Unprecedented natures? An anatomy of the Chennai floods

<u>Abstract</u>

Between November and December 2015, the southern Indian city of Chennai (alongside the northern coastal regions in the state of Tamil Nadu) experienced torrential rains with unanticipated flood consequences. Notoriously known as India's "water scarcity capital", instead of the proverbial 'poor monsoons', a series of low-pressure depressions with 'record-breaking' rainfall submerged the city rapidly, as homes and apartments flooded, communications were cut, and transportation came to a standstill including the closure of the airport. Even as environmental activists took the state and its allied actors (in the development and planning sector) to task over what they considered was a deliberate and reckless 'urbanisation of disaster', the state sought refuge in the argument that this was an unprecedented (global) weather anomaly. Recognising the need for a more robust (post) disaster discussion, this paper offers an anatomy of the floods that begs a broader rethink of twenty-first century urban disasters and argues that the current discourse offered by the social science of disaster is insufficient in unravelling the complex spatial and environmental histories behind disasters. It goes beyond setting up a mere critique of capitalist urbanisation to offer a cogent debunking of the deeply engrained assumptions about the unprecedented nature of disasters. It does so by dismantling three commonly invoked arguments that transgress any kind of environmental common sense: 1. The 100-year flood fallacy, 2. The ensuing debates around environmental knowledges and subjectivities, and 3. The need to spatially rescale (and regionalise) the rationale of the 'urbanisation of disaster'. It concludes by raising concerns over the persistence of a resilience discourse, one that relies on the will of the 'expert' underwriting not only a non-specific techno-scientific approach but also perpetuates a politicisation of risk that shows little promise of accommodating new epistemologies that are socio-ecologically progressive.

Key words: floods, unprecedented, environmental knowledges and subjectivities, urbanisation of disaster, risk and resilience, Chennai

'There is no such thing as a natural disaster'
- Neil Smith, 2005

'Chennai is a natural disaster of unprecedented scale'
- Prakash Javadekar, 2015
Minister of State (Independent Charge) for Environment, Forests, and Climate Change, 26 May 2014 – 5 July 2016

For a city tagged indubitably as India's "water scarcity capital" (Potter 2015: 112), Chennai's water woes took a surprising turn towards the end of 2015 when torrential rains pelted the city with unanticipated flood consequences. Only a month earlier, amidst nervous anticipation of the Northeast monsoon (or what is known popularly as the winter monsoon), newspapers were bemoaning a dismal Southwest or summer monsoon, by the end of which all sources of water supply had been sucked dry, and politicians and policymakers were running out of their repertoire of tricks to avoid a drought-ridden disaster. While the initial onset of rains brought some comfort to an anxious city, it soon became obvious that this was not going to be yet another year of average or less than normal rainfall. Instead, through a series of low-pressure depressions in the Bay of Bengal triggered by what weather experts referred to as a 'super-charged monsoon', Chennai (and the northern coastal regions in the state of Tamil Nadu) experienced heavy downpour resulting in 'record-breaking' rainfall for the months of November and December. As the city submerged rapidly, homes and apartments were flooded, communications were cut, and transportation came to a standstill, including the closure of the airport for several days. With lives lost, extensive property damage and businesses affected, Chennai was declared officially a disaster.

Almost immediately, Katrina-esque images of a 'city under water' circulated widely over the Internet and international media relayed reports on this deadly disaster. Even the UK broadsheet *The Guardian* set aside its frequent preoccupation with Mumbai as India's metonymic megacity to cover this critical situation. As a city that rarely makes it on the international radar of news reporting, after the devastating 2004 tsunami, Chennai found its natural misery being written once again into a global story. Somewhat reassuring during this dark hour was the spate of citizen reporting where residents provided eyewitness accounts of the unfolding events in terms of not only a sense of shock over losses incurred but also with empathy about how they were recouped through the voluntary heroics of

local civilians. Since the Mumbai floods of 2005, such framings have become a standard where, as Anjaria (2006) observed, public imagination is captured by incredible acts of selflessness and outpourings of generosity, with people setting aside their socio-economic prejudices to help one another and ensure that the city doesn't descend into outright chaos. Often relayed through popular coverage by traditional and, more recently, social media, they claim not only a realistic representation of the lived experience of disaster but their optimistic ethos is also a much-needed morale booster at a moment of despair.[1] While these stories may not shy away from asking difficult questions such as the need to untangle longstanding socio-political factors that contributed to the disaster, such queries are implicit as their preoccupation is to lessen the sense of threat for those caught in the milieu of the aftermath, unwittingly making the event seem more personal and constrained. It would be too much to expect these free-floating narratives to assemble the parts and pieces of this particular event together into a broader (post)-disaster appraisal. More importantly, in a context where those affected are eager to know 'why this has happened (to us)', individual, first-hand, folkloric accounts provide little challenge to the explanations offered by a State quick to acquit itself.

Thus, while the Chief Minister Jayalalithaa's initial reaction that 'losses are unavoidable when there's very heavy rain' suggests a commonly entrenched fatalism about the monsoons and its regular trail of death and destruction, her subsequent depiction of the event as the 'rarest of the rare' is more in line with the official position projecting the floods as unprecedented. This is not dissimilar to Davis' (1995) dialectic of ordinary disaster where, by berating the weather for its perversity, the state covers its lapse in foreseeing the catastrophe or mitigating its effect, presenting them instead as historically specific episodes embedded within a specious claim of exceptionalism. While there is a planetary appeal to Davis' argument, there is an imperative to postcolonialise it as otherwise we risk obscuring specific socio-political causes that trigger what is increasingly broadbrushed as a global weather anomaly, and ignoring (neo)colonial practices producing specific forms of vulnerability. It is in this effort that this paper begins by taking up issue with the emphasis on the 'unprecedented', as it favours an environmental determinism that undermines a critical disaster discourse. As Paul Brass (1986) showed through his analysis

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[1] #Chennairainshelp and @ChennaiRainsOrg were amongst the prominent ones who provided an information platform to help Chennaiites during the floods.

of the Bihar Famine of 1966-67, the notion of the unprecedented is a political invention that has no standing in the definitions of social science. It masks the fact that the crisis situation is generally less of a deviation from the normal, often falling in place within a classic sequence of recurring flood and drought. At the same time, there needs to be some sensitivity in challenging this perception as we try and explain this scepticism to those affected, whose personal sense of calamity is unforeseen.

