

# The Promise of Infrastructure

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## 1. Introduction

Everyday, Mumbai's water department sources and distributes **3.4 billion liters of water** through more than three thousand of miles of pipe to residents and businesses in the city. Residents get this water for a few hours a day, on a schedule (e.g. 6-9am), set by city engineers. Working between the ward and head offices, engineers decide when, and for how long each of the city's 110 hydraulic zones get water. Following this, the schedule is operationalized by a small army of *chaviwallas* (key people), who ride in municipal vans on crowded city roads **to turn eight hundred valves on and off everyday** in the city with a series of specialized cranks and levers (known as keys). As they turn valves at the rate of one for every minute of the day, their work is absolutely vital to urban life.

Therefore it was with some excitement that I boarded a city water truck together with a municipal engineer in September 2007. **The truck, outfitted with six key-people, a driver and a range of cranks, keys and wrenches stored in the back**, was about to start the morning shift. The driver started the truck and drove to the first valve, at Sahar village. Sahar village sits between the cargo and passenger terminals of the international airport (or **more accurately, the cargo and passenger terminals of the international airport were built on Sahar village**).

Right by a little bridge we make our first stop. The water mains ran under the bridge. Though settlers lived on top of the high-pressure water mains, a valve on a different line regulated their access to water. This line released water to them between 5.30 and 8.30 in the morning. It was 8.30, and the workers had arrived to turn off the valve. As we got out of the truck and walked to the side of the bridge. The workers inserted a large ‘key’ and crank through a metal plate and into the first valve that lay below the street. Working together, three of them begin to turn the crank, turning the valve shut. **As they did their work, water, the enabler of urban life, was moved, swirled, shifted and diverted right under our feet.** New zones of hydraulic pressure were enabled by this work, and almost unseen (but for the *chaviwalas* that stood over the pipes) different publics and political subjects are made to live.

In a recent review of the emerging literature on the anthropology of infrastructure, Brian Larkin has defined infrastructure as “**matter that enables the movement of other matter**” (Larkin 2013). Drawing together the work of engineers, planners, users and managers, infrastructures are dense social and material formations that are critical to our experience of everyday life and also our expectations for the future (Larkin 2008, Star 1999). **They have long promised modernity, development, progress and freedom** to citizens and governments around the world. As deepwater rigs drill for oil in West Africa’s offshore waters, or roads in Peru or Bangalore promise new connections, and emerging economies like China dams at an astonishing pace, **infrastructures are seen to be critical locations through which social or political systems, like capitalism or the state** are given form and *performed*.

At the same time as they promise **circulation and distribution**, however, these precarious assemblies also threaten **breakdown and failure**. From the Deepwater Horizon conflagration to Fukushima Daiichi, the collapse of school buildings in China, Hurricanes Katrina and Sandy, **to the failure of the derivatives market in the recent financial crisis, infrastructural breakdown saturates a particular politics of the present** (Collier 2011, Petryna 2002). As nation-states and corporations build new infrastructures to facilitate global flows of materials, energy, and information, the material and political lives of infrastructure frequently **undermine narratives of technological progress and economic growth** and instead reveal fragile relations between people, things and the institutions that seek to govern them.

This tension between aspiration and failure, **technical progress and its underbelly**, makes infrastructure an extremely productive location to examine the constitution, maintenance and reproduction of political economic life. *What do infrastructures do?* And what does attention to their lives- their construction, use, maintenance and breakdown- reveal?

On the one hand, governments and corporations point to infrastructural investment as a source of jobs, market access, and public safety. On the other, communities worldwide face ongoing problems of **service delivery, ruination and abandonment and use infrastructure** as a site both to make and contest political claims.

