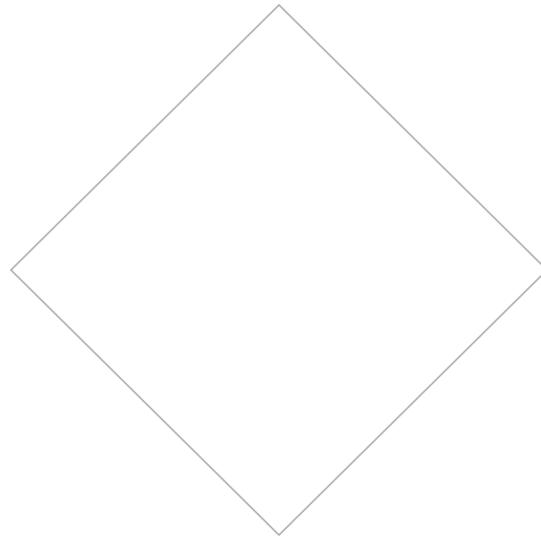




HETEROTOPIA

LOOSE SPACE FOR AN EDGE CITY



Heterotopia: Loose Space for an Edge City

Volodymyr Babii

Thesis submitted to the faculty of Virginia Polytechnic Institute and State University in partial fulfillment of the degree of
Master of Science in Architecture

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Heterotopia, Loose Space, Edge City,
Superstructure, Layering, Elevated City

Heterotopia: Loose Space for an Edge City

Volodymyr Babii

ABSTRACT

In the beginning of my research I focused on transformations of the urban leftover and void space found in between buildings, street networks, parks or other institutionalized public spaces into urban places of character.

By studying the spatial qualities of different places and their relation to human activities in those places I came up with the main question of my thesis: Can a space be designed loose and/or can it be loosened by design?

The concept of “heterotopia”, as described by Michel Foucault in his essay “Of Other Spaces: Utopias and Heterotopias”, is a place functioning in non-hegemonic conditions, the place of “otherness” that has more layers of meaning than meet the eye. That concept proved to be the best description and the bounding frame of the design part of my research.

Heterotopia: Loose Space for an Edge City

Volodymyr Babii

GENERAL AUDIENCE ABSTRACT

This Urban Design thesis explores questions of complexity and layering in the structure of the city. The places that lack social and structural richness are often perceived as dull and absent of character. My questions are mainly focused on how this character can be introduced and what makes space a place.

The main body of this study is conceptual graphical research on how, when and where the imaginary place can approximate and meet reality creating a type of city very different from the traditional image.

This concept was intended to explore how the city can be made radically different without being a utopia or dystopia in its essence.

ACKNOWLEDGEMENTS

To Marian, Kate and Mom,
I would never have done this without your support in the first place. Thank you for believing in me through all these years. You made me who I am. Although I am far away I feel you by my side all the time.

To my committee members and faculty at the WAAC,
Susan, words can hardly describe how grateful I am for all that you have done for me through the time at the WAAC. You changed my perspective on the nature of the city and the architecture itself.

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Nate, thank you for your guidance through the whole process of my research. This study probably never would have happened without you.

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Jaan, you are a walking inspiration for all of us. Thank you for those little comments that make the beauty unfold from ordinary things.

Ryan, thanks for your support and advise. Working with you in the summer was a pleasure and a lot of fun.

Nela, thank you for your kindness. You make the WAAC warmer.

Berrin and Ezgi, thanks for the movie nights!

To all my friends and all amazing WAAC people,

This was a great time. Laura, I will miss walking with you and that rattling projector cart to GM every Monday. Yaminah, you were the everpresent spirit of the WAAC. Wonkyu and Zach, thank you for welcoming me into WAAC TA circle. Alyssa, Naseem, Agni, Ian, Jeff, Ken, Dennis, Leith, Mary, Lauren, Kassandra, I will miss you people.

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LOOSE SPACE

In my research I focused on transformations of the urban leftover and void space into urban places of character. These kinds of transformed spaces are defined by some researchers (Karen Franck, Quentin Stevens and others) as “loose” urban space and in most cases appear as a result of actions from communities which activate them through new usage, adding new functions to the place.

The place does not become loose as a result of one condition or effort, rather a place holds possibility of becoming and when the right set of conditions is met – there is a chance that re-appropriation will happen. I believe that if the context and qualities of the space are carefully assessed, this possibility could be evaluated and triggered. So I studied the spatial and social qualities of numerous places (through case studies either described by other researchers or from my own experience) that were re-appropriated and the relation between the physical qualities of space and its chances of becoming a place.

One of the case studies I used (described by Jeffrey Hou in his Insurgent Public Space book) was the example of people re-appropriating the ground floor of HSBC building in Hong Kong as a space to have lunch and communicate ultimately transforming sterile corporate environment into a lively communal hub.

Another example was the case of yangge dancers in Beijing (also described by Jeffrey Hou in Insurgent Public Space), who gathered in seemingly inconvenient space under the highway. But taking a closer look the space appeared to suit their needs perfectly – it had a vast and even surface without any obstructions, no through pedestrian transit that could disrupt the dance. The concrete highway above not only could provide cover but also reflected the sound of the dance drum back onto dancers, multiplying the rhythm strength.

Another case study came from my home city of Kiev. In this case an unusual space was also occupied by elderly people who use it to dance several times a week. The space itself is a large 4-way underpass with an entrance to a metro station. Just as under-the-highway space it seem strange to host that kind of activity, but taking a closer look it appears that it is the structure of the place that makes it possible. A large square hall with even granite floor, free access and connection to metro’s centralized AC system (that keeps it warm in winters) makes it suitable for dancing all year round.

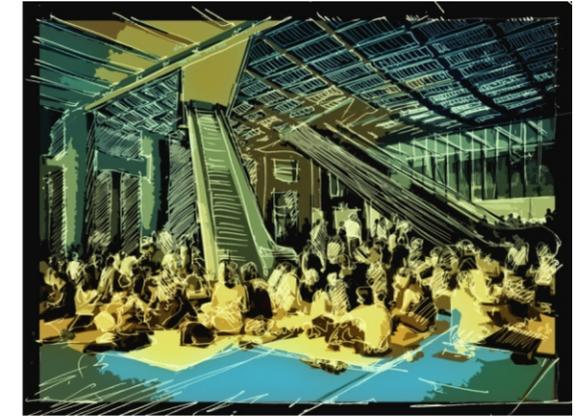


Fig 1. People having lunch on the ground floor of HSBC tower, Hong-Kong



Fig 2. Void space under a highway in Beijing re-appropriated for traditional dance



Fig 3. Underpass in Kiev used by elderly people as a place to dance



Fig 1. Void Space under the bridge. Initial state. 2012.



Fig 2. Space re-appropriated for illegal party activity. 2013.



Fig 3. An art-gallery opens in previously void space. 2014.



Fig 4. Expansion of public activity over nearby pier. 2015.

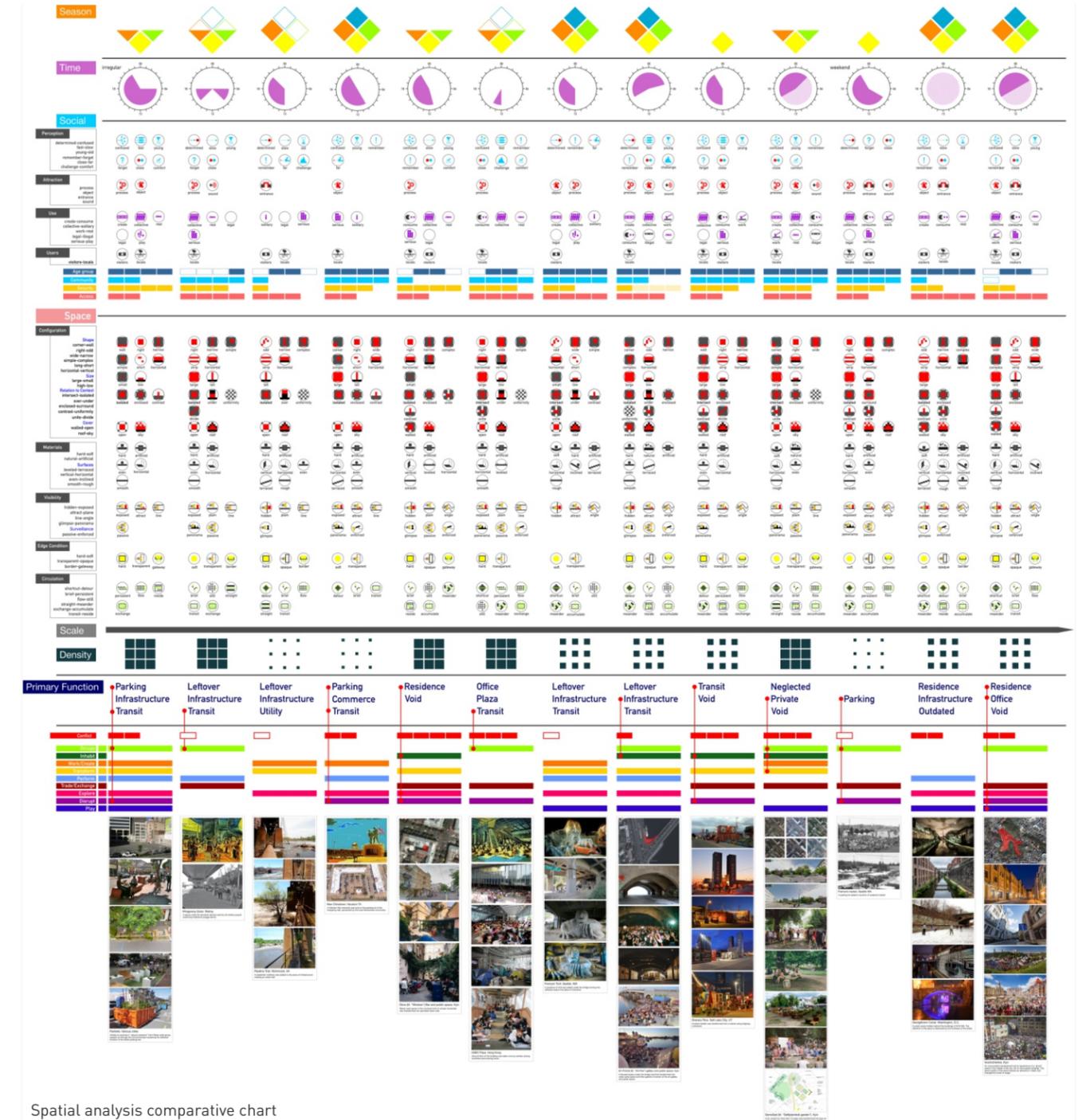
Another case that I used in my studies of relations between spatial qualities and the possibility of re-appropriation was a void space under the bridge in Kyiv, Ukraine. For several years since the bridge construction it was a place for graffiti artists and occasional fishermen.

At a certain point it became used as space for illegal parties and concerts. The space proved to be perfect as it has a large arched space shielded from wind and elements, was located near the city center and easy to access by foot or public transport. Suspension below the street level provided necessary level of sound insulation. At the same time the lack of visibility provided a degree of protection from the eyes of law enforcement.

After a few years an art gallery was opened in that space that provided exhibition and concert space.

The activity spread out to the pier itself providing different kinds of seasonal events such as movie nights and festivals, ultimately transforming dull and empty space it into a place of character.

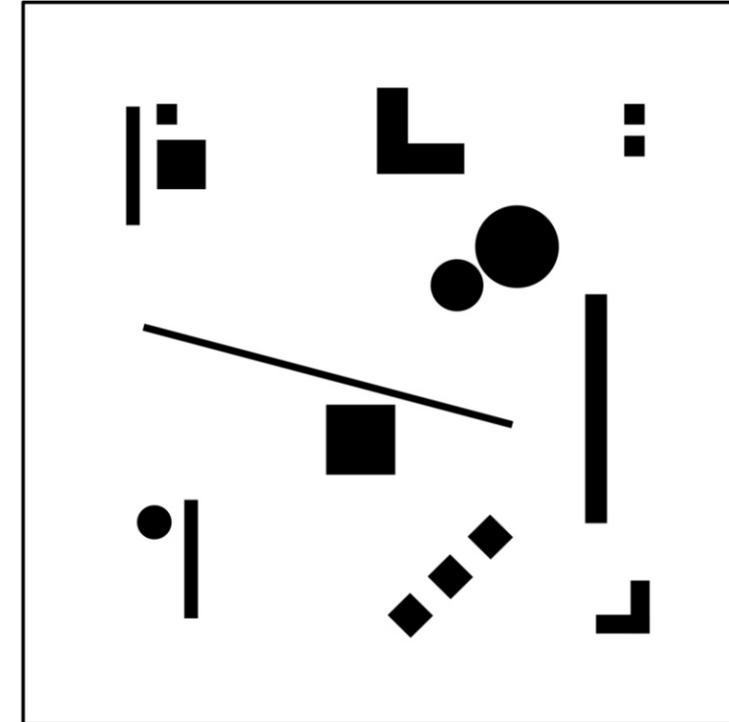
By analyzing spatial, social and other qualities of different spaces that successfully achieved additional function overlays and comparing them I was aiming to develop a design approach that would allow functional overlay without strict programming.



Spatial analysis comparative chart

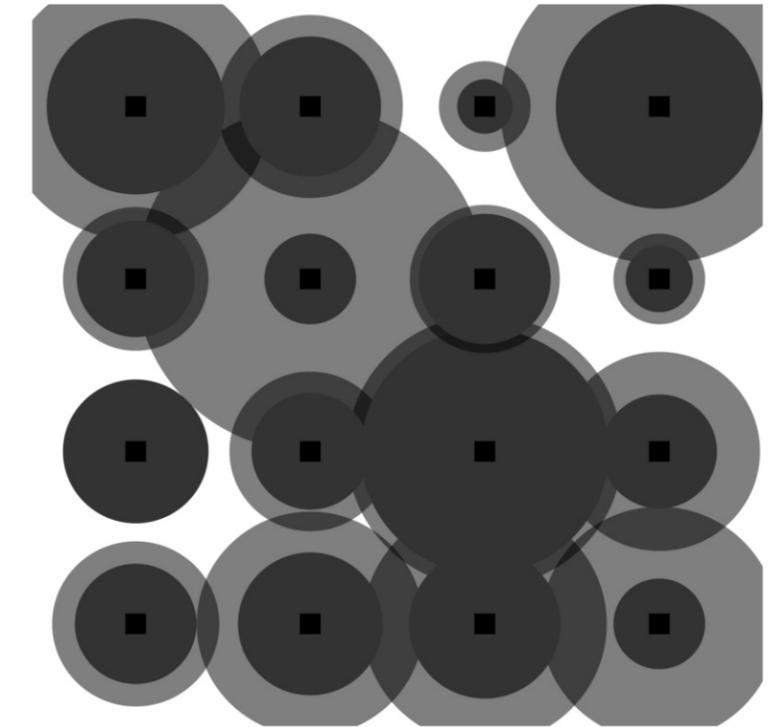
The goal of this research was to develop an approach to designing urban fabric as a dense system of complementary functions. As strict programming at this scale is either impossible or would lead to oversimplification and thus, a fractured and inflexible environment, a complexity and depth is required. By depth I mean the multiple levels on which the space can be interacted with - for example the streets and sidewalks is one level, the internal block space, accessible to the public can be the other and so on. Every level of interaction adds to the "depth" of the given part of the urban environment. In turn, in order to be physically designed, complexity can be broken into overlapping layers of function.

