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Ecosystems and their moral values

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ABSTRACT: C.E. Lane Poole's 'conscienceness' implied more than just awareness. It was a moral imperative. With this inelegant word he juggled the economic, the nationalistic and the ecological. His aim was to move the social discourse to consider forests as essential to scientific environmental management, part of, and not opposed to, the grand agricultural project of the settler nation. The 1920s were a difficult era for the new public discourse of forestry. Agricultural industry needs were sufficiently powerful to provide a platform to launch Australia's major national scientific institution: the Council for Scientific and Industrial Research (later CSIRO) in 1926. To criticise clearing land for agriculture in this climate was difficult. Even to value trees economically, let alone morally, was difficult. Lane Poole sought to align forest science with agricultural science, by suggesting that forestry was a form of 'agriculture on long rotation'.
This paper reviews some of the moral frameworks justifying the roles of science and the state in natural resource management from the 1920s to the present.

1 MORAL FORTITUDE

We've been beguiled to Augusta to consider a theme based on the rather weird words of Charles Edward Lane Poole (1885-1970), who spoke of 'a forest conscienceness' for Australia. Not just consciousness, or awareness – but conscienceness, or *moral fortitude* in relation to forests. 'The people have yet to learn that the forests are their best friends', he thundered in 1926. Conscience is a moral word, one much in vogue in wartime, often allied with patriotism and the nation. What sort of a conscience can one have in relation to forests? A scientific one? A civilising one? A public-spirited one? All of these together, perhaps, in comments like: 'To the average Australian, the tree is as much an enemy as the foreign invader … There must come a great change in the minds of the people themselves before forestry becomes a recognised source of wealth'. (Lane Poole, 1928: 714). Lane Poole is juggling the civic and the ecological, and it is an awkward balancing act. This is betrayed in the clumsy 'conscienceness'.

I want to use Lane Poole's 1926 address to the Perth meeting of the Australasian Association for the Advancement of Science (AAAS) as a way to provide a historical context for moral and scientific forestry. In this speech Lane Poole promoted forestry in the context of a national rhetoric of land settlement. It was an era where, as he put it:

> … from Cape York to the Leeuwin, … Land Settlement and Forestry have clashed. [But t]here should have been no clash at all. Agricultural experts and Foresters should have been consulted

> and a line would have been drawn between, to quote the Wisconsin formula, 'soils which can unquestionably be farmed with profit under present conditions and those concerning the farming of which there is a doubt. (Lane Poole, 1928: 722).

The clash to use his terms, was between expert national governance and Ministers of Lands, 'driven frantic by the sight of an un-subdivided region on the departmental maps', who pressured surveyors to subdivide at all costs. His speech set out to challenge the notion that 'Land settlement in this continent [was] ….a matter requiring no expert knowledge at all'. (Lane Poole, 1928: 713, 712)

Land settlement and the yeoman farmer ideal were uppermost in the minds of politicians – and were seen as the way forward for a 'new land'. To criticise clearing land for agriculture in this climate was difficult. Even to value trees economically, let alone morally, was difficult. Lane Poole solved this impasse by aligning forest science with agricultural science. Forestry was a form of 'agriculture on long rotation'. Science was one common ground shared between the members of Section K at AAAS. The other was nation. The following year at the Hobart meeting of AAAS, Arthur J. Perkins (1927), Director of Agriculture in South Australia, took up this line in his presidential address, 'A Plea for Nation-wide Research into the Economic Position of our Various Rural Industries'.

Despite the moral gravity of the language, Lane Poole was not advocating a new forest-centred view of the world, the sort of ethic proposed some two decades later by the American forester, Aldo Leopold. Rather he wanted to place forestry alongside the more prominent and self-evidently respectable agricultural science, as part of the larger scientific and civic projects advocated for the nation. Such a project demanded a long-term view, and a 'conscience' that cautioned against breathless settlement and post-war development for the sake of very short-term gains. Lane Poole and Leopold shared some ideas, including the notion that forestry was a moral practice connecting civilised peoples to nature through their forests. They would also have agreed that ethics are a 'community-instinct-in-the-making' (Leopold, 1949: 203). The duty of foresters was to guide community instincts, in the case of Lane Poole, to ensure that politicians recognised forests as positive rather than negative aspects of their emerging settler worlds.

