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Rupture and Its Temporalities at Indonesia's Jatigede Dam

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ABSTRACT: In 2015, a long-proposed dam project was finally completed in West Java, Indonesia. Ultimately financed and built by Chinese actors, Jatigede Dam entailed a series of drawn-out processes of proposal, land acquisition, withdrawal, finance, and compensation. While the social impacts of dams are usually observed within fixed temporal boundaries, in this article we argue that a focus on 'project time', strictly bounded by planning and construction timeframes, obscures the broader conditions that render people displaceable and that disrupt nature-society relations. To better illuminate the lived experience of displacement and resettlement at Jatigede we engage Mahanty and colleagues' (2023) analytic of rupture, which provides an extended temporal and spatial frame. Through analysis of 24 interviews in the dam area, observation, and secondary data we detail the particular contours of rupture at Jatigede Dam and the crises that preceded and followed its construction. Our analysis understands dam construction to be embedded in broader processes of colonisation, transmigration, regime change, persecution, poor planning and governance, and inequality of opportunity. We conclude that the extended temporal frame of the rupture analytic captures the non-linear but interrelated, long-term processes that shape dam construction, displacement and resettlement to provide a richer understanding of nature-society disruption. By deepening the temporal dimension of rupture through the voices of those impacted by the Jatigede Dam, we provide a richer, socio-culturally contextualised understanding of time and its implications in hydropower developments.

KEYWORDS: Rupture, hydropower dams, displacement, resettlement, social impacts, Sinohydro, project time, Indonesia

INTRODUCTION

Large dams and their impacts involve complex temporalities and ambiguous spatial boundaries. The literature is thick with technical case studies unpacking the near term and even longer-term social impacts of dams; however, the historical conditions that coalesce to render people displaceable and dams placeable are less explored. Historical dynamics are often obscured by the immediate and stark social impacts of dams and the formalised technocratic processes of assessing and mitigating these impacts. Yet, marginalisation can begin long before dam construction begins and continue long after it is finished. The social, economic and political fissures exploited by states and other actors to realise large

development projects have their origins in long histories of colonialism and marginalisation (see, for instance, Weldemichel, 2021; Sims, 2022).

In 2013 the Belt and Road Initiative (BRI) was officially launched, heralding a new era in development dominated by China via some 330 Chinese entities (Dreher, 2022). While the BRI may be officially just over a decade old, the conditions that facilitate and mediate China's investments across the globe began long before, perhaps extending back to the time of the Silk Road. With increasing support from China, dam construction in Indonesia is on the rise.¹ The Jatigede Dam² is one of China's flagship projects in Indonesia and has been labelled "a brand-new icon in China-Indonesia infrastructural cooperation" (SASAC, 2023) that will provide clean and renewable energy to improve economic development and livelihoods in Indonesia (PowerChina, 2024). Like most Chinese funded dams, its history precedes China's engagement and its impacts will continue long after project handover³. In this paper we use the analytic of rupture as proposed by Mahanty and others (2023) to explore the Jatigede Dam beyond its characterisation as a Chinese infrastructure project. We engage the conceptualisation of rupture to understand the conditions that placed this large dam in West Java and displaced people from 20 villages. In attending to the extended temporalities of the Jatigede Dam, we observe the complexity of nature-society disruption and by exploring the lived experience of Jatigede's construction as articulated by the residents, we deepen rupture's temporal domain.

The analytic of rupture speaks to the cumulative, cascading nature or "intensification of change" (Mahanty et al., 2023: 178). Recognising that large-scale hydropower dams bring about change that is "adverse, dramatic, interconnected and far-reaching", Mahanty and colleagues (ibid: 180) use rupture to better understand the 'why' and 'how' of episodic change in the Mekong River Delta. They define rupture according to Kull et al., (2018), as "an intense and disruptive episode that ripples, with uneven, uncertain effects that are 'sticky' or irreversible" (Mahanty et al., 2023: 180). They observe the forms of crisis that rupture signals as located in specific places at specific times, but historically and materially contextualised. It is this temporally and spatially expansive view of change that draws us to a rupture analytic; one that breaks with 'project time' as the dominant way of delineating and assessing the impacts of large dams. Particularly useful is the attention to how dams and resettlement intersect with other crises and key transformative moments. In what follows, we use a rupture analytic to think through first the sources, then the implications of the long construction of the Jatigede Dam and related displacement and resettlement. We argue that by observing Jatigede through the lens of rupture we learn more about the ongoing forms of marginalisation that are often ignored but significant to understandings of nature-society disruption.

THE RUPTURE ANALYTIC

The earliest articulation of rupture can perhaps be traced to Foucault's 1966/67 conceptualisation of heterotopia. Within this conceptualisation, Foucault sought "to understand how a tear or rupture in the *order of things* emerges, how resistance towards the normalising rationales of government can occur" (Beckett et al., 2016: 172). Almost 15 years later, Michael Watts (1983) used the term rupture to illustrate the breakdown of peasant production in response to market fluctuation in his study of drought and famine in Northern Nigeria. And, ten years on, Bourdieu and Johnson (1993) used rupture to describe the historical moments within social institutions that generate change. These scholars use the term to denote a disruption or fissure in the status quo, but they do not define rupture or its conceptual qualities through which broader instances of social and environmental change can be elucidated.

¹ During the Jokowi administration, dam construction grew by 30%, and this is expected to continue with the Chinese government's indication of its increasing commitment to dam construction in Indonesia (PwC, 2023).

² 'Jatigede' means great or big 'jati' (teak). Teak trees were an important source of building material for local communities before construction of the dam.

³ The Jatigede Dam was officially handed over by Sinohydro to the Indonesian Government on 24 August 2024.

Since the 2010s rupture's theoretical dimensions have been more clearly expressed. In 2013, Wilson outlined a conceptual model of community pathways and 'transitional ruptures' to describe community transitions and resilience during human-induced and natural disturbances. In this context, rupture is a rapid and punctuated disruption that forges community change in ways that can both build and deplete community resilience depending on their capacity to respond. In 2016, Lund produced perhaps the most widely cited conceptualisation of rupture to understand how rights flow and constitute authority. In this context, Lund (2016: 1202) defines ruptures as "open moments when opportunities and risks multiply, when the scope of outcomes widens and when new structural scaffolding is erected". Like Wilson, Lund differentiates rupture moments from more incremental transformations and recognises its generative potential, but unlike Wilson, Lund observes the importance of structural pre-conditions of social, political and institutional change as well as the reconfigurations rupture can generate. To Lund (2016) rupture is epistemological and can be used to understand a variety of phenomena at multiple scales.