As infrastructure matters both to the life of institutions and also to the biopolitics of populations, this workshop attends to the everyday life of infrastructure in different parts of the world to answer three questions: First, **what kinds of politics, socialities and subjects are embedded/ entailed/ informed** by the material forms of diverse infrastructure? Second, **why**

**does infrastructure – a material form that is inextricably bound up with projects of state formation and reform- become a critical site of politics today?** How does it produce historical and materially situated forms of biopolitical government and citizenship? Third, **how do infrastructures participate in and produce changing forms of the public and the private;** of states and corporations; of citizens and consumers? By attending to the formation, maintenance and breakdown of roads, water pipes, or electricity grids in everyday life, this workshop re-engages material forms in the theorization of social and political life to theorize key anthropological questions about affect, aspiration and imagination; about modernity, development, and temporality; and about the production of states and markets, the public and the private.

## **2. Infrastructures of Theory**

For some time now, **“infrastructure has received too little attention in the social sciences, particularly in anthropology.** By this, [we] do not mean that anthropologists, and other social scientists, should necessarily find roads, bridges, and dams interesting topics in themselves, but that the long-term effects of infrastructure in shaping people’s everyday lives in most parts of the world, particularly in most parts of the developing world, deserve much more attention than has been given in the literature. **[The] uneven and erratic supply of water, power, transportation, and sanitation** [that marks our expectations of service delivery in “most of the world”] profoundly shapes the structures of everyday life. Indeed, we find it surprising

how little of that experience finds its way into Anthropology” (Gupta, this seminar, paraphrased/quoted)

As roads, irrigation systems and other infrastructures mediate the relations between local environments, political structures and material practices of various social groups, cultural materialists have drawn attention to the ways in which material environments are productive of social, political and environmental institutions (White 1943; Harris 1966). **Though this work is particularly helpful in theorizing material infrastructures**, it does so in ways that as Dalakoglou and Harvey point out, “**re-establish spatial-cultural boundaries through particular cultural groups**”. Realist approaches withered under post-structural critique, particularly in anthropology. Drawing most especially on the work of Michel Foucault, this body of work showed how discourses, narratives, and language gave form to infrastructure development as much as concrete, wires, or zoning regulations. Following these interventions, **anthropological approaches to infrastructure have recently highlighted how power, knowledge, and the well being of populations** are constituted and compromised by infrastructure projects.

As infrastructures, their absences, and their catastrophes continue to shape our lives, anthropologists have begun to **reconsider the vitality of the material world** in the wake of post-structural theory. Recent work in Anthropology, Geography and Science studies urges us to think about infrastructure as an **assemblage of material “things” with institutional actors, legal regimes, policies, and knowledge practices** that are constantly *in formation across space and time*. As water pipes, electricity grids, and roads seldom work as they have been designed, scholars of urban studies in particular have drawn attention to the flexible, provisional ways in

which social networks step in when material infrastructures fail to deliver (Elyachar 2010; Simone 2004). The causes or effects of breakdown are not always rooted in social relations, or technical competency however (Graham 2010, Bennett 2010). Recent work has shown how material properties of infrastructure networks also participate in the constitution and reproduction of their social and political worlds (Collier 2011; Rogers 2012).

### 3. Why Infrastructure Now

In an evocative discussion of a AAA panel that inspired this workshop, Dominic Boyer asked panelists to consider, why infrastructure? Why now? Perhaps, he suggested,

**Infrastructure indexes a politics of the contemporary ...** The conceptual rise to intuitiveness of infrastructure roughly *parallels the crisis and stasis of neoliberal governance since 2008*. This hardly seems accidental, [he suggests] especially given that the Keynesianism that preceded neoliberalism [...] often utilized large-scale public works projects as key instruments for managing “aggregate demand” and the affective ties of citizenship. Thirty years of privatization, financialization and globalization later, this legacy of **“public infrastructure” has become rather threadbare in parts of this country**, capturing a general sense of evaporating futurity in the medium of corroded pipes and broken concrete. Thus, **the turn to infrastructure could be viewed as something like a conceptual New Deal for the human sciences.**

Having offered that potential explanation, Boyer actually encouraged panelists to look *beyond* a nostalgia for petro-fueled Keynesianism, to see the infrastructural turn instead as part of the

wider anti-anthropocentric turn in the human sciences ... “a sign” he writes, “that we are conceptually re-arming ourselves for the struggle against the Anthropocene and the modernity that made it.”

