Different Paradigms of evidence and knowledge – recognizing, honouring and celebrating Indigenous ways of knowing and being

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There is resurgence in interest about evidence-based policy from critical political perspectives and the place of evidence in various theories of the policy process including such works as those of Cairney (2016), Parkhurst (2017), Newman (2017). These exchanges, however, remain firmly hinged to western philosophical assumptions. Furthermore, the practice and disciplines of public administration and public policy have prioritized scientific and economic technocratic decisionism (Majone 1989) during the 20th century. Historically and more recently with the questioning of science, however, there is recognition that these realms of policy and administrative action rely on knowledge beyond science and economics including the power of emotion, persuasion, argument and public deliberation (Majone 1989).

The facts-values dichotomy has come to a head in the aftermath of Donald Trump's election. Is expertise dead? What role does evidence play? What constitutes evidence? Whose evidence? The current charged context of post-truth politics holds silver linings. Opportunities abound in the west to explore the role and nature of evidence and expertise and to contemplate possibilities of embracing knowledge from other civilizations and disciplines.

This article proposes that public administration can benefit from recognising, honouring and celebrating Indigenous ways of knowing and being. It traces some of the contemporary reasoning in favour of such acknowledgement and embrace, noting Wolfgang Dreschler's (2015) work on public administration and civilizations, Maurizio Iaccarino's (2003) arguments on science and civilizations, and Giandomenico Majone (1989) and Paul Cairney, Kathryn Oliver and Adam Wellstead's (2016) positions on public administration and evidence.

After positioning public administration as being fertile for openness to Indigenous knowledge and perspectives, the article turns to practical examples to demonstrate how the field of public administration and the practice of policy making will benefit. Potential barriers to uptake are discussed, but the article closes with a call for dedicated and respectful work by the discipline and practitioner communities to acknowledge and honour Indigenous ways of knowing and being as fruitful bearers of improved public administration and policy making in Australia and beyond.

In making this case, the article advocates that any tilting in favour of recognizing Indigenous knowledge must be done within the context of self-determination and with appropriate recognition and upholding of Indigenous philosophy and research methodology including the right of Indigenous peoples to withhold their knowledge and question motives (Chilisa 2012, Lambert 2014, Mertens et al 2013, Nakata 2007, Wilson 2008). In seeking to respect and embed Indigenous ways, they should not be co-opted, lest further injustice prevail. Instead, genuine partnership is needed between western and Indigenous peoples to forge new relationships and (re)newed ways of knowing and being. Movement towards authentic and respectful privileging of Indigenous ways of knowing and being offers genuine potential to address decades of failure in public policy pertaining to Indigenous peoples as well as opportunities to promote the wellbeing of all peoples.

Public Administration and civilizations

Wolfgang Dreschler (2015) argues that a convergence of public administration in the modern era has seen western public administration, or more particularly and accurately, Anglo-American public administration, dominate what we call global public administration. International organizations such as the Organisation for Economic Co-operation and Development, United Nations and International Monetary Fund prioritize, prescribe and proselytize administrative reforms that meet Anglo-American criteria and the western paradigm. Countries that don't look like the western model are seen as lagging behind the Anglo-American gold standard.

Implicit assumptions are built into this privileging of the western paradigm as best practice (Dreschler 2015:105). First, that there is a single public administration standard that applies to all humanity to which we should all aspire. Second, privileging the Anglo-American approach suggests that public administration is about a form of governance that emphasises execution separate from politics and as opposed to the attainment of goals (2015: 106). This is, as Dreschler notes, both misguided and counterproductive. Many of the imposed western reforms are not producing material improvement in many countries and are wasting valuable resources. Furthermore, the assumption that west-is-best is merely that: an assumption. Non-western paradigms are securing their own ways of moving towards good public administration, ones that not only might suit their own communities but which might inform western approaches to both public administration and politics. Drechsler (2013), for example, documents connections and divergence between long-established Chinese approaches and modern public management.

The global preoccupation with the Anglo-American ideal type – which particularly emerged as the dominant form of the western paradigm due to the forces of colonisation and the modern hegemony of secularized capitalist liberal democracy – plays down the possibility and desirability of other administrative forms that have proven independently successful throughout history. Dreschler points to the classical Chinese Confucian and Islamic Caliphate forms as examples here. The sophistication and creation of modern and highly successful states by Chinese-Confucian and Islamic-Ottoman public administration should not be underestimated or dismissed. Surely, he asks, we should pay attention to lessons they have to offer and new options that might be possible “...even if we believe in common goals and even some common best practices” (Dreschler 2015:124)? This point is especially pertinent to this special issue's attention to the theme of evidence-based policy making in Greater China and Australia. Just as we should pay attention to what Chinese-Confucian public administration has to say about evidence, so too should Australia turn to the administrative wisdom of Indigenous peoples that predated the imposed advent of the Anglo-American standard. As will be argued, this benefits not only Australia but also China, as well as the broader world.