Leftover Infrastructure and Space



Spatial analysis concept. Phase 1. Leftover infrastructure

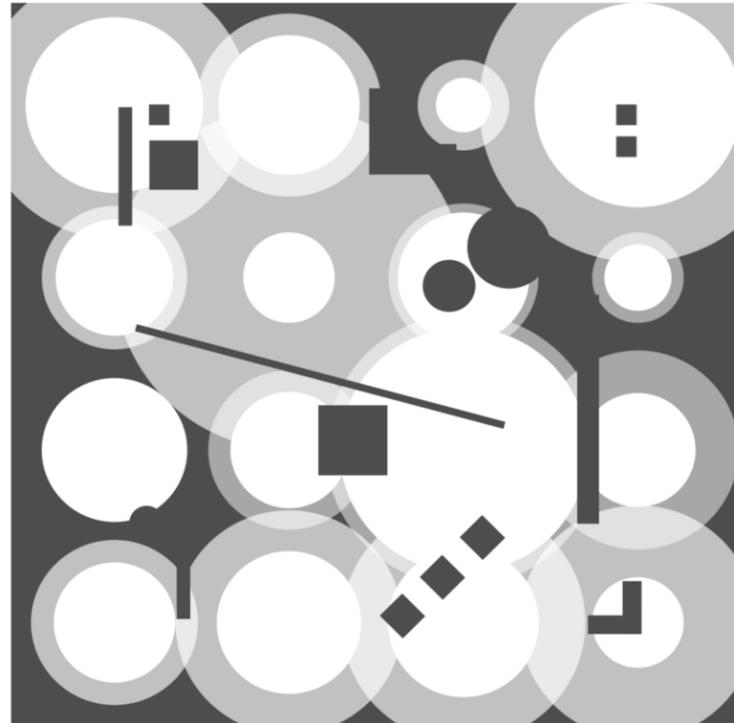
Voids



Spatial analysis concept. Phase 2. Determining voids

The diagrams in this section are conceptual. Thus, the Program Input part should be viewed as an example of the range of possible functions and is not a rigid scheme for any specific place. In real situation analysis, the context will define the programmatic functions that will be present in a place.

Used Space

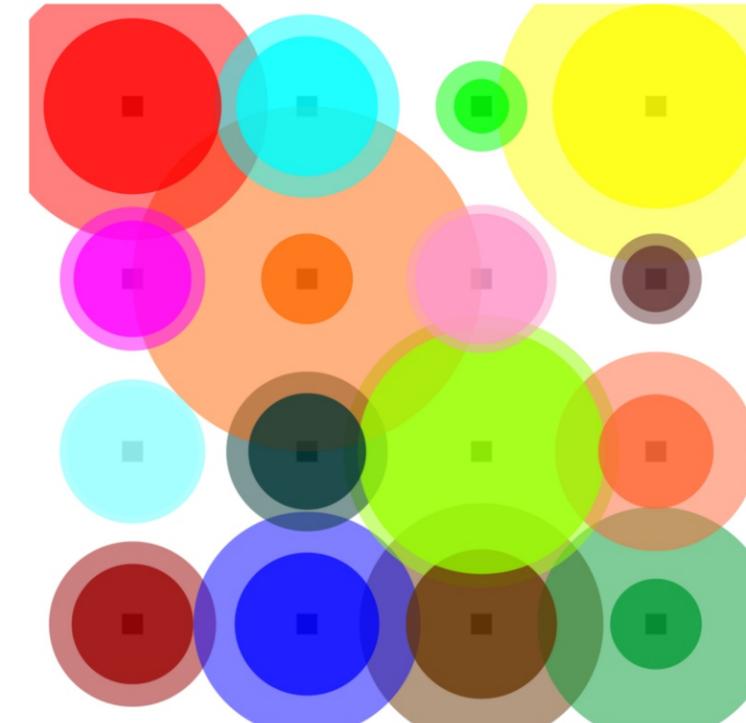


Spatial analysis concept. Phase 3. In-use space

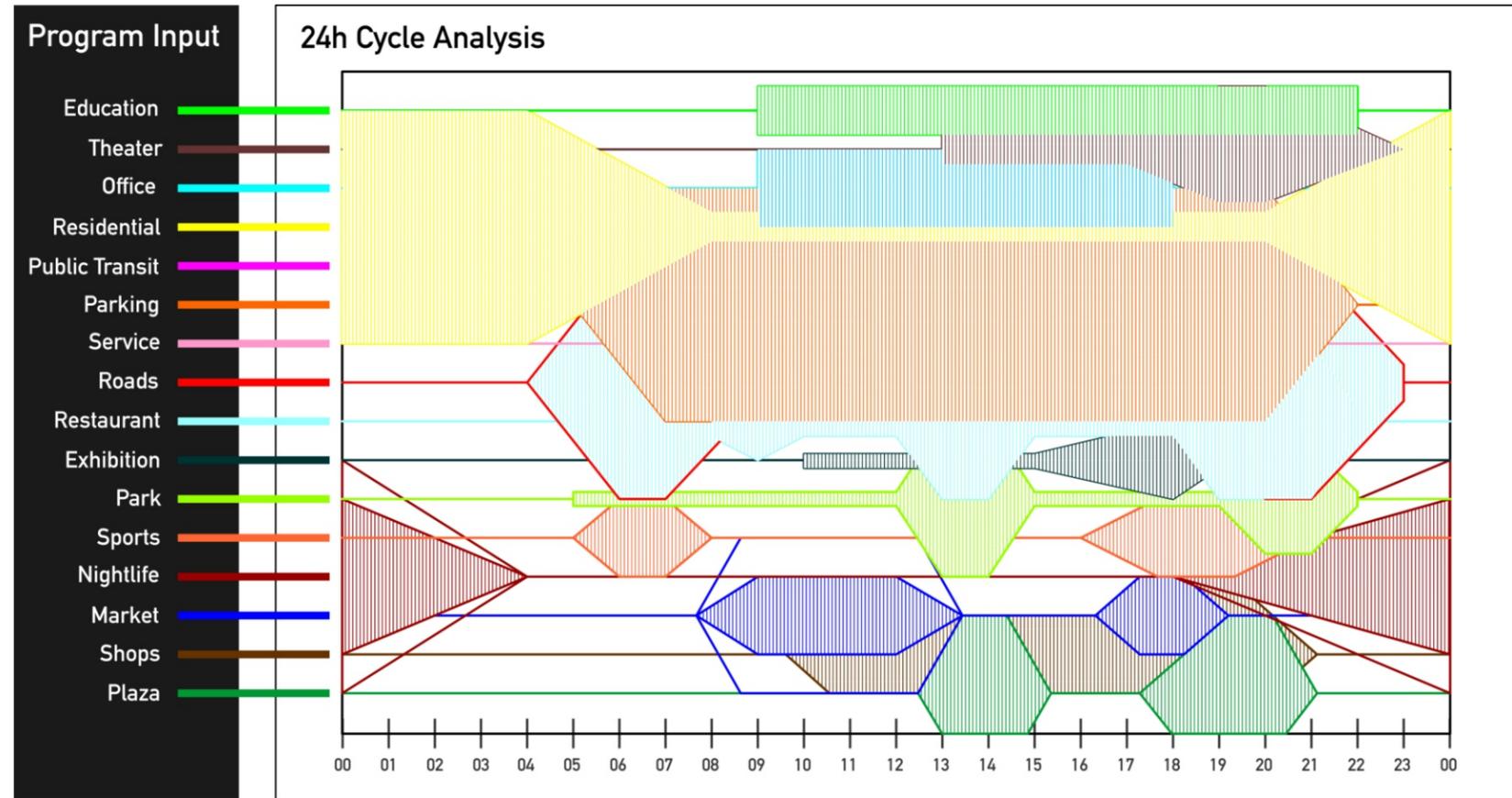
Program Input

Education	
Theater	
Office	
Residential	
Public Transit	
Parking	
Service	
Roads	
Restaurant	
Exhibition	
Park	
Sports	
Nightlife	
Market	
Shops	
Plaza	

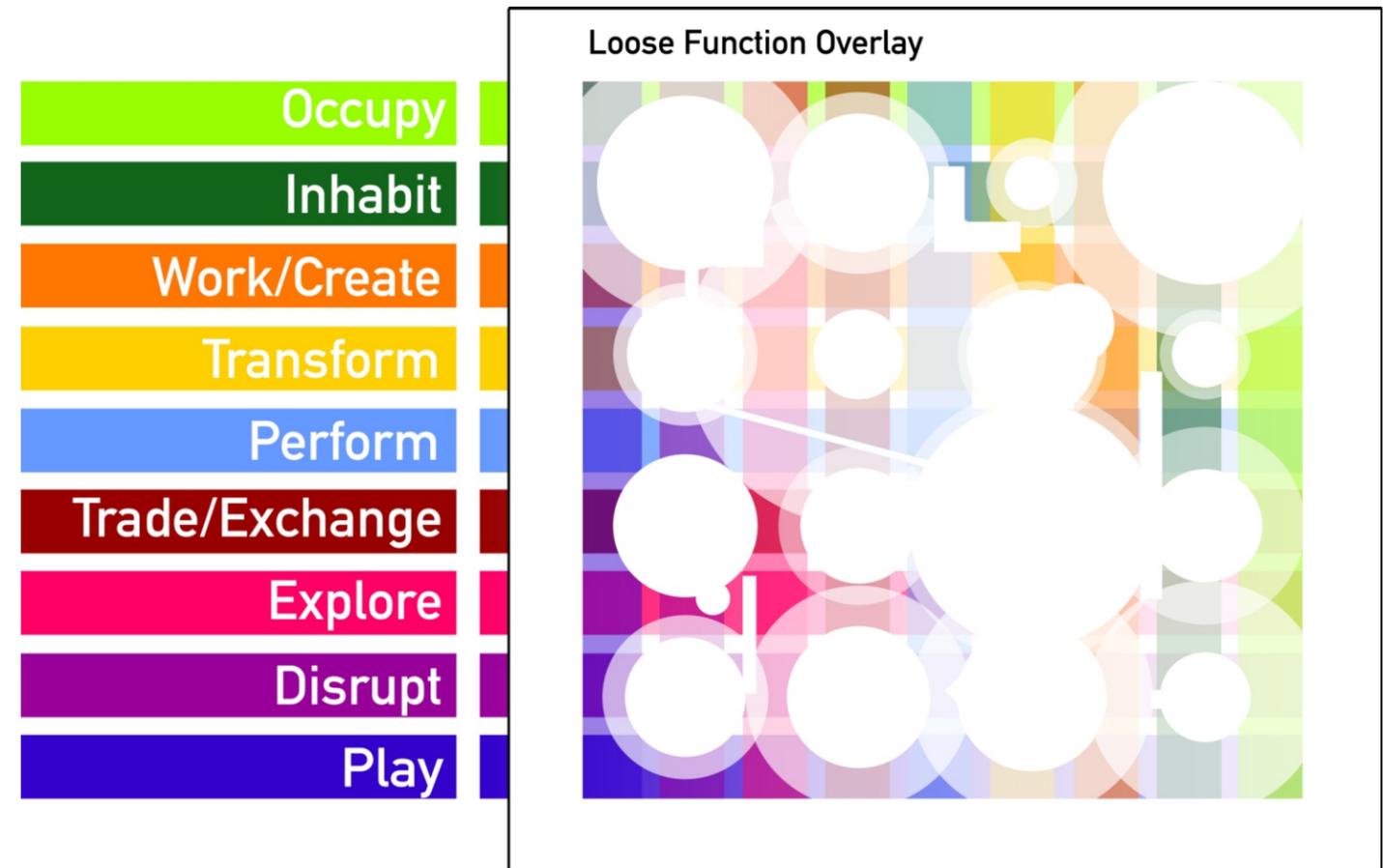
Space Usage



Spatial analysis concept. Phase 4. Program input and related space usage



Spatial analysis concept. Phase 5. Program input and related time analysis



Spatial analysis concept. Phase 6. Loose function overlay

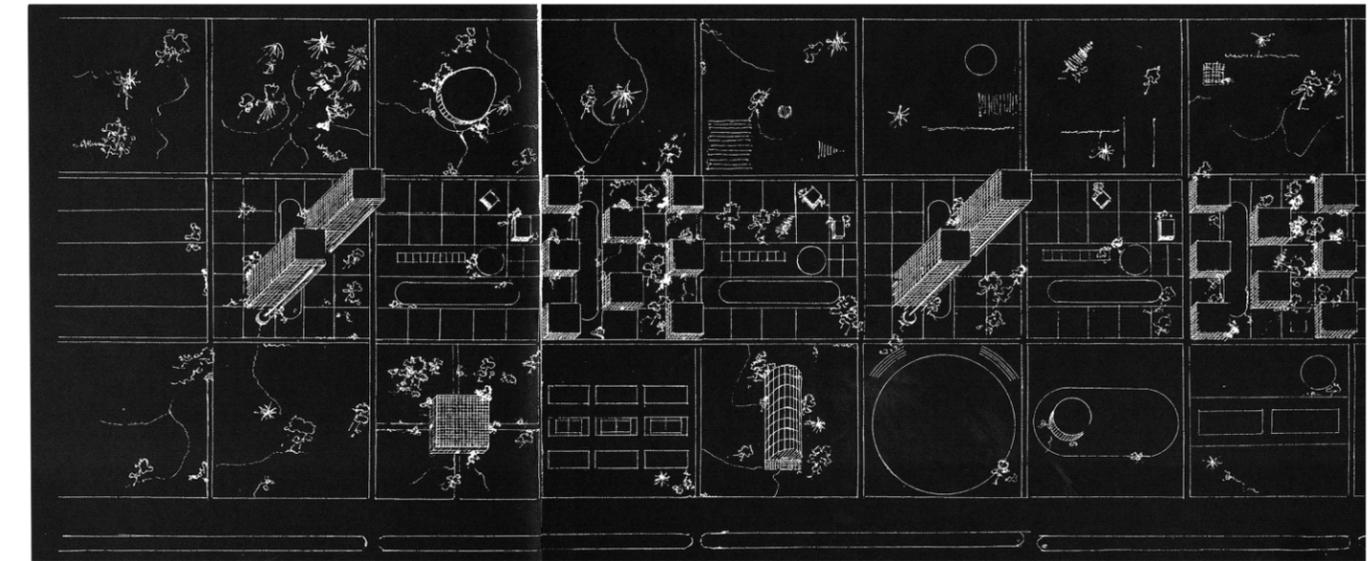
DENSITY

The density of the surrounding urban fabric is extremely important in loosening the space. Sometimes the natural density is so high that it literally enforces shared use and therefore loosens urban spaces. High enough density means a high number of interactions that could spark new uses.