2 INTERWAR NATIONALISM AND SCIENCE

The year 1926, when Lane Poole was speaking to AAAS, was a crucial one for the Australian nation. Although the constitution was created for federation in 1901, the reality of nationhood was still emerging in the 1920s. The Federal Capital Territory (2356 square metres) was formally excised from New South Wales on 1 January 1911, and the design for the capital city, and its name, Canberra, announced on 12 March 1913. The ANZACs at Gallipoli provided much of the symbolism for a new Australian patriotism, but the cost of the war-effort also delayed many of the necessary functions of independent nationhood. It was not until after the 1926 Federal election that Parliament moved permanently from Melbourne to sit in Canberra.

This was an important time for science, and it was central not to just the national, but also the imperial interest. Britain maintained a 'defensive imperialism' in the interwar years as the Empire evolved into the Commonwealth, and the United States was gaining prowess in the applied sciences. (Worboys 1979; 1996.) Science was important to industry, but it was also 'apolitical and neutral', and therefore a place for co-operation among the dominions (former colonies). Together Britain and her dominions could challenge the growing might of the United States. At the Imperial Economic Conference in London in 1923, resolutions were passed calling for co-operation and exchange of scientific information. Britain's Empire Marketing Board was established in 1926, with a brief to 'do for applied biology in the Empire what the (British) DSIR was doing for applied physics, chemistry and engineering in Britain.' The Empire Marketing Board supported the sort of basic research work that applied to 'more than one of its countries'. (Worboys 1996: 108) It funded dominion research that might assist primary industry across the Commonwealth, the dominions and

colonies thereby continuing to be defined as sources of food and fibre for British people and industry.

National and international impetus worked to entrench government science, rather than industry-based R&D in both Australia and New Zealand. In 1926, encouraged by the sweetener of supportive British funding, Australia and New Zealand both established prominent national scientific organisations: the Council for Scientific and Industrial Research (CSIR, since 1949, the Commonwealth Scientific and Industrial Research Organization or CSIRO) and New Zealand's Department of Scientific and Industrial Research. (Currie and Graham 1966; Robin 1997; Galbreath 1998; Robin and Griffiths 2004). The advent of major new government organisations requires justification to taxpayers, and in this era, the rhetoric of development especially agricultural 'improvement', was never far away. The words of the first Chief Executive Officer of CSIR, David Rivett, were typical:

> Agriculture ministers to the prime material needs of the race, the provision of food and clothing: it is fundamental to existence: without it there can be neither health nor wealth, whether material or cultural …
> Improved agriculture is a means of progress along the road towards removal of all poverty and other material cares and to the provision of opportunity for more and more men and women to seek and gain the higher culture of mind and body of which they are capable.
> (Rivett 1935: 2, 8)

Government science in these interwar years became critical to shaping understandings of environment, especially its potential for development. Expenditure on science was often justified explicitly on these grounds. For example, a flagship division of CSIR was Economic Entomology, which was established to study insects as pests and friends of agriculture. Economic entomology emerged as an important new area for government science in the wake of Australia's most politically successful 'applied biology' story, about the biological control of the weed, common prickly pear *Opuntia stricta* var. *stricta*. On the advice of an earlier Commonwealth Prickly Pear Board, a stem-boring moth *Cactoblastus cactorum* was introduced from Argentina. (Schedvin 1987: 90-6) The moth consumed prickly pear plants releasing between ten and 25 million hectares of brigalow (*Acacia harpophylla*) country in New South Wales and Queensland. Between 1926 and 1930 the moth ate through something like 10,000 tonnes of prickly pear, impressing all of the success of scientific solutions to agricultural problems. (Rolls 1984: 440-2). Such successful science was popular with government ministers, and they made it clear it was one of the things that justified 'science for the nation'.

