**Who shapes the politics of expertise? Co-production and authoritative knowledge in Thailand’s political forests**

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**Forthcoming in *Antipode***

**Date of draft: April 2019**

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**Abstract**

Expert environmental knowledge has often been described as a governmental rationality that reduces political debate and facilitates state control. In this paper, I argue instead that this line of reasoning simplifies how knowledge gains political authority, especially when expertise is shared and left unchallenged by diverse actors, including those in conflict with each other. Using the framework of co-production from Science and Technology Studies (STS), I apply this argument to conflicts over the supposed watershed functions of forests in Thailand, where simplified narratives about the impacts of land use on water supply are used as justifications for territorialization and restrictions on forest land. In particular, I focus on local resistance to the proposed Kaeng Sua Ten dam in northern Thailand in order to demonstrate how protestors have deliberately reproduced formal expertise to empower themselves, but by so doing also reinforcing simplified visions of watershed science and community culture. I argue that exposing the co-production of authoritative knowledge and visions of social order offer greater opportunities for understanding the role of expertise as a political force than analyzing competing assemblages based on oppositions of state-led expert knowledge and traditional local practices.

**Introduction: How to understand expertise in political forests?**

How does expert knowledge influence the emergence of political forests? For many analysts, the answer lies as a powerful tool of state control. For example, Peluso and Vandergeest (2011: 588) define political forests as “territories that have been legislated, zoned, mapped, and classified as permanent forest and managed by professional, ‘scientific’ government agencies.” Tania Li (2007b: 7) identifies expertise as a governmental rationality, which “constitutes the boundary between those who are positioned as trustees, with the capacity to diagnose deficiencies in others, and those who are subject to expert direction.” A common outcome of this use of expertise is resistance from local land users, whose livelihoods and experiences might be denied by these interventions, and whose own knowledge and practices comprise alternative, but frequently ignored, sites of expertise (Tsing 2005; Nightingale 2005).

In this paper, I argue for a different and less oppositional approach to expertise. While, conflict about scientific expertise is divisive and persistent, there is a need to see expert knowledge as knowledge that has become authoritative because it is used and left unchallenged by many actors, including those that are also engaged in conflicts with the state. Accordingly, expertise should not be seen as that which is connected only to the interests and practices of opposing actors, but as something that is shared and used for political advantage by all groups. Yet, by so doing, these same actors also reinforce visions of the world that shape how they present themselves as political actors, and which can reduce discussion about potential outcomes, such as redefining how forestland can be used.

Drawing on insights from Science and Technology Studies (STS), and especially the work of Maarten Hajer (1995; 2009) and Sheila Jasanoff (2004a), I use the framework of co-production to discuss how interactive politics both reflect and reinforce authoritative knowledge about political forests in Thailand. The concept of co-production has become widely used in environmental science and politics to refer to the interdependencies of knowledge and action (Miller and Wyborn 2018; Djenontin and Meadow 2018; Wyborn 2015; Fraser 2017). But whereas scholars in sustainability science, for example, have described co-production as a cognitive process of consultation between scientists and the users of science (McNie 2007; van der Molen 2018), STS scholars have instead defined co-production as a less cognitive, and more structural interdependency of knowledge and social norms: “the production of mutually supporting forms of knowledge and forms of life” (Jasanoff 1996: 397).

Two types of co-production might occur through these influences (Hilgartner et al. 2015: 5; Hagendijk 2015: 224; Jasanoff 2004b: 18). Constitutive co-production, also discussed under assemblages and actor-network theory, focuses on metaphysical distinctions such as boundaries between nature and society, or presumed ontological relationships between human actions and non-human outcomes. Interactional co-production, alternatively, refers to “the conflicts that arise as new, emerging understandings and opportunities for change—including not only new ontological but also new epistemic and socio-political arrangements—interact with existing institutions and practices, and extant cultural, economic and political formations” (Hilgartner et al. 2015: 5). Co-production can also be undertaken through four “ordering instruments” of making institutions, discourses, identities, and representations (Jasanoff 2004b: 22), which allow combined visions of society and knowledge to be made and implemented together.

As this paper demonstrates, a co-productionist approach to environmental politics implies an analysis of how knowledge gains political authority through the ways it is left unchallenged by different actors, to thus emerge as an unquestioned framework for political activities. Co-productionist approaches, however, raise challenges for some existing fashions of understanding expertise based on assemblages or the Foucaultian framework of governmentality. Firstly, much discussion about expertise based on assemblages (and the related concept of actor networks) has tended to show how technical knowledge used by development agencies or states have reflected historic, and specific, configurations of interests, values, and actors that continue to be authoritative today (Li 2007; Mitchell 2002). Increasingly, however, analysts are also asking if there is a need to adopt a more fluid connection between knowledge, actors, and interests (Law and Singleton 2005; Müller and Schurr 2016). Indeed, “how [interests] arise and sustained are matters to be investigated, not taken for granted” (Jasanoff 2004a: 20). An emphasis on interactional co-production might show how contemporary political factors reshape, or co-opt, older knowledge claims or constitutional co-production.

