
REVIEWS

Graeme Lay, *100 Days that Mapped a Nation*

New Holland Publishers, Auckland & Sydney, 2019. ISBN 9781869665128. Hardback, 208 pp. A\$40/NZ\$65

The author, Graeme Lay, has travelled widely throughout the South Pacific and has written over forty books, many of which have been inspired by the Pacific Islands. The title of his latest book refers to the number of days Captain James Cook was in New Zealand waters. The text begins “The name ‘James Cook’ and ‘New Zealand’ are historically inseparable”. The book focuses on this association but paints a broader picture of navigation. The author provides insight into other notable characters that played a part in the expeditions not only to New Zealand but also to other island nations of the South Pacific. This hard cover book is a quality publication with an abundance of photographs, artworks and maps used to illustrate the text.

The Introduction. The author provides an excellent synopsis of the content of the book. As a gentle entry into the book the reader is presented with a double-page colour artwork of the arrival of the first people to New Zealand and then a double-page map showing the explorations of Captain James Cook. The text which follows is interspersed with two more maps and three images. The author clearly states that this book “depicts – in words, maps, photographs and contemporary illustrations – the motives, nature and achievements of Cook’s three world voyages, in particular their connection to New Zealand and the other islands of the Pacific Ocean”. Even though the focus is on New Zealand, the wider historical, technical and cultural contexts of the voyages are explored.

The Life of James Cook. Cook’s early life is charted and his high level of intelligence and leadership qualities are made obvious. The author gives insight into how good fortune and clever decision-making changed Cook’s prospects as the son of a farm labourer, to become a leading maritime explorer.

The remainder of the content is separated into five parts, each of which is subdivided into chapters, a total of 32 in all.

Part 1: Cook’s ships. The history of H.M. Bark *Endeavour* and a description of the *Endeavour* replica as outlined in Part 1 gives insight into the characteristics of the vessel used by Cook for his first journey. The exact costing and dimensions are outlined along with other specific detail.

Part 2. The Voyage of HMB *Endeavour* 1768-1771. These five chapters which provide information about the voyage of the *Endeavour* during the period before Cook reached New Zealand. These are: the instructions; provisioning; scurvy; the quest for longitude; and the transit of Venus. The connection of the author’s text to this time period is enhanced by the use of quotes from Cook’s diaries, maps, visual depictions of events, and some photographs. The detail provided in the “provisioning” and “scurvy” chapters quickly alerts the reader to the undesirable, vermin infested food that was consumed, and the ill-health and deaths that occurred on board during long days at sea. Any sense of the romance of the high seas quickly dissipates.

Part 3. The *Endeavour* Voyage: Cook’s First New Zealand Landfall. This part consists of eight chapters. The first five relate to the locations of Cook’s navigation around the islands which constitute New Zealand, with an odd placement of the “Foods of the New Zealand Maori” into this mix. The last three chapters deal with New Holland and Batavia, Cook’s journals, and the men of the *Endeavour*, which also seem to be oddly placed. Nevertheless the nature of the land and the people associated with

the arrival of Cook in New Zealand is outlined in some detail allowing the reader to visualise the different locations.

The brief chapter on New Holland and Batavia provides a succinct summary of Cook's navigation of the east coast of New Holland and the disasters that beset the *Endeavour* on and after its arrival in Batavia. Of great value in terms of understanding the dynamics of the voyage of the *Endeavour* are the profiles of key personnel: Joseph Banks, Tupaia, Sydney Parkinson, and Daniel Solander.

Part 4. Searching for the Great Southern Continent. These eight chapters relate to Cook's second voyage on the HMS *Resolution*. The first chapter gives a very detailed description of Cook's sojourn south of the Antarctic Circle and the provisioning at Dusky Sound. The text is well written, and in such detail that the reader can readily visualise the situation in which Cook and his fellow travellers found themselves. The chapters which profile the men of HMS *Resolution* and HMS *Adventure* give valuable insight into the lives of the not-so-famous members of the second voyage.

Chapter 22, "The Grog Factor" tells of the role alcohol played in maintaining calm, but also, at times, causing chaos. There are a few chapters, such as this one, which would be better located in a part of their own, as they do not fit comfortably into the specific context of the existing titled parts of the book.

One emerging observation is that the images and photographs used to support the text, at times, do not always linked directly to the text by reference. For example the artist's impression of the inside of a Hippiah in Part 4 relates to Cook's third world voyage which is not discussed until Part 5. In Chapter 24 which relates specifically to Cook's second voyage, there are a lot of photographs and sketches which are not linked to this chapter and many of them better fit with other chapters in the book, such as those relating to the death of Cook. It can be confusing when the captions and bear little relevance to the text. The sketches relating to Cook's death would be better placed in Chapter 27 where the author describes his murder in detail.

Part 5: Cook's Third World Voyage. There are seven chapters in this part. Despite its title, the first chapter, Chapter 26, "Searching for the Northwest Passage," only relates to the voyage as far as the journey to New Zealand and subsequent departure north. It does however provide a fascinating account of the trials and tribulations associated with Cook's return to Ship Cove in Queen Charlotte Sound to provision the ships. It was here that Cook was determined to uncover the facts behind the massacre of 11 men from the *Adventure* during his previous voyage. However, his conciliatory approach only succeeded in angering both the local Maori people and his own crew. This appears to have been a pivotal moment in the changing attitude of the crew towards him, and in his own attitude towards the people of the South Pacific. In relating the story, the author describes two significant artworks of the massacre and the warrior Kahura who initiated the massacre, painted by Webber the onboard artist. In it a shame that these are not included in the book.

