



New frontiers of forest economics, III: Governing our forests: The evolving political economy of multiple values and multiple stakeholders^{*}



1. Governing the forests

Forestry is not a single entity or narrow discipline. The natural diversity in forests is matched by the countless and complex types of human interactions and how they are governed. Forest economists are slowly starting to understand that simple models are inappropriate for analyzing this diversity. The third international conference “New Frontiers of Forest Economics” (neFFE) was focused on exploring, modeling, and analyzing the diverse forest governance structures to increase our understanding of these interactions and how they can affect outcomes, whether it is for forests, forest dependent communities, or even forest-based economies. After 2012 Zurich, Switzerland and 2015 Beijing, China, the third international neFFE conference was held at the University of British Columbia, Vancouver, Canada, from June 24 to 28, 2018. The conference was hosted by Prof. Harry Nelson, Faculty of Forestry, University of British Columbia and supported by the Faculty of Forestry at the University of British Columbia, Faculty of Forestry at the University of Toronto, and Cycad AG, Switzerland.

Humans have established diverse private and public profit, non-profit and not-for-profit organizations (Boettke and Prychitko, 2004) that own and manage forests. These include family forests, community forests, publicly-traded forest companies, nature conservation organizations as forest owners, federal forests, small and large state forest enterprises and forestland trusts and many more. These organizations may have quite different economic perspectives, and their main objectives of forest management may range from social welfare, local employment, economic and ecological stability, poverty reduction and provision of ecosystem services in addition to or in contrast to the generation of income or maximization of profit.

Furthermore, the diversity of these organizations is enhanced by the diversity of markets in which engagements occur, and these engagements are shaped to different degrees by the nature of various local, regional, national and global demands and supply conditions that are often closely interwoven. Moreover, forests are frequently regulated jointly by federal, state and local laws with oversight and review of forest management carried out by provincial and local authorities. The budget for financing the many demands by the public and special interest groups as well comes from many different private and public bodies. Hence, economic analysis of these complex, entangled, polycentric networks of governance in forestry cannot be based simply upon an economic framework that simplifies the analysis to only consider timber production on an industrial scale.

The conference aimed to expand our understanding of how to analyze these governance questions and issues while keeping a focus on economic issues. Going back to research done originally by Ostrom et al. (1961), the conference focused on old and new issues such as polycentric governance (Ostrom, 1999), institutional diversity (Ostrom, 2005) and the entangled political economy (Wagner, 2010).

It was a great pleasure to have two excellent scholars as keynote speakers who have a long and deep tradition of working in these areas. The first keynote address by Barbara Allen was titled “Elinor and Vincent Ostrom and Polycentricity: The Grace of Listening”. Barbara is the James Woodward Strong Professor of Political Science and the Liberal Arts at the Carleton College (USA) and was the long-time friend and former student of Elinor and Vincent Ostrom. In addition, Barbara Allen arranged a screening of a movie on the lives and researches of Elinor and Vincent Ostrom together with an introduction and a post film discussion.

The second keynote address by Richard Wagner, the “father” of entangled political economy, was on “Governance within a system of Entangled Political Economy”. Richard is the Hobart R. Harris Professor of Economics at the George Mason University (USA). Through the lens of entangled political economy, Richard Wagner points out that human action at markets and at politics cannot be analyzed independently of each other; they are closely interdependent. Forestry is neither driven by markets nor by politics. Forestry can be best characterized as entangled economy.

Similar to the first two conferences, the number of participants was restricted to 30, and only 13 papers (2 invited and 11 chosen through a rigorous selection process) were presented. All chosen papers in full length were submitted before the conference, and all papers had two discussants.

The presentation by the author of each paper was followed by the presentation of two discussants' reports and open discussion with other participants. Hence, there was a thorough and lively discussion of each paper. After the conference, the authors were given the reports of the two discussants and editors' suggestions on their papers, and they were asked to revise their papers in view of these observations and the observations of the participants during the discussion. Ten revised papers are included in this volume.

