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**“Knowledge-Power-Truth” In Forestry:  
Implications of a Strong Theory, Underlying Assumptions, and Scientific  
Interpretations in Understanding the Realm of Forest Life**

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## **Abstract**

Modern forest management was shaped by the economic and political rationalities of states formed during the colonial era, often referred to as “political forests.” However, the colonial concept of “political forests” is transforming, and has become more complex with globalization, neoliberal market morales, and international forest governance regimes addressing global forestry and climate issues. “Power” is one of the central questions in the study of “political forests.” Diverse “power” framings arise from different theories. However, a strong theory that deals with the mechanisms of power relationships in forestry, while incorporating the scientific research philosophy, is rare in forestry literature. This article discusses “power” by reviewing relevant theoretical frameworks and forestry literature. It uses “logic” to validate the arguments for assessing theories and literature. It proposes a robust theory capable of explaining the background assumptions used in analyzing the factors dealing with the concept of “power.” Furthermore, it reviews Foucault’s scattered works on “power” and frames a new conceptual framework of “knowledge-power-truth.” This article shows how the integration of Foucauldian discursive analysis and Marxian materialism benefits empirical studies, aligning with the latest developments in statistical science. This paper contributes to forest policy analysis literature, particularly regarding the questions of “power” and “forest governance,” by providing a research framework for future investigations.

**Keywords:** *Political forest, Scientific inquiry, Foucauldian discourse, Marxian materialism, Knowledge-power-truth, Bayesian statistics*

သစ်တောရေးရာတွင် ဖြစ်တည်နေသည့် “အသိပညာ-ပါဝါ-အမှန်တရား” ချိတ်ထုံး (သို့) သစ်တောရေးရာ လူမှုရေးဘဝများအား နားလည်ရန် ကြိုးစားရာတွင် အင်အားကြီးသည့် သီအိုရီ တစ်ရပ်၊ နောက်ခံမှန်းဆချက်များနှင့် သိပ္ပံနည်းကျ လေ့လာမှုများ၏ အရေးပါမှု

ဒေါက်တာဝင်းမင်းပိုင်၊ မန်နေဂျာ

မြန်မာ့သစ်လုပ်ငန်း

စာတမ်းအကျဉ်း

ခေတ်သစ်သစ်တောစီမံအုပ်ချုပ်မှုစနစ်မှာ ကိုလိုနီခေတ်နိုင်ငံရေး၊ စီးပွားရေးနှင့် ပတ်ဝန်းကျင်ဆိုင်ရာ နိုင်ငံတော်အဆင့်ကျိုးကြောင်းကြံဆမှုများ၏ အမွေရလဒ် တစ်ခုဖြစ်ပါ သည်။ ဤသို့အားဖြင့် စီမံအုပ်ချုပ်ထားသည့် သစ်တောများအား “နိုင်ငံရေးသစ်တောများ” (Political forests) ဟု သတ်မှတ်ခဲ့ကြပါသည်။ ယခုအခါ အဆိုပါနိုင်ငံရေးသစ်တောများမှာ အသွင်အမျိုးမျိုး ဆင့်ကဲပြောင်းလဲလာနေပြီး ကမ္ဘာလုံးဆိုင်ရာ သစ်တောနှင့် ရာသီဥတု အခြေပြု ပြဿနာများ ဖြေရှင်းရေးတွင် ရှေ့တန်းရောက်လာသည့်ကိစ္စများ ဖြစ်လာကြပါသည်။ “ပါဝါ” (Power) ဆိုသော သဘောတရားမှာ အဆိုပါ နိုင်ငံရေးသစ်တောများအား လေ့လာသုတေသန ပြုကြရာတွင် အဓိကကျသော ကျောရိုး မေးခွန်းတစ်ခု ဖြစ်ပါသည်။ အဆိုပါ “ပါဝါ” အသိပညာ နှင့်ပတ်သက်၍ သီအိုရီပေါင်းများစွာမှ ကွဲပြားခြားနားသော သုတေသနနည်းလမ်းများနှင့် သဘောတရား၊ အယူအဆ မူဘောင်များထွက်ပေါ်လာနေပါသည်။ သို့ရာတွင် သိပ္ပံနည်းကျ သုတေသနပြုလုပ်ရေး မူနည်းအားဖြင့် နက်နဲသည့် ဒဿနဗေဒဆိုင်ရာ အယူအဆများအား အသုံးပြုထားသည့် အင်အားကြီးမားသည့် သီအိုရီတစ်ရပ်မှာ ရှားပါးလျက်ရှိပြီး သစ်တောပညာ နယ်ပယ်တွင် လိုအပ်လျက်ရှိပါသည်။ ယခုစာတမ်းသည်သင့်လျော်မှုရှိသည့် သီအိုရီများနှင့် သုတေသနနယ်ပယ်တို့အား ချင့်ချိန် ထောက်ဆ၍ ပြန်လည်သုံးသပ်ထားပါသည်။ ယခုစာတမ်းမှ ပိုမိုထိရောက် လက်တွေ့ကျသည့် “ပါဝါ” သဘောတရားနှင့် ၎င်းအားအခြေပြုသည့် သုတေသန နည်းလမ်းတစ်ရပ်အား ဖော်ထုတ်ထားပါသည်။ ဤသို့ပြုလုပ်ရန်အတွက် “လော့ဂျစ်” (Logic) သဘောတရား အားအသုံးပြု၍ လေ့လာထားပါသည်။ ထို့အပြင် ဤစာတမ်းတွင် ပြင်သစ် အတွေးအခေါ် ပညာရှင် မီရှယ်ဖူးကို (Michel Foucault) ၏ ပြန့်ကျဲနေသော သဘောတရားများအား ပြန်လည်စုစည်းပြီး “အသိပညာ-ပါဝါ-အမှန်တရား” ချိတ်ထုံး (Knowledge-power-truth) သဘောတရားအခြေပြု သုတေသန နည်းလမ်းအား ဖော်ထုတ်ထားပါသည်။ ထပ်မံ၍ မက်စ် သဘောတရား အခြေပြု ရုပ်ဝတ္ထုအခြေခံသဘော တရားအားလည်း (Marxian materialism) ပေါင်းစပ် ထားပြီး စာရင်းအင်းသိပ္ပံ (Statistical science) ၏ နောက်ဆုံး ဖြစ်ပေါ် တိုးတက် လာသည့် နည်းလမ်းအား အခြေပြုတင်ပြ ဆွေးနွေးထားပါသည်။ ဤစာတမ်းသည် သစ်တော မူဝါဒ သုတေသနနယ်ပယ်တွင် အခြေပြုမေးခွန်း များ ဖြစ်ကြသည့် “ပါဝါ” နှင့် “သစ်တောစီမံအုပ်ချုပ်မှု”တို့အတွက် အသုံးဝင်မည့် သုတေသနနည်းလမ်း မူဘောင် တစ်ခုအား ချမှတ်ပေးထားပါသည်။





# **“Knowledge-Power-Truth” In Forestry: Implications of a Strong Theory, Underlying Assumptions, and Scientific Interpretations in Understanding the Realm of Political Forest**

## **1. Introduction**

### **1.1 From natural, local forests to political forests**

Colonialism influenced the construction of “political forests,” especially in the global south. The introduction of the so-called scientific forestry prompted new forest landscape disciplines in former colonies, especially in Prome (Myanmar), which reshaped and distributed global forest management<sup>1</sup> (Barton, 2002; Wohlers, 2019; Peluso and Vandergeest, 2001). Decisions regarding forests were intrinsically politicized and forest management sciences were aligned for economic rationales under a single forestry goal – sustainable use of forest products (especially timber) – excluding the traditional forest access (Bryant, 1997).

Under this colonial legacy of forest management, five approaches were utilized – (1) the creation of territorial zones, (2) the characterization of certain racially defined groups, (3) the inclusion of procedures for settlement processes in forest reservation laws, (4) the enactment of laws within the forest codes that provided natives access to forest products for subsistence uses, and (5) the exclusion of whole racial or ethnic categories of people from the political forest (Peluso and Vandergeest, 2001). This creation of “political forests” prompted a question – “Can we exclude local people from the forests?”

Colonial interventions through scientific forestry, land territorialization, and the legalization of forests as state property led to the distinction between the forests and the people living in the surrounding areas (Bryant, 1997; Peluso and Vandergeest, 2001; Phyu et al., 2025). Forests and the people residing around or inside them had never been separated by any precolonial political regime, at least in Myanmar (Phyu et al., 2025).

However, in the postcolonial and modern eras international management and governance regimes emerged through globalization. This was because modern states aimed to transfer forest management to locals via a decentralized approach to combat global forestry problems through community forestry, agroforestry, and timber certification schemes, and climate change through the Reducing Emission from Deforestation and Forest Degradation Plus program. Thus, the shift from stricter forest controls by the states to decentralized forestry globally could be recognized as the move from “forest government” to “forest governance” (Arts, 2014).

This movement involved the construction of broader international forest regimes for dealing with forestry and climate issues (Kleinschmit et al., 2024). Therefore, people witness the “intertwined connectivity” between the people, the states, and the international bodies dealing with forestry issues based on scientific and local framing of forests. However, this “intertwined connectivity” could not escape the political framing of the forests. Peluso and Vandergeest’s (2001) original concept of “political forest” is passing through a new era, with more complicated and challenging issues than the original colonial legacy (Devine and Baca, 2020). Therefore, an examination of “political forests” faced the questions of “power and justice.” This article deals with “power” in “political forests,” specifically with the challenges of the conceptual and theoretical framing of the analysis of “power” in forestry.

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<sup>1</sup> See Wholler (2019). President Roosevelt gave a memoir speech regarding Dr. Brandis’ contribution to the US Forest Agency. In addition, “Taunya” became a basic unit of forest management. “Taungya” is a Burmese word representing a traditional hill farming practice (Blandford, 1958).



## 1.2 The haunting dream of forestry theory

Forest policy analysis has long awaited a comprehensive forestry theory, similar to other fields, such as biology, chemistry, and physics (Kleinschmit et al., 2016). Devoted professors and researchers have long struggled and successfully developed several theories framing the foundations of policy analysis. One particular example is the founding editor of the “Forest Policy and Economics” journal, Professor Max Krott. His quest for “the power of mechanics” via the magical formula, similar to those in natural sciences, aimed to advance qualitative policy research, drawing from the positivistic backgrounds of hypothesis testing, causal relations, and empirical proof. His “will to challenge” largely contributed to forestry policy literature and yielded the leading “Actor-centered Power Theory” forestry (Kleinschmit et al., 2016; Krott et al., 2014).

