Understanding Underground Spaces: Archaeological Layering of Building and Excavating Inverted Architectural Spaces

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ABSTRACT

Every city dweller walks above a grotesque maze of tunnels, which becomes the process of weaving into the modern [utopian/dystopian] underground metropolis. The very fact that the increasing world’s population had come to travel everyday in tunnels and underground was the intention and the fascination which brought me to dive into this topic of infrastructural underground spaces. Utilizing the underground as a developing and underlying model that generates into an urbanized utopian metropolis, this paper is an investigation which is developed through understanding the layering and excavation of inverted architectural spaces, leading into the appreciation of the underground city within the context of the twentieth-century—with outliers that slightly tangent a few years prior or subsequent.

1. MODERNISATION OF URBANISED SPACE DEVELOPMENT: SKY-SPACE VERSUS GROUND-SPACE VERSUS UNDERGROUND-SPACE

In 1958, Yona Friedman developed the unrealized "spatial city", to wit, a three-dimensional, bestraddling structure, which touches the ground only on a minimal area. In it, constructions can be dismantled and moved, and they can be altered as the occupant so desires—somewhat providing the basis of the nomadic implication of an urbanized city. This spatial structure, raised up on piles, contains lived-in volumes, set within some of its "void" spaces. The tiering of the spatial city on several levels that are independent of each other defines this "spatial city-planning". The piles contain vertical circulation systems (lifts, stairs). A residential city, a commercial city, and an industrial city can all rub shoulders on the same site (Fig. 1, 2).

Fig. 1, 2. Yona Friedman, Spatial City 1958 Project.
The spatial city thus represents what Yona Friedman has called an "artificial topography", a grid suspended in space. Once again the city has become cartography, through its homogeneous, continual and indeterminate network. Its modular mesh authorizes its unlimited growth, yet at the same time clutters the sky. The modern derivation of Friedman’s utopian city could be seen through the planning and organization of New York City. New York truly realizes the utopian mentality of layers bestraddling upon each other, where upon each layer eases onto the development of spatially diverse and clustered points. From early the exploration and construction of the underground railway which dive over twelve feet below the surface of the city, the temporal ramshackle booths which occupy the tunnels, to the permanent storefronts of department stores, these were the elements which drove the development and economy of the decentralized and grid plan. Without the inclusive of the reuse and redevelopment of historically developed sites which start out as economical and centralized points of departures, much of an utopian thought of compiling atop cities through uncertified gadgetry could prove impossible. Hence, the development of ‘rediscovering’ the old could only be proven through the reverse, which is, instead of building atop cities, dig deeper than the surface, and invigorate the solidified ground within the established gravel. This process is only possible through either ‘retouching’ or boring into inverted space; otherwise, through direct implications of archaeological and architectural intervention and development in combination.

Essentially, the carving into and the redevelopment of the ‘old city’, or in French terms the vieux port, produces a general consensus of trepidation of where to ‘draw the line’—since it is not common practice that the growth within a modernized city is mediated through the layering and excavation of the ‘past’, or sometimes decrypt. The Japanese Metabolists looked closely upon re-establishing the connection of land, sea, and sky; however, the European approach to urban regeneration of metropolitan space pertain closer to the environmental awareness of the statement, which are guided among the concerns and awareness of the reality that lies within the importance of historical and preservation acts, along with ‘green’ environmental concerns, which conserves much of the historical aspects and basis of a developed and ‘cultured’ nuclear city. Although rarely developed, the underground territory would in some respect closely relates to the Japanese utopian dreams, which also realistically is a zone of total probability due to the innate acoustical and thermal qualities which developing underground enables. If the space in between the sky and land is the space which is developed as utopian space, or the newfound space, then arguably, the space below ground would be seen as dystopian space. However, should not be accurate due to the fact that every city, whether from the late nineteenth century up to late twentieth century, were driven by the underground as an underlying actuality that demonstrated and provided the sustenance, both in economical and architectural terms, for the function of a metropolis.

