

## What has Athens to do with Jerusalem?

### the potential of spatial-temporal analysis methods to interpret early Christian literature

van Altena, V.P.

**DOI**

[10.4233/uuid:78515cfa-e83a-420a-8aee-b3146d96d331](https://doi.org/10.4233/uuid:78515cfa-e83a-420a-8aee-b3146d96d331)

**Publication date**

2022

**Document Version**

Final published version

**Citation (APA)**

van Altena, V. P. (2022). *What has Athens to do with Jerusalem? the potential of spatial-temporal analysis methods to interpret early Christian literature*. [Dissertation (TU Delft), Delft University of Technology]. <https://doi.org/10.4233/uuid:78515cfa-e83a-420a-8aee-b3146d96d331>

**Important note**

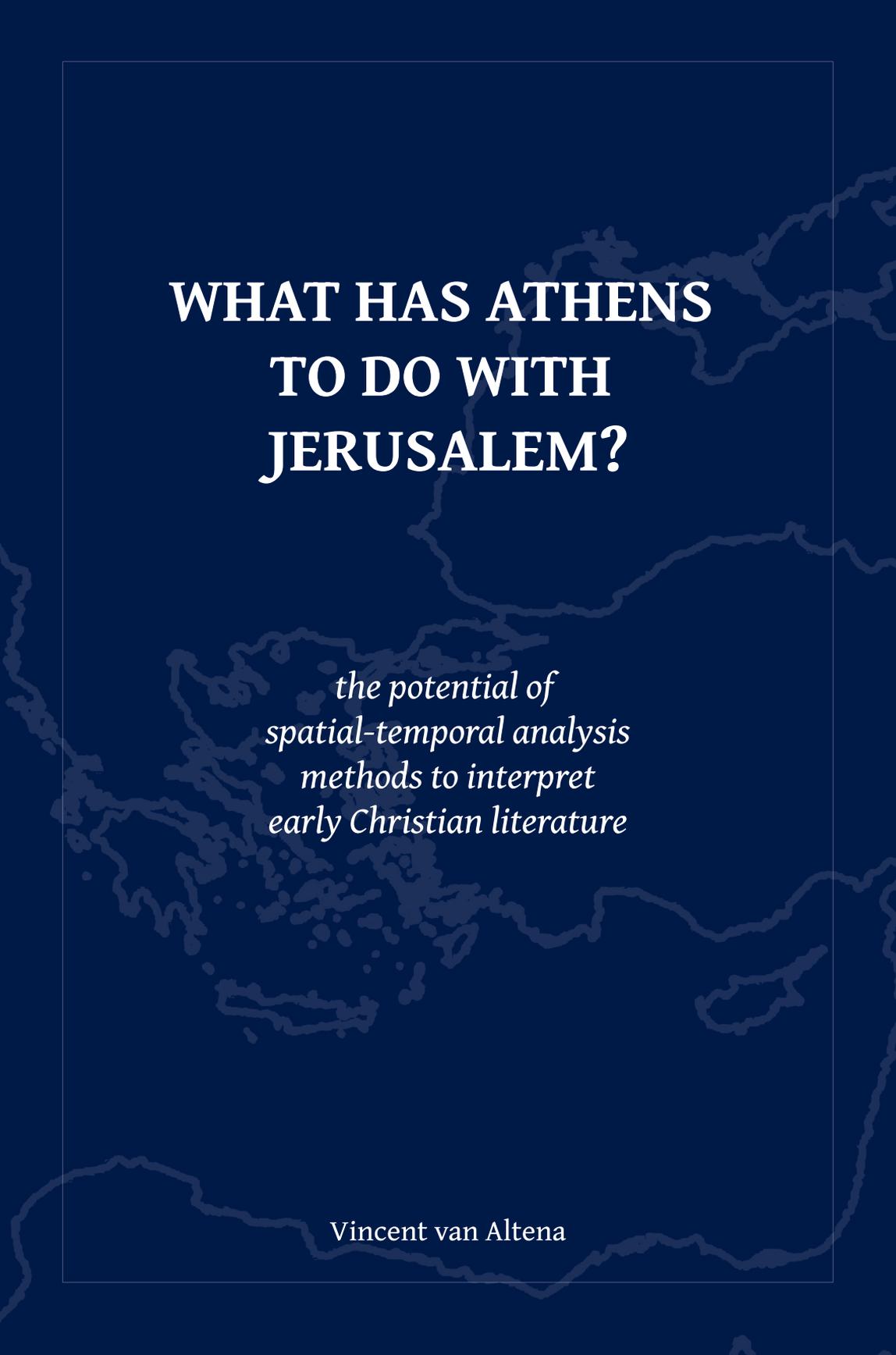
To cite this publication, please use the final published version (if applicable). Please check the document version above.

**Copyright**

Other than for strictly personal use, it is not permitted to download, forward or distribute the text or part of it, without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license such as Creative Commons.

**Takedown policy**

Please contact us and provide details if you believe this document breaches copyrights. We will remove access to the work immediately and investigate your claim.



# WHAT HAS ATHENS TO DO WITH JERUSALEM?

*the potential of  
spatial-temporal analysis  
methods to interpret  
early Christian literature*

Vincent van Altena





Am I more than just the sum  
of every high and every low?  
Remind me once again just who I am  
because I need to know.

-- *Lauren Daigle, You say*

Ἔχομεν δὲ τὸν θησαυρὸν τοῦτον  
ἐν ὀστρακίνοις σκεύεσιν,  
ἵνα ἡ ὑπερβολὴ τῆς δυνάμεως  
ᾗ τοῦ θεοῦ καὶ μὴ ἐξ ἡμῶν·

-- 2 Cor 4:7 NA28

*for Sri Indah, Azarjah and Noah*



# WHAT HAS ATHENS TO DO WITH JERUSALEM?

---

*the potential of spatial-temporal analysis methods  
to interpret early Christian literature*

Vincent Paul van Altena

January 2022





# WHAT HAS ATHENS TO DO WITH JERUSALEM?

---

*the potential of spatial-temporal analysis  
methods to interpret early Christian literature*

Dissertation

for the purpose of obtaining the degree of doctor  
at Delft University of Technology  
by the authority of the Rector Magnificus,  
Prof.dr.ir. T.H.J.J. van der Hagen  
chair of the Board for Doctorates  
to be defended publicly on  
Tuesday 14, June 2022 at 15:00 o'clock

by

Vincent Paul VAN ALTENA  
Master of Science in Geographical Information Science,  
Vrije Universiteit Amsterdam, the Netherlands  
born in Emmen, the Netherlands

This dissertation has been approved by the promotor.

Composition of the doctoral committee:

Rector Magnificus	chairperson
Prof. dr. J.E. Stoter	Delft University of Technology, promotor
Prof. dr. H.A. Bakker	Vrije Universiteit Amsterdam, promotor
Dr. J.L.H. Krans	Protestantse Theologische Universiteit, copromotor

Independent members:

Prof. dr. ir. M.J. van Dorst	Delft University of Technology
Prof. dr. A.W. Zwiap	Vrije Universiteit Amsterdam
Prof. dr. W. Th. van Peursen	Vrije Universiteit Amsterdam
Prof. dr. M.J. Kraak	Universiteit Twente
Prof. dr. ing. C.M. Hein	Delft University of Technology, reserve member

The creation of this dissertation was partly supported by het Kadaster.

Keywords: spatial-temporal analyses, historical GIS, New Testament exegesis, textual criticism

ISBN 978 94 6458 168 3

Cover & lay-out: Vincent van Altena

© 2022 Vincent van Altena. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior permission in writing from the proprietor(s).

Printed by: Ridderprint, [www.ridderprint.nl](http://www.ridderprint.nl)

## ACKNOWLEDGEMENTS

With this book, I conclude my doctoral research into the opportunities of spatial-temporal analysis methods for the interpretation of early Christian texts. A study in which I was allowed to combine my previous education in Theology and GIS to investigate to what extent these two disciplines could be related to each other.

From the start of this project, I had the privilege to be supervised by a team of experts. Professor Dr. Jantien Stoter and Revd. Professor Dr. Henk Bakker trusted my capabilities to pursue this research and they encouraged and inspired me to dig deeper. Furthermore, the contributions in the field of textual criticism by Dr. Jan Krans-Plaisier were essential to part 2.

Being allowed by Professor Dr. Peter-Ben Smit, Professor Dr. Arie Zwiep, and Professor Dr. Bert Jan Lietaert Peerbolte to participate within the bi-weekly Amsterdam New Testament Research Colloquium contributed much to my coming up to speed with the current state of New Testament scholarship. Two of the colloquium's meetings in which I was allowed to present (and receive criticism on) my research were very valuable. The Baptisten Kenniskring has also been important since it not only provided me with the opportunity to bounce my ideas against a critical audience but also brought the friendship of fellow travellers.

Along the way, I also had the privilege to be in contact with outstanding scholars who freed up a little bit of time in their busy schedules to help me. I especially want to acknowledge: Professor Dr. Barry Beitzel, Professor Dr. Eckhard Schnabel, Professor Dr. Abraham Linsenbarth, Professor Dr. Albina Mocisca, Dr. Marco Rotman, Professor Dr. Tom Marinello, Dr. Bas van Os, Dr. Jan Fousek, Professor Dr. Lilian Larsen, and Dr. Mark Wilson.

Also, the support from Kadaster has been crucial to accomplish this project. First of all, my direct colleagues allowed me to be out of the office repeatedly to work on this project. Thank you! Furthermore, Kadaster management facilitated this research quite generously. Two colleagues deserve to be mentioned by name: Ulrike Schild (†) and Ben Bruns. Thank you, Ulrike, the way you have created opportunities for me to develop is inspiring and calls to be *paid forward*. I also owe many thanks to Ben. During our period as colleagues, you often provided an incentive to see if there was even more to achieve, and you were instrumental in starting this project.

Mark Cygan should neither go unnoticed. Ultimately, it was our talk over a cup of coffee on a Thursday morning at Starbucks in the San Diego Convention Centre at the Esri User Conference 2015 which made me decide to do the deep dive and to pursue this PhD-study seriously. You showed yourself to be a true friend all the way.

A few lines or paragraphs is not enough to express my deepest feelings and sincere gratitude towards my family. My two sons, Roy and Jesse, were just entering their teenage phase when I started working on this project. Now both of you are grown-up, and I am very proud to be your dad. No titles or academic achievements can compensate for that!

Ruth Sri Indah, thank you for your support during all these years but also for reflecting on my nuisances along the way. Your unconditional love and your deeply felt aversion against status reminded me again and again that my project was exactly that: a project and not of the utmost importance in life. “Remember, your academic peers or professional colleagues won’t be there when you are old and weary”, is one of your favourite sayings. Thank you for your patience and the sacrifices you made to allow me to do this project.

My final acknowledgement is expressed in three words: *Soli Deo Gloria*.

Vincent van Altena  
Zwolle, February 2022

# CONTENTS

Acknowledgements .....	xi
Contents .....	xiii
Illustrations.....	xix
Tables.....	xxi
Abbreviations.....	xxiii
PART 1: INTRODUCTION AND BACKGROUND.....	1
1. INTRODUCTION.....	3
1.1 Research question and method.....	4
1.2 Outline .....	4
2. SPATIAL-TEMPORAL ANALYSIS METHODS .....	7
2.1 Space and geography .....	9
2.2 Spatial-temporal modelling and analysis .....	11
2.3 GIS.....	15
2.4 Doing GIS .....	16
3. INTERPRETATION OF EARLY CHRISTIAN LITERATURE .....	19
3.1 Early Christian literature.....	20
3.2 Interpretation and hermeneutics.....	24
3.2.1 <i>Motives of texts and of interpreters</i> .....	25
3.2.2 <i>The historicity of the interpreter</i> .....	28
3.2.3 <i>Texts are selections</i> .....	29
3.2.4 <i>Eco's model of textual cooperation</i> .....	31
3.2.5 <i>Narrative Criticism</i> .....	33
3.3 Researching early Christianity spatial-temporally .....	34

4.	PREVIOUS RESEARCH.....	37
4.1	Historical studies and GIS.....	37
4.2	Literary studies and GIS.....	38
4.3	Spatiality and biblical research .....	41
4.4	Biblical studies and GIS.....	42
5.	CONTRIBUTION OF THIS RESEARCH .....	47
PART 2: ESTABLISHING TEXTS .....		49
6.	SPATIAL ANALYSIS OF NEW TESTAMENT TEXTUAL EMENDATIONS UTILIZING CONFUSION DISTANCES .....	51
6.1	Scribal errors in the transmission of manuscripts.....	53
6.1.1	<i>Textual Criticism</i> .....	57
6.1.2	<i>Conjectural criticism</i> .....	59
6.1.3	<i>Summary</i> .....	63
6.2	String matching and edit distances .....	63
6.2.1	<i>Evaluation criteria</i> .....	64
6.2.2	<i>Edit operations and existing string-matching algorithms</i> .....	64
6.2.3	<i>Expansion of the algorithm</i> .....	66
6.3	Methodology .....	68
6.4	Results.....	73
6.4.1	<i>Case study 1: the food of John the Baptist</i> .....	73
6.4.2	<i>Case study 2: Judea in the table of nations in Acts 2:9-11</i> .....	77
6.5	Discussion.....	86
6.5.1	<i>Confusion distances algorithm</i> .....	86
6.5.2	<i>Spatial analysis</i> .....	87
7.	ΙΟΥΔΑΙΑΝ IN ACTS 2:9: A DIACHRONIC OVERVIEW OF ITS CONJECTURED EMENDATIONS.....	89
7.1	Introduction.....	89
7.2	A history of conjectures on Ἰουδαίαν in Acts 2:9 .....	93
7.2.1	<i>Ἰουδαίαν as an adjective</i> .....	93
7.2.2	<i>When in doubt, leave it out</i> .....	94
7.2.3	<i>Conjectured emendations</i> .....	96