Nonetheless, “power” is one of the most important concepts in human political life and “political forests.” It faced diverse conceptual framings with different interpretations observed in forestry (Arts, 2012; De Jong et al., 2012). As Weber (2024) argued, developing a new theory is complicated and difficult. On the one hand, forest policy science is a young subdiscipline, strongly rooted in forestry, therefore, one could expect a “laggard” position in the policy sciences and the use of more traditional approaches. On the other hand, one can argue that a young subdiscipline lacks the path-dependencies of the mother discipline and follows current trends in theory use (Arts, 2012). Indeed, there are several laggard positions in theories and deployments of statistical approaches.

## 1.3 Reasons and aims of this paper: Looking at forestry through the lens of our seniors

As human knowledge regarding forestry sciences advances, it is important to look at a new perspective through the lens of senior researchers to build a new comprehensive forestry “power theory.” Freedman (2009) argued that social studies needed a strong theory to explain the backgrounds of their assumptions; thereby, effectively explaining the selected variables or factors of each research. Hence, this article aims to develop a theoretical framework for forestry life analysis through an extensive, though not comprehensive, conception of “power” and propose a more nuanced framework for empirical scientific analysis.

In addition, modern statistical science indicated three major concerns regarding the dominating use of the “rejection zone” and “acceptance zone” in hypothesis testing, the associated use of p-value, and the deterministic interpretations of statistical results<sup>2</sup>. Hence, this article attempts to outline a comprehensive “power theory” by combining Foucault’s three core epistemological concepts of “power” – “knowledge-power-truth.” This is because Foucauldian approaches are diverse, unstructured, unsystematic, and have no clear division between discursive and non-discursive layers (Liepold, 2014; Liepold et al., 2017; Winkel, 2012). In addition, this article shows how Foucault’s theory could be utilized as more nuanced scientific research, through an incorporation of the Marxian materialist interpretation in the latest hypothesis comparisons in modern statistical tradition.

## 2. Methodology: Logic of theories and (in)consistency in relevant literature

This article selected and reviewed five theoretical traditions – agency theory, structural theory, Marxian conflict theory, Scottian theory, and Foucauldian theory – to discuss “power” in forestry. It discusses the logic of each theory tradition and related contemporary literature.

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<sup>2</sup> See Chapter 2 of Aitkin et al. (2009) and Dunleavy and Lacasse (2021).

Hence, it uses “informal logic,” especially the validity of the key arguments in each theoretical literature concerning the theories (Walton, 2008)<sup>3</sup>.

It focuses on the consistency of the arguments between the theory and theoretically grounded literature. Moreover, it checks the arguments and the empirical evidence of each theoretical literature. It evaluates each theoretical claim and its representation in the nature of “power” in forestry. A logical flow can be understood with the following examples.

Argument: The conjuncture that an arguer is making or announcing with a series of premises.

1. If inflation is receding, the government’s economic policies are sound (Premise 1)
2. Inflation is receding (Premise 2)
3. Therefore, the government’s economic policies are sound.

The argument, “Therefore, the government’s economic policies are sound,” follows the two premises. Tracking the inconsistent arguments is an important aspect of logic (Walton, 2008). Inconsistency can be derived by adding further assumptions. This is relevant for the present article because theoretically driven studies are the expansion of the whole theories or particular aspects. The following example clarifies this point (Walton, 2008):

1. Kevin always tells the truth.
2. Kevin lied about his age on Saturday.
3. If Kevin always tells the truth, Kevin told the truth on Saturday.
4. If Kevin lied about his age on Saturday, then Kevin did not tell the truth on Saturday.

Thus, Statements 1 and 2 are inconsistent. However, Statements 3 and 4 are fairly consistent. Hence, this article will draw its interpretation of the power theories from informal logic by tracking the (in)consistency of the statements and theoretically driven literature. Consequently, informal logic relies on classical deductive reasoning, assuming that the arguments are valid as far as their prepositional premises are true (Gensler, 2017; Walton, 2008). Thus, this article’s method of tracing the consistency of the arguments or statements will instate the theoretical traditions of “power” by tracking their premises, the (in)consistency between their premises and arguments, and the (in)consistency of between the premises of each theory and the theoretically driven forestry literature (Figure 1).

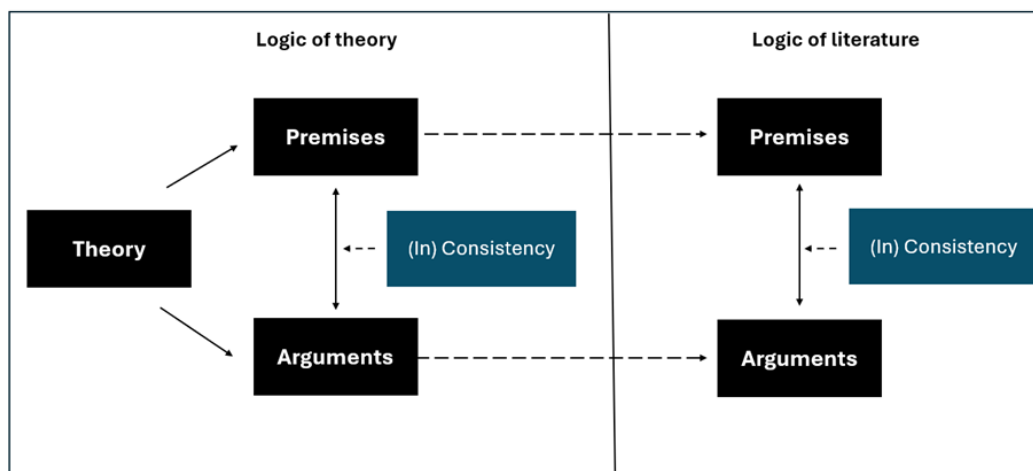


Figure 1. The framework for assessing the logic of theory and relevant literature

<sup>3</sup> This article’s approach to arguments and logical consistency largely draws on Walton’s (2008) seminal work, specifically Chapter 5, pp 136-166.

### 3. Review of mainstream theoretical traditions in “power”

#### 3.1 Agency vs structure: Seeing a forest as individual trees vs seeing the trees as a forest

Arts (2012: 8) stated, “We believe that the actor structure dimension is still a valid axis based on which different theories and models can be positioned.” Moreover, it is presumed that it is still a paradox in forest policy literature, as discussed later. In society, it is difficult to differentiate between social structures and actors just as in the case of forests and individual trees. However, agency theorists accuse structuralist theorists of failing to see individual trees and only seeing the forest. Meanwhile, structuralists criticize voluntarists for failing to see the trees as a functional forest for the sake of emphasizing the functions of individual trees.

Giddens’ (1984) attempted to reconcile the two axes with his “structurization theory.” Nevertheless, recent discussions have shown that it is difficult for theorists to escape either bias (Arts, 2012). Even with Giddens’ (1984) “structurization theory,” his duality of power (i.e., power corpora of agency and structure) is realized in the power generation dynamic, that is, allocative resources and authoritative resources in which social structures are seemingly weighted. This might be the reason that Arts’ (2012) argument of actor structure remains a valid axis for positioning different theories and models. However, the question is how to theoretically explain this valid position.

The agency-centered theory is largely attributed to Max Weber. His book, *Economy and Society*, derives the “power” concept from his definition of domination – “Domination is the probability that a command with a given specific content will be obeyed by a given group of persons” (Weber, 1978: 53). Thereby, he defines “power” as “Power (*macht*) is the probability that an actor within a social relationship will be in a position to carry out his own will despite resistance, regardless of the basis on which this probability rests” (Weber, 1978:54). Thus, maintaining the voluntarist concept of human agency, Weber’s “power” already resides in and is possessed by a human agency. Therefore, he presumed three ways in which this “power” will be produced by somebody and affect others – legal authority, traditional authority, and charismatic authority (Weber, 1978: 215-216).

Similarly, the actor-centered theory is found in Robert A. Dahl. His mechanistic and powerful “power” is as follows – “A has power over B to the extent that he can get B to do something that B would not otherwise do” (Dahl, 1971: 202-203). Moreover, he conceptualized power as “a relation among people.” Nonetheless, despite his conceptualization of “power” as a relationship among people, whereby, he explicitly and mathematically tried to find a comparative of power, power was a thing residing in human agency. Thus, this “power” theory explicitly argues two claims – power is a thing and the actor possesses this power – which is the epistemological quality of “power.” Thus, the epistemological quality of this “power” theory makes two claims: (1) an individual actor or a group of actors can determine or affect social events through relationships with other individuals or groups of actors and (2) the actors are the supreme chiefs of their actions.

Another axis is the functionalist or deterministic idea in which the “social structures” are the key stakes. In this tradition, as Parsons (1937) speculated, the order of society is the major concern. For Parsons, social life enters a stable, recurrent, patterned, and cooperative framework within which a facilitative use of “power” might flourish. Parsons saw the actors not as utilitarian self-seekers, but as socialized actors (Clegg, 1989). This thought is found in Karl Polanyi’s work, which repels the authority of the liberal market regime by proving itself to be a part of the social system (Polanyi, 2001). Nonetheless, social actions are produced, more or less, through the life course of socialization. Power is exercised in the production and reproduction of these social actions. Thus, social norms, standards, and shared values are the

roots of all power exercises (Clegg, 1989). Hence, for Parsons, communities and societies were organized around these shared values, standards, and norms (Scott, 2001). In his conceptualization of state power, Parsons revealed his theoretical centrality of social structure – “Power then is the generalized capacity to secure the performance of binding obligations by units in a system of collective organization when the obligations are legitimized with reference to their bearing on collective goals and where in case of recalcitrance there is a presumption of enforcement by negative situational sanctions – whatever the actual agency of that enforcement” (Parsons, 1963). Thus, in this tradition, power is centralized in social structures. As a structuralist approach, they focus on a specific whole, which dominates all of its elements. They are interested in finding the structural laws focalizing these laws in co-existence. Moreover, they see social structures as real things (Assiter, 1984). Therefore, the structuralist version of “power” involves one claim – social structures, such as norms, rules, standards, and institutions that mobilize or activate those social structures, mainly determine the actors’ ability. This is evident in Parsons (1963) who advanced “power” as a circulating medium, which can be everywhere, with emphasis on production and reproduction in which the actors are mobilized.

