



Forestry and Forest Governance: A Brief Interpretive History

“The Forester is a soldier of the State, and something more ...”
Sir D.E. Hutchins (1916)¹

As long as humans have lived in or around forests, they have practiced means to govern their usage. Customary law is thick, empirical, and tenacious. But the modern epic of forestry emerged in 18th century Europe. It hammered ancient lore into new forms on an Enlightenment forge, made a devil’s bargain with the state, and during Europe’s global sprawl during the 19th century, became an instrument of imperial rule. It rose during the colonial era, and it has fallen with the decolonizing impulses that have succeeded it. The former lasted 50-80 years; the latter, still underway, enjoyed a brief revival in the postwar years and now promises a similar cycle of declension. Like the forests they oversee, institutions of forestry, it would seem, grow, mature, either senesce or are felled, and then regenerate or die.

Folk Customs and Agronomic Concepts

Europe’s notions of forest and governance matter especially because they have spread, for good or ill, throughout the Earth. Prior to its Enlightenment reformation, Europe had basically two notions of the woods. One was that wooded wildlands – dark, unbroken and uncultivated – were dangerous places full of masterless men. The English term “savage”, for example, derives from the Norman French *sauvage*, which derives from the Latin *silva*, or woods. A savage was someone who lived in the forest and by the chase, seemingly without a fixed residence or social order. Savages hunted, fished, foraged, and raided. The way to eliminate their threat was to eliminate the wild woods.

The competing view was the domesticated woods, or orchard. The *silva* became one of the three divisions of civilized land; the others were the *ager*, or arable field, and the *saltus*, or pasture. Classical agronomy wanted all three, but the ideal, an equal division among them, was rarely achieved and never in the Mediterranean hearth, where pastoralism sent flocks up and down mountains out of sync both geographically and seasonally with farming. (Revealingly, the cultivation of the *ager* led to *agriculture*, and that of the *silva*, to *silviculture*, but no comparable cultivation was devised for the *saltus*.) The ideal came closest to realization in temperate Europe, which, not accidentally, became the point of origin for modern forestry. The woods supplied mast, rough pasture, fuelwood, edible nuts and fruit, coppice, litter for supplementary fallow, silvi-chemicals such as potash and turpentine, and timber.

Forestry thus emerged out of the rootstock of European agronomy. It was cultivation by other means, and it both complemented and competed against the other two sides of Europe’s land triad. All had a common enemy in the wild, which was unproductive, threatening, and ungovernable.

But farmers could reduce woodlands by expanding their fields or over-harvesting trees for fuel or construction; and pastoralists could shrink woodlands by releasing their herds and flocks to graze and browse away young growth. Worse, both groups resorted to fire, which could break free from its point of origin and become feral, and thus render free-burning flame another expression of the savage wilds that loomed over civilization. By the 18th century, population pressures and the climatic stress from the Little Ice Age led to serious encroachments on existing woods and to a search for new lands to cultivate. Forestry promised to stop the former and promote the latter.

The expression *forest* was distinct from *silva*. Forest was a legal definition, not a biological one, and it referred to reserved landscapes typically set aside for royal or aristocratic hunting and thus protected against trespass by farmers or grazers, and outside traditional usage. Given Britain’s later significance for the spread of forestry globally, it is useful to recall that the Norman conquest put

¹ David E. Hutchins, *A Discussion of Australian Forestry* (Perth, 1916), p. 142.

nearly a quarter of English land under royal forests, guarded by foresters, a practice and a group resented and detested by the displaced folk. The forests had their own law and court system. When the barons rebelled against Henry III, they forced a Forest Charter to complement the more famous Magna Carta. When lands were spared from wholesale clearing and browsing, however, they tended to encourage shrubs and woods (valued as covert), and hence “forest” came to be equated with “woods”.⁽¹⁾

The Enlightened Forest

Writing a survey history in 1911, Bernhard Fernow, a Prussian who emigrated to America, observed that Germany was “of the greatest interest”. It had developed the “highest and most intensive application” of forestry, it displayed all the phases of development “which other countries have passed or will eventually have to pass,” and it had influenced directly or indirectly “many if not most of the other countries of the world”. The magnitude of German precedents made it “the fatherland of forestry”.⁽²⁾

All this was true. Germans invented the rudiments of modern forestry, determined its social standing, aligned it with the state, and for nearly a century carried its precepts to other countries. This diaspora followed a long tradition of professionals who sold their services to whatever nation was willing to pay, and closely echoed a parallel diffusion of German naturalists (on the Humboldtian model) who attached themselves to national surveys, including those of the colonial powers. That Germany did not have overseas colonies only added impetus to the emigration elsewhere.

Still, these freelancers of forestry could no more recreate a precise facsimile of their academic ideal in other countries than they could a German village or university professorship. In truth, only in select sites did the ideal even find expression in Germany itself. A 19th-century Finnish forester wryly observed that what German textbooks criticized in remote, swiddened Finland might as aptly characterize parts of Germany. A British forester, on study leave to tour the hearth of his profession, was aghast at smoke-filled valleys around the Black Forest, the product of agricultural fire regimes (*Brandwirtschaft*) that he found indistinguishable from his previous post in east Africa.⁽³⁾

Equally, Fernow’s outburst of Prussian pride might have been tempered with a dose of irony, for the restructured Prussian forest in its purest expression has become, in contemporary times, a paradigm for how the Enlightenment state had wished to see the world and what those wishes have cost socially and environmentally. Further, for such critics Enlightenment forestry has come to symbolize the havoc caused by ill-conceived international developmental projects – many of which have historically concerned the forest sector. What the 18th century thought a paragon, like Max Weber’s idealization of the Prussian bureaucracy, the late 20th century has often viewed with horror, a case of reason turned to nightmare.⁽⁴⁾

Its pact with politics made forestry powerful. It also compromised what the guild regarded as its disinterested rationalism. What foresters viewed as a necessary and progressive alliance could become simply an instrument of the state, for ill as well as good. Forestry’s pact was, in retrospect, a Faustian bargain.

Forestry Claims State Sponsorship

In the 18th century a crisis and an opportunity came together to provide a catalyst for reform. The crisis was economic, which took the form of a wood shortage (for both fuel and timber); the opportunity was intellectual, the promise of replacing primitive practices, full of waste and superstition, with “rational” ones grounded in the premises of modern science. In brief, the Enlightenment spread to the woods; it sought to codify existing knowledge, to bolster production through experiment and close observation, and to submit all to the glare of Reason. Forestry slowly sloughed off its overtly peasant-spun chrysalis and became a distinctive subject for academic discourse.

That was one veneer of what became a three-ply synthesis. The second was a bonding with the state. Again, Germany (Prussia, particularly) pioneered, as it began placing restrictions over private and communal exploitation of woods and as it commenced state sponsorship of reclamation by forestry, notably, along the sandy margins of the Baltic. Announced controls were always negotiated: any restraint was unpopular. But plantings were a means to convert “wasteland” to productive land.

Pine plantations spread like rye fields, and through them, the state could enhance its revenue, support a denser population, and expand its claims over wooded lands. By 1754 Prussian foresters were given supervision over communal forests generally. (A parallel, less expansive but more systematic effort was underway in France, epitomized in the Code Colbert.) By the mid-19th century the tenets of forest administration and the apparatus to apply it were present in most of the advanced European nations.⁽⁵⁾

Foresters long insisted that an alliance with the state was essential because peasants would chew up existing woods to satisfy immediate needs, because trees took so long to grow that a liberal market would never allow a proper industry to emerge otherwise, and because forests produced assorted collective goods through their environmental “influences,” such as stabilizing climate and reducing floods, that properly fell under state responsibility and that only the state could sustain. In effect, foresters expanded the traditional communal forest to one the scale of the state and reorganized its principles and practices along lines deemed appropriate for a modern society. As *cameralists*, they sought to do for forests what their colleagues tried to do for other aspects of what they collectively conceived as an ill disciplined and misallocated economy.