7.3	Conclusions .....	106
8.	IOΥΔΑΙΑΝ IN ACTS 2:9: REVERSE ENGINEERING TEXTUAL EMENDATIONS .....	109
8.1	Method, algorithm, and data .....	110
8.1.1	<i>Confusion distances</i> .....	112
8.1.2	<i>Data</i> .....	112
8.2	Results .....	117
8.3	Discussion .....	119
8.3.1	<i>Candidature for emendation</i> .....	119
8.3.2	<i>Critical appraisal of method</i> .....	128
8.4	Conclusions .....	130
PART 3: INTERPRETING TEXTS .....		133
9.	ADVANCING NEW TESTAMENT INTERPRETATION THROUGH SPATIAL-TEMPORAL ANALYSIS .....	135
9.1	Acts 2:9-11 in their context .....	136
9.2	The identity of the audience .....	139
9.2.1	<i>Research questions and methodology</i> .....	141
9.2.2	<i>Results</i> .....	143
9.2.3	<i>Conclusion of case study 1</i> .....	148
9.3	Comparison with ancient catalogues of nations .....	148
9.3.1	<i>Research question and method</i> .....	150
9.3.2	<i>Signs of the Zodiac</i> .....	150
9.3.3	<i>Jewish catalogues of nations</i> .....	153
9.3.4	<i>Conclusion of case study 2</i> .....	156
9.4	Conclusions .....	156
10.	GIS AS A HEURISTIC TOOL TO INTERPRET ANCIENT HISTORIOGRAPHY .....	159
10.1	Case study: a reconstruction of Acts 17:14-15 .....	159
10.1.1	<i>Paul's route to Athens</i> .....	161
10.1.2	<i>The travel movements of Paul's companions</i> .....	165
10.2	Data, methods, and experiments .....	173

10.2.1	<i>Method and data to reconstruct journeys</i> .....	175
10.2.2	<i>Duration, dating and possible time frame</i> .....	178
10.3	Results.....	183
10.4	Conclusions .....	186
11.	INVESTIGATIONS INTO THE LOGISTICS OF IGNATIUS' ITINERARY .....	187
11.1	Introduction.....	187
11.1.1	<i>The man Ignatius</i> .....	188
11.1.2	<i>His letters</i> .....	189
11.1.3	<i>Previous research</i> .....	191
11.1.4	<i>Outline of this research</i> .....	192
11.2	Background .....	193
11.2.1	<i>Travelling</i> .....	193
11.2.2	<i>Transport and lodging</i> .....	194
11.2.3	<i>Hospitality in the early church</i> .....	196
11.2.4	<i>Care for prisoners</i> .....	199
11.3	Geography of Ignatius' letters .....	202
11.4	Conclusions .....	215
	PART 4: DISCUSSION AND CONCLUSION .....	217
12.	PRELIMINARY CONCLUSIONS .....	219
13.	ESTABLISHING TEXTS .....	223
13.1	Results.....	223
13.2	Methods .....	224
14.	INTERPRETING TEXTS.....	227
14.1	Results.....	227
14.2	Methods .....	229
14.3	Interpreting narratives with GIS: a proposal .....	230
15.	METHODOLOGICAL CONSIDERATIONS.....	233
15.1	Early Christian Literature .....	233
15.2	GIScience .....	236

16.	CONCLUSIONS AND FURTHER RESEARCH .....	237
16.1	Research contribution .....	237
16.1.1	<i>Establishing texts</i> .....	238
16.1.2	<i>Interpreting texts</i> .....	238
16.2	Suggestions for further research.....	239
	APPENDIX, BIBLIOGRAPHY, INDEXES AND SUMMARY .....	247
	Appendix: Letter confusion table .....	249
	Bibliography .....	253
	Indexes.....	295
	Summary .....	309
	Samenvatting.....	315
	Curriculum vitae .....	321
	List of publications .....	323
	Propositions .....	329



# ILLUSTRATIONS

Figure 1. John Snow's map on cholera. ....	8
Figure 2. Timeline for early Christian literature. ....	23
Figure 3. Eco's model of textual cooperation. ....	30
Figure 4. Acts 2:9-11 in three types of Greek script. ....	55
Figure 5. Manuscript types and dating. ....	56
Figure 6. Interface of ADNTCE. ....	62
Figure 7. Proces to "spatialize" textual variants. ....	72
Figure 8. MDS visualization of conjectures on ΑΚΡΙΑΔΕΣ. ....	75
Figure 9. Proximity analysis of individual conjectures. ....	76
Figure 10. Geographical structure of Acts 2:9-11. ....	78
Figure 11. Alternative locations to Judea. ....	79
Figure 12. Palaeographic confusion distances for Judea. ....	82
Figure 13. Palaeographic confusion imposed on geography. ....	83
Figure 14. Geography of the list of nations in Acts 2:9-11. ....	91
Figure 15. Locations of the conjectural emendations to Ἰουδαία. ....	105
Figure 16. Method and data. ....	111
Figure 17. Palaeographical confusion distances with ΙΟΥΔΑΙΑΝ. ....	117
Figure 18. Operations to change a toponym in ΙΟΥΔΑΙΑΝ. ....	119
Figure 19. Search area for alternative regions. ....	125
Figure 20. Toponyms palaeographically close to Ioudaiaian. ....	127
Figure 21. Known Jewish diaspora communities. ....	137
Figure 22. Travel distances in km towards Jerusalem. ....	146
Figure 23. Travel duration in days towards Jerusalem. ....	147
Figure 24. Locations in Acts 2 uncategorized. ....	151
Figure 25. Geograpy of Paulus Alexandrinus's list. ....	152
Figure 26. Geographical clusters in Philo's list of nations. ....	154
Figure 27. Locations in Acts 2 categorized. ....	155
Figure 28. Suggested routes for Paul's flight from Berea. ....	162
Figure 29. Lake's reconstruction. ....	168

Figure 30. De Zwaan’s reconstruction. ....	170
Figure 31. Meers’ reconstruction. ....	172
Figure 32. Overview of methods, data, and sources. ....	174
Figure 33. Suggested routes over land from Berea to Athens. ....	181
Figure 34. Space-time cube for Lake’s scenario. ....	184
Figure 35. Space-time cube for De Zwaan’s scenario. ....	184
Figure 36. Space-time cube for Meers’s scenario. ....	185
Figure 37. Possible trajectory from Antioch to Rome. ....	203
Figure 38. Possible trajectories from Antioch to Laodicea. ....	204
Figure 39. Ignatius’ route and the route of the messengers. ....	205
Figure 40. Possible route from Smyrna to Rome. ....	208
Figure 41. Options for Ignatius’ route from Smyrna to Troas. ....	209
Figure 42. Trajectory of Philo and Rheus Agathopous. ....	210
Figure 43. Route of Ignatius to Neapolis and hence Philippi. ....	212
Figure 44. Trajectory from Philippi to Rome. ....	213
Figure 45. Interpreting narrative events with GIS. ....	231

# TABLES

Table 1. Spatial scales. ....	10
Table 2. Common edit operations in string matching. ....	65
Table 3. Sophisticated edit operations in string matching. ....	66
Table 4. Confusion distances for conjectures on ΑΚΡΙΑΕΣ. ....	74
Table 5. Confusion distances for alternatives to Judea. ....	84
Table 6. Statistics about the toponym-datasets. ....	115
Table 7. The twenty closest alternatives to ΙΟΥΔΑΙΑΝ. ....	118
Table 8. Palaeographically close toponyms to Ἰουδαίαν. ....	120
Table 9. Locations in Acts 2 and equivalents in Orbis. ....	142
Table 10. Travel condition parameters used in the analysis. ....	143
Table 11. Travel distances and durations to Jerusalem. ....	144
Table 12. Travel duration - corrected for sabbath. ....	144
Table 13. Alleged parallels between Paulus Alexandrinus & Acts. ....	149
Table 14. Paul's mission in Macedonia and Achaia. ....	179
Table 15. Trajectories including distance and duration. ....	182
Table 16. Trajectories in Ignatius' travel. ....	214
Table 17. Summary of distances, durations, and travel modes. ....	214
Table 18. Letter confusion table. ....	249



# ABBREVIATIONS

## GENERAL ABBREVIATIONS

Ad fl.	<i>Ad fluvium</i> , near the river
Aus	<i>Ausgangstext</i>
ca.	circa, approximately
BCE	Before Common Era
CE	Common Era
ed(s).	editor(s), edited by, edition
esp.	especially
ET	English translation
et al.	<i>et alii</i> , and others
i.e.	<i>id est</i> , that is
km	kilometer(s)
ms(s).	manuscript(s)
᠔	papyrus or papyri, numbered
p(p).	page(s)
repr.	reprint
s.n.	<i>sine nomine</i> , without name
s.v.	<i>sub verbo</i> , under the word
trans.	translator, translated by

## DATA MODELS, METHODS, AND ORGANISATIONS

LCPA	Least Cost Path Analysis
LSA	Latent Semantic Analysis
MCE	Multi-Criteria evaluation
MDS	Multi-Dimensional scaling
OR	Object-Relationship
OO	Object-Oriented
SOM	Self-Organizing Maps
SRTM	Shuttle Radar Topography Mission

STER	Spatio-Temporal Entity Relationship
STC	Space-Time Composite
TIN	Triangulated Irregular Network
UML	Universal Markup Language
WHO	World Health Organization

## PRIMARY SOURCES

### Old Testament

Gen	Genesis	Josh	Joshua
Lev	Leviticus	Ps	Psalms
Num	Numbers	Isa	Isaiah
Deut	Deuteronomy	Am	Amos

### Apocrypha

1 Macc	1 Maccabees	Sir	Sirach
2 Macc	2 Maccabees		

### New Testament

Matt	Matthew	1 Thess	1 Thessalonians
Mark	Mark	1 Tim	1 Timothy
Lk	Luke	Heb	Hebrews
Acts	Acts of the Apostles	Jas	James
Rom	Romans	1 Pet	1 Peter
1 Cor	1 Corinthians	2 Pet	2 Peter
2 Cor	2 Corinthians	3 John	3 John
Col	Colossians	Rev	Revelation

### Josephus

<i>Ag. Ap.</i>	<i>Against Apion</i>
<i>Ant.</i>	<i>Jewish Antiquities</i>
<i>J.W.</i>	<i>Jewish War</i>

### Philo

*Embassy*      *On the Embassy to Gaius*  
*Flaccus*        *Against Flaccus*

#### Rabbinic Literature

*m. 'Abot*        *Pirke 'Abot*

#### Graeco-Roman Literature

*Alex.*            *Lucian, Alexander (Pseudomantis) [Alexander the False Prophet]*  
*Ant. rom.*      *Dionysius of Halicarnassus, Antiquitates romanae*  
*Bell. civ.*       *Appian, Bella civilian [Civil Wars]*  
*Bib. hist.*      *Diodorus Siculus, Bibliotheca historica*  
*Caes.*          *Plutarch, Caesar*  
*Cam.*          *Plutarch, Camillus*  
*Deipn.*         *Athenaeus, Deipnosophistae [The Learned Banqueteers]*  
*Ep.*             *Pliny the Younger, Epistulae*  
*Fam.*          *Cicero, Epistulae ad familiares*  
*Geogr.*         *Strabo, Geographica*  
*Hdt*            *Herodotus, Histories*  
*Od.*            *Homer, Odyssea [Odyssee]*  
*Jul.*            *Suetonius, Divus Julius*  
*Oed. col.*      *Sophocles, Oedipus coloneus [Oedipus at Colonus]*  
*Or.*             *Aristides, Orationes*  
*Peregr.*        *Lucian, De Morte Peregrini [The Passing of Peregrinus]*  
*Phars.*         *Lucanus, Pharsalia*  
*Phil.*          *Cicero, Orationes philippicae*

#### Early Christian Literature

*Acts John*      *Acts of John*  
*1 Apol.*         *Justin, Apologia I [First Apology]*  
*Adv. Jud.*      *Tertullian, Adversus Judaeos [Against the Jews]*  
*Apol.*           *Tertullian, Apologeticus [Apology]*  
*Chron.*         *John Malalas, Chronographia*  
*Did.*            *Didache*

<i>Dig.</i>	Justinian, <i>Digesta seu Pandecta</i> [The Digest or Pandects]
<i>Hist. eccl.</i>	Eusebius, <i>Historia ecclesiastica</i> [Ecclesiastical History]
<i>Hom. Luc.</i>	Origen, <i>Homiliae in Lucam</i> [Homilies on Luke]
<i>Ign. Eph.</i>	Ignatius, <i>To the Ephesians</i>
<i>Ign. Magn.</i>	Ignatius, <i>To the Magnesians</i>
<i>Ign. Phld.</i>	Ignatius, <i>To the Philadelphians</i>
<i>Ign. Pol.</i>	Ignatius, <i>To Polycarp</i>
<i>Ign. Rom.</i>	Ignatius, <i>To the Romans</i>
<i>Ign. Smyrn.</i>	Ignatius, <i>To the Smyrnaeans</i>
<i>Ign. Trall.</i>	Ignatius, <i>To the Trallians</i>
<i>Jejun.</i>	Tertullian, <i>De jejuniis adversus psychicos</i> [On Fasting, against the Psychics]
<i>Mart.</i>	Tertullian, <i>Ad martyras</i> [To the martyrs]
<i>MartLugd</i>	<i>The Letter of the Churches of Lyons and Vienne</i>
<i>Pass. Perp.</i>	<i>Passio Perpetuae et Felicitatis</i> [The Martyrdom of Perpetua and Felicitas]
<i>Pol. Phil.</i>	Polycarp, <i>To the Philippians</i>
<i>Praescr.</i>	Tertullian, <i>De praescriptione haereticorum</i> [Prescription against Heretics]
<i>psIgn. Phil.</i>	pseudo-Ignatius, <i>To the Phillipians</i>
<i>Vir. ill.</i>	Jerome, <i>De Viris Illustribus</i> [On Illustrious Men]

## SECONDARY SOURCES

AAAG	<i>Annals of the Association of American Geographers</i>
AB	Anchor Bible
ACM SIGG	Association of Computing Machinery's Special Interest Group on Computer Graphics and Interactive Techniques.
AcT	<i>Acta Theologica</i>
ADNTCE	The Amsterdam Database of New Testament Conjectural Emendation
AFKIT	<i>Archiwum Fotogrametrii, Kartografii i Teledetekcji</i>
AGW.PH NF	Abhandlungen der Königlichen Gesellschaft der Wissenschaften zu Göttingen, Philologisch-Historische Klasse, N.F.