Mahanty and colleagues' conceptualisation of rupture is the most recent and detailed presentation. Here, rupture is described over four dimensions. The first two – 'spatial effects and adverse synergies' and 'slow and punctuated temporalities' – consider how rupture "emerges in space and time" (Mahanty et al., 2023: 177). Drawing on Massey's (2005) proposition that spatial relationships are multidimensional and interactive, Mahanty and colleagues (2023) argue that rupture points us to the cumulative impact of processes or developments sometimes well beyond the immediate boundaries of 'the project'. Here we see rupture progressed from the more punctuated depictions of Wilson (2013) and Lund (2016) to include its more incremental dimensions. Slow and punctuated temporalities reminds us that, rather than a time-bound event, socio-ecological change can have distinct and ongoing temporalities ranging from punctuated events to gradual interactions such as slow violence (Mahanty et al., 2023). Similar to this is Hart's (2024: 156) notion of "long-wave organic movements" that interact with what is called "the present conjuncture", and how they move and change in relation to each other. The third and fourth dimensions of rupture are attuned to its outcomes, particularly the affective and unequal experiences of rupture ('emotional responses to injustice and insecurity') and its generative potential ('complex generative dimensions'). This final dimension sees rupture as an 'open moment' where existing power relations are exposed and there is potential for the reworking of institutions and political positions.

Mahanty and colleagues' rupture analytic has been generally well received by scholars working at the juncture of nature-society transformations, but we note particular attention to its temporal dimension. Besky (2023) finds it valuable for understanding the temporally complex processes of resource depletion unfolding in West Bengal by providing an alternative frame to the oversimplistic notion of tipping points. Cretney and Nissen (2023) consider it to be a significant contribution to understanding the cascading crises and disasters of the Anthropocene that do not occur within discrete timeframes. They attend to rupture's generative domain, which they see as politically ambiguous and, in line with Wilson's (2013) conceptualisation, potentially positive and negative in effect. In line with Lund's (2016) conceptualisation, Kumar (2023) emphasises the value of rupture's historical lens and its role in politicising the climate crises. Wilmsen and Rogers (2023) attempt to put the rupture analytic to work retrospectively. When attending to its temporal domain, they question whether distinctions should be made between interrelated processes that are central vs those that are peripheral and suggest that there is a "need to determine how exactly to put it to work" (Wilmsen and Rogers, 2023: 214).

Responding to Mahanty and colleagues' analytic, we examine Indonesia's Jatigede Dam as a grounded, experiential case of nature-society disruption. The spatial dimensions of displacement and resettlement have been extensively explored in various contexts (see Elmhirst, 2012; Katus et al., 2016; Miller et al., 2021; Morvaridi, 2004; Read, 2012; Rogers and Wilmsen, 2020; Suhardiman and Karki, 2019; Yang and Qian, 2021, 2022). While we return to the question of cross-scalar interactions in the discussion, we focus primarily on how rupture has emerged and how it is experienced and articulated at Jatigede through particular *temporalities*.

In what follows, we begin with a review of how cases such as Jatigede have typically been thought about i.e. the dominant temporal framings in research conceptualising large dams, displacement and resettlement. We then outline the Jatigede Dam construction and resettlement and our methods before considering the complex temporalities articulated by our research interviewees. Guided by our interviewees' responses, we explain the sources and implications of the disruptions at Jatigede, embedding the final dam construction in much longer histories of uncertainty and dispossession. Our aim is ultimately to better understand how and why people are rendered displaceable and dams are made placeable and to deepen the temporal dimension of the rupture analytic.

'PROJECT TIME' AND FIXED TEMPORALITIES IN THE MAINSTREAM TECHNOCRATIC DAM LITERATURE

When approaching a large dam as a research problem, there is a vast amount of scholarship focused on understanding the nature of social and environmental impacts and people's experiences of displacement and resettlement. Our reading is that most studies adopt a fixed or homogenous notion of time that renders "the past as completely irreversible and passed without any connection to the present" (Kampmann, 2016). Beginning with the earliest conceptualisation of resettlement, the oft-cited Scudder-Colson model (Scudder and Colson, 1982) presents the sociocultural responses of resettled people according to progressive temporal sequencing. Resettlers are said to respond to 'stages' of resettlement (recruitment, transition, potential development and handing over/incorporation) by withdrawing inwards, opening up, and then accepting their new sociocultural place. The other staged conceptualisation is Downing and Garcia-Downing's (2009) routine and dissonance culture model. Forced displacement is seen to destabilise "routine culture" and give way to "dissonant culture", which is a "temporary reordering of space, time, relationships, norms and psycho-social constructs" (ibid: 230). While the authors note that there can be different "articulation clocks", ultimately the routine-dissonance culture model is said to complement the linear sequencing of the Scudder-Colson model (ibid: 235). Noting that it may not necessarily align with the temporal sequencing of the Scudder-Colson model, the establishment of a "new routine culture" is said to follow the resettlement event as resettled people seek to redefine their identities (Downing and Garcia-Downing, 2009).

The problem with stageist models is their reductionism (see also Wilmsen and Adjartey, 2020); that is, in assuming that displaced communities pass through a series of stages to reach a circumscribed (and mostly benign) endpoint, the complexity of resettlement is reduced to a defined period that is bounded by a particular project, thus concealing diverse temporal experiences of social change. In the case of the Scudder and Colson (1982) model, the starting point of social change is a withdrawal response during the recruitment phase of resettlement and the endpoint is acceptance of life in the resettlement site. This is said to align with project hand over. We call this fixed conceptualisation of time that dominates the mainstream technocratic literature described in this section, *project time*.