That required that they justify their assumed power by something other than raw force. Accordingly, they established a discipline, academic forestry, as a subset of political economics. Professorships and support came through the state and became institutionalized in special forestry schools. This became the third ply, and with it, the origins of modern forestry were complete. It could boast an academic base, a pact with the state, and a corps of self-identified practitioners. It would speak equally with the authority of science and government; its members could pose a common front against ragtag congeries of farmers, graziers, and villagers mired in customary usages as ill-formed as a fallowed forest. Both the folk and their woodlands needed tending.

Still, forestry’s state alliances were as fragmented as a pre-unified Germany. Its fuller symbiosis with political power occurred in France. The *Code Colbert* (1669) had sought to liberalize communal forests, or more properly perhaps, to subject it to the *dirigiste* economy of the state. By 1825 a *Code Forestier* had modernized that ambition, and valenced it to an emerging alliance between the economics and environmentalism of the day. Although honored in the breach more often than in observance, the Code proposed a valence not only between state and forestry but between economics and environmentalism in which the state could do well by doing good. It disseminated widely and inspired reformers everywhere. “I know of no modern system of Forest Exploitation, based on modern Forest Science,” wrote John Croumbie Brown in 1883, “in which I cannot trace its influence”.⁽⁶⁾

In particular, France directed forestry to underpin large-scale public works, of which two became internationally renowned; the reclamation by pine plantings of Gascony’s sand dunes, and the reforestation of the alpine regions to prevent floods (known as “torrents”). The first enlarged the practice initially devised for the Baltic of converting *Landes* wasteland into agricultural landscapes. The second sought to rehabilitate landscapes denuded by reckless felling, browsing, and burning, which is to say, the excesses of agricultural colonization. The state’s interest was justified primarily by the effect of damaged watersheds on downstream farmlands, cities, and riverine transport. Behind both impulses, too, lay an inchoate if crystallizing belief that planting trees improved climate.

The establishment of a national forestry school at Nancy, which later fell under German jurisdiction after the 1870 war, advertised an emerging global culture of forestry and state-sponsored conservation. What remained was to project that Franco-German condominium outward, not only to the peripheral regions of Europe such as Spain, Italy, Greece, Russia, and Scandinavia but to Europe’s colonies. Around Europe’s fringe, this took the form of exported ideas, and often of institutions, as each state judged its modernity against its neighbor. As traditional economies broke down, forest “engineers” became a vehicle for modernizing landscapes – converting lands from subsistence agriculture to commodities valued by an industrializing economy. Always, too, there was the promise of more revenue to the state.

But it was overseas that forestry became truly powerful. It bonded to the imperial state even more firmly than in Europe, and it acquired powers it could never have known in its homeland. It could compel fundamental reforms in land use, and it could justify its power by appealing to science, by its self-proclaimed status as a profession, and by the benevolent “forest influences” a properly managed forest brought to society as a whole, even when that commonwealth had been acquired at gunpoint. In brief, forestry became a means of projecting state power and a means of justifying it.

Imperial Forestry

The expansion of Europe came in waves. The Great Age of Discovery kindled one, led predominantly by Iberians and organized by such institutions as the military, the church, and a late-Medieval or early-Modern monarchy. The late 18th century witnessed a second outburst, cresting a century later, that primarily featured northern Europeans, and it replaced the Cross with the *Encyclopedie*. This was an Enlightenment epoch: secular bureaus based on nominal science replaced ministries based on religion. Older institutions stubbornly resisted retrofits, but the newer colonies grew up with them or their formative ideas.

In this second era, foresters did much of the hard work of colonization. They were an international guild of engineers much like those who opened mines, built railroads, or surveyed military cantonments. France projected its foresters – outfitted with uniforms and ready for drafting into military duty as needed – into the trenches of land reform as it leaped across the Mediterranean into North Africa. Germany exported the system to its late-acquired colonies in Africa. The Netherlands brought rudimentary forestry to Indonesia. Russia established a forestry institute the way it did an academy of sciences, by importing its experts, mostly from Germany. All the colonizers established forestry schools to furnish staff. But the primary vehicle for expansion – certainly the most globally important – was the British Empire.

The irony is thick, for by the mid-18th century Britain no longer had any meaningful forests and was busily stripping Norway and then Sweden to supply its craving for timber, and, when it acquired valuable woods in overseas colonies, it had to recruit forester-administrators from Germany and train cadets overseas, not only for overseas assignments but for the Home Islands. Not until 1887 when private subscriptions endowed a forestry chair at the University of Edinburgh did academic forestry appear, and then staffed by a German who had previously worked in India. Forestry was an artifact of empire; it became an indispensable adjunct of imperial administration. A country without forests became the paragon of professional forestry's engagement with the modern world.

British India: template

The originating motives were Burmese teak and, after the British East India Company consolidated its reach, the role of land clearing in upsetting climate and public health. Whether or not rain followed the plow, drought seemed to follow the axe. After several experiments, Governor-General Dalhousie proposed in 1855 a Charter of the Indian Forests and the next year appointed Dietrich Brandis superintendent of forests for Pegu, Burma. Together the reforms sought to introduce the kind of rationalization that Dalhousie was pursuing for Indian government, society, and economy through the introduction of telegraphs, railroads, revenue settlements, and rule of (British) law. The revolt of 1857 quickly halted the process, but it roared back stronger than ever after India became a Crown colony (and then an empire in 1884).⁽⁷⁾

Though trained as a botanist, Brandis knew academic forestry and understood the systems of management practiced in Europe. He instituted systematic reforms, leading to the Indian Forest Act VII of 1878, which effectively founded the Indian Forest Department. He hired as deputies two other Germans, Wilhelm Schlich and Berthold Ribbentrop. Schlich succeeded him as Governor-General before assuming the forestry chair at Edinburgh, editing the *Indian Forester* (for several decades, the premier forestry journal in the world), and writing the standard text, the 4-volume *Manual of Forestry*. Ribbentrop replaced Schlich, wrote a book on forestry in British India, and found himself memorialized in a Rudyard Kipling story that explains what happens to Mowgli, of the *Jungle Book*, after he grows up (he joins the Indian Forest Department).⁽⁸⁾ Recognizing the need for trained staff, Brandis arranged for cadets to study at Nancy, embark on a Grand Tour of European forest management, and then do their field apprenticeship in India before assuming assignments elsewhere. To create an Indian support staff, he established a forestry school at Dehra Dun. In 1884, as India officially joined the Empire, education transferred from Nancy to Cooper's Hill College for Indian Engineering, and then to Oxford University in 1905. In 1925 its scope expanded into the Imperial Forestry Institute.

Diffusion by personality

To an astonishing degree, the vision of forestry rooted in central Europe diffused throughout the world not only as a standard but as a working prescription applied by the major imperial powers, sometimes

successfully, most often with very mixed results, as they sprawled across the globe. The fusion of academic discipline, guild, political clout, and actual land management proved hard to unseat. Critics could not muster an equivalent compound of ideas and institutions to act as a counterforce. Specifically, forestry had two things its challengers did not have. One, unlike academies and research institutions, it had real power because controlled lands. And two, unlike many other government agencies created to promote public good, forestry promised to pay for itself; it might even generate additional revenue. Foresters declared themselves, with some justification, the vanguard of state-sponsored conservation globally. And like victors everywhere, foresters even wrote the histories of their triumph.

As an illustration, consider the remarkable career of Bernhard Fernow. Trained in Prussian forestry, he married a visiting American woman, emigrated to the U.S., where he became its first professional forester, and directed the Bureau of Forestry from 1888-1898. At this point he established a forestry school at Cornell, with ties to New York's Adirondacks Park, until controversies over logging methods pushed him into Canada, where he founded Canada's first forestry school at the University of Toronto. He ended his career deeply involved with Canada's embryonic conservation movement while writing a world history of forestry. His personal career might stand as synecdoche for forestry's.⁽⁹⁾

Even the United States, nominally independent, found itself within the orbit of Britain's forestry. Fernow was succeeded at the Bureau of Forestry by Gifford Pinchot, who considered Dietrich Brandis an inspiration, later writing in his autobiography that he hoped to achieve something in the U.S. akin to what Brandis had achieved in India. At Brandis' suggestion he studied for a while at Nancy before returning to the U.S. to speed up the cause for reform, all the while continuing to correspond with his mentor. He soon joined the Committee on Forests that the National Academy of Sciences had created to review how the country should manage the forest reserves it had begun creating by presidential proclamation. In that assignment he helped deflect arguments, partly based on the experiences of British India and partly by the success of the U.S. Army in running the national parks, that the country teach forestry at West Point and create a corps of forestry engineers. Instead, the U.S. would find civilian alternatives. Pinchot showed where and how.