Secondly, co-productionist analyses also present challenges for governmentality by questioning how and by whom power is applied in expert knowledge. Many analysts have adopted frameworks of governmentality in relation to political forests as ways of showing how expertise can coopt citizens into state-led activities (e.g. Agrawal 2005; Li 2007b: 270). For example, Li (2007b: 270) has argued that “experts deploying what Foucault called a governmental rationality have sought to manage process and relations, balance diverse objectives, and conduct the conduct of individuals and groups.” Agrawal (2005: 216-217) has used governmentality to explain how states “turn [citizens] into accomplices.” Yet, interactional co-production also shows how knowledge can become authoritative through diverse actors or configurations of interests and values, rather than through one predefined powerful group (such as the state) exercising power over another (such as citizens). Key here is Hajer’s (1995: 64-65) definition of discourse coalitions, which generates an understanding of how contestable knowledge becomes stabilized and unquestioned when it is adopted by people and organizations, even if they are busy contesting on other matters.

In this paper, I seek to demonstrate the framework of co-production (and especially interactional co-production) in relation to expert knowledge about political forests in Thailand, focusing especially on resistance to the proposed Kaeng Sua Ten dam. My analysis forms part of a wider project considering the relationship of environmental activism and knowledge in this country (Forsyth 2004; 2007; 2019). In particular, the paper focuses on debates about forest watershed functions and the social roles adopted by local people to resist state plans. The paper asks: how has expert knowledge become authoritative and unquestioned? What factors hold this knowledge in place? And how does this process enhance or impede democratic struggles about forested land? The paper concludes by discussing insights for integrating co-productionist analyses within other debates about political forests, especially those concerning governmentality and assemblages.

**Thailand’s political forests**

Political forests have been defined as “political land-use zones meant to remain in permanent forest—although in different stages of growth and regrowth” (Vandergeest and Peluso 2015: 162). The objective of analyzing political forests is to show how categories often presented in terms of neutral ecological science are embedded in political processes such as territorialization by the state, or how state authority can be supported by defining land use zones in these ways (Sikor and Lund 2009). In Thailand, political forests have been discussed in regard to how the state has allocated property rights, engaged in counterinsurgency, and reserved forest spaces for supposedly national objectives such as conservation and security (Peluso and Vandergeest 2001; Vandergeest 1996; Vandergeest and Peluso 1995; Vandergeest and Peluso 2006). This important analysis, however, has generally under-examined the role of science and expertise as a legitimization for territoralization, or the socially embedded way in which claims about the ecological functions of forests become unchallenged and authoritative within political debates.

This paper discusses this role of expert knowledge in Thailand’s political forests, and especially concerning the alleged role of forests in maintaining watershed functions. In particular, the paper analyzes the political debate about the proposed Kaeng Sua Ten dam on the Yom River in the forested and hilly province of Phrae in northern Thailand.[[1]](#footnote-1) This dam represents a case of expertise governing the use of forest lands, and resistance to this knowledge by local people. The Thai government first proposed plans to build the dam during the 1980s, on the grounds of managing national water supply and electricity. These plans were shelved following public protests, but were resurrected after 2011 when Thailand experienced devastating floods in the plains south of the dam, which displaced thousands of people and threatened to close down industrial estates (Kirchherr et al. 2018; Marks 2011). A new round of public protests both challenged, but also invoked, many of scientific statements made by experts concerning the relationship of upland forests and lowland flooding. This paper analyzes the protests about the dam. Before this, however, the paper reviews more general connections between watershed science, forests, and state territorialization in Thailand.

*Forests and territorialization*

Forest land has been the subject of political conflicts and state control in Thailand for more than a hundred years. In the far north of the country, forest lands were famous for the production of teak trees.[[2]](#footnote-2) During the nineteenth century, the kingdom of Siam was comprised of alliances between different regions and rulers, with an increasingly centralized state based in Bangkok under an absolute monarch. The Royal Forest Department (RFD) was established in 1896 partly to allow the Bangkok court greater control over logging agreements between local rulers in northern Thailand and logging firms, usually from Britain. The first formal forestry expertise in Thailand at a national level was therefore through the RFD, and this expertise was dominated by British ideas of forest management. Indeed, one British adviser, Herbert Slade, urged: “Forestry is a science and therefore specially trained personnel are required for its management… otherwise the forests may easily be ruined and can hardly be reconstituted” (Slade 1896). Through a series of legislative measures in the early 1900s, the central government asserted and consolidated its power over the collection of royalties and the issuing of concessions to foreign logging firms.

In 1932, the kingdom of Siam was reformulated as Thailand following a revolution that also ended the absolute monarchy. In the years that followed, the government undertook various actions to consolidate forests and state territory. In 1941, the Forest Act declared 40 percent of the land area of Thailand as “forest,” although the primary objective of the act was to manage forest exploitation rather than conservation. The 1964 Forest Reserve Act emphasized conservation by gazetting so-called permanent forests as forest reserve land by royal decree. And in 1985, the National Forest Policy reinforced the aim of maintaining at least 40 percent national forest cover by setting aside 25 percent of Thailand's land mass as economic forest and 15 percent as conservation forest.

Territorialization during this period was also influenced by concerns about national security, especially during and after the Vietnam War. In particular, governments were fearful that ethnic minorities (so-called “hill tribes”) might contain communist sympathizers, and that upland shifting cultivation would destroy forest. Various insurgencies and counterinsurgency measures took place in northern Thailand during the 1960s-70s (Peluso and Vandergeest 2011; Race 1974). Controlling access to forestland was part of these counterinsurgency measures. Field Marshall Sarit Thanarat—the authoritarian prime minister of Thailand between 1958 and 1963—declared: “Forests are significant resources for the lives of Thai people and the existence of Thailand. Those who destroy the forests are the enemy who destroy the nation's security” (Pinkaew 2001: 75). During the late 1960s and 1970s, so-called “pink zones” were created within forest zones where communist infiltration was feared, with regulated settlement and land use. These concerns were strongly embedded in decisions about conservation. For example, in Phop Phra district of Tak province in northwestern Thailand, 157 families from the Hmong ethnic group were moved to lowland sites allegedly to protect the headwaters of local rivers and to establish a wildlife sanctuary (Pratya 1987). This exact zone, however, had been a site of Hmong insurgency during the late 1960s, and one government road build to control this area had become so plagued by attacks it was called “The road that cost nine men per mile” (The Nation 1973).