3 A FORESTRY PROFESSION FOR THE NATION

The management of Australian forests professionalised steadily, but was very much a State-by-State proposition, beginning in the 1880s. In the interwar years professional forestry began to develop a more explicitly scientific vision for itself, and to further build strong ties to government. A ministerial introduction to the first Report of the Director of Forests in Queensland in 1918 described forestry as 'that nationalised form of farming for which Governments are held peculiarly responsible.' (quoted in Carron 1985: 101). Interstate forestry conferences, beginning in Sydney in 1911, served to strengthen isolated foresters working in the different states, and provided impetus to lobby for better legislation to protect forests in every state and New Zealand. (Carron 1985). Scientifically-based forestry services and Forest Acts, were established in all states between 1916 (NSW) and 1920 (Tasmania), and these gave forestry some independence (more or less) from Lands Departments. Forest science at this time was based on international, especially imperial and German, best practice. (Dargavel, 1995: 65-7).

Lane Poole's training was in France, at Nancy, but German professors had stamped its style. He came with imperial experience from the Cape Colony, Transvaal and Sierra Leone to the position

of Conservator of Forests in Western Australia in 1916. Perhaps because he was the senior forest professional least happy with his state's *Forest Act* (Western Australia 1919) and one of the most internationally experienced, he was one of the most prominent in articulating a role for national government in protecting and managing forests. (Carron 1985: 144-7.) Lane Poole's impassioned plea in 1919 for 'A Forest Policy for Australia' grew out of a certainty that private commercial enterprise could not be trusted with managing forests. The saw-millers of the dominions, he argued, no longer just cut timber to assist land settlement, but cut 'timber anywhere and everywhere', attacking whole forests and reaping crops as quickly as possible. (Lane Poole 1919: 309-10). In a paper that predated the Bruntland Report (WCED 1987) by nearly seven decades, he argued that only a national government could be responsible for what we would call today 'intergenerational equity' in forest management:

> … the forest is an everlasting source of wealth, and is not the property of one generation alone, but of the nation for all time. (306)

The national importance of forests was tied to more than the timber industry: climate, water and soil all depend on forests. Indeed agriculture itself needed forests, Lane Poole (1928) argued:

> Another danger that follows the denudation of land …is the rise in the saline content of the soil; it frequently becomes so salt as to make agriculture impossible. So are deserts formed. (723)

Forests were a defence against desertification in mallee country and a 'great sponge', essential to water conservation in mountainous country. A forest was not just about trees: it was 'the mother of the rivers'. Forests offered services essential to land, rivers and weather.

How then could a national government contribute to ensuring benefits for the nation for all time (without robbing the states of their income as forest managers)? Above all, by increasing the number of expert foresters, which in Australia, he declared, could 'be counted on the fingers of one hand'. He recognised the historical trend that meant that organised forest science began when forests ran out, or nearly so, but deplored the choice of Adelaide for a forestry school too far from 'practical experience …in a forest under sound sylvicultural management'. (Lane Poole 1919: 342). Thus began his campaign for a more national and professional approach to forests, and incidentally flagged his personal interest in moving into the national arena. When his resignation from his position in Western Australia was accepted in October 1921, he redirected his considerable passion and energy to national forestry projects, beginning by officially representing the Commonwealth Government at the First Empire Forestry Conference in London. The 'national' so often demands that international dimension. Lane Poole, was not just a nationalist, he was an internationalist, concerned with Australia's profile abroad.

The international dimension also provided different opportunities to show scientific leadership. Lane Poole undertook an official survey of the timber resources of Papua and New Guinea, largely unexplored in 1922-1924. (NAA, 2000; Bright Sparcs, 2004). Inventories of forests were something many state foresters were keen to implement at this time, but often they did not have the time or the means to take advantage of technological advances. In 1920, for example, Owen Jones advocated aerial survey for the forest resources in Victoria (many of which were in inaccessible, but rapidly developing Gippsland mountains). But the first aerial forest survey was not until April 1930, when it was the Commonwealth (through the Federal Air Board) that sponsored a survey of north-west Tasmania. (Carron 1985: 71). In the mid-1920s Lane Poole articulated his concerns about Australia's lack of trained foresters and denounced the quality of science in the *Australian Forestry Journal* (an initiative by the New South Wales Forestry Commission to promote interstate collaboration.) These were critiques that served to carve out a space for the Commonwealth in forestry science, even if it was never going to be allowed to take primary management responsibility for State Forests. Education and scientific training became increasingly central to Lane Poole's

