



Folio (290 by 196mm). Original working autograph and holograph manuscript, in Italian, illustrated throughout with diagrams, and drawings of instruments, on seventeenth-century Italian paper, with various watermarks including a Sun (similar to Heawood 3893) and a Medici Coat-of-Arms (similar to Heawood 786), extensively revised at the time, some pages edited with paste-overs, others excised; early drab Italian stiff paper wrappers, stabbed and sewn as issued.

#### Collation

282 pages, foliated in pencil; pages [i-iv] bio- bibliography by Domenico Maria Manni; 1: title-page; 2: additional draft title-page, and dedication; p3-14: prospectus of contents (cancelled), followed by autobiographical 'Proemio'; p15-139: 'Direttorio Marittimo', revised texts of 28 chapters of 'Dell'arcano del mare', incorporating theological 'Proemio', pp39-40; p140-146 addenda.

#### Condition

A few leaves missing between folios 86 and 87 (chapter xix and the beginning of xx), some lower margins trimmed, occasionally crossing the text.

## DUDLEY'S ORIGINAL MANUSCRIPT MANUAL FOR THE USE AND INSTRUCTION OF THE OFFICERS OF THE TUSCAN FLEET

**Direttorio Marittimo di Don Roberto Dudley Duca di Northumbria fatto p[er] ordine del Ser[issimo]Gr: Duca di Toscana suo Sig[no]re e diviso in due Tomi et ogni Tomo in due libri co[n] suoi Capitoli.**

#### Author

DUDLEY, Robert; and others

#### Publication date

c.1637-1647].

## **Publisher**

## **Publication place**

[Firenze,

## **Physical description**

Folio (290 by 196mm). Original working autograph and holograph manuscript, in Italian, illustrated throughout with diagrams, and drawings of instruments, on seventeenth-century Italian paper, with various watermarks including a Sun (similar to Heawood 3893) and a Medici Coat-of-Arms (similar to Heawood 786), extensively revised at the time, some pages edited with paste-overs, others excised; early drab Italian stiff paper wrappers, stabbed and sewn as issued.

## **Collation**

282 pages, foliated in pencil; pages [i-iv] bio-bibliography by Domenico Maria Manni; 1: title-page; 2: additional draft title-page, and dedication; p3-14: prospectus of contents (cancelled), followed by autobiographical 'Proemio'; p15-139: 'Direttorio Marittimo', revised texts of 28 chapters of 'Dell'arcano del mare', incorporating theological 'Proemio', pp39-40; p140-146 addenda.

## **Condition**

A few leaves missing between folios 86 and 87 (chapter xix and the beginning of xx), some lower margins trimmed, occasionally crossing the text.

## **Dimensions**

## **Notes**

The only known manuscript example of any part of Robert Dudley's magnum opus, 'Dell'arcano del mare' held in private hands.

An astonishing survival: a working manuscript, seemingly specifically assembled for the eyes and instruction of the officers of the Tuscan Navy, the Knights of St. Stefano, rather than for a public audience. This suggestion is borne out by the wording of the first title for the work that Dudley has crossed out (page 2): 'Compendio del Direttorio Marittimo: Il pr[im]o Tomo e intilato, Supplemento della Navigare. Nel pr[im]o libro si discorre dell 'arte, piu Curiosa di Navigare...'.

This was also the theory of Sir John Temple Leader, previous owner, and Dudley scholar: "It seems probable that the Arcano del Mare was only a resume of several previous works by Dudley. One of them is the MS. volume, quarto size, of which I possess the original, mostly in Dudley's own hand. It is called the 'Direttorio Marittimo', and was written in very faulty Italian for the use and instruction of the officers of the Tuscan fleet. In it most of the subjects enlarged upon in the Arcano, are treated concisely, including great circle sailing and all kinds of navigation; the administrative management of a fleet, and its manoeuvres in a naval battle, etc. The book is in ancient covers of thick paper, and preceded by a dedication to the Grand-Duke, and by a sketch of Dudley's own naval life, written in his own hand with all his corrections and underlinings" (Leader, page 19).

