

The Flaky Accretions of Infrastructure: Sociotechnical Systems, Citizenship, and the Water Supply

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 “Alka tai explained to me that her water problems did not have to do with a lack of water in her pipes. “There is water!” she insisted. To demonstrate this, she began sucking water out of the pipe in the washing room—a human pump” (Anand, 2017: p3)



This has also transformed the meaning of “using water”

- Water use is now surrounded by techno-and bio-politics
- This is visible through people’s everyday mundane interactions with the water supply

“Alka tai explained to me that her water problems did not have to do with a lack of water in her pipes. “There is water!” she insisted. To demonstrate this, she began sucking water out of the pipe in the washing room—a human pump” (Anand, 2017: p3)

Such everyday interactions have gained recent attention in CSCW and social computing research, particularly to use digital technology to democratize participation.

The urban user- maybe someone like Alka tai - by interacting with, reconfiguring and appropriating the city's infrastructures also transforms them.

This process, known as “infrastructuring” is

- A site for participatory action
- Thus, also an opportunity to imagine technologies that can democratize smart cities.

Similarly, CSCW research has also emphasized the importance of

- Empowering citizens through technology by supporting bottom-up initiatives, citizen activism and participation.
- Prioritizing citizen's situated interactions in the city
- Finding innovative actions in the “gaps, cracks and fissures” of larger socio-technical systems

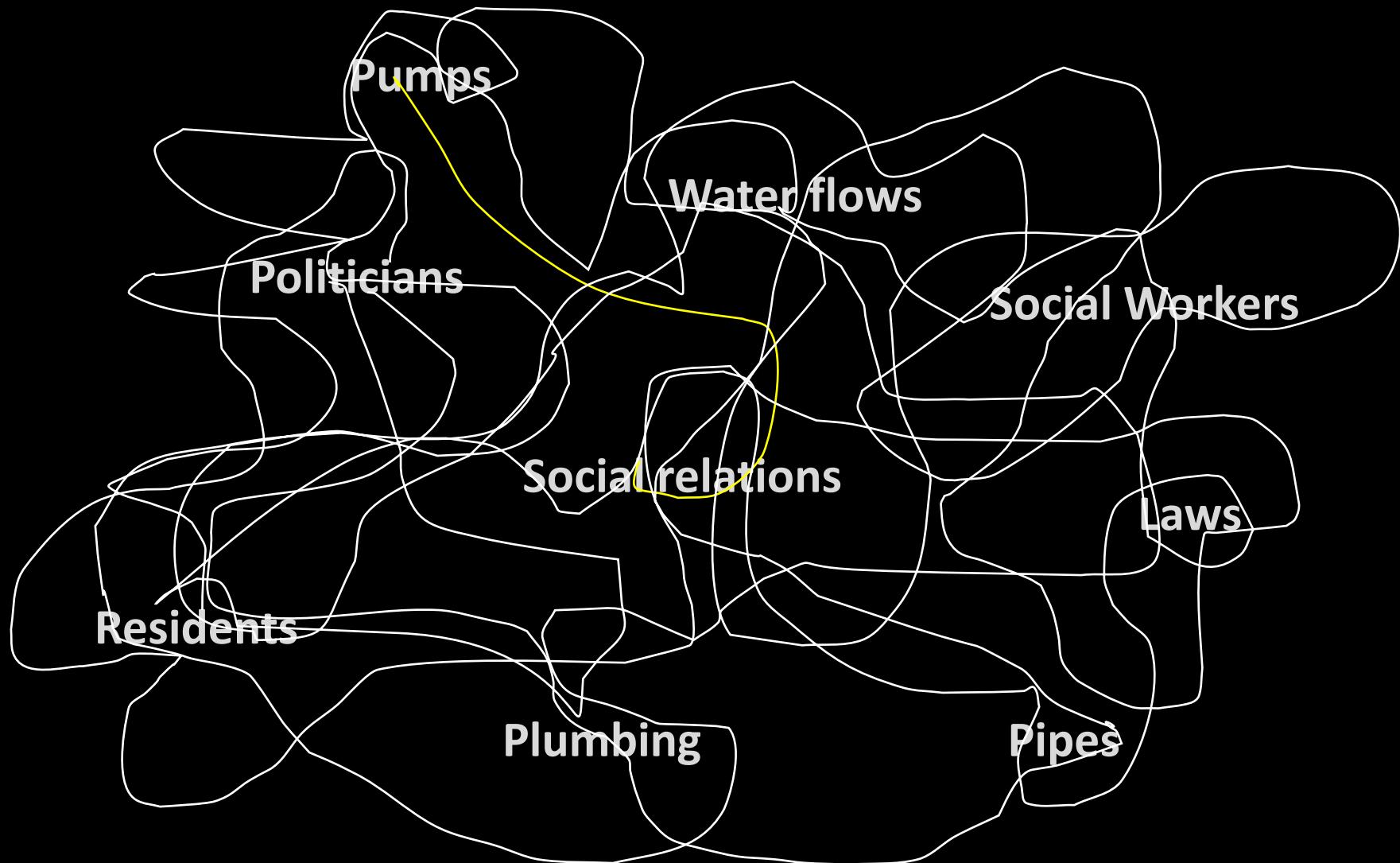
These prior works highlight the need to view the citizens as co-creators of the city.

