"...in the 19th century mankind had come to terms with space, and that the great question of the 20th was the coexistence of different concepts of time." - Chris Marker, Sans Soleil

The year 2023, Almaty, Kazahkstan

I am writing from the Steppe to tell you this story of Mongolia, its beginnings of Steppe urbanism, and how it leveraged the political economy of aridity.

It begins in 1992, shortly after the fall of the Soviet Union. Without the support of their large, ever thoughtful neighbor, Mongolia undergoes a peaceful revolution, transitioning from communism to democracy and free markets. Gifts of Soviet technology begin to decay along the steppe, and land tenure returns to pre-Soviet policy, with the country as one large collective farm where livestock and herders roam freely.

In 2009, the realm of numbers and words tell us that Mongolia is a wolf economy and a developing country. Mongolia's development potential lies in vast quantities of copper, coal and gold. Yet capital does not come so easily, whether it is the equations of uneven development or the lack of infrastructure to convey goods to market, a stunning problem for a country known for its pervasive nomadism and legacy of silk road routes.

What have the men of science and technology overlooked?

For answers, the Mongolian government convenes a group of geographers, economists, sociologists and planners to embark on a series of studies. They are tasked with the development of a nomadic science, a plan of hypercapitalism where scarcity ceases to exist.

Staring at a map of Mongolia, a young geographer recognizes it. He finds the same set of collisions and tensions along the Steppe -- an ecology not bound to political lines, the so called Gobi desert. Its very nature of imagined and real ecology makes the Steppe a site of hidden contestation, where spatial hierarchy can not be inserted through usual means. Primitive accumulation has made agricultural productivity, yet the Steppe's productivity relies on the notion of timing and rotation, cycling.

We are the prisoners of geography, he tells his colleagues, unable to be remedied by the romance of infrastructure, of rails, asphalt, central sewers, and monuments of engineering. Our dry land, our misunderstood ecology seen through arability maps indicting us with scarcity only obscure our methods to territorialize.

It is a way discredited by normative methods that render urbanism opposed to a constructed natural, a city of structure rather than event, and belief of the urban as an engineered, implicitly fixed regime placed in ports.

The steppe is only harsh to the man who does not understand the inevitability of change. From geology to deep ecology, steppe urbanism as configured by our nomadic science inverts the optic of one way totality in favor of mutation and feedback.

We prisoners of geography are also outside the boundaries of simulacra, he continues. Western

landscapes have been constructed from imaginings of data, normalized indices of arability, material good availability and wealth, artifacts of post War, Breton Woods, Big Science. These indices, these datascapes, conflate time and space as one, he says, they mark "over there" as "back then". We are made savage, "a specter in a world of appearances", by being unconstructed on a map, at the edges of hyperreality. While the western world enters the labor of information and immaterial goods coordinated by hypercapitalism, we remain mining ore and herding sheep in the plans of some World Bank Report. The problem remains, of attempting to solve a problem itself.

As the group of technologists near the end of their study, they remain no closer to a nomadic science. Frustrated, the young geographer proposes to his compatriots: what if we embraced an advanced form of capitalism succeeding where Western countries try for but fail at? How do we execute the episteme of the camp into market -- something supremely networked, profoundly particular and autonomous? How do we skip the phase of industry and materiality for an economy of transience, of the unseeable?

With this, the geographer is made head of the Ten Year plan.

In 2011, nomadic pastoralism still thrives despite the shifts towards a mining economy. Disperse energy infrastructure is provided by the government for nomadic pastoralists, allowing small scale wind and solar energy to power televisions, satellite dishes and cellphones, enabling mobile banking and long distance communication, fuel stations for motorcycles and Soviet jeeps. The pastoralists sell valuable cashmere and wool to its neighbor, China for severely undervalued prices. They engage in coordinated, regular movement along dirt roads that have etched themselves into the Mongolian steppe. Pastoralists flood the capital of Ulan Baatar in search of waged labor during livestock forage shortages when there is little stored fodder.

Despite the promises of mineral wealth, Mongolia is in stasis -- the intercontinental Millenium Highway project that to connect Mongolia with Asia remains unfinished, unable to deliver all that is solid which melts into air.

