



Coral Reefs in the Sea of Urbanity

Revisiting the idea of linearity in the suburban context of Ilford

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Introduction

The post-industrial age is upon us. Spurred by the opportunities of the neo-liberal economy, globalization has shattered the bounds of the modernist utopia. The systematized has been fragmented and the planned is now in apparent chaos (Graham and Marvin 2008, 103). This has led to the collapse of the rational city, giving way to an illegible urban scape (Skeates 1997, 6). As Rem Koolhaas describes it, 'We were making sand castles. Now we swim in the sea that swept them away.' (Koolhaas et al. 1998, 970) The civic organization of the urban has been undone, which has resulted in a breakdown in our relationship to the city and in the social ties that bind us together (Picon 1998, 27).

Yet, we find patterns of urban development in the city that still occur similarly to the way villages and towns expanded during the pre-industrial eras. Medieval communities formed near river banks or busy thoroughfares, stretching linearly along these connections. Rivers were sources of subsistence, wealth, social interaction and information. Today, the expansion and densification of the city occurs along railway lines, arterial roads and fibre optic networks (Easterling 2014, 15). The process appears to propagate almost organically, clustering to threads of infrastructure like a parasite (Gandy 2005, 29).

However, this phenomenon has given rise to increasingly generic strip developments such as commercial and retail outlets, industrial warehouses and speculative residential complexes. They are occasionally punctuated by the remnants of local heritage, huddled together in the shadow of scintillating high rises. Town centres are stranded in car parks, construction yards and railway sidings, devoid of any character and used only for the convenience of the occasional shopping expedition. This fracture within the wider residential 'sea' – to continue Koolhaas' metaphor – is now little more than a decaying 'reef'.

Urbanization is no longer a process we can control. It will continue to respond to the imperatives of the free market economy, where capital investment supersedes the aspirations of social and civic pride. However, infrastructural corridors, which have become the primary vectors of urban development, provide a natural falling point upon which to redefine our relationship to the wider city. Like a 'coral reef' punctuating the infinite expanse of the sea floor, these linear settlements harbour the variety and adaptability necessary for communities to flourish. By harnessing this potential, perhaps we can project a new sense of legibility for our urban society.

Patterns of Linearity

Linear cities: the evolving diagram

The concept of 'urban linearity' begins with a diagram. In the late nineteenth century, industrialisation bore the hopes of an ever more efficient society, powered by technological advancements. For architects and engineers, the railroads opened new possibilities for redrawing the urban environment. Speed brought places closer together and in doing so began to redefine people's relationship to space. Railway connections were designed to follow the shortest path between points, which, as geometry has proven, is a straight line. In an age where science was the new religion, the idea of a purely functional city was becoming increasingly appealing. And so, the geometry of the line provided the starting point to a new form of urban planning. 'Linear Cities' would replace the chaos of the traditional metropolis, providing efficient means of mobility along a singular infrastructural spine.

The first project was developed by Arturo Soria Y Mata in 1882 for an extension around the city of Madrid. Infrastructural advancements in the twentieth century sparked renewed fascination for the Linear City with projects such as Roadtown (1910). Modernist architects including Le Corbusier (1930), and Ivan Leonidov (1930) offered their own interpretation of the model with segregated zoning of program and mobility. In the aftermath of WWII, the diagram became increasingly problematic as cities began to expand and sprawl causing the traditional civic order to splinter. Nonetheless, several examples such as Tange's Tokyo Bay (1960) and Superstudio's Continuous Monument (1969) convey a continued interest in the idea. At the dawn of the post-modern era, Koolhaas' projects Exodus (1972) and Ville Nouvelle de Melun Senart (1987) develop the idea of linear urbanism in the context of a fragmented sprawl. Accepting the overarching complexity of the city led to a 'thickening'¹ of the linear diagram. Intricacies of program, relationship to the surrounding urban context and intensity of human interaction became an integral part of the model.

The diagram became corrupted by the rising level of fragmentation in the post-industrial landscape. It no longer operated at the scale of the entire city but in localised conditions and it was turned from an ambitious project to a theoretical framework. Paola Vigano defined the Linear City as a tool for colonising lost and abandoned spaces (Vigano et al. 2016, 55). However, it is no longer the natural but the urban which must be reconquered.