Chapter 27, "The Beginning of the End", gives an account of changes in the personality of Cook, the attempt to find a Northwest Passage and a detailed account of his murder at Kealakekua on Hawaii. Paradoxically the images inserted in this chapter relate primarily to HMAV *Bounty* and the mutiny by some of William Bligh's crew. This is surely an editorial error. It is very confusing for a reader to say the least. The images relating to Bligh should have been replaced by those in Chapter 23 which relate to Cook's murder.

The artwork by John Webber "A view of Christmas Harbour in Kerguelen's Land" appears twice in the book, once in monochrome and once in colour, both out of context. The illustration would have been better placed with the biographical sketch of Webber, the designated artist on Cook's final voyage, near the end of the book.

The remaining chapters in this part provide wonderful detail relating to the “Men of Resolution”, “The Life of Elizabeth Cook”, and the geographical features and placenames. A valuable inclusion is the further reading section.

Summary Comments. This is a wonderful read. The author has included an abundance of historical detail relating to the peoples, motivations, places, environments, events and tribulations associated with Cook’s three voyages. The level of detail provides many opportunities for the reader to visualise the different situations in which Cook and his crews found themselves. However, the storyline is interrupted a number of times by the inclusion of chapters which, while providing excellent detail, tend to disrupt the flow of the main story. It would have been worthwhile placing such chapters together in a part specifically reserved for such detail.

A major frustration is associated with many of the supporting illustrations and photographs being placed throughout the book out of context with the text or even the part of the book with which they should be associated. This tends to become more pronounced near the end of the book. The reason for the inclusion of images relating to the Mutiny on the Bounty remains a mystery.

Despite these shortcomings, the book is beautifully presented and provides the reader with great insight into the lives of the men on Cook’s three voyages and the challenges they faced. The inclusion of direct quotes, dates, times and detail of events and places, draws the reader into experiencing armchair travel with Cook and his companions.

David Fraser
Melbourne

Tessa Duder, *First Map: How James Cook charted Aotearoa New Zealand*

Harper Collins, Auckland, 2019. ISBN 9781775540946. Hardback with dustjacket, 106 pp. A\$45/NZ\$50

Such a definitive book title will certainly get the reader’s cartographic juices flowing and on two levels. How did Cook actually chart New Zealand? Was this charting used for the first map of Aotearoa New Zealand? In her foreword, author Tessa Duder tells the reader, “*This book is principally a narrative of Cook’s creation of the first New Zealand chart*”. Immediately there is a merging of the use of the terms chart and map. In terms of understanding the navigation which enabled the charting, this merging creates issues. This reviewer uses summarised definitions (from four primary English-language dictionaries):

- Map - *a representation of the whole or a part of an area, showing its main features as they would appear if you looked at them from above.*
- Chart - *a diagram, picture, or graph which is intended to make information easier to understand. A nautical chart is an example.*

Duder has “*used Folio 16 to follow Endeavour on her epic voyage around New Zealand*”, and James Cook’s Journal of his first voyage 1768-71 as the foundation for her book, as well as the interpretations of Cook’s voyage in some 28 other titles listed in the bibliography.

This book, published to coincide with the 250th anniversary of Cook’s sighting of New Zealand, is a high-quality production with very good ‘mood’ illustrations by David Elliot combined with the author’s excellent storytelling of Cook’s – and occasionally Joseph Bank’s – journals. Elliot’s illustrations fit well with the Duder’s story-telling editorial approach, and are in a style that matches Cook’s own graphic material. The book package will display well on a coffee table as a higher-end production. It is hard bound, 111 pages, on high-quality gloss paper, and includes a ribbon page marker. The dustjacket unfolds into an A3-sized copy of Cook’s map.

I began my reading with three key questions:

1. Does the reader learn anything new about how Cook created the charts he used for his map?
2. Is the book's content accurate?
3. Is Cook's map in fact the "First Map" that the book's title claims it to be?

In the reviewer's opinion the book is very good at telling the story of Cook's voyage. For those with little or no knowledge of Cook's voyaging it is an excellent starting point. However, for those readers with a cartographic interest, there is no information that could not have been gleaned from Cook's own writings about how Cook created his charts of the various parts of the New Zealand coastline that he observed directly or through a telescope.

The two significant errors Cook made – treating Rakiura (Stewart Island) as part of the South Island despite Cook noting that the Maori telling him there were two islands south of Queen Charlotte Sound, and charting Banks Peninsula as an island – are acknowledged in this book, but there is little explanation as to why these errors occurred, nor of how Cook's imagining of the coastlines at these two places was technically possible, as he would not have been able to see what he mapped.

Historical inaccuracy is also a concern in this book, and Duder's literary licence compounds the problem. The author relies on Cook's interpretation of Tasman's voyage as being fact, whereas Cook is in error in several ways. For example, Cook records that Tasman "*never landed upon it; probably he was discouraged from it by the Natives killing 3 or 4 of his People at the first and only place he Anchor'd at*". Tasman anchored in several locations near both main islands, as his log shows. The last occasion was on 5 January 1643, at Three Kings Islands.

Duder reinterprets Tasman's statement in her storytelling to claim that Cook "*...urgently needs to send men ashore for much needed wood, water and anti-scurvy greens. He knows of Tasman's hostile reception in 'Murderers Bay', when 4 men sent ashore for the same reason did not make it back to the ship. Tasman had left New Zealand without setting foot on it.*" (p.28).

Tasman sent a cockboat to shore earlier for food, water and wood, but it turned back due to failing light. He sailed the coasts of both islands for a further 18 days looking for suitable landing places, but sea conditions and the prevailing winds – which Cook also encountered – prevented him until he reached the Three Kings Islands, where he tried again, this time sheltered from the wind.