Additionally, in the case of Chennai, against accusations by environmental activists that urban development practices and their lack of respectful mutuality in the human-environment interaction were to blame for the disaster, both the regional and the national State were keen on retelling the disaster as a global weather anomaly. Thus, in light of the COP21 meeting held in Paris a few days after the catastrophic December floods, Prime Minister Narendra Modi blamed climate change for the 'unseasonal rains'. Indian media and environmental agencies picked up observations from the American space agency NASA and UNESCAP that the record precipitation was unusual, amplified by record-warm seas and the long-distance effects of El Niño. There were even suggestions that the tropical depression that brought heavy rains to the city was the remnant of Typhoon Marilyn, or In-fa which had formed near the Philippines, cutting a wide berth across not just Chennai, but India's east coast and even northern parts of Sri Lanka. Thus, deliberate efforts were made to assimilate the floods into a continuum of calamities cascading across the world with a supposedly planetary connection.[2]

Such interpretations are steeped in a liberal discourse of political denial, where the argument of weather disturbance and upheaval is invoked by the state not just to dispel citizen anxieties but, as shown by the media studies scholar Sturken (2001) in her impressive analysis of the 1997-98 El Niño, this is also a form of narrative that precludes political analysis or action. Through rhetorical manoeuvres, a state rubric is developed

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[2] The comment about 'unseasonal rains' shows the lack of geometeorological knowledge amongst India's leaders who generally assume that the entire country is served by the Southwest or summer monsoons (June-September). Tamil Nadu is part of the minor group of southeastern states in India who receive almost 50 percent of their annual rainfall from the Northwest or winter monsoons (October-December). Regarding the construction of the event as a global weather anomaly, see Bell, C. (2015, 18 November). Rain storms from Chennai to Colorado. *The Guardian*. Retrieved from https://www.theguardian.com/news/2015/nov/18/weatherwatch-chennai-india-rain-evcuation-sri-lanka-south-africa-us [Accessed on 24.02.2016]

around the supposed authority of science to disable more discerning discussions of disaster. Civil society groups in the city are well aware of this tactic, one that hardly advances our scientific understanding of local environmental hazards. Frustrated with a State that wilfully ignores their ecological standpoint that disasters are compounded by the unsustainable dynamics of contemporary urbanisation, activists, over the past few months, have taken to public platforms, demanding accountability for what is essentially a State propelled urbanisation of disaster.[3] And yet, the State continues to snub them, focusing instead on populist measures such as cash and material compensation. This is tied to the patronage politics as fine-tuned to differing degrees by the two Dravidian regional parties who have been in power in Tamil Nadu since 1967 (DMK and ADMK), and who use significant moments such as the floods to offer material appeals (Wyatt 2013). In a crucial election year (May 2016), the Tamil Nadu State Government is only too aware of the challenge that severe weather events pose to incumbent politicians, as a result of which official post-disaster steps are dictated by electoral interests.[4]

Writing in the aftermath of Katrina, Neil Smith (2006) stressed the importance of putting social science to work as a counterweight against official attempts dismissing Katrina as an inevitable "natural" disaster. For, it is thanks to the persistence of critical social theorists that we now have the uncontested axiom in disaster studies: "there is no such thing as a natural disaster".[5] While a wide-ranging literature comprising 'the social science of disaster' has contributed to a better understanding of how individuals and institutions respond under catastrophic circumstances, they have unwittingly set off a new sense of unease. Mostly, this has to do with their overwhelming reliance on lexicons such as risk, resilience, vulnerability and mitigation, constructs that have been co-opted by policymakers for their own gain, and matter less to those affected. It is also that there is something to the 'nature' of twenty-first century urban disasters that begs a rethink, one

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[3] Nithyanand Jayaraman is one environmental activist who has berated the state and its allied capitalist interests (including mega-infrastructure projects) for incapacitating the city against the onslaught of monsoons. See his post that appeared in http://scroll.in/article/769928/chennai-floods-are-not-a-natural-disaster-theyve-been-created-by-unrestrained-construction. [Accessed on 24.02.2016]

[4] The combination of largely material-based clientelism and patronage politics with programmatic policies is characteristic of the Dravidian parties that have ruled Tamil Nadu since 1967. See Wyatt (2013) for a more detailed discussion of the differentiating nuances. In the May 2016 Assembly elections to the State of Tamil Nadu, the ruling party ADMK managed to retain power but suffered electoral losses in 10 out of 16 Chennai constituencies, attributed by many to their poor ground action during the floods.

[5] When Neil Smith (2006) wrote that there is no such thing as a natural disaster, he was picking up on common adage that hazards are natural while disasters are man-made.

that draws from not a fixed position but a series of positionings where, simply tagging disasters as social is not enough, insufficient as it is to unravel the complex spatial and environmental histories behind disasters. It is in pursuit of a better theoretical framework for such a task that Gotham and Greenberg (2014) suggest forging a link between the currently separate scholarship of disaster studies and urban studies, two fields that rarely converse with each other. Their reasoning is not only to connect disaster events to the broader contexts of urbanisation and social change, but to address specifically how social forces that produce systemic risk and vulnerability are themselves embedded within a longer genealogy of capitalist urbanisation. In challenging the discursive rationale of an unprecedented weather anomaly as presented in the aftermath of the Chennai floods, this paper follows their suggestion, undertaking a more cogent debunking of the deeply engrained prejudices about disasters, identifying especially the contradictions nested within their reference to a landscape of risk and resilience. In particular, the focus is to demystify and dismantle three commonly invoked arguments that sought to transgress attempts at any kind of environmental common sense: 1. The 100-year fallacy, 2. The ensuing debates around environmental knowledges and subjectivities, and 3. The need to spatially rescale (and regionalise) our understanding of 'urbanisation of disaster'.

The 100-year flood fallacy

In the days immediately following the November and December rains, there was a burst of interest in all things related to meteorology, as it became for some key actors (i.e. politicians, policymakers and the media) *the* scapegoat lens for explaining the crisis. For instance, satellite map based animations by the US space agency NASA highlighting the unprecedented nature of the rainfall were circulated eagerly in an attempt to naturalise the 'extreme weather event' narrative. NASA's effective imagery showed an unusually high intensity of rainfall from 28 November to 04 December, with a special emphasis that 'Chennai, between 1 and 2 December received more rainfall in 24 hours than it had seen on any day since 1901'.[6] This was picked up by the local media as alert flash headlines: 'Chennai weather forecast by NASA: Chennai rain broke 100 year old record, says US

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[6] Historic Rainfall Floods Southeast India (2015, 09 December). Retrieved from http://earthobservatory.nasa.gov/IOTD/view.php?id=87131&src=eorss-iotd&utm_source=twitterfeed&utm_medium=twitter [Accessed on 24.02.2016]

space agency'.[7] Amidst an on-ground struggle to make sense of the deluge and its aftermath, the 100-year flood rationale emerged as a master narrative whose apocalyptic recital provided, if not an explanation, at least some kind of framing to an event that was supposedly uncontrollable, arbitrary and chaotic. Over the next few months as it was bandied about in policy, media and public discussions with no questions about its scientific rigour, it conveniently served as a smokescreen to avoid the more uncomfortable task of unraveling the complex anatomy of the disaster.

The 100-year flood is a rough schematic that emerged in the 1970s as western governments tried to calibrate flood frequency in a statistical manner compatible with the rise of the flood insurance industry. Its relativism notwithstanding (supposedly to allow a level comparison of areas of risk), its reckless public invocation has resulted in it becoming a highly compromised and misunderstood factual information. While even Wikipedia will tell you that the term '100-year flood' does not refer to a flood that occurs once every 100 years, this is precisely what a layperson assumes with none bothering to rectify this misreading. Given their immediate experience with the devastation caused by the floods, the public is comforted by the 100-year flood argument as they set the possibility of the disaster happening again at a safe temporal distance, hundred years into the remote future. It is this blending of science with sentiment that fails to clarify its real meaning: what it indicates is a one percent chance of flooding in any given year. As Pielke (1999) explained, in terms of cumulative probability there is a greater than 26 per cent chance that we will see at least one 100-year flood over a period of 30 years (and, similarly, more than a 74 percent chance over 100 years). There is as well the fundamental question over its credibility as an explanatory science. In what is essentially seen as a 'statistical abstraction' (Davis 1995: 230) manipulating an idealised parameter (ignoring the diversity and complexity of floods as a real phenomenon and forcing a selective extraction of data or facts), Baker (1994: 145) dismisses the 100-year flood as a doubly fallacious term:

> These words, of course, have essentially nothing to do with real years or with real floods. Instead, the words represent an idealization based on (often fallacious) assumptions. They are an example, not of science, but of an insidious form of philosophical nominalism…it is a particularly weak form of reasoning, induction, which generalizes from specific cases.