The Metabolist Movement investigated into multiple futuristic and utopian plans, including the Unabara Project (a floating city on water), which comes close to the investigation of underground, or more specifically 'underwater' possibilities, yet never really touch on the topic of the underground directly. In their view, the traditional laws of form and function were obsolete. They believed that the laws of space and functional transformation held the future for society and culture. With all their possibly projects and their vision of cities of the future inhabited by a mass society was characterised by large scale, flexible and extendable structures that enable an organic growth process, there lacked the careful resource and empowerment of looking farther down (Fig. 3, 4).

As cities naturally become more inhabited, more so that suburban areas—where in reality, suburban areas were progressively more dominated by the early twentieth century developments, which conclusively became attack of urban sprawl—historical and preservation ramifications are rarely put into context of urban development. Increasingly the natural content of a historically inhabited space results in demolition or degeneration, where the ‘past’ gets erased. Although, in most economical and major developmental projects, the concern of preservation and pre-site determination/analysis is hardly part of the design process, the democratic approach to building a city should not only pertain to the deconstruction and development, but also to the reforming of the natural state of the site—otherwise, perhaps, the incorporation of potentially formal objectives within the design of a site. In performing the acts of locating the demands of the readily available entities present in a site, the
potential for embarking the context of augmentation within regenerative planning begins to commence.

Historically, the success in the organic development of the nuclear city plan—from being an adaptive marketplace and centralized gathering territory due to natural progression and inhabitation—was the understanding that the location and the original selected site pertains to certain fixed and consistent principals and models focused within the site topography, which also lies within the underlying mass of the area, which originates from the site itself. Thus, building on the opportunity within or underneath the site also fabricates supplementary benefits which otherwise, might prove deficient. For example, by deconstructing the Kisho Kurokawa’s 1959 Helix City (Fig. 3) as a formation plan of a city, that is planar and extends from a centralized core, could prove that the interaction between localized markets, trades, and citizens would diminish due to the demand of the produced item for the site. The collage plan is neither constructed in a regulatory formation which is productive or comprehensive, but rather feels like it is coming from all direction and developing upon tangents without control. If the dots represented the loci of residential or commercial development, then the system which it generates is rather defunct, since none of the routes articulate back into the core. Hence, the model economically dematerializes the site as a producer, but signifies the ‘site’ as rather an empty space, or placeholder for a certain ‘entertainment’—where the model itself is a byproduct, which indifferently sets motion for the necessary accommodation of space.

By understanding that the site itself produces a certain involvement of activity that originates from a system of terms that results in the formation of activities which are produced in the future of the site, urban planners and architects could better produce a formalized plan that investigates the socio-political and cultural discrepancies and hierarchies which lead to the dualistic formation and land-use of spaces. Where Aldo Van Eyck sees ‘void’ or ‘unused’ spaces as possible playground or regeneration of spaces, which proved to be utopian yet a ‘realizable utopia’, underground spaces are spaces which are used also in the common realm as inhabitable spaces that provide a circulation and articulation of the plan in a city. Each tunnel acts like different arteries which penetrate through the underground of the city, where the power plants and the man holes are the pores which populate and disperses the refuse and residues of the cities. Tertiary elements would include the transportation system, which provides the commute and communication for the flow of the city. Conclusively, the electric and hydraulic power and water systems supply the city like other vital organs of the body.
2. THE “SKY’S THE LIMIT”: BENEFITS & DISADVANTAGES OF SALVAGING INVERSED SPACES

Other than the offering the effect “opacity” by utilizing the natural geological medium as a visual screen, reversed spaces also offers “natural protection” and natural protection of mechanical, thermal, and acoustic complements (ITA-AITES, 2004). The fundamental characteristics of developing functional underground space is to understand that the underground medium as a space that can provide the settling for activities or infrastructures that are difficult, impossible, environmentally undesirable or less profitable to install above ground. According to Donald G. Hagman, a professor of Law at the University of California, Los Angeles, who wrote “Planning the Underground Uses”, the benefits of recycled land-use not only re-inhabits the location of previously manipulated land, but retrospectively (Hagman, 1974):

“the costs of an excavation are somewhat lower and if space has already been constructed as a necessary by-product of mining, then it is economical, in some cases, to occupy the space. It may also be true that land costs have increased, so that market forces dictate a more intensive use of land, either below or above the surface...”