Modern American and British superiority in the public administration 'industry' was realised, to some extent, through the elite achievements and credentials of the Oxbridge and Harvard

education systems and the selling of practitioner-led expertise since the Blair era (see *The Economist* 2016). This superiority is currently under threat due to the Trump and Brexit forces beleaguering their democracies and the rise in superpower and trading status of China and India. It is likely that education and training leakage is now occurring with many international students preferring to study in other parts of the globe more amenable to a global citizenship philosophy (see for example Bendix 2017; Pells 2017). Opportunity abounds for countries such as New Zealand or Canada or Australia – who top the Blavatnik School (2017) International Civil Service Effectiveness Index – to wrest the mantle of western superiority from their bigger, more prominent cousins or – hopefully – to forge new ways that move beyond the universalizing principle to respectfully address or incorporate Indo-Pacific and other traditions.

Dreschler (2015: 108-11) frames the future of public administration as a choice between different trajectories:

- (i) continue a *western* path that tends to absolutize itself and proclaim the universality of its achievements (2015:124)
- (ii) pursue *multicultural public administration* as a possibility that suggests no single model of ideal public administration exists, but that good public administration depends on culture and context and that a patchwork of potentially disconnected models is appropriate; or
- (iii) forge *contextual public administration* where the belief would be that the key to good public administration is to be attentive to culture, context and timing and to shift across time, space and place to learn from others through genuine policy learning rather than policy transfer processes. Here, the notion of good public administration would turn to goals attainment as well as execution and would celebrate many types of public administration as holding ‘goodness’.

Science, Evidence and Civilizations

Dreschler’s arguments parallel neatly with the work of Maurizio Iaccarino (2003:220) who argues that western science has many lessons to learn from the way that other cultures ‘do’ science. As he reminds us:

...all civilizations throughout history have produced and accumulated knowledge to understand and explain the world... science is part of culture, and how ... science is done largely depends on the culture in which it is practised.

The key link in the movement of discussion from Dreschler’s public administration to Iaccarino’s science is the notion of evidence. In Dreschler’s western public administration, scientific notions of evidence are favored as the gold standard of preferred knowledge. This scientific understanding is rooted in European sensibilities and philosophical concepts

emerging from western Christendom. It is important to note the historical context of this privileging of knowledge. Science assumed dominance during the Enlightenment as humanity rejected religion as superstition, framed nature as conquerable, and elevated human capacity as limitless (Funtowicz and Ravetz 1993:741). But nature fought back. The laboratory no longer exercises control over the forces of radical uncertainty and humanity-induced complexity. Environmental, health, biological, security, peace and poverty challenges engulf and overwhelm our safety and stretch our capacities and knowledge realms beyond prediction or management.

Figures 1-5 provide exemplar graphic representations of the western hierarchy of evidence and knowledge. They convey powerfully how modern western science is predicated on a number of key principles outlined by Iaccarino (2003:222):

- Nature is understood by analysing each phenomenon according to a predetermined set of rules;
- Science builds on the past, such that it is incremental; and
- Scientists work on simple systems, which are usually idealized or primitive models of a real situation. They also work at a specific level of analysis.

Together, these principles have led to a reductionist approach to science that has dissected and compartmentalized fields and disciplines in ways that prevent, rather than promote, the integration of results and concepts towards holistic knowledge. Yet science does promote forward- as well as backward looking approaches to evidence by deploying hypotheses and tests. This is hard to do well in the public sector given the heavy price of failure, the burden of misusing public monies and the lottery of postcode reform. Nevertheless, design thinking and innovation fads have in recent times spurred renewal of faith in the possibilities of scientific evidence and technical knowledge.

Yet the selected graphics suggest a struggle. Some might see a trajectory from specialized to generalized approaches to evidence including implied commentary on how modern western science fits into the knowledge sphere. The quote of Bertold Brecht in his play about Galileo, cited in Iaccarino (2003:222) is pertinent: “The aim of science is not to open the door to infinite wisdom, but to put a limit to infinite error”. Others might see in the presentation of Figures 1-8 a recognition that society is wrestling with how to both frame and solve so-called wicked or intractable problems. No single form of evidence and knowledge presents comprehensive neat solutions or ready-made problem definitions. Sullivan (2011:507) discusses this dilemma in Hood and Jackson’s (1991) framing of UK public administration as elevating ‘concrete factual realism’ over ‘argument and acceptance’. Sullivan (2011:509-510) argues that a certain ‘regime of truth’ dominates the modern policy landscape. The regime promotes the simultaneous coexistence of two ideas of truth. The first, a *single* truth attainable through concrete factual realism of the type promoted by technical specialists and Herbert Simon’s administrative sciences. The second, the presence of multiple sources of evidence and *multiple* truths emerging from a range of policy entrepreneurs, pragmatically

connecting through citizen engagement and policy narratives and storytelling to persuade the general voting public as to how society ills might be construed and confronted. Knowledge and knower, according to Sullivan (2011:510) are battling for elevated status; the quest for evidence-based policymaking has ‘generated a disconnection between “evidence” and “argument”’. The struggle depicted in the graphics, then, is between values, evidence(s), knowledge(s) and truth(s).

Hierarchy of Evidence

Figure 1-3 provide a snapshot flavour of the scientific ordering of ‘evidence’ which dominates the western paradigm. Figure 1 represents a classic intra-scientific prioritization of evidence from lowest to highest order rational, positivist value.