The above discussion highlights the major differences between voluntarist and agency theorists’ and structuralists’ conceptions of power in forestry. Although both have their merits, neither deals theoretically with the entire “forestscape.”

### **3.2 Power in conflict theories: The worry for understory species, power of dominant species, and power of understory species**

Karl Marx emerged with the “will to challenge” to counter the gentlemen liberal economic theorists, especially Adam Smith. He criticized Smith’s idea of primitive accumulation – “Such insipid childishness is every day preached to us in the defence of property” (Marx, 1990: 873-874). For Marx, the transformation which kept the market at the center was the point of confrontation between the classes. This transformation deteriorated social means of subsistence and turned production into capital. Therefore, the immediate producers were turned into wage laborers. Therefore, for Marx, “So-called ‘primitive accumulation’, therefore, is nothing else than the historical process of divorcing the producer from the means of production” (Marx, 1990: 875).

Marxist theories of power focus on class relationships under capitalism and the persistent powers reproduced by these relationships (Harvey, 2018). Although Marx’s central concern was the working class, he, knowingly or unknowingly, elaborated the procedures of “power” of the ruling or elite class. The human agency was at the center of his power concept, however, it was a socially conditioned agency, which is reflected in his famous quote – “Men make their own history, but they do not make it as they please; they do not make it under self-selected circumstances, but under circumstances existing already, given and transmitted from the past” (Marx, 1990: 5). Hence, for Marx, human agency was conditioned by class relationships. While social structures determined the potential limits for power exertion, Marx maintained that agency reproduced structure (Svarstad et al., 2018).

Marx’s power concept focused on the “conflicts” between the classes; thereby, he searched for the answers for the working class. However, within this tradition of “power,” Antonio Gramsci’s remodification of Marx’s theory is noteworthy. Marx argued that the ruling class’s domination strategies produced the “false consciousness” of the working class. Gramsci doubted this notion based on his Italian experiences. Gramsci proposed the idea of “hegemony” meaning that the working class was facing the creation of subjects with which they constructed their “consciousness” (Gramsci, 1971). David Hume noted his belief about governing society – “ though men be much governed by interest; yet even interest itself, and all human affairs,

are entirely governed by opinion” (Hume, 1904: 51). This is the question that Gramsci poses – “Are the opinions of the working class autonomous and independent?” in response, he closely observed Italian conditions and came up with the answer that the ruling class utilized their hegemonic ideology and structured the “consciousness” of the mass (Gramsci, 1971). However, Gramsci emphasized a particular situation for this hegemony to occur – times of crisis (Femia, 2002; Gramsci, 1971; Williams, 2002). Overlooking this emphasis might contribute to the misunderstanding of Gramsci, as in the case of James C. Scott.

Nonetheless, Gramsci is the only one who came out of the traditional Marxian sphere of materialism. His emphasis on the non-materialist version of power included the idea that every hegemony was always being contested and was a contesting social phenomenon that was never stable, aligning with “poststructuralism” (Femia, 2002; Gramsci, 1971; William, 2002). However, this Marxian “power” concept includes a key claim – power is expressed in the conflicts between the social classes through production, reproduction, and the realization of capital (Gramsci was the only one who added an important non-materialist layer of human thoughts, ideas, opinions, and consents as discursive layers of humanity). Interestingly, their epistemological nature of power is neither agencies nor structures – the conflicting class relationships that shape agents and reproduce the social structures. Hence, this theoretical conception of “power” highlights the conflicts between the social classes, which are heavily structured by the material realm of a social event. This tradition weighted upon the “power” of the dominating and ruling class while searching and proposing the answers for the subordinating class. Therefore, apart from “power,” yet closely related, another powerful Marxism claim is “materialism” – our life is shaped by the realm of materiality in our world.

Another perspective emerged by challenging “Gramscian Hegemony” through empirical examinations, with the “power of the thins,” which is the “power” of the subordinating class or the grassroots (Fletcher, 2023). It came from one of the leading postmodern theorists, James C. Scott whose focus was rural people. For Scott, “hegemony” was not convincing, and, throughout his life, by critiquing the modernist understanding of the social world, he leaned toward “anarchism.” He was interested in the so-called “non-state spaces” and the people thriving there. From “non-state spaces,” he marched toward “the art of not being governed” (Scott, 1990, 2009). His central idea was that people had their own under-scripts, which were buried, and were unable to write their true stories through conventional power analysis (close to Foucault’s genealogical objective – to unearth the buried stories) (Foucault, 1971; Scott, 1990). For him, none of the states could effectively rule the people from the “non-state spaces” and the people were escaping the modern state’s formation (Scott, 2009). Thus, the power of the ruling class via “hegemony” was untenable (Scott, 2009)<sup>4</sup>. Scott’s key claim, “power of the thins,” was that the consistency and endurance of the rural or grassroots people in resisting the modern states in their daily life made it difficult for the modern states to govern them, and their “everyday forms of resistances” made them powerful (Scott, 1985, 1990, 2009). Thus, the focus of his “power” theory is on class relationships, especially class conflicts. It is similar to the Marxian tradition as both worry about the subordinating class/working class/rural people/grassroots. However, it is different from the Marxian tradition as it shows the powerful nature of the grassroots as opposed to the mechanism of the powerful ruling/elite class.

#### **4. Advancing forestry policy literature with “power”: Relevant theories in forestry**

In forest policy analysis, the attempt to understand forestry life ushered in background theories analysis (Arts, 2012). Through multiple attempts, theoretical developments, grounded

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<sup>4</sup> Scott’s theoretical framing is useful in understanding the life of rural people or grassroots-level people. However, his empirical evidence is problematic for several historians.

in philosophy, emerged in the recent decades. Among them, the actor-centered power (ACP) theory took a strong empirical and scientific voluntarist position (Krott et al., 2014). The ACP theory is primarily a Weberian and Dhal mechanistic version. The central focus is to determine the power mechanics empirically and scientifically. Krott et al. (2014) aimed to help qualitative researchers escape from mere text mining and narrative telling toward a more positivist tradition of science. Three core themes in the theory's outline – regulations (coercion), economic means (disincentives and incentives), and information (dominant)) – helped researchers measure “power” concretely. The theory considered social structures, especially in the “power” elements of regulations (coercion) and information (dominant), as structural sources, such as law-making, expert discourse, and ideologies. However, even with social structures as the power source, the theory maintained that “They (actors) play the role of potentate or subordinate, depending on their power sources and the specific issue at hand” (Krott et al., 2014: 40).

The theoretical question is how the Weberian ability of the actors explained the actors under the influence of structural sources. While advancing to more nuanced scientific research, the theory faced internal challenges – the diverse capabilities of the actors and how to count them. Krott et al. (2014) proposed to divide purposive and non-purposive actions. The theory demanded “to specify the power and to distinguish it from the general capabilities an actor might have” (Krott et al., 2014).

Another neo-Weberian theory related to forestry literature is that of Ribot and Peluso's (2003) “Theory of Access” (TOA). This theory replaced the widely used “right” of the actors with the “ability” of the actors. Furthermore, they substituted the “bundles of rights” with “bundles of ability” (Ribot and Peluso, 2003). By substituting “right” with “ability,” they relied on Weberian “power” as the ability. This theory stated, “Ability is akin to power, which we define in two senses—first, as the capacity of some actors to affect the practices and ideas of others” (Ribot and Peluso, 2003: 155-156). They tried to incorporate two epistemological versions of power – Weberian and Foucauldian. In the latter, the theory referred to Foucault's disciplinary power. In addition, the theory collaborated with the Marxian notion of “labor and capital” and their relationships. Moreover, the theory focused on the “mechanism” by which the actors were able to exercise their abilities – “The strands in our webs and bundles of power, then, are the means, processes, and relations by which actors are enabled to gain, control, and maintain access to resources. As shorthand for means, processes, and relations in the rest of this paper, we use the term ‘mechanisms’” (Ribot and Peluso, 2003). “Mechanism” here refers to Foucault's idea of “the manifestation of mechanisms in power relations.” Therefore, the theory stands between Weberian and Foucauldian with Marxian materialist interpretation.

The theoretical question is how to explain the marriage of the atomic “power” (Weberian) and the peripheral version (Foucauldian) of “power”? However, the theory framed a useful framework for the empirical analysis – access mechanism for technology, capital, markets, labor, knowledge, authority, identities, and social relationships. It claims that the analysis of specific resource conflicts is important to understand how those conflicts can become the means for different actors to gain or lose the benefits from tangible and intangible resources. Starting with Weberian atomic power of agency, the theory is closely linked to Foucauldian situational power. Hence, it is helpful for researchers to empirically identify the actors' abilities through conflicts. By 2018, there are overall, 529 articles and 302 thesis works have had been referred to or based their research frameworks on the ATC theory by 2018 (Myers and Hansen, 2018).

Another interesting domain is the use of social network theories in forest policy research. The use of theoretical grounds in networks is an ongoing debate within the scientific community. Loch and Kleinschmit (2025) mentioned, despite rigorously contributing to forest

policy analysis, the insufficient and vague theoretical elaborations in this research tradition. Three generations of SNA, with diverse theoretical traditions, evolved – individualistic version (first generation), structuralist version (second generation), and cultural and discursive version (third generation) (Loch and Kleinschmit, 2025; Knox et al., 2006). Even in this network analysis, the questions of agency and structures remain valid. Knox et al. (2006) noted, “...that its apparent methodological expertise is bought at a cost of oscillation between individualistic and structuralist perspectives.”

The first and second generations of SNA postulated the individualistic assumption in the first generation, however, their capacities encircled the social relationships and championed a type of structuralism, and functional structuralism in the second generation (Knox, 2006). Thus, the two generations, although slightly different, maintain that social structures are the premier of “power” through their networks, nodes, and links. This raises two questions – why does SNA need to move beyond networks and why does it need to add cultural and discursive backgrounds? If it is talking about power, the struggles of previous theoretical traditions will indirectly answer these questions. In this methodological tradition, Loch and Kleinschmit (2025) tracked 135 relevant papers for forestry.