Through the lens of project time, displacement and resettlement are observed as proceeding through key planning milestones. This generally begins at the feasibility or planning stage of dam construction and ends at project closure. Studies that focus on improving resettlement practices suggest intervening during construction milestones (Kirchherr and Charles, 2016; Schulz and Skinner, 2022; Tilt et al., 2009). For Schulz and Skinner (2022) the "planning stage" is the right time to intervene to prevent negative impacts, for Kirchherr and Charles (2016) it is "the operation phase"⁴. From a practitioner's perspective, Vanclay (2017) views the "whole process of resettlement" in six stages, with the resettlement process completed at stage four. These six stages are: 1) scoping and initial planning; 2) profiling and baseline data collection; 3) development of the Resettlement Action Plan (RAP); 4) implementation and handover;

⁴ In their review of the mainstream research on the social impacts of dams, Kirchherr et al. (2016) found that 65 to 67% of research took place during the 'construction phase' of the dam, with the remainder of the research conducted after 'project completion'.

5) livelihood restoration and enhancement; and 6) monitoring and evaluation. These technical activities (social impact assessment, resettlement action plans, etc) and their temporal framing also have the effect of foregrounding outside expertise; that is, if practitioners can produce the right interventions at the right time, resettlement can be contained, orderly and linear. Governments and financiers can then be reassured that uncertain and potentially volatile social worlds will be contained and controlled (Wilmsen and Adjartey, 2020).

While the Jatigede Dam was completed in 2015, we could still have approached it through project time by assessing the socio-economic impacts of the resettlement and evaluating resettlers' adaptation to their new locations and/or livelihoods; however, this would have resulted in a limited understanding of nature-society disruption at Jatigede. Instead, we turn to rupture and other critical scholarship on resettlement to guide our analysis.

Extended temporalities of resettlement

Temporalities of rupture can encompass the interplay of slow, intense, and cascading transitions. Rather than a sudden or immediate event, rupture can be both slow and punctuated (Mahanty et al., 2023). To illustrate this, Mahanty and colleagues (*ibid*) reflect on Vietnam's Hoa Binh Dam resettlement. They observe that while the construction of the dam was itself a significant event, it took place in an ongoing context of change which they traced to the marketisation of Vietnam's economy. Demonstrating rupture's punctuated character, they point out how the dam's construction interacted with the cascading pressures of migration, state neglect, land conflict, household debt, and social inequality.

More critical resettlement scholarship by geographers and political ecologists has also generally taken an extended temporal view of resettlement by drawing attention to the dynamics of class, gender, ethnicity and power in specific places. Relevant political-economic work has explored how compensation (Green and Baird, 2016; Nielsen and Nilsen, 2015) and exclusionary politics (Milgroom and Spierenburg, 2008; Sargeson, 2013; Wilmsen and Webber, 2015) progress a capitalist logic at resettlement sites. Drawing on David Harvey's notion of accumulation by dispossession, individual instances of displacement have been understood as linked to the dynamics of capital accumulation and commodification (Barney, 2009; Wilmsen and Webber, 2015). Levien (2018: 213), however, emphasises that rather than being generalisable, dispossession looks different in different places depending on its context "both in content and periodization". Others who look at the discursive foundations for resettlement projects from Mozambique to Laos (i.e. how discourses are assembled to promote particular political, cultural or moral standpoints) also stretch their temporal view to consider the sometimes colonial origins of such discourses (Arnall, 2014; Sims, 2022).

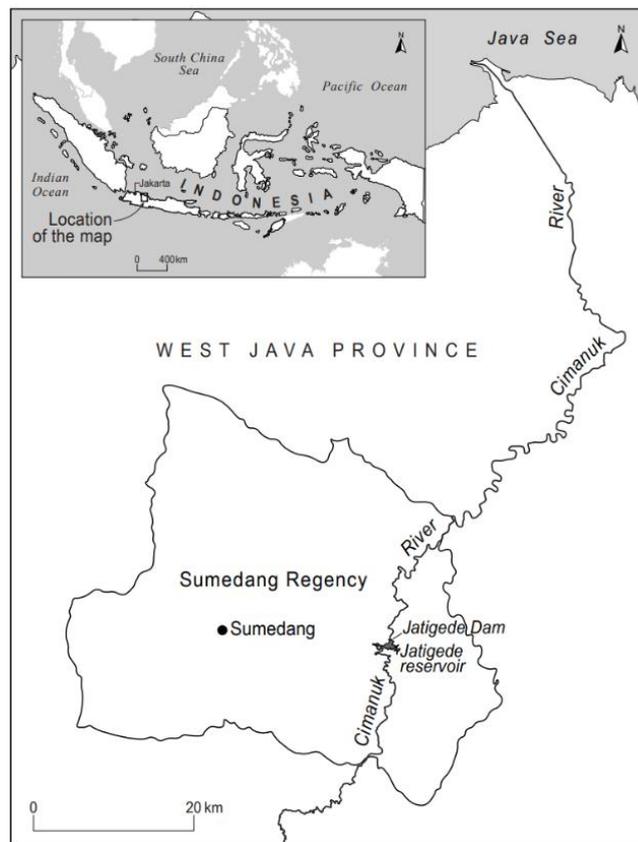
In political ecology, crisis events are also understood to be nested in larger cycles of disruption. Episodes of environmental change, for example, are seen as an accumulation of specific economic, political and social histories (Claus et al., 2015). Miller and colleagues' (2022) research in the Mekong River Delta observes how complex interactions between resettlement, environmental deterioration, and agrarian change undermined people's ability to recover from resettlement and adapt to new shocks, forcing them to again relocate. Others have drawn attention to how, in delta regions, more-than-human temporalities that may be cyclical, fluvial and flowing (of sediment, for instance) can come together to displace people and can also be used to legitimise resettlement (Neu and Fünfgeld, 2022).

Together with a rupture analytic, a reading of this literature gives us a much more expansive approach than project time for understanding the dynamics at Jatigede. In our analysis, we are therefore attuned to the long legitimisation of this development project, the way in which the 'project' can be layered with other forms of marginalisation, and the potentially diverse experiences of disruption. Before turning to our analysis, we first introduce the case and our methods.

The construction of the Jatigede Dam, displacement and resettlement

The Jatigede Dam is located in Sumedang, West Java, on the Cimanuk River (Figure 1). It is the second-largest dam in Indonesia and was constructed for the purposes of irrigation, flood control, water supply and power generation (Wiryawan, 2017; Paendong, 2013). Conceptualised under Dutch colonial rule, but officially planned in the 1960s under President Soekarno (Paendong, 2013), it was not until 1975 that the Governor of West Java placed the region under 'status quo' by Decree. This meant the land was reserved for the reservoir and as such all transactions and developments in the region were to cease (Moeliono, 2011).