Vancouver has served as a highly appropriate place to hold the Conference as the complex practice of forestry in British Columbia and the range of issues encountered in BC forestry well-reflected the title and spirit of the conference. Although British Columbia's forest

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management system is still rooted in timber production which remains an important driver of local economies as well as the provincial and national economy, owners, managers, decision makers, policy makers all face challenges in expanding management from timber to not only consider but also successfully meet other multiple expectations, while still balancing forest industry competitiveness with global sustainability. At the same time the impacts and risks from climate change are increasing and raising questions about whether we will be able to continue expecting the ecosystems services and goods we have relied on from those forests. The need for adaptation to climate change is quite obvious; and, as we noted earlier, the complexity of forest ecosystems found in BC (easily the most diverse in Canada) are also reflected in a patchwork of ownership, markets, regulation, responsibilities and finance that all influence how those forests are managed.

At the end of the Conference, participants in the Conference had an opportunity to visit the community of Squamish, a community located just north of Vancouver and famous for a rich tradition of forestry in the Province. Visits included a trip to watch logging operations on privately-owned land within the community limits and how local owners and managers balanced public and recreational interests with forest management and a visit to a local log sort, where logs are sorted into different grades destined for different markets, both domestic and export. The highlight of the field trip was a speech by the mayor over lunch, Patricia Heintzman, who spoke of how the community had historically seen forestry and its changing role in the local economy and what she saw as not only the challenges from a local perspective but also the opportunities. The field trip itself was organized by Stirling Angus, a well-known and respected local forester in the Province.

2. Overview of the papers included in this volume

The special volume starts with a paper by Richard Wagner in which he argues that economists, due to lack of alternatives to understand complexity, use models. Concerning governance, the critical aspects are the choice of models and of the theoretical frameworks. One of the major problems of the most common economic framework - organized around an equilibrium allocation of resources - is that resources cannot allocate themselves, only people can do that, and they do it through interacting with one another inside an institutional framework that governs those interactions.

The author conceptualizes governance from within a framework of entangled political economy, in contrast to the standard framework of additive political economy. The entangled political economy envisions the relationship among political and economic entities differently than orthodox political economy because prudent commercial conduct cannot be understood independent of politics. Political entities are inputs into the rational actions of commercial entities, and political entities must consider the interests and desires of commercial entities in selecting their courses of action. This results in a system of interacting entities where those entities operate under somewhat different principles of action which contribute to mostly manageable forms of societal tectonics in contrast to the placidity of equilibrium theorizing. The author explores several aspects in which entangled political economy diverges from additive political economy, and argues that the governance of forests and the relationships and interactions among the myriad interested participants offers fruitful material for reexamining it from within the perspectives of entangled political economy.

In the second paper, Peter Deegen analyzes the political economy of biodiversity in representative democracy using expressive and instrumental domains. The author identifies biodiversity as an ideological key symbol within the expressive space of politics. In this space, individuals express themselves, their core beliefs, and their ideologies for their own sake while political parties use biodiversity to garner seats in parliament and nature conservation organizations use biodiversity for private donations and membership fees. The success of using biodiversity by both types of organizations induces co-occurrence between nature

conservation organizations in the expressive space and ordinary pressure groups on the substantive floor. Co-occurrence boosts the effectiveness of both types of organisation and adjusts the results between the expressive space and the substantive floor. Nature conservation organizations, as a consequence of this success, receive donations from ordinary pressure groups and obtain legislative and budgetary privileges. The author highlights four implications of his findings: (i) biodiversity is an input which supports democracy as an impersonal social institution; (ii) in many specific forest management decisions expressive and instrumental concerns are not clearly distinguished; (iii) there must be a strong case in favour of robust decentralized arrangements of political choice in the case of projects focused on instrumental values; and (iv) projects with very high expressive and low instrumental values are at best provided at the voluntary arena of the expressive space.

