluster of 7 modules will require services typical of a small town, including a commuter train station, recreational services, educational facilities, and a hospital.

 Metropolitan Scale: For every 2 million inhabitants, it will be necessary to provide all the services of major cities, including high-speed rail (TGV) and commuter train stations integrated into various sectors of existing cities.

8.5 Transportation Networks

The public transit system is organized across three interconnected levels, serving both passengers and freight for short (subway), medium (commuter train), and long distances (high-speed rail / TGV).

Commuter trains, high-speed rail, and freight trains run outside the Linear City, entering it only to stop at appropriate stations. The underground levels for trains and high-speed rail also serve for goods and services distribution, as well as waste collection systems. A switching system and wagon storage areas are also designed to quickly dispatch freight without disrupting traffic flow. This model eliminates noise and visual pollution from surface delivery trucks.

An underground lane will be reserved for emergency vehicles and specialized service traffic.

For destinations not served by public transit, occasional vehicle rental will be more economical than purchasing a car. Rental hubs will be located at the ends of the Linear City.

Fast and easy access for small electric vehicles is integrated into dedicated wagons and elevators.

This approach reduces auto-related expenses and contributes to mitigating global warming. Imagine living in a national park with an underground subway.

We reduce the length of our networks and roads by 90%. Electricity, fiber optics, water, and sewage are consolidated beneath the buildings, accessible via utility corridors. This reduction in infrastructure maintenance enables municipalities to lower property taxes while improving service quality.

The transportation system relies on a self-supporting "U-shaped" infrastructure, physically decoupled from the buildings by a structural isolation joint. Mechanically separating the transit base from the residential superstructure eliminates vibration transmission and ensures optimal acoustic isolation. This structural gap between the two entities also serves as the primary utility gallery, allowing centralized, accessible management of water supply, power, and fiber optics without affecting building stability. Because this "U-shaped" trench is decoupled and linear, it does not strictly have to follow the alignment of the buildings.

8.6 Transition

The Linear City must demonstrate significant advantages from its inception, expanding progressively on the periphery and easily connecting to an existing city. The first building, with its exceptional location and spacious terraces, will offer living conditions superior to those of traditional urban centers.

Initially, cars will be parked in the basements designated for public transit. The first buildings will be connected to the existing road network to ensure rapid access to the city center. Buses will also provide public transit for the first residents.

As the population grows, buses will be progressively replaced by the subway, commuter trains, and high-speed rail (TGV). A monorail-type train could initially connect the Linear City to the existing downtown, as it is easily dismantled and relocated elsewhere.

This new city could extend toward existing downtown areas—which may become obsolete or abandoned—retaining only structures of historical or aesthetic interest and housing for those who choose to remain there.

This low-footprint concept integrates into a country's most appealing areas, often aligned with national routes. It is essential to regularly fragment the continuity of the buildings to allow wildlife passage and preserve the surrounding ecology. Each city will require a tailored transition analysis to lead to the creation of a modernized new urban center.

9. Economic Potential of this Urban Structure

Municipalities could renew their aging infrastructure at the expense of real estate developers, integrated directly beneath the new buildings. This would also generate profits through the sale of common land (roads, municipal lots) to developers. Reducing government service costs could likewise decrease taxes and national debt.

- **Construction Cost:** For developers, repeating identical construction elements could significantly reduce costs through industrialization, mechanization, and robotics.
- **Energy Requirements:** This transit mode considerably reduces vehicle energy consumption. Furthermore, this style of construction lowers heating and cooling demands, making geothermal systems highly viable.
- **Water Management:** Protecting our groundwater is crucial. Water consumption will be reduced by eliminating wasteful practices on individual properties and repairing leaks in aging networks, which currently account for losses of up to 40%.
- **Waste Management:** Selective waste collection will be simplified and automated, with waste chutes directly connected to train cars for efficient delivery to processing plants.
- **Public Health:** A significant reduction in noise and pollution, combined with a strong community spirit, will help lower healthcare expenses related to respiratory diseases and social isolation.