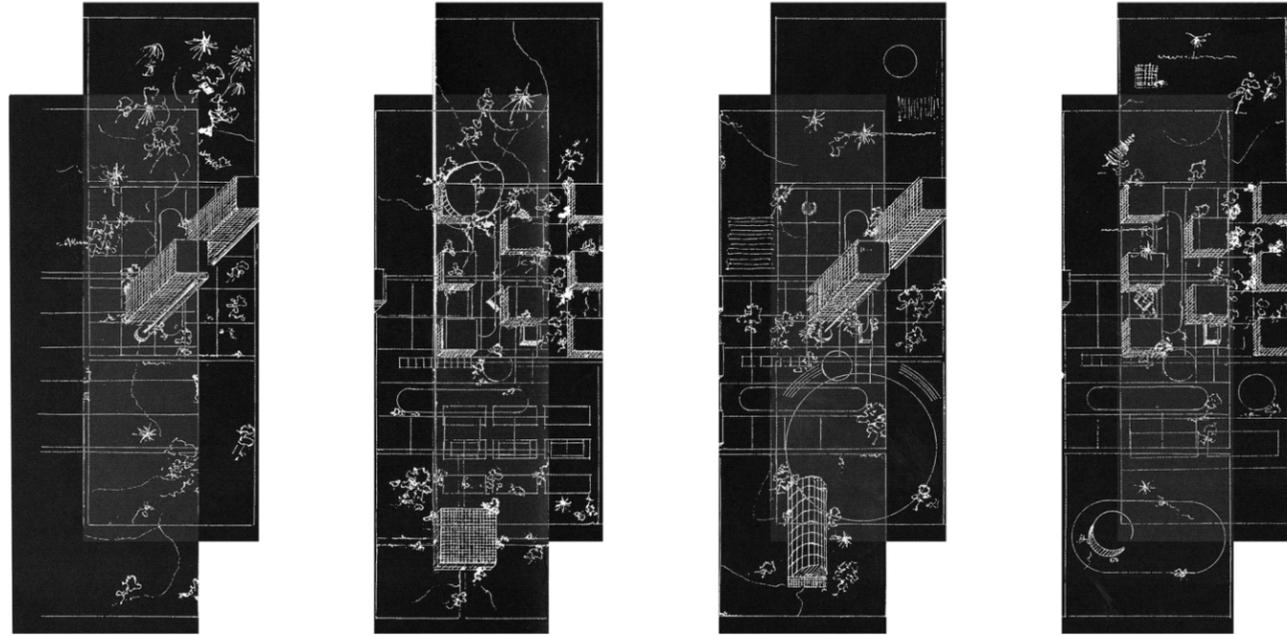
In the 1920s Ivan Leonidov and other Constructivists experimented with new types of development layering and overlapping the modes of space usage. Sixty years later Leonidov's theoretical work and designs were used by Rem Koolhaas as the base in the design of his "social condenser". His proposal for the La Vilette Park in Paris included a multi-layered loose system of interconnected and overlapping functions, providing a spatial combination of programmed and intentionally unprogrammed spaces that encourage shared use and social exchange. In his work, the density was a key factor in achieving richness.

As part of my research I also studied the Japanese Metabolists' 1970s attempts to replicate the organic processes of self-renewal and loosely programmed growth in their experimental residential projects.

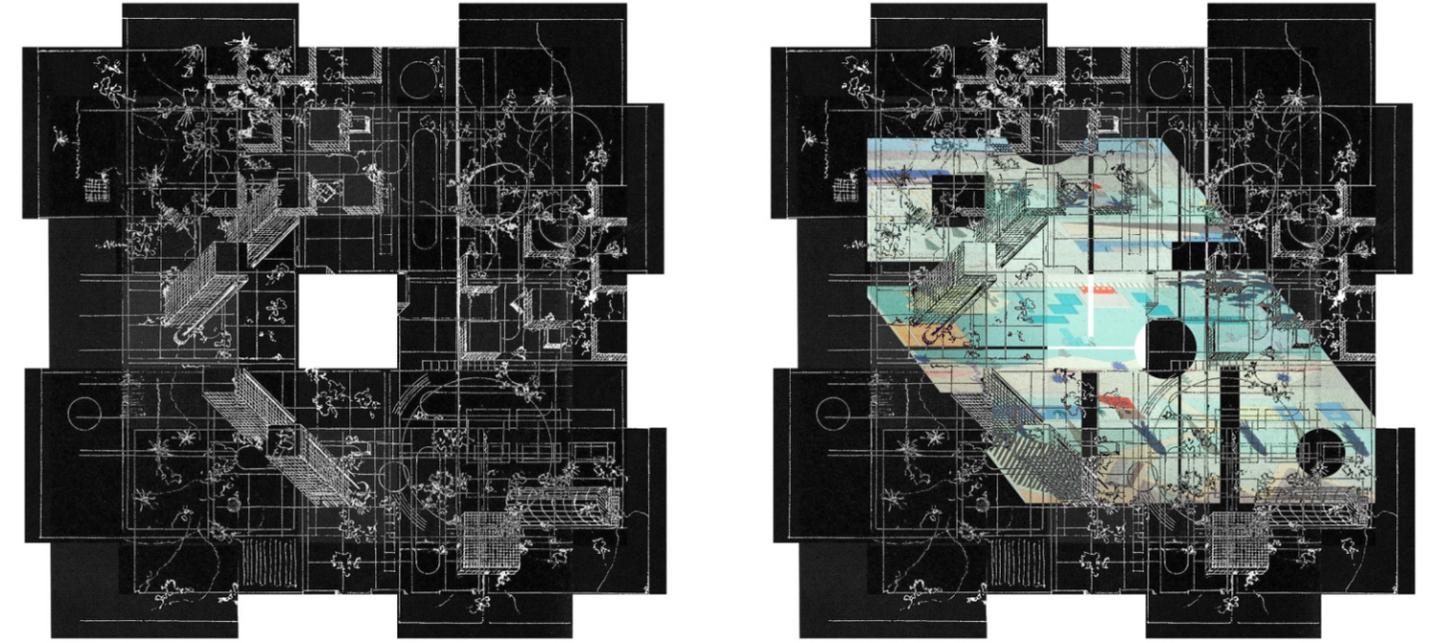
This sequence is a graphical study of density and the level of functional overlay I was aiming for in my project.



Ivan Leonidov, Magnitogorsk "Linear City" Masterplan, 1930

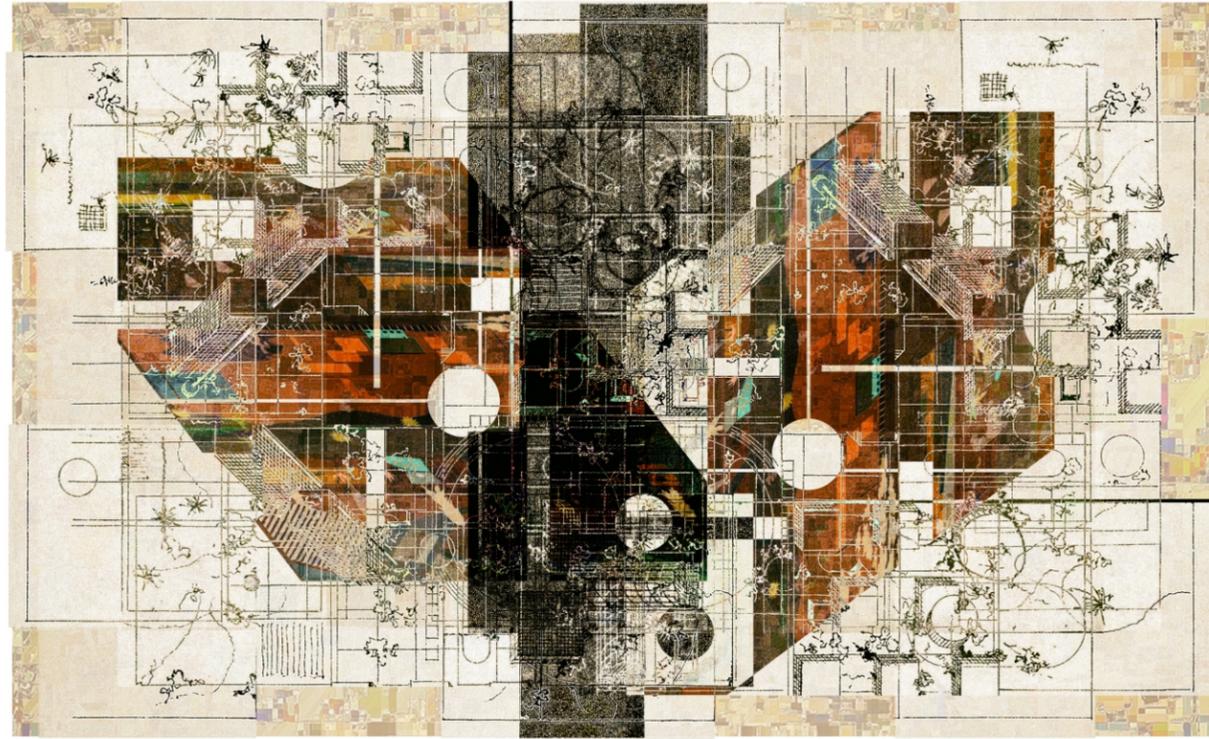


Folding the space. Iteration 1

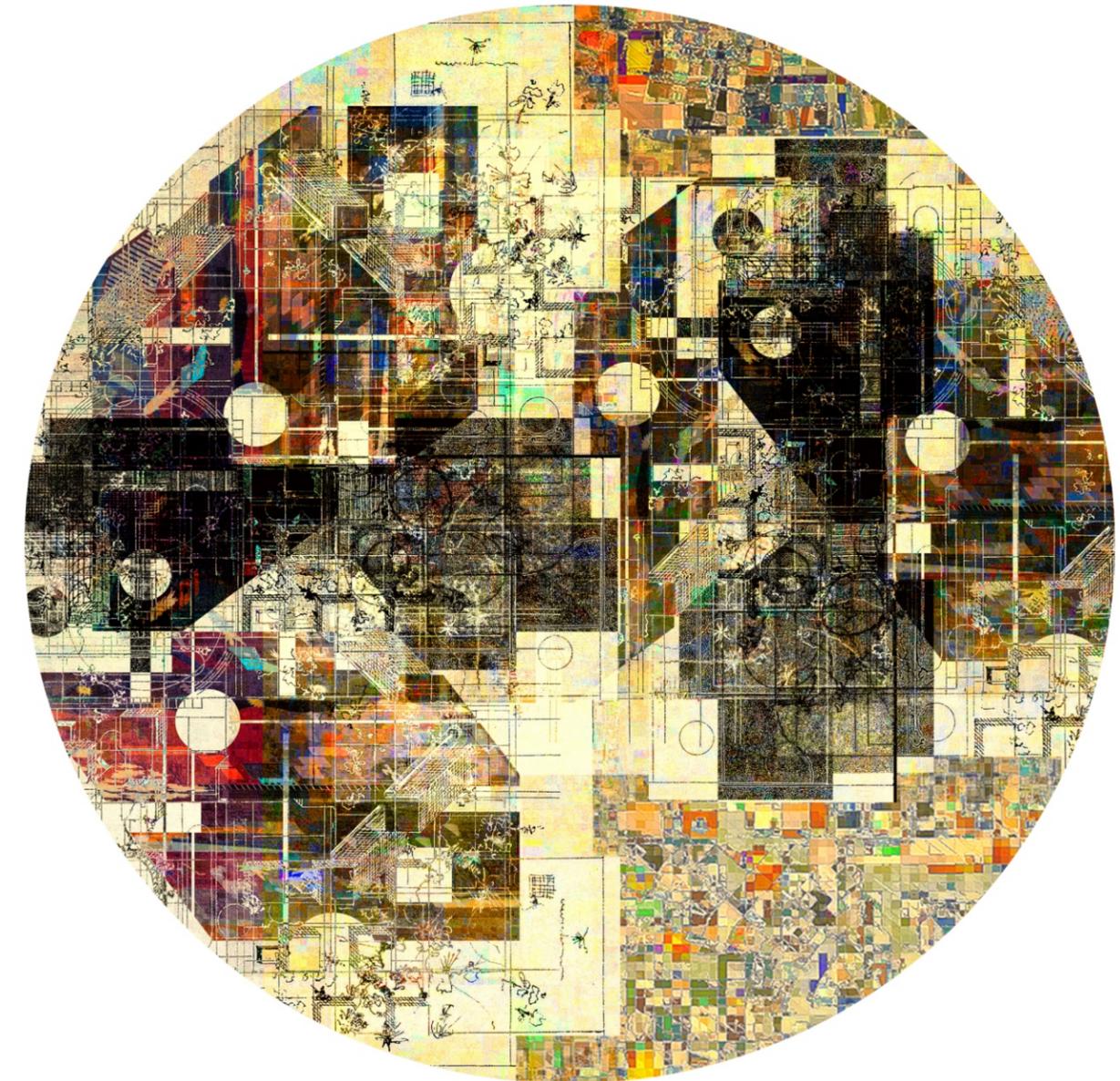


Folding the space. Iteration 2

Folding the space. Iteration 3



Folding the space. Iteration 4



Folding the space. Target functional density

EDGE CITY

Tyson's Corner was one of the inspirations for Joel Garreau's study of the Edge City phenomenon. By his definition, Edge City is a place with millions of square feet of office and retail space. It usually has a large daytime population and little residential. Edge Cities are also characterized by booming growth that makes them evolve from nothing in just a few decades. The "edge" part in the definition means that those newly formed "cities" are the frontier of modern urban expansion in the United States and some other countries, creating a phenomenon very different from the traditional city growth patterns observed up to the second part of the 20th century.

Over the past 50 years, Tyson's has developed to be the 12th largest commercial business district in the United States. Tyson's Corner Center Mall was one of the largest shopping centers in the world when it opened in 1968. Since that time the place underwent booming commercial and office development along with automobile infrastructure to support rapid growth. Now Tyson's daytime population is greater than 100,000 while at night it drops to less than 20,000. Thus, the overwhelming majority of the people who work or shop there commute from the outside, usually by means of private auto. No surprise that automobile-related infrastructure and shopping malls occupy about 80% of all space on the ground level. The opening of four Silver Line Metro stations in 2014 somewhat helped to alleviate traffic congestion and ease the commute. However lively, mixed-use, pedestrian- and public transport-oriented urban fabric (that many of us associate with a definition of a "city" itself) at the ground level is still almost non-existent and heavily fractured by highways, supporting driveways and immense parking lots.

After visiting Tyson's I fully realized how weird the place actually is. The distance between two intersections is around one mile. However, the residents of the few residential areas have to drive to get to the Metro, not talking about suburb residents. Any concept that would make a difference has to be at very large scale. The place is full of void spaces related to auto infrastructure. At this scale to achieve the density and functional interplay I was talking about in my research I had to propose a structure large enough to bridge the voids and patch the fabric together.



Tyson's Corner. Satellite view



Tyson's Corner. Overview of the Silver Line Construction, 2012



Automobile-related infrastructure (shown in red)

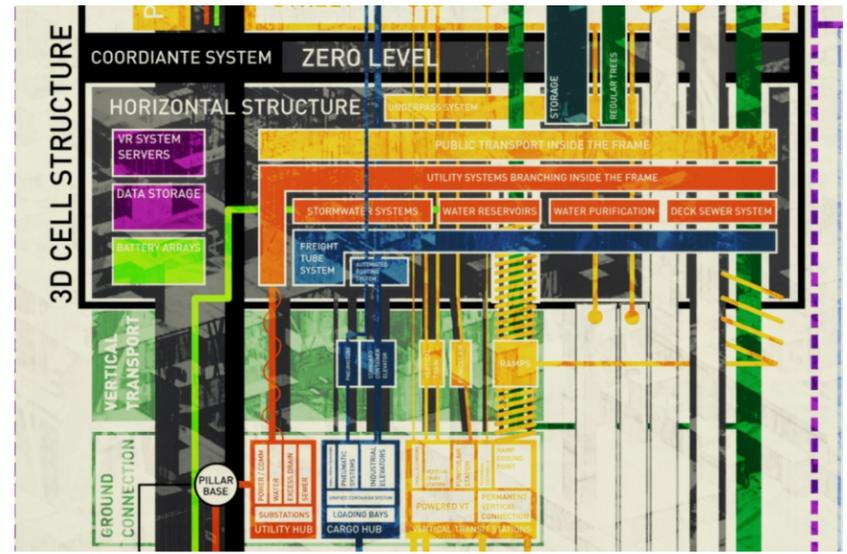
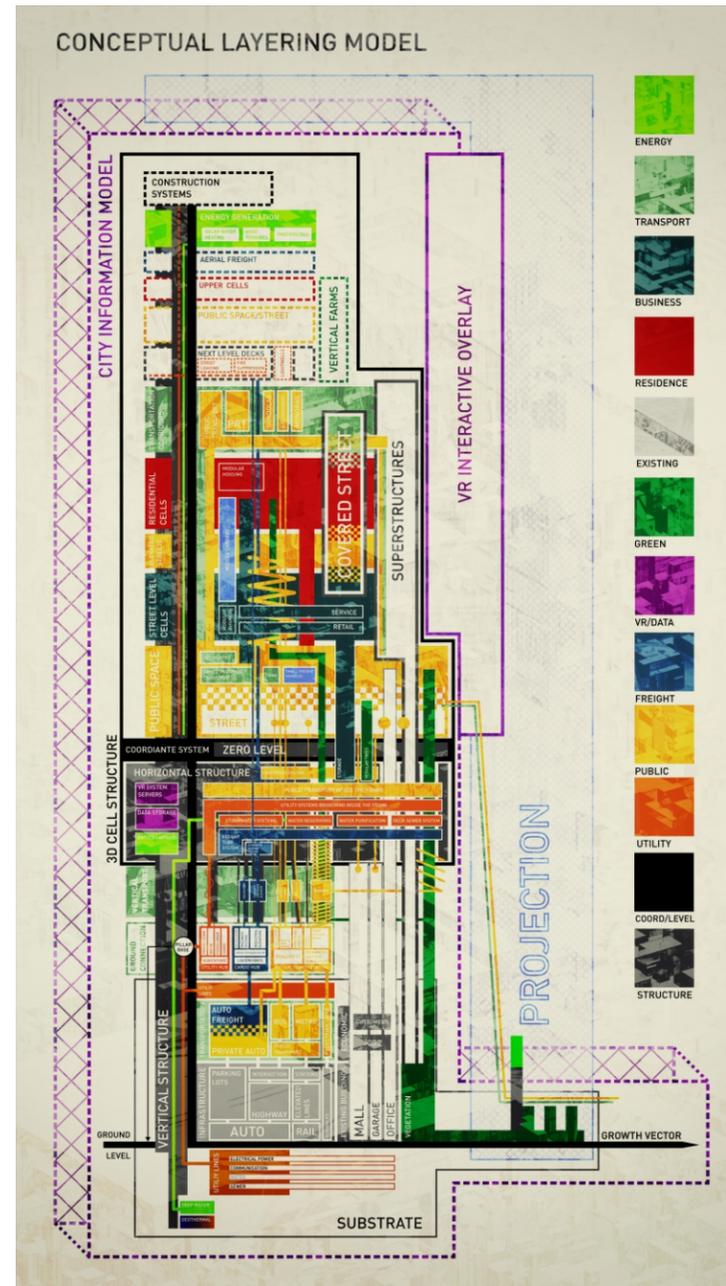
LAYERING

Because building on the ground level is next to impossible the initial concept was to introduce layering.