moral and civic national forestry, as he found that forest practice could not be wrenched from the states and entrenched industry groups. Despite the passionate rhetoric, all his calls for the allocation and permanent reservation of '24½ million acres' for 'the wood requirements of a population of 38 millions' fell on deaf ears. (Lane Poole 1928: 724; also 715 (same acreage, 28 million population). Also Lane Poole 1919). His efforts to represent forestry management as 'national duty' to the 1927 Royal Commission on the Constitution met sturdy opposition from the States, whose incomes depended on forest revenues. (Carron 1985: 246-7).

4 THE COMMONWEALTH FORESTRY SCHOOL

Lane Poole's centrality to Commonwealth and scientific forestry training was endorsed with his appointment as Forestry Advisor in 1925 and finally confirmed with his appointment as Inspector-General of the Commonwealth Forestry Bureau in 1927, a position he held until the end of the next war in 1945. He moved to Canberra soon after he gave his 1926 presidential address to AAAS. The speech to Australia and New Zealand's leading scientific audience was an ideal vehicle for establishing national (and nationalist) credentials and for nationalising professional forestry science. For each of the six states he was able to speak precisely about land settlement schemes that had sacrificed good forests for bad agriculture. Since the talk was delivered in Western Australia, and he was already on the record as critical of this state's forestry record, the locals came in for some sharp comments:

> This State has the worst record of all. She possesses the finest hardwood best in Australia, and these jarrah forests grow on the poorest of poor laterite gravels. It would have been thought that the most purblind of land settlement enthusiasts would have seen the hopelessness of trying to put farmers on such country. (Lane Poole, 1928: 721)

Thinking about the future, and not immediate returns was the forest conscience of Lane Poole. He also considered the matter of dissemination of this conscience, and was a staunch advocate for the Forestry School in his role as Acting Principal. Within its first year of establishment, the Forestry School had a solid 'brick building 165 feet long by 55 feet wide' with 'all the woodwork, from rafters to floor joists' of Australian timbers. It held a museum of wood samples and an insect collection, a library and 16 students from all six states, all but one nominated by their State Government. (Lane Poole, 1927: 11-12). Importantly, after the criticism Lane Poole had made of the Adelaide forestry school, it was situated in a forest. Located three miles from the centre of Canberra, it was 'actually within the boundaries of the main Arboretum'. Wednesdays were 'forest days' for practical work in the forest or plantation, whilst the rest of the week was devoted to science and commercial practice, building on the two years University training required as a minimum prerequisite for the course. Overarching the program was a moral imperative defined by the logo chosen by Norman Jolly, the first Principal of the School: *Mihi Cura Futuri* [my care is for the future]. Lane Poole, at the end of his first year as Director of the School, translated this even more strongly as 'I serve posterity'. (Lane Poole, 1927: 10).

5 SERVING POSTERITY

Public education programs that assign moral values to nature have a long history in Australia, where so much of environmental management and its associated sciences have long and strong associations with government, not the corporate or philanthropic sectors. Forestry provides an interesting case in point, where, despite tensions between state and federal government interests, 'building a forest conscience' was regarded as a national duty, particularly in relation to land-settlement in the 1920s, and fire in the 1940s, following the major fires of January 1939. (Robin 1991). Lane Poole's passion for teaching science – both to the political leaders of the nation, and to the forest

managers – was part of a national civic duty, a forest conscience, and very much the trope of his era.