AiS	Advances in Semiotics
ANTF	Arbeiten zur neutestamentlichen Textforschung
ASD	Opera Omnia Desiderii Erasmi Roterodami. Recognita at adnotatione critica instructa notisque illustrata
<i>Ath</i>	<i>The Athenaeum: Journal of Literature, Science, the Fine Arts, Music and the Drama</i>
ATS	Archief Teylers Stichting
AUSS	Andrews University Seminary Studies
AuThB	Auserlesene theologische Bibliothek
AWMC	Ancient World Mapping Center
AYBD	<i>Anchor Yale Bible Dictionary. Edited by David Noel Freedman. 6 vols. New York: Doubleday, 1992</i>
BA	<i>Biblical Archeologist</i>
BAGRW	Barrington Atlas of the Greek and Roman World
BBR	<i>Bulletin for Biblical Research</i>
BDAG	Danker, Frederick W., Walter Bauer, William F. Arndt, and F. Wilbur Gingrich. <i>Greek-English Lexicon of the New Testament and Other Early Christian Literature</i> . 3rd ed. Chicago: University of Chicago Press, 2000 (Danker-Bauer-Arndt-Gingrich)
BECNT	Baker Exegetical Commentary on the New Testament
BNTC	Black's New Testament Commentaries
BRS	The Bloomsbury Revelations Series
<i>BSTJ</i>	<i>Bell System Technical Journal</i>
<i>BT</i>	<i>The Bible Translator</i>
<i>BTB</i>	<i>Biblical Theology Bulletin</i>
BZVB	Beiträge Zum Verstehen Der Bibel
<i>CaGIS</i>	<i>Cartography and Geographic Information Science</i>
<i>CaJ</i>	<i>Cartographic Journal</i>
<i>Cartographica</i>	<i>Cartographica: The International Journal for Geographic Information and Geovisualization</i>
CBET	Contributions to Biblical Exegesis and Theology
CBGM	<i>Coherence Based Genealogical Method</i>
CBQ	<i>Catholic Biblical Quarterly</i>

CBR	<i>Currents in Biblical Research</i>
CCSL	Corpus christianorum series Latina
CNT <sup>3</sup>	Commentaar op het Nieuwe Testament, derde serie
CoSc	<i>Cognitive Science</i>
CSEL	<i>Corpus scriptorum ecclesiasticorum latinorum</i>
CSTM	<i>Communications in Statistics - Theory and Methods</i>
CSUR	<i>Computing Surveys</i>
CTQ	<i>Concordia Theological Quarterly</i>
DBCI	<i>Dictionary of Biblical Criticism and Interpretation</i>
DBS	Digital Biblical Studies
DLNTD	<i>Dictionary of the Later New Testament and Its Developments. Edited by Ralph P. Martin and Peter H. Davids. Downers Grove, IL: InterVarsity Press, 1997</i>
DNPSup	Der Neue Pauly Supplemente
DNTB	<i>Dictionary of New Testament Background. Edited by Craig A. Evans and Stanley E. Porter. Downers Grove, IL: InterVarsity, 2000</i>
DoPh	<i>Doklady Physics</i>
DPL	<i>Dictionary of Paul and His Letters. Edited by Gerald F. Hawthorne and Ralph P. Martin. Downers Grove, IL: InterVarsity Press, 1993</i>
EBR	<i>The Expositor's Bible Commentary</i>
ECM	Editio Critica Maior
EG	<i>Economic Geography</i>
EHNT	<i>Exegetisches Handbuch zum Neuen Testament</i>
EJPAP	<i>European Journal of Pragmatism and American Philosophy</i>
Er	<i>Eranos. Acta philologica suecana</i>
ESV	English Standard Version
EurRev	<i>European Review</i>
ExpTim	<i>The Expository Times</i>
FGnKaL	Forschungen zur Geschichte des neutestamentlichen Kanons und der altkirchlichen Literatur
FiHi	<i>Fides et historia</i>
GeoInf	<i>GeoInformatica</i>

<i>GeoInIs</i>	<i>Geoinformation Issues</i>
<i>GIS Frontiers</i>	<i>GIS Frontiers in Business and Science</i>
<i>GJL</i>	<i>GeoJournal Library</i>
<i>GTCCCL</i>	<i>Greek Toponyms Collected from Classical Literature</i>
<i>HBInt</i>	<i>History of Biblical Interpretation</i>
<i>Herm</i>	<i>Hermeneia</i>
<i>HisCom</i>	<i>History and Computing</i>
<i>Historia</i>	<i>Historia: Zeitschrift Für Alte Geschichte</i>
<i>HNT</i>	<i>Handbuch zum Neuen Testament</i>
<i>HTR</i>	<i>Harvard Theological Review</i>
<i>ICC</i>	<i>International Critical Commentary</i>
<i>IJAIT</i>	<i>International Journal on Artificial Intelligence Tools</i>
<i>IJE</i>	<i>International Journal of Epidemiology</i>
<i>IJGIS</i>	<i>International Journal of Geographical Information Systems</i>
<i>IJHAC</i>	<i>International Journal of Humanities and Arts Computing</i>
<i>INTF</i>	<i>Institut für neutestamentliche Textforschung</i>
<i>ISAW</i>	<i>Institute for the Study of the Ancient World</i>
<i>IVPNTC</i>	<i>IVP New Testament Commentary</i>
<i>JMB</i>	<i>Journal of Molecular Biology</i>
<i>JACM</i>	<i>Journal of the Association for Computing Machinery</i>
<i>JBL</i>	<i>Journal of Biblical Literature</i>
<i>JDM</i>	<i>Journal of Database Management</i>
<i>JEBS</i>	<i>Journal of European Baptist Studies</i>
<i>JECH</i>	<i>Journal of Early Christian History</i>
<i>JETS</i>	<i>Journal of the Evangelical Theological Society</i>
<i>JOSIS</i>	<i>Journal of Spatial Information Science</i>
<i>JR</i>	<i>The Journal of Religion</i>
<i>JRH</i>	<i>Journal of Religious History</i>
<i>JRS</i>	<i>Journal of Roman Studies</i>
<i>KEK</i>	<i>Kritisch-exegetischer Kommentar über das Neue Testament</i>
<i>KK</i>	<i>Kurzgefaßter Kommentar zu den heiligen Schriften Alten und Neuen Testaments</i>
<i>Klio</i>	<i>Klio - Beiträge zur Alten Geschichte</i>

KNT	Kommentar zum Neuen Testament
LCL	Loeb Classical Library
LGC	Lexham Geographic Commentary
LRE	<i>Language Resources and Evaluation</i>
LXX	Septuagint
MGS	<i>Montanari, Franco. The Brill Dictionary of Ancient Greek. Edited by Madeleine Goh and Chad Schroeder. Boston, MA: Brill, 2015.</i>
<i>Mnemosyne</i>	<i>Mnemosyne. Bibliotheca Philologica Batava</i>
NA28	Holger Strutwolf et al., eds., <i>Novum Testamentum Graece</i> , 28. revidierte Auflage (Stuttgart: Deutsche Bibelgesellschaft, 2012)
<i>Nature</i>	<i>Nature</i>
NDSB	New Daily Study Bible
NEJM	<i>New England Journal of Medicine</i>
NICNT	New International Commentary on the New Testament
NIDNTT	New International Dictionary of New Testament Theology
NIGTC	New International Greek Testament Commentary
<i>NovT</i>	<i>Novum Testamentum</i>
NTD	Das Neue Testament Deutsch
NTG	Novum Testamentum Graece
<i>NThBl</i>	<i>Neue theologische Blätter</i>
NTS	<i>New Testament Studies</i>
NTTSD	New Testament Tools, Studies and Documents
<i>OpTh</i>	<i>Open Theology</i>
PG	Patrologia Graeca
<i>Phronema</i>	<i>Phronema</i>
PiHG	<i>Progress in Human Geography</i>
PKn	<i>Primerjalna Knjizevnost</i>
PLoS Med	<i>PLoS Medicine</i>
PLoS One	<i>PLoS One</i>
PM	<i>Protestantische Monatshefte</i>

RBS	Resources for Biblical Study
RE	<i>Realencyklopädie für protestantische Theologie und Kirche</i>
RG	<i>Roczniki Geomatyki - Annals of Geomatics</i>
RSHG	Routledge Studies in Human Geography
RSR	<i>Revue des sciences religieuses</i>
SBEC	Studies in the Bible and Early Christianity
SCG	<i>Social &amp; Cultural Geography</i>
SciMet	<i>Scientometrics</i>
SCRIP	<i>Scriptura</i>
SlavRev	<i>Slavistična revija</i>
SSS	Springer Series in Statistics
TC <sup>1</sup>	<i>A Textual Commentary on the Greek New Testament. A Companion Volume to the United Bible Societies' Greek New Testament (Third Edition)</i>
TC <sup>2</sup>	<i>A Textual Commentary on the Greek New Testament, a Companion Volume to the United Bible Societies' Greek New Testament (4th rev. ed.)</i>
TIG	<i>Transactions in GIS</i>
TIPNR	Tyndale Individualised Proper Names with all References
TJT	<i>Toronto Journal of Theology</i>
TLID	<i>The Lancet Infectious Diseases</i>
TNTC	Tyndale New Testament Commentaries
T'oung Pao	<i>T'oung Pao</i>
Transf	<i>Transformations: The Journal of Inclusive Scholarship and Pedagogy</i>
TS	<i>Theological Studies</i>
TSH	The Spatial Humanities
TSK	<i>Theologische Studien und Kritiken</i>
TuT	<i>Text und Textwert</i>
TynBul	<i>Tyndale Bulletin</i>
UBS	United Bible Societies
V&F	<i>Verkündigung und Forschung</i>
VC	<i>Vigiliae Christianae</i>

VCSup	Supplements to <i>Vigiliae Christianae</i>
VGVCG	Verhandeling van het genootschap tot verdediging van den christelijken godsdienst
VRNGG n.s.	Verhandelingen, raakende den natuurlyken en geopenbaarden godsdienst, nieuwe serie
VUB <sup>2</sup>	Volksuniversiteits Bibliotheek, 2 <sup>e</sup> serie
WTJ	<i>Westminster Theological Journal</i>
WUNT	Wissenschaftliche Untersuchungen zum Neuen Testament
WZ(H).GS	<i>Wissenschaftliche Zeitschrift der Martin-Luther-Universität, Gesellschafts- und Sprachwissenschaftliche Reihe</i>
ZDPV	<i>Zeitschrift des Deutschen Palästina-Vereins</i>
ZECNT	Zondervan Exegetical Commentary on the New Testament
ZNW	<i>Zeitschrift für die neutestamentliche Wissenschaft</i>
ZWT	<i>Zeitschrift für wissenschaftliche Theologie</i>





ΜΕΝ ΠΑΡΘΟΙΚΑΙ  
ΜΗΔΟΙΚΑΙ ΟΙΚΑΤ  
ΟΙΚΟΥΝΤΕΣ ΤΗΝ ΜΕ  
ΣΟΠΟΤΑΜΙΑΝ ΟΥ  
ΠΑΝΤΕΚΑΙ ΚΑΠ  
ΡΥΤΑΝ ΠΟΝΤ  
ΚΑΙ ΤΗΝ ΑΣΙΑΝ  
ΦΡΥΓΙΑΝ ΤΕ ΚΑΙ ΠΑΜ  
ΦΥΛΙΑΝ ΑΙΓΥΠΤΟ  
ΚΑΙ ΤΑ ΜΕΡΗ ΤΗΣ ΛΙ  
ΒΥΗΣ ΤΗΣ ΚΑΤΑΚΥ  
ΡΗΝΗΝ ΚΑΙ ΟΙ ΕΠΙ  
ΔΗΜΟΥΝΤΕΣ ΡΩ  
ΜΑΙΟΙ ΟΥΔΑΙΟΙ ΤΕ  
ΚΑΙ ΠΡΟΧΑΛΥΤΟΙ  
ΚΡΗΤΕΣ ΚΑΙ ΑΡΑΒΕΣ  
ΑΚΟΥΟΜΕΝ ΑΛΛΟΥ  
ΤΩΝ ΑΥΤΩΝ ΤΑΙΣ  
ΗΜΕΤΕΡΑΙΣ ΓΛΩΣ  
ΣΑΙΣ ΤΑ ΜΕΓΑΛΕΙΑ  
ΤΟΥ ΘΕΟΥ

**PART 1**  
**INTRODUCTION**  
**AND**  
**BACKGROUND**



# 1

## INTRODUCTION

The early Christian apologist Tertullian (ca. 160 - ca. 230 CE) queries in his *De praescriptione haereticorum*: “What indeed has Athens to do with Jerusalem?” This might be interpreted as if he was discussing a geographical relationship between the two cities, but obviously this was not in Tertullian’s mind, since he continues: “What concord is there between the Academy and the Church? What between heretics and Christians?”<sup>1</sup> To him, Athens was the equivalent of Greek philosophy, while Jerusalem represented the Judeo-Christian worldview. His question can be paraphrased as “what has Greek philosophy to do with a Judeo-Christian worldview?”

On second thought, Tertullian’s question might however correspond with the topic of this research at a deeper level. The question raised by Tertullian is on the relation between different disciplines and a possible mutual relevance. How does philosophy relate to the Judeo-Christian worldview and are methods in one field of value for the other? Similarly, what does spatial-temporal analysis have to do with the interpretation of early Christian literature? Are these two disciplines in some way compatible with each other?