Figure 1. Location of the Jatigede Dam



Source: Cartography by Chandra Jayasuriya.

In 1983, 'socialisation' (consultation) took place during which people were pressured to accept the compensation offered and warned against dissent (Moeliono, 2011). By 1986, the land of 4065 families in 12 villages had been acquired via cash compensation (Wiryawan, 2017) that was set at Rp.122,000,000 (US\$7268), regardless of household size or the amount of land that was inundated. This period involved government-organised resettlement away from the site. In 1988, the World Bank withdrew from the project citing negative environmental and social impact assessments (Al-Arief, 2002; Suwartapradja et al., 2019); however, land acquisition continued between 1994 and 1997, with cash compensation paid to some 1226 families in three villages (Wiryawan, 2017). Some people were resettled under the broader transmigrasi programme (Suwartapradja et al., 2019) and others organised their own relocation.

In 1997, under President Suharto, the Jatigede Dam was suspended due to the economic crisis and the associated mass protests (Moeliono, 2011). The project remained suspended until 2007, when

President Susilo Bambang Yudhoyono (SBY) signed a loan agreement with China Exim Bank for US\$300 million (Paendong, 2013), and construction was finally completed in 2015 by Sinohydro. During this time, another 1918 households were displaced from five villages. Compensation was set at only Rp.29,000,000 (US\$1727) and resettlement had to be organised by the displacees themselves.

The chronology of the project from conception to construction gives a sense of the expanded temporal framing needed for our study. Indeed, the interviewees themselves referred to each wave of displacement as a "generation" of resettlement. Rather than a single resettlement event for Jatigede, there was a succession of interventions over decades. For this reason Paendong (2013: 1) calls the Jatigede Dam the "the longest dam project completion on earth".

METHODS

Fieldwork was conducted in June 2022 with a follow-up site visit in February 2024. The third and fourth authors have long relationships in the area and so chain referral was used to identify participants. To avoid bias, we covered a range of different interviewees; the group comprised 11 females and 13 males, and came from different age groups and economic positions. We conducted 24 in-depth interviews of about one hour each. Interviewees included local government officials at the village and regency levels, and resettlers and other affected people (*orang terkena dampak*, or OTDs) from two villages in Sumedang who occupied a variety of professions including sari store owners, farmers, fisherfolk, and a credit services worker. Interviewees also included local civil society workers and local academics. Interviews were audio recorded and then transcribed, first into Bahasa and then into English.

The transcripts were first coded inductively, generating a range of themes such as compensation, impacts, livelihoods, mobility, eviction, government and politics. Noting an overarching theme of time, timing and uncertainty, we then used deductive thematic analysis to generate additional subthemes including *sources* of displacement (the long history of development interventions and changing political regimes in Indonesia) and a range of *implications* (blunted resistance and uncertain futures). We used these themes to organise the following sections. We triangulated our results through media reports, project documents, civil society reports and online documentaries.

DIVERSE TEMPORALITIES OF PLACEMENT AND DISPLACEMENT

Slow and unending

Project time tells us that construction at Jatigede began in 2007 and finished in 2015 (Suwartapradja et al., 2019); however, residents spoke about the slow and seemingly unending temporalities associated with their displacement and resettlement. According to Interviewee 12, "it was delayed for a long time from the 1960s until it was realised in 2015, the oldest project indeed". Fung (2024: 6) refers to the time before a dam is constructed as its "before life", when "different iterations of a project are (re)proposed by a shifting conglomeration of actors in response to changing (geo)political conditions and the demands of social movements over time". At Jatigede, this period was commonly described as a "journey across generations", during which the dam became part of local folklore and the people lost sight of the potential of their place. As Interviewee 9 explained, "the journey is not just a year or two, it's a long history to get to this day and the journey is not just our journey, this is the journey of my grandfather and grandmother". At times, the project was described as having "stagnated" to the point that people did not think it would happen (Interviewee 16). The waiting was in some cases productive as people continued to build their lives by, for example, adding rooms for married children or repairing their kitchens. Some families who had been compensated in the 1980s went ahead and improved their homes in subsequent years, but then experienced significant losses when displaced, as they received no further compensation.

We can see the slowness of rupture in the complex dynamics of displacement, transmigration and return, rather than a single, defined period of resettlement. Some of those who migrated reportedly accessed fertile land and reestablished themselves near Jambi in Sumatra, while others struggled. According to our interviewees, many transmigrants decided to return to the Jatigede region after hearing from relatives that the dam was not progressing. As Interviewee 24 described it, "During Soeharto's era they were transmigrated, however, as the dam was not progressing and they were suffering, their relatives said, 'They still haven't built anything until now. Just come back home'. So they did". Interviewee 22 said that such returns were inevitable because, "It's hard to leave your birthplace, that's how it is". Rather than prohibiting the return of transmigrants, the local government turned a blind eye to the practice. According to Interviewee 3, "More and more were coming back [from transmigration] and the local government said 'please, you can stay but later when it will be flooded, please be sincere and leave'".

Importantly, this long journey did not end at impoundment in 2015 as official records would suggest; instead, it continues for the people displaced by Jatigede and, according to Interviewee 4, "it extends to this day". Although formally completed, for the people affected by the dam the uncertainty of those many decades continues. As Interviewee 1 said, "When it comes to dams, we have to ask this (...) we don't know, is it finished? Is it stopped? We don't know". At the time of the follow-up site visit in 2024, the hydropower plant at the dam was still unfinished.

The seemingly unending nature of rupture is also articulated by interviewees who are still experiencing evictions in the area. As Interviewee 12 explained, "A handful of them [those displaced by Jatigede] purchased land in the Kertajati area. The land was taken for an airport but there are a lot of problems because the land was initially a settlement area, so thousands were evicted".

The forced displacement was still occurring during our fieldwork. As Interviewee 4 noted, "Yesterday two families were evicted. They couldn't pay rent – people from Cibungur, the flooded area". These responses highlight how the experience of rupture was not linear but rather unfolded slowly (and unevenly) over time, producing complex mobilities.

