4

Environmental Wicked Problem-Solving: A Case for History

Lizzie Summerfield

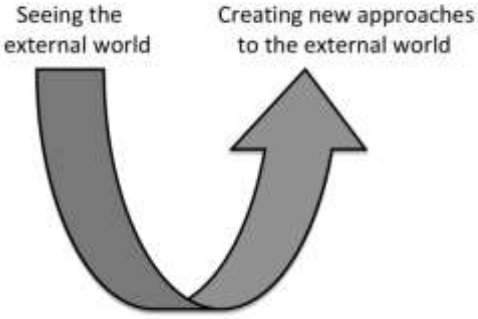
Introduction

In 2007 the Australian Public Service Commission published 'Tackling Wicked Problems: A Public Policy Perspective' (Australian Government 2007). In the Foreword the Commissioner notes that critical to such problem solving is 'thinking that is capable of grasping the big picture, including the interrelationships among the full range of causal factors underlying them'. Climate change and land degradation are cited as two of the four examples of such complex problems. While such problems may lack precedents in their specific substance, that does not mean they need to be discussed in the abstract language of the completely unknown.

Historical case studies can contribute concrete models for approaching environmental problems of similar complexity and uncertainty in the past, and models of thought and action for their solution which we have forgotten in contemporary policy-making. An implicit dismissal of the value of historical thinking as a contributor to problem-solving is established early in the Government's paper, with the declaration that wicked problems require 'innovative, comprehensive solutions that can be modified in the light of experience and on-the-ground feedback'. They pose challenges to 'traditional approaches to policy-making and programme implementation'. 'Innovative' is not a word that connotes historical, while 'traditional' is one that does. But an examination of the ways in which successful environmental entrepreneurs lead thought and action to address such complexity in the past may indeed now hold 'innovative' approaches, given the lack of attention paid to the past in formulating policy for the present and future.

Two nineteenth century social entrepreneurs, George Goyder in Australia, and Gifford Pinchot in the US offer lessons learnt in 'tackling' the innovation of forestry in their countries. They can be seen as systems thinkers before the invention of the term by management research in the 1980s (Meadows 2001). And their leadership styles can be interpreted through the systems thinking Theory of the U, which argues the importance of considering not only the 'what' and 'how' of leading but the 'who' of the leader (Senge et al. 2005). In turn, their case studies contribute to an elaboration of theory as a basis for contemporary leadership training for tackling wicked problems.

The U refers to the following diagrammatic representation of the theory:



Source: based on P. Senge, J. Jaworski, O. Scharmer and B. Flowers, *Presence: Exploring Profound Change in People, Organizations and Society*, London, 2005

Despite their striking differences, including hemispheric, generational, and wealth, Goyder and Pinchot shared an equally striking similarity in learning for environmental leadership. They were each taught to learn how to learn in ways educators would now call student-centred. Essential to the learning of each was their engagement of all of the human faculties for apprehension: head, heart and hand. Their intellectual, affective and experiential capacities were combined to effect the innovation of forestry in their different countries (and in the British Commonwealth in the case of Goyder).

Tackling the wicked problem of forestry's innovation: Australia and the United States

Australia: George Goyder and the 'who' of leadership

Goyder was Surveyor General of South Australia from 1861 to 1893 (Sheldrick 2013). By the late 1860s his environmental knowledge of the colony led him, in cooperation with sympathetic Member of Parliament Friedrich Krichauff, to push for legislation that would secure public lands as forest reserves for the production of timber in settling the young colony (Summerfield 2015). The record of debate in the South Australian Parliament demonstrates a range of contested and powerfully held beliefs centred on such issues as the scientific theory of rainfall's relationship to forest plantations, especially the potential to effect transformational climate change through forestry; the political economy of land distribution between the state, agriculturalists and pastoralists; the proper role of government and individuals in forest tree planting and management; and the duty of sustainable natural resource management for future generations.

Innovating forestry: patience, persistence and compromise

It took three years of perseverance, persistence and compromise by Goyder and Krichauff inside and outside of Parliament before a very modest *Act to Encourage Forest Tree Planting* by private landholders was passed in 1873 (Sheldrick 2013). More importantly, the matter of public forestry had gained enough traction for Goyder to begin to employ modest resources from the Department of

Lands in planting reserves - not least through the comprehensive coverage given to Parliamentary debates in the local press. The incentivised scheme for private landholders to plant forest trees only ever attracted one applicant, but by 1874 Krichauff was back in Parliament championing a bill to establish a forest board in South Australia to actively manage the implementation of public forestry (Summerfield 2015). It would be the first in Australia, and the first in an independent colony of the British Commonwealth (Robinson & Johnston 2001). But it would take almost two years of protracted, circuitous debate to pass the *Forest Board Act* and then only with modest funding.