Linear spaces in a non-linear urbanity

Conceiving of entirely new cities remained a fantasy of the industrial era. The diagram of the Linear City could not be translated into a project. In attempting to apply theory to a physical condition, designers rejected the realities of how cities were changing. In the latter part of the twentieth century, this ushered in an alternative mode of thinking. Constantinos Doxiadis explains that 'human settlements have always been created by man's moving in space and defining the boundaries of his territorial interest and therefore of his settlements, for which he later created a physical and institutional structure.' (Doxiadis 1970, 395). Similarly, Bill Hillier argues that 'well-functioning cities can [...] be thought of as "movement economies".' (Hillier 1996, 152) Furthermore, Hillier defines 'natural movement' as a series of broken-down *lines* through space (Hillier 1996, 161). In doing so, he abstracts the city to a network of nodes and connections set within the generic backdrop of an urban sprawl (Hillier 2008, 39). Their approach focuses on the mechanisms that cause cities to form and expand rather than treating them as purely spatial constructs.

Through this lens, the city becomes a web of linear processes as people, goods and services travel from one point to the next. This perception of the urban is interpreted by Antoine Picon and Matthew Gandy as a prosthetic for human activity (Picon 1998, 28, Gandy 2005, 29). The metaphor shifts the focus from the modernist anatomical view of the city to one that is neurological. It is strongly influenced by the work of Gilles Deleuze and Félix Guattari on topology and 'the Rhizome'.² Reading the city thus becomes less about physical distances and more about the *weight*³ of the relationships between points. While new infrastructures have served to strengthen ties between the global metropolises, cities have become more fragmented than ever. The emergence of archipelagos within the urban fabric testify to the existence of privileged networks of transit and communication (Graham and Marvin 2008, 177). In this way the logic of cities is no longer defined by the accessibility of its historic core but by the strength of its interconnected and interdependent attractor nodes (Carmona 2010, 28). For this reason, Graham and Marvin argue that the scale of urban intervention has become less expansive, focussing on local challenges rather than city-wide masterplanning (Graham and Marvin 2008, 103).

The topological properties of the rational city have been broken leaving us with nothing more than an 'urban soup' (Sudjic 1996, 31).

The pressures of globalisation and the liberal economy have caused infrastructures to fragment, dissolving the modernists' legacy of the systematised city. Within this context of apparent chaos however, human activity continues to thrive, particularly along the edges of infrastructures and near centres of exchange. Just as the Medieval towns clustered along river banks and road, contemporary urban development occurs within the densely packed, linear space of railways, roads and fibre optic cables.

Fragmented Suburbia

Commuter corridor: time over distance

The urban is becoming increasingly fragmented. At the macro scale, Graham and Marvin argue that the collapse of the city as a rational object was the result of its inability to adapt to the changing demands of the global economy (Graham and Marvin 2008, 103). Underpinning this shift is a more profound change in perception. As speeds of connections increase, so the world around us draws nearer. Kenzo Tange proclaimed that 'mass communication has released the city from the bonds of a closed organization' (Tange 1961, 12). Previously, cities were designed to the scale of the walking individual (Doxiadis 1970, 393). Now, the capabilities of inter-continental travel have irreversibly disrupted our relationship to space and time. As Virilio explains:

After the spatial and temporal distances, speed distance obliterates the notion of physical dimension. Speed suddenly becomes a primal dimension that defies all temporal and physical measurements. (Virilio 2002, 444).

He argues that the physical environment of the city is no longer relevant, to the point where it may not exist at all. I would argue that the prioritisation of the metric of velocity has in fact a profound consequence for the morphology of the urban fabric. For instance, Ilford town centre ranks in the highest accessibility levels for London⁴ thanks to its fast connection to the city centre. As a result, the allowable densities for development are far greater here than even a five-minute walking distance away from the station. In other words, the localization of this area in relation to its proximity to speed makes it an enviable place to live for the contemporary city dweller. Mountain ranges have emerged out of the once seemingly flat topography of suburbia where

accessibility now dictates the density of development. In Tange's words, 'mobility determines the structure of the city' (Tange 1961, 7).

Splintered myth: the new suburban condition

Suburbia is undergoing a radical transformation as a second wave of urbanization is reshaping local centres, which is spurred by the intensification of infrastructural networks. Towns like Ilford were once little more than a cluster of buildings along a high street. However, the arrival of the railroads in the mid nineteenth century, brought these places into London's orbit. By the 1920s, the meadows and orchards around the historic centre were replaced with vast estates of suburban housing. Due to the proximity to the City, these housing developments were initially built as commuter towns for white collar workers and their families. However, attracting affluent middle-class households required replicating the lifestyle they could enjoy in the central neighbourhoods. To cater for their consumer habits, high end department stores, such as Harrison Gibson,⁵ opened along the high street while in new social clubs formed according to the community's varying interests. As Joel Garreau describes, 'first, we moved our homes out past the traditional idea of what constituted the city. [...] Then we wearied of returning downtown for necessities of life, so we moved our marketplaces out to where we lived. [...] Today we have moved out means of creating wealth, the essence of urbanism – our jobs.' (Garreau 1992, 4)