Figure 1: Prioritization of evidence (National Health and Medical Research Council 2009)

Figure 2 stretches evidence beyond expertise to include anecdotal observations

A Hierarchy of Evidence

Figure 2: A Hierarchy of Evidence (Petrokovsky and Holmgren 2011)

Figure 3 presents a scientific approach to qualitative research validity.

Figure 3: A hierarchy of evidence for assessing qualitative health research (Daly et al 2007)

Hierarchy of knowledge

Figures 4 bridge the scientific notion of evidence with that of a hierarchy of knowledge. For many, science is still prioritized as the pinnacle of knowledge.

Figure 4: (Source: <https://jocellepgabriel.files.wordpress.com/2012/09/hierarchy-of-scientific-knowledge-pptx.jpg>)

Figures 5-8 show three depictions of the data-information-knowledge-wisdom (DIKW) pyramid. This pyramid is commonly used, especially in the information technology arena. Figure 5 suggests the value of knowledge increases the more it leads to collective action or shared understanding. Figure 6 introduces a temporal dimension to this proposition. Figure 7 turns expertise on its head, with common knowledge elevated as wisdom. Figure 8 translates the knowledge hierarchy into consumer action in the marketing and advertising field. This privileges affective and emotional responses which constitute a form of knowledge and commerciality that is otherwise not identified or valued in the same way by positivist scientific approaches.

Knowledge Management Cognitive Pyramid

Figure 5: DIKW pyramid (Source: https://en.wikipedia.org/wiki/DIKW_pyramid)

Author

Figure 6: Temporal DIKW pyramid (Source: <https://adamjorlen.com/2013/12/08/a-shift-beyond-the-knowledge-society-in-sweden/>)

Figure 7: DIKW <https://adriancolyer.files.wordpress.com/2015/02/commonknowledge.jpg>

Figure 8: Marketing Knowledge Pyramid (Source: <https://ginmecca.wordpress.com/2011/07/25/hierarchy-of-effects-model/>)

What can we learn from these graphic depictions? First, triumphalist self-referencing privileging of positivist science persists, but it has eroded over the later 20th century as other forms of knowledge have (re)emerged as offering valid and useful information and approaches to uncertainty. Indeed, the figures point to a story painted by many authors and commentators that modernity has seen the breakdown of the pre-eminence of western science. So-called ‘soft values’ have replaced ‘hard facts’ as the main game of knowledge acquisition and deployment (Funtowicz and Ravetz 1993:751). Worse, the infiltration of uncertainty has permeated the realm of ethics so that we now confront previously unimaginable and shocking decision-making dilemmas affecting future generations, other species and planetary sustainability (Funtowicz and Ravetz 1993:751).

The prevalence of radical uncertainty, the rise of fear and the advent of complex problems and ‘manufactured risks’ (see Beck 1992 and Giddens 1999) has seen the doubting of scientific capacity to solve issues and a questioning of scientific integrity amidst corruption scandals. We talk of *post-normal science* referring to the use of science where “facts are uncertain, values in dispute, stakes high and decisions urgent” (Funtowicz and Ravetz 1993:744). There are also *trans-scientific issues* (Weinberg 1972) which refer to problems that can be posed to science but not answered by it. The authority of science has not just lost its glow. It has lost its foothold.

Amidst this dismantling of scientific authority has been the haunting reality of the post-truth, alternative fact, ‘truthiness’ universe of the Trump era (see Threlfall 2017). The facts-values dichotomy has returned to prominence as commentators explore the need for evidence. There is a renewed quest for facts, truth and evidence to overcome the partisan, ideological battleground that is now fought on digital and social media platforms, using sophisticated market polling and wedge politics devices. Whose truth? Which facts? Suddenly, discussion concerning the existence and legitimacy of truth, facts and evidence is returning to favor.

Public Administration and Science

Where does policy making and public administration fit in this fluid contemporary legitimacy environment? In many respects, theoretical debates have played out certain of the key issues over history.

Paul Cairney, Kathryn Oliver and Adam Wellstead (2016) suggest that science could helpfully turn to public administration literature to help explain the gap between scientific knowledge and policy action. They explain the important distinction between scientific uncertainty and policy ambiguity. Both refer to realities associated with bounded rationality (Simon 1991; Gigerenzer and Selten 2002). Whereas science tries to fill the void of uncertainty with hierarchies of evidence, policy makers turn to a mix of rational and irrational forces. These forces are pieced together through networks and policy communities where informal and formal rules of the game help structure and frame data gathering and prioritization of information sources with recourse to gut feelings, habits, belief patterns and the emotion of storytelling and narrative.

Cairney et al (2016) in other words, suggest persuasion as a critical force for addressing ambiguity, more so than technical rational recourse to positivist scientific evidence. Scientists think that if they just provide more information to the policy problem, the decision makers will turn to their evidence. The dominance of policy ambiguity and persuasion – how decision makers frame their bounded rationality – however, suggests this will not necessarily be the case. According to Cairney et al (2016) policy making and public administration prizes the connection between empirical facts and human values, not their separation. Until Western science understands this reality, it will not achieve preeminence in its powers of persuasion.