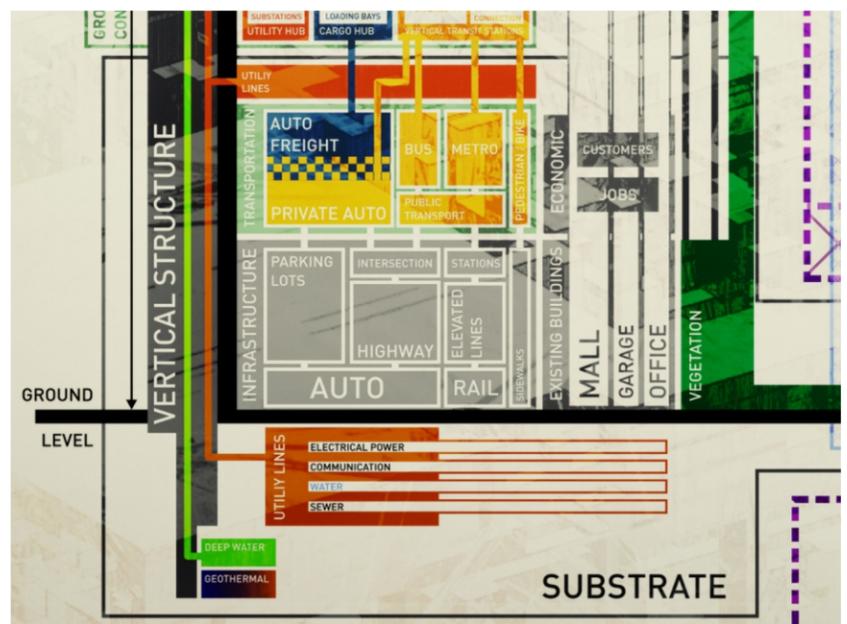
The land on the ground level is taken by flat superstructures and auto infrastructure (malls, highways, parking lots) making pedestrian accessibility and densification extremely hard. The infrastructure, however is heavily used so destroying it would be a huge waste of resources. The structures are functional and provide jobs so any layering has to be added on top without mass deconstruction.

The structures below do not need hull natural light and have very little capacity for pedestrian access. There are almost no residences below. The few residential areas are almost completely separated by highways forcing people to drive even for very small distances.

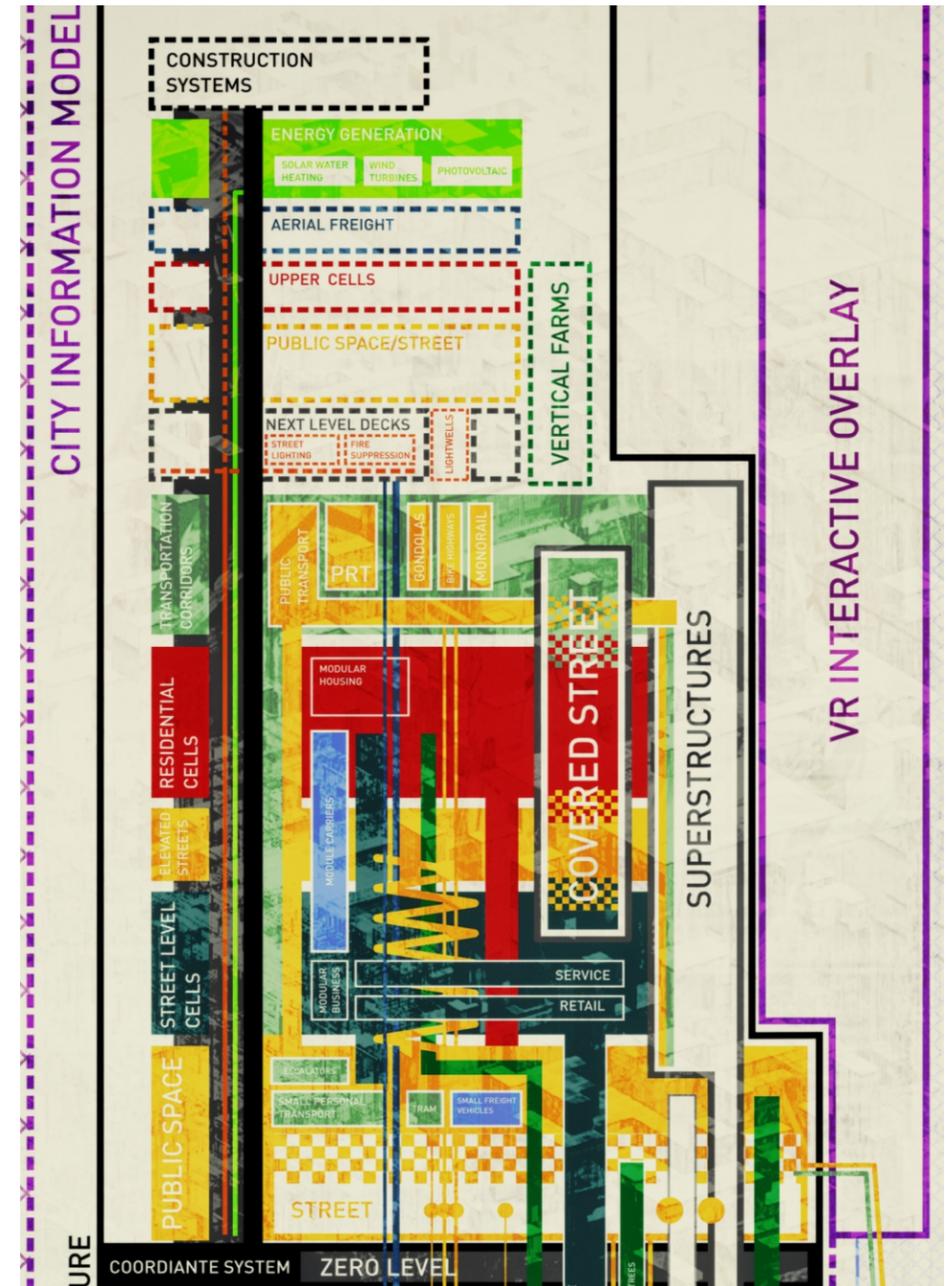
This diagram shows the possible vertical hierarchy and overlay of the functions. The buildings and structures at the ground level are kept intact and continue functioning.



Conceptual Layering close-up 2. Vertical Communication

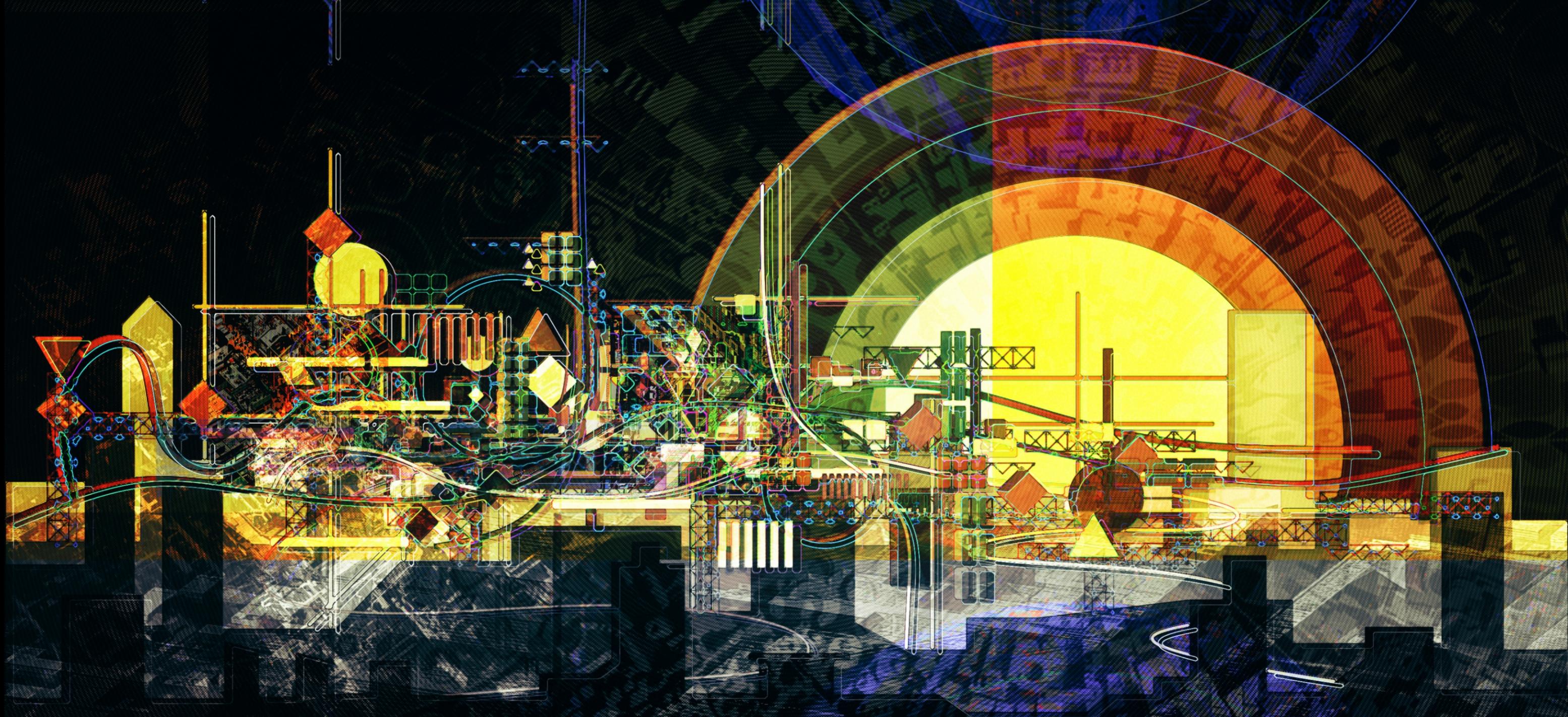


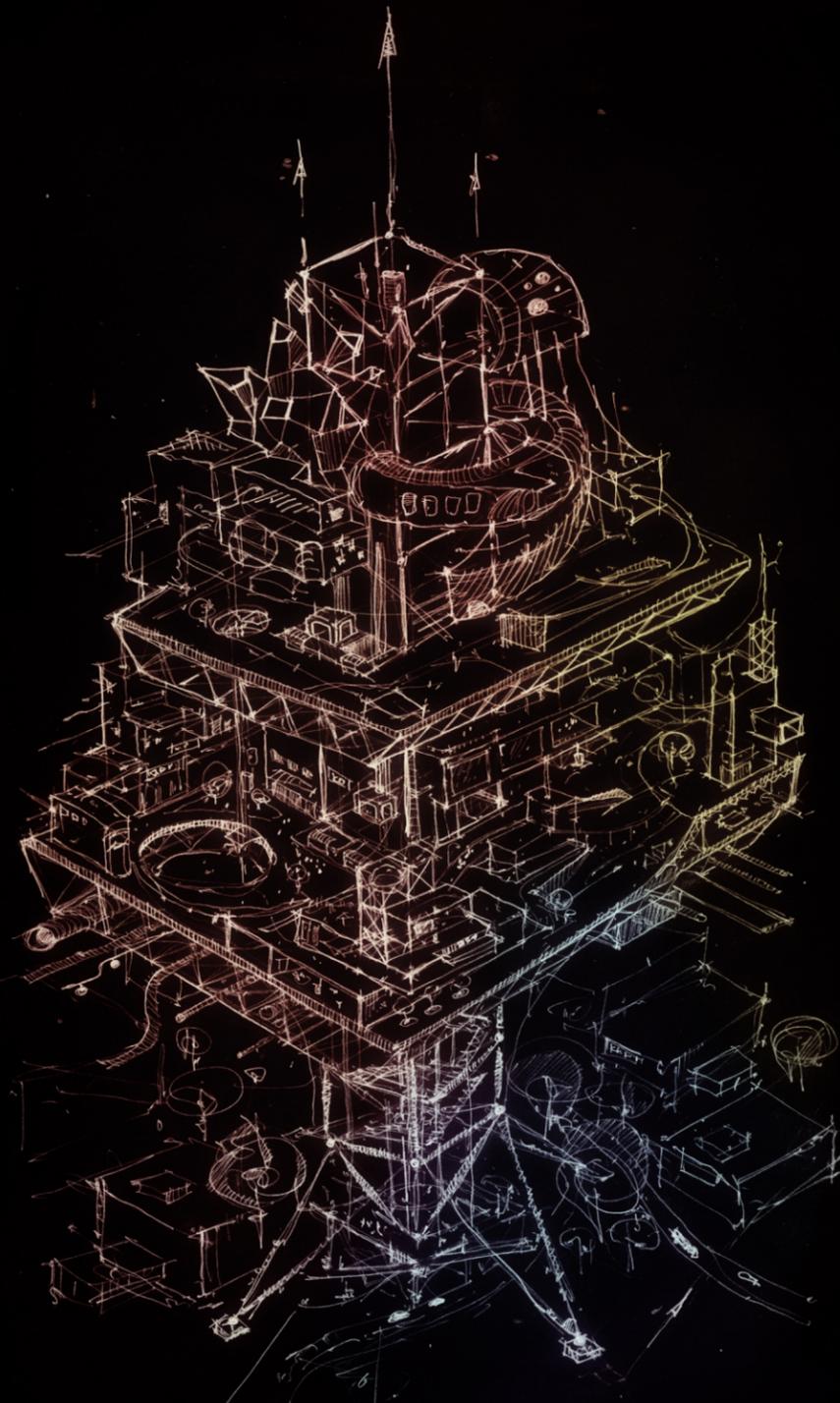
Conceptual Layering close-up 1. Ground Level Substrate



