Borderline- Part 5

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How to deploy mobile architectures? As a waterfront linear expansion with a growing population, an appropriate precedent for the Kok-Aral site is Kenzo Tange’s proposal for Tokyo Bay.

With postwar Japan as a backdrop, Kenzo Tange’s 1960 proposal for Tokyo bay was born in a time where industrialized cities all over the world were experiencing urban sprawl. The scheme accommodated Tokyo’s continued expansion and provided a method for it to internally regenerate: effectively imposing a new order for the city that united the part and the whole within an architectural language. It featured a linear series of interlocking loops that would allow Tokyo to expand towards the bay, a gesture that is understood by various authors to have started the decade-long megastructure movement.

According to Zhongjie Lin, who has authored various texts on Tange and the Metabolists, Kenzo Tange was somewhere between the Western and the Eastern mentalities. His mentor, Kunio Maekawa had been trained by Le Corbusier. Later Tange had attended the CIAM meetings since 1951, where he connected with Louis Kahn and Team X. Lin argues that his western colleagues inspired the notion of mobility and urban structuring: the notion of infrastructure. The Metabolists, a group of young architects that he mentored, viewed the city as an organic human process, and not a mechanical object as the modernists would have it. He also demonstrated a strong alliance to the idea of Metabolism as city as process, which resonates with Japanese notions of permanence through continual deconstruction/reconstruction cycles such as Ise Shrine’s 60 year lifespan.

pt. II: organization
Tange defined cities with populations of ten million or more as “pivotal cities.” The reason for this term is for the state of confusion in which he found cities such as his contemporary Tokyo, New York and London: they had “grown too old to cope with the current rate of expansion.” He stressed much importance on the communication systems of a city, but also on the automobile, as it was rapidly proliferating in urban life and changing transportation networks and the relationship between architecture and street. Speed and scale, according to Tange, were changing space itself and its conception.

traffic as generator of design
Obviously, this is **not** the case we find in the Aralsk and Kokaral regions, it is in fact, quite the opposite. We find a desolate landscape, but like pivotal cities, at a point of transition. The “formerly-former” fishing town of Aralsk is lucky to be finding a resurgence. As the North Aral sea is “coming back,” Aralsk, which used to be 64 miles away from the nearest coast at its worst in 2007 is now at about 10 miles, a coast line that will presumably stay there thanks to the Kokaral Dam. We see a repopulating town. As pipelines and railways (re)connect Aralsk with Kazakhstan and Central Asia, the infrastructure will be in place to create a hub of commerce: if not of fish, it is of the exchange of goods, ideas and people.
2007

Volga River

KAZAKHSTAN

Uzbekistan

Turkmenistan

Azerbaijan

Caspian Sea

Aralsk

Asta

Lake Balkhash

Kyrgyzstan

Tajikistan

Afghanistan

Global Cotton Exports
700,000-800,000 tons (10% of world exports)
Over one million public servants, private employees and children employed

Regional opportunities
Resource management and infrastructure

And socioeconomic impact
rail traffic density
approximately 90% of exports in Central Asia travel by rail¹


g eo-economics / connectivity
The formerly-former city of Aralsk is populating on the remnants of its former self. Because of its 1970’s status as one of the largest suppliers of canned fish to the USSR army, it has retained the same urban fabric. Its old industrial buildings are once again being put back to use. The irony of this location is that it is now very distant from the coast, meaning that transport on water is now supplemented with terrestrial transport of fish. The old railways are still in use. As a result, plans are being made to include Aralsk in the extension of pipelines in Central Asia.
The Kokaral Dam has a latent potential as a metabolizing linear system. Railroad, highway infrastructure, and pipelines may easily take advantage of the existing linear fabric. The water-facing North has the opportunity to create a flexible system similar to that which was theorized by Tange. Finally, by replacing Aralsk’s functions along this system, and on the water, Kokaral can achieve a flexible city system that responds to geo-economics, hydrological change, and regional connectivity.
Implications of Linear City Proposals and Unit Deployment

Careful considerations for the deployment of architectural units.

**Supporting Infrastructure:**
Understanding the Kok-Aral as a linear infrastructure that will serve as a backbone to a floating community requires design decisions in terms of how to create relationships between the units and clusters of activity.