These influences helped cement rules governing land use and agriculture in areas officially labelled as forests. The Watershed Classification Scheme, for example, was introduced during the 1980s in order to demarcate five different categories of land use, ranging from complete bans on agriculture and settlement, to areas where agriculture was allowed. These categories have been criticized for overlooking locally relevant socioeconomic variables, or for resorting to widespread monoculture plantation (usually of teak or pine) as its key intervention (Pandee and Maathuis 1990). A further, and more widespread difficulty is the fact that official classifications of “conservation forest,” “national park,” and “Class 1 watershed” do not always imply that the land has actual forest cover. One survey of conservation forest in northern Thailand showed the official classification overstated actual forest cover by some 800,000 hectares (Sumarlan 2004). The mismatch between official land classification and actual land use therefore creates “ambiguous lands”(Sato 2000) in which agricultural activities have occurred for years, but are officially considered illegal.

*Territorialization and expert knowledge*

The move to control the northern mountains also used, and reinforced, various forms of expertise. A core part of this expertise referred to the alleged connections between forests and watershed properties—or the ability of upland areas to regulate the supply of water to lowlands. In particular, governments and lowland settlements were concerned that deforestation or agriculture in the mountains might exacerbate lowland water shortages during the dry monsoon period (November to May); or accelerate flash flooding during the wet monsoon (June to October). These concerns were also relevant for ensuring a supply of water to dams for electricity generation, and for cities and industrial estates in the lowlands (Molle and Srijantr 2003).

Usually, government policies and scientific authorities such as the RFD and Department of Land Development have claimed forests are important for watershed properties because they act as “sponges” to keep water in the hills during periods of little rainfall, and to allow a gradual release during the summer rains. In turn, government agencies have justified plantation forests of teak and pine in upland zones to create these conditions, and even to generate rainfall itself despite these assertions being challenged by hydrologists elsewhere (Bruijnzeel, 2004; Calder, 1999). Indeed, numerous roadside signs, mostly from the RFD, inform passers-by “if you love the country you have to love forests;” “if the soil loses forest, the sky loses rain and people lose their hearts;” “if the forest is destroyed the soil is dry—the forest is the source of water;” “if the forest disappears the earth is dry, rain disappears and the rice dies;” and “the streams will dry out if the covering shade of the forest is lost” (Forsyth and Walker 2008: 87). In ways that enhance its public authority, this kind of expertise is frequently also associated semantically with the Royal Family, who in Thailand cannot be criticized publicly.[[3]](#footnote-3) Freshly reforested hillsides often carried royal crests outlined with white stones. One sign photographed by the author showed a quotation attributed to the Queen, saying “If His Majesty is compared as water, I would be comparable to the forest. The forest which is loyal to water. His Majesty has built reservoir. I myself will replant forest.” The country’s largest dams are named after the members of the royal family. Thailand’s 1,000 Baht banknote, the largest in circulation, also featured a picture of the revered King Bhumibhol (who died in 2016) next to a dam.

Despite these statements, various hydrologists have argued that forests (and especially fast-growing plantations) consume water quickly because of evapotranspiration, and hence act more as “pump” than “sponge” (Hamilton 1988; Hamilton and Pearce 1988; Forsyth and Walker 2008). Industrial tree plantations can also increase erosion and runoff from slopes because of how large teak tree leaves collect water (Calder 1999: 23), or how regularly-spaced trees enhance runoff (Calder 1999: 142). Other analysts have pointed out that the focus on upland agriculture as a source of potential damage to watershed properties overlook how roads and settlements can reduce infiltration capacity; how water shortages might also be caused by increasing lowland demand from cities or lowland tree crops; or that reforestation at altitudes of below 2,000m is unlikely to generate new rain (Ziegler and Giambelluca 1997; Bruijnzeel 2004). The point of these studies is not to suggest that upland agriculture is “never” degrading to watershed functions, but instead to highlight how political debate about watersheds in Thailand reduces diverse scientific evidence to simple, and simplistic, expressions of cause-and-effect. This simplifying process excludes a variety of land-use options that can include benefits for a wider group of stakeholders. Indeed, some analysts have argued that the debate should not ask whether upland agriculture should be banned, but instead how to maximize soil-water infiltration and retention within upland agriculture (Bruijnzeel 2004; Zwartendijk et al. 2017; Ziegler et al. 2009). Some countries, such as Costa Rica, Nepal, New Zealand, and South Africa have changed watershed policies to reflect these uncertainties; yet in Thailand these remain unchallenged.