Leader acquired the 'Direttorio' from Florentine librarian, collector, and bookseller, Pietro Bigazzi, from who he also acquired Gian Carlo de' Medici's (1611-1663), first edition of 'Dell'Arcano del mare', and a second edition, too. Leader writes about all three works, and the story of their acquisition, in his 'Life of Sir Robert Dudley' (1895).

The texts of the 'Direttorio' have clearly been written by Dudley, over time, but from at least as early as 1643-1644, and are further annotated by him up until 1647 (he died in 1649), and then further annotated by others, up until the publication of the second edition the 'Dell'arcano del mare' (1661).

They include: Dudley's autobiography, in which he sets out his credentials as an expert in all things maritime – exploration, navigation, naval warfare, and architecture; several drafts and a completed version of a theological preface, or 'Proemio', found just before the colophon in some examples of the first edition of the 'Dell'arcano del mare' (1647); a further 28 chapters of material related to the text of the first edition of the 'Dell'arcano del mare' (1646-1647); and theoretical navigational material not published in either edition of the 'Dell'arcano del mare'.

## Contents

Pages [i-iv]: Later Bio-bibliography

Written by Domenico Maria Manni (1690-1788) director of the Biblioteca Strozzi, polymath, editor and publisher, also a member of Academia dell Crusca. He owned the 'Direttorio', according to Giovanni Targioni -Tozzetti (1712-1783), see 'Notizie degli aggrandimenti delle scienze fisiche: accaduti in Toscana nel corso di anni LX del secolo XVII Florence', 1780, volume I., page 80. These notes include mention of the manuscript design by Dudley of the Mole at Livorno in the time of Cosimo II (1590-1620) which was then in the Magliabechiana library. Manni also notes two imperial folio volumes, in the Palatina di Pitti library, of "Marine Treatises", i.e. Dudley's manuscript Treatise on marine architecture, began before 1610, in English and continued in Italian, by Dudley, until about 1635 (see Maria Enrica Vadala, 'Il Trattato dell'architettura marittima di Roberto Dudley, storia e dispersione di un manoscritto', Studi secenteschi, vol. 61 (2020), pages 193-237).

Manni writes: "Leaving aside many superfine circumstances which have given the Author the opportunity of attending to the theory and practice of the art of navigation, it will suffice to say that as a young man he had a natural sympathy for the sea, so that although he had a very pleasant charge on land in 1588 under his father, then Generalissimo, he nevertheless wanted to exercise the maritime militia, on which the greatness and reputation of the Kingdom of England then depended. Desirous still of discovering new countries (which pertained to manufacture and arm vessels of war), Author confided much in the great knowledge and experience of the famous seafarer and learned mathematician Abram Kendal of England, his master. Hence it followed that in 1594 he began his voyage to West India to discover and open the passage of the Guyana or Walliana Empire in America, and at that time he was much nominated as a great and rich nation; as he did with good success being General by sea and land with his vessels and people etc."

## Pages 1-2: Title-pages and Dedication

Dudley opens his 'Direttorio' with a heart-felt dedication, officially to Grand Duke Ferdinand II, as was proper, and as he did 'Dell'arcano del mare'. However, in this instance, he goes to great pains to go above and beyond that dedication to extend his tribute to the "Generalissimo del Mare", i.e. Gian Carlo de' Medici (1611-1663), Cardinal from 1644, "High Admiral of the Tuscan Navy", "General of the Mediterranean Sea", and "General of the Spanish Seas". Gian Carlo was the second son of Cosimo II de' Medici, Grand Duke of Tuscany, and Maria Maddelena of Austria, and the recipient of a superb example of 'Dell'arcano del mare', with which the current manuscript was previously housed.

Humbly, Dudley hopes that "in [the 'Direttorio'] one can find something not useless for the common good of Navigation for your Highness and for Prince Giovanni Carlo Medici". And thanks the Medici family for their support during the "past 37 years that he has been in voluntary exile ... and under their protection", dating the dedication to 1643-44.