In 1900, more out of expectation than from actual demand, Pinchot and Henry Graves founded the Society of American Foresters, and then devised a way to fill its ranks. The scion of a wealthy family, in 1900 he convinced the Pinchot estate to endow a school of forestry at his alma mater, Yale University. In 1905, a year after the School's first class graduated, Pinchot persuaded President Teddy Roosevelt to transfer the forest reserves that had been created since 1891 to the jurisdiction of the Bureau, which Roosevelt did. The Bureau of Forestry became the U.S. Forest Service. Henry Graves, also went through the Nancy regimen, with a valedictory field trip to India before stopping by America's recent imperial experiment in the Philippines, soon to have a forestry bureau of its own. Graves returned to the U.S., where he became dean of the Yale School of Forestry before assuming the office of chief forester in 1910 after an over-zealous Pinchot got fired. In less than five years the apparatus for forestry, in all of its parts, had arrived in America.

Diffusion by guild and institution

The project commenced a secondary radiation to American territories and commonwealths, but it propagated with special force through Canada. As Fernow's career illustrates, Canadian forestry had two major tributaries, one from the U.S. and the other from Europe, partly through British imperial forestry and partly from France, through Quebec. The American influence was compelling; the U.S. Forest Service became a model for the Canadian Forest Department, Pinchot seconded several deputies to assist the birthing, and chief foresters for several provinces (including Quebec) graduated from the Yale School of Forestry. Forestry's dominion was vast; and virtually all of Rupert's Land, acquired from Hudson's Bay Company, fell under a loose forest administration, save the prairies. That federal presence expired in 1930, however, when the dominion government ceded its estate to the provinces. The Canadian Forest Service imploded, surviving as a diminutive rump in a role as a research organization. Thereafter the provinces assumed control of field forestry.⁽¹⁰⁾

Similar transfers and transplants occurred throughout the European imperium. British India trained foresters from Hong Kong to Belize and effectively staffed Thailand's Forest Service; the Burma Forest Department became the model for the Federated Malaya States and Kedah. The Soviet Union carried its system to China, Mongolia, Eastern Europe, and Cuba. And apart from direct state transfer, a global circulation of foresters sponsored by aid agencies and development bureaus

propagated their professional norms. So the cascade continued, with each subsidiary recipient altering in the process, so that the several-generation progeny might little resemble their patriarch; but the ideals remained coded in their institutional DNA nonetheless.

That process of hybridization had always been the case. The narrative that forestry had simply stamped its way out of Germany and impressed itself around the world like heelmarks had ever been a caricature. Always there had been local adaptations; always, too, the ideal persisted. Sir D.E. Hutchins, for example, could recognize that “Often, what is right in European Forestry is wrong in Extra-tropical Forestry”. Yet he could equally rail against slovenly Australians who insisted that their circumstances were unique and justified a calculated indifference to the norms. “What foreigners can do in Southern Europe, or Englishmen can do in India and South Africa, Englishmen can do in Australia if only the matter is put squarely to them!”. What endured was System and its disciplined application.⁽¹¹⁾

So if Indian foresters had to accept early burning, if Burmese foresters had to yield teak silviculture to Burmese peasants, if Cypriot foresters had to accommodate goats, if Algerian foresters had to turn an occasional blind eye to encroachments by transient Berber pastoralists, they did. They would do what had to be done. But they yielded grudgingly and with full acknowledgement that they were making the best of a bad hand. However elusive the ideal, it shone brightly, and the grandees of the caste would chastise and belittle them if they failed to measure up. They were a brotherhood with a cohesion that transcended local circumstances; they could always refer back to standard texts, to their group identity as a guild of engineers, to foundational landscapes. That they transferred from one colony to another reinforced the sense that, behind all the distortions of the material world, there lay a Platonic ideal to which they would strive.

Global Forestry: The Good, the Bad, the Ugly

The program had plenty of attractions. For almost two centuries European scientists had observed the blowback from forest clearing on such islands at St Helena and St Kitts, and devised what has been termed a “desiccation discourse” that linked deforestation with drought. It was also only too apparent that the outwash of global capital was capable of denuding vast landscapes, and that loosely managed colonies like India under the nominal rule of the British East India Company could do little to halt it, even if they wished.⁽¹²⁾

The ritual of ruin was tediously common. Local communities, with their oft-pliable or corruptible headmen, could not resist the blandishments of money and power. The land would be nominally bought or transferred by treaty and then cleared of its most valuable timbers like teak, much as buffalo hunters in North America slaughtered immense herds for their humps and tongues. A brief flush of high-grade timber was followed by decades of weed trees and the prospects, which grew to alarming proportions by the end of the 19th century, for an outright “timber famine” that would cripple both agricultural and industrial economies. Private wealth and public squalor – a few individuals or companies became fabulously rich, while societies had to pick up the pieces and endure the collective deterioration of their air, soils, waters, and habitation generally.⁽¹³⁾

State forestry promised to stop the bad and promote the good. As an institution of government (whether national or imperial), it could stand between the ravages of global capital and local communities; it could halt the forest scalping, the dislocation of watersheds, the ravenous wildfires, and the perturbed climates that unchecked logging left behind with its slash. It could, through the power of the state, conserve the forests for society overall and for the future. Equally, it did not propose to stop commercial use. Rather, outfitted with modern science and academic rigor, it promised to rationalize the harvest of timber, and such was the power of its discipline that it would generate revenue in the process. Forestry would pay for itself, and more. To its proponents, there was no downside to such an agenda.

But of course there was. By arguing that it would pay its own way, state forestry was forced to harvest timber, and as expenses increased, it had to log more, not only for its own expenses but to enhance the revenue of the state generally. During economic and political crises (such as wars or the aftermath of large fires), regulations seemed to vanish, and overcutting could result that was indistinguishable from what foresters had been empowered to prevent. Just as insidious, state forestry established a premise that it repeated over and over that further compromised its capacity to do what its justifying claims said. Each reform in its own land usage, every response to past failures,

cost money; and it was only by logging now that it could get the funds to instigate improvements later. The cutting always got done; the promised reforms came spottily. Unlike other public services, foresters ever insisted that their agenda would pay for itself. It rarely has.

Moreover, the guild was so cohesive and self-identified that a subtle collusion evolved between practitioners within government and those within industry: they all had the same education and the same caste values, and came to identify among themselves more closely than with their governments or sustaining societies. In time, the private sector, which generated the most money and jobs, could supplant the public sector as the norm for good practice. There was often no comparable body of experts or public servants to stand against it. If forestry colluded with other agencies of the state, there might be no rival organ of government either. In time it could move from being an exemplar of conservation to a nemesis; and too often it did.

Not least, forestry's origins in central Europe severely undercut its capacity when far removed from that setting. This proved particularly the case with fire. Temperate Europe had no natural basis for fire, which it associated with primitive technology and social disorder, and it sought to extirpate fire as it would spruce budworm or blister rust. But most of Europe's colonies, where state forestry found its greatest power, were awash with burning. In such places colonial forestry became one long firefight. Foresters could, at times, hardly see the forest for the flames. Yet, paradoxically, in such places fire's abrupt removal could prove more damaging than its free-ranging continuation. Here all the aspects of forestry that made it attractive to the state – its academic base, its coherence as a guild, its conviction, its engineering impulse to act in the field – worked against it. Foresters were unable to cope with the fire scene and in the end undid much of their good works by trying to shut down a phenomenon whose crime was that it challenged the precepts of Franco-German forestry and the capacity of foresters to control their land as they determined.⁽¹⁴⁾

Even the nominal science behind forestry often proved suspect, or at best mediated by its circumstances of origin. European forestry remained, at heart, a graft on the rootstock of European agriculture: the ideal forest was a planted forest, raised as a crop. The great expressions of state sponsorship had reforested or afforested to reclaim wastelands, to undo the excesses of overclearing and overgrazing, and to assure a dependable supply of fuelwood, timber, and later pulp. In all these cases, the landscape was barren; foresters planted it as they might potatoes. In colonial settings, however, the forestry bureaus often oversaw vast estates that most observers considered either unruly fallow or outright wildland. To install the forestry ideal – and to make tree farming pay – the preferred practice was to log the land clear and then replant it to suitably commercial trees grown according to “scientific” standards.