*Co-producing knowledge and social order*

Political ecologists and STS scholars have called these simplified summaries of cause-and-effect ‘environmental narratives’ or ‘storylines’, or “devices through which actors are positioned, and through which specific ideas of ‘blame’ and ‘responsibility’ and ‘urgency’ and ‘responsible behavior’ are attributed” (Hajer 1995: 64-65). Narratives might also be called assemblages or actor networks because they are knowledge claims that reflect historic configurations of interests, values, and actors. In this sense, they are a form of constitutive co-production insofar as they help to solidify an agreed consensus around the ontological characteristics of forests, land use, and water. Yet, at the same time, these narratives are not just propagated by the state, but are also adopted by diverse actors, including those in conflict with the state on other aspects of forest governance. Accordingly, the framework of interactional co-production is useful because it makes visible the role of current politics, and the potential agency of different stakeholders in influencing how scientific statements gain authority and take on the appearance of expert knowledge.

For example, there is evidence that unchallenged statements about forest ecology also go hand in hand with concerns about Thailand’s rapid modernization and industrialization, as well as with broader concerns about democratization under military or authoritarian regimes. In the 1970s, for example, much social activism identifying as environmentalism focused on campaigns to protect forests as threatened wilderness or heritage. One famous campaign opposed the construction of a cable car in the northern city of Chiang Mai because it would have degraded the important Buddhist temple of Doi Suthep and its neighboring dense forest (Hirsch 1993). In the 1980s, activism broadened to include opposition to a proposed dam in the Nam Choan rainforest in western Thailand, and a ban on logging in 1989. These concerns were partly driven by worries about Thailand’s natural heritage, but also by growing resentment against the military and national elites who benefited from logging (Pinkaew and Rajesh 1992). Indeed, the successful postponement of the Nam Choan dam marked the beginning of various resistances against dams in Thailand, and the perception that opposing dams is a legitimate arena for democratization (Dome 2007; Hirsch 1997; Kirchherr 2018).

Much of the interactional co-production of social roles and environmental knowledge in these cases, however, also reinforce two broader themes underlying Thai visions of social order. “Community culture” is a philosophy of society originally espoused by social reformers such as Puey Ungphakorn and Chatthip Nartsupha who argued that rural communities should adopt moral principles such as “sharing, mutual support, and righteousness” (Bamrung 1984; Bencharat 2014: 124; Chatthip 1997). The second framework is the Sufficiency Economy proposed by King Bhumibhol, which highlights a series of ideas about modern living without greed (Panmanee and Sutummakid 2012). Schools and public buildings in Thailand frequently carry posters featuring quotations about sufficiency economy. Critics have suggested that community culture is essentialist and nostalgic, and supports old social hierarchies (Reynolds 2013; Rigg 1991; Thongchai 2008). Indeed, Sufficiency Economy has also been described—if one believes *Wikileaks*—as “vague and malleable,” and its popularity is due to a “public reluctance to criticize anything associated with the revered King” (United States Embassy 2006). But some analysts have argued that these doctrines also offer possibilities for village empowerment through building social cohesion in poorer zones, or by prescribing roles that can allow marginalized people to appear legitimate within wider power imbalances (Hewison 1993; Seri 1986).

Accordingly, discussions about rural settlers in forested zones have frequently adopted an ambivalent tone: either seeing them as appropriate and traditional; or as potential lawless forest encroachers (Forsyth and Walker 2008). These different roles show how narratives about forests also allocate social roles of blame and responsibility. For example, between 1973 and 1976 (at a time when Thailand was experimenting with forms of democracy), an activist group known as the Campaign for Dissemination of Democracy encouraged some 3,000 students to visit rural areas to support people who had reoccupied land claimed for conservation (Bangkok Post 1976).[[4]](#footnote-4) Yet, many other Thais alleged these activities helped farmers to encroach on forest land (Bangkok Post 1975). Similarly, during the early 1990s, a military regime implemented the so-called *Khor Jor Kor* programme to establish eucalyptus and pine plantations on officially sanctioned “forest” land in northeastern Thailand, displacing villages that had farmed this land for decades. Protests against this project could be called a form of environmentalism because it involved different visions of sustainable land use and criticized plantations (Lohmann 1991; Pye 2005). Most newspapers and activists, however, represented these events as a military regime treating poorer citizens badly, rather than question environmental assumptions (Forsyth 2019).

*Implications for authoritative knowledge and political forests*

Together, narratives about forest functions and social imaginaries such as community culture and Sufficiency Economy have shaped ideas about rural development, nature, and appropriate social behavior. In particular, these ideas have influence policy discussions such as the long-standing debate about defining community rights in forest lands after the 1989 national logging ban (Bencharat 2014; Forsyth and Walker 2014; Pinkaew and Daniel 2002). They have also become a source of authority for military rule following Thailand’s coup d’état of 2014. The new military regime has repeated the ambition of restoring national forest reserve land to 25 percent of national territory. It also passed a legal mechanism known as Section 44 that gives the government executive freedom for relevant actions, including evictions (Kongpob 2017).

Debates about community forests have often been divided between analysts who wish to protect forests by keeping them out of the hands of villagers; and those who claim that villagers’ traditional wisdom is the only way to protect forest (Chusak and Baird 2018). Both of these viewpoints reinforce narratives about forest functions and appropriate social order. For example, one editor of the English-language daily, *The Bangkok Post* wrote that the Royal Forest Department (RFD) comprised “gun toting rangers, at the invitation of forest authorities who seek to evict peasants from their ancestral homes” (Sanitsuda 1999). A further conservationist criticized state-led forestry by saying, “if plantation forestry is a logical extension of colonial sustained yield logging, then conservation forestry is its mirror opposite” (Usher 2009: 10).