Conceptual Layering close-up 3. Up from Zero (deck) Level

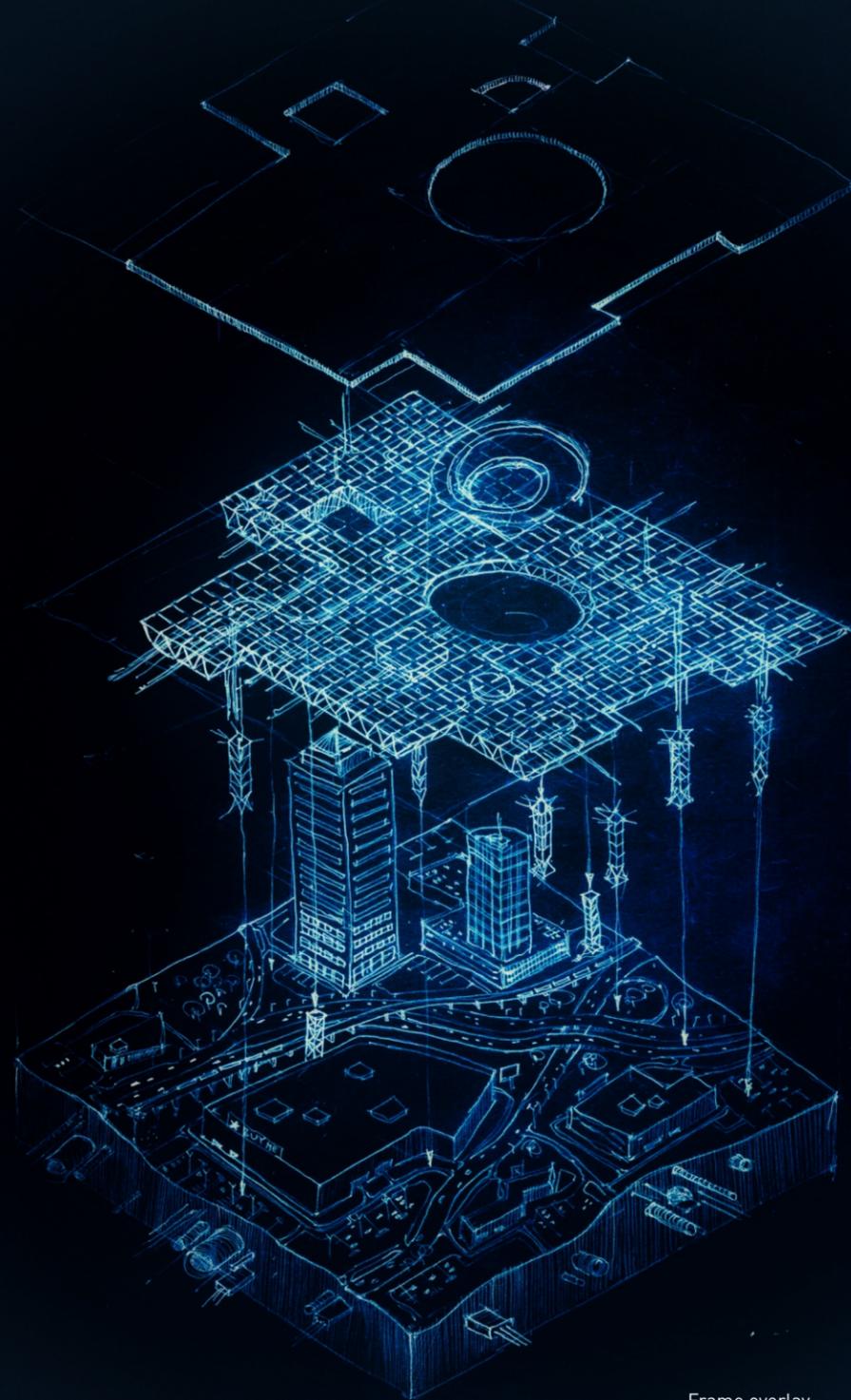
The drawings may look like a utopia, but many Utopian cities of the past were designed to be built from scratch in an empty space. This would have required tremendous initial investments that no one would be willing to undertake and will need to attract people from zero. This model is supposed to be built over existing substrate – economical, political, spatial, transportational and other.





REGULAR PYLON BASE
LIMITED ELEVATION CAPABILITY

Deck overlay

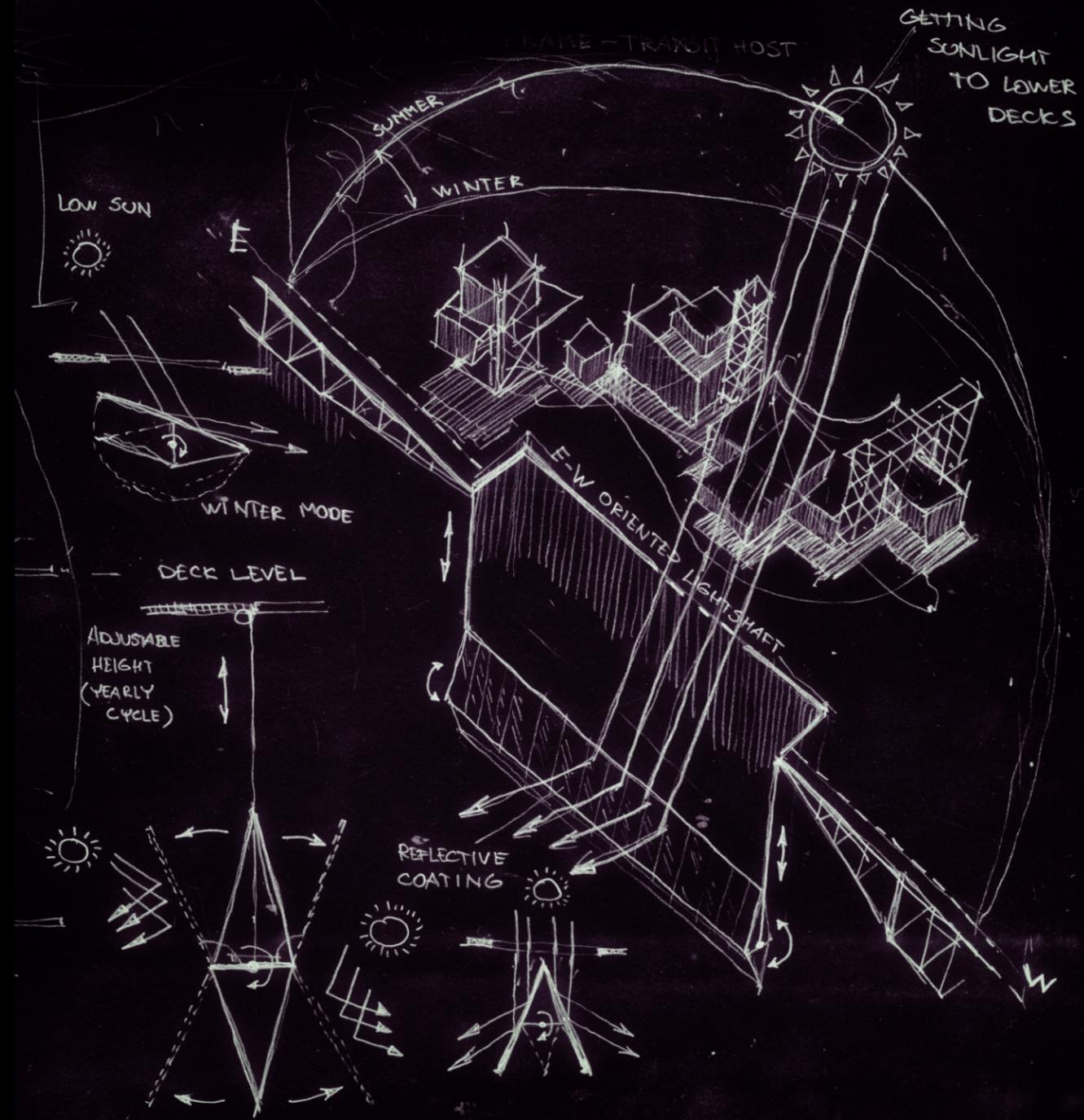


Frame overlay

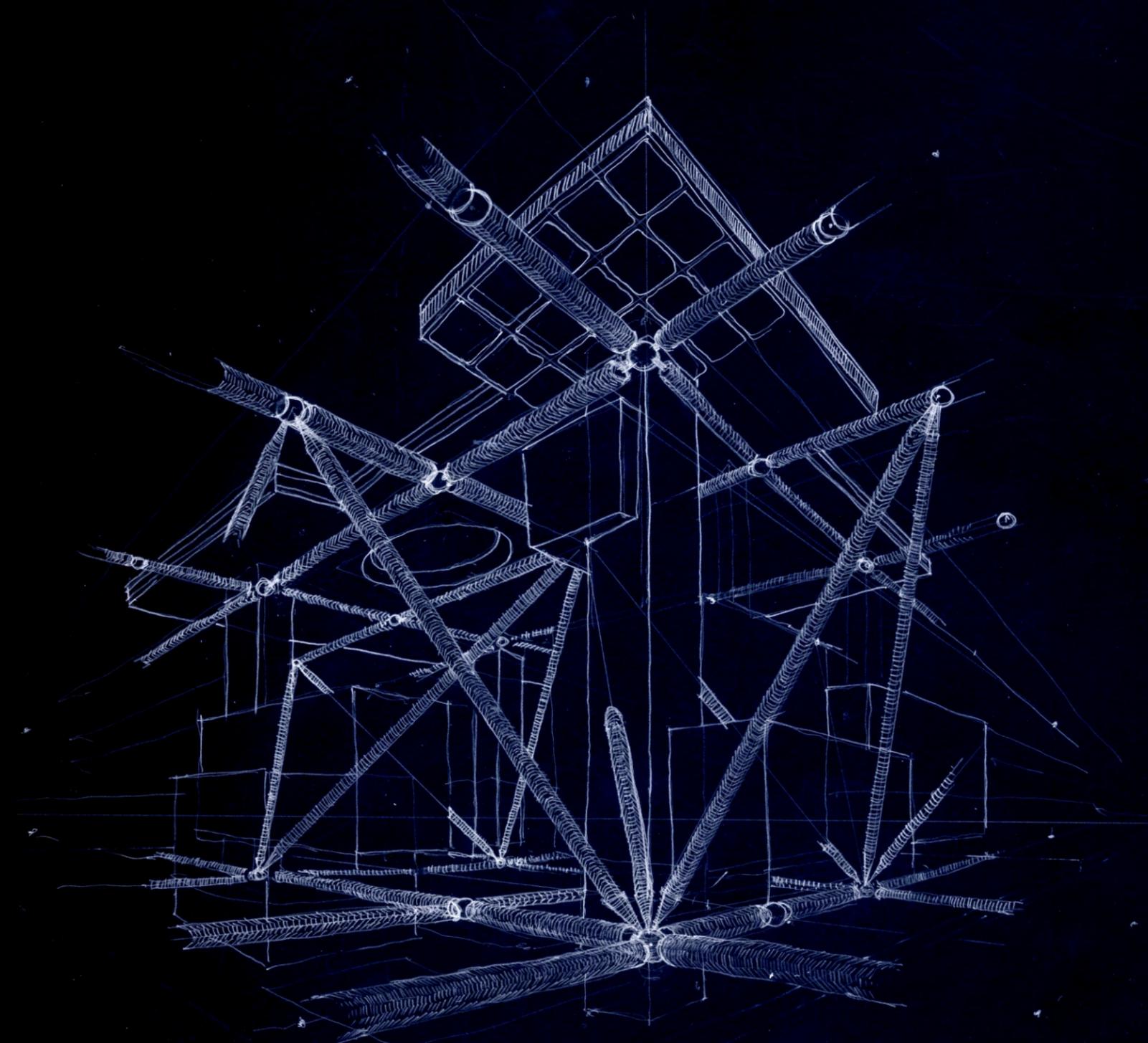
Conceptual plan



BOUNDING FRAME - TRANSIT HOST



Lightwell concept



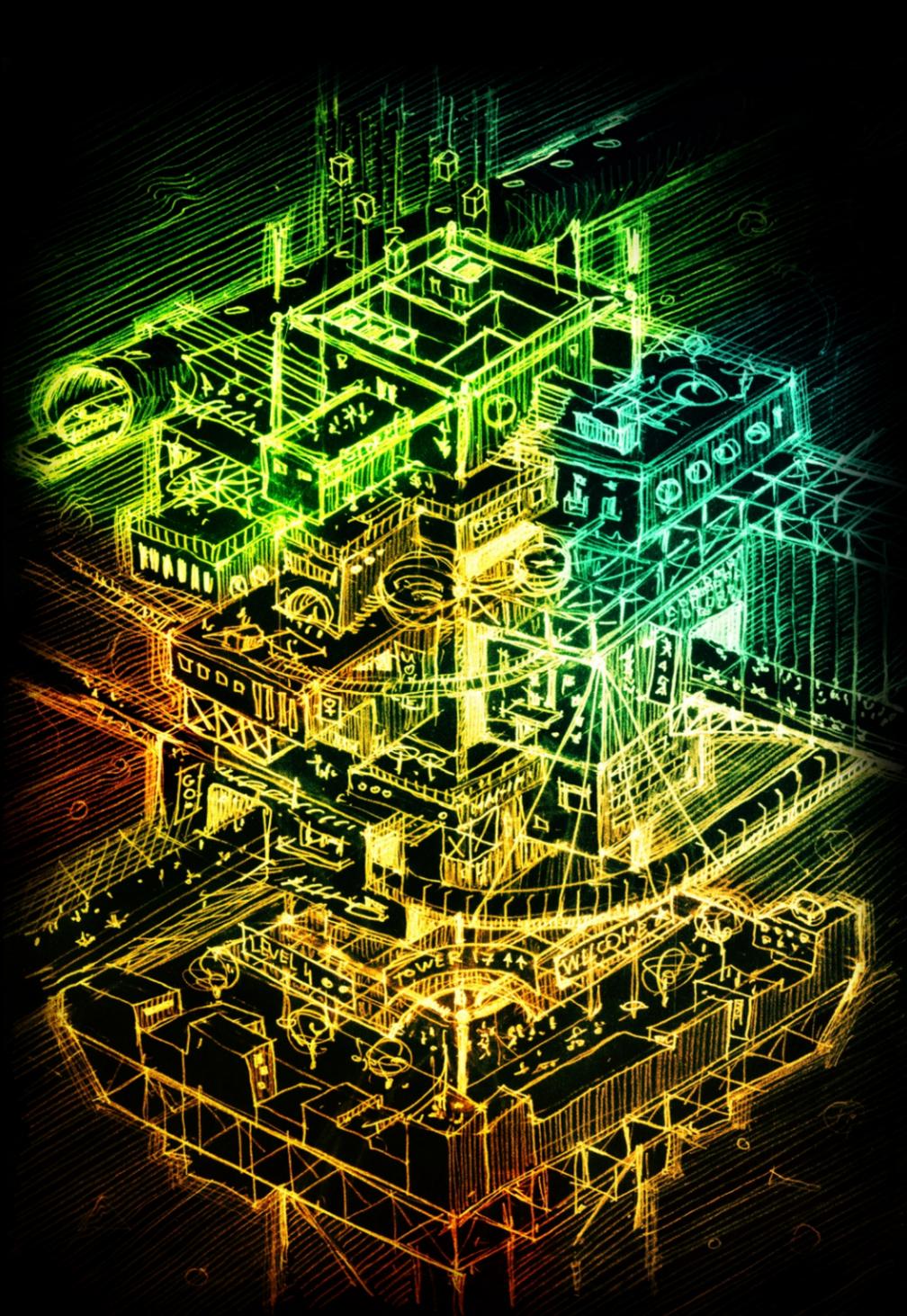
Inter-frame space

In the 1970s architect Paolo Soleri coined the term "Arcology" being a fusion of Architecture and Ecology. His concept designs for self-contained, self-sustainable cities with minimal environmental impact have inspired generations of architects with my being no exception.