Indeed, the question of modernity, Keynesian and otherwise, is everywhere at stake in infrastructural forms. As infrastructures move through **unpredictable lifecycles of aspiration, financing, construction, maintenance, repair, and destruction**, they reveal the shifting **temporalities of modernity in most of the world**. On one hand, as recent events like Hurricane Sandy or the I-35 bridge collapse in Minneapolis have made very clear, many public infrastructures- roads, water networks, electricity grids rail systems- built in the late nineteenth and the first half of the twentieth century are beginning to crumble, most especially in the US. On the other, as new infrastructures are constructed through public-private partnerships in the global South, they not only draw together new arrangements of states, engineering corporations and finance, **they also require a different relationship between infrastructure’s social actors**.

Infrastructures **bring certain kinds of social life into being**. By focusing on the lives of infrastructure, we draw attention to the iterative relation between the *technologies of politics* - the imaginations, discourses, laws and practices of everyday life; and the *politics of technology* - the manner in which things act in ways that are simultaneously material, meaningful and eventful. Such an approach helps us theorize existing and emergent social, political and institutional forms (**such as the state or the corporation**), changing paradigms of management and governance, and new forms of personhood effected in the contemporary moment. How are infrastructures reformed and claimed? What do they produce in excess of the things they were

constructed to deliver? We suggest that the contemporary theoretical moment in anthropology—in which **it is increasingly critical to think about politics and materials together**, makes infrastructure a promising site for ethnographic research. By examining the worlds of pipes, roads, oil rigs, smokestacks, toilets, and even infrastructures of education and knowledge, in this seminar we've been working to deliver new insights to theorizations of political systems, development, and the articulation of materiality and meaning.

The papers in this seminar congeal on **a few key topics**, marking exciting new directions in anthropology. We explore three of these themes in turn here: **The Times of Infrastructure**; **Materiality and Biopolitics**; and the **question of Publics**.

#### **4. The Time(s) of Infrastructure**

Considering the temporality of infrastructure allows us to think about its materiality, its immersion in the social or biopolitical, and its centrality to collective projects about the future. Thus, infrastructure is not only about pipes, steel, and concrete, but also about the promise of a certain kind of future, the expectation of a better life, the yearning for something yet to be achieved.

The first sense in which we can speak of the temporality of infrastructures is their “project life.” Infrastructures tend to be what economists called “lumpy” investments – that is, large investments of capital that pay off in the medium to long run. That is why some infrastructure can be put “out of sight” – pipes are buried underneath roads, wiring systems in homes inside walls, etc. When it is visible, because infrastructure is often engineered to last, its



imprint on the landscape can sometimes be seen for centuries. In some cases, ancient canals and aqueducts, highways, bridges, and buildings remain in use up to the present.

Why does the temporal span of infrastructure matter? For one, materials and methods of construction change over time: pipes, roads, and buildings are not new, but the materials used to build them are vastly different than those used before. As Walter Benjamin writes in the *Arcades Project* (“Iron Construction”), when iron was first introduced as a building material, there was a great deal of resistance to it. Iron construction at first mimicked what had gone before: “In the beginning, railroad cars look like stagecoaches, autobuses like omnibuses, electric lights like gas chandeliers, and the last like petroleum lamps” (Benjamin 167). However, as the new possibilities of iron construction were realized, particularly in its combination with glass, entirely new shapes and designs became possible. Iron construction began to signify strength (“the iron laws of nature”) but also modernity, as exhibited by the Eiffel Tower, built especially for the Exposition Universelle in 1889.

In addition to changes in the materials used to make existing forms of infrastructure, entirely new types of infrastructure are introduced with new technopolitical arrangements, from gas and oil pipelines, to electricity, television, and internet cables. Cold chains enabled food to be preserved in its convoluted path from farms worldwide to consumer’s refrigerators. Although infrastructures *appear* permanent and unchanging, they are in fact never static. They are constantly being reinvented and renewed, and new infrastructures arise due to technological change.