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[7]The Financial Express (2015, 12 December). Retrieved from http://www.financialexpress.com/photos/business-gallery/177148/chennai-weather-forecast-by-nasa-chennai-rain-broke-100-year-old-record-on-december-1-and-2/5/ [Accessed on 24.02.2016]

As an applied science, its serviceable logic is questionable as it is based on past flood records and is thus subject to considerable errors when it comes to forecasting the exigencies of nature. The greater risk is the consequence of planning decisions that incorporate the 100-year flood framing into its policy, with assumptions based on a static model of nature. Failing to recognise that the 100-year flood is, in reality, dynamic and needs to be redefined with every new flood event leads to dead-on-arrival regulatory standards that barely withstand the next sequence of floods and needs to be constantly revised. This is precisely why Davis (1995) passionately argues that the 100-year flood is based not only on a fictional ecological history, but also on mechanistic periodicities which does not accommodate the complexity of a natural drainage pattern that is evolving and shifting with every successive flood.

There is a bigger problem with the 100-year flood mode of historical referencing which is that it uses rainfall data to emphasise the 'record' more than anything else. Compounded as we are by the brevity of our hydrological documentation, there is hardly any supporting information to be gleaned from precipitation registers which simply reveal the amount of rainfall received in a given day, month or year. Prone to numerical sensationalism, we allow a discourse at the lowest common denominator to flourish. What does the Meteorological department seek to convey when it reels out its numbers: 'Chennai had 246.5mm rainfall in the last 24 hours which breaks the record of November 2005 which saw 142.4mm….the highest rainfall during the north-east monsoon was in November 1976, when the city recorded a rainfall of 452.4mm'.[8] While such foreboding declarations are meant to exaggerate the paranoia of a big weather story, it is drawn from a sketchy analytical terrain precluding a more sophisticated understanding of the event. Disadvantaged as we are by this blunt empiricism, Davis (1995) rails against the imaginary norms and averages that are constantly invoked as standards. Merely an abstraction, nothing is less likely to occur than average rainfall. As he astutely points out, the chance of the annual precipitation hitting the average mark is probably only a few times in the history of measured rainfall. The actual norm is an oscillation between dry and humid periods. Sometimes, the annual average is delivered during the course of a month and couple of

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[8] The Indian Express (2015, 17 November). Retrieved from http://indianexpress.com/photos/picture-gallery-others/chennai-receives-heaviest-rainfall-in-a-decade-city-plunged-in-despair/2/ [Accessed on 24.02.2016]

storms. At other times, it may take two or even three drought years to achieve the same total.

If we are to persist with a statistical investigation of weather as an omnipresent discursive trope, the big question is why we fail to draw a meaningful pattern from the de facto numbers, treating each instance exceeding the 'average' as unique. This is partially because even though we have a precipitation log since the beginning of the twentieth-century, our historical knowledge of floods relies on a less scientific form of repository involving archives and oral histories. Anecdotal recollections from a few sources mention episodes of flooding in 1903, 1918, 1943, 1969, 1976, 1985, 1996, 1998, and 2005. There are specific accounts in addition about concentrated flooding in parts of Chennai in 2002, 2004, and 2010. Figure 1 provides Chennai's precipitation summary since 1901 (the years with acknowledged flooding area highlighted in dark grey while the ones in light grey show comparable rainfall but no record of floods). Bearing in mind that while excessive rainfall often leads to flooding, it is not something that is immanent in nature. Looking at the numbers forces a few 'thinking out aloud' questions: 1. 1903 was one of the earliest recorded flood event in the city's history when it received nearly 2000mm of annual rainfall, with an unusually high amount in December (466.35mm was the highest till 2015 surpassed this figure with 539mm). Even though we have little information about the geography of flooding in these two different epochs and there are several unaccounted for variables, purely on a numerical basis, one cannot help question a century's worth of modernisation and development if the city remains susceptible to the same amount of rainfall as it was hundred years ago. 2. If these numbers hint at some possibility of a speculative analysis, then one obvious indication is of a recurring frequency of floods with similar patterns of excessive rainfall, at a closer range than the mythical 100 years. A recent report *Why Urban India Floods* (2016) by the Delhi-based Centre for Science and Environment (CSE) mentions at least 7 major flood events in Chennai since 2000. Also acknowledged by many is the fact that what Chennai experienced in 2015 is not very different from the rainfall pattern of 2005, with clearly tenable links and potential lessons to be learnt. In persistently viewing each flood year as a tightly circumscribed statistical artifact refusing parallels with previous episodes, we are left with a weakly constituted knowledge that precludes a more insightful analysis. This is further compounded by an almost non-existent critical scholarship of the milestone 2005 floods, especially from the

social science of disaster perspective. If we are to draw a critical analysis that is more than a speculation, we need to approach this historic data as an analytic, not simply a mathematical register. But in our eagerness to sustain the pretense of exceptionalism, we ignore the precedents staring at us in the eye stripping them of their analytically pliable referential meanings. Harsh though it might seem to those affected, the month long torment that the inhabitants suffered was little different from the classic pattern (except perhaps in the unusual intensity of rainfall), compelling us to reconsider the allure of explanations such as the 100-year flood. If any concessions are to be made as to the extraordinary nature of the floods, then it is in regarding them as the 'worst', reflecting an unparalleled exposure rather than an unprecedented phenomenon.

INSERT FIGURE 1 HERE

Caption: Chennai's rainfall data from 1901-2015

Source: Compiled from several sources including Indian Meteorological Department and India Water Portal (retrieved from http://www.indiawaterportal.org/met_data/) [Accessed on 24.02.2016]

Environmental knowledges and subjectivities

In the wake of the December floods, the national television channel *NDTV* ran a coverage declaring 'In Chennai Floods, Middle Class Among The Hardest Hit'.[9] In this reportage, the channel profiled a typical middle-class family in the southern suburb of Mudichur (touted by many as 'one of the worst affected areas in the city') who had to abandon their home during the floods and returned to find all their belongings (they referred mostly to their consumer goods, i.e. television, washing machine, refrigerator etc.) damaged beyond repair. Used in the wake of any calamity to the role of gracious do-gooders, the middle class found it difficult to reconcile themselves to occupying the same precarious position of the poor as the 'badly affected'. Resenting being forced into a hat in hand position, the middle-class couple in this particular programme lashed out against the state as they scoffed at the paltry governmental offer of cash and material compensation (Rs. 10,000 to those who lost their homes and Rs. 5,000 for those whose homes were damaged plus ten

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[9] NDTV (2015, 12 December). In Chennai Floods, Middle Class Among The Hardest Hit. Retrieved from http://www.ndtv.com/chennai-news/in-chennai-floods-middle-class-among-the-hardest-hit-1253988 [Accessed on 24.02.2016]

kilograms of rice and clothing in the form of one free dhoti and saree). As one disgruntled resident said, the Rs. 5,000 offered would only be adequate to get someone to clean their premises.