In the third paper, Sen Wang argues that in a changing environment, forest companies are expected to satisfy the social license to operate (SLO) as well as market-driven supply and demand conditions. The SLO encompasses society's growing desire of managing forests for the greater good, and has evolved to reflect shifting societal values, orientations of the regulatory regimes and the interplays of various forces mediating the diverse interests of stakeholders. The author discusses two examples of forest companies from North America and suggests that companies have made a conscious effort to implement the SLO. The author suggests that the evolution of forest management regimes is similar to different layers of Russian nesting dolls of Matrioshka, and uses Matrioshka to analyze the SLOs. He argues that the strength of the SLO serves as an important indicator for predicting the extent to which enterprises are able to meet a spectrum of stratified, compartmentalized, yet interconnected, management objectives. The author suggests that a better understanding of contextualized SLO will benefit forest companies, public agencies and resource professionals but forest management for the greater good will remain a lofty goal.

In the fourth paper, Ngaio Hotte, Robert Kozak, and Stephen Wyatt discuss the role of institutions in shaping trust during collective action with the help of a case study of forest governance on Haida Gwaii, British Columbia, Canada. The paper examines the characteristics of institutions that motivate trust using existing theoretical framework linking institutions, trust and collective action. For empirical grounding of these characteristics, the authors use a case study of collaborative forest governance on Haida Gwaii where the conflict between the Council of the Haida Nation and the Province of British Columbia regarding industrial logging led the two parties to establish two structures (the Haida Gwaii Management Council and the Solutions Table) to collaboratively govern forests and lands. Using the interviews data with past and present members of these two bodies, the authors identified three forms of formal rules and one form of informal rules and fourteen associated characteristics of rules that motivated trust. The authors reduced the fourteen characteristics into four clusters: alignment of interests, fairness, cohesion and satisfactory terms of cooperation, and discussed their role in trust formation.

In the fifth paper, Harry Nelson, William Nikolakis, and Kira Martin-Chan investigate the effect of community characteristics, the type of tenure, and the characteristics of timber on the harvest levels on timber harvesting licenses granted or acquired by First Nations (FN) in British Columbia. The authors, using a unique data set, find that on average 67% of the available volume (the maximum volume that could have been harvested) has been harvested and that as standard economic theory, more valuable timber, along with more secure harvesting rights, increases the percentage of harvested volume. In addition, the tenures held by FN that have engaged in governance reform through changing their political processes also show higher harvest levels. The authors observe that these findings are similar to the findings from other places, which offers additional evidence that institutional arrangements are important in explaining improved socioeconomic outcomes for society.

In the sixth paper, Frey et al. examine the impact of forest certification schemes and government support programs on the

competitiveness of community forest enterprises (CFEs) in Mexico where local communities own approximately 45% forests and some communities have established CFEs to generate community benefits such as jobs for community members. Using a data from 2011 survey of the financial inputs and outputs of 27 CFEs in the predominantly pine (*Pinus* spp.) and fir (*Abies* spp.) forests of Mexico, the authors estimate timber harvest production functions. The estimated production functions show that the CFEs generally fit the model of competitive firms (not losing sight of the importance of financial viability), and there is also some evidence that CFEs may balance this with the objective of providing community income (employment and other community payments). Participation in forest certification schemes and capacity development support programs jointly has a positive impact on CFE's productivity, but the individual impact of each was not possible to parse. These results indicate that the CFEs can achieve diverse economic and social objectives with the help of government support programs and other institutional arrangements such as forest certification schemes.