Another area where the temporality of infrastructure is especially prominent lies in the comparison of nation-states with each other. Good, new, modern infrastructure represents that the nation-state is industrial and developed. When China held the Olympics, people from the rest of the world marveled as much at the amazing infrastructure that had been put into place as they did the Games themselves. Nothing announces that you are a world-class city or a developed nation-state as much as your infrastructure. If the infrastructure in Shanghai makes the West look “backward” by comparison, it is only because we have completely internalized an “infrastructure clock” in which cities, regions, nations, and even continents can be organized into backward and forward, ahead and behind, and developed and undeveloped. The rise of China and its amazing infrastructure brings up another property of infrastructure: that its long lifespan enables countries that are “behind” to “leapfrog” in front of already developed nation-states because they can install the latest infrastructure and technology.

Where infrastructures do not as yet exist, plans for their construction signal the impending arrival of modernity. In her studies of roads in Peru, Penny Harvey finds that the promise of infrastructure, the dreams of an improved future, conjure a sense of hope and expectation. Infrastructure projects such as roads exchange sacrifices in the present for a better tomorrow. It is often the poorest people who have to give up their land for a new highway or bridge, and very often they contribute unremunerated labor for a better tomorrow, if not for themselves, then for the nation-state. Hannah Appel also shows how deferral of present needs such as education, medical care, and water is justified in Equatorial Guinea by the need to focus on other types of infrastructure that are considered central to economic development: roads, dams, ports, airports, and government buildings.

As Appel and Harvey both go on to demonstrate, deferral anticipates a certain kind of future, a time yet-to-come in which infrastructural projects will be completed, and delayed gratification will reach its gratifying end. However, that often does not happen. Projects are never completed, roads that are dug up to install water pipes remain dug up several years later, road projects are never completed, or washed away soon after they are “finished,” bridges are visible as imaginary forms mainly because of steel and concrete pillars that stick up into thin air, etc. Just as we have internalized an infrastructural clock for nations, so have we internalized the telos of infrastructure: that once planned, or begun, infrastructures are headed to completion.

Between the start and completion of infrastructural projects, many outcomes are possible, with “completion” only one possible result. Precisely because they are so expensive, and because they take so long to complete, infrastructural projects always carry many possibilities, many ends: they could be abandoned at any stage of construction; they could be torn down; they could be modified or altered; they could be completed but shoddily so as to need repairs and modification; and, they could be completed as planned. In academic discourse as well as in public debate, however, we rarely entertain these other possibilities. And when they do happen, when infrastructures are not finished as planned, or when they break down, we bemoan their “failure.”

Yet how do we begin to theorize the time of infrastructure when non-completion or breakdown is the dominant outcome? People in Equatorial Guinea or in parts of rural India never had water and electricity 24/7, and they never might. Can we really call their non-accessibility to these resources “the failure of infrastructure?” Failure implies a “normal” state which is the condition of a very small, very privileged, part of the world’s population. To have potable water

or electricity for a few hours a day does not represent a situation of “breakdown” as it does the “normal” condition for most people in the global South. Can we theorize the interrupted, fitful, erratic supply of water, electricity, and sanitation not as “breakdown” but as the planned outcome of infrastructure, the careful rationing of “goods” to those who cannot afford to pay for them? As Antina von Schnitzler shows in her study of water and electricity to the poor in South Africa, the technologies of measurement and control in the form of prepaid meters promise access to “good infrastructure” but also help regulate it by cutting off those who cannot afford to pay for these services. The result is that the actual experience of poor people is that they only have erratic and fitful supplies of water and electricity. Unlike the apartheid era, when they had no access to these goods, poor Africans can now get running water and electricity in their homes; however, unlike their richer counterparts, they cannot get it all the time. This is not because of the “breakdown” of infrastructure but because the plan is to supply it only to those who can afford it, with the full knowledge that the vast majority of poor people cannot afford it all the time.

Finally, we wish to say something about another anticipatory aspect of infrastructure, perhaps a surprising and counter-intuitive facet of the time of infrastructure. One way to understand infrastructure is to theorize it as the ruins of the future. One usually contemplates ruins with nostalgia, and associates them with degeneration and decline, with the elegiac decay of once-flourishing civilizations. Ruins are normally seen to be at the end of a historical trajectory that may be periodized as ascent, flourishing, and decline, what may be called a civilization’s post-senescence. One can think of ruins, thus, as representing the afterlife of infrastructure.