Dudley then notes that he took the trouble to finish the 'Direttorio' in the best way that his experience in 50 years of maritime affairs (i.e. since 1594) has been able to produce and plan, but if he has erred in anything he hopes he will be excused.

## Pages 3-14: 'Supplem[en]to della Navigaz[i]one perfetta Tomo primo libro I :proemio'.

Dudley writes of his many maritime achievements in exploration, warfare, and naval architecture,

clearly intending to give authority to the following texts: " Setting aside many superfluous circumstances which have occasioned the author to turn his attention to the theory and practice of the art of navigation, suffice it to say that he is Nephew of three Grand Admirals of England (or Generalissimi of the Sea, which is one of the highest offices held under that of the Crown) and that he had from his youth a natural sympathy for the sea, and this in spite of his having in 1588 held the very honorable post of Colonel in the land forces, which he exercised under the command of his father, the General in Chief and Grand Master of England...&quot.

As Tyack reports: this "proemio", or autobiographical preface, is not the "theological proemio" found in some examples of the first edition of the 'Dell'arcano del mare' (1646-1647) and in all examples of the second edition of 1661, but an account of Dudley's career before he arrived in Florence. It is clearly designed to establish his credentials and to add great authority to the 'Direttorio'. The text describes how Dudley had learnt the art of navigation and maritime discipline at about the age of 17, had experience of battle under his father the Earl of Leicester, and of navigation, and of designing warships and of participating in sea battles. There is a version of the text he wrote for Richard Hakluyt's 'Voyages...' (1600) (volume III page 574) about his voyage to Trinidad and to the Orinoco, and Guiana in 1594 (see George F. Warner, 'The voyage of Sir Robert Dudley ...to the West Indies', (1594- 1595), Hakluyt Society, 1899).

In this autobiographical preface Dudley writes: "Si contento, non di meno, che consumasse il capriccio e la spesa dall India Occidentale, p[er] scoprire et aprire il passo dell Imperio di Guiana o Walliana in America molto nominato in quel tempo pazione grande e vicca si come fece essendo Generale per mare... si fece padrone dell Isola della Trinita scopri la Guiana" - "He was happy, nevertheless... to discover the West Indies and open the way to the Empire of Guiana or Walliana in America, much known at that time as a great and wealthy country, and to be the General for the sea voyage ... he made himself master of Trinita Island [Trinidad]; He discovered Guiana". Dudley always claimed that he got to the river Orinoco in Guiana, in 1594 before Sir Walter Raleigh.

Dudley then writes about the famous learned mariner and mathematician Abraham Kendal who was his ship's master on his voyage to Trinidad, and then records how he had sent Captain Wood on a voyage to China (which in the event was unsuccessful). He records his own participation in the raid on Cadiz to destroy the Spanish fleet being assembled in 1596; he says in this and other voyages he practised navigation and the maritime and military disciplines, using great circle sailing and longitude: 'di gra circoli e della longitude', adding the words "come Arcano" - "as in the Arcano", presumably a bit later.

He says that mariners have not well understood, nor practiced, navigation, according to great circles, and the other "spiral and horizontal methods", with practical longitude.

It is his intention to explain how to do this, and a later insertion, by Dudley, in the margin, says that the first book teaches the method of using the hydrographical and general charts of the Author.

#### Page 14 'Proemio'

This is a theological preface to the 'Direttorio', and Dudley assures the censors that these potentially troublesome mathematical matters were in fact created by God himself along with natural and supernatural elements. Dudley formulates his argument for scientific knowledge, of which there are three types: the natural, supernatural, and the efficacy of the scientific (i.e. geometry and mathematics, see page 39) "le cose mathematiche sono certe, sicure et infallibili p[er] dimonstrazione e pero sono pui eccellenti delle cose naturali...ma sono inferiori, delle cose supernaturali et immutabili". An earlier version, on page 15, has crossed out "intelletto humana non arriua" - "Mathematical things are as certain and infallible by demonstration and therefore they are

superior to the natural senses ...but they are inferior to the supernatural things to which the human intellect cannot reach”.