While there were excruciating amounts of research and desire to find new possibilities of building and discovering new territories and surfaces to construct on—exemplified in Metabolist writings like Noboru Kawazoe, or built and imaginary examples in the likes of Kenzo Tange’s 1959 MIT Resident Hall, or Kiyonori Kikutake’s 1958 projects—on the other hand, the ‘model’ building method, during the late and mid-twentieth century were solely conveyed on the means of building above ground. Idealised examples would include the ‘utopian’ versions of building on stilts, in likes of Western Metabolist emulators (i.e.: Yona Friedman), or the original Japanese Metabolists (i.e.: Kisho Kurokawa’s 1962 Box Type Apartment complex)—which were successful adaptations of consumer units that maximized land-price and building economics. Through the historical references of the Metabolists and New Babylon builders, whether we are in the twentieth or twenty-first centuries, the preferred trend and known pattern of the general architectural construction still conflicted between maximizing and encouraging development in the sky. With all the possible ‘visions’ or utopian projections by the Metabolists, none included the slightest conception of building underground. Conversely, if the Metabolists truly believed in discovering new terrains to build on, if less of the skyline is used, and more underground space is maximized, wouldn’t the possibilities of rejuvenating the proximity of breathing or bathing natural sunlight, while walking on ground level, be more revitalizing? And if utilizing more ‘air-space’ is truly beneficial, why have there been restrictive laws placed on building heights in so many European and historically established urban cities?

Yet, the concern of habitation, rather than commercial use (which is presently the highest percentage of use within contemporary underground spaces), of historically inverted alternates for the contemporary means might also have to question the relation of the number and kinds of underground uses. Whether this thought could be elaborated as a utopian vision or dystopian thought, it is given that few animate subjects live or survive very far below the surface with the lack of sunlight. The notion that if construction or reused underground spaces become incredibly inexpensive, could one look into the underground as an opportunity for low-income underground housing? Or, would the consideration of “who” should be chosen or would want to live underground be too abstract of a public negotiation? From Friedman’s Spatial City to climatised sky-spaces, these examples only juxtapose the relations of building underground. The twentieth-century showed many beneficial innovations, which included the metro, urban waters systems, and underground infrastructures—all of which are underground creations that assist to facilitate and power the urban metropolis. Nonetheless, from a critical stance, given the amount of restrictive zoning laws (i.e.: 1916 New York City Setback Zoning Regulation) in the past that have been placed on building-height-limits of skyscrapers, it could be possible that most utopian thinkers, even the most avant-garde Metabolist thinkers, resisted on the development of building underground as a new model in architectural development with the same anxiety. The primary concern
would be whether the feasibility of building inversely incurs the same amount of scrutiny as building higher. Although many built examples in the twentieth century have predicted and established the necessity and proclaimed the use of plannable underground commercial space—including the Iidabashi Metro Station in Tokyo, Japan, or the Louvre’s underground commercial complex beneath the City of Lights (Paris, France)—there are still furthering global concerns of economical and legislative rights of building beneath ground level. Much of these concerns encompass social scrutiny and repercussions that are interconnected to the humane living conditions with that of urbanizational needs. An extreme dysfunctional and cynical example could be found in Fritz Lang’s 1926 film noir motion picture rendition in Metropolis; though, realistically, even to this day, it is fact that a large part of the modern metropolis is operated and renounced within the underground.