Fast and punctuated

The disruption at Jatigede was also experienced as fast and punctuated. Despite the decades leading up to the construction of the dam, when Sinohydro began construction in 2007 there was a sense that the dam proceeded quickly. According to Interviewee 8, "It was fast indeed, the work was fast, but that was it. It was only done by themselves [Chinese dam builders], without involving outsiders, local people". So fast was Jatigede's construction and so deep the uncertainty that had been sowed by past delays that when the dam went into operation and the land was flooded at the end of 2014, it came as a surprise to many. The inundation is described as a "flood" that proceeded without warning, a traumatic event that generated chaos. According to Interviewee 5,

Suddenly at the end of 2014 it happened, there was no warning at all from the government. Usually it [Jatigede] was worked on, stopped again, worked on, stopped again. But that year work continued. People were confused as they thought the dam wouldn't come here but in urgency what can you do, they are moving too.

While this interviewee mentions that there was no warning from the government, other interviewees relayed that they had attended the closing ceremony of the sluice gates, with residents watching from a distance and officials lining the dam wall above. At this stage there was still disbelief, and it was only when the gates closed and the water began to rise that the reality of the inundation became clear. The residents returned quickly to their homes, observing the water's rapid rise. Interviewee 7 said, "We moved because we were pushed by the water"; this interviewee went on to say that, "the water reached my thighs. It was really scary", and, "It was an emergency and we had to help the residents move". According to Interviewee 16, "On August 31, 2015, everything was already inundated. It was a disaster".

Some interviewees interpreted the fast pace of the inundation as intentional displacement. As Interviewee 22 described it,

The houses were not relocated and were flooded. That's where the panic of the communities generally arose, not only in Karang Pakuan and Pakualam areas, but also in the Jatigede Reservoir area. It was as if the residents were stubborn and did not want to move so they were forcibly evicted.

The suddenness of the inundation is also described by Interviewee 4, who said that, "The people have to move because the water entered the house, they force us to move not using the [legal] apparatus but by immediately flooding our house". With this, a long process of community resistance came to a sudden end. As Interviewee 12 said, "In 2014-2015, they were driven out by deliberate flooding. Before 2015, they could still fight, discussion was still happening, but fighting with water was difficult". The fact that people were still residing in the inundation area – seemingly unaware of what was to come – speaks to the sources of rupture at Jatigede.

SOURCES OF RUPTURE

Our interviews revealed that while the Jatigede Dam was a moment of crisis, the conditions that rendered the people in surrounding villages displaceable are temporally extended, reaching well into the past, well before project time. They are rooted in Indonesia's histories of development interventions and changing political context. In this section, we explore the sources of rupture as discussed by our interviewees. We begin with an overview of the various actors that dipped in and out of the Jatigede project and of the shifting national politics that punctuate local residents' experiences of Jatigede.

Our respondents' recollections of the Jatigede Dam extended back to before the involvement of China, the World Bank, or even the early round of land acquisition to reveal a complex project genealogy. As Interviewee 3 remembers, "So initially the contractors were from France, and then from elsewhere and finally from China". This mention of French engagement in Jatigede appears to refer to a feasibility study undertaken by Coyne et Bellier sometime before 1960 (Dewi et al., 2022). The idea of a dam at Jatigede, however, actually extends back to Dutch colonial rule. In 1812, based on cartographic exploration, the area was observed to be a natural basin, and a large reservoir was planned on the Cimanuk River (Performance RAR, 2023). Mass displacement followed in the early 1900s under the colonial government's 'Ethical Policy' which, in order to drive development, promoted the relocation of farmers from more-developed Java to less-developed areas of Sumatra, Kalimantan, Sulawesi and Papua. The purpose of this relocation programme was to control marginal populations and address "demographic imbalance" (Martinez and Hudayana, 2022: 59). The colonial government in this way laid the discursive and material foundations for development-through-relocation. It was a discourse that persisted beyond Indonesia's independence in 1942, across the development actors that would engage and retreat from Jatigede over time, and across the ebb and flow of Indonesian leaders and political regimes.

In 1945, the Sukarno-led Indonesian government, through its programme of *transmigrasi*, continued what the Dutch had begun. It encouraged the "spontaneous" migration of people – of their own accord and without government assistance – from "overcrowded areas" such as Java to less-crowded areas (Elmhirst, 2012: 137). This intersected with plans for Jatigede that were later formulated during the World Bank era when President Soeharto held power and land acquisition was in full swing. In order to avoid providing replacement land as required under the Land Acquisition Law, the Sumedang Regional Government encouraged the affected population to transmigrate "voluntarily" (Asmara, 2022). According to Martinez and Hudayana (2022: 63), transmigration was the "least costly means of managing all the problems posed by forced displacement". As decisions to transmigrate were made during a period of persecution, however, any claims of dam-affected people moving of their own volition must be treated with scepticism. As Interviewee 3 attests: "It was 1982 and people just accepted it [transmigration]. They

were afraid, there was a rumour at that time that those who refused the development were communists".

Jatigede stalled after the World Bank withdrew its support. One interviewee suggested that it was the World Bank's appreciation for the cultural significance of the site (see below) that at least partly underpinned its decision, however it was more likely a response to increasing pressure from civil society and international NGOs to scale back funding for large dams due to the profound environmental and social impacts of projects like Kedung Ombo in central Java. Soeharto's transmigration programme was also facing intense criticism because of the displacement of Indigenous people, rising violence and increasing deforestation. Even after the World Bank's withdrawal from the Jatigede Dam, land acquisition continued with little opposition from the affected people, who feared repercussions from the Indonesian government. Those who raised grievances were targeted and thus locals felt they had no choice but to accept cash compensation for their land. As Interviewee 3 described it, "A Cisurat villager along with his friends objected to the price [compensation]. He wanted an adjustment, but then they were summoned to the Military District Command and persecuted". Others noted that the compensation issues were emblematic of life under Soeharto. According to Interviewee 12, "There were many social problems, including the issues of paying compensation at the time, because you know, that was what the New Order era was like, the government at the time did not side with the people and the people here suffered greatly".

