TIMEWISE: Temporal Urban Dynamics for Urban Resilience
Lessons from the Global North and South
Codebook, Quotations and Memos

Endogenous Dynamics and External Drivers of Urban Change
Speed and Duration
Codes: speed/ duration/ temporal, dynamics, planning, timeframes, time horizon, short-term, long-term, scale, period, future

{P30: When you do a city as large as Mumbai, obviously, you cannot make short-term plans.}

{P38: The speed pf the temporal and statutory cycles are a mismatch. The concept of time is elastic and dominated by urgent issues}

{P34: "We need a multi-level framework for assessing (long-term) trade-offs such as coastal roads, overhauling the drainage systems, using nature-sensitive areas for residential growth in a space-starved region."}

MMR, in the absence of a long-term vision, cannot visualized large-scale trade-offs. Hence, plans must rely on shorter term benefits [P29].

Rhythm, Cycles
Codes: Rhythm, cycles, lifecycles, frequency

{P1: "MRA acknowledges different elements in a city with different frequencies and rhythms. The function of the building changes much more slowly. You should make structures whose functions can be modified in 10-20 years. Cut these rhythms loose from each other."}

P1: So, I see that there's different elements in a city that have different frequencies. the user that occupies a building changes every few years, but the function of the building changes much more slowly. you should make that in such a way that it can be easily replaced in 10-20 years. Cut these rhythms loose from each other.

There are already three frequencies in the building. At the urban level, in the public spaces the same: The way we decorate the furniture of the public space, the trees, the benches and the streets, the pavements. That changes also every 10-20 years. the street structure plan hardly changes. Only when there is a big event like an earthquake or flood or a bombarding, then we change the layout of the city.

From the outside, you cannot tell if it's a hotel or school, or it's office, or apartments. They can even transform over time. That is very circular.

{P7: "Planning and policies must account for multiple and nested temporal frames within a single planning timeline."}

{P36: "India's planning is stuck into a 10-year time step because the census is a ten-year time step."}

{P14:``Is its future proof?" Is it able to absorb changes? Can it be easily replaced in 10-20 years?"} you should make that in such a way that it can be easily replaced in 10-20 years. Cut these rhythms loose from each other.

{P9: "MRA's fabric is not changing dramatically as there is a lot of historic inertia in the infrastructure systems."}

P30: There's a lot of scope to do long-term. For instance, when you do a city as large as Mumbai, obviously, you cannot make short-term plans.

Drivers – Extreme Events, Disruptive Technology
Codes: drivers, technology, extreme, disruptions, catalysts, disasters, floods, politics, ageing, shared

{P36: "For a rapidly urbanizing region investing in new systems, a vision for 20 years is too long given the speed of technology and climate change."}

P29: MMR acknowledge the role of system-shocks and disasters in driving urban transformation. "life changing infrastructure projects'" need to be part of statutory documents so they can be part of the though process of urban plans.

P36: Disruptive development like a metro system, a new airport or newer urban functions requires creating exceptions. Planning is a become regime of exceptions.}

P34: MMR that sees a combination of extreme rain and strom surge from the sea requires a mechanism to absrob as high volume of water within its boundaries [P30]

P30 as technology evolves, when you see the picture is very clear, then you should go that extra mile to adopt new systems.

P29: What other functions are suitable for that particular part of the city, such that it can reap benefits of big projects and have a positive feedback loop."

Catalysts or Drivers for change

Both cases acknowledge the role of political motivation and extreme climate events as catalysts for change and reaffirm the realization of the catastrophe theory.
MMR growth spurts are also a result of big ticket infrastructure projects, also labelled as 'urban acupuncture' projects to revitalise an area or accelerate economic growth like new economic hubs (BKC) which become major employment generation centers, a networks of new metro and subway lines and a coastal road. These long-lasting projects are not always integrated into formal plans and can potentially create hindrances to the development trajectory [P29]. Envisioning the functional future of these projects and their ripple effects on socio-economic changes is not assessed [P27].