---

<sup>1</sup> Tertullian, *Praescr.* 7.19 (ANF:246). The Latin reads: “Quid ergo Athenis et Hierosolymis? Quid academiae et ecclesiae? Quid haereticis et christianis?”

## 1.1 Research question and method

My research hypothesizes that spatial-temporal analyses could bring additional and new insights to the interpretation of early Christian literature. The main question in this research is:

In which way can spatial-temporal analysis methods contribute to the interpretation of early Christian literature?

To answer this question, I will make an inventory of relevant work in related disciplines and apply a case-study approach to demonstrate the application of spatial-temporal analysis methods for the interpretation of early Christian (as well as any other type of) literature. Furthermore, I will assess the potential and limitations of developed methods and data solutions. I conclude by suggesting improvements and further developments to advance the use of spatial-temporal analysis in the interpretation of texts.

## 1.2 Outline

I have divided this study into four parts. The aim of the first part is to provide background on spatial-temporal analysis (chapter two), and interpretation of early Christian literature (chapter three). In the fourth chapter I discuss previous research. Chapter five defines the scope and potential contribution of this study.

Parts two and three contain several case studies and are based on articles which have been published in peer-reviewed academic journals.<sup>2</sup> The second part concerns the establishment of texts: before the interpretation of any text can start, the original wording of the text itself must be critically established. Conventionally, this is done according to qualitative criteria. However, in chapter six I explore the application of spatial analyses to New Testament textual criticism by demonstrating how an existing algorithm can be

---

<sup>2</sup> The complete list of articles is included on page 323. The first footnote in each chapter indicates on which article the chapter is based.

adapted to calculate the possibility that a (combination of) letter(s) is confused by another (combination of) letter(s). Subsequently, I translate the outcomes of the algorithm to mathematical space and use them for visualisation and spatial analyses. To illustrate the potential of these analytical tools, I apply them to the food of John the Baptist (Matt 3:4 and Mark 1:6), and to the table of nations in Acts 2:9-11.

Chapter seven functions as an interlude. Since the appearance of Ἰουδαίαν in the table of nations (Acts 2:9-11) has troubled interpreters for centuries, several scholars have proposed to emend the text. Therefore, I give a diachronic overview of the conjectured emendations and evaluate the discussion. This sets the stage for chapter eight, in which I input a list of contemporary demo- and toponyms into the adapted algorithm to identify a textual emendation for Ἰουδαίαν in Acts 2:9 that might be explained by palaeographical confusion.<sup>3</sup>

In the third part of this study, I shift the focus from the establishing to the interpretation of texts. I start in chapter nine with analysis and cartographic visualisations of the suggested contemporary geographical backgrounds for Acts 2:9-11. Chapter ten investigates how GIS can be used as a heuristic tool to reconstruct spatial-temporal events from narratives in order to examine whether a scenario is conceivable within the narrative world. For that purpose, I compare several interpretive issues that surround two accounts on Paul's experiences in Macedonia. Subsequently, I apply spatial-temporal analysis methods to construct and test the viability in space and time of three scenarios that have been proposed to harmonise these accounts.

In chapter eleven, I zoom out to a complete textual corpus. Here I synthesize the geographical and social data from the seven letters of the second-century bishop Ignatius, to create

---

<sup>3</sup> Palaeography is the study of the history and development of ancient texts.

reconstructions of several itineraries, and to analyse some aspects of the social world behind the Ignatian textual corpus.

Besides summarizing the findings from the case studies (chapter twelve), the purpose of part four is to discuss and evaluate the results and methodical contribution of the case studies for both the establishing (chapter thirteen) and the interpretation of texts (chapter fourteen). Chapter fifteen provides a further reflection on the methodological contribution of this research. Chapter sixteen concludes with answering the research question and provides suggestions for further research.

## 2

# SPATIAL-TEMPORAL ANALYSIS METHODS

August 31, 1854. Cholera is reported in the Soho district, London. One hundred and twenty-seven people died within seventy-two hours and in subsequent days more people were infected by the epidemic. On the tenth of September the disease had already claimed over 500 lives and no knowledge existed on how to fight the epidemic effectively.<sup>1</sup>

The common opinion in those days was that cholera was caused by the inhalation of polluted air, but Dr. John Snow, an English physician, had already uttered reservations against this assumption in 1849.<sup>2</sup> His hypothesis was that infections were caused by polluted water. Though devoid of modern equipment like a microscope, he acquired a lot of data by interviewing local citizens. Based on that information he created a map showing cholera-victims in the vicinity of water pumps (Figure 1). Though none of the employees of the brewery on Broad Street and neither the monks of the adjacent monastery were infected, Snow's map revealed the hot spot of cholera-victims. Disabling the pump on Broad Street stopped the outbreak.

---

<sup>1</sup> When I included this example to illustrate spatial analysis in my research proposal in 2016, I could not foresee the challenges of the COVID-19 pandemic. Our current situation makes it easier to empathise with the victims of the local cholera epidemic in 1854.

<sup>2</sup> John Snow, *On the Mode of Communication of Cholera*, 1st ed. (London: Churchill, 1849).

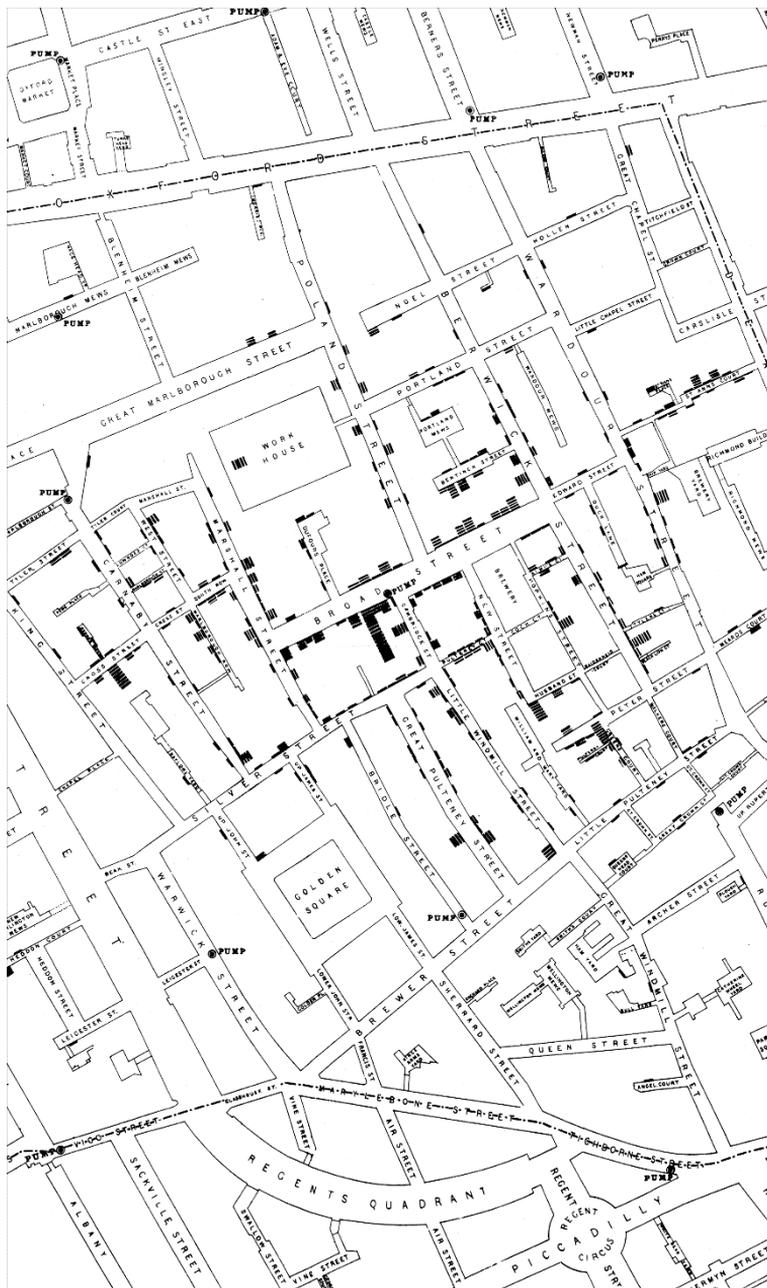


Figure 1. John Snow's map on cholera.<sup>3</sup>

Due to the success in fighting the cholera epidemic on the basis of a hypothesis which became evidenced by data collection and analysis, John Snow has been considered the founder of modern epidemiology.<sup>4</sup> In addition, since the mapping of locations and events, and the analysis of spatial correlations resulted in evidence that supported the decision to dismantle the Broad Street pump, John Snow is also seen as a GIS pioneer *avant-la-lettre*.<sup>5</sup>

In this chapter, I briefly discuss space and geography. Additionally, I give a short overview of spatial-temporal modelling and analysis. I end with a summary of the three points of view on “doing GIS” to situate my research.

## 2.1 Space and geography

Space has multiple connotations in common parlance. It is used in a metaphorical sense, but also to describe our social and physical reality. In the latter case this implies empirical measurability. Donna Peuquet defines space as a meta-category with several subcategories

---

<sup>3</sup> John Snow, *On the Mode of Communication of Cholera*, 2nd enlarged edition. (London: Churchill, 1855) map 1. A scan of the map is available at <https://upload.wikimedia.org/wikipedia/commons/2/27/Snow-cholera-map-1.jpg>

<sup>4</sup> Donald Cameron and Ian G Jones, “John Snow, the Broad Street Pump and Modern Epidemiology,” *IJE* 12.4 (1983): 393–96, <https://doi.org/10.1093/ije/12.4.393>.

<sup>5</sup> Nowadays, spatial analyses are still applied to fight epidemics. For instance, WHO physician dr. Bruce Aylward and his team successfully applied GIS in the fight against Ebola in Western Africa, see: WHO Ebola Response Team, “Ebola Virus Disease in West Africa — The First 9 Months of the Epidemic and Forward Projections,” *NEJM* 371.16 (2014): 1481–95, <https://doi.org/10.1056/NEJMoa1411100>; WHO Ebola Response Team, “West African Ebola Epidemic after One Year — Slowing but Not Yet under Control,” *NEJM* 372.6 (2015): 584–87, <https://doi.org/10.1056/NEJMc1414992>; International Ebola Response Team et al., “Exposure Patterns Driving Ebola Transmission in West Africa: A Retrospective Observational Study,” ed. Lorenz von Seidlein, *PLoS Med* 13.11 (2016): e1002170, <https://doi.org/10.1371/journal.pmed.1002170>. For a more current example, compare Ensheng Dong, Hongru Du, and Lauren Gardner, “An Interactive Web-Based Dashboard to Track COVID-19 in Real Time,” *TLID* 20.5 (2020): 533–34, [https://doi.org/10.1016/S1473-3099\(20\)30120-1](https://doi.org/10.1016/S1473-3099(20)30120-1).

based on scale and perception (Table 1).<sup>6</sup> Not all types of spaces are within the reach of our perception. When discussing physical elements of space in this study, I will focus on *geographical* space.

*Table 1. Spatial scales.*

Type	scale	perception
atomic	what must be put under a microscope to become accessible	mediated
tabletop	what can be laid out before us on a surface	sensory
personal	what is in our immediate proximity	sensory
geographic	the environment around us, the greater world we live in	sensory
astronomic	what must be observed by telescopes and satellites	mediated

Geography studies phenomena on, above, and below the earth’s surface. These phenomena can pertain to human culture and its effect on earth,<sup>7</sup> or to physical features of the earth’s surface. This is a very broad and diverse stream of information. Sheila and Steven Steinberg remark: “almost all information researchers collect about people, their communities, and their environments can be tied to some geographic location.”<sup>8</sup> In addition to the localizability of

<sup>6</sup> Donna J. Peuquet, *Representations of Space and Time* (New York, NY: Guilford, 2002), 1.

<sup>7</sup> “Social reality is not just coincidentally spatial, existing ‘in’ space, it is presuppositionally and ontologically spatial. *There is no unspatialized social reality*” Edward W. Soja, *Thirdspace: Journeys to Los Angeles and Other Real-and-Imagined Places* (Malden, MA: Blackwell, 1996), 46 (emphasis original); “The significance of space to understanding human activity cannot be overstated. Everything that exists, exists within space” E.C. Stewart, “New Testament Space/Spatiality,” *BTB* 42.3 (2012): 139, <https://doi.org/10.1177/0146107912452245>.

<sup>8</sup> Sheila L. Steinberg and Steven J. Steinberg, *GIS Research Methods: Incorporating Spatial Perspectives* (Redlands, CA: Esri, 2015), 27. In my opinion a statement like “Everything happens somewhere”, which was the slogan for International GIS Day 2013, is problematic due to a lack of definition of the three concepts “everything”, “happen”, and “somewhere”. Likewise, the claim that “almost eighty percent of information has a spatial component” is meaningless, since it is impossible to verify such a statement, see Stefan Hahmann, Dirk Burghardt, and Beatrix Weber, ““80% of All Information Is Geospatially Referenced”??? Towards a Research Framework: Using the Semantic Web

everyday phenomena, geography also presupposes spatial relationships. This observation led Waldo Tobler to the formulation of his first law of geography: “everything is related to everything else, but near things are more related than distant things,”<sup>9</sup> which is fundamental to spatial analysis, since it presupposes relationships such as overlay, contingency, proximity, and distance to study social and physical reality.

In a sense, geography does not study the real world. It only models and studies abstractions of reality. For that purpose, it selects data, and models spatial characteristics deemed relevant to simulate conditions in reality. These characteristics can be geometrically (such as location, distance, perimeter, or area), coincidentally (like topology and overlay), or adjacently (for example, distribution or allocation).

## 2.2 Spatial-temporal modelling and analysis

Phenomena, space, and time are entangled and the aim of spatial-temporal modelling and -analysis is to answer questions about the *where* and *when* of phenomena and their relationships. Transferring real-world observations about spatial phenomena (whether they are social or physical) to spatial data requires a translation to a distribution in two, three, or more dimensions, using a system of coordinates.<sup>10</sup> This translation is a *sine qua non* for the input, storage, editing, visualisation, and analysis of spatial data.