This extremely insightful interpretation of policymaking and public administration needs to be historically contextualised. Cairney et al's (2016) argument is well established from Greco-Roman times – with their upholding of rhetoric and politics as virtuous endeavors – through to the Enlightenment period. Indeed, this is a key argument of Giandomenico Majone (1989) who frames argumentation and reciprocal persuasion as the critical forces over time from the Greek period through which policy makers and citizens deliberate and arrive at moral judgments and policy choices.

Majone (1989) helpfully distinguishes between a range of key concepts such as facts, evidence and truth. Argument, according to Majone (1989:10) "...is the link that connects data and information with the conclusions of an analytic study". It blends a mix of factual statements and propositions with subjective evaluations. These facts, propositions and evaluations together comprise evidence, but evidence is not synonymous with data or information, "it is information selected from the available stock and introduced at a specific point in the argument in order to persuade a particular audience of the truth or falsity of a statement" (1989:10). In the Majone classification, *facts* are a sub-component of *evidence* which is a sub-component of *truth* which is a sub-component of *argument* which feeds into *rhetoric* which is the craft of *persuasion*. Under this model, all disciplines play a role. History

and law contribute concepts such as credibility of expertise or plausibility of argument given that internal validity and competence cannot be demonstrated or taken as given as is the case in science.

The Enlightenment, with its rejection of religion and the emergence of science as a dominant paradigm paved fertile ground for the growth of political science as a discipline during the 20th century. The emergence of policy analysis and public administration as sub-disciplines traded in a revised version of science that preferenced behaviouralism over tradition and revelation (see Ricci 1984). The Taylorist tendencies that dominated the early 20th century were refined during the century as the post-World War eras took hold and then reached a pinnacle of technical rationality with the advent of what in Australia Michael Pusey (1991) called economic rationalism, and what Majone (1989:12) calls decisionism.

Decisionism (see Majone 1989:17-20) grants primacy to economic choice over evidence or rhetoric. It is predicated on rational comprehensive models where the assumption is that of a small number of key actors making calculated choices within specified immediate timeframes over clearly understood and agreed options to reach articulate objectives. No distinctions are made between policies and decision. This allows a common language and process to permeate the policy realm, elevating decisions and decision theory to the pinnacle of the process. Such an approach dismisses prudential judgements and the elevation of process over instrumental decision outputs. Decisionism also ignores the reality that political decisions need to be justified and that justifications often differ from the decision maker's original motives in considering an issue and making a decision.

Decisionism, in other words, elevates technical, mechanistic calculation over messy political and persuasion skills. As Majone (1989:21-22) argues, however, "This image of the analyst's art is grossly misleading". Instead, the requisite skills of a policy analyst "...are not algorithmical but argumentative: the ability to probe assumptions critically, to produce and evaluate evidence, to keep many threads in hand, to draw for an argument from many different sources, to communicate effectively.... The image of the analyst as a problem solver is misleading because the conclusions of policy analysis seldom can be rigorously proved... In all these cases we do not demonstrate, but argue". David Ricci (1984:304, 323) in his epic lament over modern political science summarizes the case saying

...political studies suffer from overemphasizing science while paying insufficient attention to the realm of morals... at least some political scientists should serve as an educational force on the Temple of Science's roof. From there, they should help democratic citizens to think and behave so as to bring reasonable order to a world beset by contradictory conceptions of how civilized people can live together.

This focus on argumentation takes us back to the primal connection between facts and values. Recent policymaking and public administration endeavors have returned the discipline – and to a lesser extent practice – to the prizing of connection between facts and values as

evidenced by the surge in interpretivist and craft approaches to political science, public policy and public administration (see Schwartz-Shea and Yanow 2014; Rabinow and Sullivan 1987; Rhodes 2017).

Where we are now at this particular point in history is an interesting juncture.

Previously, the logic of connecting facts with values would have been anathema to the scientific community. With the challenges to science, however, the possibilities of openness to other civilizations becomes a potential reality. Furthermore, the conflation within public administration of: (a) pivoting in favor of interpretive practice and theory combined with (b) post-truth Trumpism suggests new arenas for our appreciation of evidence and the role of expertise beyond the decisionism of recent Western paradigms.

Indigenous ways of knowing and being

At long last we can return to the potential of Indigenous ways of knowing and being.

Iaccarino (2003:223) suggests that a comparison of western science with traditional knowledge is worthwhile. It warrants a long quote:

Whereas Western science favours reductionist, mechanistic and quantitative methods, traditional knowledge observes natural phenomena from a global point of view. These observations are strictly linked to local culture and to the predominant philosophy.... Cultures from all regions of the world have developed a complex view of nature, rooted in their philosophy, which has led to their understanding and explanation of the natural world. The traditional knowledge of non-European cultures is the expression of specific ways of living in the world, of a specific relationship between society and culture, and of a specific approach to the acquisition and construction of knowledge. This knowledge provides much of the world's population with the principal means by which they fulfil their basic needs. But colonization by Europeans destroyed much of this indigenous knowledge and replaced it with the European educational and political system that consequently devalued what was left of it... Traditional knowledge does not divide observations into different disciplines to the same extent as science, and this more synthetic and holistic approach may help to develop new paradigms for the observation and study of complex phenomena. Most of our observations of the natural world are empirical, and scientists offer a scientific explanation for only a part of them.