[P25]: they will show interest because they are vulnerable and they are facing those risks, otherwise it was quite low in priority

P29: "even in Mumbai somebody suddenly comes up, they say, "We must have a desalination project. Because Chennai has it. We have so much of seawater. So we should do it". Then the tendency is to do a pilot project"

P29: What other functions are suitable for that particular part of the city, such that it can reap benefits of big projects and have a positive feedback loop."

Only when there is a big event like an earthquake or flood or a bombarding, then we change the layout of the city.

Approaches and Tools to Understand Urban Change
Codes: approaches, mechanisms, responses, tools, incremental, transformative, forward-looking, land-use, landscape, layers, networks, evolution, metabolism, flow, circularity (pertaining to urban metabolism studies)

MRA

P1: If you have a system that is too structured, then it works very well at the current moment. But once the world changes, they are too structured to change. So, they go under, they're just too slow to change

P1: If we think about the future from a Dutch context, that we're so prosperous, we have so much money with so much to lose, that a lot of Dutch people think about the future, about change and something that they could lose. There is an overarching resistance to change.

P1: Don't make your plans very detailed. If you want to make them very detailed, please build them up in steps.

P1: The overarching sentiment is the resistance of change

P1: The MRA in particular has heavy inertia of its past history of formal, engineering-driven planning and has been criticised for being too detailed and too structured.

{P2: Make an abstract vision for the future. Then it works out in different programs that can change so you can be flexible.}

P2: What you do is you try to make quite an abstract vision for the future. And then it works out in different programs and these programs can change so you can be flexible a little bit selective.

P3: we have maps that can give prioritizations and we kind of try to facilitate those discussions

P5: Having a redevelopment but also that moment of renewed interest in the area gives us the opportunity to actually review what we wrote down 10 years ago and to make a new development perspective where we actually integrate also climate change

No discussion on renewing, retrofitting areas below sea level. People trust the national government and that dikes will project them.
P5: future scenarios, which are still very far away and trust in technology here and water management is so high due to the history.

How do you secure something vs how do you be adaptive?

P5: policy to implement climate norms will also always be dated, you know, because this is changing so quickly. So how do you actually allow the policy design to go beyond what is set into stone, because it's so dynamic

As both cases see a high volume of redevelopment and maintenance projects, they recommend a formal methodology to use renewal as a window of opportunity to review regulations and adopt a new development perspective that can also integrate climate goals [P5]

P5: I think you have to take into account the long-term transformation process. many urban areas in Amsterdam are long term projects that are about transformation. For plot developments might happen or not. Is brings a lot of uncertainty.

In terms of concrete Approaches and Tools to Understand Urban Change, MRA performs significantly better. MRA benefits from a historical record of land-use changes at the national level updated every few years since 1986 to understand the most and least dynamics functions. MMR does not have a time-series of land-use maps to understand dynamics. Limited academic work focuses on small parts of the region. MRA is also making steps to transition to a circular economy with a preliminary roadmap which needs further development. The City of Amsterdam within MRA has a more detailed strategy to measure flows in the built environment and a mandate for renovations and building maintenance to encourage circular flows, to extend temporal lifecycles of systems. However, participants do not discuss using these sources in decision-making.

50% of all renovations and building maintenance activities in Amsterdam will follow the principles of circular construction. – impacts energy flows

P8: really want to fight your planning or want to get rid of your plans. There are also techniques to link return periods to these storylines, but of in the future each storyline will be different, it will evolve differently again, but at least you have thought of some catastrophic storylines

P3: We really need to try to not make very big investments, where we later on think we shouldn't have done them. We need to find a way where we kind of make progress, but then keep different options open or so. It's difficult

P7: old harbor area will be transformed into a residential area. It's one of our cases in this thematic study on water safety. For instance, for this area, we are really looking into the elevation heights to be resilient? It's also a choice you can only make in the beginning.

P6: Finally, interesting knowledge area is how to find good connections with other challenges in the physical environment. Like the energy transition, if you open streets, the underground of a street to replace sewage network, you can do lots of couplings with other pipes for water transport, energy transport under the pavement of the road.