**System Flexibility:**
Flexibility on the scale of infrastructure guarantees functionality in spite of any possible changes in industry, water level, salinity, and biology.

**Incrementalism:**
Community construction on a unit by unit basis allows equitable and integrated participation in community development. The community becomes the sum of individual contributions rather than the single architectural feat.

**Flotation and Interchangeability:**
Flotation offers interchangeability of the unit, as a method for shrinkage/growth of individual businesses and measures for their competitiveness. Ease of adaptations to scale of operation will create businesses that otherwise would exist on land.
Tokyo Bay, Kenzo Tange, 1960

Tange critiqued the “closed system” nature of pivotal cities, which were and are predominantly organized centripetally, with a civic center at its core. Instead, he proposed an open civic axis, which was emblematic of modern society’s spontaneous mobility. For this reason, the linear expansion strategy boldly started at the existing center of Tokyo, imagining a drastic mutation of the existing city fabric as a consequence of a new unity of city, transportation, and architecture.
Arturo Soria, Ciudad Lineal, 1883

Linear system proposals have been around since the 1880’s, and became popular after WWII, as a method to control urban sprawl and the decentralization of the city. The earliest known example of a linear city proposal was Soria’s proposal for Madrid. This system would connect dense urban centers, and the space enclosed would be devoted to a maximizing of agricultural production. The main backbone, of 50 m width, was to be occupied with a tram, as the commercial automobile was not yet in use. Soria and his partners kept active by promoting the Ciudad Lineal idea in Spain and abroad.

Tony Garnier, Cite Industrielle, 1901-4

Tony Garnier proposed a socialist utopian ideal of living, a city of 35,000. It was located between a mountain and a river, which provided hydroelectricity. This plan allowed vocational schools to be located near their respective industries, and in proximity to all methods of transportation. The arterial avenue connected a linear set of courtyard housing, civic center and port. ¹

Recipro-city
Linear city by hubs

By re-reading the linear city proposals of Soria and Garnier through the lens of Lebbeus Woods’ “borderline” as applied to the Aral Sea, they reveal that the movement between its ‘urban’ nodes is about reciprocity between strategic points. Each node, or center of activity, becomes a focal point of activity such as fisheries and fish hatcheries, while floating architecture supports ancillary program.
Roadtown, Edgar Chambless, 1910

It was conceived as an economy of means and construction, maximizing energy, pipes, wires and transportation on a continuous two dimensions, transcontinentally if need be. As a linear city, the proposal established that it was to be surrounded by farmland, so they travel its length to find particular products, but only need the building to gather food. Two stories of living and working spaces were stacked above three lines of railway, with a continuous promenade on the roof. Similar to Arturo Soria’s concept, it was the a transportation spine surrounded by massive agricultural production. Differently, however, it was about creating a megastructure to maximize construction systems.

Milo Hastings, Solution to Housing, 1919

A separate line of thought evolved from Soria’s Ciudad Lineal. While Roadtown sought to maximize and densify to achieve an economy, Tony Garnier in England and Milo Hastings in the USA felt that the slow transportation methods of the past led to congestion and crowded living areas, where modern trains required only living near a trainstation. This sought to decentralize industry, with nearby housing for workers, intensification of agriculture, and “an increase in productivity through living conditions.” Hastings proposed U-roads that would contain communal parks.

resource delivery
thick infrastructure

Chambless’ and Hastings’ ideas for linear cities gave priority to the machine as the central component of linear expansion. The line itself, the railways, are a method for the machinistic deployment and delivery of industrial resources. When read against “borderlines,” and the latent opportunities of the Aral, it begins to imply a continuous network, a thickened edge, that may distribute supporting systems such as electricity and water through a linear network, as much as people through some sort of railway.
Soviet urbanists’ superblocks were programmed with nurseries, gymnasiums, sports halls, and large cafeterias. Their counterpoint “deurbanists” argued that the massive scale of such proposals was dehumanizing, and as such, an alternative was the continuous strip of smaller neighborhoods had social amenities distributed at regular intervals. Each neighborhood had eight communal houses of sixteen people. In Leodinov’s proposal for Magnitogorsk, group living was arranged for a more casual socialization instead of excessive density. Architecture and nature were more close by removing private lots. Living arrangements were more free, and allowed for more interpersonal relationships. Finally, the planned organization of discrete territories provided a sense of resilience.