Moral frameworks are still powerful in justifying the state's domination of natural resource management. Despite the well-known short-sightedness of politicians with three-four year terms, a concern for intergenerational equity is an overpowering argument for institutions bigger than single human lifetimes. Scientific expertise is still advanced as a key to 'the future'. In a secular society without prophets, knowledge has a high status, and scientific knowledge is deemed more certain (or at least less uncertain) than other ways of knowing. In 1935, when David Rivett declared a scientific manifesto, he drew strongly on the distinction between state and religious belief that is crucial to the Australian Constitution:

> Though neither prophet nor preacher, I claim the right to utter a creed: 'I believe in knowledge as the one and only basis for human development and in the pursuit of knowledge as the highest task of man.' If the word 'nature' be used in its proper sense, which is so wide as to make the term 'supernatural' merely absurd, then the road to knowledge is by the study of nature. (Rivett 1935: 1)

Rivett betrays his background as a preacher's son in his style. His words were chosen to reassure both governments and the public in the uncertain futures of the 1930s. While Lane Poole's speech had to counter an excessive urge to develop land with 1920s optimism, Rivett had the advantage of promoting science in the context of a major depression with high unemployment, and environmental disaster evident in the major dust storms of the dirty thirties. The way beyond immediate economic pressures and short-term thinking was a scientific horizon, a light at the end of the tunnel of a negative present. Long-term thinking is particularly important for lifecycles and ecosystems that function in frameworks well beyond one financial year. Trees, soils and other non-human elements of the natural world are often therefore regarded as sites of scientific expertise. The rhetoric of long-term futures can therefore reinforce scientific authority across the wider 'environment'.

The latest version of the forest conscience, with intersecting concerns for economy, ecology and the national interest, is 'ecosystem services', which seeks to value nature in ways that politicians can understand and economists can measure. Lane Poole's forests were 'great sponges' or 'mothers of rivers'. Today the talk is usually about biodiversity, an ecological accounting system that values genetic, species and whole ecosystem diversity.

The cultural, political and international dimensions of entrenching science in policy and institutions have parallels with the 1920s despite very different historical contexts. Ecological science has a particularly high visibility in Australia. Unlike the other 178 signatories to the Rio Convention, Australia chose to call its path to sustainable development 'ecological'. 'Ecologically Sustainable Development' (ESD) was enshrined in 123 pieces of State and Federal legislation by 2000 (Stein, 2000: 3-23). ESD and its institutions reinforce ecological science as a paradigmatically central element of environmental management. ESD would have pleased Lane Poole, who was also concerned for whole ecosystems, and valued his entomological cabinets as well as his herbarium specimens and hand samples of wood.

The biggest changes are not in the moral imperatives or the economic justifications for preserving biodiversity, but the fact that they now apply to land (and sea) beyond the reserves system. The style and justifications for scientific research have changed surprisingly little. Conserving biodiversity, one reads in the popular brochures prepared by CSIRO, is essential because everything depends on the 'services' of biodiversity and functioning ecosystems:

> Many important industries like tourism, agriculture, forestry and fisheries depend directly upon biodiversity … An environment rich in biological diversity offers the broadest array of options for sustainable economic activity, for nurturing human welfare and for adapting to change. (CSIRO, n.d.: 2)

This is still nowhere near a morality based on the Leopold ethic of 'thinking like a mountain', of treating non-human species as ethical beings. Nor does it allow for a science that is unfettered by national usefulness. Under the ecosystem services paradigm, non-human nature is justified economically in service of agriculture, and perhaps culturally and aesthetically as well in the context of eco-tourism. Justifications given for funding biodiversity research depend strongly on service to human needs. The danger in government science is that it is limited by its service ethic. The limitations to 'science in the national interest' were articulated by David Rivett:

> [I]f any iconoclasts wish to kill literature, or music, or art of any kind, or science, let them ensure that there shall be produced in these lines of human activity only that which in their view is certain to prove of direct usefulness to the nation. Experience has shewn that controlled planning leads inevitably to closure of the fountain sources of human inspiration. (Rivett, c.1947: 3)

But governments do not wish to hear such messages, or fund curiosity-driven research. In 1949 Rivett was relieved of his position of Chief Executive Officer of CSIR, at least partly because of his idealistic views on the free exchange of scientific ideas.

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