P10: What is important though, in terms of design and long-term perspective, which comes from the definition of adaptability according to IPCC. The adaptability of the urban environment. Vulnerability according to the IPCC includes the adaptability of the city, is not only the risk, it's also the adaptability that is to be part of your consideration.

P24: normally 5 year plans based on the priorities of the current government. But climate projections do not give any significant information for five years. You will have to have a medium term or long term vision in mind to use this concrete information.

P29: in Indian urban planning system, your time span, for which you basically think of is above 20 years. Because all our development plans if you see, active for 20 years. So now 2031 plan of Mumbai, the development plan is right now under process, because the preparation started in 2011. Finally, it got prepared after suggestion and objection and it was submitted to government some time in 2015-16. But if you see the horizon is of 20 years but that also first 7-8 years are spent in that process only. And then actual execution happens in the next, whatever year so normally the realization **is to the tune of 25 to 30% of this plan**.

P29: doing infrastructure projects in cities like Mumbai, it becomes a big challenge and we need to put a lot of energy to push these projects, and every time we have to harp upon the immediate advantages, and how they are better than the immediate disadvantages, but the long-term vision is at times, missed

P29: planning process and thinking is very conservative, based on existing land use pattern and matched to conventional amenities for the future.

P30: Nearly having incremental changes is not going to help anything, because by the time you finish the incremental changes, you have some other kinds of innovation.

P33: So this blueprint approach can be very successful if it's used as a framework, with a lot of authority to the local bodies to change and adapt as they see the situation evolving. / And against that scenario setting the sectors which are problematic, whether it is roads on the coasts, whether it is drainage systems. / So against all of this, you have a blueprint, which forecasts the best optimal path to the future.

P34: for a metropolitan area of that size, this is not a new thing. You have to look at at least 30-50 years and think regionally. Effectively, especially if you're looking at climate you need to take 100-year horizon, to look at how development may or may not take place.

P34: the framework has to have, multiple levels, because it's multiple kind of engagements but it also has multiple temporal frames. That's a tricky thing to do. To build an integrated assessment model, which has the specialization that you have that's dynamic, and has the ability to look back and forth, because we need to backcast to calibrate and also do it at this level is pretty difficult.

You need to have a long-term plan, over 30 years. What is the kind of city that you would like to have? What is the kind of land that will become available because of changes that will happen, new buildings that will come up? Where is it that you could leverage your plan by sanctioning a plan that will allow you to do what you have planned over the long term? That's why a long-term plan has to be there, because it's possible to do it, if you have that kind of a long-term plan. If you don't have it, then ad hoc decisions are should continue to be taken.

Projects with longer temporal scales face heavy opposition> need to be in official documents for lega sanctity.

P36: If you have a macro level plan, which lays out a vision for 20 years, I think it's too much given the speed at which technology change is occurring.
P38: If you're doing a 20-year plan from 2010 to 2030, it has to be published before 2010, not in 2015.

MMR uses a conservative, prescriptive approach based on past metrics, market driven. Large infrastructure projects disrupt existing planning cycles.

Need for a framework for a multi-level framework for assessing trade-offs such as roads on the coasts, or overhauling the drainage systems, using nature-sensitive areas for residential growth in a space-starved region. The framework can borro from stratified planning models to acknowledge the multiple temporal frames.[p34]

P35: So MCGM's task, if you look at it, this long-term planning has become just development regulation. Planning is seen as development regulation.

Vision building, is often done by external consultants finishes as 'smart, crisp english goals with no accountability'. MMR has a restrictive FSI regime that monitors development at each parcel. Hence, anything remotely different or disrutive such as a new airport or metro lines requires creating exceptions. Hence, the DP and the DCR has become regime of exceptions, where there is no integrated idea of urban renewal [P36]

P35, 36: MMR, on the other hand, is criticised for having too little structure and an overtly regulatory, prescriptive approach in which functions and restrictions are assigned at the parcel level - planning process does not account for a dynamically evolving urban structure and regulations are set considerein a system under equilibrium. The temporality of the informal urban landscape cannot be assessed using existing planning as they cannot they be fully regulated to determine their emergence in the future.

