

Reconstructing the Archipelago

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In June 1997 the Indonesian rupiah plunged dramatically against the US dollar. This currency decline did not cause an immediate mass panic, as the central government in Jakarta assured the public that the country, with its strong economic foundations, would not enter into a crisis. But, alas, the rupiah went into free fall only a few weeks later. Within several months the whole country was in deep turmoil, triggered by the unforgiving Asian financial crisis that had struck the whole region. Indonesia suffered the most, and its crisis entailed unpredictable political ramifications. Amid riots that saw parts of Jakarta burn, on 21 May 1998, President Suharto, the strongman of the authoritarian New Order regime, finally stepped down after ruling Indonesia for thirty-two years. This dramatic episode in Indonesian politics marked the start of the era of *Reformasi*, which paved the path to democracy.

Twenty years after being prostrated by turbulence in the global financial system, Indonesia is now emerging as a new economic powerhouse in Asia, having undergone massive transformations from what it had been under the New Order regime. Currently, Indonesia is the largest economy in Southeast Asia. With its soaring GDP it has even joined the G20, which comprises the world's twenty largest economies. And while its economy has grown many times over with its further integration into global markets, Indonesia's politics too has been remarkably transformed. *Reformasi* created a new sociopolitical environment whereby democratic principles became the rules of the game. For several years, democratic transitions brought about a wholesale change in the political landscape that took place from the central government in Jakarta all the way down to the district level countrywide. The authoritarian top-down style of governance is now a thing of the past, as liberal democracy is widely embraced. Having implemented political reforms, Indonesia now has one of the most complex electoral systems seen anywhere, in which all executive officers from the president and provincial governors down to district heads are elected through general elections. This renders Indonesia the third most populous democracy in the world after India and the United States.

Yet despite what seems to be a bright picture, we should not look through rose-colored glasses at all of the transformations that have occurred in Indonesia since the

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fall of Suharto's dictatorship, for some aspects of the economic and political changes have presented uneasy challenges and resulted in less satisfactory outcomes. The bottom line is that Indonesia's transformations over the last twenty years are complex and marked by uncertainties that can be traced to the disparity of institutional and cultural conditions in society.

It is such complexity that attracts interested scholars to study how these massive social and political transformations have been carried out in response to the post-New Order environment. Indeed, explaining a country like Indonesia is not an easy job for any scholar to accomplish. For a start, Indonesia's population is approximately 250 million people; it is the world's largest Muslim population. The country is extremely large—the archipelago stretches for some 5,360 km, the same distance as New York to Anchorage, and is made up of around 17,000 islands, half of which are uninhabited. A culturally diverse nation, Indonesia has over two hundred ethnic groups living across the archipelago, each with its own language but all speaking a common language, Bahasa Indonesia. As a postcolonial nation, Indonesia as such did not exist before the Dutch came to the archipelago and claimed it as a colony. During the precolonial period, for centuries a number of major kingdoms ruled parts of what is now Indonesia. Under the Dutch rule modernity was introduced, and in the twentieth century the European concept of the nation-state was adopted by pro-independence movements that called for unity among all the peoples of the archipelago.

The study of modern Indonesia was pioneered by Western scholars intrigued by its history and culture. More specifically, the beginnings of this academic field saw a growing interest among American scholars who paid particular attention to revolution and nationalism, a political process that dates back to the late nineteenth century. [George Mc Turnan Kahin \(1952\)](#) scrupulously observed the origins of Indonesian nationalism in the social, economic, and cultural experiences of the Indonesian people under Dutch colonialism. In his seminal work *Nationalism and Revolution in Indonesia*, Kahin described with great sympathy how pro-independence leaders fought the colonial power with both diplomacy and physical force, a long struggle that culminated in independence after World War II.