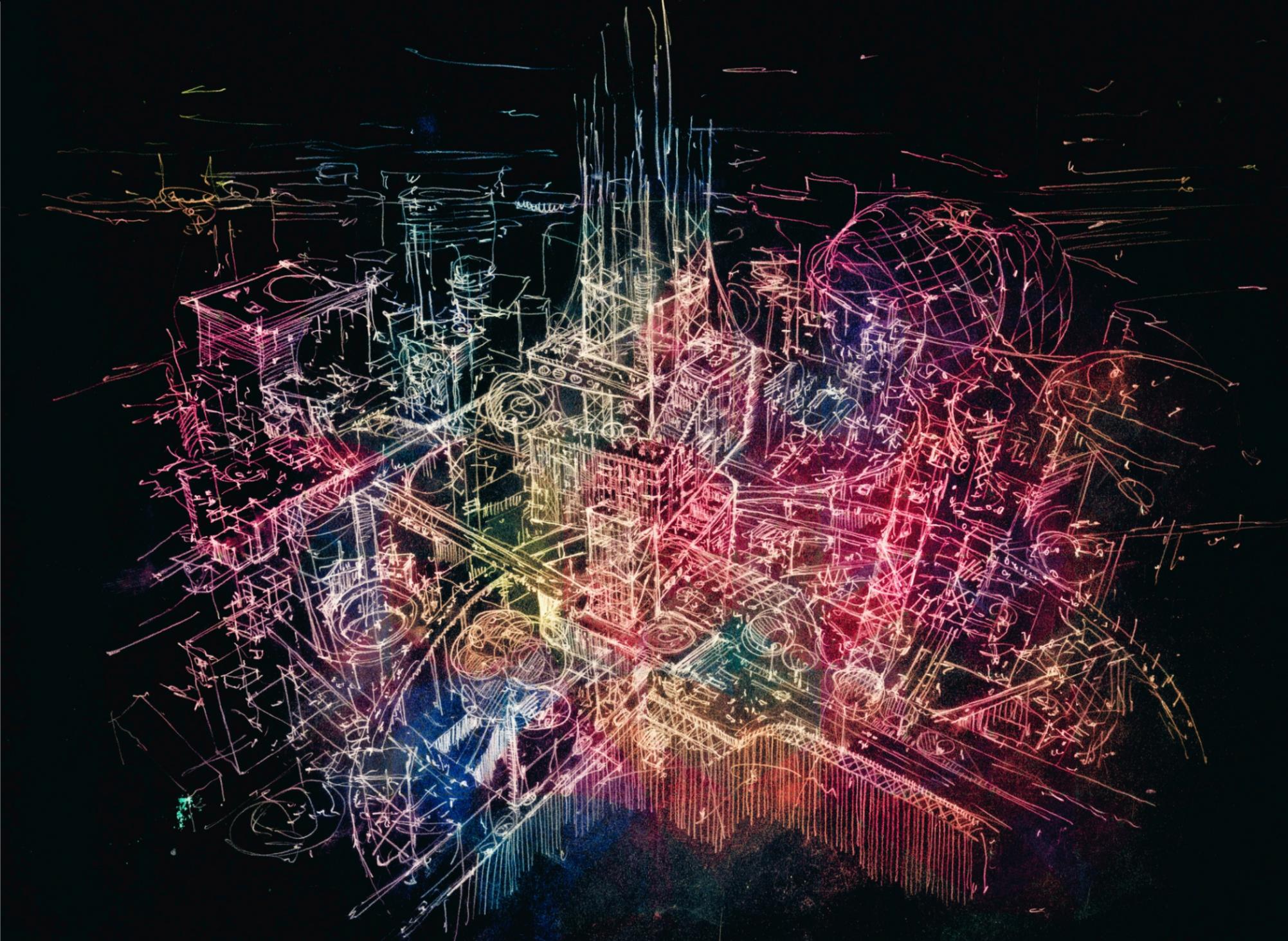
However, his Arcology designs were more an end-state solution, a final destination for the city, a future's end. He provided very little insight on the evolution of his cities after they are built. On the contrary my concept is centered around the issues of evolution and growth, a study of how and where the future city can begin.

The difference between this concept and Soleri's Arcologies also lies in the fact that he proposed a rigid shell to host the program for a whole city with most activities having designated places. My concept can also be called an Arcology, but of a different type - instead of inhabiting a shell, this model will provide a skeleton for the city's loose organic growth.

The frame is not intended to be dominant - it is there to support, not to dictate. Although city will be defined by it, it is important not to allow the frame to constrain and contain it.



Vertical growth



Residential superstructure integration

HETEROTOPIA

Heterotopia is a concept used by philosopher Michel Foucault to describe places functioning in non-hegemonic conditions and that are simultaneously physical and mental. By his definition a heterotopia is a physical approximation of imaginary utopia or a parallel space that makes utopia possible somewhere else.

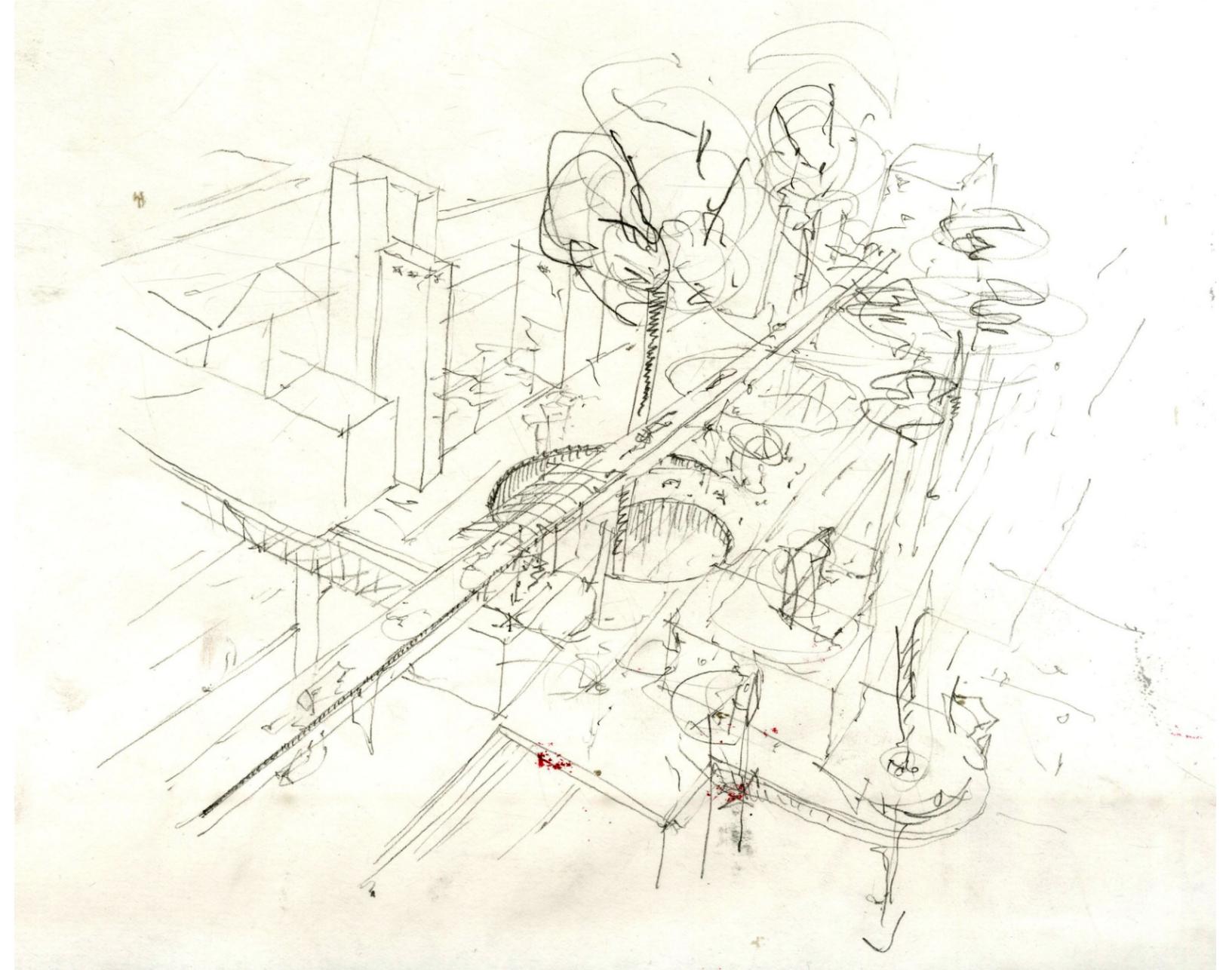
This concept appeared to be the best description of the practical part of my thesis research. By bounding together the maximum possible layers of meaning, both physical and virtual I attempted to imagine how the assumptions I made could progress. Because the concept in itself opposes masterplanning, the best way to explore it appeared to be through visual reflections on the aspects of the city I was designing. Works in this and subsequent chapters of my study are the results of this approach.



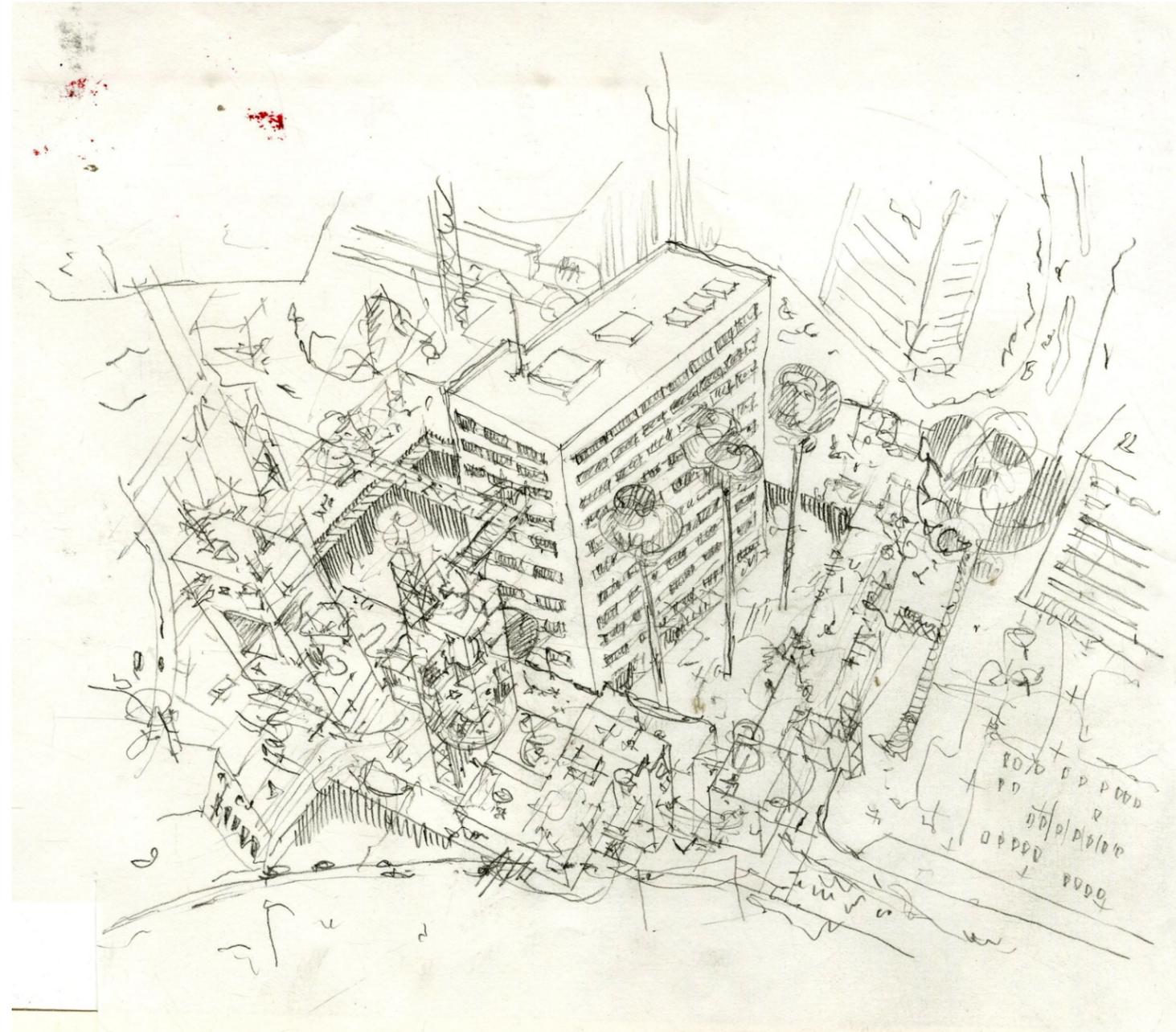
FRAMECITY / HETEROTOPIA

SPACES

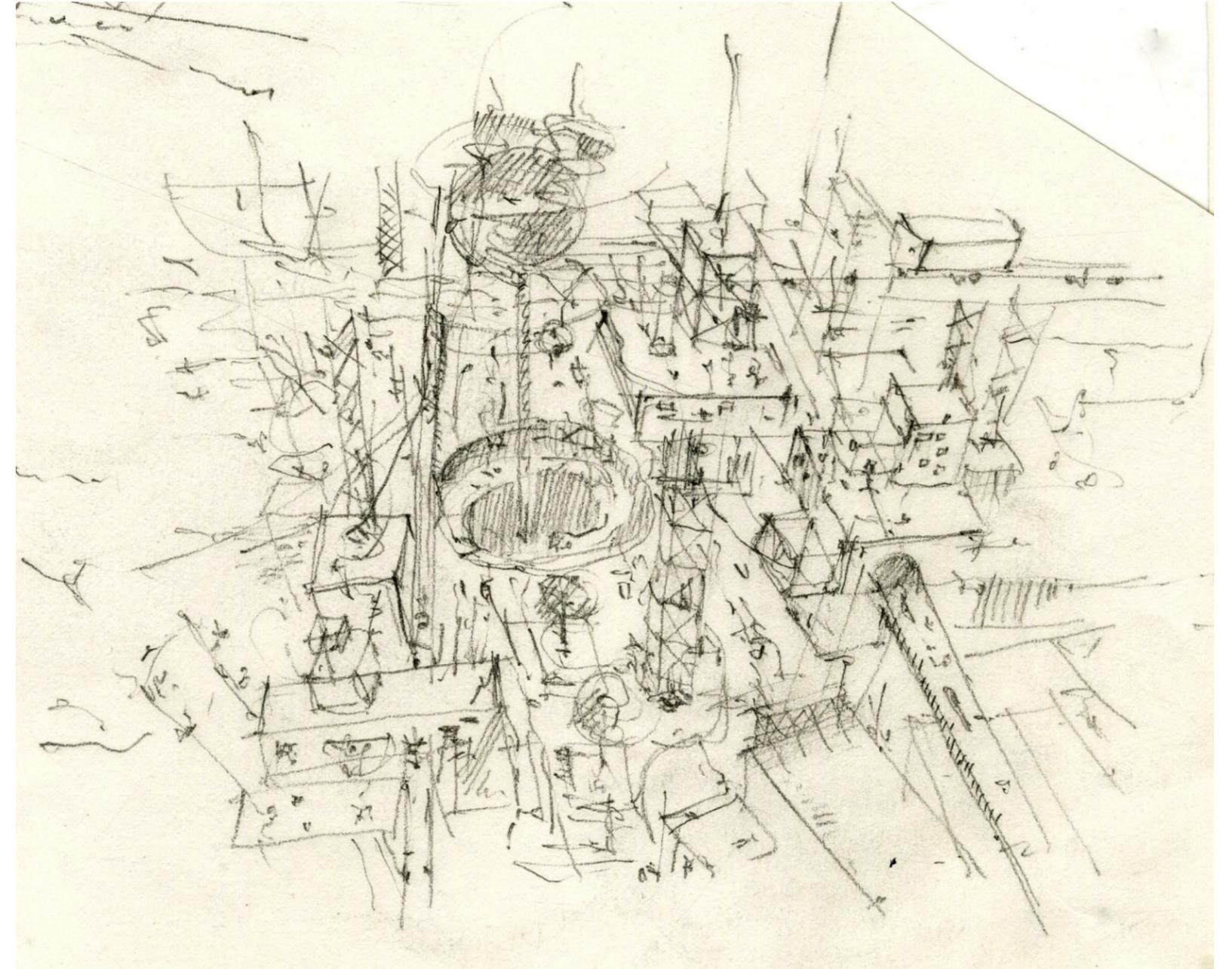
This section is devoted to graphical research of the possible arrangement of space and highlighting the aspects of the city, such as, connection to the ground, integration of the ground-level buildings and large superstructures, public space and street, frame interior, vegetation integration and other.