So how did this differ from industrial-era logging and folk reclamation for farms? As trained engineers, foresters insisted they knew how to do the logging properly; as civil servants, they would see that the proceeds went to society; and as a professional guild, they could police themselves. They would not be unduly influenced by outside (and irrelevant) considerations, whether political, commercial, or ideological. To critics, of course, none of these assertions was true, and the guild had become a self-referential world unto itself, incapable of seeing its own failings or, worse, a puppet bureau of raw state power or outright extortion.

Strategies of Forest Administration

Protecting forests, reserving forests

At the core of colonial forestry was a program of forest regulation, which had its purest expression as a system of reserved lands. The project returned “forest” to its original, legal definition, as an area set aside for a special purpose. Without control over land, forestry had little power: it was simply another among a chorus of bureaucratic counselors. The point is worth repeating. While state forestry agencies did research, regulated practices, and advised government, their control over land is what differentiated them from scientific bureaus, regulatory agencies, constabularies, and consultation councils. Where they oversaw land, they were powerful; where not, not.

Reserves were justified where the state deemed unregulated land as a threat to public safety or as an impediment to a modern economy. Especially when conveyed in the form of reserves, forest law was a vehicle to prevent abusive land use, to forestall timber famines, to ensure public health by stabilizing climate and watersheds, and to enact compulsory modernization, a latter-day version of

the enclosure movement. They were most complete where the state could impose its will most forcibly.

Still, a constellation of options and categories of tenure existed. A “protected” or “reserved” forest could mean many things, and that meaning for any country could change over time. How completely state forestry might control a reservation varied; there were degrees of control, just as there were degrees of imperial power exercised over its colonies. Much of the British “empire”, after all, depended on indirect rule, and the same was thus true for its gazetted forests. Forestry’s rule could bring it into conflict with other imperial agencies and of course with locals, which is why the program worked best with uninhabited lands. And of course the program, designed for temperate Europe, inevitably struggled to realize its ambition. Some state forestry bureaus thus oversaw lands for which they had little say apart from regulating logging; others, lands over which they could ban or segregate local farmers and grazers; and some, from which most use was proscribed, which functioned more or less akin to parks.

Scandinavia: from forests to tree farms

Applying such doctrines in long-established countries was always troubling; most lands were already occupied, and protest lay worryingly close to the capital. Most often an alternative strategy emerged whereby the state exerted its influence through legislation that prescribed what landowners could do or not do with their holdings. Germany and France again pioneered, but the concept achieved perhaps its finest expression in Scandinavia.

It was through forests that Sweden and Finland began their serious industrialization, for not only did forests provide timber and tar for export but fuel for emerging iron factories. Helpfully, most of the northern lands were lightly settled or occupied only seasonally. The state claimed approximately 25% as public forest while companies took an equivalent amount. The real innovation was the conversion of private lands, most notably through Sweden’s succession of forest laws, beginning in 1903. The legislation was intended to assist the conversion of marginal farms into tree farms. Landowners were told what to plant, when and how to prune, and when to harvest. While the land remained theirs, the timing and output of timber and pulp remained under the control of society, manifest in local forestry boards.⁽¹⁵⁾

Seemingly radical, the idea was mostly evolutionary. It kept forestry securely within an agricultural matrix – literally so. It did not result in massive resettlements, collective farms, or wide-scale abandonment. Instead it replaced an existing, faltering agriculture with an upgrade such that even the landscape retained its infrastructure, with trees substituting for rye much as silica replaces lignin in petrified wood. While the concept fed nicely into emerging expressions of what would become Swedish socialism, it really modernized what already existed, and it relied on cultural conventions inherited from past times, which granted all citizens certain kinds of access to land. The concept has not proved widely transferable outside Scandinavia.

Still, Europe shows several variants, which look as much to the Baltic and Landes origins of forestry as to Sweden. World War I alarmed Great Britain with its dependence on imported timber, an essential war material. It approached the crisis from two directions. One, it formalized its loose-jointed imperial forestry operations by sponsoring conferences, creating a journal, and otherwise seeking to assure a reliable source of supply. And two, it established a Forestry Commission to create an internal woods industry by selectively reforesting Britain by means of plantations on marginal farmland. As the plantations have matured, they have run afoul of environmentalists, save where they use native species to recreate ancient forests as in Caledonia.⁽¹⁶⁾

Another experiment emerged from Iberia. During the Franco and Salazar dictatorships, the state sought to convert marginal communal lands (*montes*), mostly given over to pastoralism, to industrial forestry, and commenced afforesting with eucalypts. The exercise was an eerie echo of the Carlist liberalization program, and ended no better. Local communities resented the confiscation and detested the exotic trees. Not only was traditional usage legally denied, but the allelopathetic trees denied biological access as well since the local flora and fauna could not survive within them. In dual protest, as the trees reached pole size, arson fires broke out. The lesson in both instances is that the “modern” vision of forestry, with an emphasis on commercial species and plantations, would fail unless it built upon a legacy of custom and a culturally useful biota.⁽¹⁷⁾

Colonial model: Inhabited lands

The real contest laid overseas where the state could exert its will more freely and where the only civil society to oppose the program could be deemed insurgents and hence suppressed. The project played out in two general contexts, one on inhabited lands, and one on uninhabited. The former typified British imperialism in India and French rule in Algeria; the latter, the United States, Canada, Australia, and in a different way, Russia.

Gazetting forest reserves in countries that were already inhabited provoked endless fights, often violent. People who were moved off lands, or denied seasonal access, or were constrained in their traditional use felt oppressed rather than environmentally uplifted. They denounced state-sponsored conservation as a land-grab, engaged in trespass as acts of both protest and subversion, and lit proscribed fires. Officials might point to the ineffectiveness of local politics to resist the suasions of footloose capital and leave a landscape wrecked for decades, and they might sanctify their decisions on the basis of a “rational” science, but indigenes tended to see only restraints and hardship and a disregard for customary lore and usage. Higher causes and a modern market meant little, while prohibitions against burning, gathering plants, and goat grazing brought immediate hardships.

Traditional usage was, to use James Scott’s term, “illegible” to officials. Indian landscapes, for example, resembled Indian society; syncretic, layered, dense. Foraging for *mowhia* flowers, nuts, medicinal plants, small game, and bee hives could not compete with teak, *sal*, and *chir* that had monetary value in the international market and could serve as sleepers (ties) for the rails that would modernize India. Officials scorned such “minor forest products” and were baffled that villagers would not agree with them. The timber brought money, and money could help pull India out of its bullock-rutted mire of superstition and subsistence living. And better, foresters could regrow the trees to make the process sustainable. “Forest conservancy” it was called. Indians viewed it as Saxons did Norman confiscation, and English peasants did Parliamentary enclosure. What was true in British India was often magnified in Cyprus, Cape Colony, Kenya, and Sierra Leone.