In the seventh paper, Zhang Yiwen, Shashi Kant, and Jinlong Liu examine the performance of the management of collective forests of China. The authors observe that prior to the early-2000s forest tenure reform, many collective forests were managed by community forest enterprises (CFEs) which suffered from insufficient investments, low management capacities and farmers' little access to timber revenues. The authors use a framework through the lens of the agency theory to investigate the behavior of CFE managers and explain the outcomes. The authors suggest that the CFE manager (the villagers' committee) performs two opposite roles - an agent of community members which requires CFEs management based on the needs of community members and an agent of the local government which requires top-down administrative tasks. In this dual role, due to more resources and power of the local government than community members, the villagers' committee tends to be more receptive to the demands of the local government. Therefore, collective timber production, which was the primary income source for the villagers' committee, was administered to finance various short-term, top-down administrative tasks at the cost of the long-run timber production efficiency and community welfare. The authors argue that more attention should be paid to the macro-level institutional context of collective forest management and the unequal power relations between the state and rural communities.

In the eighth paper, Daojun Zhang and Runsheng Yin argue that there is a lack of concrete and practical inquiry into how to adopt and implement market-based mechanisms, and the spatial dimension of payment for ecosystem services (PES) has not been well recognized and appropriately incorporated into the design and implementation of market-based mechanisms. Even ecologists, who emphasize restoration at the landscape scale have not fully come to terms with the real-world conditions in their articulation of landscape restoration. The authors examine spatially fragmentation and heterogeneity of the typical degraded landscapes in west China and discuss their implications for effective design, implementation, and evaluation of PES programs, especially restoring deforested or degraded landscapes. The authors

argue that spatial fragmentation and heterogeneity is prevalent in many parts of the world with high population densities, including countries like India, Mexico, and Indonesia, and therefore, it is essential and timely to better identify the fundamental characteristics of the deforested or degraded landscapes to be restored and to explore how to improve the effectiveness and efficiency of forest restoration programs.

In the ninth paper, Travis Warziniack, Charles Sims, Jessica Haas present a landscape-level spatial-dynamic optimization model for joint production of ecosystem services on a forest at-risk of catastrophic wildfire. Using the model, the authors show that optimal fuel management strategies vary over time in response to biomass growth dynamics, the contribution of biomass to ecosystem services, the implied tradeoffs and complementarities between ecosystem service values, and the spatial dynamics of fire spread; and fuel reduction strategies increase expected ecosystem service values in the future by lowering the probability of loss due to catastrophic fire. However, fuel management differentially impacts various current ecosystem service values. For example, forage for grazing is immediately enhanced by fuel reductions and serves as an indirect benefit while recreational values are immediately harmed by fuel management and serve as indirect costs of fuel management. In addition, spatial spillovers, in the form of high wind, tend to lower tradeoffs between ecosystem services, and increase complementarities.

In the last paper, Vadim Saraev, Andrew Peace, Gregory Valatin and Christopher Quine examine the impact of a biodiversity (species richness) value upon optimal rotation length. First, the authors estimate relationships between species richness and stand age for a range of forest types based upon UK biodiversity assessment data. Next, they examine the impact of these relationships in combination with biodiversity monetary values on forest rotations. The authors find some evidence of significant relationships between overall species richness and stand age, but at individual taxonomic group level only about 4% of responses had this significant relationship. The authors also found evidence of increasing and decreasing relationships (as well as no response) at individual group level which may result from the particular niche requirements and the species assemblages present. These relationships resulted in minimal difference (with two exceptions) to optimal rotation length based upon biodiversity values published in the literature but a higher biodiversity value than published values changed optimal rotation length in more cases. The results suggest the need for further refinement of biodiversity estimation and valuation methodology.

3. Aggregation and conclusions

The subjects of the ten papers demonstrate the saying at the beginning of this editorial: Forestry is not an entity. Forestry includes countless and complex types of human interactions.