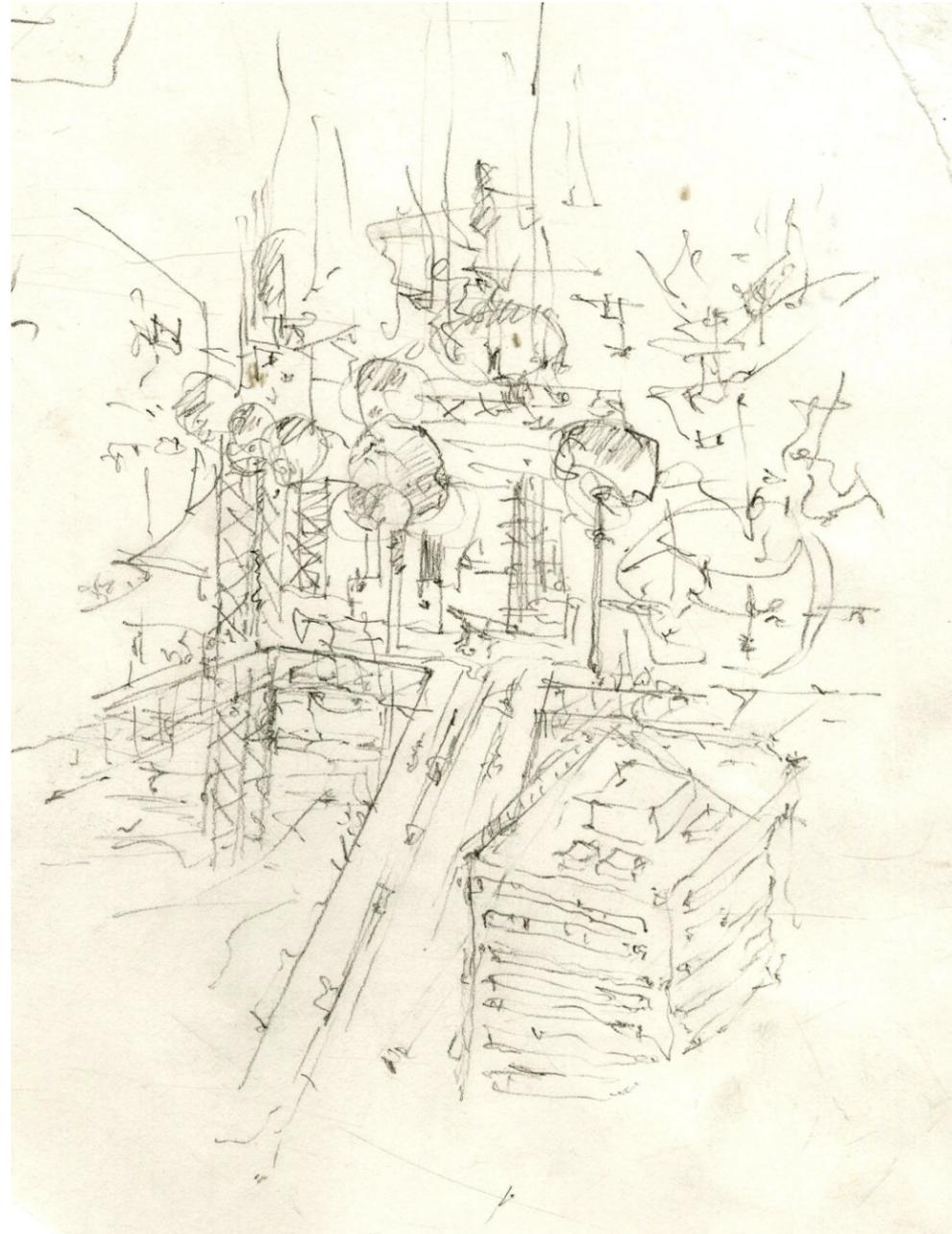
Spaces in the city. Sketch 1



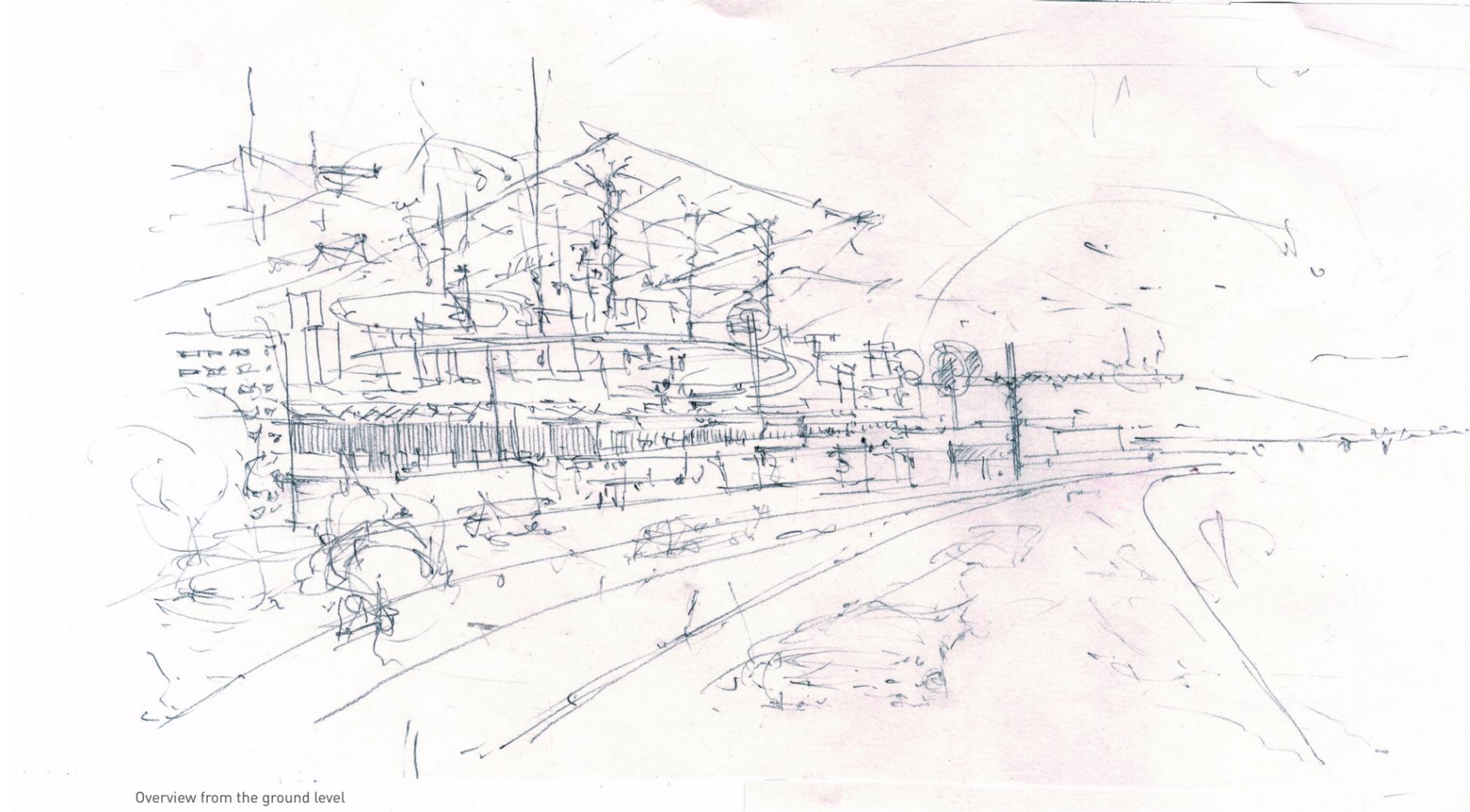
Existing building integration



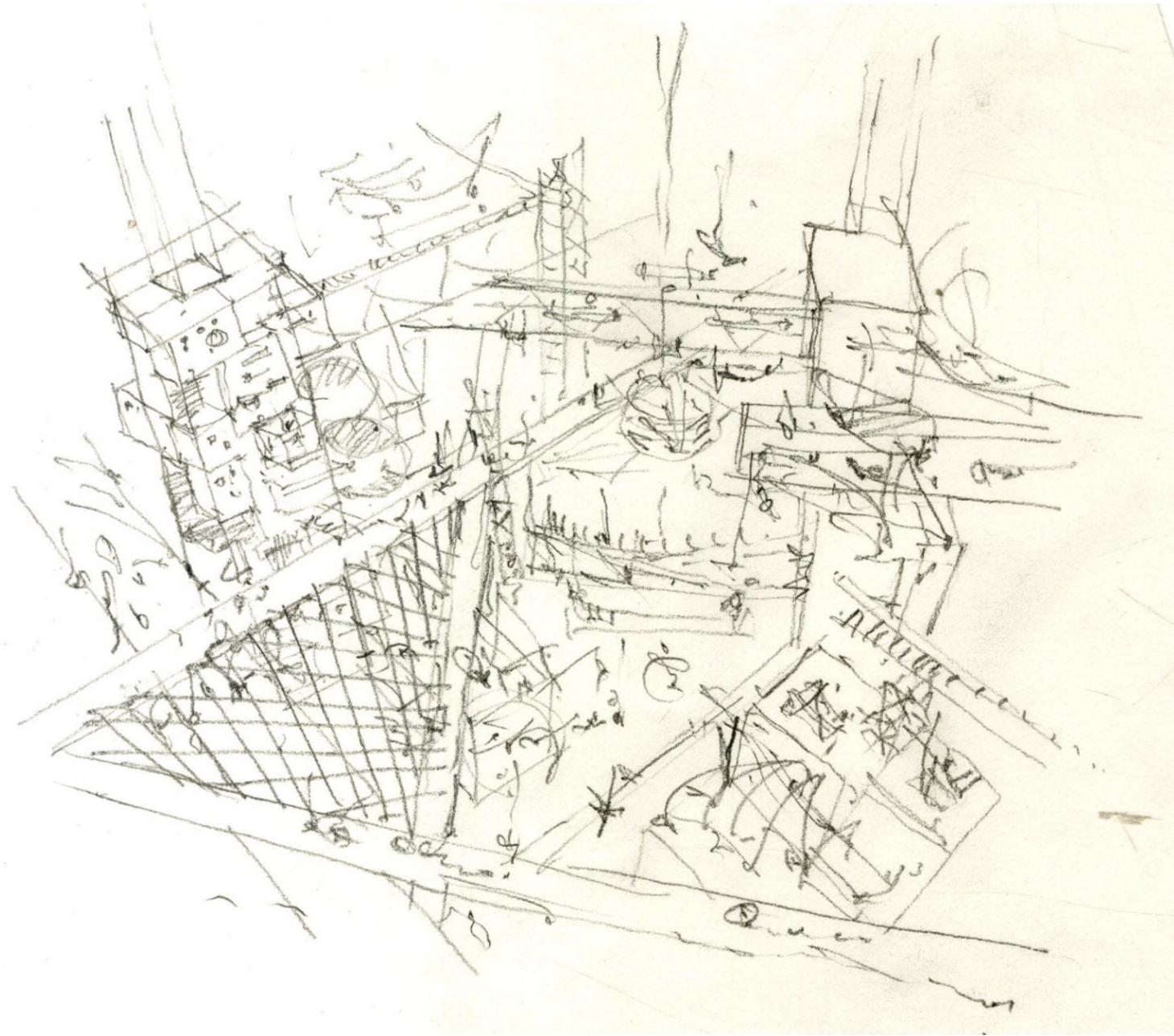
Spaces in the city. Sketch 2



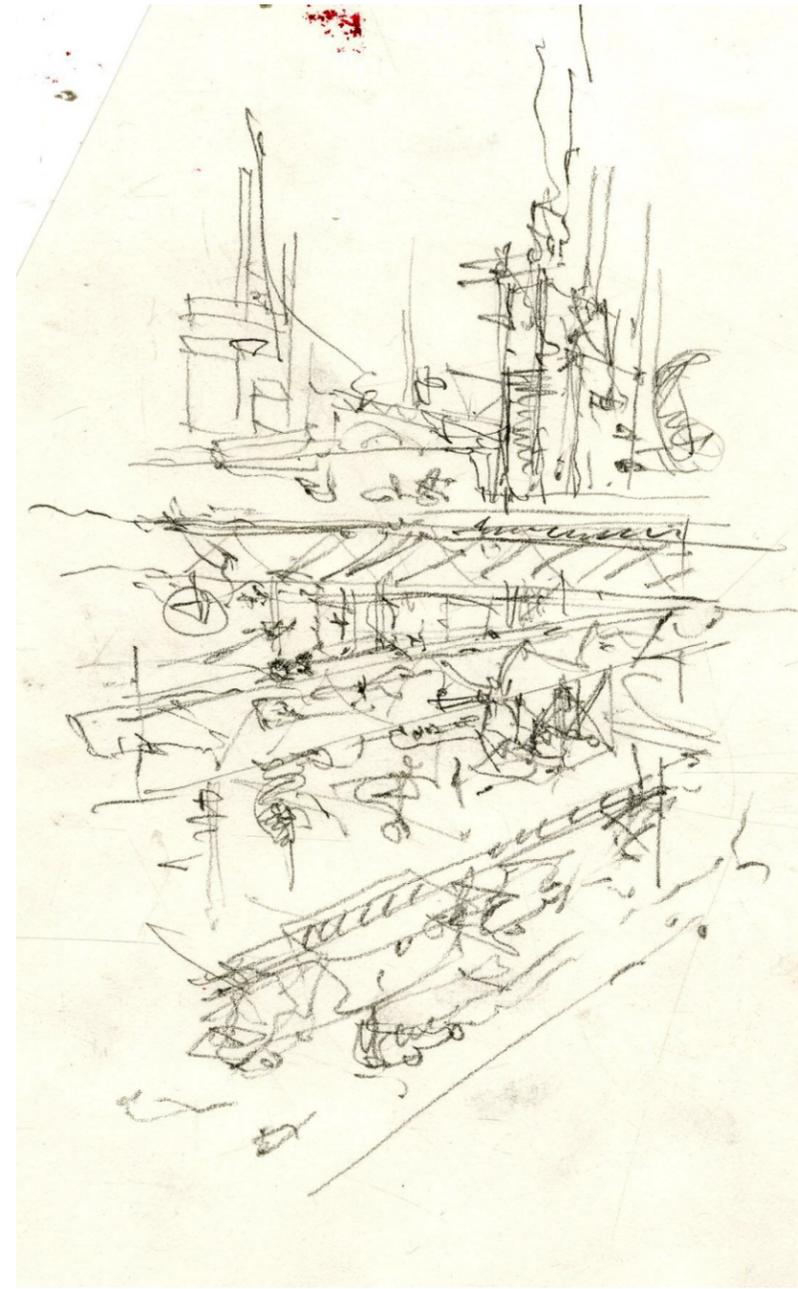
Ground connection



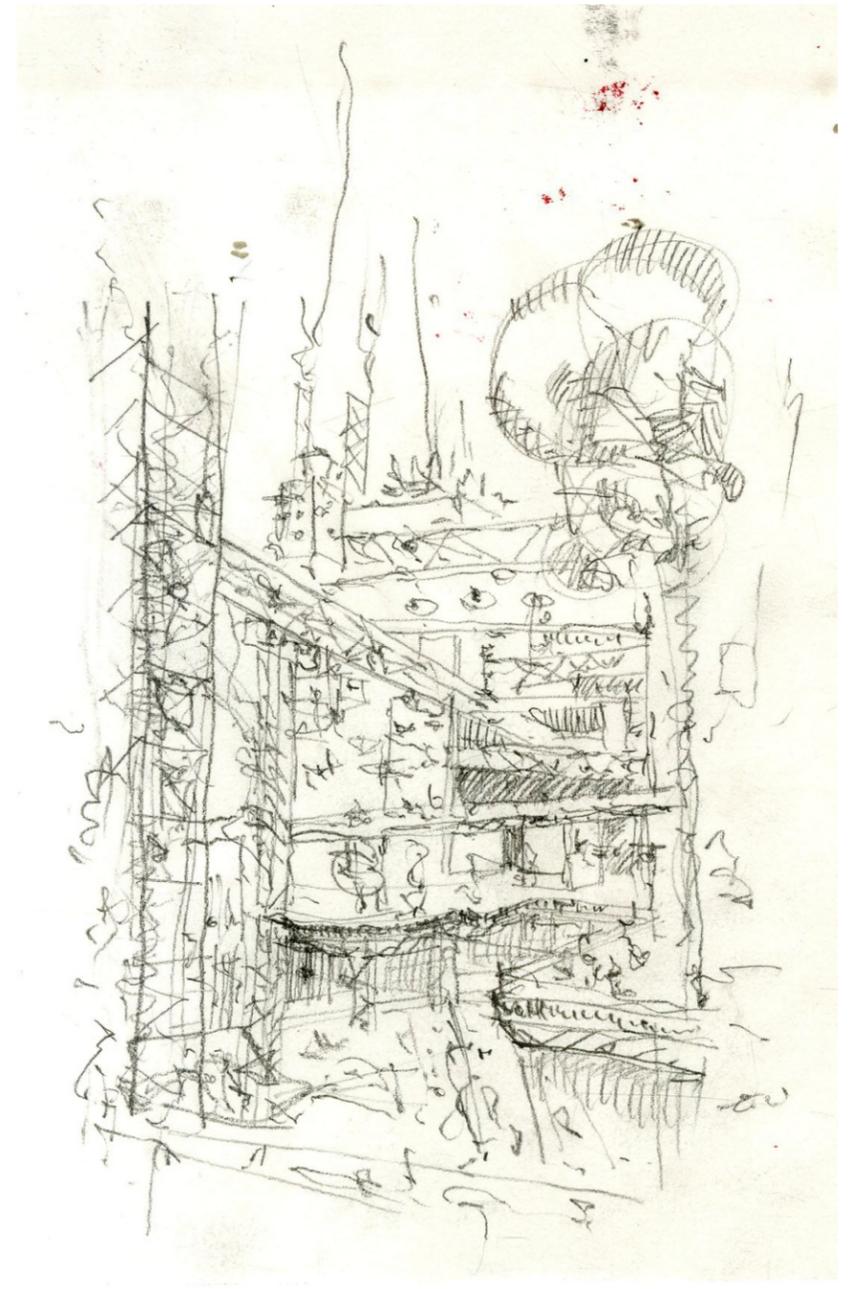
Overview from the ground level



Spaces in the city. Sketch 3



Spaces in the city. Sketch 4



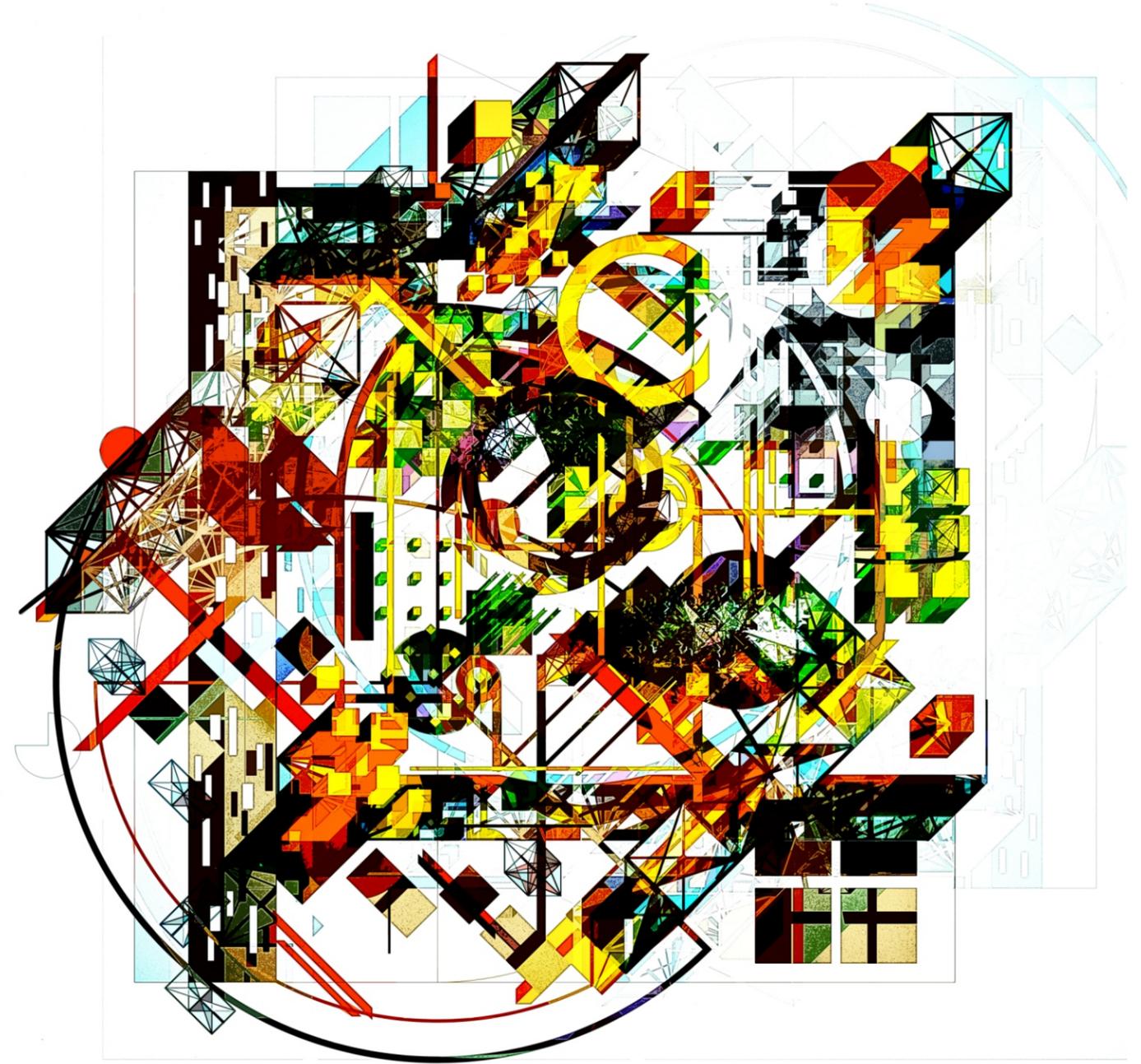
Spaces in the city. Sketch 5



Tall tree integration concept



Existing building integration concept



Street / public space concept

These drawings explore the experience of space inside a heterotopian city.



Overview from a lower level



Elevated Street

PROGRESSION

This image and the following sequence show the possible progression of growth of the city over an existing landscape and infrastructure. The city can start small and then expand along the vectors of major highways, parking lots and shopping malls, effectively unifying the disrupted fabric. The heavy fractures on the ground level could be healed by the overlay, interweaving old and new into a different but coherent fabric type.

The sequence was intended to show only the growth vector (along main transportation corridors and shopping malls) and probable development pattern with snapshots “taken” approximately every five years. It does not show the changes that will inevitably happen at the ground level as the result of two kinds of urban fabric fusing into one.



This sequence was intended to show the growth vector (along main transportation corridors and commercial superstructures) and probable development pattern with snapshots “taken” approximately every five years. It does not show the changes that will inevitably happen at the ground level as the result of two kinds of urban fabric fusing into one.



Progression. Step 1



Progression. Step 2



Progression. Step 3



Progression. Step 4



Progression. Step 5



Progression. Step 6



Progression. Step 7



Progression. Step 8



Progression. Step 9



Progression. Step 10



Progression. Step 11



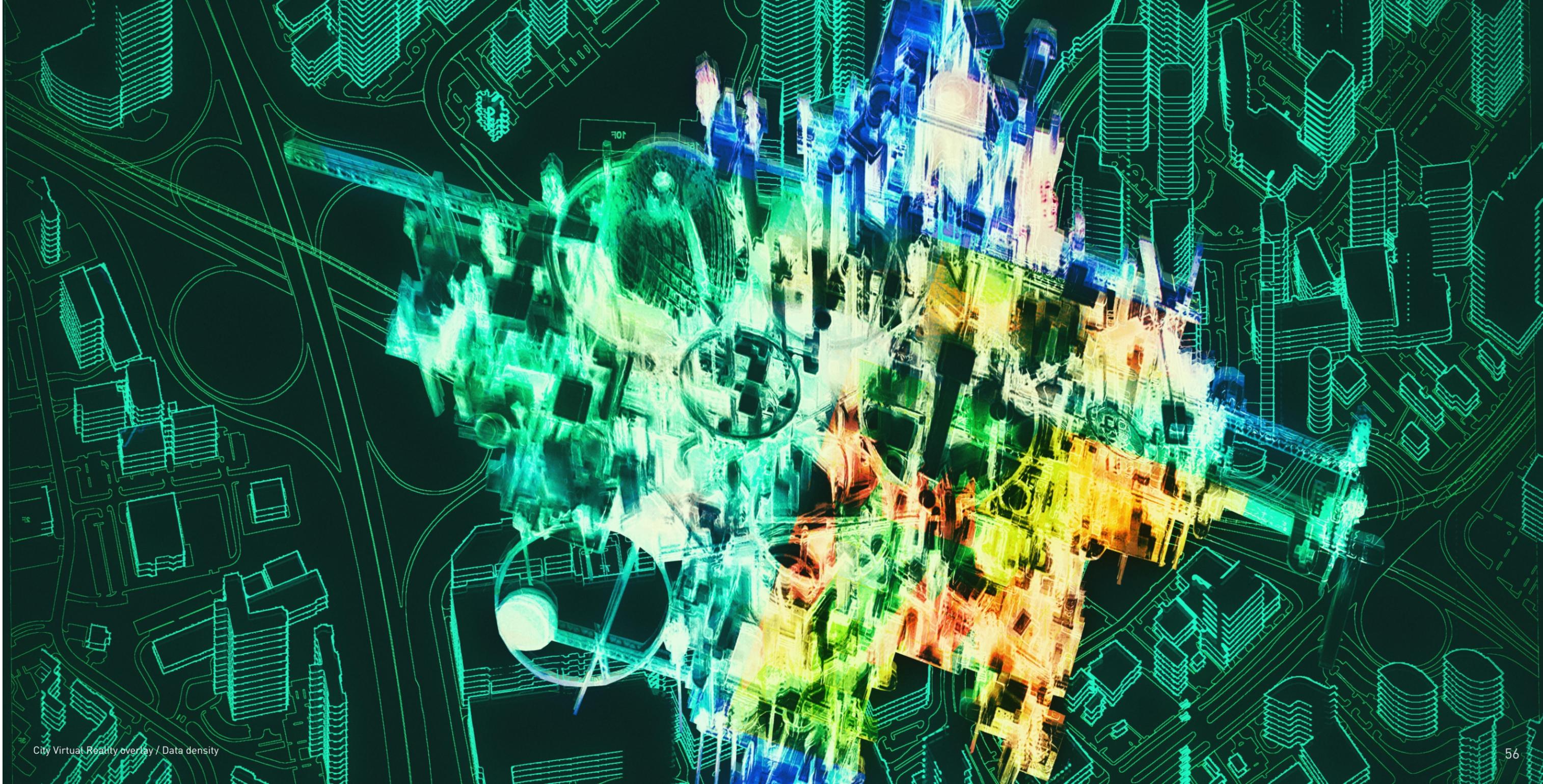
Progression. Step 12

PROJECTION

The city will have its own coordinate system (real-time GPS tracking of the frame joints). This will make creation of its VR overlay and city information model much easier allowing not only to monitor its physical state, but also to project its growth and make virtual additions by the people inhabiting it. Old cities are “made of stone” so overlaying the information model is hard, not talking about fully aligning the two.

The space on, above and below the decks is divided into property cells that can be sold rented and so on. The property cells are registered and managed through the city information model, effectively creating a 3D zoning map. 3D cell structure will change the definition of the building which no longer have to be confined to the flat site and its area.