In the past, urbanism has focused on cities like Paris, London, Berlin, and Barcelona; however, modern urbanism focuses on cities like Beijing, Brasilia, Mexico City, and redevelopment and rejuvenations of older historical cities, since there is not that much land left to redevelop. Although not concentrating on the problematic implications of the nuclear city plan, the indispensable development of the nuclear city and intervention of the modern day phenomena of urban sprawl as a resolution, in turn, gives birth to the layered quality of the modern metropolis. Underground developments provide an opaque and neutralized point of ground contact, hence minimizing the necessity to accommodation ground-level clutter and planning—since underground structures are only visible at certain points where it connects its surface. Consequently, the importance of recognizing the layered properties and rendered underground potentials through the improvement of stacking onto deep-rooted foundations of the underground as a centralized theme of the twenty-first century metropolis/urbanized city is irreconcilable—given the possibility of reusing or reoccupying historical ground space does not seem that large of a predicament that is far-out of reach.

With the new China coming aboard the architectural and construction scene, through new urbanization plans, without the usual democratic concerns of historical preservation—like that of new contracting development and demolishment of ancient Ming Hu-Tongs within Central Beijing and outlying Chinese suburbs—brings the a centralized apprehension on whether Capitalistic development and gains begets political architectural and archaeological spatial anxiety. The ancient ruin preservation in the City of Xian—location of the original terracotta warriors and horses (Fig. 7) where the First Chinese Emperor Qin Qi-Huang built his exotic and elaborate tomb—was merely considered as a UNESCO historical landmark in 1987 solely due to foreign intervention.
Hence, brings certain qualms of preservation versus profit into modernized architectural accounts: If a Museum was not built atop the Qin site, would developers have demolished the area, have dug trenches, and re-established the area as a new urbanization plan like the construction of the electrical dam of the Three Gauges?

Relevant present day built projects like Bernard Tschumi’s New Acropolis Museum in Athens, Greece (Fig. 8), where many critics would argue and agree which relates closely upon the ideals of Yona Friedman’s Spatial City (1958), the modernized version of the innately layered development of the modernized version of urbanism is through the rejuvenation of a ‘mapping and layered’ approach of the metropolis. The interest of preserving and conserving the ‘past’ (the archaeological remains underneath the site) through the maturity and progress of the ‘future’ increases the relative awareness and importance both cohabitation of the construction rather than destruction or deconstruction. A social statement nonetheless, yet, also an architectural and archaeological development which does not undermine the significance of preserving the shadows of the past to better understand future anthropological remnants, which sequentially contemporizes on the fundamentals of the Modernist utopian architectural movement.
Planners, urban archaeologists, and architects should pertain to bridging a higher concern within a democratic development of necessity within cultural and international social concerns which ascertain to the significant factors which drive a construction project, from the beginning—even before the design, planning and construction of a project is carried out, and maximize the idea of geological resource and land-use within the framework of an emergent architectural and design perspective. In result, re-inhabiting and recycling the spaces of the void of brown-sites [i.e.: abandoned car-parks] and fully utilizing the green belts [an area of largely undeveloped wild or agricultural land surrounding or neighbouring an urban area] within a city.

In view of realistic and rational terms, since cities are already the loci and focal points of inhabitation and centralized workplaces for the cosmopolitan citizen, urban metropolitanional development is not ‘utopian’, or in any way a false reality. The future is only viable through surveying the foundations and layers of the historic past, through gridding the conservation and transformation of land-use, the leveling of redevelopment and recycling of old findings, and the rejuvenation of new reversed spaces, that should enter a diplomatic coexistence, which only derives the past as a passing reference; therefore, well introduces the modern use of inversed excavated space for modern urban purposes. Thus, in order to pragmatise the “new” and foster the remains of an already established antiquity, it is important to understand the reprimanded leftovers of layered precedent trysts, which could generally be rediscovered beneath the layered cities we live in.

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