{P8: "There are techniques to link (flood) return periods to planning storylines, but the future will evolve differently, but at least think of some catastrophic storylines."}

{P33: "The more you are in reactive response mode, the lesser time and energy, and resources, to devote for strategic thinking."}

{P36: Development could be controlled using transit networks which can offer a spatial structure for future growth, using it as a backbone with long lifecycles.}

Tighten internal municipal processes: encourage circularity: The City organises tenders for its own real estate, public spaces (above and below ground) and land allocation tenders such that they encourage circularity,

monitor is used to measure the environmental impact of the production and consumption of goods and services, including the treatment of waste.

{P5: "You must consider the long-term transformation process. Plot developments might happen or not, it brings a lot of uncertainty."}

P34: the framework has to have, multiple levels, because it's multiple kind of engagements but it also has multiple temporal frames.

P33: , I don't think anybody has looked at City Planning from the uncertainty principle, and how the future is so uncertain, and is going to become more uncertain with climate change.

Perspectives, Challenges and Gaps
Codes: perception, challenges, institutional, issues, gaps, delays, process, update, regulation, renewal, maintain

MRA

P2: *Yeah, we always have the Structuurvisie that was published in 2012, which is totally no up to date. The City grew much faster*

P7: For the other parts of multi-layer safety, there are no regulations, no standards, the governance is still vague. It is hard. Of course, the Delta program itself has the Delta decisions in 2014. They did an update last year. Every 6 years they see, first of all, if they should do some adjustments for the long-term scenarios.

*P3: Then talk with the other partners and see what they have for challenges in the **near future**, so that you only have to open the streets, one time.*

{P29: "Planning is mechanical. Projects with long gestation periods are hard to implement as planners can't see beyond even three years."}

{P5: "Policies to implement climate norms will always be dated. How do you allow the policy design to respond and go beyond what is set in stone?"}

P8: For the Delta program the longest time horizon was 2100, for the extreme sea level rise we have looked further into the future.

{P3: "Amsterdam's Structurevision (2012) became outdated soon after its release as the city grew faster than expected."}

{P22: "In a war, you don't stretch decisions for six months, and cities in India are at war."}

{P7: "For the other parts of multi-layer safety, there are no regulations, no standards, and the governance is vague.}

{P3: "An issue with the temporality of formal planning documents is the lag in the statutory acceptance of the plan".}

MMR

P29: Long-lasting projects are not always integrated into formal plans and can potentially create hindrances to the planning timeline.

{P29: planning is mechanical. The thought process of envisaging infrastructure projects for next 40-50 years is missing}

{P37: "This lag in planning and implementation timelines cascades to day-to-day decision-making which then stretches to several months."}

{P29:``The planning horizon is 20 years, but the first 7-8 years are spent in processes. The actual execution and realization are about 25 to 30\%."}

P35: there is nobody to do long-term thinking

P30: Indians, by nature are conservative. They don't want to take too many risks. Partly that has to change in the modern world as technology evolves. When you see the picture is very clear, then you should go that extra mile to adopt new systems.

Reverence to the planning process is low (P29). Legal sanctity does not exist as large projects can be opposed by citizens and civil societies <u>– trade offs not visible / it has to be mandated in law</u> (p33)

P37: "the 1991 DP was sanctioned in 199. We have placed the new DP by 2014. 20 years from 2014, the new DP is for 2034, however, the DP got sanctioned in 2018. So, now the DP will be in force till 2038 because the sanction came in 2018."

P35: The biggest problem in Mumbai, in India, is synchronicity - getting the data in time for a plan. We kept waiting for updated Economic Census results and as far as I knew, till I left it hadn't yet come

P33: I don't think that there is decentralized scenario plans available at all. Okay, so these are very broad at the top level available. They're not that helpful. And, and it takes years to create, like the BRIMSTOWAD report, which told about the drainage system of Mumbai. It takes years to create a report like that, but by the time that report is there, it's already getting outdated.