The draft clauses for the management structure, written by the Department of Lands to facilitate the passage of the legislation, backfired. Many Members of Parliament latched on to the minutiae of detail and lost sight of the big picture. Should Board members, for example, receive a one pound sitting fee per meeting? On the one hand this demonstrated the importance of the work they were doing on behalf of the colony. On the other payment would likely attract the unworthy seeking to maximise their financial gain by meeting often and unnecessarily. A modest board of five was the eventual result with Goyder appointed as reluctant chair: an addition to his already expansive portfolio (Summerfield 2015).

It would take a further seven years of holding fast to a vision of public forestry to enable sustainable settlement before the Department of Woods and Forests was created. It was a messy journey marked by two major conflicts that finally caused the implosion of the Board. These were the belief that plantation forestry in the north of the colony would produce transformational rainfall; and the associated view that forest reserves should be for the planting of forests only, excluding small scale horticulture for the production of fruits and vegetables (Summerfield 2015). Goyder, who had demarcated the line of reliable rainfall in the colony in 1865 from careful observation of patterns of vegetation and rain over fourteen years, resisted the views of other Board members on both counts. His opposition was led by the Conservator of Forests, John Brown, appointed for his scientific credentials from Scotland and who had arrived in the colony in 1878 to take up the post. Goyder's employment of scientific method stood in contrast to Brown's application of a scientific theory of rainfall (Summerfield 2015).

Goyder's concern to balance an economy dependent on sustainable farming with equally sustainable natural resource management stood in opposition to the singular purpose and vision of the rest of the Board. Where the earlier legislative debates had suffered from the opinions and involvement of too many in Parliament, the implementation debates suffered from the contested expert views of too few. Conflict escalated from 1880, driven by Board member and ex-Premier B.T. Finniss, with rational differences becoming heavily personalised and politicised. Goyder's efforts at reconciliation and compromise were finally met with the resignations of all Board members (Summerfield 2015).

Rather than heralding the collapse of forestry, the Board's implosion instead enabled the creation of the Department. A powerful enabler of this final acceptance after twelve years of forestry as legitimate public business, was Goyder's initiative in 1875 of inviting the public press to attend and report on all meetings of the Forest Board. Growing public engagement in the innovation was clear from the increasing letters to the editors expressing views on forestry matters, including the conflicts in the Board. Controversy seems likely to have raised even greater public awareness of forestry. Brown too had helped elevate the status and profile of forestry. He was a prolific writer, like his father, and advocate for forestry, almost evangelical in his wish to engage the farmer and city dweller alike. But he, with his fellow Board members, and many Parliamentarians before him, lacked Goyder's ability to see forestry as one part of a whole system of settlement. He read his environment holistically across its social, economic, physical and political dimensions. They thought instead in terms of singular and absolute truths: the self-evident public good of exclusive forest reserves whatever the state of development of the economy and the competing needs of settlers in it; the absolute truth and universal applicability of scientific theory rather than the importance of the scientific method and the contingent nature of theory (Summerfield 2015).

Uncertainty, experimentation and iterative progress were inevitable features of innovation for Goyder, but not for the rest of the Board. Were these innate leadership traits of the key figures or had they been learned? The evidence suggests the early learning environments of Brown and Finniss had actively encouraged the leadership they displayed in forestry. By contrast, Goyder had been taught to learn how to continuously read and learn from an inevitably constant state of change. The 'who', 'what' and 'how' of their adult professional selves could be traced from their educational histories (Summerfield 2015).

Goyder's capacity for social innovation was fostered by his early education in a method that used the child's inherent interests as its starting point, and included her/his rationality, emotions and senses (Sheldrick 1999; Summerfield 2015). Interestingly the particular eighteenth century methodology by which he was taught, the Pestalozzian method, is being revived and adapted by the European Council as one highly suited to the needs of twenty-first century education (Huber et al. 2011). Less important than the methodology itself are its foundational principles, summarised by one commentator as the three savoirs: *savoir*, *savoir etre* and *savoir faire*. Elsewhere neuroscientists have described the approach to learning as a twenty-first century counter to Descartes' pronouncement: 'I think, therefore I am'. Instead, they argue, this should read: 'I feel, therefore I learn' (Huber et al. 2011). A critically important complement to Goyder's interdisciplinary thinking about forestry was the engagement of his heart in forming judgements. He had an ideal vision of a civil society aspired to in the original planned settlement of South Australia and was revealed succinctly in his report to Parliament in 1870 of his review of the land laws of Victoria (Summerfield 2015). This had convinced him that survey before settlement was essential so the city plan of Adelaide could be replicated throughout the colony, not for aesthetic purposes but for civic. The surrounding belt of parklands contained within it the essential elements of a civil and humane settlement: schools, and other community services to which everyone should have equal access. The conservation and proliferation of forests were, apart from any potential as an export industry, such an essential service in the nineteenth century. Reserves needed to be replicated in the same way as the design of cities and townships were, to ensure equal access of all settlers to the amenities of a civil society (Williams 2007).