Duder is not correct regarding the "four men sent ashore" by Tasman. The cockboat at the centre of the Murderer's Bay incident was manned by the quartermaster and six paddlers. In Tasman's words they were tasked such that "if these people [the Maori] should offer to come alongside the Zeehaan, they should not allow too many of them on board of her, but use great caution and be well on their guard." Of the seven, three men were killed immediately, one, wounded, was taken by the Maori, and three others swam to safety.

In relation to Cook Strait, Duder tells the story of Cook setting eyes on it using the words of Cook and Banks, and records that Cook put his name to the passage on his map but did not name it in his log. However, Tasman had attempted to enter that same passage 137 years earlier but was beaten back by the weather and seas. Because he believed there was a strait, he mapped it. His navigator Visscher omitted that feature in his own map, and it is Visscher's map that is the more widely known today. Cook was not the *discoverer* of the strait but was certainly the first known European to pass through it.

Despite Cook's own log recording repeatedly that the Maori played an important role in helping him shape his voyage by passing their knowledge to him, Duder does not explore this very important aspect of the mapping of Aotearoa New Zealand. She has ignored or discounted the Maori geospatial

knowledge of Aotearoa, despite Cook, by his own admission and through Tupaia, using that very knowledge to greatly assist his navigations. Maori had mental and verbal maps that served them – and Cook – well, but their importance is not explored in this book. Maori were also able to create visual representations of this knowledge, as was demonstrated by two chiefs, Tuki Tahua and Ngahuruhuru, at Norfolk Island in May 1793. In this reviewer's view, if you are telling a story about the creation of the first map of New Zealand, how can you omit such information? The outcome is that the book leads the reader to think it was all Cook's work. It clearly was not.

Addressing the claim in the title that Cook's map was the first map of Aotearoa New Zealand, no it was not. Maori had mapped the islands first, then Tasman mapped some of the western coastline in 1642/3. Tasman's map was reproduced by others, prior to Cook's voyage, including Coronelli, with the first individual map and text on the European knowledge of Aotearoa (New Zealand) in 1698, and the Königlische Akademie der Wissenschaften (Prussian Academy of Sciences) in 1749. While Cook's mapping was exceptional, and was the first to detail the whole country – all of the land he saw or imagined – by his own admission it was not complete. A more accurate title for this book might have been "Cook's First Voyage to Aotearoa New Zealand and the map he made from that journey".

Michael Ross
Waikanae

John McCrystal, *Singing the Trail: The story of mapping Aotearoa New Zealand*

Allen & Unwin, Auckland & Sydney, 2019. ISBN 9781760633592. Hardback, 275 pp., 137 pp. of plates. NZ\$60/A\$55

Singing the Trail is among the first national cartographic histories of New Zealand; the precursors to it can easily be counted on two hands. Sustained research in the subject originated in the 1970s with the works of Peter B. Maling and Philip L. Barton. These two had long-standing disagreement over whether the Maori practiced drawn cartography prior to European contact. Significant works were published in the late 1990s, including Maling's *Historic Charts and Maps of New Zealand, 1642-1875* (1996 & 1999), Barton's *Māori cartography and the European encounter* (1998), and Malcolm McKinnon's *New Zealand Historical Atlas* (1997). McCrystal does not duplicate any of these. Maling's book is chronologically narrower, while Barton deals exclusively with the Maori tradition. McKinnon's work, on the other hand, is a historical atlas rather than a cartographic history. More recently, the Alexander Turnbull Library (the special collections branch of New Zealand's National Library) produced a treasury of its maps in 2006, and Thomas Suarez wrote a broader and decidedly Eurocentric history, *Early Mapping of the Pacific*, in 2018.

McCrystal's work is from a truly multicultural perspective. He signals this in his title, which invokes the Maori concept of songlines, or geographic knowledge encoded in song. "The earliest cartographic technology," he asserts, "is story." McCrystal executes this project beautifully. On his view, the Maling-Barton debate on the nature of pre-contact Maori "maps" diminishes greatly in importance. If maps can be told as well as drawn, then both Maori and *pakeha* created and used maps in their own ways, and the relationship between these world views – in cooperation as well as conflict – becomes another thread in the story.

The book's organisation is roughly chronological, from earliest times to present day, and divided into 12 prefaced chapters. A total of about 90 maps are presented, each with a caption of 200 to 600 words. The chapters are grouped into three parts. In the scheme of European cartography, these correspond to maritime charts; terrestrial maps and plans; and thematic maps (administrative, military, transport, economic). McCrystal's arrangement, however, is "Coast," "Inland," and "Changing Views," more in keeping with the multicultural narrative of a national journey from the sea to the land, and beyond.

The author comes out swinging in Chapter 1, with his piece on Polynesian (particularly Maori) geographic knowledge. The topic is both controversial and complex, as the earliest surviving Maori paper maps (mainly 19th-century) are mere visualisations of their orally transmitted, memorized data. By the time of contact with Europeans, Polynesians already had highly evolved systems for navigating the western Pacific and sharing geographic information – even in media (e.g. drawings on paper) that were completely foreign to them.

In the following two chapters, McCrystal tracks the European discovery of New Zealand, from the first (largely imaginary) depictions of Terra Australis through to the first undisputed representation of New Zealand's coastline by Vincenzo Coronelli in 1696. Chapter 4 is a masterful tribute to James Cook's legacy as commander of the first European expedition to circumnavigate New Zealand and chart its coastline. Chapter 5, on the earliest European exploitation of the islands' natural resources, wraps up Part 1 and sets the stage for the following act.