Many analysts would agree with these criticisms, but a co-productionist analysis interrogates what is excluded by voicing these concerns, or how these statements reinforce dominant narratives about land use in forest areas. In Thailand, criticisms like these contributed in 1998 to a so-called People’s Draft for community forests legislation that urged only “original local communities” should be eligible for “community forestry.” Here, communities were defined as people “that live together as a society in the same area and pass down their culture together” (Anonymous no date). This representation of villages bears little relationship to many contemporary villages where people are transient, where “forest land” might not have actual forest cover, or where agriculture is the main source of livelihoods.

This representation has particularly focused on Thailand’s largest ethnic minority, the Karen people, who have lived in forest zones on the western border with Myanmar for some hundreds of years. The Karen have historically employed a system of shifting cultivation that allows forests seven years to recover, as well as various spiritual acts to respect forest. Walker (2001) has argued that a so-called “Karen consensus” has emerged that portrays this group as especially close to nature and an appropriate model for land use in forest zones. In effect, the Karen consensus is a discourse coalition between conservationists who worry about the impacts of agriculture, and development groups who want to claim that agriculture is not always degrading. For example, Usher (2009: 110), describes how one Karen elder in the Hot district of Chiang Mai province opposed forest plantations by saying: “If they remove the [original] trees from the watershed, the rivers will run dry, the soil will lose its fertility, and we won't be able to grow rice. How will we eat?” But this representation belies the diversity of Karen livelihoods as well as different experiences of water and forests. According to Walker (2012: 192), this consensus is “an imagery of local cultural identity, self-sufficient agriculture, and ecologically-friendly lifestyles… that is largely disconnected from the livelihood aspirations of Thailand’s commercially connected middle-income peasantry.”

Crucially, however, according to Walker (2002; 2004) many Karen activists have knowingly represented themselves in this light in order to gain legitimacy at times of political tension. There are other examples: in the mid-1990s, an NGO called the *Community Love Forest Project* was formed to demonstrate appropriate behavior at the time of the community forests debate (Bencharat 2014, 145). Many communities living in forest zones also use Buddhist rituals to demonstrate their care for forest protection by ordaining trees (Darlington 2012). This procedure involves wrapping a saffron robe around trees, often with a blessing from a monk, in order to demonstrate that villagers are happy to respect the lives of the trees, and to dissuade illegal loggers from cutting them down. In 1996, the Northern Farmer Federation started a project to ordain 50 million trees in honor of King Bhumibhol’s 50th anniversary.

These activities represent forms of co-production because they reinforce beliefs about the ecological function of forests (constitutive co-production), and the social roles that are considered politically legitimate within forest politics (interactional co-production). Even if conservationists and the state disagree about forest policies, they both uphold the underlying narrative that forest cover is needed, and that farmers have to show they pose no risk to forests. In effect, these statements take on the status of an expertise that is unchallengeable in political discussion—even if they close down alternative scientific or development pathways.

**The Kaeng Sua Ten dam**

The paper now presents a more detailed analysis of expert knowledge in the context of resistance to the Kaeng Sua Ten dam. It presents research conducted in 2012 and 2017 that forms part of a longer research project concerning knowledge and social movements in Thailand.[[5]](#footnote-5) The author—who used to be a journalist working in Thailand and speaks Thai—was invited by a Bangkok-based campaigning organization, Towards Ecological Recovery and Regional Alliance/Foundation for Ecological Recovery (TERRA/FER)[[6]](#footnote-6) to attend a public meeting at the site of the planned dam. The purpose of the meeting was to publicize and interrogate the proposal for the dam with local villagers. The author treated this event as an opportunity to conduct interviews with activists and villagers, and to make ethnographic notes of the meeting. The key questions posed by the research project were: what forms of interactional co-production can be observed? What evidence exists for discourse coalitions and authoritative knowledge between different parties, interests, and values? How do these formulations of authoritative knowledge influence how local people represent themselves and forest functions when seeking to oppose the dam? Later research conducted interviews with activists and analyzed documentary information.

This work also raised challenges. It was important consider the potential impact of someone—and especially a foreigner—asking questions among villagers. These factors were managed by speaking Thai as far as possible, following other people’s behavior, and befriending village leaders who could explain his presence. Second, there was a need to demonstrate neutrality concerning national politics. Since the mid-2000s, Thai politics had been riven by conflicts between so-called Red Shirts and Yellow Shirts. The former were generally rural people from Thailand’s north and northeast who supported the ex-prime minister, Thaksin Shinawatra, who had been deposed in a coup in 2006. Yellow Shirts were generally royalist opponents of Thaksin (Pasuk and Baker 2010; McCargo and Ukrit 2005). The author took steps to distance himself from these matters to avoid being categorized, but also to avoid worrying interviewees.[[7]](#footnote-7) Indeed, after this event, following a further coup in 2014, political protests throughout Thailand were suppressed, and many activists imprisoned (Jenkins 2015; Kongpob 2017).

*Formal expertise and resistance*

The proposed site for the Kaeng Sua Ten lies in a river confluence in a forested zone of Phrae province, northern Thailand, in the local district of Sa-iab. The dam has been proposed three times: in 1981 for electricity generation; in 1989 for additional irrigation purposes; and then in 2012 primarily to reduce downstream flooding (Marks 2011; Marks 2015; Kirchherr 2018). In the first two occasions, local protests led to the dam being shelved. At the time of writing, the dam is still under consideration. Four villages are scheduled for resettlement,[[8]](#footnote-8) comprising an estimated 3,000 people (although this figure is contested) (Kirchherr et al. 2018: 479).[[9]](#footnote-9) As with many Thai settlements in northern Thailand, local people engage in agriculture and trading, with some poorer households also fishing and collecting forest products. The district has been settled for some hundreds of years.