## **5. Recent forestry-related literature: Contributions, theoretical arguments, and (in) consistencies with background theories in research applications**

### **5.1 The interpretation of ACP theory-based literature**

Charmakar et al. (2024) researched the use of ACP theory-based literature and voluntarist theoretical tradition. In this systematic review, 55 studies dealt with the ACP theory in forest management institutions. The theory has been overwhelmingly used in qualitative interpretations. The review revealed that, using the ACP approach, both formal and informal actors can wield power, contingent on available power resources and specific issues. The key findings were that both formal and informal actors exhibited coercion, with formal actors predominantly relying on formal power resources, such as forest laws explained with the ACP theory. Therefore, informal actors, especially in developing nations, remained important forestry regimes, providing insights for decision-making and forestry policy (Charmakar et al., 2024).

However, the ACP theory states the importance of the interactions of the three elements theoretically and empirically – “Therefore the analysis is restricted to looking at the three elements separately at this point. It is a highly important future task to tackle the interrelations of the three elements theoretically and in empirical research” (Krott et al., 2014). It seems we still overlook the theory’s will to observe the interrelations of the tree elements. In addition, it rightly claimed, “To gain a deeper understanding of the role of power in shaping institutions, it is necessary to broaden our comprehension of power elements or resources in both formal and informal dimensions” (Charmakar et al., 2024: 100465). However, the question is that “to have a deeper understanding of the role of power, can we rely solely on the capabilities of the actors?” This article, based on the latest research in this theoretical tradition, argues that the incorporation of actors’ capabilities in the ontological and epistemological nature of the mechanism of power is needed.

Table 1. Key findings in theoretical-based studies and their contribution to the understanding of forestry life in terms of “power”

| Research                | Contributions                                                                                                                                                                                                                                                                       | Theoretical and empirical challenges                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ungirwalu et al. (2025) | <ul style="list-style-type: none"> <li>• ACP framework with historical underpinning</li> </ul>                                                                                                                                                                                      | <ul style="list-style-type: none"> <li>• Identifying structural power via reinterpretation of history</li> <li>• Historical dimensions as the new contexts of power sources, therefore, power gain or loss of the actors were regulated</li> <li>• The ability of an actor to influence others within social relationships rests on its power sources</li> <li>• During the new intervention, the Patuans were increasingly unable to deliver the power sources they possessed to impose Sasi rules on the harvesting of nutmeg in the current state forests</li> <li>• It identified the mechanisms by which they (Patuans) were later constrained in using the power sources, leading to the reconfiguration of the power networks</li> </ul> |
| Maryudi et al. (2016)   | <ul style="list-style-type: none"> <li>• Power sources of peasants</li> <li>• The intertwining of political environments, power sources, and local peasants’ power appropriation</li> </ul>                                                                                         | <ul style="list-style-type: none"> <li>• Structural environments are not power, they only directly influence an actor’s power</li> <li>• Surrounding political environments have an extent of influence on the capability of actors, either weakening or strengthening</li> <li>• Village officials are the most important actors</li> <li>• The elements of power in the ACP approach are the “given power” possessed by the actors</li> <li>• If an actor has “the given power,” but not a <b>supporting network</b>, the actor cannot be powerful</li> </ul>                                                                                                                                                                                 |
| Juniyanti et al. (2021) | <ul style="list-style-type: none"> <li>• Comprehending power analysis via structural and actor levels of the powerful actors in land contestation (combination of ACP and social network analysis (SNA))</li> <li>• Power dynamics between the state and the communities</li> </ul> | <ul style="list-style-type: none"> <li>• The central government and the reserve management bureau were the most powerful actors</li> <li>• Community remained the least powerful</li> <li>• The policy coalition used strong “power strategies” to exacerbate the power inequality between coalitions</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                |



| Research             | Contributions                                                                                                                                                    | Theoretical and empirical challenges                                                                                                                                                                                                                                                                                                 |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sahide et al. (2020) | <ul style="list-style-type: none"> <li>• Extension of the ACP theory</li> <li>• Adding power backgrounds</li> <li>• Adding the history of a landscape</li> </ul> | <ul style="list-style-type: none"> <li>• Historical and socio-cultural factors were one of the power backgrounds and shaping the actors</li> </ul>                                                                                                                                                                                   |
| Zhnag et al., (2023) | <ul style="list-style-type: none"> <li>• Combination of bureaucratic politics and ACP theory</li> </ul>                                                          | <ul style="list-style-type: none"> <li>• Actors are hypothesized as autonomous</li> <li>• Scientific knowledge and effective policy outcomes require the support of power</li> <li>• Policy process is influenced by social networks, whereas the most powerful actors within these networks determine the policy outputs</li> </ul> |

Table 1 presents some of the latest articles concerning the ACP theory. These have dived into empirical examinations using the ACP theory and contributed to the understanding of the nature of power in forestry. Yet, the theoretical claims and epistemological nature of power in the theory and ACP-based literature highlighted some difficulties in empirical research. Several of them, such as Maryudi et al. (2016) and Ungirwalu et al. (2025), revealed a departure from Weberians or Behaviorists, such as Dhal's (1971) atomic power. Several discussions highlight the power of social structures beyond the actors' power. Juniyanti et al. (2021), in a powerful yet less discussed research, used a mixed method, incorporating the ACP and SNA, to explain the mechanism of how the villages' leaders became powerful actors. This involved realistic observations of land affairs in the rural areas of the global south. However, their claim that an actor without a supporting network cannot be powerful is similar to the structuralism of Parsons and Althusser. Given that the ACP theory considered the structural sources, a theoretical question remains – are actors the managers of their power production? As Maryudi et al. (2016) stated, "Structural environments are not power, only they directly influence an actor's power." More importantly, the ACP tradition expanded to the historical underpinning to adequately understand power relationships (Sahide et al., 2020). Hence, it is important to ask from which analytical tool will history be analyzed – Foucauldian genealogy or Annales School's method from mainstream historiography. Meanwhile, Zhnag et al., (2023) showed the liquidize position of power in their studies as the power in actors and the sources of power from structures. This analysis also revealed that social structures and scientific knowledge are quite influential upon the actions of actors.

## 5.2 Interpretation of Theory of Access (TOA), SNA, and structuralist position literature

Table 2 discusses some of the literature in these traditions (i.e., SNA, ATC, and relevant literature with structuralist positions) and summarizes their contributions and theoretical and empirical challenges. In the structuralist traditions in forestry literature, the implicit theory is rarely used with clear structural positions. However, numerous studies have adopted their analytical frameworks in structuralist positions.

Table 2. Key contributions of theoretical-based studies and their theoretical and empirical challenges

| Literature                 | Contributions                                                                                                                                                                                  | Theoretical and empirical challenges                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rutt et al. (2015)         | <ul style="list-style-type: none"> <li>Scrutiny of scientific knowledge in forest management</li> </ul>                                                                                        | <ul style="list-style-type: none"> <li>The two communities unaffected by the technical qualities of the plans</li> <li>They are entirely “dependent” on their legal validity</li> <li>The “rationale” and “resulting regime” of scientific management planning should be scrutinized</li> </ul>                                                                                                                                                                                                     |
| Faye (2025)                | <ul style="list-style-type: none"> <li>The contesting power relationships</li> <li>Mixed conceptual background: Foucauldian power, institutional choice, Scott’s weapon of the weak</li> </ul> | <ul style="list-style-type: none"> <li>An institution has power over the forests; thereby, controlling other actors’ interventions in the forest.</li> <li>The Forestry Department, through its forestry management project, dominated pre-existing, local, legally and democratically elected governments</li> <li>Scientific expertise is a political performance in which and by which technically-dominated projects, such as PROGEDE, seek to institutionalize technical domination</li> </ul> |
| Rogelja and Shannon (2017) | <ul style="list-style-type: none"> <li>Through SNA, anti-corruption policy for forestry</li> </ul>                                                                                             | <ul style="list-style-type: none"> <li>The relationship patterns within a social system allocate resources</li> <li>Government agencies are the central networks</li> <li>Government agencies hold strong determinants for others</li> </ul>                                                                                                                                                                                                                                                        |
| Lescuyer et al. (2013)     | <ul style="list-style-type: none"> <li>Through TOA, power mechanism among timber industry, decentralized regime, and local people</li> </ul>                                                   | <ul style="list-style-type: none"> <li>Government agencies hold strong determinants for others</li> <li>The development of chainsaw industry s has relied mainly on easy access to domestic markets and on recognition of customary tenure</li> </ul>                                                                                                                                                                                                                                               |

## 6. Toward the mechanism of power affecting the entire “forestscape”: The nexus of “knowledge-power-truth”

The above-mentioned theory traditions have attempted to deal with “power” in society, with a diverse focus. The structure theory favors the determinant functions of the social structures, whereas the agency theory argues for the premier capacity of individual actors. Another perspective could be found in Marxian and postmodernist versions of power. The former revealed the powerful nature of the ruling or elite class or technocrats while the latter focused on the grassroots level. Nonetheless, all the above-mentioned theoretical traditions failed to handle and explain the entire society. In forestry, they faced difficulties in providing a bird’s eye view of the scope of the forest landscape. Hence, only Foucault’s ideas and theories of power can handle the entire society and explain the entirety of a “forestscape”

Foucault had two theoretical shifts in his entire analysis. His first theoretical shift included a displacement of “the notion of dominant ideology” with his notion of “knowledge-power” through, what he called, modes of veridiction (Foucault, 1989, 1995, 2002, 2012, 2014). Contrary to domination or resistance tradition, it focused on a different way of analyzing knowledge (*savoir*) and power. His analysis stated, “... with knowledge (*savoir*) the problem was to be posed in terms of constitutive practices, of practices constitutive of domains of objects and concepts where the oppositions of scientific and unscientific, true and false, reality and illusion could come into play” (Foucault, 2012: 11-12), and with the power “...to replace the notion of dominant representations with the question or field of analysis of the procedures and techniques by which power relations are actually effectuated” (Foucault, 2012: 12). Thus, his first theoretical development “... identify the discursive practices which were able to constitute the matrices of possible bodies of knowledge, and study the rules, the game of true or false, and more generally, the forms of veridiction in these discursive practices” (Foucault, 2008b: 4) in analyzing the plays of power relationships during the emergence of a new discourse.

