A04

Photography by Anita and James Maxlow.

Graphics by Anita and James Maxlow.

Permission was granted by the Commission de la Carte Geologique du Monda, Paris to use and digitise the Geological Map of the World at 1:25,000,000 M scale (1990), published by the Commission for the Geological Map of the World and UNESCO © (1990).

Digitising the Geological Map of the World (1990) © was originally carried out by Simon Brown of Geoviz International.

James Maxlow

Beyond plate tectonics

Unsettling settled science

Aracne editrice

www.aracneeditrice.it
info@aracneeditrice.it

www.gioacchinoonoratieditore.it
info@gioacchinoonoratieditore.it

via Vittorio Veneto, 20
00020 Canterano (RM)
(06) 45551463

ISBN 978–88–255–1890–0

I[st] edition: November 2018

And some rin up hill and down dale, Knapping the chunky stanes to pieces wi' hammers, Like sae many road makers run daft. They say it is to see how the warld was made.

Sir Walter Scott, *St. Ronan's Well*, 1824

Index

Part Two
Empirical Global Data Modelling

Part Three
Speculating on the Geological Rock Record

About the Author

James Maxlow was born in Middlesbrough, England in May 1949. James' passion for geology was no doubt inherited from a family history of "ironstone workers" supplying iron ore mined from the Eston Ironstone Mine to the foundries and steel rolling mills of Middlesbrough, England, during the early 1800s to mid–1900s.

James immigrated to Australia with his parents in 1953 where he grew up in Melbourne. He studied Civil Engineering at the then Swinburne College, but soon became disillusioned with engineering and redirected himself to geology at the then Royal Melbourne Institute of Technology, graduating in 1971. It was in Melbourne where he later met and married his lovely wife Anita and during their work and travels throughout Australia they had three wonderful children, Jason, Karena, and Jarred.

James' interest in alternative tectonic theories stems from working in the Pilbara region of Western Australia during the late–1970s where he first read the book "The Expanding Earth" written by Professor Samuel Warren Carey. The Pilbara region is a huge, Precambrian domal structure, several hundred kilometres across. It occurred to James that this relatively undisturbed ancient domal structure may have been a fragment of a much smaller radius primordial Earth.

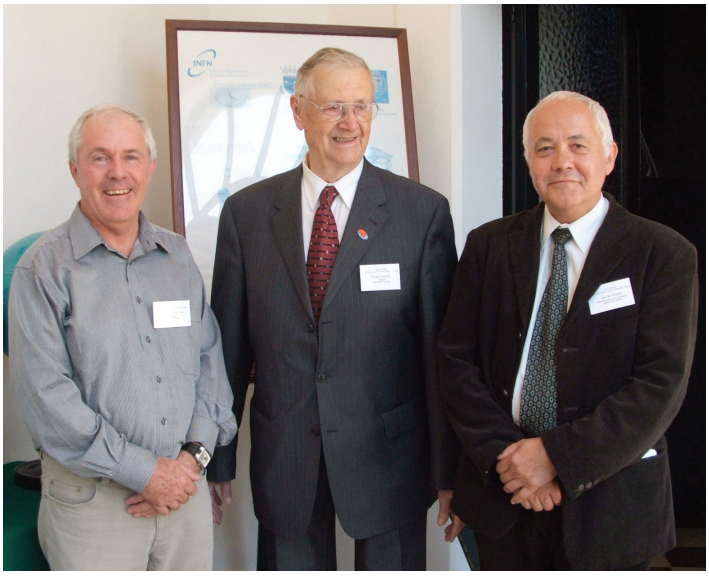
During his academic years James met and communicated with many wonderful scientists from around the world. Most notable of which was the late Professor Samuel Warren Carey from Tasmania, the father of modern Earth Expansion, Jan Koziar from Poland who was the first sci-

entist to measure and calculate an ancient Earth radius using modern seafloor mapping, and the late Klaus Vogel from Germany, the father of modern small Earth modelling studies. It was during James' academic studies that Professor Carey recognized the potential of his research into Global Tectonics. Carey then kindly "passed on his Expanding Earth baton" to James in order to further ongoing research into Expansion Tectonics; an honour that James deeply cherishes.

James gained his Master of Science in geology in 1995, followed by a Doctorate of Philosophy in 2001 at Curtin University of Technology, Perth, Western Australia, including a letter of commendation from the university Chancellor for original thought provoking research into Expansion Tectonics. His Master of Science thesis was called: "Global Expansion Tectonics: the Geological Implications of an Expanding Earth", and his PhD thesis was called: "Quantification of an Archaean to Recent Earth expansion Process Using Global Geological and Geophysical Data Sets."

Dedication

This book is dedicated to the memory of Ernst Klaus Vogel who passed away peacefully during November 2015. Klaus is especially noted for his contribution to small Earth modelling studies using early versions of sea-floor mapping. My wife Anita and I were fortunate in visiting Klaus and his dear wife Eva–Maria at their home in Werdau in the former East Germany during the mid–1990s where we were warmly received and entertained.



The author (left) with Klaus Vogel (centre) and Jan Koziar (right) attending the 37th Interdisciplinary Workshop; The Earth Expansion Evidence: A challenge for Geology, Geophysics and Astronomy, held at the Ettore Majorana Foundation and Centre for Scientific Culture, Erice, Sicily, 4–9 October, 2011.

Klaus' small Earth models represent the first time that modern seafloor mapping has been used to both constrain plate assemblage and to accurately constrain ancient Earth radius back to the early–Jurassic Period.

Preface

With the hindsight of over fifty years of global tectonic data collection and processing by numerous researchers, my primary intent in writing this book is to utilize this modern global observational data in order to investigate what else this data tells us about the formation and subsequent geological history of the Earth. Or, as Zarebski noted, to investigate "new ways of seeing and understanding the physical world".