There are no fewer than four early versions of the theological ‘Proemo’ in the ‘Direttorio’, two of which are incomplete revisions of difficult passages. However, the “theological proemio” which appears on pages 39-40 of the ‘Direttorio’ is published in some examples of the first edition (1646-1647), and all examples of the second edition of the ‘Dell’arcano del mare’ (1661).

Pages 15-139 text from ‘Dell’Arcano del mare’ (1646-1647)

This section of the ‘Direttorio’ is composed of early versions of important passages in Books One, Two and Five of ‘Dell’Arcano del mare’: a compendious study of naval theory and practice, treating of longitude and latitude and Great Circle sailing. They appear as drafts and revisions of twenty-eight chapters (lacking part of Chapters 19 and 20); but the order and headings of the chapters does not correspond with that of the ‘Dell’arcano del mare’.

The subjects in this part of the ‘Direttorio’ cover many of those in ‘Dell’arcano del mare’: how to navigate along known and unknown the coasts; knowing which winds prevail; currents and the times of tides of places; how to use ‘Tables of Ephemerides’ for celestial observation; how to ascertain magnetic declination values with a meridian compass across the globe. In the field of cartography, Dudley considers how to determine latitudes and longitudes across the oceans, and explains the errors of “horizontal” or common charts in navigation. He proposes the use of mathematical instruments, as well as celestial observation, to accomplish correct navigation.

Interestingly, he also proposes to establish longitude by the use of a clock “oriuolo mecuriale”. As in the ‘Dell’arcano del mare’, Dudley focusses on his preferred method of navigating by Longitude and Great Circle sailing – using his own invention of tables of “traversali sfericali”, and his charts based on what we now call “Mercator’s projection”, giving his latitudinal values.

Here the ‘Direttorio’ is heavily re-worked with some passages entirely re-written by the author in the margins, and in places makes direct reference to the text of the ‘Dell’arcano del mare’. This suggests that some parts of the ‘Direttorio’ may well have been written during, or after, the text for the ‘Dell’arcano del mare’, was being printed. On page 3 of Dudley’s autobiographical ‘proemio’, Dudley adds “come Arcano” – “like the Arcano”; on page 122, a reference to the “master of the Arcana, who holds the secret of longitude” is mentioned; further on pages 21- 22 when in discussing the method of using the “spiral” charts (Cap 8 and 9), Dudley refers to the “carte hydrografice del 2[do] libro” – “hydrographic charts in Book 2”, which is exactly where they appear in the published ‘Dell’arcano del mare”.

These chapters of the ‘Direttorio’ are illustrated with numerous small drawings, and a number of larger diagrams, but the numbering of the figures, while referencing specific charts, do not correspond to the engraved figures in the published ‘Dell’arcano del mare’. It is possible that the references may correspond to the set of 268 manuscript charts now preserved in the BSB, in three volumes (Cod icon 138-140).

Similarly, these chapters also contain text not found in the published ‘Dell’arcano del mare’. Dudley describes the likely effects of bad weather in high latitudes above 66°N, and the usual weather in temperate and tropical latitudes (pages 133-134); and ‘Cap XXIV’ contains Dudley’s explanation of how to find the North Star with a diagram (page 115).

Pages p140-146 Addenda

Apparently new text, in which Dudley formulates his ideas on the application of science to navigation

on the high seas: “la 2 da parte di q[ues] to libro tratta de naviagare con scienza in alto mare Cap 6”; incomplete sections on astronomical and military subjects; and a few additional notes in other hands.

#### Dudley and the Medicis

Robert Dudley (1573-1649) first published his ‘Secrets of the Sea’ in 1646 when he was 73. It was the culmination of his life’s work, and a testament to his close bond with one of the greatest ruling families of Italy, it is dedicated to Ferdinand II de’Medici. For his services to three Medici Grand Dukes of Tuscany (Ferdinand I, Cosimo II, and Ferdinand II), as philosopher, statesman, civil and military engineer, naval architect, hydrographer and geographer, mathematician and physician, Dudley was rewarded with status during his lifetime, a public funeral and a memorial monument upon his death.