Paramount to the modelling of a spatial entity are its *location*, that is the point(s) on the earth’s surface or in mathematical space described by x-, y-, and z-coordinates; its *shape*, including the choice of geometric primitive; and its *attributes*, which contain information

---

for (In) Validating This Famous Geo Assertion,” in *Proceedings of the 14th AGILE Conference on Geographic Information Science* (Utrecht, 2011).

<sup>9</sup> Waldo R. Tobler, “A Computer Movie Simulating Urban Growth in the Detroit Region,” *EG* 46 (1970): 236, <https://doi.org/10.2307/143141>.

<sup>10</sup> Peuquet, *Representations of Space and Time*, 229.

about a geographic feature. Data can be quantitative or qualitative,<sup>11</sup> and discrete or continuous.<sup>12</sup>

Data are always an abstraction and depict location, shape, and attributes of geographical features only at a certain resolution: they are smoothed, simplified, dissolved, or exaggerated according to the necessary detail in the data and model. As such “spatial data are always an approximation or generalization of reality, they are full of uncertainty and inaccuracy.”<sup>13</sup>

Several approaches for modelling spatial-temporal data have been proposed. Ohori et al. identify eight categories:<sup>14</sup> (1) in a Snapshot Model a certain region is represented at a certain time and every individual object is considered static until the next snapshot. Multiple snapshots are required to simulate time.<sup>15</sup> The model is simple in concept and easy to apply, but quickly results in redundant data and inconsistency between layers. (2) Another type of modelling collects timestamps per static object:<sup>16</sup> a pair of

---

<sup>11</sup> Quantitative, measurable, data are grouped by amount or rank, such as air temperature, wheat production, or degree of soil pollution. Qualitative data, on the other hand are data grouped by kind, such as soil type or animal species.

<sup>12</sup> Discrete data describe geographic features that are represented in mathematical space by geometric primitives such as points, lines, or bounded polygons. This way of modelling is not applicable to all data. Many data are not distinct and have fuzzy boundaries, they vary without discrete steps (such as surface elevation). This type of data is usually represented by TINs, rasters, or contour lines. Heather Kennedy, ed., *The ESRI Press Dictionary of GIS Terminology* (Redlands, CA: Esri, 2001), 20, 29.

<sup>13</sup> Michael F. Goodchild, “Geographical Information Science,” *IJGIS* 6.1 (1992): 35, <https://doi.org/10.1080/02693799208901893>.

<sup>14</sup> Ken Arroyo Ohori, Hugo Ledoux, and Jantien Stoter, “Modelling and Manipulating Spacetime Objects in a True 4D Model,” *JOSIS* 14 (2017): 61–93, <https://doi.org/10.5311/JOSIS.2017.14.297>.

<sup>15</sup> Marc P. Armstrong, “Temporality in Spatial Databases,” in *Accessing the World Third Annual International Conference, Exhibits, and Workshops (GIS/LIS '88 American Society for Photogrammetry and Remote Sensing, presented at the GIS/LIS '88, 1988)*, 880–89.

<sup>16</sup> Umit Basoglu and Joel Morrison, “The Efficient Hierarchical Data Structure for the Us Historical Boundary File,” in *Harvard Papers on Geographic Information Systems*, ed.

timestamps, demarcating start and end, are attached to an individual object. This is more efficient than a Snapshot model, but objects that change in time must be stored as multiple representations. It is impossible to store events or topological relationships explicitly. (3) A Space-Time Composite (STC) splits objects spatially into identical historical regions.<sup>17</sup> This is more flexible as it explicitly stores the history and topology of individual objects. However, objects can become extremely fragmented, slowing down many operations. (4) An event-based model stores points in time where objects change, the “events.” The model maintains a list of all events.<sup>18</sup> In this model it is exactly known when

---

Geoffrey Dutton, vol. 4 (Addison-Wesley, 1978); Gary J. Hunter and Ian P. Williamson, “The Development of a Historical Digital Cadastral Database,” *IJGIS* 4.2 (1990): 169–79, <https://doi.org/10.1080/02693799008941538>. Both C.M. Gold, J. Nantel, and W. Yang, “Outside-in: An Alternative Approach to Forest Map Digitizing,” *IJGIS* 10.3 (1996): 291–310, <https://doi.org/10.1080/02693799608902080>; and Peter van Oosterom, “Maintaining Consistent Topology Including Historical Data in a Large Spatial Database,” in *Proceedings of Auto-Carto*, 1997 13:327–36 refined the model by allowing incremental topological updates. Gail Langran and Nicholas R. Chrisman, “A Framework For Temporal Geographic Information,” *Cartographica* 25.3 (1988): 1–14, <https://doi.org/10.3138/K877-7273-2238-5Q6V> advanced the model by storing differential changes only, which decreases space usage.

<sup>17</sup> Nicholas R. Chrisman, “The Role of Quality Information in the Long-Term Functioning of a Geographic Information System,” *Cartographica* 21.2–3 (1984): 79–88; based on Kenneth J. Dueker and Nicholas R. Chrisman, “Cartographic Data Structures: Alternatives for Geographic Information Systems,” *ACM SIGG* 10.2 (1976): 167–72, <https://doi.org/10.1145/965143.563306>; Jaroslaw R. Rossignac and Michael A. O’Connor, “SGC: A Dimension-Independent Model for Pointsets with Internal Structures and Incomplete Boundaries,” in *Proceedings of the IFIP Workshop on CAD/CAM*, ed. M. Wosny, J. Turner, and K. Preiss (IFIP Workshop on CAD/CAM IBM Watson, presented at the IFIP Workshop on CAD/CAM, 1989), 145–80; and Mark de Berg et al., *Computational Geometry* (Berlin: Springer, 2008), <https://doi.org/10.1007/978-3-540-77974-2>.

<sup>18</sup> Michael F. Worboys, “A Model for Spatio-Temporal Information,” in *Proceedings of the 5th International Symposium on Spatial Data Handling* (Charleston, SC, 1992), 602–11; Donna J. Peuquet, “It’s About Time: A Conceptual Framework for the Representation of Temporal Dynamics in Geographic Information Systems,” *AAAG* 84.3 (1994): 441–61, <https://doi.org/10.1111/j.1467-8306.1994.tb01869.x>; Donna J. Peuquet and Niu

events occur, and individual changes can be identified. The disadvantage of this model that it requires expensive searches to find objects within each event.

Other approaches have also been suggested, for example (5) to separate models for space and time.<sup>19</sup> Here, space and time are stored independently as separate, but linked objects. Others conceptualized more generic spatial-temporal models and formulated (6) Conceptual models.<sup>20</sup> These have the advantage of

---

Duan, "An Event-Based Spatiotemporal Data Model (ESTDM) for Temporal Analysis of Geographical Data," *IJGIS* 9.1 (1995): 7-24, <https://doi.org/10.1080/02693799508902022>; An example is the History Graph Model, which supports different type of events and the modelling of continuously changing event. It also allows the specification of interpretation of data between events, A. Renolen, "History Graphs: Conceptual Modeling of Spatio-Temporal Data," *GIS Frontiers* 2 (1996).

<sup>19</sup> An example is the three domains model, which uses the third dimension to explicitly store semantics, May Yuan, "Wildfire Conceptual Modeling for Building GIS Space-Time Models," in *Proceedings of GIS/LIS*, 1994 94:860-69; Christophe Claramunt and Marius Thériault, "Managing Time in GIS: An Event-Oriented Approach," in *Proceedings of the International Workshop on Temporal Databases: Recent Advances in Temporal Databases* (Springer-Verlag, 1995), 23-42; van Oosterom, "Maintaining."

<sup>20</sup> P.A. Story and Michael F. Worboys, "A Design Support Environment for Spatio-Temporal Database Applications," in *Spatial Information Theory A Theoretical Basis for GIS*, ed. Andrew U. Frank and Werner Kuhn, ed. Gerhard Goos, Juris Hartmanis, and Jan Leeuwen (Berlin: Springer, 1995), 413-30, [https://doi.org/10.1007/3-540-60392-1\\_27](https://doi.org/10.1007/3-540-60392-1_27). Examples are the (1) Spatio-Temporal Entity Relationship (STER) developed by Nectaria Tryfona and Christian S. Jensen, "Conceptual Data Modeling for Spatiotemporal Applications," *GeoInf* 3 (1999): 245-68 which offer rudimentary support for multi-scale objects by allowing for multiple geometries to be stored in each feature; (2) Object-Relationship (OR) model, which Christophe Claramunt et al., "Database Modelling for Environmental and Land Use Changes," in *Geographical Information and Planning*, ed. John Stillwell, Stan Geertman, and Stan Openshaw (Berlin: Springer, 1999), 181-202, [https://doi.org/10.1007/978-3-662-03954-0\\_10](https://doi.org/10.1007/978-3-662-03954-0_10) specifically tailored to model change; Christine Parent, Stefano Spaccapietra, and Esteban Zimányi, "Spatio-Temporal Conceptual Models: Data Structures + Space + Time," in *GIS '99* (ACM Press, 1999), 26-33, <https://doi.org/10.1145/320134.320142> describe a similar one based on geometry-changing processes; (3) Rosanne Price, Nectaria Tryfona, and Christian S. Jensen, "Extended Spatiotemporal UML:

being extensible and adaptable, but do not offer a complete solution. (7) In an Object-Oriented (OO) model, distinct spatial, temporal, and spatial-temporal classes are used to model space and time, and these are subsequently connected by various relationships.<sup>21</sup> This approach incorporates features similar to object-oriented programming but is complex. (8) A space-time model in true dimensional space treats time as a true dimension. This is complex but allows operations similar to those performed on spatial dimensions.

Modelling spatial-temporal objects is complex but needed for spatial-temporal analysis to study locations and shapes of geographic features, the relationship between them, and their development. All data that can be modelled in mathematical space can be studied in a geographical information system.<sup>22</sup>

### 2.3 GIS

The acronym GIS and the term *geographical information system* was coined by Roger Tomlinson for a tool implemented in the Government of Canada's program on rural development in the early

---

Motivations, Requirements and Constructs," *JDM* 11.4 (2000): 14–27, <https://doi.org/10.4018/jdm.2000100102> extended the UML scheme, providing an option to mark class attributes as spatial, temporal or spatiotemporal. Parent, Spaccapietra, and Zimányi, "Spatio-Temporal."

<sup>21</sup> Michael F. Worboys, Hilary M. Hearnshaw, and David J. Maguire, "Object-Oriented Data Modelling for Spatial Databases," *IJGIS* 4.4 (1990): 369–83, <https://doi.org/10.1080/02693799008941553>.

<sup>22</sup> Goodchild, "Geographical Information Science," 42–43 states that "the handling of spatial information with GIS technology presents a range of intellectual and scientific challenges of much greater breadth than the phrase 'spatial data handling' implies – in effect, a geographical information science. The term 'geographical' seems essential – much of what GIS research is about concerns the geographical world and our relationships with it, and the term is much richer than 'spatial'." However, Dawn J. Wright, "Theory and Application in a Post-GISystems World," *IJGIS* 26.12 (2012): 2204, <https://doi.org/10.1080/13658816.2012.713957> remarks correctly that 'space should not be limited to the Earth, it could be in the realm of virtual space..., information space, mental space and more.'

1960s.<sup>23</sup> He defined “GIS as computer-based information system for the storage and manipulation of map-based land data.”<sup>24</sup>

Since that description needed clarification and extension, scholars have tried to identify which components constitute a GIS. This resulted in definitions such as: GIS is a “collection of computer hardware, software, and geographic data for capturing, storing, updating, manipulating, analysing, and displaying all forms of geographically referenced information,”<sup>25</sup> or like: GIS is “an organized collection of computer hardware and software, people, money, and organizational infrastructure that makes possible the acquisition and storage of geographic and related attribute data, for purposes of retrieval, analysis, synthesis, and display to promote understanding and assist decision making.”<sup>26</sup>

## 2.4 Doing GIS

Besides the definition of GIS itself, there has also been an extensive discussion of what is meant with “doing GIS”. Would it not be better to understand the S in the acronym as *science* instead of *system*? Michael Goodchild posited in a seminal article that GIScience can be understood in two senses: “research about GIS” or “research with GIS.”<sup>27</sup> In a later article he reiterated this point of view:

---

<sup>23</sup> Today, GIS has found its way to the consumer, for instance in route planners, navigation systems, Google Earth, etc. There are different applications for a vast variety of disciplines, compare e.g., “Industries,” n.d., <http://www.esri.com/industries>; Henk J. Scholten, Rob van de Velde, and Niels van Manen, eds., *Geospatial Technology and the Role of Location in Science*, 1st ed., GJL 96, ed. Daniel Z. Sui et al. (Dordrecht: Springer, 2009).

<sup>24</sup> Roger F. Tomlinson, “A Geographic Information System for Regional Planning,” in *Land Evaluation (Papers of a CSIRO Symposium, Organized in Cooperation with UNESCO, 26-31 08 1968)*, ed. G.A. Stewart (Melbourne: Macmillan, 1968), 200.

<sup>25</sup> Kennedy, *Dictionary of GIS*, 42.

<sup>26</sup> Michael Kennedy, *Introducing Geographic Information Systems with ArcGIS®: A Workbook Approach to Learning GIS*, 3rd ed. (Hoboken, NJ: Wiley, 2013), 5.

<sup>27</sup> Goodchild, “Geographical Information Science,” 41.

“Geographic information science (GIScience) addresses fundamental issues (...) associated with geographic information and the use of geographic information systems to perform spatial analysis, using a scientific approach” and it “plays an important role ... as both a technology that can support research, and as an approach to problem-solving.”<sup>28</sup>

His seminal article suggested a new way of thinking about GIS, but it also functioned as an impetus to the tool-science debate within the GIS community. Wright et al. summarized this discussion and argued that “doing GIS” can best be understood as three positions along a continuum from tool to science. “Doing GIS” can pertain (1) to using GIS as a tool to advance the investigation of a (spatial) problem; (2) to developing a toolbox to advance capabilities, facilities and ease of use of GIS tools; and (3) to reflect on GIS as a “method or body of knowledge for developing and testing spatial theories.”<sup>29</sup>

In this research, doing spatial-temporal analysis must be understood as synonymous to “doing GIS” in the first sense. I will use GIS as a tool to investigate and interpret early Christian literature.