Part 2, "Inland," progresses to the permanent European settlement of the islands and long-term relations with Maori, and a corresponding shift from maritime charts to topographic mapping. Chapters 6 and 7 cover the earliest town plans, dating to the 1830s and 40s, and the beginnings of inland reconnaissance and geodetical surveys in the subsequent two decades. Chapter 8 examines cadastral mapping, through the lens of the profound mismatch between European and Maori notions of property and inheritance, and the resulting series of armed conflicts. McCrystal highlights their cartographic manifestation with a balanced and well-informed commentary.

The final part, "Changing Views," traces the nation's trajectory from the peak of the British Empire to the present day. There isn't really a single unifying theme to this group, but the four chapters are individually very good.

Chapter 9 shows the evolution of New Zealand's sovereignty from British colony to dominion to independent nation. It's short, but it works. Chapter 10 continues the themes of territoriality and empire, but within the framework of the two World Wars. He proceeds from the romantic notion that the land of a people can be demarcated through associated burials, quoting Rupert Brooke's "some corner of a foreign field." Three campaign maps are presented, then two of burial sites, thus following the paths of Kiwi soldiers and sailors to the far side of the world, where many today populate the war cemeteries of British Commonwealth forces. McCrystal perhaps misses a trick here in failing to note the parallel between the interment of The Glorious Dead and the traditional Maori practice of legitimizing claims to ancestral lands by burying the *whenua* (placenta) of newborns, which he highlights in Chapter 8. Both are deeply imbued with a sense of a person belonging in a specific place, but one ceremony occurs at birth and the other at death.

Chapter 11 focuses on the steady growth of New Zealand's transport infrastructure. The impact was primarily unifying, but it was also a nail in the coffin of the "rebel" Maori movement. The final chapter showcases several maps of natural resources. The last map of the chapter, a satellite image of the country, wraps up *Singing the Trail*.

My one complaint about the book is that there is virtually no treatment at all of the past 40 years of cartographic history, particularly the huge impact of digital technologies. Quite rightly, McCrystal avoids getting bogged down in the development of surveying and cartography techniques, only briefly touching on them. But the digital revolution in geographic information has really brought about a fundamental change in the nature of mapping itself. Vector drawing formats made geodata easily editable and reusable, user interfaces have enabled interactivity, the Internet has facilitated widespread dissemination, and community-generated open data and software have democratized mapmaking. These aside, the one development that would have really tied together *Singing the Trail* in the end is

the advent of immersive mapping technologies, such as geotagged panoramic images (e.g. Google StreetView) and the interactive 3D views increasingly available on e.g. Google Maps. This emergent notion of maps as rich experiences resonates elegantly with the indigenous concept of maps as recalled stories and itineraries, far more so than with highly abstract and static paper maps. In his final piece, McCrystal regards the satellite image of his country – the only born-digital image in the book – as a “cold and inhuman perspective” of it. He claims that digital map technologies “can only give us the numbers: the altitude, the bearing, the precise location.” It’s an odd take, and a disappointing note on which to end an otherwise superb book. If his last page is read as a rejection of digital cartography in general, then McCrystal has, in the final stretch, abandoned the open-minded philosophy with which his story began. I’m not sure that it is, and I encourage readers to make up their own minds.

The real substance of *Singing the Trail* is in the first two parts, and it’s well worth buying for this alone. Chapters 11 and 12 could have been condensed into one. A final, more forward-looking chapter on contemporary mapping was needed. It would have rounded out the project much better.

The ending aside, there’s very little not to like about it. The production quality is excellent. The maps are presented in their entirety, but the book’s reasonably large page format preserves the legibility of fine text in most cases. For some large maps, however, the size reduction is so great that the fine text is inevitably lost.

Readers will appreciate McCrystal’s writing style, which greatly enriches what could otherwise have been a very dry and dusty volume. He is articulate, colorful, and precise. His sense of humour crops up in places, and any reader who can’t handle a good pun won’t survive beyond the table of contents. At its core, though, *Singing the Trail* is philosophical about humanity’s view of the world and place within it. McCrystal lays bare his own personal connections with the subject of cartography. He succeeds brilliantly in developing a story that is unique to Aotearoa New Zealand, and he tells it in a way that is accessible and entertaining to a general audience and yet also very satisfactory to specialists. If you have any interest in pre-digital maps, I don’t recommend you buy this book – I demand it!

Michael Athanson

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Chris McDowell & Tim Denee, *We Are Here - an atlas of Aotearoa*

Massey University Press, Auckland, 2019. ISBN 9780994141538. Hardback, 240 pp. NZ\$70

This lavishly produced atlas comprises 240 pages of maps and graphics divided into eight sections covering the physical and human geography of Aotearoa, intertwined with its history – an exploration of how New Zealand has become what it is today. Each section is introduced by a different guest writer, setting the tone for the pages to follow. Individual illustrations have explanatory texts with *How to read* notes to aid interpretation of the more complex graphics.

Te Whenua This section examines the physical form, with elevation, geology and tectonics represented in traditional cartographic styles, concluding with a stylised map illustrating the area of different types of land cover. A detailed map of Christchurch shows the after-effects of the Canterbury earthquakes – around 86% of central and eastern Christchurch subsided between 2003 and 2012 while buried faults caused uplift in some areas.

Water and Air An exploration of water, wind, weather and climate including maps of drainage and rainfall but supplemented with a variety of graphics representing aspects of weather – from bar charts for rising temperatures to scatter charts for wind patterns for different cities and regions. *A Year of Weather* is especially interesting to unravel with so much information plotted in graphic form. A

wind-zone map of Wellington determines the degree of building reinforcement required to withstand the frequent high winds.