It was even worse in Greater France. French forestry had grown in temperate France, and as France expanded southward it had to grapple with very different environments within its national estate in ways not true for Germany or Britain. Provence, the Cézennés, and the Midi exhibited wildly different settings from the north, particularly for fire and grazing; but it was the French genius (and burden) to try to yoke them within a common administrative and conceptual system with the Ardennes and the Paris basin. When France acquired Corsica, it could no longer pretend to impose a common order; and the scene only worsened across the Mediterranean. Foresters throughout French West Africa, but especially in Algeria, found themselves in one long upheaval, usually in the form of a firefight.⁽¹⁸⁾

Still, France posed an alternative to British imperial styles, and to that of Germany, particularly once it was weakened and isolated by the Great War. Americans, especially, rekindled an interest in European forestry through participation with French colleagues during World War I. After the war Theodore Woolsey, Jr., published a study of French forestry, with an eye to improving American silviculture, a position with which William Greeley, then chief forester of the U.S. Forest Service, concurred. Gifford Pinchot wrote a preface in which he agreed, noting that Americans could learn much from French experiences in Algeria (what exactly, other than getting out, is unclear). Where their experiences did bear resemblance was to the American South, then the heartland for American logging and soon to acquire national and state forests, all built out of formerly open range and soon to have a stubborn insurgency.⁽¹⁹⁾

Colonial model: Uninhabited lands

The contrast with the American far west is striking – and that highlights the global contrast between a colonization that imposed forest reserves on inhabited landscapes and a colonization that moved into territory more or less vacated by war, relocation, and disease. Here, the reserves could be vast, and while foresters had to fight off the trespass of pastoralists and the occasional homesteader, the reserves predated the bulk of settlement. Their politics were completely different.

This made it possible to enact the precepts of Schlich’s *Manual* without constant harping from indigenes. American foresters, especially, were quick to distinguish between bad use, which they prohibited, and good use, which they sought to promote. It was positive use that distinguished state forests from parks which only “locked up” resources. While this was never enough of a justification for locals, aside from Indian tribes sequestered onto reservations, they had no traditional claims or rights

of usufruct. The irony is that the features that made the lands remote from settlement also made them remote from markets. For decades the charge to foresters was to hold those lands until such time in the future that they might be needed. They remained wild lands under the managerial hands of a caste that by training and temperament distrusted wild lands and who bided their time until they could practice what their education and guild mores told them they ought to do.

This was the situation generally in Australia and Canada, and in a skewed way in Russia. They all show variations on a theme. In North America the proportion of public (or crown) land increases to the west, as larger expanses of acquired lands coincided with the growth of state-sponsored conservation as an idea. A third of the U.S. is now public land, with a third of that in Alaska. Roughly 97% of Canadian forests lie in crown land, almost all under the jurisdiction of the provinces. The Yukon and Northwest territories have, for purposes of forestry, moved from status as territories under federal purview to provinces with control over their woods. Australia's public lands followed the Canadian example and reside in the provinces (save for national parks).

The spectacular examples of state forestry are those on public or uninhabited lands. Here forestry bureaus flew the flag, laid down an infrastructure, codified practices, and sponsored research; they did what in private lands would be called "settlement." If their reach was astonishing, so was their ambition; in 1910 the U.S. Forest Service had only one fire guard for every 670 square miles. It's astounding – and unmistakable testimony to their conviction and zeal – that they even attempted to exert control under such circumstances. They saw themselves in a crusade for conservation, as proconsuls of a global project, and they acted accordingly. Their larger societies generally agreed and knighted many leading British foresters for their achievements.

Yet the overreach extended to ideas as well as staffing. The forestry they learned at Nancy said little about the realities of sprawling wildlands that mocked the prospect of wholesale felling and replanting according to the prescriptions of formal silviculture. About all they could do was to protect, not manage: they fought fire, expelled trespassers, pushed back against political schemes to privatize. They made token gestures toward wildlife and watersheds and recreation, but they regarded such amenities as the equivalent of minor forest products. The only genuine market value lay in timber – and timber harvest, or its future promise, was what paid for forest administration. They did not consider their reserves as parks or nature preserves. They were working forests, whose capital was presently banked, but would eventually to be spent.

Ultimately, they succeeded, or failed, not by forcing indigenous communities to modernize but by holding land while, from other causes, those surrounding communities and sustaining societies changed, and the two agendas came into alignment. A general industrialization unwound some of the land-competing pressures that had traditionally pitted foresters against farmers, grazers, loggers, and charcoalers. State forestry was less an instrument for reform than a means to hold out while that general reformation worked out its narrative. As the British expression "forest conservancy" implied, forestry was a conservative presence. That, paradoxically, left it vulnerable to societies that changed in ways that came to value those public lands for purposes other than forestry. Post-industrial societies could challenge forestry as fully as pre-industrial ones.

State forestry was thus poorly positioned for the post-World War II era. In developing countries, it could not resist becoming a tool of the state for purposes other than conservation, and in developed ones, it could not address the emerging amenity and ecologically based values of an industrial society. As the forestry guild became more technically proficient, it became more culturally illiterate. In place of their founding vision as fearless protectors against waste, public corruption, and private monopoly, they came to resemble pliant state banks, a vehicle for political manipulation, without significant checks and oversight from the civil service that staffed them.⁽²⁰⁾

Decolonizing Forestry

The great bureaus had swelled during the era of European imperialism, and in places like the United States and New Zealand they later became vehicles for massive environmental and social engineering during the Great Depression when national states exerted themselves more forcibly over their homelands. But the postwar period commenced an era of decolonization, and those agencies shrank, imploded, or reconstituted themselves according to the particulars of their political setting.

Developing nations

Surprisingly (or perhaps not), much of the developing world kept those institutions, and sought to redirect them to more suitable purposes; this was the case with India, for example, as it refused to disassemble the elaborate apparatus of the forestry raj and instead baptized it in the waters of Nehruian socialism and had it born again as “social forestry.” Ghana kept its Forest Department and its gerrymandered forest reserves, but without effective funding to run them. South Africa’s Department of Water and Forestry Affairs retooled to establish a softwood industry. Myanmar’s Forest Department became a hollow shell, or a cover for timber looting by the ruling junta.

But state forestry in these countries had always been compromised from an ideal because of local resistance, not only social and political hostilities but a pervasive ecological obstinacy. The further the scene from a central European ideal, the more widely practice diverged from published precepts. Foresters had always relied on local staff, which gradually tweaked and accommodated mandates into something that could survive local circumstances. Certainly in British forestry indirect rule proved as necessary in woods as in cities. In India, for example, forest guards often lit so many “protective” fires that the outcome might be indistinguishable from the indigenous burning it was intended to prevent. When European notions for regenerating teak failed, a hybrid agro-silvicultural system (*taungya*) was devised – with approval from Brandis himself – to substitute. In Burma the jungle of resistances, ecological and ethnic, became so great, and the failure of British silviculture so massive, that in 1907 the Conservator of Forests simply withdrew formal fire protection, a response so radical that the scheme found itself quarantined as another expression of Burmese exceptionalism.⁽²¹⁾

FAO: Shadow empire

There is one striking anomaly in the process of shedding or redefining the vestiges of colonial forestry. As Peter Vandergeest and Nancy Peluso have argued, the U.N. Food and Agricultural Organization (FAO) effectively reconstituted the old imperial network for several decades after World War II. In countries that had thriving bureaus, the FAO presence provided a neutral political network to connect forestry officers with best practices as defined by the global guild. The FAO allowed countries that had poorly developed bureaus to build them up by providing the kind of support that the imperial powers had previously extended. Equally, it allowed those with flourishing bureaus to maintain status and academic currency. In both cases state forestry could modernize without the compulsions and stigmas that had marred the earlier epoch.⁽²²⁾

If FAO became a shadow empire, it came with the worst contaminants of imperialism stripped away. It could present itself as apolitical, a purely technical project, a creation of the forestry guild, which sought new institutional habitations like a hermit crab occupying a new shell. But of course the FAO merely transferred the politics to more local hands. In a sense, what appears to be a revival is also a devolution that empowered newly independent national governments to assume the roles of the imperialists. It appears, moreover, that the reign of FAO as a major force lasted only through the postwar development era, providing a kind of external leveraging for the developing world that the developed nations already possessed. As FAO has faded, other development agencies have stepped in, all eager to work with the kind of trained staff and an economically informed discipline that forestry offers.

The attractions of even moribund institutions are several. For one, they exist. They may no longer receive the care and funding they once enjoyed from the state, but the global reach of development can replace the imperial reach of former colonizers. Funds have a place to go to; institutions can be revived to satisfy their founding purposes or be redirected to more contemporary ones. It is not necessary to invent a structure, only to reoccupy agencies that already exist. For another, forestry argues economics. It has always prided itself on its fiscal sensibilities, that it is a business that it will pay for itself and more. (That this has rarely happened is irrelevant: it *should* happen in principle.) This disposition makes it an attractive venue for agencies that cannot afford to subsidize enterprises indefinitely, and a legible message for the economists who advise them. Whether as public reserves or private holdings, the land will be used, but used with technical competence. It will be, in today’s parlance, sustainable.