Dudley was the son of the Earl of Leicester (the one time favourite of Elizabeth I) and Lady Douglas Sheffield, the widow of Lord Sheffield. Although born out of wedlock, Robert received the education and privileges of a Tudor nobleman. He seems to have been interested in naval matters from an early age, and in 1594, at the age of 21, he led an expedition to the Orinoco River and Guiana. He would later, like all good Tudor seamen, sack Cadiz, an achievement for which he was knighted.

His success upon the high-seas was not matched, unfortunately, by his luck at court, and at the beginning of the seventeenth century he was forced to flee, along with his cousin Elizabeth Southwell, to Europe. Eventually, in 1606, he ended up in Leghorn, Italy, which he set about turning into a great international naval and commercial seaport, in the service of Ferdinand I.

Dudley, successful at last, married his cousin, converted to Catholicism, helped Ferdinand wage war against the Mediterranean pirates, by designing and building a new fleet of fighting ships for the Italian navy, served as Grand Chamberlain to three Grand-Duchesses of Tuscany in succession: Maria Maddelena, widow of Cosimo II; then Christina of Lorraine, widow of Ferdinand I; then to Vittoria della Rovere, Princess of Urbino, and wife of Ferdinand II, who created Dudley Duke of Northumberland.

#### Gian Carlo de’ Medici (1611-1663).

It is not surprising that Dudley should dedicate his ‘Direttorio’ to his greatest patrons, Grand Duke Ferdinand II, and Gian Carlo de’ Medici. Nor that they should have owned examples of his greatest work, ‘Dell’arcano del mare’. What is very pleasing is that this working manuscript for the ‘Direttorio’, should also once have been in the possession of at least two other previous owners of both Gian Carlo’s first edition ‘Dell’arcano del mare’: Pietro Bigazzi, Florentine bookseller; and Sir John Temple Leader.

Gian Carlo de’Medici shared Dudley’s passion for all things maritime. The second son of Cosimo II de’Medici, Gian Carlo was made “High Admiral of the Tuscan Navy” in 1638, held the title of “General of the Mediterranean Sea”, and appointed “General of the Spanish Seas” by Philip IV of Spain during the 40 years war. In 1644, he reluctantly resigned his naval appointments when Pope Innocent X appointed him Cardinal. As a young and attractive man, he found the religious life a trial, and in 1655, the Pope returned him to Florence, after he became a bit too friendly with Queen Christina of Sweden. There he remained until his death, working in close collaboration with his brothers, in the government and cultural enrichment of the grand duchy. Gian Carlo was “passionate about science, letters and above all music. Founded the Accademia degli Immobili and contributed to the construction of the Teatro della Pergola, inaugurated in 1658.... and enrichment of the Galleria Palatina di Palazzo Pitti” (Cardella, Lorenzo. ‘Memorie storiche de cardinali della Santa Romana Chiesa’. Rome, Stamperia Pagliarini, 1793, VII, 51).

The close bond between Dudley and Gian Carlo is attested to by a letter written in September of

1638 from Dudley to Gian Carlo, who had just been appointed High Admiral of the Tuscan Navy, offering his homage and swearing his fealty, saying, that “if his nautical experience of many years merited employment in the service of his Highness, he, though old, would be always ready to obey the Admiral’s commands” ( John Temple Leader in his ‘Life of Sir Robert Dudley,...’ 1895, pages 115-116).

Domenico Maria Manni, Pietro Bigazzi, and the Biblioteca Moreniana (Moreniana Library). A Florentine bookdealer and collector, Pietro Bigazzi was also a librarian, and clerk of the Accademia della Crusca, from 1854. His large library had come from a number of sources, including that of Domenico Maria Manni (1690-1788) director of the Biblioteca Strozzi, who has supplied the four pages of bio-bibliography at the beginning of the ‘Direttorio’. See ‘Manoscritti e alcuni libri a stampa singolari esposti e annotati da Pietro Bigazzi’, Firenze, Tipografia Barbera, 1869, in which it is noted: “manuscript ceded, many years ago, to Mr. Temple Leader, a distinguished English gentleman, domiciled among us; solicitous repairer of the Tuscan Memoirs”.