In the present work we argue that one way to do that is to focus on understanding what being a citizen entails from the perspective of hyper-local, micro-interactions in the city.

We contribute to this line of research by focusing on a narrower scope – the city residents' everyday interactions with only the water infrastructure, and in a single city: Pune, India

We draw on Nikhil Anand's concept of "Hydraulic Citizenship" to help us locate the co-emergence of citizenship and infrastructure in the micro-interactions that constitute everyday life.

— Laws — Pumps — Plumbing — Water flows — Residents ➔



“It takes a significant amount of work to become and remain a hydraulic citizen” (Anand, 2017: p8)

As CSCW researchers, we thus ethnographically set out to capture this very “significant” work residents of Pune, India undertake to become and remain hydraulic citizens.

Our goal was to find “new ways of imagining the relationship between people and technology” in the context of smart cities and urban informatics.

We collected data in Pune, India through

- Ethnographic Observations and interviews
- Auto-ethnography by the lead author
- Media collection and Analysis of newspapers, blogposts





We then used an iterative interpretive process to discuss and refine themes in a mutually informing dialogue with Anand's concept of hydraulic citizenship.

As an outcome of this dialogue, following themes emerged

1. Hydraulic infrastructures
2. Lived Experiences through water
3. Legitimacy



Hydraulic Infrastructures

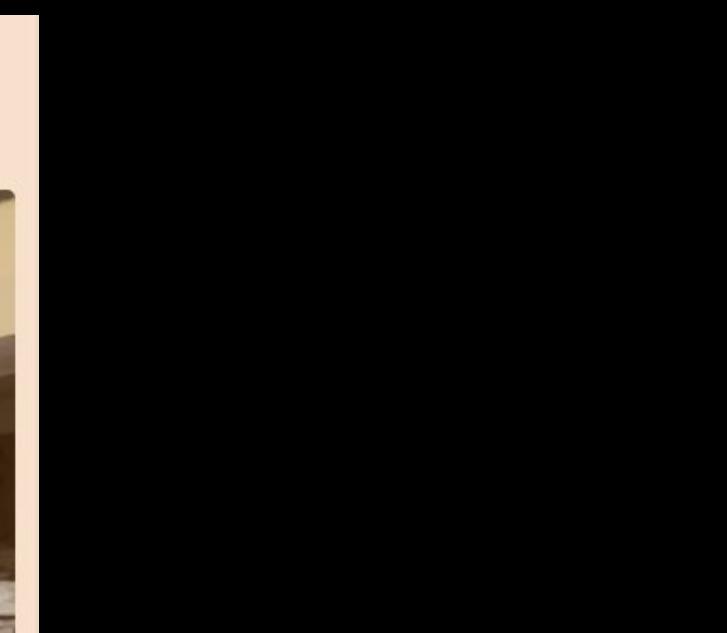
- **Socio-material assemblages** made up of “flaky accretions” of socio-material processes
- Brought into being through relations with **human bodies, discourses**, and other things (sewage, soil, water, filtration plants).
- **They are processes always in formation and always coming apart**” (Anand, 2017: p13).



“Oftentimes, the water flow will suddenly stop and then start again with even more force; Sometimes it will trickle, taking eternity to fill my water filter.

Someone from the lower-level floors might be filling the drinking water (I think) and the minute they close the tap, the pressure is redirected towards my house, on the top-most floor of the apartment complex.”

HT Spotlight: How tanker 'mafia' controlling flow of water in Pune



CGWB · URBAN WATER SECTOR

Groundwater of Pune: An Over-exploited and ungoverned lifeline

This goes on to show residents are constantly looking at ways in which they can experience some relief from these struggling interactions with water infrastructures.

So then, what does the experience of lack of water look for the city residents?



Lived Experiences through water

The phenomenological account of experiencing the city through the daily practices of using water.



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Why want 24 hours of water? No one will hold the hand of the people of Pune for the waste of water. I lived in Wardha city. Water is provided every other 2 days and enough water is provided. This is the way it has been for the past 20 years. There is no one complaining about this, even though there is abundant water in the water supply scheme”

Legitimacy:

The ability of the resident to be recognized as the rightful participant in the city's water distribution services.