The issue, however, is not whether state forestry has revived in places, but what the character of its new avatar might be. In principle, such agencies could equally resuscitate the old vision of state-sponsored conservation; they could lead to an era of environmentalism. The contemporary obsession with sustainability, after all, has a great deal in common with old-style conservation. But those

agencies could just as readily become vehicles for simply extending state power, including state-sponsored environmental havoc, appropriation, and outright looting. What matters is not the presence or absence of the agency; what matters is the larger social and political setting that can offer checks and balances on the agency's actions. While this is often related to a past history of colonialism, such that nations like Thailand that modernized without being colonized or Myanmar that sloughed off much of British forestry rule, behave differently than the Philippines or Indonesia, the chronicle effectively begins anew in the postwar development boom.

Developed nations

What astonishes more, perhaps, is the implosion of state forestry in the developed countries, especially those where state forestry established itself on largely uninhabited lands. The fragmentation began in the 1970s, and has accelerated under hammer blows from indigenous land claims, public revulsion over forestry practices, economic interests urging privatization of land and services, a general distrust of government, political pressures arguing for devolution, the emergence of NGOs to dispute forestry's claims, rival scientific research to question forestry's doctrines, and other challengers to what had become a government hegemony. The old Establishment fractured, and in many places, folded.

As with decolonizing nations, the particulars of local politics have sparked a range of responses. Greece downsized forestry, even ceding control over fire protection to urban fire services. New Zealand disestablished its Forest Service, parsing a massive public-works agency into commercial plantations (which it sold off) and conservation areas, mostly in the mountains (which it turned over to a new department). Australian state forestry agencies vanished, save in Tasmania; some fragments of commercial woodlands have gone into public corporations, but the bulk of land has been transferred to national parks or other species of nature preserves. Meanwhile, the Mabo decision by Australia's Supreme Court has adumbrated effective sovereignty from crown land agencies to Aboriginal rule or some hybrid institution. Canadian devolution began earlier (in 1930), which left the provinces responsible for crown-land forestry; but the provinces have become cameos, reacting to the same reforming pressures and adjusting (or not) accordingly. Among those prompts are native (First Nation) land claims as old treaties are subjected to renegotiation, or as in the case of British Columbia, which had seized land without the bother of treaties, a first-time negotiation.

The trend characterizes even the most robustly developed of national forestry bureaus, notably those of Russia and the United States. Both had become an apparatus of the state as it expanded its territories and sought to incorporate the new lands under the rule of institutions; in a sense, they were internal empires. With the breakup of the Soviet Union in 1991, the national forest service has undergone almost continual reforms that climaxed in 2007 with devolution to the "federal subjects" of Russia, that is, to the major 83 administrative units – the republics, oblasts, and krais – that make up the political fabric of the Russian Republic. These reforms were formalized in the 2008 constitution. Russian forestry is thus trending toward the structure common to Canada and Australia, two other countries that amalgamated former colonial entities into a single nationality. The likely outcome will be more intensive resource exploitation and diminished protections – the prediction does not depend on any peculiarities of Russia but reflects experiences globally.⁽²³⁾

The United States, almost alone, has retained its national forestry service. It survived its 2005 centennial with its name and lands intact. But the organization is no longer a hegemon and no longer a subsidiary of the forestry guild. It more resembles a heritage building whose exterior walls have been strengthened, but whose interior has been ripped out and rebuilt with modern designs and wiring. Since the apparatus of forestry by the 50 states largely reflects cooperative programs with the U.S. Forest Service, they have also experienced the impact of reform and citizen challenges. The extent of their power (and autonomy) generally depends, as with the national institution, by the extent of state lands they oversee.

Critics abound, and have successfully used environmental legislation (e.g., National Environmental Policy Act) to check agency autonomy in the courts. Nor are the challenges solely external: the Forest Service Employees for Environmental Ethics (FSEEE) operates as a civil-society voice within the organization. Today the U.S. Forest Service is widely excoriated by outside critics for what it does, and by its own staff and the forestry guild for what it fails to do. The agency, in sum, for all the oddities of its peculiar subplot, follows the same narrative arc as state-sponsored forestry globally.

State Forestry, Rebound and Recession

Consider three brief examples. Each traces a different evolution of postwar state forestry. In one, the imperial era undergoes a revival; in the others, the agencies of state forestry recede.

Malaysia and Indonesia

Independence was a complex process; not only did Japanese occupation intervene, but the new nations themselves underwent periods of expansion and consolidation. For Malaysia this meant uniting the Federated Malay States with the Unfederated States to create Malay (1957), and then absorbing Sarawak and Sabah, on Borneo, into a Federation of Malaysia (1963). For Indonesia it meant integrating the Outer Islands with a Javanese core. Dutch Borneo (renamed Kalimantan) united with Java in 1950; it was subsequently parsed into four provinces. For forestry, this left a small island with intensive management, and a large one with almost none. Likewise, the transfer of state forestry from the colonial power to a national one often came in stages. Colonial foresters frequently continued to run bureaus for some time after independence. And Malaysia's autonomy was delayed by the long British fight against insurgents. In several respects the national task became a miniature of the imperial one.⁽²⁴⁾

Both nations, as Vandergeest and Peluso put it, "adopted doctrines of economic development and national political organization as their central activity and source of legitimation," saw their existing plantations and untapped backcountry (mostly in Borneo) as raw material to support that development, and expected forestry to assist that conversion. Both also looked to the FAO as a surrogate for imperial forestry. Not only could it help transfer knowledge and technology and align the fresh national bureaus with practices elsewhere, but it sanctioned a logging industry as a vehicle to a modernizing economy, much as imperial forestry had done. The "creation of modern, territorialized, political forests", it has been argued, was "key to the emergence of Southeast Asia as a major exporter of tropical hardwoods". But the two nations made that transition differently.⁽²⁵⁾

Malaysia had inherited a vigorous state forestry program from Britain, one that included a research program, plantations (including rubber), a journal (*The Malay Forester*), solid revenue, and good connections with the global circuit of the forestry guild. British influence lingered past nominal independence, and then the FAO could replace it shorn of the political stigma of colonialism. It completed the segregation of agricultural lands from forest lands that had always been a fundamental ambition of state forestry, and then expanded seamlessly into its Borneo possessions. FAO's "empire of forestry" assisted the process but was probably not mandatory for it to happen; sufficient momentum remained from its legacy of British colonialism.

Indonesia had a stickier time. Its politics was harder to consolidate; and it had not become a secondary center for forestry in its own right, as Malaysia had, and it relied on colonial foresters who remained after independence and otherwise looked to Wageningen. This ended in 1957 with an effective declaration of independence from Dutch forestry. The act left it isolated from the global guild, just as it looked to its immense tropical woods as a "subsidy from nature" that it wanted to tap for national development. The FAO midwived that transition. It helped train, connect, and justify the wholesale opening of Kalimantan and other Outer Islands. It became a formal extension of state power at a time when the Javanese metropole needed to assert its authority more forcefully over its dispersed archipelago of national territories. FAO's reign, however, lasted only through the time it took to consolidate power. Thereafter the national state assumed the tasks that imperial powers and their apolitical successor had previously done.

Whether state forestry only enabled logging companies to strip the landscape more efficiently, even granting some nominal patina of legitimacy, or whether it did abate the process, is unclear. But their forestry agencies were certainly a means to shape land use and project state power. They make an interesting contrast with, say, Brazil, also bent on developing its tropical backcountry but without the apparatus of state forestry. Brazil was an offshoot of earlier, Iberian imperialism and lacked many of the Enlightenment institutions that characterized colonial administration under Britain and France. Both Indonesia, and especially Malaysia, had evolved with state forestry as part of its governing apparatus. Brazil – and for that matter, Portugal – had not. What differences the presence or absence of state forestry have made will be interesting to evaluate.

