Methods for Valuing Indigenous Knowledge (IK) in Uncertain Times

Dr Boyd Blackwell, Visiting Researcher, ANU; President ANZSEE, boydbwell@gmail.com
Dr Kerry Bodle, Griffith University, K.Bodle@griffith.edu.au
Prof. Boyd Hunter, ANU, Boyd.Hunter@anu.edu.au

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Acknowledgement of Country

We acknowledge and celebrate the First Australians on whose traditional lands we meet and work, and whose cultures are among the oldest continuing cultures in human history.

Image: Namadgi National Park.
Photograph by Adrian Brown, Ngunnawal man, Country ranger, ACT Parks and Conservation Service.
A poem for uncertain times?

Turning and turning in the widening gyre
The falcon cannot hear the falconer;
Things fall apart; the centre cannot hold;
Mere anarchy is loosed upon the world,
The blood-dimmed tide is loosed, and everywhere
The ceremony of innocence is drowned;
The best lack all conviction, while the worst
Are full of passionate intensity.

Source: “The Second Coming” is a poem written by Irish poet W. B. Yeats in 1919, published after the last great pandemic
Project Requirement

• Indigenous Knowledge (IK) will encompass:
  – Traditional Knowledge – the practices, know-how and skills developed by Indigenous communities, including knowledge about the properties and uses of native genetic resources
  – Traditional Cultural Expressions – traditional artworks, designs, and stories not covered by copyright law

• Review of approaches to market valuation of aspects of IK, with a view to undertaking a quantitative valuation of the current and potential market value

• Scoping study of specific sectors, identify possible data sources & methodology for measuring market value

• Sometimes referred to as Indigenous Cultural Intellectual Property (ICIP)
Motivation

• Historical use of Indigenous knowledge without recognition of value (ANTA)

• Timber Creek high court judgement awarded $2.5 million for economic AND cultural/spiritual loss
ICIP is affected by more than IP Laws

- Intellectual Property Laws
- Racial Discrimination Laws
- Goals for economic and Indigenous development
- Access to Justice
- Indigenous Cultural & Intellectual Property (ICIP)
- Native Title Laws
- Environment and Heritage Laws
- Corporations Law and communal property rights
- International Agreements (relating to IP and non-IP matters)

Source: Productivity Commission, 2016, p.59
## Instruments for the protection of Indigenous Knowledge (IK)

<table>
<thead>
<tr>
<th>Enforceable instruments</th>
<th>Protocols, standards and guides</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recognition of IK as intellectual property (IP), including certification and collective trade marks and geographical indicators</td>
<td>Government-supported protocols</td>
</tr>
<tr>
<td><em>Sui generis</em> laws for particular contexts, including access and benefits-sharing agreements</td>
<td>Non-government protocols</td>
</tr>
<tr>
<td>Private contracts and agreements</td>
<td>Accountancy Standards</td>
</tr>
<tr>
<td>Actions against misuse of IK under the Australian Consumer Law (ACL), under tort law or in equity</td>
<td></td>
</tr>
</tbody>
</table>

Source: Stratton, Blackwell, Bodle and Hunter, 2019
➢ Documentation of oral traditions entails risks to culture, but provides defensive IP protections and potentially positive IP protection.
Prior Informed Consent (PIC) & documentation process

Intangible assets & attribution problem

Requirements for an item to be recognised as an intangible asset:

1. Meets definition of an asset; and
2. Satisfies recognition criteria.

(a) Identifiability: capable of being separated or divided from the entity and used by another entity, or arises from contractual or other legal rights; and
(b) Control: power to obtain future economic benefits and restrict others from those benefits; and
(c) Future economic benefits: produces benefits such as revenue or cost savings.

(a) Flow to entity: it is probable that future economic benefits from the asset will flow to the entity; and
(b) Measurement: costs associated with the asset can be reliably measured.