George Goyder's leadership attributes – the 'who', 'what' and 'how' - and their connection to his early learning can be seen and validated in an examination of Gifford Pinchot's, the more celebrated 'father of United States forestry'.

Gifford Pinchot's leadership of United States' forestry

Pinchot succeeded, under Theodore Roosevelt's presidency, in establishing the first Forest Service in the United States (Miller 2005). Even though forestry, particularly deforestation, had been a concern of individuals and government since the 1870s in the US, the efforts by mostly German-trained scientists to raise the profile of public and private forestry had been diligent but modest in outcomes (Steen 2001). Pinchot was the first US-born and trained professional forester. Though trained in France under the tutelage of German-born Dietrich Brandis, he became impatient with the focus on theory over practice in his education, and with the assumption that forestry training itself would be sufficient to secure public attention and resources to pursue sustainable forestry practice in the US.

Pinchot's choice of career had been on the advice of his father, James, whose father and grandfather had been amongst those first settlers in Pennsylvania to clear-fell trees for commercial purposes. James had left Pennsylvania to become a self-made entrepreneur in interior decoration, a living that took account of and helped to develop his aesthetic interests and patronage of the arts, particularly the landscape paintings of the Hudson River School (Miller 2005). He and his young family were amongst those Americans in science and the arts who spent time in France in the second half of the nineteenth century (McCullough 2013). James' father and grandparents had been émigrés in the early nineteenth century following Napoleon's exile, so he went with the additional aim of discovering more of his heritage, including the republican sympathies between France and the US. A wealthy retiree by

his early forties, he had time to devote to the careful consideration of his children's education, beginning with Gifford's. His first son had been born months after the end of the American Civil War and the family's time in Paris coincided with the turmoil of the Commune, so that reflection took place in the context of the reinventing what constituted a humane, civic society (Summerfield 2015). General William Sherman, architect of the decisive conflict on the War, and himself an educator, was a close family friend with a profound interest in the rebuilding of such a society (Miller 2005). James Pinchot also sought out other educational thinkers of the day who, like Pestalozzi, thought about educational method against the background of social ideals in an industrialising and revolutionary global atmosphere. These included Ralph Waldo Emerson, Henry David Thoreau and Herbert Spencer. Interestingly these men were also influenced by Pestalozzi and Swedenborg. Like Pestalozzi, Emerson said 'the secret in education lies in respecting the student' (Summerfield 2015).

James' advice to his young adult son to become a forester was prompted by a mix of these large social and political questions, forestry's place in providing the resources and the aesthetic landscape of a rebuilt republic, and his son's manifest and persistent fascination with the biological world. Gifford's education fitted the family's peripatetic lifestyle. His childhood learning took place across continent and cultures. It occurred inside and outside of schools until he reached late secondary education. James saw to it that Gifford's education combined sedentary learning from books with active, experiential learning out of doors. And a mixed classical curriculum always contained Gifford's proclivity for learning more about the biological realm. The summary phrase that describes Pestalozzian educational philosophy of 'head, heart and hand' was evident in the foundational principles of Pinchot's education (Summerfield 2015).

Gifford Pinchot, like George Goyder, received an education deliberately designed by his parents to foster an internal system of humanist values and an external system able to think across boundaries of scientific, economic, social and political. The Scientific Revolution of the nineteenth century, which had begun to quarantine nature as the subject of physical science alone, was insufficient in a household with a more holistic understanding of the world. Pinchot's diaries reveal his continuing interest in adulthood of language, literature, religion and political philosophy, which provided a context in which he could apply his developing scientific interests. His arrival at holistic, or systemic, thinking about forestry as a component part of a civil society is revealed in the following quote:

> Equality of opportunity, a square deal for every man, the protection of the citizen against the great concentrations of capital, the intelligent use of laws and institutions for the public good, and the conservation of our natural resources, not for the trusts, but for the people; these are real issues and real problems. Upon such things as these the perpetuity of this country as a nation of homes really depends (Pinchot 1910).

Common ground: the 'who' of Goyder and Pinchot

In the end, the differences of country, of generation, of wealth, of position, of society that separated Goyder and Pinchot had a less profound effect on the 'who' of their leadership than the similarities of affective and intelligent parental engagement and the educational principles that framed and continued to shape their learning. Each child learned to consider his natural, social and physical environments as a whole first and as separate parts in the service of the whole second. Each child learned to think not only with their head but also with their heart and with their senses, so that later the 'what' and 'how' of forestry were determined by a holistic approach to its practice and to its role in civic society, filtered through a holistic and continuously maturing knowledge of 'who' each man was.