**Miliutin, Plan for Stalingrad, 1931**
Drawing from Garnier, this Marxist adaptation of the linear city ideal was proposed by professor N.A. Miliutin, for a linear city of 100-200,000. The use of parallel zones along the Volga (6) was used to break down the social distinctions between the urban and rural proletariat. Though it was ultimately not adopted for practicality and lack of industrial capacity, it promised the abolition of centralized cities in favor of collectivism, decentralized industry, and mechanized agriculture throughout the indefinite length of the linear city (with collective dwellings). First came the railway (5), then industry (3), green buffer zones (2), highways (4) and residences (1).
Leonidov and Miliutin proposed systems that created pockets of activities for the resilience of their communities: in hopes of leading to a more casual socialization, and relief from density. An important concept is that because there were no private lots, there is always the removability of the architecture. A parallel can be drawn here because on water, the architecture does not have to be fixed to a piece of land, but can be freely floated.
MARS plan for London, 1938-1942

MARS, or the Modern Architectural Research Group, developed the idea of a master plan for Greater London on linear principles. The intention was to control the expansion of London, by organizing industry, commerce, and administration east-west along the Thames and railroads, where residential zones were to be placed in sixteen perpendicular ribs, each a mile wide, separated by two miles of countryside. North-south highways would connect the city to the rest of the nation. Historic London is indicated at the center of the drawing, to be retained. With the County of London schemes of 1943-44, the plan was abandoned.

Ludwig Hilbersheimer, the New City, 40's

All of the previous examples, save for Tony Garnier’s, concentrate industry on the main trunk of a linear proposal. As a response, Ludwig Hilbersheimer developed a more open system, with what he claimed to be a more efficient transportation system due to the closer proximity of home (above) and working area (below). This creates distinct neighborhood zones. It also incorporates both a main highway, and a local highway, commercial areas, and schools placed in parks between distinct neighborhoods.
The branching proposals for postwar London as applied to the thick edge of the Kok-Aral site is a pattern that is equally adaptable to the land side of the linear structure as much as the water side. The discrete identity of each pier can be maintained while another mutates between fishing and tourist seasons.
Linear Village, Iga, Japan
Fumihiko Maki, a member of the Metabolists that often theorized with vernacular settlements, published this image in his Investigations in Collective Form book. His point was that the house was the generator of village form, and the village was the generator of house form, where the house may be replaced without changing the character of the village. What is also useful about this example, as an idea embodied by both Chambless and Soria, is that it condensifies and maximizes human space and effort, to then maximize productive space on its exterior.

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La Rambla was originally a streambed whose function was to carry sewage out to sea, and for stormwater management from the nearby hills. In 1377, the city walls enclosed la Rambla, and in 1440 the stream was diverted towards the new walls, and La Rambla slowly became a street. Over the next centuries, it became the 1.2 km-long center of city life in Barcelona. As a thoroughfare it is the heart of the city’s festivals, markets and sports, as well as several religious buildings built along its length. Trees were planted in 1703.
"Architecture is situated between the biological and the geological - slower than living things but faster than the underlying geology."

- Stan Allen

Cedric Price, Potteries Thinkbelt, 1964
The Potteries was the industrial center of the ceramic industry in England for 250 years before WWII. As the global economy changed from industrial production of commodities to the production of technological and scientific goods, the Potteries failed to adapt and instead largely fell in disuse. Frustrated with the dilapidated industrial infrastructure that was redundant all over the North Staffordshire Potteries, Cedric Price proposed turning the infrastructure into a high-technology university on rails: a Thinkbelt. Price contended that architecture was too slow, and it could therefore not
solve issues like the Potteries’ state immediately, and were limited to their programmed functions. Primarily, he argued that buildings should be built for adaptability, for unforeseen futures. Architecture should be able to be dismantled. Price thus attempted to rebrand the Potteries as a symbol for science and innovation as the concept for a constantly mutating university. This campus had no single building, but had all of its components displaced in a network of mobile classrooms, laboratories, and supporting spaces on the pre-existing industrial rail lines. The movement allowed constant variation through various transfer points. Architectural strategies for these structures included portable decking and inflatable walls.
As scientists predict that natural hazards and disruptive events will continue to escalate in frequency, there is a global need to address the capacity of architectural and urban systems to actively recover, mitigate and manage risk, not just to passively perform sustainably. Resilience is defined as the ability of complex systems to adapt to changing conditions. Hydrological change is quickly emerging as an agent of the risk of fixed urban forms due to (1.) floods/droughts originating from inland watershed interventions and (2.) rising sea levels. On a global scale, this is a timely and relevant effort as it makes today’s rapidly urbanizing and populating coastal zones most prone to change.