Virtual Reality overlay is an important element of the city. It can project its growth but create interactable overlay. With the advancement of real-time computer-generated sensory input technologies, the information model can be overlaid onto the real world, allowing two-way interaction between the model and its users, which, in turn will further increase functional density, as people will be able to interact with the environment on the digital level. The VR model will be a flexible entity and a result of the cooperation of multiple private agents.





Final model. Overview



Final model. Detail



The multi-layered concept required adequate means of representation. Thus, a hologram projection machine was built to show that. The idea also comes from Foucault's heterotopia concept as a space behind the mirror.

The machine uses a transparent mirror that when aligned at correct angle creates an illusion of 3D overlay over a physical model positioned behind the mirror.



FUTURE

My initial studies of loose space showed me how rare those places actually are. The appropriation of the new uses often happens in unusual (and often unlikely) spaces. Thus, the spatial and social factors have to align well at the right time to create a place of character. Those factors can be modified by the means of design only to a certain extent. The other part depends on probability.

At this scale one of the few reliable ways to increase this probability would be through density, depth and diversity of the designed environment. However, to get them past the limitations of the traditional urban fabric, a new, more flexible and interactive type has to be introduced - a heterotopian loose fabric for the undefined future.

This collage is an imaginary overview of a full-fledged heterotopian city. The question is where do we go if we begin here?



IMAGE CREDIT

The images listed below are for educational purposes only and were reproduced according to fair use law. All other images, drawings, and illustrations were produced by the author.

- p.2 Fig.1. Author's drawing based on the photograph from *Insurgent Public Space: Guerrilla Urbanism and the Remaking of Contemporary Cities*. Hou, Jeffery. 2010.: p.9
- Fig.2. Author's drawing based on the photograph from *Insurgent Public Space: Guerrilla Urbanism and the Remaking of Contemporary Cities*. Hou, Jeffery. 2010.: p.32
- Fig.3. People dancing in the underpass at "Teatralna" metro station in Kiev, Ukraine. Web. May 5 2016. <YouTube video service, snapshot>
- p.3 Fig.1. Under-bridge space in Kyiv, 2012 photo. Web. May 5 2016. <<http://afisha.tochka.net/11868-v-kieve-pod-gavanskim-mostom-postroyat-art-galereyu-foto/>>
- Fig.2. Appropriation as party space, 2013 photo. Web. May 5 2016. <<https://calvertjournal.com/articles/show/5742/kiev-techno-scene-djs-producers-cxema>>
- Fig. 3. "Art-Prichal" gallery, 2014 photo. Web. May 5 2016. <<http://artprichal.org/en/>>
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