The ruins we speak about – the ruins of the future -- are inserted into a very different temporal structure. It makes sense not to think of them as occupying a temporary zone between the start of projects and their completion. Every pillar sticking out of the middle of a road marks the temporality of the now, between past and future, between potential and actualization. Ruination is not about the fall from past glory but this property of in-between-ness, between the hopes of modernity and progress embodied in the start of construction, and the suspension of those hopes in the half-built structure. Rubble here stands neither for senescence nor for anticipation, but for the suspension between what was promised and what will actually be delivered. To label them “incomplete” would be to succumb to the narrative of completion as telos; we should think of this suspension, rather, as a condition in its own right, not a transient property on the way to becoming something else. Rather than theorize it as immanence, the emergent suspended highway already visible in its pillars, we see such ruination as its own condition, its own end. In Equatorial Guinea, Appel characterizes such anticipatory ruination as “the memory of petroleum” which is being built today in the form of infrastructures whose decline can be anticipated with the end of oil. The present of an oil-producing nation-state is haunted by a future without oil, when the infrastructures made with oil money can no longer be sustained, and will end up as ruins. “The question of ruins, then, begins to haunt the futurity of the present” (Appel pg. 9). Production facilities, buildings, and pipelines are abandoned with the end of oil; the industry moves on, and leaves behind ruins that mark that it was once there. The future of infrastructure is thus not only about completion and higher living standards; it is also about ruination and abandonment. The biopolitical project of managing the population depends

on the management of the future—about expectations, aspirations, hopes, and dreams—as much as about the provisioning of the present, and infrastructure is critical to that project.

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## 5. Materiality / Biopolitics

Biopolitics is a historical form of regulation that works through practices of imagination, technology and subject formation via the management of populations. Biopolitics works through technologies like the survey, the plan, and the development program. Biopolitical work is not politically neutral. It produces differentiated social and political subjects via their incorporation into state regimes. For example, in my work on bureaucracy in India, I/Akhil show how structural violence is produced by including the poor in the biopolitical poverty reduction programs of the Indian state. Yet as scholars have recently pointed out, Foucault's use of "technology" in his framings of biopolitics serves more as a conceptual shorthand for different instruments of state formation--the cadastral map, the census and the survey--and less to identify the material technologies and infrastructures--roads, pipes, electric wires--that materialize forms of rule.

Indeed infrastructures are key sites for the administration of political control. Our work on infrastructure in this seminar makes three contributions to this literature. First, as Hannah Appel has noted in her paper on the fickle infrastructures of Equatorial Guinea, they are not continuously extended over time to control the population. As processes that are always in formation and flux, infrastructures constantly advance and retreat, connect and disconnect. They

are always falling apart, they are oftentimes bombed out of existence in war (as Christina Schwenkel shows through her work) and they often do not come to be. Similarly, Penny Harvey and I note in our papers for this seminar that the plans for roads, and even their inauguration, does not mean that they will do what they are supposed to do. After being completed, they may need continuous maintenance to function as planned.

In their unpredictability and flux, infrastructures structure social and political life. They are key sites for the making and management of difference and inequality, *for equitable distribution of resources and technologies, or for their pooling and accumulation.* The papers in the seminar demonstrate the processes through which administrators divide, distinguish and differentiate publics through the management of infrastructure. For instance, in her paper on water and sanitation infrastructures in post-apartheid South Africa, Antina von Schnitzler demonstrates how infrastructures are in fact material “registers” and “forms” of political practice. They distribute life and produce political fields through their administration. She reminds us that infrastructures are not only biopolitical promises in the present for a yet to be realized future. As material forms, water and sanitation infrastructures in Johannesburg and Cape Town continue to reproduce the differentiated and political bodies of the apartheid state.