In the case of Aboriginal and Torres Strait Islander peoples across Australia, with 65,000 years of enduring civilization (Weule and James 2017) that represents the world's oldest continuing culture, there are numerous examples where Indigenous knowledge presents extremely valuable evidence to feed into policy making and public administration. It is important from the start to remember that hundreds of individual Aboriginal and Torres Strait

Islander nations exist, each with their own unique cultures, practices, beliefs and languages. Within this context, land and water management, species management, weather knowledge, Indigenous medicine, food and plant knowledge, clothing and design knowledge and governance, law and societal practices and knowledge preservation and curation itself (including intellectual property principles) are just some of the areas that present unique evidence bases that warrant attention and respect.

Larkin (2006) reminds us that this acknowledgement has not been present since colonization. Instead, there has been civilizational dominance of white, western assumptions about ontology, epistemology and axiology that stifles Aboriginal and Torres Strait Islander flourishing, not only of their peoples but also of their ways of knowing and being. Philosophical and disciplinary racism (see Nakata 2007) has begun to be acknowledged. It is important in such recognition to highlight that Indigenous evidence needs to be interpreted not just simply as another knowledge base and potential source for action but also as a reflection of a fundamentally different set of values, both at the civilizational, philosophical and research levels (Larkin 2006:24). Aboriginal and Torres Strait Islander evidence should helpfully be attached to Indigenous affairs policy making to provide self-determination pathways for the communities themselves (see for example Naquin et al 2008; Walter and Andersen 2013). This will rightfully align information with values, culture and philosophy (Larkin 2006).

If Indigenous knowledge is to be contemplated for policy making and non-Indigenous use more broadly, however, we have to pay attention to other factors of respect.

Barriers and Respectful Opportunities to promote Indigenous Knowledge Uptake

To start, there are debates as to whether Indigenous knowledge is commensurable or reconcilable to western systems (Nakata 2007:183). Ross et al (2011) explain that Indigenous epistemologies are imbued with personalised, relational, localised, place-based and community-based embeddedness that cannot be undone. Western scientific epistemology, on the other hand, assumes an ‘objective “knowledge without a knower” that can be commodified and traded and dissected in ways that can be not only foreign but offensive to Indigenous values. Ross et al (2011:33) go on to posit a range of similarities and differences that map the two approaches, concluding that they believe there are “good reasons to separate scientific from Indigenous modes of thought” but “important continuities between scientific and Indigenous ways of knowing”.

The significance of distinction as well as linkage rests in the propositions that neither system ought to be privileged or made superior than the other just as neither should be decontextualised or treated as savagery (2011:33-34). There is much to be said here on the comparison of Indigenous and Western scientific knowledge. For now, we can summarise by referring to Ross et al’s (2011:47) rejection of an absolute divide between the two forms of knowledge, with science sharing “certain features with Indigenous knowledge, and likewise

Indigenous knowledge in some ways aligns with scientific reason”. Table 1 reproduces their comparison.

Table 1: Comparison of Western and Indigenous Knowledge

Ways of Knowing	Western/Scientific Knowledge	Indigenous/Local Knowledge
Knowledge Framework	Compartmentalized and specialized; narrowly constituted in a single or limited range of paradigms	Holistic and integrated; broadly constituted in a wide array of paradigms
Knowledge Holders	Individuals or small research teams develop and explore specialist research questions (often rather like a small-scale society); knowledge is objective – knowledge without a knower. Knowledge is ‘true’ because of the rigor of data-gathering and theoretical framework of the knowledge research	Knowledge is subjective and belongs to an individual or group of specialists. Knowledge is shared asymmetrically (based on social relationships between individuals in a society) but is socially constructed, available to all members of society involved in applying knowledge to solve practical problems. Knowledge is ‘true’ because of the social status of the knowledge holder
Knowledge Format	Knowledge is impersonal, factual, data-rich, and deemed to be decontextualized from external and unrelated aspects of society and culture (although expectations and dominant paradigms can influence knowledge application)	Knowledge is culturally and spiritually embedded in a social framework
Methodology	Rigorous, empirical, and objective methodology, based in quantitative data and requiring replicable	Experiential, empirical, and subjective, based in both qualitative and quantitative data and requiring ongoing

	experimentation within rules of logic. Knowledge is theoretically framed, abstract, and universalizing	experiential reinforcement. Knowledge is pragmatic, concrete, and local
Methods	Quantitative, empirical, replicative, and experimental; all results must be empirically grounded	Quantitative, qualitative, spiritual, experiential, replicative, and experimental. All results must be experientially grounded
Transmission	Publication and peer review, rigorous debate and academic investigation/corroboratorion. Transmission is designed to inform other specialists, although interdisciplinary research is becoming increasingly common	Oral (including song and dance) and reviewed by social peers, debated in social circles. Transmission is designed to inform other members of a social group
Application	Problems are resolved by experimental research based on theories that are 'true'	Problems are resolved by application of knowledge that works in accordance with social and normative rules
Knowledge Structures	Institutional	Social and spiritual

Source: Ross et al (2011:52-53)