While it is probably an exaggeration to say that the middle class were the worst affected, there is partial truth to the argument that the floods this time wrecked as much havoc on middle class neighbourhoods as they did on the poorer areas of the city. However, as activist Kela (2015) clarified in his online post, there are differential impacts wherein slums and shantytowns along the river are swept away almost instantly while middle-class localities suffer only considerable inconvenience. The woeful reality is the historic production of uneven flood risk areas where disasters remain a province of the poor living as they do in unstable structures on flood plains, and whose subsistence living is more severely disrupted by a recurring cycle of drought and excessive rains. Thus, as Smith (2006, n.p.) argued in the aftermath of Hurricane Katrina, natural disasters are in essence a social disaster as they 'simply don't flatten landscapes…they deepen and erode the ruts of social difference they encounter'. What is interesting in the specific case of Chennai is the way the 'naturalisation' of social contradictions (*cf.* Davis 1998) was framed by the two largely affected social groups, the middle class and the poor. Looking at the two in parallel helps us understand better how, in moments of crisis as this, one thinks and acts about the environment as a relevant referential category, not only at a given point of time (especially in a post-floods scenario) but also in terms of changes over time.

In this context, the aftermath of the Chennai floods presents an apt moment to reconsider the continuously shifting nature of environmental knowledges and subjectivities, especially its (re)production through social relations and institutions. Based on his research in the Himalayan district of Kumaon, Agrawal (2005) employed Luke's (1995) Foucauldian notion of environmentality to identify 'environmental subjects' as a category of people for whom the environment as a conceptual domain organises their thinking and in conscious relation to how they perform some of their actions. At the same time, he found that while the environment might have deep ramifications for people's social identity and well-being, their everyday practices and knowledges might not be always shaped by the environment. Pertinent to the debate here is the fact that such subjectivities are constantly made and unmade where, despite a complex knowledge

production process, certain forms of knowledge are validated over others. Moreover, while environmental subjectivities are socio-historically constituted, particular conjunctures such as the floods have a major transformative potential, not only offering a critical space for the production of new subjectivities but also providing a terrain within which to foster new socioenvironmental practices. This forces us to rethink the material geographies of vulnerability and the practical decisions that are ill-informed by a rather superficial understanding of the crisis, especially in terms of how people perceive their own exposure to disaster and what bearing it might have on the larger flood narrative. Focussing on the meanings that the middle class and the poor draw out of their environmental knowledges and subjectivities thus provides for interesting revelations. In the aftermath of the floods, an immediate reaction of most of the affected middle-class residents who found themselves evacuating their homes overnight was surprise and shock that their 'brand new' residential developments were in areas vulnerable to the floods.

Over the last decade or two, the southern part of the city has been subject to a rush of urbanisation and development resulting in a massive overhaul of its geography and its natural features. Chennai based ecologist, Jayshree Vencatesan (2007: 288) rues this forgotten fact:

> A large part of south Chennai was historically a flood plain as evidenced by the soil type of the region…Spread over 50 sq. km, it comprised of a large marsh (Pallikaranai marsh), smaller satellite wetlands and large tracts of pasture land. Locally known as Kaiveli (a generic Tamil name for marshes and swamps), the Pallikaranai marsh drained about 250 sq. km. The numerous smaller wetlands that surrounded the marsh served as the only source of irrigation for the area, which thrived on paddy cultivation. This gave the marsh a legendary status since the villages did not have wells or dug-out ponds, which are the norm in the northern districts of Tamil Nadu.

As a natural resource, it thus was essential during precolonial times that much of this tract remain undeveloped. But during the colonial era, a revenue-based land settlement and administration meant that wetlands were falsely identified firstly as uncultivated land and eventually as wastelands within a State classification of land uses (Vencatesan 2006). This continued into the postcolonial years as a result of which their ecological significance has been largely forgotten and making it easy to transform their use value for speculative developmental purposes. Abused by the State and citizens equally, the marsh came to be used not only as a waste disposal site by the Corporation of Chennai but has also been actively encroached upon for residential and commercial development projects. Over the

decades, Pallikaranai marsh has become a key symbol of the environmental degradation of the southern part of Chennai with large-scale infrastructure projects propelling the worst kind of capitalist urbanisation model that completely disregards its natural eco-system. To paraphrase Ranganathan (2015), the very physicality of the wetlands (and its indeterminacy of ownership) suggests a "consequential materiality" that is ideal for millennial capital's "becoming-being". It is no wonder that by the beginning of the twenty-first century only 10 per cent of the marsh remained (600 ha).

Initially, there was little recognition of the significance of this loss, as the colonial administration had replaced its associated *eri* (tank or reservoir) system of rainwater catchments and spill-overs with an engineered storm water drainage system. The former is more suited to the city's flat topography, designed as they were to capture slow and gradual movement of water across the landscape through a series of interconnected bunds, but was overlaid with a storm water drainage network whose reliance on gravity in a city with very slight gradient made it difficult to capture flowing water, resulting in stagnant water pools (Jameson and Baud 2016). To this date, state governments prefer the latter despite the fact that *eris* historically served the dual purpose of groundwater recharge and flood management efficiently. As their function was displaced by storm water drains, they have rapidly decreased in numbers amidst a lack of initiative from the State towards their conservation: Chennai had more than 600 waterbodies in the 1980s with only a fraction remaining today (27 according to a report by the National Institute of Disaster Management). And the area of 19 major lakes has shrunk from 1130 ha in the 1980s to around 645 ha in the early 2000s. However, the modern engineering infrastructure of storm water drains has been inadequate as well in compensating for the loss of this natural system. Thus, with only 855 km of storm water drains against 2,847 km of urban roads, even a marginally heavy rainfall causes havoc in the city (DownToEarth Publication 2016).[10]

Ironically, it was the floods of 2002 that brought some awareness to the issue at hand when inundation of residential areas along the marshes combined with health concerns

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[10] This figure is contradicted by the Corporation of Chennai which claims that it maintains a Storm Water Drain network of 1660.31 km within the city against 6000 km of roads. Whatever the number, it shows that less than 30 per cent of the city's roads is lined with the necessary service infrastructure.

around the burning of the garbage dumped on site rallied residents together with environmental activists in the city to petition the government for remedial and mitigating measures. Eventually, in 2007, 317 ha of the marsh was declared a Reserve Forest. While civil society groups actively involved in this debate view this as a victory of sorts, the 2015 floods showed that such tokenistic gestures are insufficient as the marsh's incapacitation as a natural flood sink proved to be a major reason for flooding in the southern areas of the city. Even though Pallikaranai marsh captured public imagination as a prominent environmental debate in the first decade of the twenty-first century, dominating often the media headlines, most of Chennai's residents remain unaware of such ecological framings, focussing on specific aspects such as the burning of the garbage rather than the larger concern of flood plain destruction. Such a position confirms Agrawal's (2005) argument that environmental subjectivity reflects one's own knowledge and preference often based on compulsion or short-term interest, and also cautions against the limited possibility of these actions morphing into larger ideological beliefs about the environment. It is thus not surprising when many affected middle-class residents showed little geographical awareness about the ecological destruction wrought by the residential developments they had bought into. Thus, in *Lessons from Chennai floods* profiled by *The Hindu Business Line*, middle class residents complained as to how they bought into the promise of 'lake view' apartments, little realising that they were built on a lake:

> I bought that apartment only in June. They said it's a lake view apartment, but the entire place looks like a lake now.[11]

Many according to this report were unaware that their residential areas were either built on a lake or a wetland as they claimed they weren't aware of the history of the place. This is unfortunate as something simple such as paying attention to the etymology of place names would have told them more than enough. Thus, most neighbourhood names in southern Chennai finish with either '*akkam*' or '*eri*', with the former referring in Tamil to a location along a waterbody while the later refers to a tank or reservoir. In the above story, residents interviewed were mostly from Perumbakkam, again 'one of the worst affected areas', its misery coming from a little acknowledged and long-forgotten geographical reality.