The 1998 riots were a significant period for the people of Jatigede, who joined a movement that forced the resignation of Soeharto. According to Interviewee 9, "In 1998 Soeharto stepped down after the rebellion happened which involved many of those who were paid compensation in 1982, 1984 and 1986". Even so, successive government administrations continued to pursue the project. As Interviewee 12 recalls, "From there the government changed from Harto (Soeharto) to Habibi to SBY to Jokowi, then there were negotiations with elements of the community as the government kept pushing the project". As Interviewee 24, from a local NGO, further remembers, "From Soeharto to Habibie, from Habibie to Megawati, Abdurrahman Wahid, SBY. Then, under SBY's leadership, it began. Jusuf Kalla was looking for funding from China. That's where it started". Another interviewee noted, however, that SBY had great respect for the cultural significance of this region and so the project did not proceed until President Jokowi came to power. Some of the interviewees remarked that this was because of his bravery. As commented by Interviewee 22, "Indeed the story exists in the community, that only Jokowi, the brave president, did this". Jokowi is seen as the president of action who pushed the project through. According to the same interviewee, "Jokowi's last commitment was to re-collect data and then compensate the affected areas, because it was delayed for a long time", and he further added that, "the dam was immediately closed by Jokowi". The bravery attributed to Jokowi was similarly ascribed to China and its involvement in Jatigede. As Interviewee 5 said, "There is this myth that they [World Bank] didn't dare build the dam because it was dangerous, but China is brave". This suggests that the decision to build Jatigede regardless of its sensitivities was seen to demonstrate the fortitude of the Jokowi administration and the Chinese state.

In terms of the precise actors involved (World Bank, China's Sinohydro etc), some participants felt it did not matter, but that the Indonesian government (national and provincial) was to blame for the conditions of their relocation. Interviewee 22, for instance, said that, "It's not really a problem of who builds it (...). It seems that the government was not capable of handling the situation properly". Interviewee 1 similarly commented that, "It's impossible for Chinese people to think about these people, it's the [Indonesian] government's business, not the Chinese". That said, some participants did reflect on the particular nature of the Chinese actors. As stated by Interviewee 3, "The current contractor doesn't use Human Rights indicators (...). Contractors from China don't consider the humanitarian aspects of standards". Others noted that displacement and resettlement under Chinese management differed from the procedure that would have been followed if the dam had been funded by the World Bank: According to Interviewee 24,

We saw that China's character is closed and not very concerned about environmental and social issues, based on their track record. And it is reflected in Chinese financial institutions that fund the dam, such as China Exim Bank. So we thought, well China is stubborn, even if we send letters or something like that, they won't respond, different from the World Bank.

Local residents discussed the Chinese contractor's attitude to cultural losses. It was felt that the Chinese did not understand the significance of Sundanese culture which should have been taken into account when deciding the height of the dam and its location in the region. Sundanese civilisation was recorded as early as the 9th century and residents told us that the region is considered the origin of the universe. The flooding of ancestral burial grounds and Sundanese spiritual and material culture was deeply felt. Residents have attempted to guard against some of those losses by marking the location of burial sites in the reservoir with floating balloons and by quickly decorating graves that are revealed when the waters of the reservoir recede in the dry season. In one village, a cultural centre has been reconstructed with a sign that reads "Welcome back. Great burial sites". In this way, residents welcome visitors to the area and occasionally return physically to their ancestral sites, depending on the season.

As discussed by residents, the question of how people at Jatigede were rendered displaceable is a complex one. Layers of colonial practices, political change, conflict and development imaginaries have produced the potential for a large dam at this site and have resulted in waves of disruption to lives and livelihoods in the area. 'Project time' would bracket out much of this history, but it is essential to fully understand people's experiences of nature-society disruption at Jatigede. This complexity is also a reminder that Sinohydro – and the cross-scalar dynamics of Chinese dam building – stepped into this context right at the end. We return to this in our discussion.

IMPLICATIONS OF RUPTURE

Blunting resistance

Local residents' memories of resistance to dam construction and the resettlement process date from the first land acquisitions of the 1980s. For some, this was a time of unity; indeed, according to Interviewee 12, "continuously the community rejected the plan with various considerations and kept strengthening the people's power, so there were mass protests against the Jatigede project". A number of interviewees, however, saw resistance weaken over time. As Interviewee 1 put it, "There was a mutual agreement at first among the residents that they would not move until the water enters the house. But it turned out they had already received compensation and they left immediately". People feared missing out on compensation and many gave in. According to Interviewee 3, "People were quietly agreeing [to compensation] (...). The situation began to become disorganised, then some people began to waver, people began to worry about 'this village next door has accepted'".

The underlying fear that was pervasive during the Soeharto presidency stoked the abandonment of resistance against the dam and displacement. As put by Interviewee 4, "So the years 1983 to 1986 were the New Order era and there was a lot of torture, some died, some were called to the Military District Command". These kinds of events were well known among the affected population and played a role in forcing compliance. According to Interviewee 5, "We were afraid too, couldn't talk, now we can. Back then if you fought you would have been arrested first, so we just obeyed".

Other interviewees felt that the resistance movement was undermined by outsiders who claimed to support the struggle against the dam and displacement but were in fact self-interested. "Each organisation has its own interest (...), some use defending the community as an excuse, but actually they are pursuing their own interests" (Interviewee 22). One result was that NGOs that genuinely wanted to assist the affected population were hampered by the suspicion generated by non-genuine organisations. "We [a local NGO] were initially suspected of wanting to take advantage because there was already a

grassroots movement there. We tried to enter the village but were blocked by residents" (Interviewee 24). There were also reports that protesters were paid to withdraw. According to Interviewee 22,

Let's say there is a certain association, A and B have their own interests. When I participate in a demonstration and then a certain person calls me and hands me an envelope. Automatically, I would tell my fellow demonstrators that everything's been done (...). A dog barks and then gets thrown a bone.

This suspicion undermined later attempts to reinvigorate the resistance movement, which finally collapsed during the Jokowi presidency. "In the end the movement weakened, and the next movement had a different name [and] was suspected of having a hidden agenda, so from there the Jatigede project was achieved during the Jokowi presidency" (Interviewee 12).