The justification for the dam was based on the recommendations of various government agencies such as the Royal Irrigation Department (RID), who saw this site as one of many locations where dams could generate electricity, and help manage water shortages and flooding. Yet, as soon as plans were announced, these expert claims were challenged on the grounds that they avoided impacts on local environment and livelihoods. In particular, critics argued that the dam’s reservoir area of 65 square kilometers would flood more than 6,400 hectares of forest (Rajesh 1997: 20). This forest area included 1,600 hectares in land classified after 1986 as the Mae Yom National Park, which was widely described as the last naturally-occurring golden teak forest in Thailand. Teak trees have cultural significance in Thailand for their status as distinctive features of landscapes, as well as a source of income and livelihoods for centuries. The specific term, “golden teak” does not refer to a specific species of teak tree (*Tectona grandis*) but is a rather poetic reference to the color of the trees harvested locally. The forest is also home to various other colorfully named threatened species, including the Green Peafowl, Malayan Night Heron, White-Rumped Falcon and Green Imperial Pigeon (Rajesh 1997: 20).

Other groups also criticized the RID expertise. In 1982, environmental groups criticized the Environmental Impact Assessment (EIA) conducted on behalf of the RID by TEAM consultants on the grounds that it had a history of producing EIAs that ignored potential environmental impacts. In 1989, a government diagram suggested three villages would be inundated: later, critics claimed fourteen. Other government departments joined the criticism. In 1994, the Office of Environmental Policy and Planning (OEPP) rejected an EIA by the irrigation department on the grounds that it was “out of date and confusing.” (The OEPP was a relatively new section of the government that did not exist in the 1980s). In 1996, the Thai Geology Department expressed concerns about the dam identified because it was 31 kilometers from an active fault line (Rajesh 1997: 18-19).

There were also concerns about community exclusion. One academic, Prakob Wirojanagud from Khon Kaen University, alleged: “the RID, with large irrigation projects, has destroyed the culture of community water management.” In particular, he argued that traditional methods of water management (locally called *muang fai*) were superior and cheaper because they use natural flows of water, adding: “They have the expertise within the village” (in Rajesh 1997: 22). Meanwhile, critics alleged the government put pressure on villages by cutting funding for infrastructure and schooling, and allowing government-trained teachers to call children “barbarians” for opposing the dam (Rajesh 1997: 22).

*Co-producing expertise and resistance*

The initial plans for the dam, therefore, included expert statements that could be called government rationalities that sought to overturn local practices and wishes. Yet, a lot of this expertise was criticized by other government departments. Moreover, many of the narratives underlying the government statements were later adopted by local people in order to empower their resistance to the scheme.

At first, local people’s responses to the proposed dam were directly confrontational. According to one history written by an environmentalist (Rajesh 1997: 20), villagers first responded to the proposed dam during the 1980s by undertaking illegal logging because they believed the forest would be lost anyway. This tactic did not last long: following the 1989 logging ban, villagers handed over logging equipment to local authorities. In 1994, however, villagers physically attacked World Bank employees who were assessing the site for the dam. This incident contributed to the Bank’s decision not to finance it (Piyaporn 2012a; Matichon 2015). Local people also boycotted a public hearing in 1994 because they feared their attendance would signal acceptance. Indeed, a national conservation group, the Seub Nakhasathien Foundation called the public hearing a “government soap-opera” (Rajesh 1997: 22). This foundation was named after a national park official who killed himself out of worries about logging and poaching, and later became prominent in urging the maximum protection of forests against potential encroachment by agriculture (RECOFTC 2011; Rights and Resources Institute 2008).

Over time, however, villagers changed their tactics from boycotting consultations to organizing their own expertise. One tactic was to organize meetings in collaboration with national conservation groups to highlight concerns and win allies (Matichon 2015; Hom and Poe Htoo 2018). In 2012, the village announced a further meeting following the announcement that the dam would be built again: villagers, journalists, academics (including the author), and activist groups attended. The event took two days, interspersed with tours of the forest and dam site; speeches and discussions; music, and food. Television crews and reporters covered the event. Perhaps the most photogenic event was the visit to the “golden” teak forest threatened by the dam. Here, about 50 villagers and observers (including the TV crew) watched a Buddhist monk bless the forest. Participants then ran through the forest wrapping saffron ribbons around teak trees in order to show blessings and protections for the trees (Chularat 2012; Darlington 2012).[[10]](#footnote-10) Local leaders made speeches opposing the dam, showing how local people respected the forest.

Back in Sa-Iab district, the meeting hosted various talks by village leaders and invited scientists to highlight scientific knowledge about forests and watershed functions, including their impact on water retention, and future risks from climate change. These talks showed charts and diagrams in front of the villagers and observers, who were sitting cross-legged in an open-air pavilion. Unsurprisingly, these discussions repeated narratives about forest conservation and water. Speakers included university professors from Bangkok, and specialists from national conservation groups. One well-known activist-scientist was Sasin Chalermlarp, a representative of the Seub Foundation, who was previously a geology lecturer and who now has a strong social media following (Manta 2014; Frederickson 2013). Various academics proposed one alternative form of water management: “monkey cheeks” are small paddocks on the sides of rivers that can be used as temporary water storage areas during flood times. Monkey cheeks offer cheap, and non-disruptive alternatives to dams in flood management. Moreover, they were favored by the revered King Bhumibhol and are therefore difficult to criticize.