Source: Adaption of Bodle et al. 2018, AASB138; and see Stratton, Blackwell, Bodle & Hunter, 2019
## Characteristics of economic goods and services

<table>
<thead>
<tr>
<th></th>
<th>Excludable</th>
<th>Non-excludable</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rivalrous</strong></td>
<td>Private goods</td>
<td>Common goods (Common-pool resources)</td>
</tr>
<tr>
<td></td>
<td>(food, clothing, cars,</td>
<td>(fish stocks, timber, coal)</td>
</tr>
<tr>
<td></td>
<td>parking spaces)</td>
<td></td>
</tr>
<tr>
<td><strong>Non-rivalrous</strong></td>
<td>Club goods</td>
<td>Public goods</td>
</tr>
<tr>
<td></td>
<td>(Native title?; cinemas,</td>
<td>(free-to-air television, air, national defence,</td>
</tr>
<tr>
<td></td>
<td>private parks, satellite</td>
<td>public domain knowledge?)</td>
</tr>
<tr>
<td></td>
<td>television)</td>
<td></td>
</tr>
</tbody>
</table>
Market and non-market value of IK

Total Economic Value

Market value (captured by the market)

- Direct use
  - Value of IK embodied in goods and services sold

- Indirect use
  - Surpluses (losses) for businesses spend by users of IK income flows from original spend of users through economy amenity value to surrounding markets, businesses, and employees

Non-market value (not captured by the market)

- Use benefit
  - Direct use
    - Use IK which is not captured by a market (e.g. fake art)
  - Indirect use
    - E.g. non-pecuniary spillovers of IK

- Non-use benefit
  - Option future ability to use or protect IK
  - Existence knowing that IK is protected although no use is intended
  - Bequest Protecting IK for future generations
  - Vicarious History, culture, art, poetry, documentary, film, music, talks, other media etc.

Source: Blackwell et al. 2019
Methodological issues for measuring market value of IK

- Market and non-market values
- Market and non-market goods & services
- Transactions
- IK – inherently a shared good but:
  - When freely available – pure public good
  - When exclusionary mechanism – club or shared good
  - When IP instrument used – private good

- Identifiable IP (e.g. IP instruments) = IIP
- Non-identifiable IP = NIIP

Source: Blackwell et al., 2019
Methodological Issues – IIP and NIIP

Market Factors of Production

- Capital (equipment, materials, IIP, etc.)
- Labour (includes HC: NIIP)
- Land
- Other

Factors of Production including subfactors/capitals are combined (incl. concealed NIIP) to provide sale price and quantity of final good or service

Final good/service

Capitals/Assets: e.g. Human (HC), Social & Cultural, Natural, Political etc.

non-IK

other aspects of HC

IK: IIP + NIIP

Source: Blackwell, Stratton & Hunter 2019
## Literature Review Approaches

<table>
<thead>
<tr>
<th>No.</th>
<th>Area of literature</th>
<th>Relevance to the market value of IK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Accounting standards related to intangible assets and IK</td>
<td>Could potentially be used to value IK, but significant gaps in current practice, particularly for NIIP.</td>
</tr>
<tr>
<td>2</td>
<td>Valuations of the Indigenous business sector</td>
<td>Could be used to provide a market value of IK where the question of attribution is considered by industry and subsector.</td>
</tr>
<tr>
<td>3</td>
<td>Valuations of the contribution of IK to a specific sector</td>
<td>Detailed description of value of some industries, but no economy-wide aggregation. Methodology may be able to be extended to a broader approach to capture the value of IK.</td>
</tr>
<tr>
<td>4</td>
<td>Valuing other types of intangible capital</td>
<td>Provides background on possible ways to value IK, by reference to other types of intangible capital.</td>
</tr>
<tr>
<td>5</td>
<td>Choice modelling of people’s willingness to pay (stated preference approaches)</td>
<td>Non-market valuation methods have been used to value private goods prior to being released on the market to set an ideal price point.</td>
</tr>
</tbody>
</table>