Living Things The other beings sharing the land. Threatened environments maps show areas with heavily reduced indigenous native biodiversity and conservation land – parks and reserves where precious plants, animals and ecosystems are protected. Detailed maps of the 13 National Parks are coloured according to their land cover. Distribution maps of indigenous creatures and introduced animals (pests and predators) are followed by the *Secret Lives of Cats* – traces of over 100 cats fitted with tiny GPS collars tracked over a week in Wellington.

Places A survey of settlements and a study of where people live and work. The map of historical *pa* locations shows that of 7321 sites only 144 are in South Island. There is a similarity with present day population distribution reflecting that people live where it is warmer, on the coast, in river valleys and where the land is fertile. Large-scale dot maps of major cities show where people live and work and a graphic of tangled coloured bands tracks the relative sizes of settlements over 130 years. The final map in this section is one of places with the longest travel times to a main centre, highlighting New Zealand's most remote areas.

People An exploration of birthplaces, faith, language, education, occupations, inequality and death. There is one map of Te Reo Maori speakers but the rest of this section is a miscellany of stream graphs, bar graphs, slope graphs, proportional circles and dots representing different aspects of population study. The child poverty chart represents over 250,000 children living in material hardship; an impactful chequerboard of dots spread over four pages.

Government Parliamentary history, lawmaking, budget spending, armed forces health and local government. Restructuring Health and Local Government maps follow a variety of topics – line graphs depicting the progress of Government and Private Members Bills from their introduction through the various readings till Royal assent – dot graphs illustrating the number of Maori speeches in parliament – pictograms depicting navy, air force and army statistics. A large-scale map of downtown Wellington locates and names every government agency.

Movement and Energy Movement of money, goods, services and people. Roads, railways, commuting into the major cities, traffic in towns and even underground wastewater pipes in Christchurch are mapped conventionally. The broadband access maps confirm the fastest speeds are concentrated in cities and towns. Proportional circles, coloured by continent and sized by value, illustrate imports and exports of different commodities – the colourful array of spots and circles is particularly mesmerising.

Heart and Memory A reflection on landscape, language, music and memory. The opening essay for this section is compelling. It is in this section that the story of the iwi of New Zealand strikes home. The *Names Etched in Stone* (monuments to past events and people) pages begin to haunt me — the New Zealand Wars of 1845-72 especially. There has been some progress in protecting spiritual landscapes such as Tupuna Maunga, destroyed through quarrying of the volcanic cones, and in 1954 a National Park was created for Te Urewera (the traditional home of Ngai Tuhoe *iwi*) after large swathes of the land were confiscated in the nineteenth century. In 2014 Te Urewera became recognised as a legal person. Its personhood was a world first – an ancestral landscape with its own identity, free of western notions of property ownership. Te Urewera belongs to itself. Powerful stuff. In 2017 Whanganui (the river and all its tributaries) became the second legal person in Aotearoa.

The coming together of geography, cartography and design gives us traditional cartographic styles but with a twist – unexpected colour schemes (as in the elevation map) challenge the reader to look more closely and discover what the map is actually telling us. The wide variety of different data

visualisation techniques also challenges convention on many levels but always with a feeling of satisfaction that there is so much to discover on each page – if you just take the time.

Nearly every map and chart is based on open data and I am particularly impressed with the *Tools and Software* and *Technical Notes and Data Sources* appendices. It is reassuring to read just how the data has been manipulated and represented and we are encouraged to reach our own conclusions from what we see.

There is an honesty and a passion in this work. It tells some powerful stories about Aotearoa – some are very thought provoking, others make uncomfortable reading. But “our past has happened and we can learn from it,” says Lillian Grace in the *Afterword*, “but the future – well that’s in our hands and hearts: we are here.” This atlas must surely make a significant contribution to the spreading of such a sentiment.

Mary Spence MBE

Former President, British Cartographic Society

Y.-Y. Chiang, W. Duan, S. Leyk, J.H. Uhl & C.A. Knoblock, *Using Historical Maps in Scientific Studies: Applications, Challenges, and Best Practices*

Springer, Cham (Switz.), 2020. ISBN: 9783319669076. Paperback, 114 pp. €40/US\$60/A\$77.

It’s no secret that historical maps hold a wealth of fascinating information about the past, and serve as witnesses to our cultural heritage, past landscapes, and even former human activities. In many archives and libraries across the world, these historical maps are held in their paper format for long-term preservation. However, many of these maps are also scanned into digital format, creating an opportunity to engage with their contents from a variety of physical locations and with a host of technologies. The scanning of these historical maps also opens up incredible research opportunities where scholars across multiple disciplines can supplement their work with the historical data held in the maps. Much of this research happens in Geographical Information Systems (GIS), where information from the maps is extracted and made available in spatial layers. In this book, Chiang *et al.* recognize the vast research opportunities made possible with the digitization of these relics, but they also highlight a disconnect between the users of digital historical maps and those developing digital map processing technologies. The goal of this book is to bridge the divide between these two siloed communities through demonstrating the opportunities, challenges, and recommended practices when working with historical maps in research. The authors fully realize this goal through five chapters which follow a logical flow introducing the research merit of historical maps, detailing case studies using existing digital technologies to engage with these maps, and finally highlighting emerging and future technologies that better enable the use of digital historical maps in research.