Meanwhile, houses throughout Sa-Iab district made visual protests by portraying posters in Thai and English about the dam. These posters repeated narratives about forest functions, and the appropriateness of community culture. They proclaimed trees are the “lungs of the world;” that trees can “stop flooding;” “protecting forests also protects people;” and “community action can protect the forest” (Piyaporn 2012b).[[11]](#footnote-11) Inside the public meeting, posters and banners used equal proportions of red and yellow to indicate villagers were neither Red nor Yellow Shirts. Village leaders repeated this message; one organizer (middle-aged male) saying:

“we are a law abiding village and community, and we do not want the dam to be built because it will destroy our lives here and the forest and river that have existed for many years. We want to show our guests that we respect the forest and river and that the dam is not needed.”

The author particularly asked about relationships between agriculture and forests. Did these presentations imply that forests and local agriculture were incompatible? In some fifteen conversations, all respondents said it was possible to conduct traditional agriculture simultaneously as protect the forest. Two informants (middle-aged male and female) stated: “we look after the land when we farm. We do not burn the forest. We do not cut the trees.” One man—who owned a food shop and agricultural land in the village—explained that villagers saw the agriculture and forest as largely separate. Agriculture could be enhanced through careful land management including irrigation, fertilizers, and tradeable crops such as garlic. But in his view, these matters were not connected to lowland water supply, and no villagers were considering clearing land in teak forests.

*Implications for knowledge and social order*

The ongoing resistance to the Kaeng Sua Ten dam shows a rather familiar pattern of a clash between two different formations of expertise. One is the state-based vision of trying to manage national problems by imposing costs upon local and relatively powerless groups. The second is the alliance between villagers and conservationists that emphasizes tradition, local knowledge, and community. Yet, it is also important to acknowledge the diverse ways in which these different groupings (and various actors therein) share and consolidate authoritative knowledge, which also acts as a framework for political action. In particular, these frameworks include the alleged links between forests and lowland water supply, and the need for rural settlers to act in accordance with the ideas of community culture and Sufficiency Economy.

Accordingly, analyzing the dam protest as an example of two opposing assemblages conceals the ways that both sides of the dispute reinforce knowledge that is afforded the status of expertise. Clearly, these tactics have sought to make the protest palatable to more powerful actors within Thai society and the state. Yet, these actions also uphold interpretations of ecology and society that (as discussed above) are reductionist, and can work against alternative and arguably more empowering land uses in forest zones and social identities in villages. Is this tradeoff perceived by local people? In discussions with villagers, the author did not identify anyone who disagreed with the well-cited narratives about forests and watershed functions in Thailand. Perhaps this is unsurprising. Yet, conversations with villagers (both men and women) revealed that individuals were happy to acknowledge that portraying the village as respectful of Buddhism, ecology, and authority was its most likely chance of success. One village leader said: “In the past we used to cut the forest. Now we know the only way to control our lives is to show that we protect the teak forest.”

A further question worth posing is whether the collaboration with conservation groups and trained scientists also raised tensions (Lohmann 1995). Here, there is evidence that collaborators have upheld these narratives. For example, the Seub Foundation has argued for years for maximum protection of forests in Thailand, and opposed the so-called “People’s Draft” for community forests during the late 1990s (RECOFTC 2011; Rights and Resources Institute 2008). Another conservation group—Earth Rights International—has called the Sa-iab protestors “a model of community activism” (Flynn 2011). A research network in Thailand, known as *Thai Baan* (literally “Thai Village”) also undertook research in the Sa-Iab area after the organized meeting in 2012. *Thai Baan* is a citizen-science network of research originating in Chiang Mai university that has aimed to generate information about livelihoods and ecology in collaboration with farming and fishing communities (Friend 2009; Kirchherr et al. 2018: 480). This research argued that community-based river management methods such as *muang fai* could offer solutions to downstream flood management, and emphasized the likely impact of the dam on local traditional livelihoods (Brockelman 2013). Co-productionist scholars, however, have questioned whether *Thai Baan* might represent a deliberately traditional and romantic vision of rural development (Forsyth 2019; Lamb 2018).

The implications of these tactics, however, are that the villagers strengthened their opposition to the proposed dam because they adopted and reinforced these familiar frameworks about forests and expected behaviors in rural Thailand. This does not imply that states “turn [citizens] into accomplices” (Agrawal 2005: 216-217) in the manner of governmentality because there is no indication that this process persuades villagers to adopt the proposed dam. Instead, protesters adopt certain elements of expertise in order to enhance their conflict with the state. But by so doing, they also reinforce the unchallenged nature of these beliefs. A co-productionist approach “seek[s] to understand how particular states of knowledge are arrived at and held in place, or abandoned” (Jasanoff 2004a: 19). In this study of opposition to the Kaeng Sua Ten dam, evidence suggests that authoritative knowledge about ecology and social order persist because the state wishes to enforce them; national conservation groups encourage villages to act this way; and local protestors consider them effective under conditions of political oppression.