Because infrastructures often distribute vital resources people need to live- energy, water, information, food- they are often the sites for active negotiations between state agencies and the populations they govern. Infrastructure here becomes a terrain for negotiating the promises and ethics of political authority. Populations are not only constituted by states for their administration through infrastructure. They are not extended water or electricity lines easily. *Many residents of Santa Fe and New Mexico know this very well.* Subordinated groups often find themselves

outside and beyond the formal infrastructural regimes of the state, they often call out to state agencies, their legitimacy as populations deserving of federal or state assistance.

Therefore it is not just states that extend infrastructures to deserving subjects. As Nikhil Anand shows in his paper on water connections in Mumbai, subjects are also constantly evaluating the morality and politics of their leaders, based on their ability to deliver services. The worth of elected officials is often adjudicated, based on their ability to manage and extend infrastructure in Mumbai's slums. Residents in neighbourhoods without reliable access to water constantly hail engineers and city politicians to do this work. They form neighbourhood water committees, register these in the offices of the municipal administration, and apply, as a population group for a water connection together. Biopolitics, here isn't only extended as a means of management and control, it is also called on, tugged and demanded by subordinated groups who constantly work hard to make themselves available for projects of biopolitical care.

Third, infrastructure provides an emergent opportunity for scholars to consider the manner in which non-human worlds also matter to the formations of our political worlds. As Peter Redfield points out, the effects of biopolitical projects- both on the subjectivities they engender and the forms of government they produce- are heavily dependent on the ecological and material histories that they are situated in. In his review of Foucault's work amidst the material turn in Anthropology and Geography, Thomas Lemke suggests that by focusing on the body to theorize the workings of power relations, Foucault would assume non-human matter to be a passive and inactive site for the staging of biopolitics (Lemke 2014). While he remains suspicious of new materialist approaches that assume the dynamism of matter, Lemke draws on



Foucault's later work that gestured to a "government of things" to urge that political theory would do well to acknowledge a "relational materialism" that is critical to its processes (Mol 2013 in Lemke 2014). To do this, Lemke suggests we more carefully articulate the link between the "matter of government and the government of matter" (*ibid* 14).

Matter here is not just backdrop or substrate to infrastructural form. It is an active participant in its form, and therefore also its politics. We might think of infrastructure's materials, Dominic Boyer argues via a careful reading of Marx, as "a potential energy storage system, and means of gathering and holding productive powers [of capital, but also of state] in **technological suspension.**" As a congealed and transformed process of people and things, infrastructure is generative and transcendent, he demonstrates, yet its effects are themselves heavily contingent on the mediations of its materials. A misalignment of these material forms can, as we noted in the case of the Deepwater Horizon spill, "blow the very same [tenuous] arrangement sky high" (Boyer, this volume).

An attention to infrastructural materialities not only reminds us how political life is contingent on precarious arrangements that are often beyond our control. They also reveal how materiality is central both to the sensory and somatic ways in which we inhabit this world. In Christina Schwenkel's work, the chimneys of the socialist energy plant continue serve as a site for the mobilization of affect and sentiment, of being and loss of a polity that is being unmade and remade.

Infrastructures here not only carry the promises of biopolitics, but also their very material toxicity, when these promises are unmade and abandoned, as they have been in many rust belt cities of the United States. Cassie Fennell's paper about the processes of abandoning and

demolishing housing in Detroit highlights what she identifies as the “noxious aspects” of biopolitical emplacement. While scholars of biopolitics and of infrastructure have often highlighted the dynamic processes through which infrastructures are claimed, and in so doing, situate people in place and with history, Fennell argues that her interlocutors, both in public housing in Chicago and in Detroit have been contending not only with being seen as deserving subjects for biopolitics, but also, at the same time struggling with the physical harm of living with abandoned and thrown away, overbuilt infrastructures. As plumes of lead emerge from the physical demolition of the American dream/home, the process of retreating infrastructures doesn’t just entail the disconnection of political subjects. The abandonment and demolition of housing infrastructure is experienced as a toxic shock, one whose materials continue to inhabit, and slowly poison the body, long after the promise of infrastructures- and the biopolitical dreams of access and recognition that constitute them- have been carted away, as rubble.