Since independence, Indonesia's state and society have continued to be influenced by their colonial legacy. As new transformations have occurred, Western scholars have continued to study this nation of many islands. Some of their works have made major theoretical contributions to the social sciences and humanities. One notable work, on nationalism, is by the US political scientist [Benedict Anderson \(1991\)](#); the peculiar structure of the Indonesian nation-state prompted him to theorize nationalism as an "imagined community," a constructivist view of nationalist ideology that ties the state and society in an ambivalent unity. In a similar vein, the prominent anthropologist [Clifford Geertz \(1963\)](#) argued that Indonesia was a new state constructed over an old society; his rich anthropological exposition of the ancient state edifice of Negara ([Geertz 1980](#)) has enriched our understanding of polity and power relations in the Indonesian archipelago in particular and of non-Western society in general.

When during the 1960s Southeast Asia became a focal point of the Cold War, this inevitably altered the political landscape in Indonesia. The triumph of Western power in the region gave rise to the New Order regime, following the violent annihilation of the Indonesian Communist Party, the PKI ([Cribb 1991](#); [Roosa 2006](#)). This bloody

episode saw millions of alleged PKI members slaughtered, and for the next three decades Indonesia was virtually controlled by the military regime of General Suharto, who promised to deliver economic development and prosperity. Again, a new generation of scholars arrived to study how politics and the economy were governed under this new authoritarian structure, and plentiful studies of the New Order were carried out by both local and foreign scholars. They examined an array of important issues that shed light on the nature of Suharto's developmental authoritarianism and its impacts on Indonesian society. A few theories are worth noting in this respect, as they made major contributions to the field of Southeast Asian studies.

Perhaps the most influential theory came from those political scientists who sought to understand how New Order authoritarianism was able to survive over three decades. A variety of explanations arose in response to this question. Some looked into the institutional structures of the New Order and highlighted three key elements—the military, the ruling party, and the bureaucracy—that underpinned Suharto's power (Vatikiotis 1993). Other political theorists shed light on the political culture of New Order Indonesia to describe the deep influence of the concept of power in Javanese culture (Anderson 1990), on which Suharto relied to stay in power without significant oppositional challenges (Liddle 1985). Besides the question of power, the role and impact of rapid economic growth and industrialization were critically examined by several scholars to expose the consequences of New Order developmentalism, particularly on the environment (Tsing 1993) and on social justice (Collins 2007). They also reveal how corruption, nepotism, and a lack of transparency plagued the New Order regime (Robertson-Snape 1999), leading to its downfall.

The abrupt demise of the New Order dramatically shifted Indonesia's political system. Nevertheless, the legacy of Suharto's authoritarian culture lingers on (Bunte and Ufen 2008), massively internalized as it was for three decades in state institutions and political parties: continuity and discontinuity have become a common theme emphasized in most analyses of the post-Suharto era. On the one hand, scholars of political economy attempt to debunk the assumption that *Reformasi* would make Indonesia more democratic (Hadiz 2010); by using the evidence of local politics in different parts of the country, they demonstrate the revival of old oligarchic power in the new democratic system (Winters 2013). On the other, some scholars are more optimistic toward the prospects of democracy; that Indonesia has been able to avert massive political conflict at the grassroots and elite levels—a tendency typical in emerging democracies—is attributed to the successful institutionalization of the democratic system throughout the country (Mietzner 2009).

Indonesia is an incredibly important regional nation with a growing influence on Asia, and political and historical studies of the country contribute significantly to explaining the dynamics of Southeast Asian societies, especially in a global context where transnational forces deeply penetrate local institutions, politics, and cultures. Yet the scholarship of Southeast Asian studies still lacks insights into how political and social changes are mediated by knowledge production. This is an area where the perspectives of STS are highly relevant to comprehending the complexity of ongoing transformations in Indonesia and the wider region. By the same token, Indonesia provides an important site for testing STS concepts and theories, which have been situated primarily in the production of science and technology in the Euro-American context (Jasanoff 2002).