---

<sup>28</sup> Michael F. Goodchild and P.A. Longley, “Geographic Information Science,” in *Handbook of Regional Science*, ed. M.M Fischer and P. Nijkamp, 2nd ed. (Heidelberg: Springer, 2018), 1598.

<sup>29</sup> Dawn J. Wright, Michael F. Goodchild, and James D. Proctor, “GIS: Tool or Science? Demystifying the Persistent Ambiguity of GIS as ‘Tool’ Versus ‘Science,’” *AAAG* 87.2 (1997): 350, 355, 357, <https://doi.org/10.1111/0004-5608.872057>.



# 3

## INTERPRETATION OF EARLY CHRISTIAN LITERATURE

49 BCE. Julius Caesar and his army just crossed a small river, the Rubicon. The river itself was nothing special. Much wider and deeper rivers had been crossed by armies bigger than the legion of soldiers accompanying Caesar. And still, in the act of crossing Caesar is supposed to have uttered *Alea iacta est*,<sup>1</sup> demarcating the start of a new era in ancient history.<sup>2</sup> According to Alister McGrath this example illustrates the distinction between event and meaning.

As a simple event, it was not remarkable. [T]he meaning of the event [however] guarantees its place in history books, in that its political significance was enormous. Crossing this national frontier with an army was a deliberate act of rebellion against Rome.... It marked a declaration of war on the part of Caesar against Pompey and the Roman senate. The event was the crossing of a river; the meaning of that event was a declaration of war.<sup>3</sup>

Several aspects are involved in the derivation of meaning from events. The following short story from Alasdair MacIntyre illustrates this:

---

<sup>1</sup> ET: "The dice have been thrown."

<sup>2</sup> Suetonius, *Jul.* 31, Plutarchus, *Caes.* 32, Appian, *Bell. civ.* 2.35, Lucanus, *Phars.* 1.185, 213-227. See also Cicero, *Phil.* 6.3.

<sup>3</sup> Alister E McGrath, *Christianity: An Introduction*, 3rd ed. (Somerset: Wiley-Blackwell, 2015), 22, *italics added*.

I am standing waiting for a bus and the young man standing next to me suddenly says: “The name of the common wild duck is *Histrionicus histrionicus histrionicus*.” There is no problem as to the meaning of the sentence he uttered: the problem is, how to answer the question, what was he doing in uttering it? Suppose he just uttered such sentences at random intervals; this would be one possible form of madness. We would render his action of utterance intelligible if one of the following turned out to be true. He has mistaken me for someone who yesterday had approached him in the library and asked: “Do you by any chance know the Latin name of the common wild duck?” Or he has just come from a session with his psychotherapist who has urged him to break down his shyness by talking to strangers. “But what shall I say?” “Oh, anything at all.” Or he is a Soviet spy waiting at a prearranged rendez-vous and uttering the ill-chosen code sentence which will identify him to his contact. In each case the act of utterance become intelligible by finding its place in a narrative.<sup>4</sup>

This chapter defines the concepts and disciplines behind the second part of the research question: the interpretation of early Christian texts. Section 3.1 briefly introduces early Christian literature. This is followed by a brief explanation of the field of hermeneutics, in which five concepts are highlighted: underlying motives (3.2.1), historicity (3.2.2), reader and text (3.2.3), textual collaboration (3.2.4), and real and implied entities (3.2.5). Section 3.3 concludes this chapter by evaluating the research question in the light of these concepts.

### 3.1 Early Christian literature

Throughout this dissertation, I will use the term “Early Christian Literature” to refer to documents that originated in the first three centuries CE, and that were produced within movements that emerged from, were affiliated to, or identified themselves with the figure and memory of Jesus of Nazareth.<sup>5</sup> These writings are

---

<sup>4</sup> Alasdair C. MacIntyre, *After Virtue: A Study in Moral Theory*, 3rd ed. (Notre Dame, IN: University of Notre Dame Press, 2007), 228.

<sup>5</sup> L. Michael White, “Christianity: Early Social Life and Organization,” *AYBD* 1:927–35.

distinguished according to literary genre. *Gospels, histories, epistles, and apocalypses* exist in canonical and apocryphal variants.<sup>6</sup> In later centuries genres such as *martyrdom acts* and *apologies* were added.

The era of early Christianity can be divided into two periods (Figure 2). The earliest period, when at least one of the apostles was still alive, is called the apostolic age (ca. 30 – 90 CE).<sup>7</sup> Conventionally, scholars attribute the canonical New Testament writings to the apostolic age, although opinions about the exact dating of the individual writings can differ substantially.<sup>8</sup>

The apostolic age is followed by the postapostolic or ante-Nicene age (ca.90 – ca. 325 CE), which starts when all of Jesus'

---

<sup>6</sup> Canonical are the twenty-seven books which are traditionally known as the New Testament. This collection comprises four Gospels, the Acts of the Apostles, twenty-one letters and an Apocalypse. The term Apocrypha originally meant “hidden or secret things.” Besides being used for the deuterocanonical books which are complemented to the Old Testament, the term is also used for Christian writings, such as gospels, epistles, histories or apocalypses, from the second to sixth centuries. Rick Brannan, *Greek Apocryphal Gospels, Fragments and Agrapha: Introductions and Translations* (Bellingham, WA: Lexham Press, 2013), 2 remarks that these documents ‘say less about [(Jesus in)] the context of the first century and more about the problems and issues people in later centuries had in understanding Jesus, and how they tried to solve those problems.’ For English translations of New Testament Apocrypha, see Wilhelm Schneemelcher, ed., *New Testament Apocrypha*, trans. R. McL Wilson, vol. 1 (Louisville, KY: Westminster John Knox, 1992); Wilhelm Schneemelcher, ed., *New Testament Apocrypha*, trans. R. McL Wilson, vol. 2 (Louisville, KY: Westminster John Knox, 1992); J.K. Elliott, ed., *The Apocryphal New Testament: A Collection of Apocryphal Christian Literature in an English Translation* (Oxford: Oxford University Press, 1993); Bart D. Ehrman, ed., *Lost Scriptures: Books That Did Not Make It into the New Testament* (New York, NY: Oxford University Press, 2003); Bart D. Ehrman and Zlatko Pleše, eds., *The Apocryphal Gospels: Texts and Translations* (New York, NY: Oxford University Press, 2011); Tony Burke and Brent Landau, eds., *New Testament Apocrypha: More Noncanonical Scriptures*, vol. 1 (Grand Rapids, MI: Eerdmans, 2016); Tony Burke, ed., *New Testament Apocrypha: More Noncanonical Scriptures*, vol. 2 (Grand Rapids, MI: Eerdmans, 2020).

<sup>7</sup> W. Randolph Tate, *Interpreting the Bible A Handbook of Terms and Methods*. (Grand Rapids, MI: Baker Academic, 2006), s.v. Apostolic age.

<sup>8</sup> See for instance Bart D. Ehrman, *The New Testament: A Historical Introduction to the Early Christian Writings* (New York, NY: Oxford University Press, 1997); D.A. Carson and Douglas J. Moo, *An Introduction to the New Testament*, 2nd ed. (Grand Rapids, MI: Zondervan, 2005).

original disciples are deceased,<sup>9</sup> and which ends with the first ecumenical council of Nicea (modern İznik in north-western Turkey). Documents from this period are distinguished in different categories. The writings of the *Apostolic Fathers* are attributed to the first few generations after the apostolic age (ca. 90 – ca. 150 CE). They contain apocalyptic, epistolary, and catechetical writings as well as martyrdom acts. Examples are, respectively, the Shepherd of Hermas, the letters of Ignatius, the Didache, and the Martyrdom of Polycarp.

During the second century, the so-called *Apologists*, such as Justin Martyr († ca. 165 CE) and Tertullian († between 220 – 230 CE), felt a pressing need to provision a defence for the Christian faith against libelling and repression, as well as to safeguard the Christian belief from external religious influences like paganism or Judaism.

During the second century heterodox, or heretic, writings started to emerge.<sup>10</sup> These contain for instance the nowadays-lost writings of Marcion, the (often gnostic) Nag Hammadi documents and Manichean writings. Several authors in the West, such as Irenaeus, Hippolytus, Novation, Tertullian, and Cyprian, wrote refutations in response to these documents.

In the same period treaties about the whereabouts of Christian martyrs began to appear.<sup>11</sup> Examples are the Martyrdom of Polycarp, the *Passio Perpetua et Felicitatis*, and the Letters of the churches of Lyon and Vienna. Several theological expositions from the Alexandrian fathers Clement from Alexandria (who probably lived in the city between 180 and 202 CE), his successor Origen (ca. 185 – 254 CE), and Origen's pupil Dionysus (bishop of Alexandria since 247 CE) have survived as well.

---

<sup>9</sup> Tate, *Interpreting*, s.v. Postapostolic age.

<sup>10</sup> The terms heterodox and heretic have a pejorative connotation because they have often been used to dismiss Christian writers and writings that did not conform to mainstream Western, white, male views. It is important to realize that this is a biased reading of history and that there was a rich variety of beliefs in early Christianity.

<sup>11</sup> Musurillo, vol. 2 provides a collection of some of the extant Acts of the Christian martyrs.

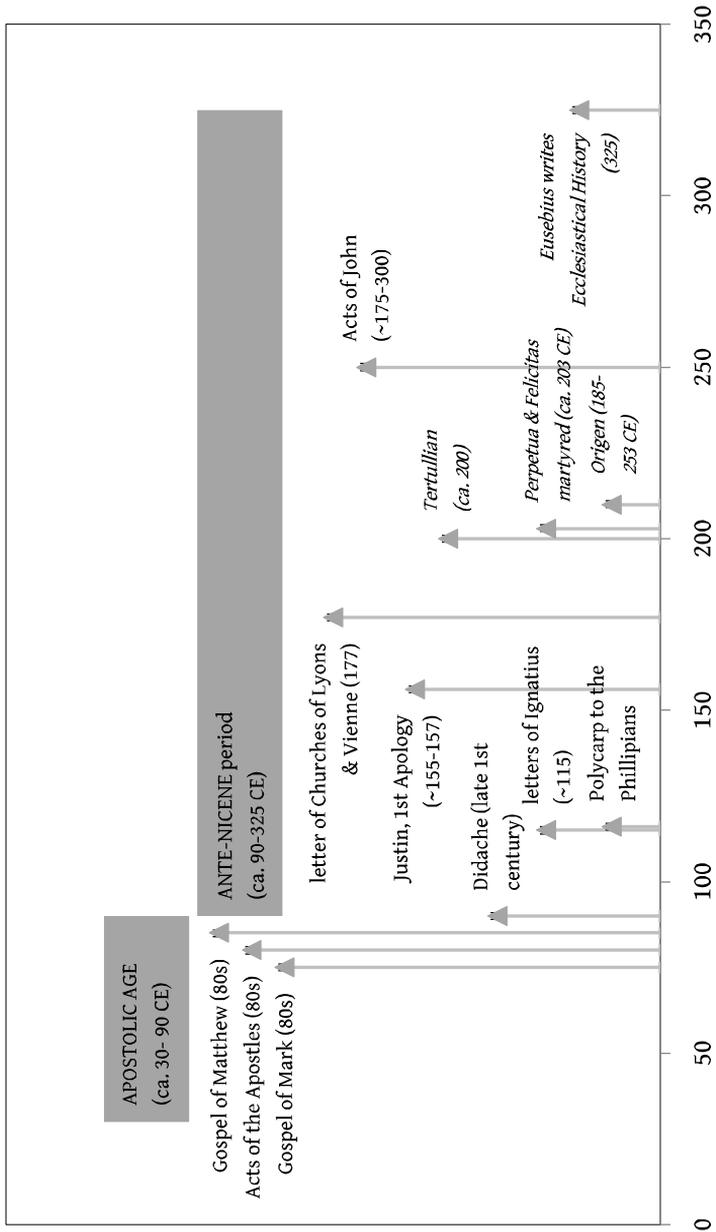


Figure 2. Timeline for early Christian literature.

Finally, the historian of the early church, Eusebius Pamphilus (ca. 260-339 CE) deserves to be mentioned. He lived in Caesarea Maritima, a coastal city of Palestine, and became bishop of its congregation in 314 CE. Eusebius had access to a massive library of Christian writings collected by Eusebius' mentor Pamphilus. Eusebius' major work, the *Historia Ecclesiastica*, provides a biased historical overview from the New Testament era until the times of the council of Nicea. It uses material from the Caesarean library extensively. Due to Eusebius' work, we still have remnants of many early Christian writings which are no longer extant.<sup>12</sup>

### 3.2 Interpretation and hermeneutics

Although the two examples at the start of this chapter about Julius Caesar's crossing of the Rubicon and an incidental meeting at a bus stop distinguish events from meaning, and indicate the necessity of a sense of the overarching narrative, interpretation of reality (including texts) happens automatically and oftentimes subconscious:

“Initially” we never hear noises and complexes of sound, but the creaking wagon, the motorcycle. We hear the column on the march, the north wind, the woodpecker tapping, the crackling fire. It requires a very artificial and complicated attitude in order to “hear” a “pure noise”. The fact that we initially hear motorcycles and wagons is, however, the phenomenal proof that *Da-sein*, as being-in-the-world, always already maintains itself together with innerworldly things at hand and initially not at all with “sensations” whose chaos would first have to be formed to provide the springboard from which the subject jumps off finally to land in a “world.” Essentially understanding, *Da-sein* is initially together with what is understood.<sup>13</sup>

---

<sup>12</sup> F.F Bruce, “Literature, Early Christian,” *AYBD* 4:340–45.