While suspicion and mistrust led to disunity within the resistance movement, the slow and unending temporalities of Jatigede clearly eroded people's resolve to fight. As Interviewee 9 said, "It's a long journey, a lot of dynamics, a lot of conflict", and as Interviewee 5 further commented, "The project took a long time, in the end people were not strong". Key resistance leaders passed away leaving gaps that were not filled. "Many people have passed away. Even the leaders of recent demonstrations, leaving only the members" (Interviewee 22). While there was a temporary resurgence in the resistance movement, "In 2015, there was turmoil again, protests here and there, and requests for justice, especially for the 1982, 1984, 1986 problems" (Interviewee 9), and people were just too tired to sustain pressure on the government. "Everyone went their separate ways. The people had already done enough and still had power, but they were tired and just stopped" (Interviewee 23). Interviewee 1, a woman who had been a leader during the struggle, said that, "It's better to be quiet, we've tried our best". Notably, this contradicts Fung and Lamb's (2023) findings on how slow resistance in the Salween River Basin generated incremental change and improvement, and how project delays gave activists time to organise more effectively. At Jatigede, intimidation, project delays and exhaustion meant that ultimately the trajectory of development does not appear to have been fundamentally challenged.

Uncertain futures

Rupture at Jatigede appears to have generated impoverishment, inequity and deep uncertainty. A folk story about the dam illuminates some of these dynamics. "Ever hear of '*uga*'? Its more than a myth, it's like a forecast of what will happen (...), it assumed that the Jatigede Dam will be broken" (Interviewee 3). *Uga* is an oral tradition in West Java. As the story is told, the Sundanese believe that a white crocodile wanted to build a dam at Jatigede as a gift to the woman he loved (Performance RAR, 2023); however, it was halted by a white crab who anticipated that the dam would cause ecological destruction (ibid). The crab and the crocodile battled it out, with the crab emerging as the victor (ibid). The crocodile said that he and his descendants would continue to pursue the construction of the dam but the crab threatened to return and destroy the dam if it was ever built (ibid). Because of this story, some people assumed the dam would never materialise or that, if it did, it would fail. As such, they did not prepare for their future displacement.

The uncertainty surrounding the dam had many ramifications. Some people spent their compensation on consumables rather than replacement land and housing. According to Interviewee 22, "The land acquisition started in 1982 (...), the flooding occurred in 2015, and the compensation money was used up and some people may have been confused about how to use the money". Disbelief jostled with uncertainty, and people existed in limbo "because they were always waiting". As Interviewee 9 put it, someone would suggest, "let's do this and someone would say ah no, it will be like this later, like that. The people lost an understanding of their potential in their place". With the uncertainty of Jatigede and with legal restrictions preventing new construction, people stopped investing in the area. According to Interviewee 3, "There was a prohibition on building and all kinds of things, for example road infrastructure and electricity tended to be very slow to build because it would be flooded. The school

building almost collapsed". What these responses highlight is that Jatigede was not one displacement event, but rather a long-drawn-out and confusing process that created huge uncertainty about the future.

Compensation had intergenerational impacts. The generation that received the compensation had children and then in some cases passed away, leaving the burden of displacement to the next generation without recompense. As Interviewee 9 lamented, "the problem is that compensation is actually already in the past", and Interviewee 7 commented that, "People who were compensated have mostly died. So, receiving compensation was a matter of inheritance". Time also devalued the compensation, which "was the value of the money during Soeharto's time" (Interviewee 24). Families also expanded during the 35 years after compensation and follow-up compensation was thus confusing, seemingly accruing to some but not to others. This difference, according to Interviewee 1, occurred because,

at that time, there were still many, such as some who lived in Jakarta but used to be here. Some people got compensation and some didn't. Like my brother and sisters in Jakarta, how come the others get compensation, why not my younger siblings? It's our land.

As time passed, some people no longer had the required documentation to receive compensation, which left them with the burden of displacement but no financial recompense. As Interviewee 25 put it, "They could not produce house certificates, so the government did not want to give compensation". Other interviewees observed that the compensation process changed over time. According again to Interviewee 25, "Before data collection, they had already moved. They were originally OTDs [*orang terkena dampak*, or resettled people] but when they applied again, some succeeded, some did not".

The livelihoods of some residents became deeply uncertain after losing their paddy fields. "I was a wealthy person, but the situation has changed – from having to not having. Hard to get a job" (Interviewee 5). Similarly, Interviewee 4 reflected on life before resettlement compared to after, saying that, "The economy was better before. In our previous village if you just sleep you can still eat rice. As for here, if you sleep you don't eat". While the impoverishment within one generation could be extreme, it was particularly so for rice farmers who lost paddy fields and fishers who lost fishing grounds. "There is no livelihood for their daily needs. They used to have rice fields and now they are farm labourers", said Interviewee 5, and Interviewee 12 commented that, "Fish farming makes fishing activity harder because the fish are more interested in the leftover feed for the farmed fish and so they stay under the floating cage. So, it's rare to catch fish during fishing".

Uncertainty is also reflected in new temporalities of farming around the Jatigede Reservoir. Those who self-relocated to the water's edge but have no farmland there are engaged in a seasonal dance with the dam (what we might call 'reservoir time'); that is, as the water recedes in drier months, relocatees move quickly to plant short-term crops such as corn and peanuts to feed their families and to sell. They attempt to predict the rising waters as the rains come, and while some years the crops reach maturity and are harvested, oftentimes the crops are swamped by the rising waters. The remains of waterlogged crops stand in the water as a stark reminder of the unpredictability of the water level and of their failed gamble. Hope and defeat wax and wane with the rise and fall of the reservoir.

There were also plans for the region to become an important tourism destination where the affected population could establish businesses to replace their lost livelihoods as rice farmers; however, it seems that these opportunities have been taken advantage by others who have migrated to Jatigede. According to Interviewee 4, "Most of the outsiders who can afford to build stalls at the Jatigede Dam are outsiders who have money. The people who were displaced are just spectators or coolies". We visited tourist sites around the reservoir and found a moribund tourist economy, with most of the food stalls empty unless there was a public holiday, sometimes with only one customer per week. The more formal tourist sites at the dam (supposedly run by outsiders) have better infrastructure but were equally empty. The road coming into these sites is poor, while there is a better road directing tourists to the nearby Al Kamil

Jatigede Mosque. Additional activities to support peoples' livelihoods, such as irrigation and aquaculture, never materialised. According to Interviewee 12,

They [the Indonesian Government] said it [Jatigede] was for the provision of irrigation which would benefit the surrounding community, but what happens is we have not yet seen it implemented. There are lots of illegal floating fish cages, but the investors are outsiders.