In 2012, the Ten Year Plan takes effect, a whir of activity and optimism. Markets are made, fodder is sown, men till the land while women become equals in the eye of the nation state. Stasis is a forgetting of time and geography.

The team identifies 133 sites across the Mongolian Steppe, through seeing the vitals of nomadic and mining economies -- wells, road and river junctures and the key to pervasive networks: information telecom infrastructure of existing cellphone towers. Exhuming the old model of the caravanserai, or trading post, the Ten Year Plan utilizes nomadic pastoralists to form a nationalized logistics company, with their hardy camels and yaks, fast horses, 200 leftover cargo planes from the Soviets, capable of the most efficient transport of goods across vast territory. These camp-like, nomadic FTZs are temporary sites of seasonal settlement that adjust, expand and change according to market, climatic and ground conditions. Seasonal economic suitability is a reflection of the Steppe's political ecology, and these FTZs increase and decrease in settlement from season to season, vanishing or sedentarizing on a longer time scale. These 133 sites are mapped out in relation to their climatic and ground parameters along with ties to nearby economies ranging from mineral ore extraction to cashmere harvesting.

By 2013, the geographer finishes work on his reverse engineered index, the nomadic capitalist index, a stochastic model of movement. This index argues against the simple suitability map, with its boundaries of delineation and assumption of fixed movement from central point to the next central point.

He explains his nomadic trade index:

In our abstraction of data, it is our chance to create reality itself, to place us on the map. We begin with the abstraction of the Digital Elevation Model, an index of topographic value. This data is from a thin slice of the sensing spectrum, and forms each cell of data. Using these values, we can predict the probability of movement through a matrix of probability; the stochastic matrix.

As a stochastic matrix, the system will eventually reach steady state. Each cell's value can be changed according to layering -- of wind, water, cellphone availability range, geologic deposits, weighted and added. Movement is then modeled through this, and shown to us is how settlement happens : temporary agglomeration.

And this is how settlement happens.

The geographer visits the site of Olon Ovoot, in the southern region of Mongolia. Formerly a remote, unsettled site, it is now home to 2000 households and 500 miners who work in the nearby gold mine. Nomadic miners also wander through in the winter, panning for gold. Working with designers and data miners, anything without multiple efficiencies and uses is deleted. Nothing is without use.

To the notion of time, the geographer rearranges and amplifies existing processes happening along the Mongolian steppe; programs which coagulate in these nomadic Free Trade Zones, a form that confronts him at Olon Ovoot. These processes accelerate each other and manifest themselves into an infrastructural circuitry of components.

This system's logic operations begins with the creation of an air field from gravel mine overburden and its hangars, simple structures that are adaptive containers for seasonal program. The airfield runway, determined by wind, sits on top of an existing road allowing for vehicular and plane use, creating a temporary logistics corridor buffered by airplane hangars.

The hangars are constructed atop felt foundations, made from the vernacular materials of wood, and felt with a plastic tarp facade. These hangars were designed to collect water at their bases, forming livestock pools, and inside allow space for four Antonov 24 planes and an ICT center. The side curves allow the storage of silage for winter time, when the hangars are used as holding shelters or subdivided for markets which are simultaneously post offices for receiving goods ordered by cellphone, classrooms, and cashmere processing using felt tents suspended from the trusses.

As logistics sites, seasonal contraction and expansion of settlement is anticipated, mitigated by the leftovers of mining exploration -- a network of resistivity sensors that create responsive patterns and arrangements of nomadic tents and livestock corrals responding to water availability and soil stability. This level of data gives a closer resolution to a landscape produced by data and information.

The livestocks' manure of the nomadic logistics company is used for electricity in the FTZs during winter, placed at the edge of the infrastructural corridor for efficient drop off, and close to the stacked trailers for the miners employed by large companies. With less settlement in the spring, manure is also allocated for the beginning of sown fodder fields that become stored for the winter season. In the fodder fields a cycling of forage crops occurs, an amplification of Steppe species rather than industrialized agriculture which disrupts Steppe soil into desertification.