Ilford is now almost as dense as an inner-city district. Skyscrapers have sprouted around the station, isolating the remanence of its rural history. As cranes and scaffoldings take over disused industrial sites, the High Road has developed a distinctively urban character. This drastic change in the skyline can be attributed in part to a general migration of urbanites. In the last decade, the suburban boroughs have witnessed a general emptying out of their residential neighbourhoods and an intensification of town centres and high streets. The leafy streets that had previously attracted affluent middle-class families are now being abandoned in favour of strategically located apartment blocks near the station and along the main road. This evolution in urban living can perhaps be positioned as the next step in Garreau's account of *Edge Cities*. We are leaving the regimented, private sphere of suburban houses for the chaotic, sociable space of the high street; and this marks the beginning of a new form of urbanity, a space of density and interaction, an urban coral reef.

The Ecology of Coral Reef

Topography

The rise of the coral reef is linked to the reconfiguration of population densities in cities. Evolving commuter habits mean that urbanites prioritise accessibility over space; in other words, convenience at the expense of comfort. Ilford's town centre was once exclusively populated with shops; now people flock in their thousands to live there. Perhaps, Rem Koolhaas' washed out sandcastles are rising once more (Koolhaas et al. 1998, 970). In a literal sense, skyscrapers and apartment complexes now dominate the suburban skyline, creating a chain of peaks and ridges along the High Road. As the rest of suburbia begins to subside, we are left with a mountain range of densely backed homes, businesses and shops. The reef can thus be represented topographically, in the same way that a change in altitude is demarcated by contour lines. The suburban fabric is not a smooth, ironed out cloth but crumpled, soiled napkin. The creases follow the lines of infrastructure: jagged rifts dividing up its surface.

This violent landscape may reflect an inherent human instinct. Alexander argues that 'we cannot live entirely within cities—at least the kinds of cities we have built so far—our need for contact with the countryside runs too deep, it is a biological necessity.' He imagines a new model of urban development where city centres are stretched out 'into long sinuous fingers', allowing urbanites to live closer to the natural environment (Alexander, Ishikawa, and Silverstein 1977, 23-24). More recently, Paolo Soleri put forward the idea of the 'Lean Linear City' as an illustration of *Arterial Archology*⁶ (Soleri et al. 2012). However, in both cases, the proposals are governed by a modernist undertone of planned urban development. In this way, it is incompatible with the nature of the reef, which thrives on perpetual change and diversity. Nonetheless, we might pause to imagine the reef becoming a web of 'sinuous fingers' as it depletes the surrounding urban fabric. The interstitial spaces are eventually restored to their natural habitat as urbanites migrate towards more accessible living conditions along the dense spines of infrastructure. To this end, Soleri's model illustrates a plausible outcome, centuries from now, when mankind will have abandoned the sprawl of modern urbanisation.

Topology

The reef is not a planned occurrence. Unlike the Linear City projects of the twentieth century, these urban fragments are emerging out of the existing urban fabric rather than being purposefully drawn out. It is therefore difficult to define an urban coral reef as a strictly formal entity. Naturally, it has a predisposition to follow the linear space of the road and the railway, but it is also influenced by the processes and relationships that occur within it. For this reason, we use the term 'ecology' and not 'structure'. The reef grows out from an initial core of activity, following the lines of infrastructure and colonising the remaining undeveloped sites along its path. It is not defined by its boundary but instead by the varying strength of its field of attraction (Allen 1997, 28). We may consider ourselves at times either within it or outside of it but never encounter a gate or a wall that signifies the beginning or the end. The boundless condition of the site suddenly reveals the topological characteristics of the reef. The question of 'where am I?' is now superseded by the questions of 'what is it for?' and 'how is it connected?'. It is more of a sequence of perceptions through time (Virilio 2002, 447) as opposed to a singular spatial experience, the kind we might enjoy in a town square or a church. Through the lens of topology, we begin to unpack the qualities of the site in a more sensorial way. As Shields explains, 'it provides the mental hand-holds for working with situations where relationships are changed, distanced, collapsed or distorted, reshaping the 'diagram' one might draw of the situation.' (Shields 2012, 48)

Thickness

The third condition to discuss is the idea of *thickness*. The reef is not only defined by a topographical, physical thickness but also by an intangible thickening of human activity. We would then naturally refer to Stan Allen's conclusive speculation in 'From Object to Field':

'The new institutions of the city will perhaps occur at moments of intensity linked to the wider network of the urban field, and marked not by demarcating lines but by thickened surfaces.' (Allen 1997, 28)

Thickness here is understood in a topological sense, as discussed in the previous argument. Thickening represents the sum of all the sequences of perception experienced by everyone in the city (Virilio 2002, 447).

