

Preface

This book is a selection of papers that, with one exception, started life as either conference papers or abstracts submitted to GeoCart'2010/the 1st ICA Regional Symposium on Cartography for Australasia and Oceania, held in Auckland, New Zealand. It follows on from the selection of papers published from the GeoCart'2008 conference as "Geospatial Vision", also published by Springer. All of the chapters have since been updated and revised thoroughly or, in the case of conference abstracts, worked up into full chapters. They have been blind peer reviewed by two referees of international research standing in geospatial science, mostly in the subdisciplines of cartography and geovisualisation.

The first section **The Changing Face of Cartography** has three chapters, two covering critical and historical cartography, the third an account of current true-3D mapping technologies.

To begin the book we have Mick Abbott's chapter which considers time in particular, a deeply argued piece of critical cartography for transforming conventional topographic maps so that they have a consistent temporal scale for a line of travel. In so doing, traditionally inexpressive cartographic depictions of wilderness in particular become richer, revealing cultural and experiential facets of the landscape.

Next, William Cartwright gives an account of the Gallipoli campaign in World War I (the 100th anniversary of which will be commemorated in 2015) and the various maps and cartographic artefacts that existed or were produced in response to the campaign in military contexts (on both sides of the conflict) and relating geospatial aspects of the battle to people back home.

To now and the future: Manfred Buchroithner and Claudia Knust's chapter represents one of the major branches of cartographic display available today with increasing ubiquity—that of 3D. They provide a comprehensive review of "true-3D" techniques (analogue and digital), taking in lenticular foil displays, solid landscape embodiments, tactile maps, Internet-linked 3D display and holography.

The next set of chapters is grouped in the **Space, Time and Cognition** section, though these themes are echoed throughout the book; Abbott's mapping of wilderness could be interpreted as a cognitive mapping and most of the chapters in the

sections of the book following this one are strongly embedded in a spatiotemporal context.

To kick off, Antoni Moore, Jared Hayes and William Wong re-examine Human–Computer Interaction (HCI) and cognitive science studies applied to ambulance dispatch displays, which must critically convey spatiotemporal data to emergency workers. Their approach hinges on a geographic approach to these studies, through linking similar proximity-based principles that have been developed independently and the novel application of cartographic symbolisation and generalisation to the time-critical interface domain.

Next, Chayn Sun, Pip Forer, Jinfeng Zhao and David Simmons perform a thorough data quality analysis on a valuable field-collected space–time dataset describing tourist flows into, within and out of the West Coast of New Zealand’s South Island. As well as revealing characteristic anomalies such as incompleteness and inconsistency in the minority of data collected, they apply solutions to these issues, such as interpolation, extrapolation and use of surrogate variables.

Lastly in this section, Jean-Philippe Aurambout, Falak Sheth, Ian Bishop and Christopher Pettit present findings from a project that assesses various local and regional geovisualisation techniques featuring Google Earth. The context is the critical communication of climate change scenarios and impacts. When tested on stakeholders the spatiotemporal representations were generally effective, though variation in feedback indicated that a visualisation suite rather than a single representation would be of most value.

Around the globe, most people will be using **geovisualisation tools enabled by mobile technologies and/or Web 2.0** if they are at all. The third section of the book has two diverse examples of this, though as implied in the previous chapter and doubly emphasised in the final section, Web 2.0 is a dominant theme in this book.

In the first offering, James O’Brien and Ken Field demonstrate the innovative use of the social network microblogging service Twitter and SMS to enable geocollaboration in a distributed student fieldwork context. Subsequent to this was the visualisation of the spatial footprint of discussions and the collaborative Tweet Map (with a temporal as well as spatial mode to emphasise the discussion thread) built for the purpose of land use classification.

Mariusz Nowostawski and Julian Münster continue the Web 2.0 theme, dealing explicitly with the mobile context. In their chapter they demonstrate their Virtual Stickies spatiotemporal annotation system, which combines mobile augmented reality and Google Maps on an Android platform.

In the first chapter demonstrating **geovisual analytics** perspectives, there is an investigation of complex volunteered crime data (from the Google Maps-based WikiCrimes resource) by Antoni Moore, Marcos de Oliveira, Carlos Caminha, Vasco Furtado, Victor Basso and Leonardo Ayres. Using the National Visualization and Analytics Center’s eXplorer tool they were able to identify patterns within and between attributes of crime at the Brazilian state level and degree grid cell level.

The analytical theme continues with Slava Kisilevich, Daniel Keim, Natalia Andrienko and Gennady Andrienko applying a powerful multi-stage geovisual analytics methodology to a massive database of geotagged Flickr photos (extending the Web 2.0 theme). Through spatial clustering, time series analysis, analysis of text and linking to Point of Interest data, they were able to identify meaningful spatiotemporal clusters reflecting stationary, reappearing, occasional and regular moving behaviour.

The final chapter uses the innovative ringmap spatiotemporal visualisation method as a tool for geovisual analytics. Jinfeng Zhao, Pip Forer, Mike Walker and Todd Dennis report on the application of the ringmap to gain insights into the spatiotemporal behaviour of the possum, a switch from the predominant use of such techniques on human temporal geography. Furthermore, they adapt the ringmap to represent possum GPS collar data at day as well as year scales, and utilise the established space-time aquarium of Hägerstrand's time geography.

We would like to gratefully acknowledge the efforts of the authors who supported this book by either responding to our call for papers or contributing their chapters afterwards. Their innovative and cutting-edge research, predominantly undertaken in the Australasia and Oceania region, contributes to the advancement of cartography and GIScience internationally. Their commitment to the project by meeting tight deadlines and promptly responding to editorial comments is very much appreciated.

We wish to express our gratitude to the international experts, who agreed to serve on the Paper Committee. Their prompt and in-depth reviews and notes helped to refine this book and assisted us in the editorial work.

Special thanks go to Professor Pip Forer for suggesting (again) a contemporary and inspiring theme "*Cartographies for Tomorrow: Mapping in a mash-up world*" for GeoCart'2010 and the ICA Regional Symposium on Cartography for Australasia and Oceania. Thanks to our sponsors: Statistics New Zealand, School of Environment at The University of Auckland and New Zealand Cartographic Society, without which these events and subsequently the book would not have been possible.

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To Kirsten, Alex, Danny and Cormac...

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