## 6. Publics

Attention to subjectification within biopolitics can seem to individuate, to atomize, to isolate. But ethnographic attention to infrastructure counters this tendency, as infrastructures are central to collective forms of belonging. Riffing on Habermas, Cassie Fennell’s work poses a question: what is it, she asks, that summons people to collective meanings, commitments and identifications? In short, *how are publics made?* The normative liberal answer to that question is that publics are made in enunciatory communities, circulations of intention, text, and speech that produce disembodied spheres of deliberation and fantasies of free circulation. Ethnographic attention to infrastructure enables us to **think differently** about how publics are made.

Infrastructures “gather collectivities, subjectify populations, and materialize dreams.” In Nikhil’s work, “publics come into being through the material and intimate political commitments to care for water distribution in Mumbai”; in Johannesburg, publics come into being around the political intimacy of toilets or water meters , or in Christina’s work, around the shared defense of bridges and power plants in bombarded Vinh City. Materialities as diverse as lead and water meters have the capacity both to constitute publics and to truncate or fracture them.

In other words, that infrastructures *can* participate in the making of publics does not mean that they essentially do so. On the contrary, the vitality of their material form is overdetermined, and infrastructures can just as easily participate in the prohibition and differentiation of publics, as in Antina’s assertion that apartheid infrastructures worked not merely to enable circulation, but as much to impede, prescribe, and prompt movement. So too in Equatorial Guinea, where, reminiscent of colonial infrastructures, a surfeit of private infrastructure investment by U.S. oil firms works to provision expatriates and markets while intentionally excluding Equatoguineans. Outside the walls of US oil enclaves, Equatoguinean state representatives routinely attribute a deferral of “the public”—the tenacious problems of distributed electricity, water, healthcare and education, not to mention the draconian limits on press and political organizing—to the need to focus *first* on infrastructure. Here, infrastructure is both the object of the future and the justification of the present’s constant deferral. Penny’s story of an inauguration of a long-anticipated Peruvian road is another moment in which we see the simultaneous making and unmaking of publics, with the event as both an official moment of public promise and a policed, cordoned-off, helicoptered in-and-out event.

Perhaps the most powerful intervention into the theorization of publics offered by these papers is **infrastructure's capacity to unsettle long-accepted understandings of liberalism**. If “liberalism is a form of government that disavows itself, seeking to organize populations and territories through technological domains that seem far removed from formal political institutions,” ethnographic attention to infrastructure—from public toilets to municipal water systems, from roads to leaded homes—forces us to rethink governance and citizenship not at a distance but pressing into the flesh, through questions of *intimacy and proximity*. At stake in Antina's work, in Nikhil's work, in Cassie's work, in Christina's work, is not only how infrastructures interpellate specific types of citizens, but how the immediacy and intimacy of infrastructures enable citizens to hail the state ... Through pipes, wires, and concrete, infrastructures can provide people with a direct point of connection through which “to hail the state to recognize them as publics.” **Infrastructure does not allow state power to disavow itself**. On the contrary, it is an intimate form of contact, presence, and potential.

As raised in the seminars' papers, there were several tensions in the question of publics as well. Many if not most of our papers enroll infrastructures in what Akhil calls *an anthropology of public goods*. This is what Dominic referred to as “a conceptual New Deal for the human sciences ... a return of repressed concerns of public developmentalism” in an era of both Keynesian and neoliberal ruins, at least **in parts of the world**. Dominic suggests that an anthropology of public goods is not a way forward, because in his words, “all the 20<sup>th</sup> centuries' dominant models of economic ontology and health were equivalently indebted to apparatuses of carbon energy extraction and delivery” that are at this point widely understood as on their way out.