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[11] Nirmal, Rajalakshmi (2015, 13 December). Lessons from Chennai floods: Why home buyers should know geography. The Hindu Business Line. Retrieved from http://www.thehindubusinessline.com/portfolio/people/lessons-from-chennai-floods-why-home-buyers-should-know-geography/article7983497.ece [Accessed 24.02.2016]

It isn't that the middle-class residents were not aware of their neighbourhood being in a 'low-lying area', used as they often are to rainwater stagnation of one foot or so during the monsoon period. What they didn't anticipate is the little it took for these low-lying neighbourhoods to quickly sink into flood-prone areas. As the floods emerged as a calamity that the middle class no longer witnessed at a safe distance but one they had to live through, it became clear that the environmental subjectivity of the middle class was not built on ecological awareness, rather their emphasis was on the fact that they were ignorant of any such knowledge. This aspect of not knowing is something anthropologists such as Dilley (2010) have highlighted as critical to investigations of knowledge. The emphasis is on knowledge and ignorance as being mutually constitutive, not simply as an opposition where one is seen as the negation of the other, but more importantly in terms of how a dialectic between knowledge and ignorance is played out in specific sets of social and political relations. In the context of Chennai's middle class, their claim of lack of knowledge cannot be seen as plain ignorance but a wilful act of refusing to take notice of the environment, especially when they are capable of knowing, and perhaps might even be expected to have some sort of social obligation to know. In a similar vein, Mair, Kelly and High (2012) show that ignorance is not so much the lack of knowledge but one that incorporates certain knowledge, logics, ethics, emotions, and social relationships. Following this argument, it becomes clear that the middle class, by professing to not know the rules, the ecology of the soil, vulnerability of the land, etc. have become complicit in a certain kind of speculative urbanism to thrive, one that is dependent on practices that are the result of not knowing. Convinced that such knowledge was not essential, their ignorance reinforces a form of knowledge in its own right, acquiring a cognitive content and false consciousness, one that is used to justify their (lack of) environmental subjectivity. What renders this knowing/not knowing dialectic even more incongruous is the fact that most members of the middle class have found their economic prosperity through employment opportunities in a knowledge economy the success of which thrives on an ignorance economy nurtured by State and capital interests. Here, the middle class emphasise their deniability by not only avoiding knowledge but a few also insisted that it is up to the experts to produce information about risk, valorising a bourgeois mode of knowledge production and allowing environmental knowledge to be twisted by political spin. The State playing on middle-class confusions regarding environmental risks and uncertainties is not only able to contort the "hard facts" of environmental degradation but

also convince them to doubt civil society arguments as an exaggeration. 'It cannot be that bad' is what middle-class residents resort to as a response when reminded about the extent of environmental damage to the city's natural features. This is not surprising given Mawdsley's (2009) already established scepticism about the environmental subjectivity of India's urban middle classes. Whatever exists, she argued, carries little traction, signifying an ecologically-deficient environmentalism, one that is regressive and authoritarian.

On the other hand, the poor address their vulnerability of living on risky terrain not through deliberate unknowing but a carefully developed system of knowing, one that does not subscribe to the usual domains of knowledge systems and reinforces the limitations of following any kind of local/indigenous/traditional vs western/modern/scientific binary. Their perception of an environmentally unsafe situation is premised not on a scientific knowledge but a simpler understanding of clear and present danger based on their need for surviving the annual cycle of floods. Drawing from their ethnographic research of risk perception in an Argentinian shantytown, Auyero and Swistun (2008: 369) introduce the notion of 'relational anchoring', that is, the 'cognitive heuristics people use to select and digest information about their environment—and thus their perception of hazards—are relationally anchored in everyday routines'. Driven by the necessity of knowing their hazardous environment, the poor develop a system of noesis to make sense of the inevitability of hazards and the continued disruption of their everyday lives. This is attached to a wider understanding of a risky environment which includes unsanitary living conditions, polluted drinking water and a myriad set of health-related hazards. In this context, floods are one of many risks that needs to be balanced and overcome through a carefully constructed set of strategies against multiple others occurring often at the same time. As a result of this continuous exposure, what they tend to do is normalise the risk, not by ignoring it, but by cognitively and materially adapting to it, so that the perceived risk is at least lowered over time (Sara, Jameson, Pfeffer and Baud 2016). It is not that they have become accustomed to the recurring floods, but employ 'diverse knowledge that structures the course of mundane life, ranging from unconscious routines and pragmatic, problem-oriented knowledge to the general socio-cultural framework and its normative instructions for social action' (Ehlert 2012: 18).

Following the 2005 floods and the subsequent announcement by the government in 2009 of a Cooum River Restoration Project, several slum dwellers living along the banks of the Cooum River, including those in the Pudupet area were evicted and relocated to slum resettlement sites in Semmancheri and Kannagi Nagar, 30-40 kms south of the city. Disregarding the fact that the latter are part of the now forgotten wetland system, the resettlement exposed the evicted slum-dwellers to new kinds of vulnerability. Speaking about their experiences of resettlement, one of them explained clearly their positionality vis a vis vulnerability and risk:

> Yes, we lived in slums and yes, we lived in river banks. And yes, there were floods often, almost annually, some worse and some not so bad. But we coped with it. Our shelter was constructed with temporary materials (kuccha), and at the first sight of floods we would pick up our belongings and run to higher ground for shelter. Sometimes, we would have relocated all our things elsewhere in anticipation of the floods. At other times, you should see us running for our lives with our belongings on our head. Yes, we suffered when our houses were washed away and we had to rebuild them again. Initially, we agreed to move here thinking this was a better option. But there, everything else was intact: jobs, schools for our children, clinics, everything was nearby and we could access them all. But by relocating us here, this is permanent disaster. There are no jobs, no schools, no hospitals. Nothing. You think this [resettlement site] is not flood-prone. You put us in a swamp. You should see this place when the rains come. It is worse than what we faced along the river banks. We have to wade our way through at least a couple of feet of water and there are all these snakes and other animals whose habitats we have displaced and who are now a constant threat to us.