Global Scope
1. Lin, Zhongjie. Kenzo Tange and the Metabolist movement: urban utopias of modern Japan. New York: Routledge, 2010. Zhongjie’s book traces the evolution of Metabolism from 1960 until its demise in the World Expo of 1970. The author discusses relevant material as to the successes and failures of the system, as much as the continued life of the projects in theoretical terms and constructed realities. The book has a number of well-documented photographs and sketches belonging to the Metabolist group.

2. de Graaf, Rutger. Adaptive Urban Development. Rotterdam, NL: Rotterdam University, 2012. This study illustrates the theories that drive DeltaSync’s work, in terms of symbiotic ecological and societal relationships between land and water-based architectures.


4. Dreiseitl, Herbert, and Dieter Grau. New waterscapes planning, building and designing with water. Expanded and rev. ed. Basel: Birkhäuser, 2005. This book is particularly useful in addressing waterscapes as large-scale applications of water in landscapes and buildings, describing water as being the fundamental soft element, demonstrating plasticity in form, transparency, reflectivity, refractivity, color, movement and sound. The authors are also concerned about the fact that cities are expanding worldwide. Natural spaces such as forests, meadows and wetlands are being consumed and displaced. Water is rarely thought of as a polluted, though “we drink it everyday, use it to keep clean, to promote a sense of well-being, and for recreation… it is generally and constantly available, naturally and through technology, the frequent precipitation in our latitudes, and running water in our homes all seem to give the lie to the idea that water could be a problem.” (p. 130) This attitude is certainly useful in terms of thinking about water-based architectures in terms of exploiting programs and details that would otherwise take these things for granted. Problem of quantity and of quality People have become accustomed to the fact that rivers are not suitable for bathing, or springs for drinking. Even tap water is distrusted. Air-conditioning, cleaning cars, and flushing toilets. Significant elements of urban life are no longer directly visible, including water and electricity. This highlights the need to regain an experience of the natural and technical context of urban life.

   Wylson provides a comprehensive study of the waterfront, in historical and sociocultural context, but elaborates quite a bit in the waterfront and what it means to maritime cities, water corridors, seaside resorts, before studying the architectural detail and the technical details of water spaces.

   Leeuwen comprehensively studies the architectural history and implications of the swimming pool, where water is used as a social factor for space. He describes swimming as a complex bodily sensation, with water as a primitive force with tactile quality, that is once erotic and at the same time reminds one of the imediacy of death.

   Kasperin and Turner, from the point of view of government and geography, hold that human-induced environmental change is found ubiquitously around the globe, and expand on nine particular regions that are considered “critical environmental regions,” which are particularly vulnerable and suffering from degradation. Their studies make available and clear vast amounts of data, and provides an elaborate understanding of the Aral Sea Basin catastrophe.

   This book discusses how the international community can prevent deadly conflict. The Aral Sea Basin appears in Chapter 3: “Intermediation in Noncivil Conflicts,” examining the history of the dispute over water resources and water quality. It holds, “Shared freshwater resources present problems for the international system of nation-states because water does not adhere to political boundaries.” This will be useful in studying the politics at large involved in the Aral Sea Basin case.

    In terms of City Branding, Patteeuw describes the value and creation of the city’s branded image within the context of the experience economy and the leisure industry. Considering the Bilbao effect, the author explores how a city competitively positions itself in a global environment for tourism, in the eyes of the inhabitants, companies and investors.

    This book describes the American West’s water crisis, as water is evidently a precious resource. It will help draw parallels to the Aral Sea situation. It documents Western expansion as related to the power of acquisition of water resources, and to the diversion and damming of American rivers.

To help more clearly make the relationship between the American plains and Kazakhstan/Uzbekistan in terms of water resource management and food production.

   This article very clearly illustrates the workings of the Aral Sea situation in a manner that is very comprehensible.