Source: Blackwell, Stratton & Hunter, 2019
## Economic size of indigenous (business) sector

<table>
<thead>
<tr>
<th>Source</th>
<th>Location, population</th>
<th>Approach</th>
<th>Economic value</th>
<th>$ value, billions</th>
<th>% of Nation</th>
<th>Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>PwC (2018)</td>
<td>Australia, Indigenous business</td>
<td>GDP Value Add</td>
<td>Income</td>
<td>2.2-6.6 AUD</td>
<td>0.1-0.4%</td>
<td>Incl. non-idig Employees, IBN</td>
</tr>
<tr>
<td>Te Puni Kōkiri (2013)</td>
<td>New Zealand, Mäori enterprises</td>
<td>GDP Value Add</td>
<td>Production, income &amp; expenditure</td>
<td>11 NZD 16 NZD 18 NZD</td>
<td>6% 8% 11%</td>
<td>Need official statistics as well</td>
</tr>
<tr>
<td>Market</td>
<td>Asset base</td>
<td>43 NZD</td>
<td>6%</td>
<td>Wellbeing broader</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hsld inc-exp</td>
<td>Net Savings (4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gulati &amp; Burleton, (2015)</td>
<td>Canada, Aboriginal economy</td>
<td>Total=business+hshlds +Govt</td>
<td>Income</td>
<td>31 CAD</td>
<td>~2%</td>
<td>Includes govt as well</td>
</tr>
</tbody>
</table>

Source: Blackwell, Stratton & Hunter (2019)
<table>
<thead>
<tr>
<th>Sector(s)</th>
<th>Author (date)</th>
<th>Region</th>
<th>Methodology</th>
<th>Value ($ billions, USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Genetic &amp; natural resources</td>
<td>Kate &amp; Laird (2000)</td>
<td>World</td>
<td>All markets for IK: agriculture (55-60%), pharmaceuticals (15-19%), biotechnology (12-15%)</td>
<td>500-800</td>
</tr>
<tr>
<td>Genetic &amp; natural resources ag seeds</td>
<td>Posey (1990)</td>
<td>World</td>
<td>International seed industry</td>
<td>15</td>
</tr>
<tr>
<td>Traditional rice crop varieties (landraces)</td>
<td>Evenson (1996)</td>
<td>India</td>
<td>Use and value of landraces contribution to India’s rice yields</td>
<td>6.1</td>
</tr>
<tr>
<td>Bush food</td>
<td>Robins (2007)</td>
<td>Australia</td>
<td>Sum of farm gate and value added (method unclear)</td>
<td>0.014 AUD</td>
</tr>
<tr>
<td></td>
<td>Foster &amp; Bird (2009)</td>
<td>Australia</td>
<td>Farm gate value, 11 native foods</td>
<td>0.00628 AUD</td>
</tr>
<tr>
<td></td>
<td>Clarke (2012)</td>
<td>Australia</td>
<td>Gross value farm gate. 13 native species Value Add could be *5</td>
<td>0.015-0.025 AUD</td>
</tr>
</tbody>
</table>

Source: Blackwell, Stratton & Hunter, 2019
<table>
<thead>
<tr>
<th>Sector(s)</th>
<th>Author (date)</th>
<th>Region</th>
<th>Methodology</th>
<th>Value ($ billions, USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts</td>
<td>Myer (2002)</td>
<td>Australia</td>
<td>Total indigenous arts &amp; crafts: Indigenous individuals receive $50m</td>
<td>0.2 AUD</td>
</tr>
<tr>
<td></td>
<td>Altman, et al. (2002)</td>
<td>Australia</td>
<td>Indicative only, limitations</td>
<td>0.1-0.3 AUD</td>
</tr>
<tr>
<td></td>
<td>desArt (2007)</td>
<td>Australia</td>
<td>No methodology provided.</td>
<td>0.2-0.5 AUD</td>
</tr>
<tr>
<td></td>
<td>Woodhead &amp; Acker (2014)</td>
<td>Remote areas of Australia</td>
<td>Surveys Art Centres &amp; freelance artists</td>
<td>0.0527 AUD</td>
</tr>
<tr>
<td>Herbal pharmaceutical products</td>
<td>Market Research Future (2018)</td>
<td>World</td>
<td>Not provided</td>
<td>5.1</td>
</tr>
</tbody>
</table>