<sup>13</sup> Martin Heidegger, *Being and Time: A Translation of Sein Und Zeit*, trans. Joan Stambaugh, SUNY Series in Contemporary Continental Philosophy, ed. Dennis J. Schmidt (Albany, NY: State University of New York Press, 1996), 153. “Zunächst”

In which way that derivation of meaning functions and what processes are happening “beneath the surface”, is the field of study for the discipline of hermeneutics. Central to the discipline is the question: how do we get meaning from a text and in what way does this meaning become relevant for today? The discipline engages in “bridging a gap between two worlds, the world of the text and the world of the reader.”<sup>14</sup> Traditionally it was restricted to exegesis and interpretation,<sup>15</sup> offering rules to interpret or apply the text, but nowadays the discipline is concerned with the nature of understanding itself.<sup>16</sup> It involves the whole process of understanding, “not only of texts, but of all meaningful utterances, even the whole of reality, with everything that it involves.”<sup>17</sup>

### 3.2.1 Motives of texts and of interpreters

In addition to the applied methodology, the interpretive repertoire of the interpreter is under investigation. The text and the

---

hören wir nie und nimmer Geräusche und Lautkomplexe, sondern den knarrenden Wagen, das Motorrad. Man hört die Kolonne auf dem Marsch, den Nordwind, den klopfenden Specht, das knisternde Feuer. Es bedarf schon einer sehr künstlichen und komplizierten Einstellung, um ein “reines Geräusch” zu “hören”. Daß wir aber zunächst Motorräder und Wagen hören, ist der phänomenale Beleg dafür, daß das Dasein als In-der-Welt-sein je schon beim innerweltlich Zuhandenen sich aufhält und zunächst gar nicht bei “Empfindungen”, deren Gewühl zuerst geformt werden müßte, um das Sprungbrett abzugeben, von dem das Subjekt abspringt, um schließlich zu einer “Welt” zu gelangen. Das Dasein ist als wesenhaft verstehendes zunächst beim Verstandenen.” Martin Heidegger, *Sein und Zeit*, Elfte, unveränderte Auflage. (Tübingen: Niemeyer, 1967), 163–64.

<sup>14</sup> Arie W. Zwiep, *Tussen tekst en lezer: een historische inleiding in de bijbelse hermeneutiek. Deel 1: de vroege kerk - Schleiermacher*, 2nd ed. (Amsterdam: VU University Press, 2009), 4: “het overbruggen van een kloof tussen twee werelden, de wereld van de tekst en de wereld van de lezer.”

<sup>15</sup> Tate, *Interpreting*, s.v. Hermeneutics.

<sup>16</sup> Stanley E. Porter, “A Multidisciplinary Approach to Exegesis,” in *Linguistic Analysis of the Greek New Testament: Studies in Tools, Methods, and Practice* (Grand Rapids, MI: Baker Academic, 2015), 93.

<sup>17</sup> Zwiep, *Tussen tekst en lezer 1*, 8–9: “niet alleen van teksten, maar van alle betekenisvolle taaluitingen, ja zelfs van de hele werkelijkheid, met alles wat daarbij komt kijken.”

interpreter are part of a historical, cultural, and ideological context. Hermeneutics, therefore, focuses on the analysis of the conscious and unconscious methodical and ideological assumptions that play a role in interpretive methods.<sup>18</sup> For that reason, three 19<sup>th</sup> century philosophers, Karl Marx, Friedrich Nietzsche and Sigmund Freud advocated methodical distrust.

The term “Masters of Suspicion” was coined by the French philosopher Paul Ricoeur (1913-2005) to indicate Marx, Nietzsche, and Freud. They criticized religion each in their own way. Karl Marx (1818-1883) upholds a materialistic philosophy which neglects any transcendental reality. At the core of his philosophy is the notion of *possession*. Possession is power and shapes social and economic relationships. According to Marx, the function of religion is twofold: as an instrument of repression to maintain the status quo in the interest of the ruling class and as a drug to anesthetize the working class to endure the misery of life, i.e., the reality of inhuman working conditions. Hence, “religion is the opium of the people.”

In the eyes of Friedrich Wilhelm Nietzsche (1844-1900) all human behavior should be understood as a struggle for *power*. Everything in life is subjected or manipulated to achieve this.

---

<sup>18</sup> Historical overviews are given by William Baird, *History of New Testament Research*, vol. 1 (Minneapolis, MN: Augsburg Fortress, 1992); William Baird, *History of New Testament Research*, vol. 2 (Minneapolis, MN: Augsburg Fortress, 2002); Donald K. McKim, ed., *Dictionary of Major Biblical Interpreters*, 2nd ed. (Downers Grove, IL: InterVarsity Press, 2007); Donald K. McKim, ed., *Historical Handbook of Major Biblical Interpreters* (Downers Grove, IL: InterVarsity Press, 1998); Duane F. Watson and Alan J. Hauser, eds., *A History of Biblical Interpretation: The Ancient Period*, HBInt 1 (Grand Rapids, MI: Eerdmans, 2008); Alan J. Hauser and Duane F. Watson, eds., *A History of Biblical Interpretation: The Medieval through the Reformation Periods*, HBInt 2 (Grand Rapids, MI: Eerdmans, 2009); Alan J. Hauser and Duane F. Watson, eds., *A History of Biblical Interpretation: The Enlightenment through the Nineteenth Century*, HBInt 3 (Grand Rapids, MI: Eerdmans, 2017). Zwiép, *Tussen tekst en lezer 1*; Arie W. Zwiép, *Tussen tekst en lezer: een historische inleiding in de bijbelse hermeneutiek. Deel 2: van moderniteit naar postmoderniteit*, 2nd ed. (Amsterdam: VU University Press, 2014). Arie W. Zwiép, “Bible Hermeneutics from 1950 to the Present: Trends and Developments,” in *Handbuch Der Bibelhermeneutiken: Von Origenes Bis Zur Gegenwart*, ed. Oda Wischmeyer (Boston, MA: De Gruyter, 2016), 933–1008.

According to Nietzsche Christianity is not different: it maintains the status quo and even legitimates it by promoting virtues as pity, humility, and friendliness. Christianity seeks to disguise its true aims: power and self-enrichment. Texts are not neutral and need to be interrogated on their underlying ideologies, perspectives and aims.

Sigmund Freud (1856-1939) turned the lens to the inward world of the interpreter. Human behavior is controlled by uncontrollable and unconscious *passions* which stem from early childhood. These passions are essentiality symptoms of anxiety and can cause aggression or repression. Based on this analysis, Freud aims to reveal and distinguish the real from the apparent. To his opinion, religion is merely an illusion, expressing one's wish for a father-God to cover up unconscious anxiety.<sup>19</sup>

Ricoeur acknowledges the hermeneutical contribution of the Masters of Suspicion: "If we go back to the intention they had in common, we find in it the decision to look upon the whole of consciousness primarily as 'false' consciousness. They thereby take up again, each in a different manner, the problem of the Cartesian doubt, to carry it to the very heart of the Cartesian stronghold. The philosopher trained in the school of Descartes knows that things are doubtful, that they are not such as they appear; but he does not doubt that consciousness is such as it appears to itself; in consciousness, meaning and consciousness of meaning coincide. Since Marx, Nietzsche, and Freud, this too has become doubtful. After the doubt about things, we have started to doubt consciousness."<sup>20</sup> When interpreting reality and texts, it is therefore important to bring unconscious processes to the surface, because motives about possession, power, and passion are often hidden, both within texts as in interpreters.

---

<sup>19</sup> Zwiap, *Tussen tekst en lezer* 2, 49–62.

<sup>20</sup> Paul Ricoeur, *Freud and Philosophy: An Essay on Interpretation*, trans. Denis Sauvage (New Haven, CT: Yale University Press, 1970), 33.

### 3.2.2 The historicity of the interpreter

Following his teacher Heidegger, Hans-Georg Gadamer (1900-2002) added the notion of historicity: every reader is also part of history, which makes objective historiography impossible.<sup>21</sup> Gadamer deems this however positive. Being part of history provides common ground for text and reader in the act to discover meaning.<sup>22</sup> Since every man is moulded by cultural, social, religious, and historical conditions, this should imply a critical interaction between one's own perspective and tradition, and the *Wirkungsgeschichte* of a text, that is how the text has been understood and applied in the past.<sup>23</sup>

Upon such a critical enactment with text, tradition, and personal perspective, real understanding takes place when the worlds of the text and the reader come together. Here, Gadamer uses the notion of *Horizontverschmelzung* (the fusion of horizons).<sup>24</sup> A text and a reader both have a vantage point, and therefore a horizon, that is “the range of vision that includes everything that can be seen from a particular vantage point.”<sup>25</sup>

“When the horizons merge, one's range of vision broadens.... An effective fusion of horizons, however, does not necessarily mean that one is in agreement with one's conversation partner; it does not necessarily imply the reader's submission to the viewpoint of the text (or, vice versa, the adjustment of the text to the reader's viewpoint). Rather it is the experience that ‘the penny has dropped,’ that subject

---

<sup>21</sup> “Not only the texts themselves are inextricably bound to their historical context, but the modern reader herself is conditioned by her own historical ‘situatedness’ (cf. Heidegger’s *Dasein*, ‘being-there’). One simply cannot step outside one’s own perspective and view things from a vantage point outside history”, Zwiép, “Bible Hermeneutics,” 963.

<sup>22</sup> Zwiép, *Tussen tekst en lezer 2*, 188.

<sup>23</sup> Zwiép, *Tussen tekst en lezer 2*, 173–79.

<sup>24</sup> Zwiép, *Tussen tekst en lezer 2*, 196–97; Zwiép, “Bible Hermeneutics,” 967; Tate, *Interpreting*, s.v. Fusion of Horizons.

<sup>25</sup> Hans-Georg Gadamer, *Truth and Method*, trans. Joel Weinsheimer and Donald G. Marshall, 1st ed., BRS (1960; repr., London: Bloomsbury, 2013), 313.

(reader) and object (text) are 'on the same wavelength,' that there is 'common understanding' on what the text is about."<sup>26</sup>

### 3.2.3 Texts are selections

The role and contribution of the reader in the derivation of meaning has been further developed within Reader Response Criticism. Especially the work of the Italian scholar and novelist Umberto Eco (1932–2016) deserves to be mentioned.

Inevitably texts are selections. A story simply cannot contain every single detail since that would result in infinitely long accounts. An author, therefore, presupposes certain knowledge and use language economically: with the least effort they try to maximize the effect.<sup>27</sup> Selection, moreover, has another important function, it helps to see the wood for the trees. The arrangement of subjects and the proportionality of included details put emphasis on certain themes.

Omission is also used to leave certain aspects of a story open to the imagination of the reader. Eco posited that texts can be classified along a continuum from closed to open texts. A *closed text*, for instance a detective story, directs in a certain direction. During the narrative the plot unfolds and at the end it becomes apparent to the reader who was the perpetrator and what was the motive. *Open texts*, such as poems, on the other hand, leave much to be contributed by the reader's imagination.

---

<sup>26</sup> Zwiep, "Bible Hermeneutics," 967.

<sup>27</sup> Zwiep, *Tussen tekst en lezer* 2, 349.

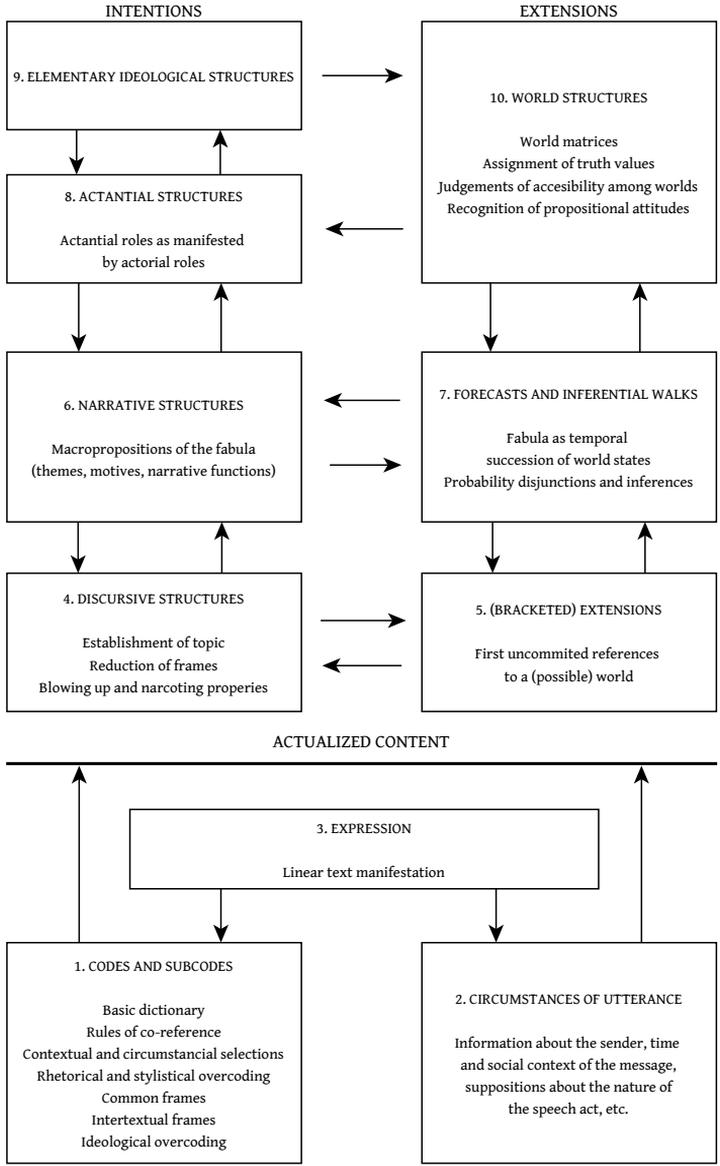


Figure 3. Eco's model of textual cooperation.