10. Ecological Benefits

To provide an average living space of 40 m² per person—including the workplace, as well as the space required for transportation, services, and recreation—the efficiency of current urban models varies considerably. The Linear City represents a radical shift in how we occupy the planet.

Location	Land occupation per inhabitant
American metropolises and suburbs	**500 – 700 m²**
Paris and its suburbs	**300 m²**
São Paulo	**175 m²**
The Linear City	**20 m²**

This represents a 95% reduction in land use. By condensing the human footprint, we achieve several critical environmental goals:

- **Land Conservation:** This reduction does not merely gain space; it preserves vital agricultural land and protects endangered plant and animal species by preventing habitat fragmentation.
- **Energy Independence:** The extreme efficiency of the Linear City could reduce our reliance on nuclear power plants, whose radioactive waste remains a serious threat to the future.
- **Land-Use Planning:** It serves as an essential planning tool, ensuring the survival of our ecosystems while offering a better quality of life for ourselves and for generations to come.

11. Industrial Sector

Concentrating industrial activities along public transit corridors would isolate industries from residential areas while facilitating their connectivity to markets and workers. The proximity of industries would also lower their transportation costs by optimizing access to their suppliers.

This clustering—both vertically and on the ground—could mitigate pollution issues by connecting industries to shared services, such as filtered chimneys, waste recycling systems, water treatment facilities, and rapid emergency access routes. This clustering model must be rethought by considering the interrelationships between different activities as well as current technologies.

12. Enhanced Security

La connectivité entre les bâtiments facilitera l’évacuation lors d’incendies, tant horizontalement que verticalement. Un système d’incendie intégré à des constructions incombustibles réduira les dégâts matériels et les pertes humaines. Des voies souterraines réservées à certains véhicules garantiront un accès rapide aux services d’urgence. Le système de transport en commun contribuera également à éliminer les accidents de la route.

13. Architectural Diversity and Preservation

Les plans et documents de ce projet offrent une programmation architecturale détaillée, précisant le fonctionnement, les dimensions et les principaux éléments. La modulation de sept immeubles permet une variation architecturale, favorisant le sentiment d’appartenance. La conception des immeubles, des aménagements paysagers, des logements et des bâtiments publics en dehors de la ville devrait être confiée à des professionnels locaux pour garantir une grande diversité architecturale.

La réduction des surfaces bâties, ainsi que la construction de plusieurs immeubles publics en dehors de la Ville Linéaire, devraient favoriser l'amélioration de la qualité architecturale.

Il est également crucial de conserver les bâtiments et sites à valeur architecturale ou historique qui pourraient accueillir des usages publics. Certaines activités ne pourront pas s'intégrer dans la Ville Linéaire ; il sera nécessaire de créer des secteurs dédiés hors des villes pour des vocations spécifiques (ex. agriculture, lieux de villégiature, villages miniers ou forestiers, besoins particuliers de marginaux, préservation des secteurs attrayants de nos villes actuelles).

14. Agricultural Mechanization

As proposed by Japanese engineer Tetsuya Hanamura, this would also be applicable to the Linear City.

15. Public-Private Partnership

The State and municipalities will develop master plans, encouraging developers to participate. The new buildings can be developed by various contractors, who will quickly benefit from the advantages offered by integrated public transit. The linear concentration of underground utility networks reduces infrastructure costs per square meter while maximizing the value of surface housing.

16. Historical Context and Future Vision

Engineer Arturo Soria y Mata had already envisioned a linear city back in 1882 to improve transportation. Today, thanks to modern technology, we have the opportunity to rethink and elevate our way of living, ensuring we do not leave future generations a devastated planet and unlivable cities.

To those who consider this project utopian, let us recall the words of Le Corbusier:

“Utopia is never anything other than tomorrow’s reality…”

Gilles Gauthier
Consulting Architect

Designer of the “Linear City according to Gilles Gauthier” Standard

Gilles.Gauthier@Linearcity.org
ou ggauthier775@gmail.com