Cashmere processing and livestock sale are given extended seasons, and allowing for processing of cashmere which makes its market value more than raw cashmere. This processing occurs in the late fall and early winter, when snow packs and storms put a halt to movement and additional sedentary activities such as data processing can occur, within the contained shelter of airline hangars that have been subdivided for programmatic needs.

Increased nomadic movement in spring and summer is capitalized upon for transporting ores during mining season which happens during summer months, the same movement used for mineral exploration and mapping during spring prospecting season, resulting in the same data that is processed during winter months. This movement is also the vehicle in which saxaul seeds are scattered along informal roadways, creating a wind break for the forage fields and overall settlement.

Other informal economies such as winter time nomadic mining become formalized through multiple use of agile infrastructural components and their operations maximized for creation of naleds, a Soviet technology of 8m thick ice shields formed by puncturing holes through ice. These naleds store drinking water for the spring-summer droughts, supplementing the water from existing wells in the FTZ sites.

Built at the existing well sites are the bathhouses, social condensors which allow for a mixing of miners and nomads, women and men, children and livestock. Livestock manure fuels the burners, creating scalding hot conditions for steam rooms and hot showers with intense water pressure from well depth and its internal piping configuration. Its design is a mutation of existing bathhouse typologies, and its brick envelope recalls Soviet bathhouses in the region. At eye level, bricks tilt to allow air circulation into the bathhouse, where steam escapes, a signal of rest along the steppe. The same steam obscures the gaze of passers by, although it is one mislaid brick, a window of memory, or was it future, that lures the young geographer in...

My letter to you ends in 2020, just three years ago. The Ten Year Plan near completion, overwhelmingly successful, yet not without its social ills. Whatever Mongolian culture was, it has disappeared, replaced by an onslaught balanced in dissent and free speech, bureaucracy and democracy.

Mongolian elegance is all the rage in East Asia. Cashmere and gold, wool and iron remain Mongolia's valuable exports. It is a stronghold of inland logistics, bridging the divide between Central Asian neighbors, Russia, China, and the sea.

Other countries have begun to develop their own indices for assessing economy, without the parameters of steel railways, and the nomadic capitalist index has spread across the Steppe. Bathhouses and air hangars remain across the steppe, welcome sites to weary traders.

For fresher markets, group of long time traders who have been always doing the border crossing from Zamyn Uud set up camp in the sister city of Erlian, the Chinese border town 8km away. These traders have long fueled the gray economy, bringing cartons of Chinese cigarettes, rolls of cheap toilet paper and cheap plastic umbrellas in Mongolia and selling them for cutthroat prices. Dissatisfied with their political territory, these Mongolian traders begin to colonize the edge of Erlian, an image that Mongolians passing through call "Ulan Baatar twenty years ago" at the sight of Soviet style blocs and white tents.

By now, China's economic stimulus method through infrastructure building has lagged; only so many rails and roads can be built to remain unused. China again resists these nomadic economic insurgents just as it did thousands of years ago. Hoping to shut out the nomadic traders and their dangerous cosmology, they launch a campaign against the Steppe itself, to detach the land from these clever entrepreneurs by amplifying a Green Wall Project of Steppe destruction.

The geographer, who by now is not so young, is alarmed by this turn of events. As the Mongolian traders become even better at this exchange of cheap goods than the Chinese, he wonders: what happened to the autonomy he so imagined? He thinks to his passing romance of ten years ago, a romance between data and technological aspirations, the universal and the particular, parameters and poetry.

He remembers what his grandfather told him. "The steppe is vast and man is small. The steppe takes no sides." It is true, he thinks. Like all places, like all romances, time comes to pass for the truth of survival. He stands on the edge of Olon Ovoot, seeing former ovoos that dotted the land, marking topography. It is now the cell towers that are the modern ovoos.

The simple fact: *the impermanence of things*.











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Overall compilation of data

Altitudinal range of Steppe activities (the Steppe section)



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NP WELL Traditional

MINE-GRAZING WELLMINE WELLHi-productionHi-productionwell w. water storagewell w. water storage+

NP WELL

WINTER

Reshaped Topographies

Gers + Berms

Hangars

Settlement shaped by real time conditions

Multiple use of agile infrastructures

10 km

