

## Table of Contents

Preface . . . . .	v
Table of Contents . . . . .	ix
<i>JACOPO, HIS TREATISE, AND ABBACUS CULTURE</i>	
Introduction . . . . .	3
Three Manuscripts . . . . .	5
The Vatican Manuscript . . . . .	6
Time, Place and Author (6); Language, Orthography, Copying Quality and Writing (7); Structure, Contents and Character (9)	
The Florence and Milan Manuscripts . . . . .	12
The Vatican Chapters with No Counterpart . . . . .	23
The Abbacus Tradition . . . . .	27
A “Fibonacci Tradition”? . . . . .	30
The <i>Livro de l’abbecho</i> . . . . .	32
Fibonacci and the Abbaco . . . . .	41
The Contents of Jacopo’s <i>Tractatus</i> . . . . .	45
Ch. 1. Incipit and General Introduction . . . . .	45
Ch. 2. Introduction of the Numerals and the Role of Zero . . . . .	49
Ch. 3. Tabulated Writing of Numbers . . . . .	50
Ch. 4. Explanation and Exemplification of the Place-value Principle . . . . .	51
Ch. 5. Introduction to the Multiplication Tables . . . . .	52
Ch. 6. Multiplication Tables, Including Multiples of Soldi . . . . .	52
Ch. 7. Tables of Higher Squares . . . . .	53
Ch. 8. Divisions <i>a regolo</i> . . . . .	55
Ch. 9. Graphic Schemes Illustrating the Arithmetic of Fractions . . . . .	58
Ch. 10. Examples Explaining the Arithmetic of Fractions . . . . .	58
Ch. 11. The Rule of Three, with Examples . . . . .	58
An Aside on Counterfactual Mathematics (64)	
Ch. 12. Computations of Non-Compound Interest . . . . .	67
Ch. 13. Problems Involving Metrological Shortcuts . . . . .	68
Ch. 14. Mixed Problems, Including Partnership, Exchange and Genuine “Recreational” Problems . . . . .	70
Ch. 15. Practical Geometry, with Approximate Computation of Square Roots . . . . .	89
Ch. 16–19. Algebra and Quasi-Algebra, with a Non-Algebraic Intruder . . . . .	100
An Aside on Arabic Algebra and Its Mixed Origin (101); Jacopo’s First- and	

Second-Degree Algebra (107); Rules for the Third and Fourth Degree (113); A Grain Problem of Alloying Type (115); Wages in Geometric Progression (115)	
Ch. 20. The Coin List . . . . .	121
Ch. 21. Alloying Problems . . . . .	125
Ch. 22. Supplementary Mixed Problems . . . . .	128
General Observations . . . . .	144
Algebra . . . . .	147
Jacopo's Algebra . . . . .	147
The Examples (149); Peculiar Methods (150); Other Idiosyncrasies (151); The <i>Fondaco</i> Problems (152); Abbreviations and Notation (153)	
Jacopo's Possible Sources: Arabic Writings on Algebra . . . . .	153
The Order of the Six Cases (154); Normalization (155); Examples (155); Square Roots of Real Money (156); Commercial Calculation within Algebra (157); Jabr and <i>Muqabalah</i> (157); Geometric Proof (158); Polynomial Algebra and Geometric Progressions (158); Summing Up (158)	
Jacopo's Possible Sources: a Look at the Next Italian Generation . . . . .	159
Paolo Gherardi (161); The Lucca Manuscript (163); <i>Trattato dell'algebra         amuchabile</i> (163); The Parma Manuscript (164); Lines of Ancestry and Descent (166)	
Maestro Dardi da Pisa . . . . .	169
Chapter 1: Calculating with Roots (170); Chapter 2: the Six Fundamental Cases (171); Chapter 3: 194+4 Regular and Irregular Cases (173); Dependency or Independence (174)	
An Instructive Fragment: Giovanni di Davizzo . . . . .	176
Summing Up . . . . .	180
Jacopo's Material and Influence . . . . .	183
<i>THE VATICAN MANUSCRIPT EDITION AND TRANSLATION</i>	
Edition and Translation Principles . . . . .	189
The Text . . . . .	193
[1. Incipit and General Introduction] . . . . .	193
[2. Introduction of the Numerals and the Role of Zero] . . . . .	196
[3. Tabulated Writing of Numbers, with Corresponding Roman or Semi- Roman Writings] . . . . .	197
[4. Explanation and Exemplification of the Place-Value Principle] . . . . .	198
[5. Introduction to the Multiplication Tables] . . . . .	203
[6. Multiplication Tables, Including Multiples of <i>soldi</i> Expressed in <i>libre</i> and <i>soldi</i> ] . . . . .	203
[7. Tables of Higher Squares] . . . . .	214
[8. Divisions <i>a regolo</i> ] . . . . .	220

[9. Graphic Schemes Illustrating the Arithmetic of Fractions]	228
[10. Examples Explaining the Arithmetic of Fractions]	230
[11. The Rule of Three, with Examples]	236
[12. Computations of Non-Compound Interest]	242
[13. Problems involving metrological shortcuts]	246
[14. Mixed Problems, Including Partnership, Exchange and Genuine “Recreational” Problems]	251
[15. Practical Geometry, with Approximate Computation of Square Roots]	284
[16. Rules and Examples for Algebra until the Second Degree]	304
[17. Rules without Examples for Reducible Third- and Fourth-Degree Equations]	320
[18. A Grain Problem of Alloying Type]	323
[19. Second- and Third-Degree Problems about Continued Proportions Dressed as Wage Problems and Solved without the Use of <i>cosa-census</i> Algebra]	325
[20. Tabulated Degrees of Fineness of Coins]	331
[21. Alloying Problems]	337
[22. Further Mixed Problems, Including Practical Geometry]	347
<i>APPENDIX: THE REVISED VERSION, MILAN AND FLORENCE</i>	
Introduction	379
The text	383
[1. Incipit and General Introduction]	383
[2. Introduction of the Numerals and the Role of Zero]	385
[3. Tabulated Writing of Numbers, with Corresponding Roman or Semi-Roman Writings]	385
[4. Explanation and Exemplification of the Place-Value Principle]	387
[6. Multiplication Tables]	389
[7. Tables of Higher Squares and Products]	395
[8. Divisions <i>a regolo</i> and <i>a danda</i> ]	408
[9. Graphic Schemes Illustrating the Arithmetic of Fractions]	415
[10. Examples Explaining the Arithmetic of Fractions]	416
[11. The Rule of Three, with Examples]	419
[12. Computations of Non-Compound Interest]	422
[13. Problems Involving Metrological Shortcuts]	423
[14. Mixed Problems, Including Partnership, Exchange and Genuine “Recreational” Problems]	426
[15. Practical Geometry, with Approximate Computation of Square Roots]	440
[20. Tabulated Degrees of Fineness of Coins]	448
[21. Alloying Problems]	452
Sigla	457
Bibliography	458

Source Index . . . . .	467
Index of Personal and Geographical Names . . . . .	472
Authors/Editors Appearing in the Bibliography . . . . .	472
Other Personal Names . . . . .	473
Geographical Locations . . . . .	473
Subject Index . . . . .	477



<http://www.springer.com/978-3-7643-8390-9>

Jacopo da Firenze's Tractatus Algorismi and Early Italian  
Abacus Culture

Høyrup, J.

2007, XII, 482 p., Hardcover

ISBN: 978-3-7643-8390-9

A product of Birkhäuser Basel