Second, Indigenous knowledge is often treated as yet another commodity to be traded at the will of colonial forces (Nakata 2007:189-192). It is important that non-Indigenous peoples do not co-opt Indigenous ways of knowing and being for their own ends. As just explained, the commodification tendency of Western knowledge systems is endemic. The intrusion of colonization on Indigenous Knowledge development and progress cannot be undone. What non-Indigenous people and knowledge systems can do is move away from paternalistic approaches that historicize Indigenous knowledge as static when all evidence points to its dynamism, rigor and resilience. They can also self-consciously pay respect to self-determination of Indigenous peoples and ask them what they wish to do with their knowledge not only for themselves and their communities but also for others. If one accepts that "knowledge is power" (Ross et al 2011:65), non-Indigenous people ought to impart and exercise their own values with respect to knowledge including its availability and use. An

important point here is that certain Indigenous knowledge is sacred and that “management of this knowledge involves rules regarding secrecy and sacredness” (Nakata 2007:185).

Indigenous knowledge also ought not be disembodied from its knowers – Indigenous peoples themselves – even in order to help non-Indigenous peoples be more respectful. Much here hinges on the generosity and self-donation of Indigenous peoples. As a non-Indigenous woman I have been exposed only to ‘sharing largesse’ from Indigenous peoples from across Australia, New Zealand and Canada where I have been privileged by great generosity and hospitality. In her work on Aboriginal spirituality and knowledge Vicki Grieves (2009) makes the powerful point that Aboriginal and Torres Strait Islander peoples not only possess Indigenous knowledge as it refers to pre-colonial contact but also particular Indigenous knowledge as it applies to Western knowledge that has been used to repress them as a dominant culture. This critical dialogue with ‘colliding ontologies’ is something with which they are particularly familiar. Despite the antagonism one would expect from such reality, the converse is often what is given. Grieves (2009:7) quotes two Aboriginal people who speak of gifting Australia with Indigenous knowledge:

We are really sorry for you people. We cry for you because you haven't got meaning of culture in this country. We have a gift we want to give you. We keep getting blocked from giving you that gift. We get blocked by politics and politicians. We get blocked by media, by process of law. All we want to do is come out from under all of this and give you this gift. And it's the gift of pattern thinking. It's the culture which is the blood of this country, of Aboriginal groups, of the ecology, of the land itself.

David Mowaljarlai, senior Lawman of the Ngarinyin people of the west Kimberley, addressing a gathering of white people in his country

Many Australians understand that Aboriginal people have a special respect for nature... That they have a strong sense of community... That we are people who celebrate together. There is another special quality of my people that I believe is the most important. It is our most unique gift. It is perhaps the greatest gift we can give to our fellow Australians. In our language, this quality is called Dadirri. This is the gift that Australians are thirsting for.

Miriam-Rose Ungunmerr-Baumann

These quotes speak to me as a non-Indigenous academic woman of both generosity and frustration. Mowaljarlai's words recount something of the barriers to Indigenous knowledge that Ross et al (2011:95-113) document in the realm of natural resource management. These barriers are thematised into two categories: epistemological and institutional. Epistemological barriers largely comprise problems associated with western science recognising value and appreciating the presentation of Indigenous knowledge. Institutional barriers centre around the challenging of Indigenous knowledge to western hegemony and systemic structures that are often paternalistic or racist. Table 2 replicates the Ross et al summary.

Table 2: Summary of barriers to Indigenous involvement in NRM

Barrier	Description
Epistemological Barriers	
A IK not recognized	There is a lack of recognition that Indigenous knowledge once had a place in natural resource management
B Narrow definitions	Narrow definitions of concepts of 'tradition' and 'custom' reduce opportunities for recognition of Indigenous knowledge in modern communities
C Nonvalidation of IK	Indigenous peoples' expertise and connection to the land or seascape are not deemed to have been 'proven' to the satisfaction of scientists and resources management bureaucrats
D Translation of IK	Indigenous peoples are required to translate their knowledge into frameworks that are widely understood by scientists and resource managers
E Social/spiritual expression	When knowledge is expressed in a social or spiritual, rather than a scientific, framework, scientists often find the relevance of such information challenging
F Codification of IK	The need to write down information can lead to Indigenous concerns about codification and appropriation of knowledge
G Ownership of knowledge	Barriers can arise when Western systems of property rights (including intellectual property rights) are imposed over Indigenous ways of controlling and managing ownership of knowledge
H Spatial/temporal boundaries	Barriers may occur as a result of a system that requires land and water to be bounded spatially and temporally via the demarcation of areas on maps or within chronologically defined management planning systems
Systemic or Institutional Barriers	
I 'Outsiders' kept 'outside'	Bureaucratic arrangements such as meeting requirements and government institutional structures make the involvement of any 'outsiders' difficult

J IK and management institutions	Barriers that occur when Indigenous knowledge cannot be accommodated within reductionist and formulaic approaches to management such as those found in management manuals
K Decentralization	Barriers can arise as a result of the decentralized nature of Indigenous concepts of governance and decision making, which challenges bureaucratic systems of centralization
L Racial/cultural inferiority	Some 'races' or cultures are seen as being categorically inferior, practicing inherently destructive or under-productive forms of livelihood, and therefore incapable of possessing a complex knowledge of nature
M State power	The State has more power than Indigenous peoples do and so has greater control. Indigenous people must strategize about how and when to assert their concerns
N 'Benevolent' West	The State is assumed to act benignly, despite obvious resource degradation under the State's watch. Indigenous people must prove that State actions have been detrimental
O Globalization	The State needs to meet global environmental challenges on global (often theoretical) scales, rather than on the local scale used in Indigenous knowledge systems

Source: Ross et al (2001:96-97)

These barriers – not necessarily comprehensive – can be seen in areas beyond natural resource management that extend across social, political, cultural and economic spheres.