Framing Indonesian studies around an STS perspective is barely a new academic undertaking: there is a small but growing body of literature in recent STS scholarship that focuses on Indonesia as an empirical ground. Some scholars of Indonesia have taken technology into account as a key factor when trying to paint more nuanced pictures of how Indonesian society has responded—both now and in the past—to a changing social and political environment. This STS-informed analysis within Indonesian studies extends across both colonial and postcolonial periods. One instance is Rudolf Mrázek's *Engineers of Happy Land* (2002), which connects the presence of new technology to the emergence and spread of the nationalist consciousness in the Dutch East Indies that sparked a movement toward Indonesian independence. Mrázek eloquently describes a multiplicity of technological artifacts, such as radios, telephones, cars, and trains, to uncover narratives reflecting the strong aspiration for modernity that was exploding among the peoples of the archipelago.

While Mrázek's account describes how modern technologies were turned into political instruments by native populations, Suzanne Moon (2007) offers a different view in explaining the interplay between technology and politics during the colonial era. Focusing on the ethical policy (*Ethische Politiek*) that spawned the development programs initiated by the Dutch colonial government, Moon's historical work analyzes the construction of new relationships between the Dutch and the Indonesians through technical knowledge and artifacts. Both Mrázek and Moon explore the role and impact of technology on colonial history in Indonesia; what is more, their historical accounts of the interplay between technology and politics have helped map the genealogy of modern Indonesia as being rooted in the colonial project.

The STS analytical framework gains greater relevance to studies of Indonesia under the Suharto regime. Suharto's New Order brought about development and economic growth and placed these at the center of its authoritarian governance. Technology and politics had never been more intertwined than in this period, especially since the New Order viewed technology as more than just a tool for industrial production. As I (2012) have shown, mastering high-tech for the goal of power was the primary objective for the New Order's leaders. This resulted in the rapid institutionalization of technology within state structures, with engineering technocrats led by Suharto's most trusted lieutenant, B. J. Habibie, dominating a wide range of developmental policies that went beyond the merely technological. The most prestigious high-tech project is described by me (2007): the construction of Indonesian-built aircraft, a large-scale technological program that blended Indonesian nationalism and the New Order's vision of industrial modernity. Despite the failure of this program in the aftermath of the Asian financial crisis, the imagination of high-tech as a legacy from the Habibie era remains strong and is cultivated by many Indonesians. Similar to this is the Palapa satellite project, funded by the New Order government starting in 1976 using revenue from the oil bonanza. As Joshua Barker (2005) explains, the satellite project was constructed around the nationalist intent of the New Order regime to unify the whole archipelago under a single telecommunications network that would allow the regime to have full control of the nation while maintaining its national integrity.

In short, STS studies of a range of technological sectors in Indonesia helped reveal the true character of Indonesian politics by taking into account the roles of technology and knowledge production. The STS framework is useful both in unpacking power

relations between state elites, technocrats, and technical artifacts and in investigating the way in which technology, specifically through the presence of the Internet, was used to dismantle Suharto's thirty-two-year rule (Lim 2003).

This special issue is presented as a continued contribution of STS scholarship to understanding the social and political roles of knowledge production in the largest country in Southeast Asia; the articles are intended to situate STS within the wider field of Southeast Asian studies. By integrating STS and Southeast Asian studies, this issue aims to build a synergy between these two fields to foster an examination of science and technology in postcolonial Asian societies in general (Anderson 2002; Fischer 2016). Conceptually, the collected articles revolve around the notion of transformation that marks the current progress of Indonesia. It should be noted that transformation is to be distinguished from the idea of development, an old-fashioned concept of social and economic changes guided by Western modernization. In this issue, transformation is understood as more than simply state-directed economic progress through top-down development policies; rather, it is a shifting process that is often unforeseen and with uncertain outcomes. More specifically, transformation results from complex interrelations between internal and external factors shaping an emerging society. On the one hand, global conditions play a key role in pushing forward transformation; on the other hand, local realities motivate local actors to adapt to the changing environment, leading to a long-term transition. The result is reconfiguration of both power and structure that comes with a set of institutional adjustments taking place at all levels of society.