Even though they had no grand flood management strategy in place, using tacit knowledge or what Boyer (2008) refers to as "para-ethnographic" knowledge and adaptive solutions, the poor developed a lifestyle of 'living with floods', one that involved the interweaving of a crude form of meteorological knowledge with their quotidian routine (here we need to resist any tendency to romanticise an indigenous knowledge system based on a perfect but non-existent man/environment relationship). That their vulnerability has been exasperated through these resettlement projects became evident in the 2015 rains when Semmancheri flooded rapidly, cutting off the resettlement sites from disaster assistance.[12] Doshi (2013: 226) in the context of Mumbai's resettlement politics discusses how slum dwellers advance new forms of environmental politics through a subjectivity that is 'produced through the intersecting experiences and politics of redevelopment, displacement, and ecology'. However, it is hard to share her optimism that 'the spatial and relational

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[12] Again, the lack of etymological knowledge regarding place names is clear as one needs to only look at the suffix *eri* in Semmancheri to understand its original role as a reservoir.

production of environmental subjectivity among evicted slum-dwellers is key to urban spatial transformation and possibilities for social justice' (p. 245). By the end of December 2015, in a show of quick post-floods action, officials from the Corporation of Chennai began an eviction drive clearing slums along the Adyar River. Slum dwellers from areas such as Thideer Nagar where they have lived for generations found themselves joining their counterparts from Pudupet in resettlement sites close to Semmancheri (their destination being another low-lying marshland, Ezhil Nagar in Okkiyam Thoraipakkam). Barely had they emerged from the month-long misery when the stark reality of floods-as-disaster compelled them to rethink their everyday relations with hazardscape (*cf.* Mustafa 2005) that they were plunged into a nightmare, once again (and a long-lasting one), through this relocation.

The troubling aspect here is that such institutional decisions which can only be deemed as regressive were not even informed by an expert knowledge but an arbitrary decision making process that overrides any form of knowledge system providing a suitably different reading of environmental change (especially one that holds the State accountable as an environmental subject). Accompanying this is the usual hogwash of heavy-handed solutions for controlling flood and other ecological risks. Such responses are reactions to the floods as a specific shock rather than considering the challenge of a continuous process of water management through a hydrological cycle. Led by middling bureaucrats who take little into account of the diversity of people's ecological framings, hard sciences continue to dominate policymaking. Disregarding the historic, generative causes of such risk and the myriad subtle connections between humans and nature, this misplaced belief in artifice's ability to tame nature has led to a chronic reliance on flood-control technologies as the undisputed answer to tackling such disasters in the future.

In the case of Chennai, one of the major causes of the 2015 floods was the blocking of Okkiyam Maduvu, a channel which in the natural scheme of things is crucial to draining excess rainwater from the Pallikaranai marsh into the sea. But at 16 Km from the sea, this is a slow process of drainage, firstly into the man-made Buckingham Canal which in turn discharges into the Kovalam estuary. In 2009, acknowledging the length of time this takes, a flood alleviation programme proposed the construction of a short-cut diversion channel that would drain rainwater directly from Buckingham Canal to the sea, one that would be

faster than the slower system of marshland natural drainage system. Even though the Comptroller and Auditor General (CAG) in its 2014 report reproached the government for defective planning of flood control projects in Chennai, it is disheartening to see its emphasis on techno-engineering solutions as it endorsed schemes for short, straight canals and flood protection walls, sanctioning controversial land acquisition as well as clearing of encroachments to meet the alignment criteria of such schemes. Thus, in the aftermath of the 2015 floods, the Tamil Nadu State Government Chief Minister Jayalalithaa announced that a detailed investigation would be taken to have a regulated canal (straight cut) directly to the sea from the Buckingham Canal, adjoining Okkiyam Maduvu. This, she believed, would be the best long-term solution for not only ensuring faster discharge of surplus water during heavy rainfall but also allow a certain amount of fresh water to remain in the wetland. One can only be wary of such solutions especially in light of Das's (2014) scepticism about effective flood control planning which according to him has lost out to the political economy of corruption and the inefficiencies intrinsic to a system at the mercy of patronage relationships. Such solutions are not even about the challenges of an expertise-driven planning prioritising professional knowledges and practices but about the blind spot created by a state-driven assumption that risk can be managed with engineering solutions. In this collapse of a socionatural understanding of environmental risk, the greatest challenge is our failure to acknowledge that 'a single hazard in a place is the outcome of interactions of geographical variables across spatial scales' (Mustafa 2005: 566).

Rescaling the 'urbanisation of disaster' discourse

Barely had the city recovered from the 1200 mm of rainfall it had received during the month of November (generally considered to be the city's annual quota) when, between 1 and 2 December, the city received 345 mm of rain, a much-touted meteorological record over a 24-hour period in the month of December (the previous maximum of 261.2 mm was 114 years ago in 1901). In the following days, Chennai witnessed the worst of the floods, one that was exasperated by two factors. Firstly, is the spatial variability of rainfall as more rains lashed peripheral areas than the city, wherein against the city's 35 cm there was 49 cm of rainfall in Tambaram (southwest in Kanchipuram district), 47 cm in Chembarambakkam (west in Kanchipuram district) and Ponneri (north in Thiruvallur district) received 39 cm. A Rapid Assessment Report produced by the Indian Institute of

Science and Indian Institute of Technology (2016) observed that the 24-hour rainfall in the city was more like a 25-year storm (rainfall intensity peaking at 35mm/hr) whereas that recorded in Chembarambakkam on the outskirts was more like a 100-year storm (rainfall intensity peaking at nearly 60mm/hr). With the natural rainwater drains, run-offs and spill-overs blocked off by a reckless and unregulated process of periurbanisation, excess water quickly breached the shrunken tanks, reservoirs and canals, flooding initially the surrounding areas and eventually the city. Second is the controversial decision of the state government to release 29000 cusecs of water from Chembarambakkam reservoir. According to official reports, on the afternoon of 1 December, as the reservoir was reaching its maximum capacity (3645 million cubic feet), the Chennai district collector issued a press statement that water will be released from the reservoir at the rate of 5000 cubic feet per second, possibly increasing the overflow to 7500 cusecs, and advised people residing along the banks of the Adyar river to move to safer areas. By the morning of 2 December, with most areas of Chennai within a radius of 7 km on either side of the Adyar river under water, it was clear that this was simply not from heavy rainfall and that more than 7500 cusecs had to have been released to unleash this kind of damage.[13] That those in-charge underestimated the implications of the river's wider geographical basin was apparent from this particular disaster.

There are three major rivers flowing through the Chennai Metropolitan Area (CMA), Kosasthalaiyar, Cooum and Adyar, each of them being part of a larger, regional watershed system, with their own defining characteristics. The CMA covers 1189 km2 over three districts (176 km2 of Chennai district, 637 km2 of Thiruvallur district and 376 km2 of Kanchipuram district) (Figure 02). The Kosasthalaiyar River originates about 100 km from Chennai to the northwest in North Arcot district, with its main branch feeding the Poondi Reservoir (the largest in the city), before travelling through Thiruvallur district and CMA, finally joining the sea at Ennore Creek. Cooum River is a bifurcation from the main Kosasthalaiyar River, flowing mostly through Kanchipuram district before entering the city and draining at Napier's Bridge into the sea. Adyar River has modest beginnings from Malaipattu tank near Sriperumbudur in Kanchipuram district, appearing only as a stream

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[13] I am grateful to Sandhya Ravishankar's in-depth analysis that appeared in thewire.in on this particular aspect of the Chennai floods. Retrieved from http://thewire.in/17468/as-chennai-flooded-officials-fiddled/ [Accessed on 28.07.2016]

from the point where water from Chembarambakkam tank joins the river. Cooum and Adyar constitute two important rivers in the city, marking geographically, during the city's colonial foundations, its northern and southern boundaries. Even though within the CMA both the rivers cut across in an easterly direction to a short distance of 24 km, they are very different as river basins. Thus, the Cooum River, 72 km in total length, has a macro drainage area of 502 km2, carrying surplus from 75 tanks in its catchment area, and a bankfull discharge of 991 m3/s. On the other hand, Adyar River is a shorter 42 km, with a larger macro drainage area of 720 km2, 450 tanks feeding into it, and a bankfull discharge of 2038 m3/s, twice that of Cooum River (Narasimhan et al. 2016). It is therefore not surprising that most historic accounts of Chennai's earlier floods often refer in particular to the flooding of Adyar River. In the specific context of December 2015 floods, even though the outflow from Chembarambakkam tank itself was only 800 m3/s, overflow from its inter-linked system of smaller *eris*, canals and drains meant that the flood flow of the river peaked at 3800 m3/s, exceeding 60,000 cusecs of water (way beyond its capacity of 40,000 cusecs).