The significance of Goyder and Pinchot's story

Policy-making and implementation is validated by a strong evidence base. So is management theory and practice. But each of these fields has a preference for the quantitative and scientific disciplines. The humanities in general and historical thinking in particular are seen to be of minimal relevance. Even the sub-discipline of systems thinking, widely acknowledged as playing a significant role in understanding environmental and sustainability issues, tends to either dismiss the past or to look to it as the provision for the source of current problems. The rationale of the Theory of the U provides a powerful argument for interrogating the 'blindspot' of leadership research: the 'who' rather than the more typical 'what' and 'how' of leadership.

The story of Goyder and Pinchot, framed by this theory, argues a place for history in the theory in two ways. Firstly it provides a historical case study that supports the validation of the theory. The 'what' and 'how' of both men's leadership of forestry was profoundly influenced by who they each were at their core. Both had a highly developed sense of who they were and what they believed a civil society looked like, and where forestry sat inside this big picture, but their stories expand the concepts of the 'what' and the 'who' of leadership. Each man read and reflected on forestry across the discipline boundaries of science, social science and humanities; they read their environments not only as physical phenomena but also as social, cultural, economic and political. How they acted was dependent upon this interdisciplinary reading but the expanded definition of the 'who' was critical here. It meant that not only were these rational or intellectual dimensions (head) of the problem considered; they were filtered through the empirical observation of these different environments, and through the affective component of determining for oneself what an ideal civil society looked like. The 'who' comprised the head, the heart and the hand, and understanding the successful adult who, for Goyder and Pinchot, was made clearer by an examination of their learning histories.

Systems thinking has under-utilised the positive lessons history can provide. Because policy and management studies and practice do not have a culture of historical thinking, it means there exists in the actors of the past a repository of innovative thinking and outcomes waiting to be tapped for leadership thinking and training in environmental wicked problems like climate change and land degradation. The personal learning histories of individual leaders or aspiring leaders can be a source of identifying undeclared and perhaps misguided operating assumptions that can then be corrected for the improvement of the 'what' and the 'how' of leadership.

Conclusion

Goyder and Pinchot's educational and professional histories of successful environmental entrepreneurs have contemporary relevance because:

- they teach us to think about the wicked problem of climate change across boundaries of science, social science and humanities;
- they teach us to make explicit the values and affective base of our thinking (and that everyone's rational thinking contains this);
- they can be used as stimuli or provocation for contemporary thought leadership training in environmental wicked problem-solving; and
- as highly accessible, evidence-based stories, they can be read by the general public – adults and children – as models of how they can effectively engage in the climate change debates.

In summary, Goyder and Pinchot's stories offer models we have forgotten to remember in overlooking history as a repository of relevant knowledge. They satisfy and demonstrate the Commissioner's requirement for wicked problem-solving with which this piece began. They show 'thinking that is capable of grasping the big picture, including the interrelationships among the full range of causal factors underlying them', and the learning principles from which that capacity comes.

References

Australian Public Service Commission 2007, *Tackling Wicked Problems: A Public Policy Perspective:* http://www.enablingchange.com.au/wickedproblems.pdf, accessed 14 December 2010.

Huber, J. et al. 2011, *Teacher Education for Change. The Theory behind the Council of Europe Pestalozzi Programme*, Council of Europe Publishing, Strasbourg .

McCullough, D. 2012, *The Greater Journey: Americans in Paris.* Simon and Schuster, New York.

Meadows, D. 2002, *Dancing with Systems.* Systems Thinker 13:2, 2-6.

Miller, C. 2011, *Gifford Pinchot and the Making of Modern Environmentalism*, Island Press, Washington.

Pinchot, G. 1910, *The Fight for Conservation*. Doubleday, New York.

Robinson, R. and Johnston, P. 2001, *Forestry in South Australia.* The Wakefield Companion to South Australian History, Wakefield Press, Adelaide.

Senge, P. Jaworski, J. Scharmer, O. and Flowers, B. 2005, *Presence: Exploring Profound Change in People, Organizations and Society*, Nicholas Brealey, London.

Sheldrick, J. 2013, *Nature's Line: George Goyder, Surveyor, Environmentalist, Visionary,* Wakefield Press, Adelaide.

Sheldrick, J. 1999, *Nature's Line: George Goyder over South Australia.* Ph. D. Deakin University, Melbourne.

Steen, H. 2001, *The Conservation Diaries of Gifford Pinchot*. Island Press, Washington.

Summerfield, E. 2015, *Learning and Leadership for Complex Environmental Problems: George Goyder and the Innovation of Forestry in Australia*, Ph. D. University of Melbourne, Melbourne.

Williams, M. 2007, *George Woodroofe Goyder: A Practical Geographer:* the Presidential Address, 1978: 84.