Later, from the 1979 lectures on “governmentality,” his second theoretical shift included the move from “knowledge-power” to “government by the truth.” However, this shift included two further theoretical steps for “studying the techniques and procedures by which one sets about conducting the conduct of others,” which he termed “conducts of the conduct” or “governmentality” (Foucault, 2007, 2008a, 2008b, 2008c, 2012; Lorenzini, 2023). Through governmentality, he attempted to uncover the arts of government as rationalities producing the practice of government. From the 1980 lectures, he moved further toward the analysis of the pragmatic self (i.e., “analyzing the subject mode of being”) to elaborate on the “government by truth” (Foucault, 2007, 2008a, 2008b, 2008c, 2001, 2012, 2014). He argued that passing from the notion of “knowledge-power” to “government by truth” involved adding “... a positive and differentiated content to these two terms of knowledge and power” (Foucault, 2012: 12). For Foucault, analysis of government by truth meant; “... it seems to me that the analysis of governmentality – that is to say, of power as a set of reversible relationships – must refer to an ethics of the subject defined by the relationship of self to self (Foucault, 2001: 252). Therefore, his entire scope of power relations extends to include ethics through an insertion of truth telling of his 1980s lectures. He is far away from giving up “power relations”, rather he stated that “... the need to be concerned about the self is linked to the exercise of power” (Foucault, 2001: 36).

The question is where is his conceptual “power” in the analysis of “government by truth”? Foucault critiqued that the exercise of governance and the exercise of power require the manifestation of truth by raising an analytical question – “... can there be an exercise of power without a ring of truth, without an alethurgic circle that turns around it and accompanies it?” (Foucault, 2012). Hence, he exerts that without truth, no hegemony can be exerted, sufficing Gramsci’s “hegemony” (2008c, 2012, 2014, 2017). For Foucault, through truth telling (parrhesia), one can create a meeting point for the obligation to speak the truth, the procedures and techniques of governmentality, and the constitution of the relationship with the self and others (2008b). This is how one achieves the chains of mechanism, the focus of analyzing power, where the conceptual “power relationships” are at play – emerging forms of knowledge (*savoir*), the procedures and techniques of government, the constitution of the relationship with the self, and truth telling (parrhesia). Foucault emphasized this theoretical framework: “... from the theme of acquired knowledge to that of veridiction, from the theme of domination to that of governmentality, and from the theme of the individual to that of the practices of the self – we can study the relations between truth, power, and subject without ever reducing each of them to the others (Foucault, 2008c, 9).” Therefore, the Foucauldian challenge includes going beyond knowing the limits of knowledge and reason (Foucault, 2008b, 2012, 2017).

During an interview, Foucault indicated “what we call knowledge, that is to say, the production of truth in individual consciences through logical experimental processes” (Foucault, 2014). Therefore, the nexus of “knowledge-power-truth” is inseparable in the realm of governing society and in power relationships. Hence, the formation of “knowledge-power-truth” aids in the analysis of power relationships in societies, resembling a theory, which serves as the foundation for explaining the life mechanism of the “forestscape.” In this manner, Foucault got rid of the centuries-old paradox of structure and agency dimensions.

## **7. A framework: Actualities and scientific applications**

### **7.1 The questions of agency, hypothesis, and positivism**

Some scholars pointed out that in forest and environmental policy analysis, Foucauldian studies lacked the proposition of scientific studies, that is, they had no hypothesis (e.g., Liepold et al., 2019). Foucauldian literature did suffer from the deficiency of hypothesis testing. This may be attributed to Foucault’s rejection of the positivist position. Both his archaeology and genealogy methods did not encourage the examination of the internal dynamics of and the appearances and conditions of each discourse with hypothesis testing, that is, through the falsification principle (Foucault, 1971; Popper, 2002). In statistical terms, both methods do not encourage the prior specification of settings whereby the hypothesis is treated as null or alternative (Aitkin et al., 2009; Freedman, 2009). Here, a question arises – why is the most realistic theory explaining the actual situations of humanity for power dynamics incompatible with scientific nature?

However, Foucault did use a hypothesis. His inaugural lecture at College de France showed his hypothetical position – “Here is the hypothesis which I would like to put forward tonight to fix the terrain ... that in every society the production of discourse is at once controlled, selected, organized and distributed by a certain number of procedures whose role is to ward off its powers and dangers, to gain mastery over its chance events, to evade its ponderous, formidable materiality” (Foucault, 1971). This was Foucault’s hypothesis for his entire project of “history of system of thoughts” at College de France. However, this hypothesis is different from the conventional and dominant hypothesis testing derived from the Newman-Pearson theory. Foucauldian hypothesis attempts to cover a larger picture or test the assurance of an assumed discourse, which is supposed to occur at a given time frame (Foucault, 1971). However, the conventional hypothesis tests specific conditions or factors within the dynamic of each discourse. They may appear similar, yet are different in their intentions. Recent developments in statistical science pointed out the deficiency of the Newman-Pearson theory, distinguishing null hypothesis and the alternative hypothesis (Aitkin et al., 2009)<sup>5</sup>. Therefore, if having a hypothesis is a scientific merit, Foucauldian research compares hypotheses without a prior null hypothesis.

Two major criticisms of Foucault are his rejection of absolute truth and his negligence of the human agency. Therefore, he is unable to provide useful and normative recommendations. Foucault denied giving normative values in several of his interviews (Foucault, 2014, 2024). These rejections contradict the dominant discourse of science – “positivism.” However, when one looks at the material nature of humanity, some of the most prominent findings and scientists hold against the positivist position. Albert Einstein once stated the major challenge one should take into account: “As far as the laws of mathematics refer to reality, they are not certain; and as far as they are certain, they do not refer to reality” (Einstein, 2002). His “special relativity” affirmed that truth relies upon the observers and observations. “This is in agreement with

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<sup>5</sup> Aitkin et al. (2009: 44-58) stated that the p-value depends on the hypothesis specified as the null hypothesis; thereby, questioning the strength of the p-value without considering other possible null hypotheses.

Freedman's (2009) "sensitivities of modelers." Indeed, Einstein declared, while writing a letter to Karl Popper, that he "... really do not at all like now the fashionable [modische] 'positivistic' tendency of clinging to what is observable (Einstein, 1935 in Popper, 2002: 482)." Therefore, Einstein's subjective belief is obvious in his development of theoretical and mathematical laws in explaining the expected physical world (Press and Tanur, 2016). Clark (1984) pointed out that before Einstein the scientist, there was Einstein the philosopher.

Another powerful indication came from Heisenberg's "theory of uncertainty" where one cannot definitely know the location and the velocity of an electron simultaneously. Thus, Foucault's position aligned with the real nature of modern statistical and physical sciences. However, instead of focusing on ideologies or normative norms, he wanted to know what are the actualities of life, focusing on power/truth regimes (Foucault, 1971, 2008b, 2001, 2012, 2014, 2024). Regarding the criticism of reducing the capacity of human agency, the quote from his inaugural lecture clarified that he focused on the procedures produced by human agency, which were capable of controlling, selecting, organizing, and distributing discourses. He observed the human agency that produced discourses and the associated power relationships, which were selected, controlled, and distributed repeatedly by the human agency and associated institutions, in which humans were the actors as well (Foucault, 1995, 2007, 2008a, 2008b, 2001, 2012, 2014). Therefore, "Foucauldian agency" has certain abilities and limitations simultaneously, and is similar to light's particle-wave duality in modern Physics (see., Lorenzini, 2023).

## **7.2 Analytical framework for empirical research: Towards the analytical middle way with the help of Bayesian approach**

As Suarez (2020: 59) noted, "This suggests that no serious philosophical inquiry into the nature of chance can start from very different assumptions." Therefore, this article proposes a new analytical framework on "power" by combining Foucault's latest work – "knowledge-power-truth." The analysis of "power" in forestry starts with a holistic hypothesis – the assumption of an emerging discourse in which the dominant or new knowledge is situating and claiming a single truth. The analytical task includes tracking the practices and procedures of the actors, institutions, and forestry structures involved in the new knowledge and proclaimed truth. Within the emerging discourse, there are interplays of knowledge exchange among the central knowledge/practices/procedures dynamic and discourse players (i.e., actors, institutions, and structures). With this framework, this article aims to track the balance of practices and procedures among the actors, and between the actors and others (institutions and structures). This will identify the dominant and marginalized players and understand the mechanism of making discourse players (Figure 2). This forms the discursive layer.

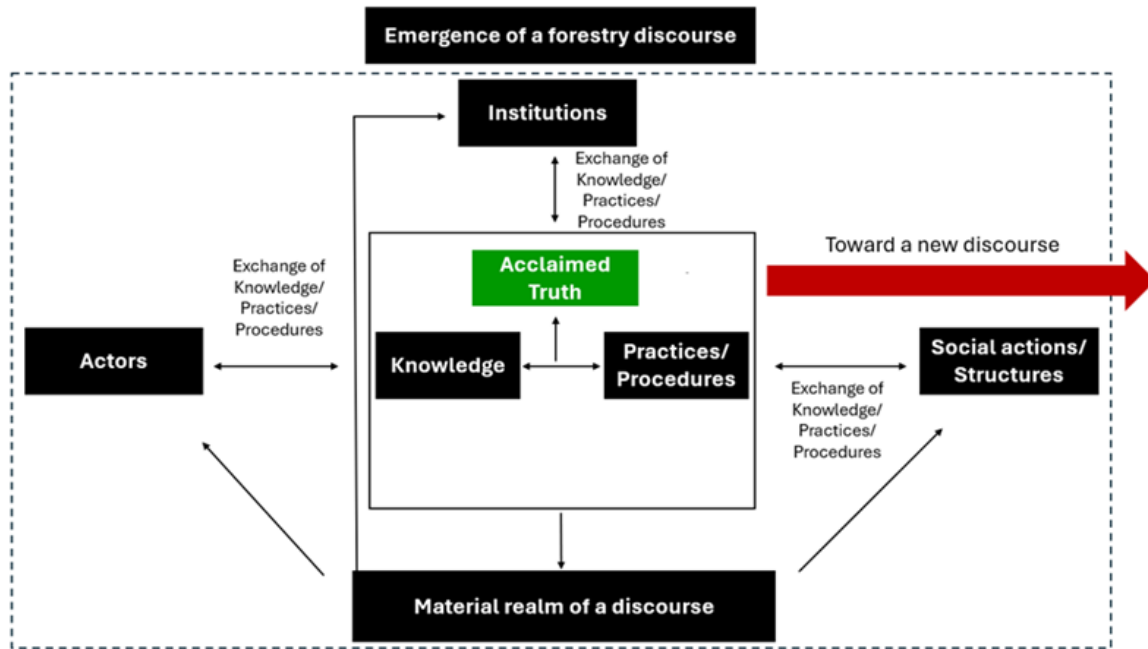


Figure 2 A proposed analytical framework

In the discourse's non-discursive layer or materialist conditions, the discursive events are realized in the material realm (Foucault, 1971). These material conditions are produced simultaneously and affect the discourse players. This material realm is so important that Foucault admitted it to be one of the reasons for his choosing to study genealogy after the 1970s (Foucault, 1971).