Chapter 1 introduces the layout of the book and its objectives. As a primer for the following chapters which follow a more technical tone, this chapter also explains why historical maps are rich data sources which merit further exploration. Through the use of digital map processing technologies, these maps offer detailed place information that can be applied to research topics in a variety of disciplines, including but not limited to urbanization, biodiversity, human disease, cancer and environmental epidemiology, and sociology. However, the authors believe this research potential has not been enabled through current technologies, as most usage of historic maps in scientific studies relies on manual digitization. Through more advanced processing technologies such as predictive algorithms, the information in these maps can be “unlocked” for more effective use in scientific research. As a reader who is less well-versed in digital map processing techniques but familiar with the concept of historical maps as a data source, I found this introductory chapter to be a satisfying precursor to better understanding the remainder of the book.

Following the primer of the previous chapter, Chapter 2 outlines several case studies of the applications of historical maps in scientific research, again beginning with a historical perspective on the use of historical maps in scientific research, with a shift towards the use of scanned historical maps in these settings. The case studies are framed through two types of digital map processing technologies: semi-automatic (where user intervention is required to some extent) and automatic (those not requiring any user intervention during the processing). The case studies cover a variety of topics, including land reclamation records in Hong Kong, and the identification of a wedding location (an historical synagogue) described by a Holocaust survivor in videoed testimony.

Chapters 3 and 4 are the most technically ‘dense’, and may be a section where readers with less of a technical background begin to struggle with fully grasping some of the content. However, readers with less technical experience than the authors will appreciate the clear and concise layout of these two chapters, which will likely enable a better understanding of the technical elements. Chapter 3 discusses the process (and associated challenges and trends) of building a program for map processing, modelling, linking, and publishing which would allow users to better search across large collections of historical maps for relevant data. In this chapter, the authors’ goal of forging a stronger connection between the user and developer communities is fully realized, highlighting the challenges in finding historical maps that are useful to research, while also identifying the elements of the map which may present difficulties for the producer community working to increase access to these elements. Chapter 4 discusses the opportunities and challenges in using Deep Convolutional Neural Networks (DCNNs or CNNs) to train computers for geographic feature recognition in order to quickly “unlock” the information held within historical maps. Again, this chapter effectively speaks to both users and developers by discussing the technical elements of producing these models, while also identifying what elements are most useful to the researchers.

Chapter 5 summarizes the aforementioned chapters and leaves the reader with logical next steps for what to expect from increasingly connected historical map user and developer communities, including the generation of new and exciting research opportunities. The authors note these research opportunities, which serve to unlock the 200 years’ worth of digital information “hidden” in these historical maps, are expected to help us better understand the long-term effects of human activities on our landscapes (p.100).

The book contains over 50 colour maps and figures to supplement the textual content, including images of historical maps (such as Fra Mauro’s *Mappa Mundi*, c.1450, and Da Vinci’s town plan of Imola, Italy, c.1502), as well as images highlighting examples of digital map processing technologies applied to historical maps.

This book may serve as a useful text for a variety of academic settings, including in advanced GIS seminars where students are expected to have a basic understanding of geospatial technologies and apply that knowledge towards more advanced projects. As the book endeavours to help readers understand how to bridge connections between users and producers of digital map technologies, it could also be well-suited for a user experience/UX course. Instructors of historical geography courses may also benefit from assigning the earlier chapters of this text as a point of discussion for the role of historical maps in modern-day research. While having a technical background may help readers better understand the processes described in the case studies of Chapter 2 and the technologies described in Chapters 3 and 4, casual readers with an interest in historical maps will likely enjoy the myriad examples of digital engagement with the information held in these important documents in order to better understand our past.

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Riaz Dean, *Mapping the Great Game: Explorers, Spies & Maps in Nineteenth-century Asia*

Casemate, Oxford (UK) & Philadelphia, 2019. ISBN: 9781612008141. Hardback with dustjacket, 293 pp. A\$50

Mapping the Great Game is the first book by Riaz Dean. It focuses on the efforts by Britain to maintain its presence in India by keeping influence, especially Russian influence, out of the region. The book begins with a general discussion of the region north of India and focuses on today's Afghanistan, Turkestan and Tibet. It covers the East India Company and the political situation around this region in the 19th century. The author tells an engaging story, sets the scene and brings the time to life. He humanizes the story by including details such as indiscretions involving some of the participants.

After setting the backdrop, Dean moves on to one of the biggest hurdles to the defence of India. This was the unknown with regards to the terrain and geography north of India, particularly any possible invasion routes from the north. Beginning with James Rennell's first survey of India in 1782, and a description of the methods he used to establish this first general "Map of Hindoostan", Dean moves on to a review and description of the Great Trigonometrical Survey (GTS) begun in 1800 by William Lambton on behalf of the East India Company. The GTS is described in detail with discussions of the instrumentation used, the obstacles that had to be overcome, and the lengths to which the surveyors had to go to surmount variations in measurements due to temperature fluctuations. As Dean comments "Britain had a growing colony to define, defend, and exploit and for this it desperately needed accurate maps" (p. 79). Dean chronicles a very human story, with detailed descriptions of the challenges involved in creating the baseline from St Thomas Mount, and the problems of overcoming refraction and the ongoing use of triangulation to create the Great Arc. The book continues with George Everest taking over the work of the triangulation in 1823. Dean's descriptions – of how Everest adapted the work to fit the terrain, developed and improved techniques such as night surveying, and constructed more than a dozen towers in the plains to provide the necessary height from which to make observations – are brought to life by vivid vignettes of Everest at work, including excerpts from notes to his subordinates.

The story of the Great Game, a phrase describing the conflict between Russia and Britain popularized by Rudyard Kipling in his novel *Kim* (1900), is the background to the mapping and surveying that Dean describes so well. As the work of the surveyors extends into the regions north of India, including Jammu and Kashmir, the mapping becomes more akin to espionage. The efforts to continue to do route surveying accurately, while disguising the work and the tools, is an interesting story that Dean tells well. His section on the struggles to determine the heights of mountains in Kashmir, as well as the hardships and the efforts to which the surveyors went to obtain accurate data, make for fascinating reading.