Source: Blackwell, Stratton & Hunter (2019)
## Case Studies: Commercial uses

<table>
<thead>
<tr>
<th>Field</th>
<th>Summary of contribution of IK</th>
<th>IP instruments for protection of IK (conservative IK attribution %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural and genetic resources</td>
<td>IK around the properties and processing of natural and genetic resources widely-used in <em>medicine, cosmetics and food industries</em>.</td>
<td>Plant breeders’ rights, patents, requirement for benefits-sharing agreements (Low: 3.3-12.5%)</td>
</tr>
<tr>
<td>Healthcare and medicine</td>
<td>IK in production of traditional <em>medicines</em> and use of traditional <em>healing practices</em>.</td>
<td>Patents, trademarks (High: 13.3-20%)</td>
</tr>
<tr>
<td>Bush food</td>
<td>IK in production of traditional <em>foods</em>.</td>
<td>Patents, trademarks, copyright (Low: 3.3-12.5% see natural and genetic resources*)</td>
</tr>
<tr>
<td>Environmental management and preservation</td>
<td>IK in <em>environmental services</em> delivered by Indigenous and non-Indigenous Peoples.</td>
<td>Patents, trade marks (High: 8.3-28.5%)</td>
</tr>
<tr>
<td>of biodiversity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tourism</td>
<td>IK in marketing of goods and services to domestic and international <em>tourists</em>.</td>
<td>Trade marks, copyright (Medium: 11.2-16.8%)</td>
</tr>
<tr>
<td>Designs (architecture and construction,</td>
<td>IK used in <em>designs</em> in a variety of industries.</td>
<td>Designs, copyright (Low: 1.7-12.5%)</td>
</tr>
<tr>
<td>fashion, furniture etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research and education</td>
<td>IK in research <em>methodologies</em>, or in imparting <em>knowledge</em> to students.</td>
<td>Patents, copyright (Low: 5.7-8.5%)</td>
</tr>
<tr>
<td>Culture</td>
<td>IK in traditional and contemporary <em>cultural expressions</em>.</td>
<td>Copyright, trade marks (Low: 1.7-12.5%; see designs &amp; education)</td>
</tr>
</tbody>
</table>

(Source: Blackwell, et al. 2019)

But: no publicly available prices
Conclusions

• Need to understand process by which **IK is transformed** into value in the market (production versus claim on the resources generated)

• **Case studies** may be best where **prices** (& quantity/quality) are available for IP instruments and directly attributable to IK (i.e. IIP)

• For **NIIP**, **Attribution problem** remains but....
  – could be addressed through **case analysis** within key sectors then transferred across industries (more funding and research) OR
  – **Choice modelling or stated preference approaches (demand) and business specific accounting questioning (supply)** to tie down attribution problem for specific cases

• **IK is a mixed good** – can be **pure public** where freely shared, **club** with restrictions and **private** with IP instruments

• **Diverse set of instruments/institutions** preferred to capture complex nature of goods made with IK

• **Dual valuation approach:** micro and macro (connected by meiso) recommended
Production/valuation in intercultural market

• Tension between Indigenous axiology & a western based economic system
  – Separability of factors versus joint production
  – Agents with different beliefs work in markets all the time
  – Unless all factors of production held within an organization where people share same beliefs, need to ensure incentives are coordinated in market
  – All factors need adequate rate of return to ensure supplied and maintained
    • If not, that factor could be withheld. This is what gives capitalist power in they are patient with alternative means that allows them to be the residual claimant on profits
  – Attribution of value to IK intrinsically difficult and not fully ‘determined’ & hence focus on scope of potential value-add
Renewed Indigenous Institutions

• At the risk of stating the obvious …
  – Indigenous economic self-determination must be Indigenous
    • First Nations literally ‘Leading the Way’
    • Tulo Centre of Indigenous Economics
    • Alliance for Renewing Indigenous Economies
  – Pragmatism and minimising transaction costs?
  – All legal and political institutions need to support Indigenous autonomy and the freedom to choose an Indigenous future
References


• World Intellectual Property Organization (WIPO) 2017a. Documenting Traditional Knowledge – A Toolkit. WIPO.