Not just about the strict legalities of the matter but includes judgments about what is earned or deserved given an infrastructure that sometimes is too rigid to work properly.



With this introduction of AMR (Automatic Meter Reading) technology, at my desk itself I can say,

*"gentleman, this is your consumption pattern for the last 6 months 6 years you are supposed to consume 700-750 litres of water per day, and you are consuming 1300 litres, which is much more and based on that, **because I am very much sure your consumption is on higher side than what you are supposed to.**"*

I can very point blankly tell them show them what their consumption was and what it is now.



PMC threatens to seize house of ex I-T comm who refuses to pay water charges

Anurag Bende / Updated: Jan 1, 2020, 06:00 IST

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No water, no tax

70-yr-old Undri resident asked to pay dues of over Rs 10L for decade's worth of property tax; he now plans to take

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Residents remove PMC water meters in Pune

TNN / Updated: Nov 21, 2019, 09:12 IST

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Residents remove
PMC water meters
in Pune



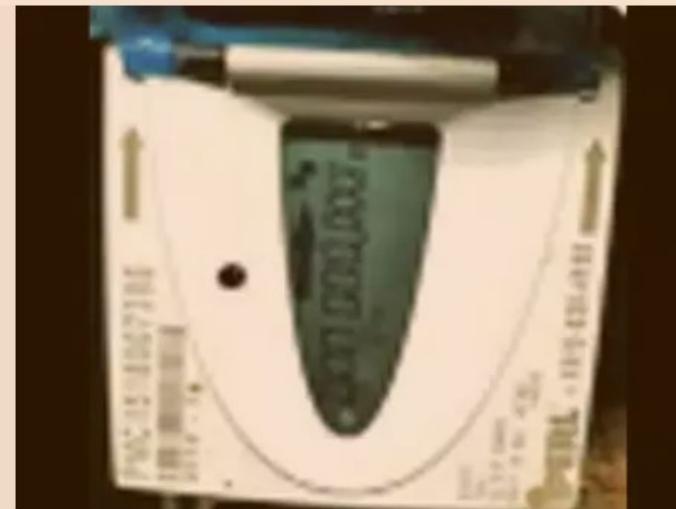
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Here's an ode to a
song on World
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Pune: Students,
teachers from
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Kashmir visit...



The PMC has set a 2021 deadline for the project that will cost an estimated Rs 2,900 crore

So, what does residents' acceptance of their water situation and opposition of "fixes" mean for those of us looking to use technology to do exactly that?

We argue that such resistance is not necessarily a resistance to an improved water supply.

Rather, it is a resistance to the possibility of ground truth, that cannot be hacked or negotiated with.

FOR EQUITABLE SHARE



THE PLAN

9L Properties to get water meters

Pune: PMC

► The properties are in PMC limits (barring merged villages)

PILOT PROJECT

Is being carried out in the Nagar Road areas

5,000 meters were installed in June

350 meters were found uninstalled in October

FUTURE ACTIONS

- PMC to reinstall the removed water meters
- To create awareness about the meters and their importance
- To file criminal offence against people removing the meters



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Residents remove PMC water meters in Pune

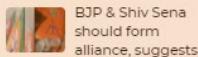
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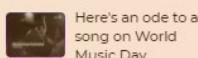
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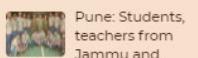
Residents remove PMC water meters in Pune



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The PMC has set a 2021 deadline for the project that will cost an estimated Rs 2,900 crore

“Why want 24 hours of water?”

HT Spotlight: How tanker 'mafia' controls Pune





- Pune's infrastructure is unfortunately always in a state of breakdown.
- Yet, the collective work of the city's residents to make it work and get by, almost looks more like infrastructure (re-)gained.
- A situation where the work put in results in an infrastructure that has receded from the resident's awareness.

We thus argue that a crucial aspect of citizen participation would be to make visible such workarounds and “jugaads”, But not as a report of issues and complaints.

Rather, we argue that we need to re-define the meaning of “citizenship” with spaces to co-create the infrastructures.

This re-imagined “citizenship”, is at least partly constituted by a daily repeating set of interactions among residents, municipalities, and physical infrastructures.

It is a shift of focus from governance to mundane interactions with infrastructures.

If CSCW is to support citizens and municipalities, we argue that we need to

- Dismantle arguably dated assumptions about natural monopolies and the role of the state in the provision of services.
- Avoid defining citizenship solely in terms of a resident's interactions with or subjectivization to a state or municipality
- Recognize that citizens diversely engage in the collective work of accessing and managing the resources needed to sustain life.