Together, the three broad areas of epistemological debates, commodification and gifting present both barriers and opportunities for Indigenous knowledge uptake.

How policy would be different if Indigenous evidence was taken into account

The perennial question 'so what' must be tackled head on. In the case of Australia with a white Anglo-Saxon settler-colonial history, a turn to Indigenous concepts of evidence holds high potency at this particular point in history. Colonisation wreaked havoc and destruction on Indigenous societies including dispossession, removal of children, suppression of Indigenous cultures and languages and, in some cases, physical eradication of particular Indigenous groups (see Althaus and O'Faircheallaigh 2019). Racism, intergenerational trauma and injustices continue today.

A movement can be detected, however, in the voices and views of mainstream Australia, especially younger generations, to challenge this system as expressed through the questioning of Australia Day (see Knaus and Wahlquist 2018), the positive exploration of treaty processes (see Wahlquist 2018), and slow cultural shifts occurring in sport, the arts and corporate activity (see Bamblett 2013). Social justice, human rights and inclusion agendas inform some of this movement. Another explanation cites a maturing in Australia's recognition and understanding of its history and identity. Recognition of frontier wars and, at this point, over 250 massacre sites during the period 1788-1960 documented through an Australian Research Council research grant project conducted through the University of Newcastle (see Brennan 2018) is one example of Australia beginning to acknowledge previously papered-over history. Another example is Bruce Pascoe's (2018) documentation of Aboriginal agricultural practices which corrects an inaccurate portrayal of Aboriginal peoples as hunter-gatherer societies.

The glimpses of opportunity for authentic reform that these signals demonstrate suggest opportunity for Indigenous evidence to be taken up as a valuable endeavor at this particular point in Australia's history.

In saying this, I acknowledge that I have grouped together Indigenous knowledge despite advocating in favour of respecting the uniqueness and plurality of each Aboriginal and Torres Strait Islander nation's forms of culture, practices, beliefs and languages. This pragmatically fits within word length parameters and provides sharp contrasts for the purposes of the argument, but in doing so I open the article to criticism for over-simplification. This analytic choice is worth noting. It presents a reminder that western ways remain dominant and that respectful enthusiasm for Indigenous concepts of evidence must always consciously attend to nuances and the need for context and power relationships to be laid bare and addressed.

Keeping this in mind we can thematically identify at least two different types of significant shifts in policymaking to exemplify possibilities that Indigenous evidence can offer: products and processes.

Products

Indigenous 'evidence' is sparking what might be termed product changes in the policy space. Concrete examples abound of product initiatives that otherwise would not exist without acknowledging and privileging Indigenous ways of knowing and being. Charles Massy is a non-Indigenous farmer in Australia who is passionate about changing the way we think and act with respect to growing, eating and framing food in response to the Anthropocene. He believes that nothing short of a revolution is needed to properly confront the challenges humanity faces in its stewardship of the earth and our place in it (Chenery 2017). Massy turned to western science and Aboriginal knowledge to come to his conclusions and recommendations for positive action. On the advice and knowledge of Aboriginal elders he has been pursuing landcare management using techniques known as 'cool-burn patch' or 'mosaic' burning (Brown 2016). This system of land regeneration addresses both the

biodiversity degradation arising from European farming practices as well as new options for land use and landcare into the future. The benefits are not only resulting in improved ecological health. Such practices are also linked to improved health of the Aboriginal population itself involved in the landcare management practices. Burgess et al (2009) report that increased participation by Indigenous people in ‘caring for country’ activities is associated with significantly improved health outcomes that are pertinent to Indigenous morbidity and mortality rates.

Spinifex grasslands cover a third of the Australian continent; their ecosystems represent some of the driest, hottest and most fire prone landscapes on earth (Memmott et al 2017). Aboriginal communities have traditionally used spinifex in construction of houses, fish traps and smoke signals, and spinifex resins as a ‘glue’ for attaching spear heads to wooden shafts. A partnership between University of Queensland researchers and the Indjalandji-Dhidhanu People of the Camooweal region has seen the development of a method to extract nanocellulose to make super-thin sensation-transmitting latex. A range of applications has been identified including condoms, medical dressings, cleaning oil spills; and as a component of flexible electronic displays. Commercialisation of the technology was only possible with the expertise and input of the traditional owners and is likely to result in significant financial success due to the interest of latex manufacturers across a multi-billion-dollar global market (Memmott et al 2017).

As these partnerships suggest, there is rich opportunity to reframe policy problems and solutions using Indigenous ways of being and knowing. In addition to products themselves, new avenues and imagination for thinking about policy options becomes possible with privileging Indigenous ‘evidence’.