Thank you

Comments can be provided to:
Boyd.Hunter@anu.edu.au
boydbwell@gmail.com
BACK POCKET SLIDES
Environmental Management & Biodiversity Protection

Source: Blackwell et al. 2019
Choice modelling (CM) & non-market valuation

• **CM: Stated preference technique**
  – Originally developed to value goods before they were released to the market to provide an indication of price
  – Ideal in this sense for valuing IK in markets
  – BUT also developed to value goods not traded in markets – to separate out the value captured by specific attributes of a good
    • IK could be part of this

• **Revealed preference techniques**
  – Hedonic pricing or travel cost could also be used
  – to isolate IK as an attribution to the final price of goods and services that are traded in markets

• **These methods have their limitations in Indigenous settings but….**
  – have the clear advantage of providing a number (versus $0)
  – which can be tested for validity and reliability
  – Have become more sophisticated in recent decades

Source: Blackwell et al. 2019
Aboriginal Carbon Foundation (AbCF): Reducing Carbon Building Communities Fund

Trades Australian Carbon Credit Units with environmental, social and cultural values

(Source: AbCF, 2019)
Bundle of rights associated with various property right positions

<table>
<thead>
<tr>
<th></th>
<th>Owner</th>
<th>Proprietor</th>
<th>Claimant</th>
<th>Authorised User</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access and Withdrawal</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Management</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Exclusion</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Alienation</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Property rights in Indigenous culture are communal in nature with many claimants or authorised users. Ostrom identified eight "design principles" of stable local common pool resource management based on societies diverse institutional arrangements for managing natural resources effectively: clearly designed principles adapted to local conditions, with **effective monitoring, sanctions against appropriators, mechanisms for conflict resolution**, community self-determination & multiple layered organisation with local CPR base.

Sources: Poteete, Ostrom and Janssen (2010); Schlager and Ostrom (2012)
Box 5.1: Example of set of questions provided in an interview or survey for a particular type of good or service

a. What is the **main good or service** you provide through your business?

.............................................................................. (please state)

b. What is the **typical unit** of this good or service?

.............................................................................. (please state)

c. How many units are typically sold **per year**?

.............................................................................. (please state)

d. What is the **typical unit price** of this good or service when it is sold in the market?

.............................................................................. (please state)

e. What **percentage of contribution** do you believe that I.K makes to the **final good’s price**? (Please circle your best guess at the percentage)

0-10% 11-20% 21-30% 31-40% 41-50% 51-60% 61-70% 71-80% 81-90%

f. What **percentage of contribution** do you believe that I.K makes to the **final good’s quantity** sold?

(Please circle your best guess at the percentage)

0-10% 11-20% 21-30% 31-40% 41-50% 51-60% 61-70% 71-80% 81-90%

g. Please indicate the **value** and/or **percentage** that the following inputs provide in producing a unit of the **main good or service** that you provide through your business?

<table>
<thead>
<tr>
<th>Input</th>
<th>$ cost/unit</th>
<th>Percentage of cost/unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- I.K &amp; skills (i.e. not covered by an IP instrument)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Other knowledge &amp; skills (which may include scientific knowledge)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Other labour factors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital – equipment, tools, machinery, assets etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Non I.K Equipment etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- I.K equipment e.g. Identifiable I.K e.g. IP Instruments containing I.K</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other factors not included above (Please state)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Blackwell et. al, 2019