Marx and Foucault worked on two ends of the spectrum (Marsden, 1999). In an interview, Foucault stated that his work covered the parts left out by Marx (Foucault, 2024). Hence, one cannot integrate Marxian "conflict power theory" and Foucauldian "knowledge-power-truth." Instead, the Foucauldian discursive world can be integrated with Marxian materialism. Both Marx and Foucault never rejected the "discursive world" or "materialist world." Marx emphasized how life was shaped by the process of production and reproduction and in the dynamics of capital and labor in material terms, while Foucault emphasized how the evolution of thoughts and systems of knowledge shaped life. Evidently, both are needed in actual life and are compatible in one framework.

From this union of the discursive and materialist layers of discourse, empirical studies can be visualized, with their results producing effective insights for policy analysis. For qualitative research, the patterns, trends, and time series presentation are sufficient (Paing et al., 2023). The challenging question for quantitative researchers dealing with a strong theory in "power" analysis is how to proceed. The theoretical assumptions for the analysis of the effects produced in the material realm are not well fitted with the "frequentist approach." The nature of "power" in "knowledge-power-truth" has multiplicity, complexity, uncertainty, and non-universality with unfixed positions. Therefore, the frequentist approach of finding fixed parameters for power relationships is untenable. However, the Bayesian approach can deal with the subjective position of treating the probabilities and their parameters (Kruschke, 2015), which is in line with Foucault's theoretical articulation of "subjectivity" and "subject creation." Indeed, the greatest scientists, from Kepler and Newton to Einstein, adopted their subjective belief first before observations (Press and Tanur, 2016). Furthermore, the Bayesian approach is in line with the historical background of the Foucauldian approach because it needs a prior assumption about the population, unlike the frequentist approach. Accordingly, Foucauldian

theoretical subjective position in the mechanism of “power” can benefit the subjective positions and beliefs of scientists in their interpretations of “forestry power”. Therefore, Bayesian approach helps researchers to apply formal way of their subjective beliefs and assumptions while exploring the unfixed positions of power relations (Kruschke, 2015; Press and Tanur, 2016). In social science studies, the frequentist approach and the overuse of the p-value for rejecting or accepting the null hypothesis have been strongly rejected by leading statisticians (Dunleavy and Lacasse, 2021; Freedman, 2009)<sup>6</sup>.

### 7.3 Ways of analysis in forestry

For the analytical framework includes two layers – discursive layer and material layer, and two events (for a long-standing discourse with possible facelifts) (see figure 3). The theory assumes a discrete event of a discourse, following Foucault’s historical discontinuity but with a regularity of the social patterns. For a discrete event, it assumes the starting point of analysis is the discursive layer of the first event and the constituted material realm accessing both its initial condition and transformed condition being shaped by assumed discourse. The next event of a long-standing discourse will be influenced by the forces of both discursive and material layers of the previous event. Therefore, tracking and analyzing the long-standing discourses can reveal the dynamic and interactions of both discursive and material layers. The short discourse or emerging discourse will mostly end with the shaping effects of discursive layers upon the material world (see figure 3).

A discourse is, in Foucauldian philosophy, a social phenomenon through which power and knowledge intersect and regulate individuals, groups, and institutions even with the capacity of producing and assembling new knowledge with the new procedures in society. However, the human agencies could modify or being manipulated by the given situations from a discourse. Thus, tracking discursive layers involve two steps – knowledge production or tracking dominant and well accepted knowledge and the manifestation of truth. The first step, knowledge production, involves tracing the forestry practices, procedures and techniques oscillating around the assumed discourse and their appearances, forms, contents in claiming some arguments via some premises in relation to the existing knowledge in search of a single forestry truth. However, regulating individuals, groups, and institutions via the knowledge production also involves the manifestation of truth which could also be tracked through three steps;

1. Falsification of or distinction of what is right and wrong or good and bad etc.
2. Exclusion of other possible forms of knowledge, practices and associated actors and institutions.
3. Exertion of the new knowledge which acclaimed as the best choice in each specific situation – claiming a single forestry truth

Therefore, the manifestation of an assumed truth via the newly accepted knowledge first involves the process of dividing true and false or good and bad thereby excluding the associated actors and institutions who are practicing those forestry practices and knowledge assumed to be bad or false. Therefore, the researchers can track how the emerging and dominating new knowledges, through the scrutiny of forestry practices and procedures, which shape the ideas, thoughts, beliefs, and associated forestry related practices of actors (individuals or groups or different classes or elites or technocrats or the top, mid and low-level management or rural or grassroot levels and so on) and the institutions. Therefore, it can track five stages via the manifestation of “knowledge-power-truth”;

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<sup>6</sup> For this concern, there was a special issue in the journal “The American Statistician”, Vol 73, Issue 1, 2019. (<https://www.tandfonline.com/toc/utas20/73/sup1>).

1. The ways the actors and the institutions reform and reconstruct themselves in adapting a new discourse,
2. The mechanism of the adopters (those actors and institutions who adopted and submitted to the new knowledge) in including and excluding some actors and institutions within the formation of a new discourse,
3. The ways in which the actors and institutions, who are forced to transform, prepare to transform themselves to adapt with a new discourse or the techniques and procedures of them in resisting or adapting or adopting a new discourse,
4. The ways the actors of different categories attempt to submit, resist, adapt, modify, and manipulate a discourse for their own ends,
5. And, finally the conditions, appearances, formations, specific norms and variations within a new discourse where the dominating or well accepted knowledge which is claiming one single truth in forestry.

The insight from this analytical framework is that it can track the conditions of a transformed material realm which underwent along with an emerging discourse (e.g., deforestation and forest degradation, volumed of logged timber etc. of a region of focus) and the subsequent effects of this transformed material realm to the next facelift of a discourse. As discussed earlier, for quantitative analysis, the theoretical assumptions of “knowledge-power-truth” are more compactible Bayesian approach. Bayesian approach can consider the subjective beliefs and prior assumptions (in our case they come from our discursive analysis) mathematically (Kruschke, 2015). Bayesian inference deals with a researcher’s prior belief from his/her assumptions obtained from his/her previous observations or reviews and attempt to generate a prediction based on an obtained posterior probability. The use of subjective and Prior belief is not unusual in scientific examinations and mostly ends in an informal way. Press and Tanur (2001: 205) noted: “Science cannot, and should not, be totally objective, but should and does involve a mixture of both subjective and objective procedures, with one type of procedure feeding back on the other.” The fundamental and basic Bayesian equation (Kruschke, 2015);

$$P\{B \text{ given } A\} = \frac{P\{A \text{ given } B\} \times P\{B\}}{P\{A \text{ given } B\} \times P\{A \text{ given not } B\} + P\{A \text{ given not } B\} \times P\{B\}}$$

It includes  $P\{B\}$  as the prior probability,  $P\{A \text{ given } B\}$  as the model of the observational data, and  $P\{B \text{ given } A\}$  as the updated or posterior probability of B – that is the answer one is looking for. Through the assumption of prior information and prior distribution, calculation for likelihood function, highest density intervals (HDIs), instead of degree of freedoms and p-value as in frequentist approach, and posterior distribution give a more flexible and reliable prediction and analysis (Kruschke, 2015; Tanur and Press, 2001). Therefore, Bayesian inference can run in the numerous statistical treatments – Binominal models, Generalized linear models and other promising tools such as such as Markov Chain Monte Carlo (MCMC) method, hierarchical models, Model comparison, Metric Predictors for regression analysis.



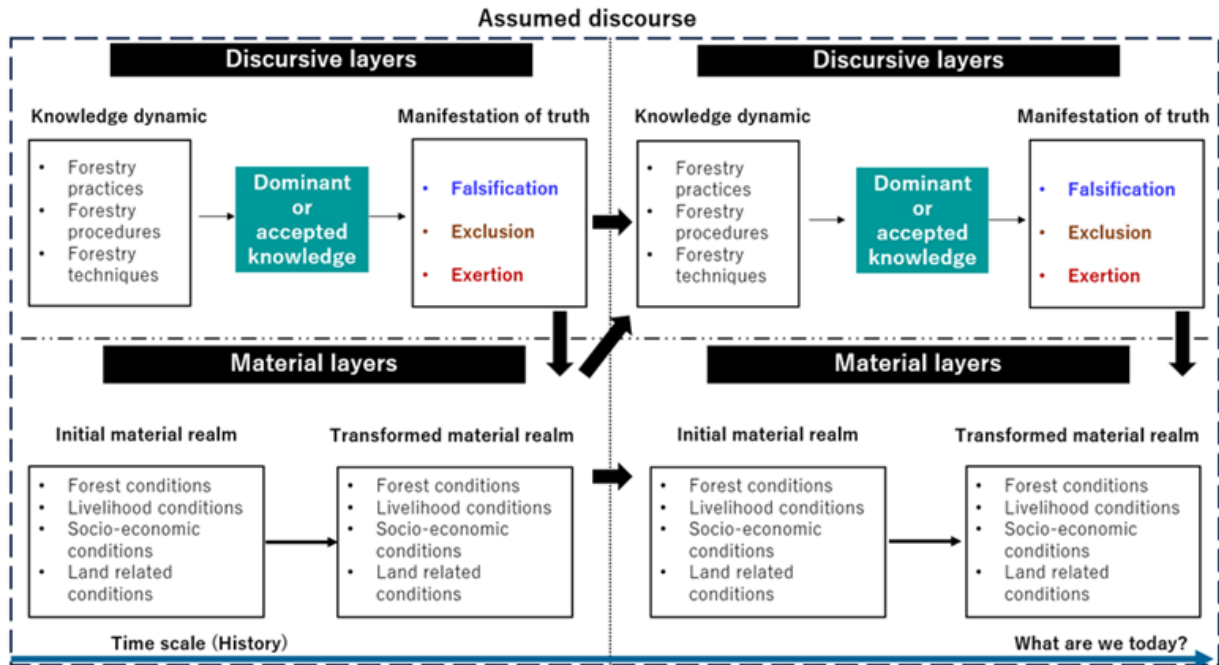


Figure 3. Components of the analysis for the nexus of “knowledge-power-truth”

## 8. Discussion and Conclusion

This article discusses five theoretical traditions and relevant literature in analysis of “power” in forestry. We show that recent literature struggled in positioning the fixed positions of power exercise in forestry events, especially in the two dimensions of a forest society – agency vs structure. Meanwhile, the use of Marxian and Gramscian and Scottian “power” is very rare in the forestry literature even though the recent concerns centered on local communities in modern forest governance regimes. Nevertheless, results from recent literature revealed that the positions of exercise of power revolved around unfixed positions swinging and oscillating in each forestry discourse. Therefore, the analysis of manifestations of “knowledge-power-truth” is theoretically capable of explaining this phenomenon. Obviously, in forest and environmental affairs, “knowledge-based capacities” are a central part of power relations (e.g., Herdieckerhoff et al., 2023; Mustalahti et al., 2017). Moreover, scientific knowledge was used as the normative norms for governing the nexus of humanity, forests, and environmental affairs (e.g., McDermott et al., 2023). This situation is in line with Foucault’s division of “game of truth” (i.e., the logical and epistemological order of a knowledge in a truth event) and “regimes of truth” (i.e., the interplays of the acclaimed truth via knowledge production in the realm of life) (Foucault, 2012; Lorenzini, 2023).