Processes

Indigenous ways of knowing and being also lead to new ways for thinking about engagement and conflict resolution. This is highly relevant to the policy contest space and how to incorporate values and morality in new ways into the policymaking system.

Over 50 Indigenous sentencing courts exist across all states in Australia except for Tasmania. These courts do not practice Indigenous customary law but use Australian criminal law to sentence Indigenous offenders but allowing Indigenous Elders and respected persons to participate in the process (Marchetti 2009). Evaluations of the County Koori Court and Children’s Koori Court demonstrate success for these alternative sentencing forums – referred often as circle sentencing – with respect to promoting deterrence and improving rehabilitation (Borowski 2010; Dawkins et al 2011). The success of the models is bound to partnerships between the local communities, Elders, support service staff and justice officers. While mixed reviews exist with respect to the role of circle sentencing with respect to reoffending, a key difference in this Indigenous-inspired approach to justice is the greater cultural alignment with Indigenous values and the clear success in changing community

attitudes including opinions of the justice system which positive knock-on effects with respect to combatting intergenerational trauma (Marlow 2016).

Experience in Indigenous approaches to evaluation show that Indigenous ways of knowing and being as well as Indigenous research methodology directly shifts the way that evaluation is conducted, results communicated, and engagement and co-creation is achieved. Scougall (2006) explains how he deliberately followed aspects of the Four R model of Kirkness and Barnhardt (2001) which requires research follow principles of: (1) respect; (2) relevance; (3) reciprocity; and (4) responsibility. The principle of reciprocity, for example, is a very different way of performing research from Western models. A researcher or evaluator enters into deliberate relationship with the participants and/or community and engages in a two-way sharing of knowledge and expertise.

In Scougall's case, this meant: (a) following 'malparrara' in Central Australia which entails partnering a non-Indigenous evaluator with local Indigenous worker(s) selected to match cultural needs of the community in question and (b) recognising local community knowledge and giving this back to the community in different forms that were helpful to their needs. In different cases, 'malparrara' saw unique local contexts being addressed. Thus, for one evaluation, the research team comprised a mix of mature female elders from inside and outside the community. For another evaluation, the deliberate selection of a relatively youthful Indigenous man, woman and a youth occurred to achieve maximum impact and to breakdown potential barriers that might have occurred if mature elders were used. Principles of self-governance for the evaluation were also followed as closely as possible. The presence of 'women's business' and men's business' was also noteworthy. This does not imply gender segregation per se but rather acknowledgement that at times it is appropriate for males or females to engage in certain activities or speak on particular topics.

Many would say that these examples do not differ from empowerment evaluation techniques or good practice when it comes to public engagement methodologies. However, the principle of responsibility and the relational dimension to Indigenous research and evaluation demands ongoing relationship with the parties involved. Contrary to Western approaches, there is no fly-in-fly-out mentality. Moreover, the desirability of 'on-country' research is also seeing positive health and wellbeing impacts (Ganesharajah 2009). When packaged together as a set of principles that shift the demands of engagement and evaluation, Indigenous ways of being and knowing set a different bar. When coupled with discrete methods such as yarning circles (see for example Holmes 2011), the field of Indigenous research methodology holds great promise for fresh ways to approach meaningful community engagement and co-created evaluation outcomes (Hunt 2013:31-32).

Conclusions

Debates regarding evidence-based policy making will move only so far if public administration and policy making remain isolated within western paradigms. What this article proposes is that the time is ripe for recognition of other paradigms that witness the intrinsic

contribution and value of other civilizations and cultures. In Dreschler's terms, I am pursuing recognition of 'contextual public administration', being attentive to ways that imbue healing and deliver respect to the distinctive *and* shared aspects of diverse ontologies and epistemologies. In this approach, evidence is connected beyond decisionism with both facts and values, configuring public administration and policy as inclusive of all knowledge rather than divisive and pitting knowledge, civilizations and disciplines in tension with each other.

This shift towards contextual public administration requires change both in practice and scholarship as well as institutionally. Yunkaporta (2009) makes it clear that "In our world the deepest knowledge is not in words. It is in the meaning behind the words, in the spaces between them, in gestures or looks, in meaningful silences, in the work of hands, in learning from journeys, in quiet reflection, in Dreaming". This knowledge is not unknown to western sensibilities, but it is not the way of its mainstream formalised academy. Attention to the knowledge and approaches of other civilizations allows for self-reflection that involves both positive and critical analysis. In speaking of Indigenous traditions, for example, I am reminded simultaneously of the need to honor and celebrate, as well as compare and contrast, other civilizational approaches to public administration, including that of China.

I have deliberately been extreme in positing these arguments in order to make the case. Western positivism and the triumph of scientism is neither clear-cut nor unchallenged. Nevertheless, there is merit in categorizing and typologizing epistemology in order to progress thinking and move beyond standard debates.

I can only close briefly by conveying the belief that if we accept openness to the possibilities and worth of Indigenous perspectives on evidence and public administration, we ought to – together – develop respectful practices with each and every Aboriginal and Torres Strait Island nation to assist in embracing the diversity of new avenues and imagination from for thinking about our world, our place in it and new roles for policymaking.

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