It is the weight of the most travelled route or the frequency of the most intense relationship. In this way, the reef is a 'thick space'. It is both dense in its physical form and intense in its collective identity. Topographical and topological conditions become more intertwined as the built environment begins to reflect the changing dynamics of urban life. Accessibility and speed now dictate the process of urbanisation. A concrete illustration of this theoretical notion can be found in the work of Susan Rogers on the transformation of Houston's highway system. *Thick Infrastructure* is 'the expansion of public works projects to include elements that enhance civic and public spaces or the adaptation of existing, single-purpose infrastructural landscapes into more robust, multifunctional systems.' (Rogers 2011, 448) However, it is not inherently a reef because the project seeks to use the residual infrastructure space without plugging in to the infrastructure itself. Furthermore, it is a planned process that does not rely on existing human activity but rather tries to stimulate it. Nonetheless, the idea of generating variety in places of infrastructure should be carried through into the definition of the reef.

Conclusion

Urban coral reefs are rising. As the nineteenth century radial cities have dissolved into the sea of urbanisation (Koolhaas et al. 1998, 970), a new form of urban structure has emerged. Time is now more important than distance, which means access to speed has become the primary vehicle for development. This 'splintering' of space (Graham and Marvin 2008, 114-115) is guided by society's increasing demand for mobility as places – not just within cities but around the world – become more closely tied. Urbanites now choose to live along busy corridors of infrastructure, close to arterial roads and public transport (Shannon and Smets 2016, 15). The suburban dream of the Post War age has collapsed: city dwellers privilege the convenience of efficient means of travel over the comfort of a semi-detached house with a garden. This has spurred a new wave of development which follows the networks of infrastructure, creating a web of dense linear settlements (Doxiadis 1968, 60).

However, unlike the Linear Cities of the modernist utopia, these fragments of the city are unplanned, perpetually changing spaces, organised according to the collective ambition of the people who live and work there. The reef is a thick space which is defined both by the physical topography of the buildings that frame it and by the topological nexus that binds it together. From a distance, the distinctive silhouette of towers and blocks contrasts with the low-lying row houses of suburbia. Yet, there are no demarcating lines (Allen 1997, 28). The human experience of the reef is a sequence of perceptions (Virilio 2002, 447), which is tempered by the level of intensity of exchanges and activities, as would a field of attraction.

The ecology of the reef is an intricate web of urban life. It is an ongoing process, which requires flexibility and adaptability of use while also providing a strong social and civic setting for the community. However, the rising demand for housing along infrastructural corridor, such as Ilford, makes these places vulnerable to financial speculation. Recent high-rise developments near the station have added pressure on the existing public realm and attracted a demographic of young professionals. Despite the inevitable tensions that will arise from this added weight, it is an opportunity to define the new spaces of interactions that will ensure the sustainability of the reef. As Picon proclaims, 'it is time to look at the territorial city of today without too much nostalgia, animated by the hope of detecting the seeds of a new form of solidarity' (Picon 1998, 39). We are not able to control society's capitalist intentions for the city, but it is worth fighting for the variety that thrives within this emerging urban environment.

Endnotes

1 Thickening is understood here as an expansion of the definition of linearity. Formal tools are no longer sufficient to design such a space; it requires a layering of different socio-political and geographic conditions.

2 Deleuze, Gilles, and Félix Guattari. *A Thousand Plateaus : Capitalism and Schizophrenia*. [in English] Minneapolis: University of Minnesota Press, 2003.

3 Weight is used in network theory and machine learning to refer to the quantitative value attached to a connection between two nodes.

4 Public Transport Accessibility Level (PTAL) is a metric devised by Transport for London (TfL). The scale goes from 1a (least accessible) to 6b (most accessible).

5 The development of Ilford over the past 150 years is presented in the town's museum. Harrison Gibson was one of several department stores to open in Ilford. However, the company collapsed in the 60s and the store changed ownership. The latter eventually closed due to falling demand and it currently being converted for mixed-use purposes.

6 Arcology: Arch[itectural] [Ec]ology is a concept developed by Paolo Soleri and his team at the Arcosanti project <https://arcosanti.org/project/arcology/>

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