Dean further expands on these stories in describing the activities of Pundits, indigenous people who became surveyors. The story Dean documents of these individuals is a compelling one. The Pundits' attention to detail, all the while running the risk of being discovered and possibly executed for espionage, makes for a strong story and one that has not been widely shared. These pages share tales of how the Pundits would disguise themselves and the hardships they endured to create route surveys of the northwest frontier and Chinese Turkestan, including the first map of the city of Lhasa.

Finally, the author describes the final wars of the 19th century in Central Asia including the Indian Mutiny of 1857 and Russia's incursions into Central Asia, the taking of Samarkand in 1868, and the creation of Russian Turkestan in 1875. The negotiations to establish the region that is present day Afghanistan as a permanent neutral zone between Britain and Russia are covered, as well as the Second Afghan War of 1878.

The author has done a very good job of describing the complexities of mapping this region via route surveying and triangulation and making it a very readable and enjoyable story. At times the book reads like an adventure novel and keeps one engaged. He has done an excellent job in describing the work of the Pundits and its lasting importance to the mapping of the region. The descriptions of the difficulties in getting accurate data and the innovations required to overcome the difficulties are very interesting. The author brings this work to life for people who have never actually done work of this nature. He has also brought to life the personalities involved through his descriptive narrative. Overall the book is well researched and a fascinating read. The book includes six black and white maps to aid in following the story. The book also has a timeline that tracks both the major events of the Great Game and activities of the GTS and the Pundits, a short glossary and a well selected bibliography, as well as cited references throughout the book. I would highly recommend this book to general readers as well as anyone with a passing interest in mapping in general or in the Great Game.

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Bill Arthur & Frances Morphy (eds.), *Macquarie atlas of Indigenous Australia: culture and society through space and time*, Second Edition

Macquarie Dictionary Publishers, Sydney, 2019. 2nd edition. ISBN: 9781760556587 (hb), 9781760786946 (ebook). Hardback, 293p. A\$80 (hb), A\$20 (ebook)

This atlas is a powerful educational resource: capable of dispelling stubborn myths and greatly enhancing our understanding of Australia. A collaboration between the Australian Bureau of Statistics and the Australian National University – specifically CAEPR: the Centre for Aboriginal Economic Policy Research (where I worked as a research and administrative assistant in 2010-11) – the atlas includes chapters from over 30 Indigenous and non-Indigenous authors, who work in academia, the arts, Indigenous organisations, and the public service.

Following an introduction and a chapter on how to use the atlas, this richly illustrated work is divided into three sections. The first, and by far the biggest, is ‘The Socio-Cultural Space.’ This is followed by ‘The Socio-Economic Space’, and finally ‘The Socio-Political Space’. Each has chapters covering an array of topics, with succinct summaries and further reading lists. The two appendices and glossary, along with figures and entire chapters, are effectively cross-referenced throughout. The inside covers feature a locations guide at the front and a timeline spanning 70,000 years at the back, perhaps the only elements excluded from cross-referencing.

Chapter 1 sets out clear aims: to explore Indigenous life through spatial analysis, and to make data and information usually restricted to academics and government officials accessible to the general public. Tindale’s influential ‘tribal’ names (languages) map (1974) – an early effort to map Indigenous people nationally – and Davidson’s ‘Distribution of broad spearthrowers’ map (c.1940) exemplify single subject national mapping, which is contrasted with the atlas’ comprehensive remit. Tindale’s map is helpfully critiqued in the chapter on languages, and Appendix 1 compares Tindale’s spellings with atlas spellings. Thematic range is evidenced on p.4, where a ‘Barbed Spears’ map is followed by ‘Adults participating in the labour force in 2016’, illustrating thematic and choroplethic mapping respectively.

Next, ‘Representations of Space and Place’ foregrounds ontology, as maps and graphic representations of ancestral journeys and landscape creation are put into conversation, while authors Morphy and Mahood skilfully avoid equating them. Here relational direction is contrasted with magnetically fixed cardinal points. A brief critical discussion of anthropologist Baldwin Spencer’s term Dreamtime (from

the Arrernte *altyerre*), notes its now widespread use as well as some objections, and its inapplicability for Torres Strait Islanders. In this way authors maintain balanced coverage of Indigenous groups, including Torres Strait Islanders.

Language is a key strength. The editors deftly explain terminology choices, stating they use 'colonisers' rather than 'invaders' because colonisation is a specific form of invasion. The aim of promoting questioning is realised throughout, for example in discussing horse-hoof cores in Chapter 4: two proposed uses are presented, followed by a conclusion that the tool may have had both uses. Authors clearly state the reasons for changes in dominant explanations, for example the shift from believing microliths were an Asian invention, to recognising that local Indigenous Australians created them. One example of effective myth busting comes in the 'Governance and political participation' chapter, explaining that many Indigenous people were effectively (but not formally) excluded from voting on account of receiving charity.

I was impressed by the decision to resist a deeply-rooted antithesis in Western thought: material versus spiritual. Authors consistently present Indigenous exploitation of resources for sustenance and profit alongside ongoing cultural and spiritual connection to country. This position allows us to understand change. A map and story charts the journeys of two initiates in 1977 and 1994 respectively, with mobile phones and aeroplanes facilitating travel over greater distances with larger contingents in the later year. The northeast Arnhem Land mortuary practice of exhuming bones to put in hollow log coffins – which reminds me of Kim McKenzie's exceptional 1980 film, *Waiting for Harry* – was replaced with opening and cleaning the dead person's house, and burning their possessions. Further on we see log coffins in *The Aboriginal Memorial* (1987-88) at the National Gallery, commemorating Indigenous loss from colonisation. People in Mowanjum, Western Australia incorporate songs and dances about the flying doctor service into traditional ceremonial performance. Authors discuss the influence of collecting practices on Indigenous production in a section on the Kimberley Point spear. Again we see that profit and innovation are compatible with authenticity; they are another form of survival. The atlas gives a strong sense of movement, of how culture is carried.