Alaska

In the postwar era even major industrial powers sought to develop their remote territories – the Soviet Union turned to its “virgin lands” steppes, Canada to its Northwest Territories, and Australia to its tropical north; the equivalent for the United States was Alaska. When it was admitted to the Union in 1959, Alaska was granted 25 years in which to select lands for the state itself (other states had been admitted with a percentage of public lands left in their charge to support education).

The undertaking became complicated as oil was developed in the Arctic, as indigenous peoples clamored for land and political presence, and as the Lower 48 began to covet Alaska’s relatively untrammelled vastness as wilderness. The process deadlocked, not resolved until President Carter intervened, followed by passage of the Alaska National Interest Lands Conservation Act in 1980. The resolution is revealing. A strategy of native corporations defused the indigene crisis, while large fractions of national public lands went to wilderness, national parks, and wildlife reserves. None went to national forests.⁽²⁶⁾

Already the U.S. Forest Service was becoming a pariah to modern environmentalism. It was cast as an agency committed not to emerging ecological values but to old-style commodity production - its hunger to log long delayed, but now ripping over landscapes in ways that appalled citizens and landed a lordly agency in court where it was routinely chastened. Yet that logging paid for much of its other activities. The Forest Service would endure, but it would lose most of its battles and survive only by rechartering its purposes to resemble those of its bureaucratic rivals such as the Fish and Wildlife Service and the National Park Service. Chief foresters were recruited from fields other than forestry.

Canada’s Northwest Territories (NWT)

The Canadian Forest Service had early planted a flag along the Mackenzie River, almost the only real administrative presence of the Dominion, but all it could attempt was fire protection, and fighting fires in the Territory’s unbroken boreal forest was quixotic. In the postwar era, however, the federal government tried again, linked in general ways to development schemes. While forestry (along with mining and hydropower) had traditionally pioneered much of development in Canada’s boreal outback, here it faltered.⁽²⁸⁾

Resistance took three forms. One, the basis for a full-bore forest industry did not exist, and was unlikely ever to exist; wood stocks, infrastructure, and markets were inadequate. Two, forestry operated as it did in other Canadian provinces: it produced timber and pulp and revenue for the province. In the NWT, however, indigenous peoples were more concerned with fur than timber, and Canadian elites were acquiring a slow-spreading enthusiasm for wild nature, both of which left a commodity-obsessed forestry on the margins. Three, the politics of devolution was shifting the power of decision away from national agencies, of which forestry was a prime expression. The Territory split off an Inuit province, Nunavut; the Cree and especially Athabaskan peoples wanted to control the remaining NWT in a similar way, and got their wish at least for natural resources. State-sponsored forestry proved incapable of satisfying these needs and lost its historic status as an *imperium in imperio*.

Forestry and society

The premise that forestry as a guild – that foresters as a corps of engineers, trained to practical solutions based on science and economics, insulated from political control, self-regulating in their professional character – can substitute for a broadly based civil society or legal checks and balances has little basis in history. Foresters no more challenge their sponsors than do state-run banks or civil servants in a postal service. Absent outside critics and the means to contest with them, such agencies can become instruments of oppression as readily as of uplift. In brief, institutions of state forestry take on the personality of their sustaining societies and political cultures.

Whether the FAO and comparable developmental programs have the punch and stamina of old imperial forestry, they perpetuate many of its means and ends. The FAO, in particular, keeps land management in hock to forestry, and forestry in bondage to its agronomic origins, and both subservient to an old plutocracy of purposes that ignores the upwelling of environmental concerns which must inform modern public land management. It seems at best paradoxical that thoughtful and well-intentioned organizations should promote an institution and idea that developed nations are abandoning.

Future of Forestry

Forestry will not only survive, it will thrive. But it will likely flourish best apart from its pact with the state. Within government bureaus forestry will serve as one discipline among many; on private lands, committed to timber production, it will stand unchallenged even as it modernizes to accommodate values society deems important in addition to pulp and sawtimber. The issues before the field and its guild might collapse into three categories: internal, external, and relationship to the state.

Internal issues

From its origins forestry has been a guild, although one that has consistently claimed professional status. It has always displayed a high degree of self-identity and self-regard, much of which seems to derive from its rigorous and consistent training, and the degree to which it has functioned as a vertically integrated enterprise with its own schools, professional society, and common tasks, all of which insulate it from the larger culture. In general it has not responded well to outside critics; rather, it resists until its members absorb those criticisms and introduces them within the context of the guild itself.

In recent years forestry education, particularly in the United States, has expanded to embrace a full constellation of land management concerns that includes wildlife, non-commercial species, and an "ecological" paradigm overall. It has done so under compulsion. Having converted, however, it now displays an astonishing collective homogeneity. Nearly all American foresters, for example, regard as mandatory reading Aldo Leopold's seminal *Sand County Almanac* in which the author argues for wilderness, wildlife, and a land ethic. But it is worth noting that Leopold began his career as a forester (Yale School of Forestry, with later duty as a U.S. Forest Service ranger), and hence can be claimed by the guild as one of their own; and it is remarkable that they *all* read it. This kind of consensus has always been one of the great powers of the forestry guild – as well as one of its greatest liabilities.

External matters

Forestry has consistently failed to satisfy social purposes beyond timber and pulp. It has done what it was trained to do: grow and harvest trees efficiently. This focused vision would not matter had foresters remained like their counterparts in agriculture. It mattered hugely when they became the overseers of vast tracts of public land. Even though they honored "forest influences" as legitimate concerns, and used them to sanction their dominions, they were speaking of *trees* – of the consequences of reckless forest clearing and the benefits of forest planting.

Its bargain with the state reinforced these tendencies. Forestry, its proponents have insisted over and over, is a business. It will so manage the forests under its care that they will yield plentiful and renewal timber, and hence revenue for the state. It will pay for itself. In this way the many other benefits of extensive forests will be enjoyed by society. If forestry is a public service, it resembles a public corporation that can self-finance its operations, and perhaps make money for society as it prevents both environmental ruin and monopoly by private capital.

There is little reason to believe this assertion. Timber is practically the only component of a forest that has a clear market value, so in practice it consistently dominates all other interests. Besides, if a forestry agency does not yield revenue, it will not exist for long except in wealthy nations. So a logic evolves that goes, logging is necessary in order to pay for the other goods the agency produces, and the more money the agency makes, the more good it can do. The more it logs, the better. (Forestry may be further complicit in that its old belief tends to revive, like a spore coming out of dormancy, that it must convert wild woods to domesticated ones.)

The problem is that the revenue is never enough to satisfy all the social goods under consideration. The logging gets done; the rest either gets ignored or becomes a public service like education or sponsored research. Forestry has never worked well within such a model, or amid circumstances in which society makes complex and often contradictory demands. In developed countries, the solution has evolved to include forestry as part of advisory teams also staffed with other disciplines. In developing countries, the syllogism can be shortened to promote efficient logging without any money returned to the land for other, non-commercial purposes.

The upshot is that forestry remains both appealing and deeply suspect.

Forestry's relation to the state

In retrospect, it is clear that forestry was a very flawed instrument for managing public lands. Yet it is not clear what single discipline or guild might have replaced it, given Enlightenment expectations about the need to "rationalize" landscapes and to modernize traditional economies. Forestry deserves the credit for much of the good that the reservation system did, although any agency that successfully checked awful practices might have accomplished as much. The difficulty came when forestry sought not just to stop disastrous land usage but to promote its own vision of appropriate land use. In this endeavor it became culpable for much of the bad that has resulted from its tenure.

Its strengths define equally its weaknesses. The homogeneity of the guild, the guild's control over education and standards, an agronomic and utilitarian perspective, all became robust and more resistant when it successfully bonded with the state. Without the power of the state, forestry believed it could not succeed, but with that alliance, its every flaw became a fissure. In time state forestry came to epitomize the Establishment against which a modern environmentalism campaigned.