INSERT FIGURE 02 HERE

Caption: Chennai's city and metropolitan boundaries with its river systems

The frustrating aspect of this debate around why and should the government have released so much water from Chembarambakkam tank with such little notice is that this is not the first time surplus water from Chembarambakkam tank has been released under similar circumstances exasperating an existing flood-like situation in the city. Earlier in November, 18000 cusecs of water had been released with calamitous flooding in the nearby neighbourhoods of Mudichur, West Tambaram and Manapakkam. Even though some noise had been made over its disastrous consequences, given their peripheral location, it didn't raise as much concern as the one that followed the December deluge. While similar amounts of water had been let out from Poondi reservoir into Cooum River, with not so much rainfall in its catchment area and its differing nature of flood water discharge meant that there was minimal flooding of the Cooum River. But Chembarambakkam has its own precedents which was conveniently ignored. On the night of 24 November 1976, facing the consequences of a severe cyclonic storm, state officials released 28,000 cusecs of water with deadly flooding of settlements and neighbourhoods

along the Adyar riverbanks (EPW 1976). This practice continued through almost every single major flood episode in the city (1985, 1996, 2005 and 2008). While the government was quick to release a press statement defending its decision, it shows the need to understand better the hydrological regimes of Chennai's river systems and its associated socio-natural risks. While such disasters echo the futility of command and control schemes managed by engineers and flood mitigation experts deferring to the decisions of bureaucrats and politicians, there is an urgent need for tackling floods as complex riverine phenomenon whose dynamics are framed by a geomorphology of a wider floodplain. This is also perhaps one instance where we would be better served looking backwards rather than forwards. Thus, alongside a tendency to populate the debate with a spate of mostly scientific and quantitative analyses of flooding through georeferencing, hydrological modelling, and generating impressive GIS as well as remote sensing maps, what is equally required is a critical historiography of how specific watershed areas have been socio-politically manipulated and transformed.

This is particularly pertinent in the case of Chembarambakkam tank and its metamorphosis from an irrigation tank to a standby water supply reservoir for the city. Until the 1990s, Chembarambakkam was a historic irrigation tank feeding the paddy fields of the surrounding 168 agricultural villages, covering a catchment area of 357 km2 (Kolappan, 2015). It is crucial to the Adyar river sub-basin controlling nearly 40 per cent of its water with the remaining 60 per cent coming from other major and minor tanks upstream. Understanding this is crucial as the upper catchment area (including the Chembarambakkam tank) occupies 75 per cent of the total area of the Adyar river sub-basin and has a major say in the way the river floods and thereby affects the city which is further downstream (Vidyapriya et al. 2012; Figure 3). In the early 1990s, based on the World Bank practice of encouraging inter-sectoral reallocation of irrigation water using precedents of buying out farmers' rights to irrigation tanks (especially in peri-urban contexts), the state government of Tamil Nadu sanctioned the reallocation of the tank from irrigation to general purposes (in this context, specifically for Chennai's drinking water supply). Since 2000, the tank has been used to convey water to Porur Lake as well as a reservoir for the diverted water from Krishna Water Supply Project, alongside the construction of a 540mld water treatment plant on site. We cannot pick too many bones here over its transformation as Swyngedouw (2009) reminds us that hydraulic

environments are in essence socio-physical constructions that are actively and historically produced and thus there is nothing apriori unnatural about reconstructing them as large-scale water infrastructure projects. However, what is worrying is the resulting environmental change where, over the past two decades, an intricate system of established agricultural canals that used to lead out of the tank has disappeared. This can be mainly attributed to the specific pattern of periurbanisation following the re-designation of the nearby town of Sriperumbudur as a Special Economic Zone (SEZ) and its related development as an industrial corridor attracting global automotive and telecommunication industries. Referred to as India's "new Shenzhen" (Homm and Bohle 2012), the area has witnessed a rapid depletion of its sensitive natural habitat, privileging the growth of factories over flora and fauna. It is not surprising that most of these plants (including Hyundai, Renault-Nissan, Daimler, Ford, etc.) quickly submerged in water suspending their operations for several days. Also, by dumbing the tank down from its complex function as an irrigation reservoir to a surface-water conservation reservoir, state bureaucrats and technocrats did not address all factors such as shift entails. Thus, every time the state has tried using Chembarambakkam as a flood-control reservoir, it has failed miserably. As one of the largest tanks in the CMA, its design was meant for irrigation purposes, with an exit as high as possible to irrigate maximum land. But for urban water supply and flood management the exit needs to be low with overflow across minimum surface area. In re-imagining the tank from a surplus to a scarcity reservoir, state authorities have tampered with its socio-hydrological function, irreparably changing its relationship with its wider landscape without rectifying its original physiography.

INSERT FIGURE 3 HERE

Caption: Chennai Metropolitan Area in the context of Chennai River Basin and Adyar Sub-River Basin

This pushes us to question once again the prevalent emphasis on expertise, questioning the social figure of the expert and its epistemic consequences (Boyer 2008). Often based on a flawed logic, their decisions have continually made the city more vulnerable. What is also annoying is the way they invoke inevitability as an inchoate reasoning, in this case, letting the water out being inevitable, reminding us of Kelman's (2006) argument that assuming inevitability is less elegant and more damaging as it leaves

no room for contingency. Following stringent criticism of the government's decision to release water from Chembarambakkam tank, the Chief Secretary to the Government of Tamil Nadu issued a press note on 13 December emphasising that they followed the Rules for Flood Regulation as stipulated in the Compendium of Rules of Regulation of the Public Works Department which requires the State to '*balance the interests of water storage for the scarcity period, the need to control flooding in downstream areas and the safety of the reservoir*' (emphasis original).[14] But as already noted, achieving this balance is impossible given the contradictory operational mechanisms embedded in the function of a water storage versus a flood control reservoir. Denying the interference of bureaucrats and politicians, the press statement emphasised the 'engineer' as the competent authority, reinforcing their role in the technical management of urban space within regional industrial systems (Gandy 1997). Disregarding the possibility of following meteorological predictions to make decisions well ahead in time, there was once again a statistical simplification of the de facto pattern of rainfall, where much of the explanation suggests a tendency to mistake correlation for causation, imprisoning the discourse of floods within a narrow ecological imagination.