**Conclusion: co-production and the analysis of political forests**

This paper has argued for a more dynamic analysis of the ways that expert knowledge is co-produced within environmental politics and political forests. As noted at the start of this paper, much recent discussion of expertise in political ecology or environment and development has tended to link expertise essentially to different interests or historic networks of power—such as the state, or wider structures of colonialism and capitalism—and then to analyze expert knowledge as forms of governmental rationality seeking to control others (Li 2007b; Mitchell 2002). Instead, this paper has argued for a less oppositional approach that highlights how knowledge becomes authoritative within political disputes when it is accepted as unchallenged by diverse parties, and then acts as a tacit framework for political discussion. The frameworks of interactional co-production (Hilgartner et al 2015: 5; Jasanoff 2004b: 18) and discourse coalitions (Hajer 1995: 64-65) offer ways to indicate how knowledge gains authority in these ways,

Understanding expertise through the lens of co-production does not contradict the value of analyzing contextual or historical influences on how knowledge is generated within scientific networks or government agencies. Indeed, much research in political ecology and environmental policy has highlighted how scientific representations of problems such as deforestation or desertification have reflected the interests, concerns, and values of historic (including colonial) researchers and societies (Davis 2016; Sivaramakrishnan 1999). Analyzing interactional co-production, however, highlights how this pre-shaped knowledge is rendered authoritative within political interactions, which has implications for how political debates proceed, and for reshaping or representing knowledge within those earlier formations.

This analysis therefore raises questions for some familiar approaches to expertise based on governmentality and assemblages. Many studies of governmentality have argued that expertise is a governmental rationality that can be used to frame political debate and options to achieve government objectives. Yet, this paper has shown that villagers adopted and reproduced statements about forest watershed functions and appropriate village life because it empowered them to resist the state on other themes. An interactional co-production approach therefore shows how discourse coalitions might reinforce expert knowledge between groups, rather than represent expertise as a process of co-optation, persuasion, or resistance based on opposing and incommensurate fields of knowledge.

Second, the manner by which expertise becomes authoritative involves a broader set of drivers than analyzing how different assemblages render knowledge technical. Li (2007a: 263)—influenced by Latour and Woolgar (1979)—for example, proposes six stages for employing assemblages within political strategies that include: forging alignments between different elements inside an assemblage; rendering knowledge technical; authorizing knowledge as expertise; managing failures (when knowledge is applied out of context); de-politicizing expertise to reduce public discussion; and then reassembling assemblages in response to criticisms. A key part of this process is making inscriptions: objects and measurements that create persistent but partial representations of reality, such as maps, title deeds, or observed relationships of forests and water.

Co-productionist approaches, however, place more emphasis on the contemporary use of alleged facts and narratives for current political objectives rather than on the historic and unwitting influence of inscription devices (Jasanoff 2004b: 23). The examples of expertise discussed in this paper included numerous occasions where inscription devices were made, including environmental impact assessments, ordained trees, or links between “golden teak” and global climate change. But the political potency and authority of such artefacts also occur from their current usefulness and valency across diverse contemporary concerns rather than the impacts of historical blindspots. For example, “monkey cheeks”—the temporary storage areas for water alongside rivers in Thailand—can be an inscription device. But these artefacts gain their authority by offering current activists a colorful way to combine royal assent with the demonstration of local wisdom, in ways that the state might find hard to resist. It is not the devices that drive the politics, it is the short-term value to political disputes that drives how these and other empirical or technical objects become salient (Joerges 1999). Focusing upon dynamic and interactional factors such as these is part of a growing trend in geography and social science to point to the more fluid connections between interests, actors, and knowledge than older approaches to assemblages and networks are able to make visible (Law and Singleton 2005; Müller and Schurr 2016).

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1. The proposed dam site is in the neighborhood (tambon) of Tao Pun, Song district (amphoe), of Phrae province, latitude 18.60, longitude 100.15. [↑](#footnote-ref-1)
2. The landscape of northern Thailand is characterized by long valleys surrounded by ridges with sporadic forest cover. The highest peak—Doi Inthanon—is 2,565 meters above sea level, and there are no glaciers. Rainfall is usually concentrated into the wet monsoon period of June to October. [↑](#footnote-ref-2)
3. Thailand’s lèse-majesté laws are draconian. In just one example, in 2015, a factory worker faced 37 years in jail for allegedly insulting the King’s dog (Jenkins 2015). [↑](#footnote-ref-3)
4. These activities especially took place in Chaiayphum, Phitsanulok, Si Saket, and Chantaburi provinces. [↑](#footnote-ref-4)
5. UK Economic and Social Research Council: R000 22 2245 “The local and the global: environmental knowledge and social movements in Thailand.” [↑](#footnote-ref-5)
6. http://www.terraper.org/web/en [↑](#footnote-ref-6)
7. Interviewees and village leaders were informed about the research in advance, and all speakers anonymized. [↑](#footnote-ref-7)
8. Don Chai, Don Chai Sak Thong, Don Kaew and Mae Ten [↑](#footnote-ref-8)
9. The dam is proposed to have an electricity generating capacity of 49 megawatts. The dam wall is proposed to be 72 meters (in the 1980s this was more than 90 meters) (Rajesh 1997: 20; Kirchherr et al. 2018: 479). [↑](#footnote-ref-9)
10. <http://www.nationmultimedia.com/national/Phrae-villagers-ordain-teak-trees-in-battle-agains-30191816.html> Accessed 17 March 2019. [↑](#footnote-ref-10)
11. <https://www.bangkokpost.com/print/319469/> Accessed 17 March 2019. [↑](#footnote-ref-11)