As noted above, this special issue seeks to respond to the challenge of how to understand transformations in contemporary Indonesia from an STS perspective, by which we mean an exploration into the role of knowledge and expertise in the way in which transformations have been carried out, have been constructed, and have taken place in three major social domains. The first such domain deals with the political transformations that have been under way for the past twenty years. Following the analytical trend in STS that we can see in the work of such scholars as Frank Fischer (2000) and David Hess (2007), we highlight the contestation between the public and the expert, as prompted by Indonesia's new, democratic environment. The second domain for these transformations is indicated by the emergence of alternative methods of development planning that characterize how the economy is governed under the new system. Thus, participatory approaches allow nonelite actors and subaltern subjects to take center stage in debates on economic and developmental policies. And the third domain resides in cultural values that structure power and knowledge relations between the state and civil society—transformations that entail multiplication of sources for legitimate knowledge. In such a situation, technocratic knowledge has not only been challenged but also transformed to adjust to different demands and needs from society.

This special issue stemmed from the 2014 Global STS Conference at Nanyang Technological University, an international event organized to celebrate the tenth anniversary of the university's School of Humanities and Social Sciences. Four particular papers from the conference were selected for this issue, their authors all Indonesian scholars who thoroughly examine four different areas of technology and knowledge production. Anto Mohsin provides us with a historical analysis of rural electrification in Indonesia as undertaken by the New Order regime. Focusing on the

beautiful island of Bali, Mohsin seeks to reveal the process of electrification as a technopolitical transformation. Drawing on archival research as well as oral history, he discovers the inextricable connection between technological development and authoritarian motive. The electrification of Bali, Mohsin argues, not only reflects the technological capacity of the Indonesian government but also, more importantly, was a strategic project by which the state aimed to cast for itself a modern identity in the eyes of both the native population and the outside world.

Moving forward to the post-Suharto era, Yuti Fatimah's article addresses biofuel innovation, a topic that loomed large after Indonesia was affected by an oil crisis. With its abundant resources, Indonesia used to be an oil-exporting country, but as oil deposits began to be depleted the post-Suharto government was compelled to start looking for nonfossil fuels. Considering the multiple advantages not only in replacing fossil fuels but also in reducing rural poverty, Indonesia embarked on an ambitious plan to cultivate *Jatropha curcas* as a main source for biofuel production. However, as Fatimah describes, transformation of energy production through a biofuel innovation program was not as easy as the Indonesian government had thought. Informed by the actor-network theory, Fatimah presents her analysis from the micro- and macro-levels to explicate the existing barriers preventing biofuel innovation from achieving success. At the microlevel, she underscores the lack of entanglement between key actors in different socioeconomic contexts; at the macrolevel, although several actors were able to produce real innovation, biofuel production failed to take off because of the disorganized institutionalization of research and industry.

Moving to another technological domain, Arum Budiastuti explores the issue of illegal logging, partly responsible for the massive deforestation of Sumatra and Kalimantan. Budiastuti observes how, in the post-Suharto era, the Indonesian state transformed itself to enhance its capacity to control illegal logging using DNA technology to identify illegal timber products. Using the concept of governmentality, Budiastuti's article offers us a critical view of this technological practice, which she considers a form of biosurveillance undertaken by a postauthoritarian state to assert its authority over resource management.

Finally, Rita Padawangi offers insights from a different technology context. Situated in rapidly growing Jakarta, Padawangi describes the contestation between state experts and the urban social movement over water governance in the Indonesian capital. Inequality of water supply has been a chronic problem in Jakarta, and citizens have been trying to change that situation. Empowered by a post-New Order democratic spirit, a new alliance was built between this urban movement and experts to create a more sustainable and fairer system of water governance. In her article, Padawangi underlines the synergy between civic and technocratic epistemology that results in a more socially acceptable urban system.

Though this special issue is not intended to capture a complete picture of the transformations taking place in Indonesia—a task that would be impossibly large, given the size and scope of this nation—it does aim to provide interesting and useful vignettes of how complex the issues of technology and knowledge production are in a multicultural, democratic society. An underlying force of these transformations lies in the sociopolitical sphere, where knowledge is constantly produced and contested. And the result of these processes is always contingent.

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