And yet, carbon-infrastructure-heavy developmental models are still alive and well, if not in Detroit, certainly in Equatorial Guinea and arguably in Akhil's ruins of Bangalore. But the teleologies at stake in these places are not Keynesian; the New Deal is arguably irrelevant. Indeed, in Equatorial Guinea's development plan that I chronicle briefly in my paper, the two places on which EG models its own "progress" are Dubai and Singapore. This new teleology of developmental progress that imagines not Euro-America, but Asian models of authoritarian capitalism was widely shared across diverse field sites. But of course, infrastructures of carbon energy are unevenly at stake everywhere, though they present themselves ethnographically in radically different ways. How to think the futurity of publics, then, in the anthropocene? To what extent must we *all* think about new forms of sustainable public provision in a post-carbon era, despite the fact that that question is not at stake ethnographically in most of our present projects?

### **To conclude...**

The premise of our SAR seminar has been that infrastructures are good to think with in the classic ethnographic sense. We inhabit worlds already formed by differentiated infrastructures. Paying attention to these enables us to make the three provisional interventions we suggested here: about time and temporality, biopolitics, and publics.

***EXTEMPO- Though these themes came out in our initial readings of the paper, from which we drafted this presentation, many more have come up in the course of the seminar, including a lively debate on new materialism; questions of spectacles and ruin; and more...***

But to summarize, first, time and temporality: As materials and technologies transform, so too do their promises. New infrastructures are promises made in the present about our future.

Insofar as they are so often incomplete--they appear as ruins of a promise... of materials not yet fully moving to deliver their potential. Infrastructures in Equatorial Guinea or Bangalore or Detroit do not only promise a future. Suspended in the present, they symbolize the ruins of an anticipated future, and the debris of an anticipated or experienced modernity.

Second, infrastructures permit anthropologists to study how subjects are imagined in the offices of planners, policy makers and politicians---for example in the design of the route for a road, or a demolition plan in the city of Detroit, and how these projects are inhabited, contested and employed differently by their subjects. Infrastructures are not just systems of constituting and controlling populations. They are also actively desired and called upon by marginalized groups. As residents demand toilets or water, or lives free of toxic harm, infrastructures are critical sites for the workings of the political. They distribute life and death to the people who are affected by them. It is necessary to attend not only to the infrastructures of the present, or the ways in which they direct us to a desired future, but also to the way in which their histories matter to the formations of publics in the current moment.

Joining the domestic home to the apparatus of the state, infrastructures are sites of conceptual trouble. As such, they promise conceptual creativity. For example, infrastructures often quite literally connect and constitute boundaries between public and private, boundaries that people try and transgress. In Detroit, groups of residents suffering harm from lead poisoning appear as a community of the affected making claims on the government. Infrastructures may also stymie political mobilization by ensuring that difference and marginalization *appear* concretized in walls or roads or pipes. Rethinking this misplaced concretism, ethnographic attention to infrastructure as project and process allows us to follow the work through which the

boundaries between the public and the private, nature and culture, and the human and non-human are made and maintained.

Given this role in boundary-making, it is no accident that several of the papers in the seminar ask us to think more carefully about the epistemics of infrastructures themselves, for example, how infrastructures shape what is *possible* to think around energy use and climate change. The “impossibility” of a rapid shift to renewable energy is often articulated around sedimented infrastructures like pipelines or electrical grids.

As Geof Bowker highlights, one of the main problems in studying infrastructure is that the tools to study it are constrained by epistemic divisions. By this, we mean that the division of academic labor found in university departments constrain and shape--enframe--the study of an inherently transdisciplinary (or de-disciplinary) phenomenon. Infrastructures are cognitive, historical, material, and social at the same time. Geoff Bowker’s work poses the problem of how we are to understand important global problems like climate change, produced by infrastructure of various kinds, through epistemic infrastructures that take the form of silos. In our academic silos, anthropology is separated from economics, for example, and both in turn are separated from biology.

In an era where federal commitment to knowledge-production is weakening, and universities and institutions like the SAR are struggling to maintain public funding, a politics of infrastructure asks after its revolutionary potential. How might ethnographic work on infrastructure not only be productive for anthropology, but also a critical intervention in our unstable world? Ethnographic work, we suggest, can help redeem the promise of infrastructure by making more visible, and indeed more apparently political, the formative role of

infrastructures in the ways we think, and, particularly, the ways we think, build, and inhabit our shared futures.