Arts et al (2024) stated that progress in changing the current social and ecological trajectory of global forest governance requires significant redistributions and deliberate, novel power coalitions. In addition, inequalities in most aspects of forestry governance are acute problem. Therefore, Arts et al (2024) calls for a diversity in researchers' origins, research approaches, and methods in achieving the triangulated insights and transformative futures for forests and people. Indeed, the diversity of careful and well-constructed research is a necessary. The theoretical constructs offered by the western philosophies greatly benefited both western and non-western academia and societies. However, Foucault (2024) foreseen the limit and lock-in of the western philosophies and theories since Aristotle time by stating: “For it is the end of the era of Western philosophy. Thus, if a philosophy of the future exists, it must be born outside of Europe or it must be born of encounters and reverberations between Europe and non-Europe (Foucault, 2024: 156).” Both Nietzsche and Foucault foreseen this lock-in – drawing from the

division between the good and the bad through the ideas of rational, autonomous, sovereign selves is in a position of lock-in. This situation is well obvious in forestry and environmental affairs as Jueres et al (2020) indicated for difficulties in categorizing the actors for the power analysis. The question is: Could we start the analysis with the mechanism of “knowledge-power-truth” and proceed with categorization, drawing from their situational occurrences, for interpretation? Following Feyerabend (2010)’s epistemological anarchism, our claim is that – if Foucault was pessimistic about human nature, the Buddha is double pessimistic about human nature. If Foucault’s concept of “self” is “periphery self”, the Buddha is “non-self”. The quest to continue and suffix Foucault’s work is to answer the question – why Foucault cannot suggest us some basic normative norms while the Buddha can establish the fundamental and normative norms in terms of actions of the selves through internal cultivation of individual responsibilities<sup>7</sup>. To link this is very important for the forest and environmental affairs in terms of justice in search of a justified world. This is important because the urgent task for equitable transformation needs “the capacities of diverse societies and peoples to exercise their own agency” while avoiding politicized scientific/technical terms as “normative goals” (McDermott et al., 2023). Even well celebrated framework of “collective actions” and “polycentric governance” didn’t work well and faced with several challenges (Djosetro, M., & Arts, B. (2024). A huge question left to answer – what are the normative actions driven from internal cultivation of the actors themselves (see., Ophuls, 2013), instead of normative ideologies or concepts inserting the external guidelines, for these diverse societies and peoples?

This review of the prominent theoretical traditions of “power” reveals that Foucault’s nexus of “knowledge-power-truth” can answer the questions concerning human affairs in society. It focuses on the mechanism and its manifestations modes of the inner core of power dynamics. Therefore, it gets rid of the dilemmas concerning the actors or structures and conflict theories. The “knowledge-power-truth” nexus deals with all the dimensions because it considers how power relationships are mobilized in societies. In forestry, it can deal with all aspects – individual trees, a forest, dominating species, understories, and the entire forestscape. This article bridges the gap between the Marxist materialist realm and the Foucauldian discursive world through Foucault’s genealogy. His genealogy created room for material and quantitative analysis, theoretically bridging two arguments – material production and realm shaping humanity (Marxism) and discursive world shaping life (Foucauldian). This article develops a robust framework for qualitative and quantitative power analysis. It contributes to the literature by proving the compatibility of the “Bayesian approach” with the “knowledge-power-truth” nexus. Integrating Foucauldian “power” and Marxian materialist framework with Bayesian statistics could benefit future forest policy analysis. However, there still needs to link the mechanism of the manifestations of “knowledge-power-truth” with the normative quest for “justice” in forest and environmental affairs. We assume the notion of “justice” and the nexus of “knowledge-power-truth” could be theoretically linked, in some parts, through the concept of “the force of truth” via “truth telling” (Lorenzini, 2023). The major limitation of applying the nexus of “knowledge-power-truth” is in the component of the analysis of the self via truth telling. The challenge is that how to track the truth-telling of the individuals – communities, market actors, technocrats, activists, researchers, state actors and so on. Future methodological expansion in this matter is essential.

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<sup>7</sup> In his last lectures at the College de France (1983-1894), Foucault for the first time seemingly established the first normative action of humanity – truth telling (parrhesia) with two demanding obligations: 1. Telling all that one knows, 2. Taking the risks by telling all what one knows. This normative action is, in fact, the lost art of humanity especially in contemporary era of neoliberal market morales. Here we deal with the Buddha as the great philosopher who searched the answers for the realm of human life, instead of a religious leader of Buddhism. For the philosophical similarity between the Buddha and Foucault and Nietzsche, see Morrison (2000), Panaioti (2014), Rosenberg and Westfall (2019).

## 9. References

- Agrawal, A., 2005. *Environmentality: Technologies of Government and the Making of Subjects*. Duke University Press, Durham and London.
- Aitkin, M., Francis, M., Hinde, J., Darnell, R., 2009. *Statistical Modelling in R*. Oxford University Press, London.
- Arts, B., 2012. Forests policy analysis and theory use: Overview and trends. *For. Policy Econ.* 16, 7–13. <https://doi.org/10.1016/j.forpol.2010.12.003>
- Arts, B. 2014. Assessing forest governance from a ‘Triple G’ perspective: Government, governance, governmentality. *For. Policy Econ.* 49, 17–22. <https://doi.org/10.1016/j.forpol.2014.05.008>
- Assiter, A., 1984. Althusser and structuralism. *Br. J. Sociol.* 35(2), 272–296. <https://doi.org/10.2307/590235>
- Barton, G.A., 2002. *Empire Forestry and the Origins of Environmentalism*. Cambridge University Press, London.
- Blandford, H.R., 1958. Highlights of one hundred years of forestry in Burma. *Emp. For. Rev.* 37(1(91)), 33–42.
- Boer, H.J. 2018. The role of government in operationalising markets for REDD + in Indonesia. *For Policy Econ*, 86, 4–12.
- Brown, W. 2015. *Undoing the Demos: Neoliberalism's Stealth Revolution*. Princeton University Press, Princeton.
- Bryant, R.L., 1997. *The Political Ecology of Forestry in Burma*. University of Hawai'i Press, Honolulu.
- Charmakar, S., Kimengsi, J.D., Giessen, L., 2024. Power in forest management institutions: A systematic review. *Trees For. People.* 15, 100465. <https://doi.org/10.1016/j.tfp.2023.100465>
- Clegg, S.R., 1989. *Frameworks of Power*. Sage Publication, London.
- Dahl, R.A., 1957. The concept of power. *Behav. Sci.* 2(3), 201–215. <https://doi.org/10.1002/bs.3830020303>
- De Jong, W., Arts, B., Krott, M., 2012. Political theory in forest policy science. *For. Policy Econ.* 16, 1–6. <https://doi.org/10.1016/j.forpol.2011.07.001>
- Devine, J.A., Baca, J.A., 2020. The political forest in the era of green neoliberalism. *Antipode.* 52(4), 909–1234. <https://doi.org/10.1111/anti.12624>
- Djosetro, M., & Arts, B. (2024). How Polycentric Governance Affects Nature Conservation in Practice: The Case of Two Coastal Protected. *International Journal of the Commons*, 18(1), pp. 601–617. <https://doi.org/10.5334/ijc.1302>
- Dobrynin, D., Smirennikova, E., Mustalahti, I., 2020. Non-state forest governance and ‘Responsibilization’: The prospects for FPIC under FSC certification in Northwest Russia. *For. Policy Econ.* 115, 102142. <https://doi.org/10.1016/j.forpol.2020.102142>
- Dunleavy, D.J., Lacasse, J.R., 2021. The use and misuse of classical statistics: A primer for social workers. *Res. Soc. Work Pract.* 31(5), 438–453. <https://doi.org/10.1177/10497315211008247>