The December floods indicate even more the need to consider the aggregate of extreme events over an expanded sense of the region. There is an unevenness to urbanisation with substantial local variations, which combined with an increasingly heterogeneous rainfall spread requires us to widen the scope of a hydro-meteorological region for any kind of useful analysis. Thus, a simple 'urbanisation of disaster' argument pointing out to disaster risk as a manifestation of urban growth and its depleting effects on ecosystems is insufficient. Rescaling our dissection of Chennai floods as a periurbanisation and regionalisation of disaster shows that neither is the ecosystem secure at this scale nor can we assume that looking at the watershed or river basin will promote a better holistic understanding of human-environment relations. Nevertheless, rethinking the socionatural risks of floods in the twenty-first century is better served by rescaling its ramifications beyond a city or even metropolitan demarcations (defined arbitrarily by the convenience of governance structures) and redrawing ecosystem boundaries to a biophysically determined region. In this context, the December floods forces us also to address the fact that what we

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[14] Press Note NO: 188 released on 13 December, 2015. Retrieved from http://www.tn.gov.in/pressrelease/archives [Accessed 26.07.2016]

are dealing with here is not a plain hydrological cycle but a more complex hybridized form of socio-natural flow, one that is nested within an unstable scalar configuration that is perpetually constructed and reconstructed (Swyngedouw 2004).

Final remarks: The futility of resilience

The irony here is that only a year earlier, in December 2014, Chennai was amongst three Indian cities (including Surat and Bangalore) selected to the proud roster of 35 cities joining the 100 Resilient Cities programme set up by the Rockefeller Foundation (with a funding of $100 million), a pioneering initiative to help cities around the world become more resilient to the physical, social and economic challenges of the twenty-first century. According to a statement released by the network, Chennai was chosen based on a coordinated disaster response plan developed in the aftermath of the 2004 Indian Ocean tsunami. In addition, it appreciated the city for making efforts to build on experience, learning from past events and continuing to provide best-practice solutions to other regions. And yet, as this paper establishes, this is pure drivel given the way the city has treated every disaster as 'unprecedented' and there is little jurisprudence to the way policies are proposed in their aftermath. One of the first steps emerging from the 100 Resilient Cities Programme was the purported appointment of a Chief Resilience Office for the city, a position that remains unfilled even in the wake of the December floods. There has however been no end to numerous workshops conducted and reports produced since the beginning of 2016. While some are useful, most simply perpetuate the tripe that dominates these conversations. Typically, they bring together a diverse range of international and local experts to identify best practices and tangible ideas that could help Chennai become more flood-resistant in the future. Recommendations generally include mega-engineering solutions such as redirecting the flows of rivers (actions that were responsible for the floods in the first place), and construction of artificial channels and outlets, all offered by a multitude of global consultancies seeking lucrative contracts. Even though some caution against overreliance on technical responses, most wilfully ignore the critical issue of disappearing wetlands, flood plains and waterbodies. It makes us question the usefulness of a resilience discourse, especially one that unquestioningly transmits scientific information from a known, intentional source (the experts) to a passive set of willing recipients, i.e., the state authorities and the public. The problem here is that such expertise is underwritten by professional and institutional knowledges and practices

(mostly from the outside), prioritising tangible and visible solutions. There is also a sense of pointlessness to such deliberations as they merely join a long line of schemes that have been enthusiastically proposed but rarely implemented. Over the years, state officials have announced any number of flood protection strategies, both structural and non-structural, but as a CAG audit for 2013 and 2014 found most of these suffer from an endless spiral of delayed decision making and increasing costs.

The other vexing issue with resilience is its promulgation of a culture of optimism where cities always bounce back as they are rebuilt all the time. Taking for granted their durability, the premise of post-disaster urbanism is that modern cities almost always recover from disaster. It detracts us from addressing its conflict-ridden nature as well as questions about equity. This is flagged by Vale and Campanella (2005) who find that resilience as a function of political power is perhaps nothing more than a rhetorical device. Cultivating a prematurely progressive narrative, its manipulation by capital makes it inherently controversial. It is thus difficult to share the enthusiasm of the CITY Journal debate where Taylor and Schafran (2015) maintain that resilience can be redeemed if it critically engages with the everyday and actually existing politics and processes, and that it can be a means of both imagining and building better urban futures. If one goes by the simple definition of resilience as the ability to bounce back, then yes, Chennai has demonstrated remarkable resilience in the aftermath of the devastating floods. Within a few weeks, scant traces of disaster remained (mostly seen in garbage pile ups and abandoned cars), as the city seemed to recoup its losses as quickly as possible. But to seek comfort in such a capability engenders a false sense of confidence, till the next disaster strikes. The concern about employing a resilience discourse here is not even in terms of it possibly being a neoliberal connotation (*cf.* Zeiderman 2016), but at a simpler level. By focussing on resilience, city governance officials do not bother to fix the problems at hand, or if they do, it is done shoddily, only making the problems worse, as seen in state responses to averting a flood-like situation again in the future. In this case, risk signifies a condition where human and nonhuman threats are constantly looming, thus becoming the new parable to justify brutal political actions such as evicting slum dwellers from the riverbanks barely a few weeks after the floods. The immediacy of the disaster allows a constitutive relationship between politics and risk, invoking key framings of the resilience discourse including vulnerability, mitigation, threat, etc. to set aside rights and entitlements

arguments of the urban poor and justify their resettlement. Arguments such as right to the city as invoked by the urban poor in their struggles to assert some semblance of citizenship is disenabled by the idiom of resilience.

It is not just the poor who have had to bear the brunt but also civil society activists whose efforts at highlighting the environmental risks posed by capitalist modes of urbanisation, and calling for immediate as well as long-term remedial action have been neatly sidestepped by the state, dismissing their hard facts as their usual rant. With no possibility of a state-civil society alliance in the future, at least as far as environmental actions are concerned, in the post-floods scenario, we are left with an environmental subjectivity that shows little promise of being socio-ecologically progressive. This pessimism is seen in Catterall's (2016: 2-8) reflection that the breakdown that ensued was

> on the one hand, an example of the fragility of our technological condition, an intricate array of communication systems and work patterns, at a time of increasing globalisation and acute climate change, but also, on the other, of the fragility of our knowledge and understanding of our condition, and underlying this despite easy talk…about contestation, of reform versus revolution (now safely evaded through resilience?) the creation/destruction opposition (now safely amalgated?), of "urban" versus the rural and "the city", of commodities and coomodification, paradigms and epistemologies….These are insecure foundations

His biggest concern is however

> An approach to urbanisation that marginalizes the earthy riverrun planet, the commodification of knowledge that supports such marginalisation, such are the insecure foundations that sanitised new epistemologies hide and that a genuine paradigm shift needs to secure.

As the disaster hangover slowly fades away, and we forget the complexity of factors comprising the root cause, the paradigm shift that Catterall (*ibid*.) calls for seems far away given the continued preference of the state and its allied actors for the legitimacy of probability and statistically driven inputs. Thus, when the Chief Secretary to the Government of Tamil Nadu insists that the floods were a 'rarest of rare natural calamity' and that the flooding was caused primarily due to very heavy rainfall, it makes us wonder if we are being naïve in suggesting the possibility of an alternative culture of knowledge, and believing that it will provide ammunition for a more critical approach in the future.

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