Over the past half century modern global tectonic data has primarily been investigated from a conventional Continental Drift–based Plate Tectonic perspective. To an observer it may seem that science has adopted Continental Drift as a unique and comprehensive mechanism for our tectonic understanding of the Earth and all is settled in the geosciences. In reality, at no stage over this time period has the scientific community been encouraged, or has seriously deviated from conventional Continental Drift–based plate theory in order to see what else this modern global data may reveal beyond our current Plate Tectonic understanding.

It is emphasized that the research presented here — based exclusively on modern global observational data — is a data modelling exercise focused on modelling this data independently of any present or pre–existing theory. It is important to note this is not a theory modelling exercise. This critical analysis allows the data to tell its own story and reveals a new tectonic picture of the Earth that more closely aligns with global empirical observations. It will be systematically shown that the resulting picture overcomes a great number of known limitations and problems still facing Plate Tectonics today and, in particular, the use of Continental Drift as the basis of plate theory.

The research presented here does not directly challenge or discredit Plate Tectonics. It does, however, offer new ways of interpreting and un-

derstanding the vast amount of Plate Tectonic observational data now available today. A concern raised during this research is that, when Plate Tectonics was first introduced during the 1960s, the decision to use Continental Drift as the basis of plate theory may have been premature and ill–advised. Because of this decision, scientists have since failed to utilize this modern global tectonic data in order to further test or quantify this decision.

The work covered in this book represents the results of an intensive research study by the author, a retired professional geologist and researcher, over a period of twenty five years. Because no one can know for certain what has happened to our Earth over the four to five billion years of its existence, it is considered that, in order to understand more about what modern global data has to offer, we need to start from the present–day Earth and, step by step, reconstruct global data for increasingly older geological periods, thus working our way back in time. This *actualistic–principle* approach, which emphasizes reliance on observed geology, is already the basis for modern understanding of the geological evolution of our Earth: *the present is the key to the past*.

This book is structured in three main parts. Part 1 will introduce historical aspects relating to the origins and development of global tectonics. Focus then shifts to presenting modern geological mapping evidence from the continents and oceans which will be displayed on purpose–built spherical scale models of the Earth. This geological mapping is then used exclusively to accurately constrain crustal plate assemblages back to the early Archaean — the beginning of geological time — an unprecedented outcome. From this spherical modelling study the origins of not only the continents and oceans but also the origins of the more ancient supercontinents and primitive seas will be discussed at length.

Part 2 extends on these geological modelling studies by introducing additional global tectonic observational data from a wide range of more specialized fields of Earth science. These fields include geology, palaeogeography, palaeoclimate, biogeography, palaeomagnetics, natural metallic and fossil–fuel based resources, and space geodetics. The opportunity will also be taken to speculate on a proposed causal mechanism for the observations raised.

Part 3 introduces even more detailed and specialized geology in order to compare and contrast the different viewpoints raised by this new shift

in thinking. The implications raised by the modelling study will also be used in an attempt to further promote original thought and to create new opportunities for on–going research within the sciences.

The approach taken here is considered necessary in order to promote increased objectivity in the modelling and interpretation of all global tectonic observational data. If conventional Continental Drift–based plate theory is truly consistent with the modern data, then there is no problem and the data modelling will highlight this. If it is not, then there exists a problem that demands to be taken seriously and in the Earth sciences must be fully addressed by the scientific community as a whole.

The data used throughout this book is sourced from well–renowned international datasets including the International Global Palaeomagnetic Databases of McElhinny & Lock (1996) and Pisarevsky (2004), the distributions of ancient shorelines based on the published data of Scotese (1994) and Smith *et al.* (1994), and palaeobiogeographic data sourced from the Paleobiology Database (PaleoBioDB) (2015). The distribution of metals is sourced from the USGS Mineral Resource Data Set (MRDS) (2015) and oil and gas resources sourced from various publications.

The contents of this book are written in an informative style and are designed to appeal to a wide audience — in particular those with an innate exposure to the natural sciences — and to persons with prior exposure and qualifications in the various Earth sciences.

Much of the first part of this book is based on geological research originally carried out as part of the requirement for the award of the Doctor of Philosophy of Curtin University of Technology in Perth, Western Australia, completed in 2001 with some extracts from my earlier Master of Science award of Curtin University of Technology completed in 1995. The book is also a completely revised and updated extension of earlier books, including: *Terra non Firma Earth*, first published in 1995, and *On the Origin of Continents and Oceans: A Paradigm Shift in Understanding*, first published in 2014, along with the introduction of an extensive range of new modern data and modelling studies.

Acknowledgements and special thanks go to my wife Anita Maxlow of Terrella Press for her support, encouragement, and assistance in editing, and for her patient involvement in graphical display and publication of this book. Sincere thanks must also go to Philippe Bouysse of the Commission de la Carte Geologique du Monde, Paris, for granting permission to use

and digitize the *Geological Map of the World* at 1:25,000,000 M scale (1990), published by the Commission for the Geological Map of the World and UNESCO©. Simon Brown of Geoviz International, Perth, Western Australia, who originally digitized the Geological Map of the World which was then used as a base map in my research. Also thanks are due to Professor Cliff Ollier, Dr Errol Stock, John B. Eichler, Jan Koziar, Bill Erickson, and Stephen Hurrell, amongst many others, who have provided invaluable assistance with editing of early versions of this text and providing constructive assistance on content and structure, stimulating discussion on mountains, causal mechanisms, crustal processes, dinosaurs, as well as ongoing encouragement towards completion of this book.

Dr James Maxlow
Perth, Western Australia, 2018.