For illustrating the diversity of human interactions of the papers a coordinate system of institutional diversity is plotted in Fig. 1. While the x-axis of Fig. 1 distinguishes between anonymous and non-anonymous human relationship, the y-axis distinguishes between markets

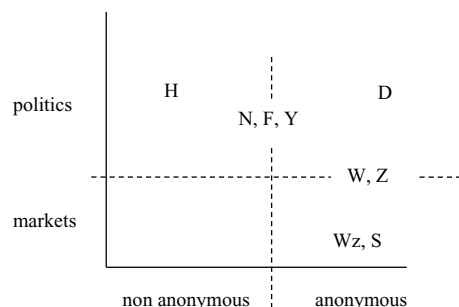


Fig. 1. The arrangements of the papers of this special issue into a diagram of institutional diversity. [Source: Deegen (2013: 27, fig. 4, changed)].

and politics. This type of diagram is explained in detail in Deegen (2013). Hotte et al. (2019) (H) investigate human interactions at politics under a non-anonymous institutional frame. Deegen (2019) (D) investigates human interactions at politics under an anonymous institutional frame. Nelson et al. (2019) (N), Frey et al. (2019) (F) and Yiwen et al. (2019) (Y) study political interactions in a transition space of both non-anonymous and anonymous institutional frames. Warziniack et al. (2019) (Wz) and Saraev et al. (2019) (S) dealt with market interactions in a non-anonymous institutional setting. The interactions of the papers by Wang (2019) (W) and Zhang and Yin (2019) (Z) can be arranged in a transition space of both markets and politics inside an anonymous institutional frame.

The papers of this special issue cannot only be arranged according to the type of human interaction in forestry. They also can be distinguished to methodical approaches: new methodical approaches (Wagner, 2019; Wang, 2019), public choice (Deegen, 2019), institutional economics (Hotte et al., 2019; Nelson et al., 2019), public-market interrelations (Frey et al., 2019; Zhang and Yin, 2019), organizational economics (Yiwen et al., 2019) and the Faustmann-Hartman approach (Warziniack et al., 2019; Saraev et al., 2019).

All these methodical approaches are well-known in economics. However, with the exception of the Faustmann-Hartman approach, they are not so widespread in forest economics. Future research will help these methodical approaches to shed greater light on our understanding of forestry. However, not only the application of known methods to the analysis of forestry increases the expectations of new insights in forestry, the development of new methodical approaches is also necessary for progress in research. Wagner (2019) and Wang (2019) present new methodical ways for future research.

The application and development of the concept of entangled economy by Wagner (2019) moves the economic analysis closer to the real-world forestry, because forestry is neither driven by markets nor driven by politics alone. Forestry can be at best characterized as a branch in which markets and politics are tightly entangled.

Also the Matryoshka analogy by Wang (2019) presents a productive way of thought. With the help of a rather general model, the macrostructures of a system become visible. And as more details are built into the model, microstructures become visible and at the same time some overview gets lost. Every Matryoshka doll (model) explains specific characteristics of the full system whereupon other characteristics of the system are beyond the model. None of these models explains the real forestry better than the other models. Every model explains reality with another focus which depends on the specific problem in question.

In summary, for identifying new frontiers of forest economics two approaches are worth noting, first, to discover and develop fundamentally new research methods and, second, to feel one's way, step by step, in unknown territories.

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Shashi Kant^{a,*}, Peter Deegen^b, Martin Hostettler^c, Sen Wang^d, Harry Nelson^e

^a Faculty of Forestry, University of Toronto, 33 Willcocks Street, Toronto, Canada

^b Forest Policy and Forest Resource Economics, Faculty of Environmental Sciences, Technische Universität Dresden, Tharandt, Germany

^c Cycad AG, Blumenweg 6E, 3063 Ittigen, Switzerland

^d Freshwater Institute, Fisheries and Oceans, Winnipeg, Canada

^e Faculty of Forestry, University of British Columbia, Vancouver, Canada

E-mail addresses: Shashi.kant@utoronto.ca (S. Kant), deegen@forst.tu-dresden.de (P. Deegen), martin.hostettler@cycad.ch (M. Hostettler), sen.wang@dfo-mpo.gc.ca (S. Wang), harry.nelson@ubc.ca (H. Nelson).

* Corresponding author.