It is unlikely that irony will end with the humbling of state forestry. Its preferred replacement, certainly among the developed world, might be termed state-sponsored ecology. The exchange will test which of the core problems lay with policy and which with politics. If the problem was policy, then the substitution will more closely approximate what societies say they want; if the issue was really politics, then the question of how to decide what uses a society wants from its land will dominate. State ecology may prove as distasteful a half century hence, as forestry a half century ago.

Similarly, the return of control over their natural resources to local communities may lead to unexpected consequences. One of the founding purposes of imperial forestry was to shield such groups from the clutches of cut-and-run global capital; without powerful lobbies at the national or imperial level, they could not resist the onslaught of money, corruption, and outright looting. To local eyes, of course, the imperial program seemed to advertise another agenda: to siphon off local resources into the pockets of the metropole and otherwise deny residents in or around reserves access to basic necessities. Eventually these dissatisfactions, combined with others, contributed to independence, which all too often left the new nation in an eerily similar position with regard to its locals as the colonial power.

The drive to return control of their surroundings to communities answers this charge, at least politically. But the quarrel involves more than the politics of colonizer and colonized: the resources might still remain at risk, as a new wave of global capital seeks out accessible forests or the lands on which they grow. It is unlikely that today's villagers and pastoralists can resist any better than their predecessors did without outside support. Some surrogate institution to state forestry will likely be necessary if local environmental goods and services, none of which have explicit market value, can survive the new quest for commodities.

Soldier of the State

In the end, forestry has been no better or worse than its setting. It could be a vehicle for uplift or oppression. It could rehabilitate mauled landscapes and protect pristine ones, or it could just as equally clearcut old-growth woods and replace biodiverse forests with exotic plantations. When it bonded with the state, those tendencies could be magnified because they moved from idea to action and from woodlots to national estates. They would do good or ill along with the state generally.

The Forester, as Sir David Hutchins declared a century ago, has indeed been "a soldier of the State." But perhaps it is time to call a truce, and let the latter part of Hutchins' declaration – that a Forester is also "something more" – take root.

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IFFN Contribution by

Stephen J. Pyne
Regents Professor
School of Life Science
Arizona State University
PO Box 874501
Tempe, Arizona 85287-4501
U.S.A.

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- (5) Fernow, *Brief History*, p. 51.
- (6) John Croumbie Brown, *French Forest Ordinance of 1669* (Oliver and Boyd, 1883), p. iii.
- (7) A distilled summary is available in Stephen Pyne, *Vestal Fire: An Environmental History, Told Through Fire, of Europe and Europe's Encounter with the World* (University of Washington Press, 1997), pp. 484-494. Offering more detail, although distracted by an unnecessary argument over the origins of American environmentalism, is Gregory A. Barton, *Empire Forestry and the Origins of Environmentalism* (Cambridge University Press, 2002). For a fascinating Indian perspective on imperial forestry and its legacy, see Madhav Gadgil and Ramachandra Guha, *This Fissured Land: An Ecological History of India* (University of California Press, 1993).
- (8) See "In the Rukh," Appendix A, W.W. Robson, ed., *The Jungle Books* (Oxford University Press, 1992).
- (9) For an exhaustive biography, see Andrew D. Rodgers III, *Bernhard Eduard Fernow: A Story of North American Forestry* (Princeton University Press, 1951).
- (10) For a good summary of Canadian state forestry, see R. Peter Gillis and Thomas R. Roach, *Lost Initiatives: Canada's Forest Industries, Forest Policy and Forests Conservation* (Greenwood Press, 1986).
- (11) Hutchins, Discussion, pp. 138, 494.
- (12) The best account of this complex narrative is Richard Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens, and the Origins of Environmentalism, 1600-1860* (Cambridge University Press, 1995).
- (13) This may be the place to insert an obligatory citation (one willingly given) that places these examples of forest clearing within a larger narrative: Michael Williams, *Deforesting the Earth. From Prehistory to Global Crisis* (University of Chicago, 2002; abridged version, 2006).
- (14) The best single digest of colonial forestry's long firefight is Pyne, *Vestal Fire*, passim. For the particulars of the story for the U.S., Australia, and Canada, see, respectively, *Fire in America: A Cultural History of Wildland and Rural Fire* (University of Washington Press, 1997), *Burning Bush: A Fire History of Australia* (University of Washington Press, 1998), and *Awful Splendour: A Fire History of Canada* (University of British Columbia Press, 2007).
- (15) A still-useful summary (in English) is Roy Millward, *Scandinavian Lands* (Macmillan, 1965), pp. 340-349.
- (16) See N.D.G. James, *A History of English Forestry* (Basil Blackwood, 1981), and on emerging criticisms, see D.N. McVean, "Muir Burning and Conservation," *Scottish Agriculture* 39 (1959), pp. 79-82.
- (17) The catastrophic plague of burning has been extensively studied in Iberia and its analysis published widely (if patchily) in conferences. See R. Velez, "Forest Fire Prevention: Policies and Legislation," in EEC, FAO, ILO, *Seminar on Forest Fire Prevention, Land Use and People* (Athens: Ministry of Agriculture, Secretariat General for Forests and Natural Environment, 1992), pp. 251-263 (also, for Greece, D. Kailidis, "Forest Fires in Greece," pp. 27-40); and, more recently, João Santos Pereira et al, eds., *Incêndios Florestais em Portugal. Caracterização, Impactes e Prevenção* (ISA Press, 2006).
- (18) A summary of French forestry, as refracted through fire, is available in Pyne, *Vestal Fire*, pp. 106-127.
- (19) Theodore Woolsey, Jr., *Studies in French Forestry* (John Wiley & Sons, 1920). For an interesting perspective on French colonial forestry, see Christian A. Kull, *Isle of Fire. The Political Ecology of Landscape Burning in Madagascar* (University of Chicago, 2004).
- (20) Perhaps the best treatments are those of Samuel Hays, particularly, *Health, Beauty, and Permanence: Environmental Politics in the United States, 1955-1985* (Cambridge University Press, 1987), and *Wars in the Woods. The Rise of Ecological Forestry in America* (University of Pittsburgh Press, 2007). The latter is an excellent distillation of the rise, fall, and persistence of state forestry within a unit (the state of Pennsylvania) much smaller than a nation.

- (21) For a distillation of the fire story, see Stephen Pyne, "Nataraja," in *World Fire* (University of Washington Press, 1997), pp. 149-170, and *Vestal Fire*, pp. 486-494, for a synopsis whose bibliography will lead to the major studies of Indian forestry. But it is worth highlighting three here: Berthold Ribbentrop, *Forestry in British India* (Indus Publishing, 1989; reprint of 1901 edition); Madhav Gadgil and Ramachandra Guha, *This Fissured Land. An Ecological History of India* (University of California Press, 1993), which is rich in fire and forestry references; and Gregory A. Barton, *Empire Forestry and the Origins of Environmentalism* (Cambridge University Press, 2002), which attempts an overview at the imperial forestry project.
- (22) See Peter Vandergeest and Nancy Lee Peluso, "Empires of Forestry: Professional Forestry and State Power in Southeast Asia, Part 1," *Environment and History* 12 (2006), pp. 31-64, and "Empires of Forestry: Professional Forestry and State Power in Southeast Asia, Part 2," *Environment and History* 12 (2006), pp. 359-393.
- (23) "Forest Code of the Russian Federation," adopted by State Duma on 8 November 2006; unofficial translation by World Bank, November 2006.
- (24) This summary follows closely Vandergeest and Peluso, "Empires of Forestry...Part 2," especially pages 369-373.
- (25) *Idem*, pp. 369-370.
- (26) For a useful summary, seen close at hand, consult Roderick Nash, *Wilderness and the American Mind*, 3rd ed. (Yale University Press, 1982), pp. 272-315.
- (27) Books and articles on this topic are legion. For a good introduction, see Samuel Hays, *Wars in the Woods. The Rise of Ecological Forestry in the United States* (University of Pittsburgh Press, 2006).
- (28) Again, many studies available. In addition to Gillis and Roach, *Lost Initiatives*, *op. cit.*, see Kenneth Johnstone, *Timber and Trauma. 75 Years with the Federal Forestry Service 1899-1974* (Ministry of Supply and Services Canada, 1991).