If you haven't solved them, then you are always in the reactive mode. Because you have to keep solving problems.

No decentralised climate scenarios available at the regional or urban plan than can be utilised by decision makers for evidence-backed decisions. [P22, 33]

MMR acknowledges varying and more unpredictable climate patterns. Both MMR and MRA have a general aversion to risk.

P30: As technology evolves, when you see the picture is very clear, then you should go that extra mile to adopt new systems.

Codes: process, update, regulation, renewal, maintain, lock-ins

planning instruments are regulatory, not strategic.

P3: We really need to try to not make very big investments, where they are locked-in we later on think we shouldn't have done them.

{P24: "By the time the SAPCC (climate plan) was released, it was outdated because the models were outdated, scenarios changed, urban population and land-use changed rapidly."}

{P7:``The Delta program wants to update data every six years and make adjustments for long-term scenarios."}

{P5: "We recommend a formal methodology to use `renewal' as a window of opportunity to review regulations and adopt a new development perspective to integrate climate goals."}

{P29: "There is a disconnect between the (urban) system and the plan. The Mumbai Metro was conceptualized in 2014 but was never reflected in formal plans."}

NOTES

Why are temporal dynamics important?

P7: *"Until 2050, we don't have to worry about sea level rise, but everything we're building now will be around after 2050. You build it for 50, maybe 100 years. What should we do in order to keep all those adaptation paths to future open?"*

Disconnect between the system and the plan. Mumbai Metro was conceptualised in 2044 but was never reflected in the formal development plan [P29]

P21: Where do all of these different parts of your city come together as a part of a planning process? They don't, because the DPs is basically concerned with this sort of micromanagement of parcels. That larger planning process doesn't come into play.

Approaches

Participants in both cases acknowledge the need to empower local decision-makers to think out of box and propose local level responses to change and adapt to uncertainty. However, both cases have an overall aversion to taking risks or adopting more non-confirmative planning processes to improve adaptability. The formal urbanization or planning documents confirm to a single vision fir the future and dedicate a 20-year time period to achieving it. The MRA is aiming to make this process nimbler by updating climate assumptions every 6 years, but this has not been fully realised in practice.

The MRA in particular has heavy inertia of its past history of formal, engineering-driven planning and has been criticised for being too detailed and too structured [P1]. Participants recommend making an abstract vision for the future which can integrate different programs that can be flexible [P2]. **MMR that has emerged from a mix of formal and informal growth suffers from very little spatial structure but the planning guidelines are very detailed and prescriptive, impeding flexibility.** As a result, the planning mechanism in both cases is heavily incremental.

P37 explains that the 1991 Development Plan (DP) for Mumbai was sanctioned only in 1996, whereas the new DP for development between 2014-2034 was only sanctioned 2018. Hence, the original assumptions and climate projections utilised are often outdated by the time the plan is in force. This lag in timeline often cascades to day-to-day decision-making which often stretch to several months considering the urban system to be static. It also brings a disconnect in achieving goals for employment creation, share of public transport, etc. [P38] Like P22 emphasis, 'In a war you don't stretch decisions for 6 months, and cities in India are at war.' Similarly, by the time the SAPCC was released, it was already outdated because the models were outdated, scenarios changed, urban population and land-use changed rapidly [P24]. The

focus remains on short-term, immediate returns as there are not many examples of long-term cost benefit assessments. This asynchronicity also extends to data availability where official data is often no accessible even to planners within the system [p35].

For a rapidly urbanizing region investing in new systems, a vision for 20 years is perceived as too long given the speed of technology and climate change [P36]. It could benefit from shorter nested temporal frames within a longer term framework. For MRA, where the urban fabric is not changing dramatically, the of historic inertia in the infrastructure systems. Hence, it become more suited for longer time steps.

MMR is developing its fundamental planning knowledge base and building stronger institutional setup for long-term planning. It does yet not have dedicated resources to devote resources for long-term strategic thinking.

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