Images and text are very well integrated. To mention some striking maps: the Northern Basins Aboriginal Nations' 'Hodgepodge map' (2016-17) displays the use and occupancy mapping that came from Canada to Australia some 10 years prior. Unfortunately this detailed map cannot be 'read' in full due to both the reduced reproduction presented, and the density of activities and connections to country depicted. Other maps that stand out are those the reader is unlikely to see elsewhere, such as the map of some words for 'policeman' in Australian languages. The map of atomic bomb and rocket test sites, 1940s-63 and a map indicating the geographic extent of child removals both powerfully show the spread of devastating events with intergenerational impacts. A map of art and craft centres in 2017 speaks to the ongoing strength, diversity and popularity of Indigenous art, supported and enabled by peak bodies. Perhaps the 'Regional movement to harvest bogong moths, Australian Alps' map could have benefited from a base layer with greater topographic detail. Ancestral being mapping in Chapter 8 is interesting and worthy, but a schematic map of ancestral tracks crossing a section of Walpiri country, NT seems too decontextualized, although this may have been a deliberate choice.

Illustrations (artworks, diagrams, seasonal calendars, photographs etc.) are generally presented with their own contextualising key maps, effectively ensuring that almost everything is 'placed'. Often illustrations support explanations, such as the drawings of seven types of multi-pronged and barbed spears. A Haddon Collection image of a Torres Strait man hunting dugong off a platform c.1900, and a photograph of a Torres Strait graveyard being eroded about a century later, illustrate change through time. David Mowaljarlai's *Bandaiyan: the body of Australia* (early 1990s) is well situated just before a chapter summary that notes how representations of country were initially localised, later becoming regional and even national, and combining Indigenous and non-Indigenous conventions. Authors present an insightful account of non-Indigenous interpretation and incorporation of the boomerang in

colonial iconography. Non-Indigenous attitudes are also well documented in a succinct and sensitive analysis of a gorget/king plate in the Burdekin River region. Jon Altman's 'Toyota with fish trap' photograph from Maningrida, Arnhem Land (1980) is a striking picture of complementary technologies. Exceptionally, 'Housing and infrastructure' lacks images showing people, and this, along with no mention of housing advocacy organisations like Healthabitat, leaves it weaker. The 'Economic life' chapter ends with a compelling Ricky Maynard photo of mutton-birders in the Bass Strait in the 1970s.

The analysis of households with internet access takes on particular significance during the COVID-19-spurred shift to learning and working from home. We learn about dynamic language transfer: how some English speakers carried Aboriginal words to new locations, where local Indigenous people perhaps interpreted that language as English, adapting terms for new items. The maps foster connections not generally made, for example drainage basins relative to culture areas. A map shows the 1912 Interdenominational Committee of Churches' proposal to divide north Australia into 'spheres' of missionary work. We learn that Abstudy – government payments to support Indigenous students and apprentices – was an early policy response following the 1967 Referendum. I had not realised that socially progressive South Australia was where land rights were first enacted (1966), and the Aboriginal flag first flown (1971). Redfern, where my paternal grandmother lived, had, in the Redfern Aboriginal Legal Service, the first free legal service in Australia. We can also appreciate Indigenous achievement and endeavour through individuals. To name just two: Brenda Gifford, a musician who has collected many oral histories of Aboriginal musicians, and Bill Jonas, the first Aboriginal Australian to gain a PhD, Australia's second Aboriginal and Torres Strait Islander Social Justice Commissioner, and the person to establish perhaps the first university geography course about Aboriginal Australia.

Largely absent is attention to gender (the index does not include the term); one of the few observations on gender is about women doing PhDs in the final chapter. Like other chapters, it ends with male-author-dominated further reading. As is often the case, historian Peter Read is solely credited with inventing the term 'Stolen Generations', his partner, historian and curator Jay Arthur, missing out on some credit. Further reading for the 'Social justice' chapter could be supplemented with political speeches and more works on treaty, as well as creative works, drawing on the wealth of powerful Indigenous authored novels, poetry, biography and autobiography. The use of GIS by Indigenous rangers, and Indigenous mapping initiatives, such as Indigenous Mapping Workshop Australia are also omitted. Further reading for 'Economic life' could benefit from publications beyond the majority CAEPR-authored and associated ones listed, perhaps including younger scholars. Some images have only an institutional source (but not a specific identifier) listed, so the author or collection is not always discernible.

The observation that Indigenous place names reflect shared interest in resources that often led to violence, as well as an acknowledgement of prior occupation, represents a central achievement of the atlas: fully engaging with Indigenous/non-Indigenous relationships, in all their complexity. These relationships, and the project's ethics, are reflected in the source list referencing permission or approval granted by the subjects of photographs or their descendants to reproduce the images. Arthur and Morphy indicate there are more Indigenous authors in this edition, and express their hope that a potential third edition would be mostly driven by Indigenous scholars and researchers, using Indigenous-authored data, a model we can see in the *Canadian geographic indigenous peoples atlas of Canada* (2018). Ending the atlas with the 'Evolving Patterns of Research' chapter, and Indigenous data sovereignty in particular, leaves readers poised to continue exploring the bases for our knowledge, relationships and future.

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