The Biblioteca Moreniana “was created when the Provincial Deputation of Florence acquired the bibliographic collection that had belonged to Pietro Bigazzi.

The collection of literary writings, the majority of which were part of the library owned by Domenico Maria Manni and Domenico Moreni, consists mostly of records on Tuscan history and culture. Later, several other literary collections from well-known scholars and collectors of Tuscan antiquities were added. In 1942, the library was housed in Palazzo Medici Riccardi and opened to the public. Other historically significant collections of manuscripts were added later. Today the library is managed by the Metropolitan City of Florence” (Biblioteca Moreniana, online).

John Temple Leader (1879-1903)

Possessed both the first and second editions of Dudley’s ‘Dell’Arcano del mare’, and this manuscript, the ‘Direttorio Marittimo’. He describes his relationship with Pietro Bigazzi, the Florentine bookdealer from whom he purchased all three items, in his biography of Dudley: “Long ago I bought from Signor Pietro Bigazzi, together with many other books which had belonged to Dudley, the first two volumes and the fourth of the ‘Arcano del Mare’, the first edition of his great work which was published at Florence in 1646-47. The third volume was wanting, perhaps lent to some friend who had forgotten to return it. Two or more years after this, Signor Bigazzi brought me, as a New Year’s gift, the missing volume of this very same incomplete set. He had discovered it on the low wall or ledge of the Palazzo Riccardi, and bought it from the salesman who had permission to sell his books there. My joy on thus unexpectedly receiving the missing part may be easily imagined by collectors and lovers of old books. The four volumes thus happily reunited after a long separation were in the old binding with the arms of a Cardinal of the Medici family” (pages 18-19).

Other Dudley manuscripts related to ‘Dell’arcano del mare’ Manni noted that the Palatina di Pitti library held two imperial folio volumes, in manuscript, of “Marine Treatises” by Dudley. They were on marine architecture, begun before 1610 in English, and continued by Dudley in Italian until about 1635 (see Maria Enrica Vadala: ‘Il Trattato dell’architettura marittima di Roberto Dudley, storia e dispersione di un manoscritto’, Studi secenteschi, vol. 61 (2020), pp. 193-237) The Bayerische Staatsbibliothek holds several manuscripts by Dudley related to the ‘Dell’arcano del mare’, including: a of 268 manuscript charts, in three volumes, (Cod icon 138-140); and another relating to naval architecture and the conduct of naval warfare (Cod.icon 221) British Library (Add MS 22811).

## **Bibliography**

Dudley, ‘Dell’Arcano del mare’, 1646-1647; Dudley, ‘Dell’arcano del mare’, 1661; Gould Lee, ‘The Son of Leicester, the Story of Sir Robert Dudley’, 1964; Leader, ‘Life of Sir Robert Dudley’, 1895; Targioni-Tozzetti, ‘Notizie degli aggrandimenti delle scienze fisiche accaduti in Toscana nel corso di

anni LX. del secolo XVII', 1780; 'Manoscritti e alcuni libri a stampa singolari esposti e annotati da Pietro Bigazzi', 1869.

## **Provenance**

### Provenance

1. Domenico Maria Manni (1690-1788), polymath, editor and publisher, also a member of Accademia della Crusca, and Director of the Biblioteca Strozzi, who has supplied 4 pages of bio-bibliography at the front of the manuscript;
2. Pietro Bigazzi, Florentine collector, librarian, and bookseller, a number of annotations in pencil, including on the flyleaf ("Ms citato del Targioni negli aggrandimenti Vole 10 pag.80"), sold to:
3. Sir John Temple Leader (1879-1903), who also bought Gian Carlo de' Medici's (1611-1663), first edition of 'Dell'Arcano del mare', and a second edition, from Bigazzi;
4. By descent to Richard Luttrell Pilkington Bethell, 3rd Baron Westbury (1903-1917), who sold Leader's collections "piecemeal".

**Price:** £500000

**Inventory reference:** 21901