- Einstein, A., 2002. *The Collected Papers of Albert Einstein: Volume 7 The Berlin Years Writings, 1918-1921*. Princeton University Press, Princeton.
- Femia, J.V., 2002. Hegemony and consciousness in the thought of Antonio Gramsci, in: Martin, J. (Ed.), *Antonio Gramsci: Critical Assessments of Leading Political Philosophers*, vol. 2. Routledge, London, p. 224.
- Fletcher, R., 2023. *Failing Forward: The Rise and Fall of Neoliberal Conservation*. University of California Press, Oakland.
- Foucault, M., 1971. Orders of discourse. *Soc. Sci. Inf.* 10(2), 7–30.  
<https://doi.org/10.1177/053901847101000201>
- Foucault, M., 1989. *Madness and Civilization*. Routledge, New York.
- Foucault, M., 1995. *Discipline and Punish: The Birth of the Prison*. Vintage Books, New York.
- Foucault, M., 2001. *The Hermeneutics of The Subject: Lectures at The College de France 1981-1982*. Picador, New York.
- Foucault, M., 2002. *The Archaeology of Knowledge*. Routledge, New York.
- Foucault, M., 2007. *Security, Territory and Population: Lectures at The College de France 1976-1977*. Picador, New York.
- Foucault, M., 2008a. *The Birth of Biopolitics: Lectures at The College de France 1977-1978*. Picador, New York.
- Foucault, M., 2008b. *The Government of Self and Others: Lectures at The College de France 1982-1983*. Picador, New York.
- Foucault, M., 2008c. *The Courage of Truth: Lectures at The College de France 1983-1984*. Picador, New York.
- Foucault, M., 2012. *On the Government of the Living: Lectures at The College de France 1979-1980*. Picador, New York.
- Foucault, M., 2014. *Wrong-Doing, Truth-Telling: The Function of Avowal in Justice*. Chicago University Press, Chicago.
- Foucault, M., 2017. *Subjectivity and Truth: Lectures at The College de France 1980-1981*. Picador, New York.
- Foucault, M., 2024. *The Japan Lectures: A Transnational Critical Encounter*. Routledge, New York.
- Freedman, D.A., 2009. *Statistical Models: Theory and Practice*. Cambridge University Press, New York.
- Gensler, H.J., 2017. *Introduction to Logic*, third ed. Routledge, New York.
- Giddens, A., 1984. *The Constitution of Society: Outline of the Theory of Structuration*. Polity, Cambridge.
- Gramsci, A., 1971. *Selections from the Prison Notebooks*. International Publishers, New York.
- Han, P.P., Paing, W.M., Ota, M., Fujiwara, T., 2025. The evolution of land governance in Myanmar: A historical analysis of the people-land nexus in the Konbaung dynasty and British colonial eras. *For. Policy Econ.* 172, 103446.  
<https://doi.org/10.1016/j.forpol.2025.103446>
- Harvey, D., 2018. *A COMPANION TO MARX'S CAPITAL: THE COMPLETE EDITION*. Verso, London.

- Herdieckerhoff, I., Mustalahti, I., Siteo, A., Chambule, E. E., 2023. Uncertainty and Forest Concessions in a Globalized World: Insights into Local Access to Forest Resources in Mozambique. *Society & Natural Resources*.  
<https://doi.org/10.1080/08941920.2023.2255152>
- Hume, D., 1904. *Essays: Moral, Political and Literary*. William Clown and Sons, Limited, London.
- Juniyanti, L., Purnomo, H., Kartodihardjo, H., Prasetyo, L.B., Suryadi, Pambudi, E., 2021. Powerful actors and their networks in land use contestation for oil palm and industrial tree plantations in Riau. *For. Policy Econ.* 129, 102512.  
<https://doi.org/10.1016/j.forpol.2021.102512>
- Juerges, N., Arts, B., Masiero, M., Baškent, E. Z., Borges, J. G., Brodrechtova, Y., Brukas V., Maria João Canadas, M. J., Carvalho, P. O., et al., 2020. Integrating ecosystem services in power analysis in forest governance: A comparison across nine European countries. *For. Policy Econ.* 121, 102317.  
<https://doi.org/10.1016/j.forpol.2020.102317>
- Kleinschmit, D., Böcher, M., Giessen, L., 2016. Forest policy analysis: Advancing the analytical approach. *For. Policy Econ.* 68, 1–6.  
<https://doi.org/10.1016/j.forpol.2016.05.001>
- Kleinschmit, D., Wildburger, C., Grima, N., Fisher, B., 2024. International forest governance: A critical review of trends, drawbacks, and new approaches. *IUFRO World Series* Vol. 43. IUFRO, Vienna.
- Krott, M., Bader, A., Schusser, C., Devkota, R., Maryudi, A., Giessen, L., Aurenhammer, H., 2014. Actor-centered power: the driving force in decentralized community-based forest governance. *For. Policy Econ.* 49, 34–42.  
<https://doi.org/10.1016/j.forpol.2013.04.012>
- Kruschke, J.K., 2015. *Doing Bayesian Data Analysis: A Tutorial with R, JAGS, and STAN*. Academic Press, London.
- Leipold, S., 2014. Creating forests with words– a review of forest related discourse studies. *For. Policy Econ.* 40, 12–20.
- Leipold, S., Feindt, P. H., Winkel, G., Keller, R., 2019. Discourse analysis of environmental policy revisited: traditions, trends, perspectives. *J. Environ. Policy Plan.* 21(5), 445–463, <https://doi.org/10.1080/1523908X.2019.1660462>
- Lescuyer, G., Cerutti, P. O., Robiglio, V., 2013. Artisanal chainsaw milling to support decentralized management of timber in Central Africa? An analysis through the theory of access. *For. Policy Econ.* 32, 68–77.  
<https://doi.org/10.1016/j.forpol.2013.02.010>
- Lorenzini, D., 2023. *The Force of Truth*. Chicago University Press, Chicago.
- Marsden, R. 1999. *The Nature of Capital: Marx After Foucault*. Routledge, London.
- Maryudi, A., Citraningtyas, E. R., Purwanto, R. H., Sadono, R., Suryanto, P., Riyanto, S., Siswoko, B. D., 2016. The emerging power of peasant farmers in the tenurial conflicts over the uses of state forestland in Central Java, Indonesia. *For. Policy Econ.* 67, 70–75. <https://doi.org/10.1016/j.forpol.2015.09.005>
- Marx, K., 1990. *Capital: Volume 1-3: A Critique of Political Economy*. Penguin Classics, New York.

- McDermott, C. L., Montana, J., Bennett, A., Gueiros, C., Hamilton, R., Hirons, M., Maguire-Rajpaul, V. A., Parry, E., & Picot, L. (2023). Transforming land use governance: Global targets without equity miss the mark. *Environmental Policy and Governance*, 33(3), 245–257. <https://doi.org/10.1002/eet.2027>
- Morrison, R. G., 1999. *Nietzsche and Buddhism: A Study in Nihilism and Ironic Affinities*. Oxford University Press, London.
- Mustalahti, M., M. Cramm, S. Ramcilovic-Suominen, and Y. T. Tegegne. 2017. Resources and rules of the game: participation of civil society in REDD+ and FLEGT-VPA processes in LaoPDR. *Forests* 8 (2):50. <https://doi.org/10.3390/f8020050>.
- Mustalahti, M., Agrawal, A., 2020. Research trends: Responsibilization in natural resource governance. *For. Policy Econ.* 2020. 121, 102308. <https://doi.org/10.1016/j.forpol.2020.102308>
- Ophuls, W., 2013. *Plato's Revenge: POLITICS IN THE AGE OF ECOLOGY*. The MIT Press, Cambridge.
- Paing, W. M., Han, P. P., Ota, M., Fujiwara, T., 2023. The state-private hybrid Forest policy in Myanmar: the impact of neoliberalism on the forestry sector after the 1990s. *Forest Policy Econ.*, 148 (2023), Article 102900. <https://doi.org/10.1016/j.forpol.2022.102900>
- Panaioti, A., 2013. *Nietzsche and Buddhist Philosophy*. Cambridge University Press, London.
- Parsons, T., 1937. *The structure of social actions: A study of social theory with special reference to a group of European writers*. McGraw-Hill, New York.
- Parsons, T., 1963. On the concept of political power. *Proc. Am. Philos. Soc.* 107(3), 232–262.
- Peluso, N.L., Vandergeest, P., 2001. Genealogies of the political forest and customary rights in Indonesia, Malaysia, and Thailand. *J. Asian Stud.* 60(3), 761–812. <https://doi.org/10.2307/2700109>
- Polanyi, K., 2001. *The Great Transformation: The Political and Economic Origins of Our Times*. Beacon Press, Boston.
- Popper, K., 2002. *The Logic Scientific Discovery*. Routledge, New York.
- Rogelja, T., Shannon, M. A., 2017. Structural power in Serbian anti-corruption forest policy network. *For. Policy Econ.* 82, 52-60. <https://doi.org/10.1016/j.forpol.2017.05.008>
- Sahide, M.A.K., Fisher, M.R., Verheijen, B., Maryudi, A., Kim, Y.S., Wong, G.Y., 2020. Sequential power analysis framework in assessing social forestry outcomes. *Methods*. 7, 100917 <https://doi.org/10.1016/j.mex.2020.100917>
- Scott, J., 2001. *Power*. Polity Press. London.
- Scott, J. C., 1985. *Weapons of the Weak: Everyday Forms of Peasant Resistance*. Yale University Press, New Haven.
- Scott, J.C., 1990. *Domination and the Arts of Resistance: Hidden Transcripts*. Yale University Press, London.
- Scott, J.C., 2009. *The Art of Not Being Governed: An Anarchist History of Upland Southeast Asia* (Hardcover). Yale University Press, New Haven.
- Suarez, M., 2020. *Philosophy of Probability and Statistical Modelling*. Cambridge University Press, New York.

- Svarstad, H., Benjaminsen, T.A., Overå, R., 2018. Power theories in political ecology. *J. Political Ecol.* 25(1), 350–363. <https://doi.org/10.2458/v25i1.23044>
- Ungirwalu, A., Mansoben, J. R., Runtuboi, Y. Y., Fatem, S. M., Peday, M. H., Marwa, J., Maryudi, A., 2025. The fall of the kings: Power relations and dynamics in Papua's indigenous community in forest resource management. *Forest Policy Econ.* 172, 103424. <https://doi.org/10.1016/j.forpol.2025.103424>
- Walton, D., 2008. *Informal logic: A PRAMATIC APPROACH*. Cambridge University Press, New York.
- Weber, M., 1978. *Economy and Society*. University of California Press, Berkeley.
- Weber, N., 2012. Reflections on theories in forest policy: Testing, combining or building? *Forest Policy Econ.* 16, 102–108. <http://dx.doi.org/10.1016/j.forpol.2011.02.003>
- Winkel, G., 2012. Foucault in the forests—a review of the use of ‘Foucauldian’ concepts in forest policy analysis. *Forest Policy Econ.* 16, 81–92. <https://doi.org/10.1016/j.forpol.2010.11.009>.
- Wohlers, D.C., 2019. Prome, Burma—How a village in colonial Burma became the global epicenter of scientific forestry and impacted the founding of the United States Forest Service. *J. For.* 117(5), 515–524, <https://doi.org/10.1093/jofore/fvz045>
- Zhang, P., Zhao, J., Krott, M., 2023. Strictest nature conservation: China's national park policy underpinned by power shift and turf dynamic. *For. Policy Econ.* 154, 103033. <https://doi.org/10.1016/j.forpol.2023.103033>