

The IRISH ASTRONOMICAL TRACT:
A Case Study of Scientific Terminology
in 14th Century Irish

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SYNOPSIS

Included in this work, is a general historical overview of the development of astronomical knowledge in the West from the realms of Greek scholarship in classical times through to the Renaissance and the threshold of modern physics. The subject matter of both the Irish Tract and this review extends beyond the strict confines of astronomy, encompassing the physical sciences in general.

The extent of astronomical knowledge in medieval Ireland is given specific attention with a review of scholarly works in Latin since the seventh century. This includes a number of specialist studies on astronomical topics and related cosmographical fields. Also included are numerous incidental references to astronomical matters from both Irish and Latin literature during the Middle Ages.

Attention is devoted to the surviving manuscript copies of the Tract and the question of its sources, origin and purpose. A possible Dominican context for the compilation and dissemination of the Tract is considered. A detailed commentary of the technical content of each chapter is presented, together with reference to contemporary developments in the West and to the occasional clues as to the institutional, geographical and chronological origins of the Tract.

A study of the technical terminology used by the Irish compiler is presented in detail. Reference is made both to earlier Irish terminology where appropriate, as well as to the limitations imposed by the fact that many of the scientific concepts were yet to attain clarity that came with the advent of Newtonian physics, Copernican astronomy and post-Colombian geography.

The data entries on ms Stowe B are evaluated and compared with computer generated data of astronomical movements in the 14th and 15th centuries with a view to ascertaining the time of compilation of the Tract and its working life.

A revised English translation of the Tract is included in the appendices together with Maxwell Close's unpublished commentary to relevant portions. An Irish edition, closely following the ITS edition of 1914 is also included. Corruptions to the text are footnoted together with the likely run of the original text.

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This is to certify that the research work presented in this thesis was carried out by me in the Department of Celtic Studies at the University of Sydney and has not been submitted previously for any other university degree or award.

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ACKNOWLEDGEMENTS

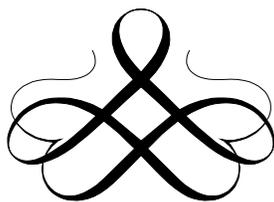
Among those who have assisted with this work, special mention needs to be made of the late Bernard Martin, formerly of the Department of Celtic Studies at this university. Bernard was largely responsible for the scope and direction of this research and his input in its early stages as Assistant Supervisor was invaluable. His unexpected death in January last year was not without its apprehensions on my part. I am also indebted to Helen Fulton who was likewise involved in the early discussion sessions that mapped out a blueprint for future investigations. Over the last two years Helen has assumed full supervision and I am grateful for her valuable suggestions and patient proofing of thesis drafts.

Other members of staff at Sydney University have contributed in various ways during the early stages of this work, notably, Aideen Cremin and Lynette Olson.

I would also like to acknowledge the assistance of Bernadette Cunningham at the Royal Irish Academy for permission to view ms Stowe B and for access to the photo-negative prints of its folios during my visit to Dublin in 1999.

It is appropriate at this point in time for me to put on record a belated expression of gratitude to David Boulton who gave me my first lessons in spoken Irish during my student days more than thirty years ago. David was then a tutor at the University of New South Wales and a recent graduate of TCD.

Lastly, I should like to mention my supportive family who have looked upon this work with a mixture of benign bewilderment, amusement and encouragement. Instrumental in the conversion of my lifelong interest into formal studies was my daughter Megan who recently graduated with Honours in Celtic Studies.



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Chapter 1: Introduction

In the preface to her 1914 edition of the 14th century Irish Astronomical Tract and its English translation, Maura Power made the following pertinent comment:

A comparison of the text now in hand with some of the numerous medical tracts, almost all of which still remain unedited, would doubtless supply much interesting material with respect to the resources of our language in treating of purely scientific and technical subjects.¹

It is now almost 90 years since Power made this remark and regrettably, little work has been directed towards the Tract during that time. The present study seeks to partially remedy this neglect by an evaluation of its scientific and technical terminology. It had earlier been my intention to include some of the above mentioned medical tracts, but the likely scale of this undertaking soon dictated it prudent to postpone the medical dimension. In any case, the subject matter in the so-called astronomical manuscripts is largely confined to the physical sciences, bearing little overlap of content with the biological works. Nevertheless, a natural sequel to the present study would be a review of the medical tracts along the same line.

Since the publication of Power's Irish Text Society edition in 1914, attitudes towards Irish history and scholarship in the Middle Ages have changed somewhat. Joyce, in his voluminous 'Social History of Ancient Ireland' (1920),² made reference to 'several ancient treatises in the Irish language.' The reference was to the three surviving copies of this Tract. There is a hint of apology in his admission that the content of these works derived ultimately from outside sources. He noted that 'they appear to have been in considerable measure copied or transcribed from foreign treatises'³. He then sought to highlight indigenous astronomical knowledge as if it were a self-contained and self-grown element of Gaelic culture.

A closer look at the Tract reveals it to be an integral participation in the vigorous translation and dissemination of scientific works that led to the European Renaissance. Viewed in this light, the Tract places Irish learning firmly within the cultural and scholastic life of the West; by no means a small feat for a distant country on the Atlantic fringe of Europe.

Given the size of this Tract, some 26,000 words, it provides a useful case study of the ease with which the Irish language was able to cope with the need for specific scientific and technical terminology. A number of earlier astronomical and cosmographical works had been written by Irish scholars, but invariably these were in Latin. A limited number of technical terms can be gleaned from the general corpus of Irish literature, but in the main, the compilation of this 14th century Tract provides us with the earliest substantial repository of such terms in Irish.

¹ M. Power, *An Irish Astronomical Tract*, Irish Texts Society, Vol. 14, London, (1914), p i.

² P. W. Joyce, *A Social History of Ancient Ireland*, Gill & Sons, Dublin, 1920, (Vol. I) p464.

³ *Ibid.*, p464.

It will become clear in this study that there were various mechanisms employed by the Irish author to meet this need. In general, the language seems to have been remarkably adept. Many of the vernacular terms employed are still current in modern Irish. By way of comparison, such terms in English (and other European languages) are usually borrowed from Latin. A typical example is the Irish word for ‘element’, *dúil*, a term originally signifying a ‘created being’.

The precise conceptual meaning of many of these technical terms has, of course, evolved considerably since the later Middle Ages. In this sense, the Tract serves also to illustrate in small measure the historical development of science in the West. The inclusion of a revised English translation, together with the editing of Maxwell Close’s comments as a separate Appendix, recognises this valuable dimension to the Tract.

I have included a digressional matter of some interest. One of the Royal Irish Academy manuscript copies of the Tract carries with it additional data relating to the movements of the sun and moon at some stage during the working life of the text. These details have been translated and subjected to computer analysis with a view to determining a possible date for these long passed astronomical observations. The results are reported in Chapter 5.

It has been said that the manuscripts of the fourteenth and fifteenth centuries bear witness to a Ireland’s own Gaelic Renaissance,⁴ the so-called ‘Second Irish Revival’.⁵ A detailed study of the surviving manuscript copies of this Tract certainly confirms this view.

Within this study I have used the name, ‘The Irish Astronomical Tract’, generally shortened to the Tract.

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⁴Rowena Finnane, *Late Medieval Irish Law Manuscripts: A Reappraisal of Methodology and Context*, MA Thesis, Sydney University, 1991

⁵ M Power, *An Irish Astronomical Tract*, Irish Texts Society, Vol. 14, London, (1914), c.f.; Introduction, p.xi.