Instead, the affected people are left with fears for the next generation. "We feel we are the victims. It has been difficult for us and in the future, our children may experience it too. Since the dam was built, I feel like we haven't had a positive impact and I'm worried for the next generation", commented Interviewee 12, and Interviewee 14 said that, "I once had a thought of having a baby but had to think again as I can barely meet our daily needs". There are ongoing processes of marginalisation at Jatigede, reminding us again that this was not a single event.

DISCUSSION AND CONCLUSION

By putting the rupture analytic to work, what do we learn about nature-society disruption at Jatigede and the impacts of large dams more broadly? The rupture analytic can provide a critical understanding of the sources and effects of nature-society disruption. Large dams and resettlement have historical origins that the rupture analytic encourages us to explore. These include: colonisation (the Dutch and their 'Ethical Policy' of relocation), transmigration (under Presidents Sukarno and Soeharto), regime change (from President Sukarno continuing to President Jokowi), persecution (from the national and regional governments but also within the community), poor resettlement planning and governance (from the World Bank, national governments under various regimes, and Sinohydro), and inequality of opportunity (such as access to compensation). In terms of effects, the Jatigede Dam brought about a crisis in local livelihoods as farmland was inundated and resources such as fishing grounds were lost, and a crisis of splintered, exhausted resistance.

We argue that what enables this deeper understanding of episodes of nature-society disruption is rupture's extended temporal frame. It is not just that the effects of rupture ripple through time (see Mahanty et al., 2024), though they certainly do; there are two key insights that we wish to draw out from our analysis. The first is that rupture captures the long-term processes of marginalisation in which dam building is embedded. The historical context of Jatigede Dam clearly extends to colonial-era policies and narratives that, like in Lukas Ley's (2021) ethnography of flooding in Semarang, continue to reverberate. What rupture highlights is how dam building interacted with other nested, historical processes to produce uneven and uncertain effects. While scholars have long attended to the politics of dams (see for example the Bui Dam in Ghana (Wilmsen and Adjarney, 2020), the Danjiangkou Reservoir in China (Rogers and Wang, 2020), the Sardar Sarovar dam in India (Ranjan, 2018) and the Lower Sesan 2 Dam in Cambodia (Milne et al., 2021)), the mainstream technical literature must also attend to their historical contexts and structural conditioning.

The second key insight is that time can be experienced as nonlinear, with unfixed effects, and should be understood through specific socio-cultural lenses. Displacement and resettlement at Jatigede proceeded in a haphazard way over several decades, generating deep uncertainty and many different forms of mobility. Over and over again at Jatigede, local residents highlighted the uncertainty generated by the project, uncertainty that has had rippling effects over decades (see also Fung, 2024). This drawn-out project is embedded in local mythology (*uga*), reminding us that social and cultural conceptions of rupture are important. For some people there remains the possibility that the angry white crab will return to destroy the crocodile's dam. Then, there are people's slow/unending and fast/punctuated experiences. At Jatigede, the interviewees expressed their experience of time in a variety of ways. For some, the final inundation was experienced as an emergency or disaster – a sudden, cruel flood that could not be fought against. This is juxtaposed with the long and non-linear 'journey' of land acquisition,

compensation, resettlement, return, displacement, waiting and rebuilding. These stories of time were sometimes aligned with the activities of the dam, but at other times they were not. Time, as it is perceived in a specific sociocultural context, is significant because it influences people's responses to development interventions such as large dams; it affects decisions to resist or desist, to relocate or return, and to prosecute for compensation or bear injustice.

Overall, this case highlights that the fixed temporal frames of 'project time' that are used in technocratic dam studies are profoundly limiting. It points out a failure to recognise the interrelated long-term processes and locally relevant temporal perceptions that shape displacement and resettlement. At Jatigede, a project-time-focused analysis would have reduced this case to a stand-alone Chinese infrastructure project with an imperfect resettlement plan. This would have been problematic on two levels. Chinese dam building anywhere in the world needs to be understood in the context of a broader "Chinese water machine" (Han and Webber, 2020b) that is brought together by workers, finance, expertise, and a powerful dam export industry (see also Han and Webber, 2020a; Rogers et al., 2023; Wilmsen and Adjarney, 2020). The lives of residents at Jatigede have been fundamentally reshaped by this 'water machine'. A project-time approach would then have elided the local particularities of rupture and people's understandings of the project and its effects. While Jatigede is in one sense a Chinese (Sinohydro) Belt and Road Infrastructure project, it is also so much more. By using the rupture analytic, we reach a more precise understanding of nature-society disruption at Jatigede through observing other political, social and economic interconnections. This is a project shaped by multiple political regimes in Indonesia and one that intersects with existing dynamics of transmigration, inequality and marginalisation; it reminds us of "how local dynamics of rupture are nested within a complex network of wider geopolitical and spatial relationships" (Mahanty et al., 2023: 7). This is similar to more recent work by Gillian Hart (2024: 135), who encourages us to see the "present differently through global lenses" by exploring a global conjunctural analytic.

To conclude, we argue that the expanded temporal frame of the rupture analytic can help mainstream technical scholars, clarify the impacts and implications of large dams in ways that 'project time' cannot. This expanded temporal frame orients us to the nested historical and contemporary conditions that coalesce to render people displaceable and dams placeable; it also sensitises us to the generative qualities of nature-society disruptions. In observing Jatigede, and by documenting the stories of those it displaced, we deepen rupture's temporal dimension to account for locally relevant perceptions of time, thus gaining a richer understanding of the lived experience of dam construction, displacement and resettlement. Our findings have implications for future studies of hydropower development in Indonesia and more broadly. Indonesia, for example, has committed to boosting its hydropower potential from 6.7 GW to 72 GW total capacity by 2070 (IHA, 2024) and the role of China in large dam construction is set to grow⁵ (PwC, 2023). Other countries in the region are following suit, with Laos in particular pursuing hydropower development given its high mid-stream flow rates and elevation (Ang et al., 2023). Here, China is also an important actor. Contemporary narratives of 'clean energy', net zero, rising energy demand, livelihood improvement and economic development are driving a new dam boom that will cause widespread nature-society disruption across Asia. A rupture lens with its expanded temporal frame is critical to interrogating a new round of interventions that (re)produce nature-society disruption and can be the result of complex historical and political motivations.

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⁵ In 2023, the governments of Indonesia and China agreed to strengthen their cooperation in dam development in Indonesia (PwC, 2023).

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