### 3.2.4 Eco's model of textual cooperation

To explain how meaning is derived, and what components are involved in that process, Eco proposed the model of Textual cooperation (Figure 3).<sup>28</sup> In Eco's understanding, interpretation is not a linear process with separate subsequent steps, but a complex of iterations. He distinguishes ten components which interact and influence one another.<sup>29</sup>

Eco's model starts with the actual expression in which the text comes to the reader, that is the set of symbols and signs in a certain language read from a physical medium [3].<sup>30</sup>

During the composition of a text, its author intentionally adds several codes and subcodes [1], thereby anticipating on an ideal of the text's possible reader who would be able to understand the specific linguistic code, literary style, and specific specialization-indices.<sup>31</sup> In other words, the author presupposes a repertoire of knowledge, experience, and referential dictionary. This is what Eco defines as the reader's *encyclopaedia*. Readers have such an (imaginary) dictionary at their disposal that they use to get a first impression of what the text is about. The content and size of someone's *encyclopaedia*, however, determine what is deemed possible and what not. The success to understand and interpret the text is dependent on the reader's ability to address and use this

---

<sup>28</sup> Umberto Eco, *The Role of the Reader: Explorations in the Semiotics of Texts*, AiS, ed. Thomas A. Sebeok (1979; repr., Bloomington, IN: Indiana University Press, 1984), 13ff.; Zwiep, *Tussen tekst en lezer* 2, 345–57.

<sup>29</sup> Eco, *The Role of the Reader*, 14–15 phrases this as follows: 'In the actual process of interpretation all the levels and sublevels of my diagram (which are in fact mere metatextual 'boxes') are interconnected in a continuous coming and going. The cooperation of the interpreter at the lower levels can succeed only because some hypotheses which concern upper levels (and vice versa) are hazarded'. Figure 3 has been replicated after the original in Eco, *The Role of the Reader*, 14.

<sup>30</sup> The discipline of textual criticism aims to critically establish the initial text out of the multiple available textual variants, and during that process interpretative decisions are made.

<sup>31</sup> Eco, *The Role of the Reader*, 7.

complex system, in Eco's terminology one's *encyclopaedic competence*. In addition to decoding the text by their encyclopaedic competence, readers often also have some preunderstanding about the author, the circumstances in which the text was written and the possible presuppositions on which it is based [2].

To unravel the meaning of a text, the reader focuses on its content (intentions) [4,6,8-9], and its possible connections (extensions) [5,7,10] outside the world of the text. The reader gets an understanding of the discourse, the coherent argument, of the text by reducing the number of conceivable meanings (based on one's encyclopaedia), to one or more possible meanings (based on the content and context of the story). For that purpose, he enlarges or "anesthetizes" certain properties, and explores what which gives coherence to the text [4]. During this process, the reader makes preliminary inferences [5] about the relationship of the text to the extratextual reality.

The topics of the discourse are then determined: what is the text about and what is happening in the story? For this purpose, the narrative structures, the framework of the text, are examined [6]. Thereby a reader makes predictions about the possible implications of the text and anticipates its possible outcomes, both based on their narrative conceivability and limited by the reader's encyclopaedia [7].

To gain insight into what the narrative is essentially about, at an abstract level, Eco presents an analysis of the actantial<sup>32</sup> [8] and ideological [9] structures. An ideological structure can manifest itself in the deeds of the characters in the story, or by their explicit value judgments or that of the author. These clues serve readers to formulate their own judgments about the ideological value of the text. Readers compare these findings, which are based on reconstructions of the text, with their construction(s) of the real

---

<sup>32</sup> Here, Eco bases himself on Greimas, according to whom a narrative consists of a number of fixed actors: a subject, an object, a sender, an addressee, each of which fulfills its own role in the plot. Zwiep, *Tussen tekst en lezer 2*, 356, 238-43.

world [10]. Thereby they wonder whether the real world is adequately described by the text and whether there ultimately is a connection with the real world at all.<sup>33</sup>

### 3.2.5 Narrative Criticism

In Narrative Criticism we find several analogies with Eco's work. In addition to traditional elements such as rhetoric, characters, point of view, plot, and setting,<sup>34</sup> the method also emphasizes the role of the reader. For this study, it is important to notice that the method rigidly distinguishes between *real* and *implied* entities.

For example, the method distinguishes the real author from the implied author and the real reader from the implied reader. With this distinction, it indicates, on the one hand, the flesh-and-blood writer and - reader who exist in the real, physical world, and the partial and incomplete pictures of writer and reader that can be constructed from a text itself. Two texts by the same real author can therefore assume two completely different implied authors, based on the information in the separate texts. The same applies to real readers and implied readers. The implied author and reader must therefore be reconstructed on the basis of careful analysis of the text. The identification of the implied author and - reader helps to uncover ideological assumptions behind the text.

In a similar vein, narrative critics also distinguish between the real, physical world and the story world. It has already been discussed that every author necessarily selects information: they include some and exclude other events from the narrative. Thereby, the story world can never be an exact replica of the real world. However, story worlds can (and often do) refer to the physical world and evoke associations. Authors can also use incompatibilities between the story world and the real world as a narrative device to

---

<sup>33</sup> Zwiep, *Tussen tekst en lezer* 2, 346–57.

<sup>34</sup> Mark Allan Powell, *What Is Narrative Criticism?* (Minneapolis, MN: Fortress, 1991); James L. Resseguie, *Narrative Criticism of the New Testament: An Introduction* (Grand Rapids, MI: Baker Academic, 2005).

deregulate the reader. Their success to do so, is dependent on the encyclopaedic content and competency of a reader.

### 3.3 Researching early Christianity spatial-temporally

This chapter can be read as a caveat to the application of spatial-temporal methods to advance the interpretation of early Christian literature. Ian Mortimer is correct when he observes that:

[We] are like astronomers viewing the light of stars which exploded hundreds of years ago: what [we] see and hear is inextricably linked with what is no more. What [we] see is not the past itself but its light, relics or residue.<sup>35</sup>

Similar observations are applicable to the considerable discussion about the historical value and trustworthiness of the events described in early Christian literature.<sup>36</sup>

An example is the book of Acts: some scholars are highly critical and claim that the portrayed events in the narrative – although under the guise of historicity – only have a theological function; while others advocate the events are historical and as such at least datable and locatable in general.<sup>37</sup>

---

<sup>35</sup> Ian Mortimer, “What Isn’t History? The Nature and Enjoyment of History in the Twenty-First Century,” *History* 93.312 (2008): 461.

<sup>36</sup> For an overview of the discussion about historicity in the book of Acts, see Daniel Marguerat, *The First Christian Historian: Writing the “Acts of the Apostles,”* trans. Ken McKinney, Gregory J. Laughery, and Richard Bauckham (Cambridge: Cambridge University Press, 2002), 2–7.

<sup>37</sup> Gerd Lüdemann, for example, advocates that Luke clearly displays a disbalance between history and theology (the first suffers from the latter). Gerd Lüdemann, “Acts of Impropriety: The Imbalance of History and Theology in Luke-Acts,” *TJT* 24.1 (2008): 65–80. Another example is Dennis E. Smith, “How Acts Constructed the Itinerary of Paul: Conclusions Excerpted from The Acts Seminar Report,” *Westar* (2013): 69–79, which posits “...the itinerary of Paul presented in Acts can no longer be considered reliable in any of its details. Even those details derived from Paul’s letters have been compromised.” He concludes the author of Acts “is an unreliable

The present study takes the narrative unity of the individual documents of early Christian literature as point of departure. This does not mean an a-critical reading of these accounts. On the contrary, it already has been shown that the critical engagement of the reader with the story world of narrative texts and its relationships with and references to the real world help to discover meaning.

The next chapter will explore in which way spatial-temporal studies have been applied to literary, historical, and biblical studies. The final chapter of this first part will define the scope and potential contribution of this study.

---

interpreter of Paul.” Others, for instance Ben Witherington, *The Acts of the Apostles: A Socio-Rhetorical Commentary*, SRC (Grand Rapids, MI: Eerdmans, 1998) are willing to give the accounts more historical credence. N.T. Wright, *The New Testament and the People of God*, vol. 1 of *Christian Origins and the Question of God* (Minneapolis, MN: Fortress, 1992), 81–120 provides a treatment of history and the first century in general, as well as a discussion of the relationship between narrative accounts and historical events. An extensive discussion on the different views on the historicity of Acts is provided by Craig S. Keener, *Acts: An Exegetical Commentary - Introduction and 1:1-2:47* (Grand Rapids, MI: Baker Academic, 2012), 1:90–220.



## 4

# PREVIOUS RESEARCH

Using insights from geography is not new to the discipline of biblical research. Many bible atlases cover the geography of the ancient Mediterranean. In addition, the cartographic production of these atlases has nowadays been optimised by the introduction of GIS. However, until now the use of GIS in biblical research is often still limited to topography and physical geography. Only a few other researchers have studied the use of spatial-temporal technologies to obtain more insights into ancient biblical contexts.

This chapter provides a partial overview of previous research on the integration of GIS with other disciplines. It discusses the contribution of GIS to historical and literary studies. Furthermore, it provides a selective overview of the impact of the spatial turn on biblical studies and ends with a comprehensive overview of GIS research in the field of biblical studies. Chapter 5 discusses the potential contribution of this research.

### 4.1 Historical studies and GIS

For more than twenty years, historical research is one of the areas in which GIS is applied. Gregroy et al. distinguish three types of Historical GIS (HISGIS) usage: (1) to discover, manage and integrate

historical sources; (2) to visualize research; and (3) to perform spatial analysis on historical data.<sup>1</sup>

“Through GIS, hypotheses concerning the influence of place and representations of the ways that features are arranged on the earth’s surface can be explicitly incorporated into historical research in a far more systematic and analytically powerful manner than was previously possible. GIS has the potential to significantly enhance the use of spatially referenced information in all parts of the discipline, not just those with a strong geographical tradition.”<sup>2</sup>

Scholars do not aim “to model or replicate the past; a model implies the working out of dependent and independent variables for purposes of prediction, whereas replication suggests the ability to know the past more completely than most historians would acknowledge as possible. Rather the goal is to simulate or illustrate a specific set of events.”<sup>3</sup>

## 4.2 Literary studies and GIS

Spatial perspectives have also been used in the study of literature.<sup>4</sup> First, the *geography of literature*, studied the dispersion of collections

---

<sup>1</sup> Ian N. Gregory, Karen K. Kemp, and Ruth Mostern, “Geographical Information and Historical Research: Current Progress and Future Directions,” *HisCom* 13.1 (2001): 7–23. A more recent introduction and more examples on contemporary and ancient history can be found in Anne Kelly Knowles and Amy Hillier, eds., *Placing History: How Maps, Spatial Data, and GIS Are Changing Historical Scholarship* (Redlands, CA: Esri, 2008); and Ian N. Gregory and A. Geddes, eds., *Toward Spatial Humanities: Historical GIS and Spatial History*, TSH (Bloomington, IN: Indiana University Press, 2014).

<sup>2</sup> Gregory, Kemp, and Mostern, “Geographical Information and Historical Research,” 7–8.

<sup>3</sup> David J. Bodenhamer, “History and GIS: Implications for the Discipline,” in *Placing History: How Maps, Spatial Data, and Gis Are Changing Historical Scholarship*, ed. Anne Kelly Knowles and Amy Hillier (Redlands, CA: Esri, 2008), 222.

<sup>4</sup> Barbara Piatti, Anne-Kathrin Reuschel, and Lorenz Hurni, “Literary Geography—or How Cartographers Open up a New Dimension for Literary Studies,” in *Proceedings of the 24th International Cartography Conference, Chile, 2009*; Marko Juvan, “From Spatial

of literary works, its reception history, and the geographical extent of specific subjects. Second *literary geography* studied the narrated geography in a piece of literature, the world inside the text.

Multiple researchers have attempted to map personal and literary narratives. Mei Po Kwan applied Geo Narrative Analysis to map the personal post 9-11 experiences of an American Muslima.<sup>5</sup> Menno-Jan Kraak modelled Napoleon's march to and return from Moscow and unleashed new insights into the dramatic losses of the French army in the winter of 1812 using conventional cartographic techniques as well as sophisticated 3D modelling.<sup>6</sup> For the more literary realms, Robert Rose applied GIS to analyse character perspectives in Tolkien's *Lord of the Rings*,<sup>7</sup> and Andrew Hill mapped all the geographical locations in the works of Mark Twain.<sup>8</sup> Charles Travis applied GIS to the conquest and mapping of seventeenth century Ireland, to the works of Kavanagh, and to

---

Turn to GIS-Mapping of Literary Cultures," *EurRev* 23.1 (2015): 81-96, <https://doi.org/10.1017/S1062798714000568>; Mimi Urbanc and Marko Juvan, "At the Juncture of Literature and Geography: Literature as a Subject of Geographic Inquiry in the Case of Slovene Istria," *SlavRev* 60.3 (2012): 317-33; Daniel Alves and Ana Isabel Queiroz, "Exploring Literary Landscapes: From Texts to Spatiotemporal Analysis through Collaborative Work and GIS," *IJHAC* 9.1 (2015): 57-73, <https://doi.org/10.3366/ijhac.2015.0138>; Ross S. Purves and Curdin Derungs, "From Space to Place: Place-Based Explorations of Text," *IJHAC* 9.1 (2015): 74-94, <https://doi.org/10.3366/ijhac.2015.0139>; Marko Juvan and Joh Dokler, "Towards a GIS Analysis of Literary Cultures: The Making of the Slovenian Ethnoscape through Literature," *IJHAC* 9.2 (2015): 196-218.

<sup>5</sup> Mei-Po Kwan, "From Oral Histories to Visual Narratives: Re-Presenting the Post-September 11 Experiences of the Muslim Women in the USA," *SCG* 9.6 (2008): 653-69, <https://doi.org/10.1080/14649360802292462>.

<sup>6</sup> Menno-Jan Kraak, *Mapping Time: Illustrated by Minard's Map of Napoleon's Russian Campaign of 1812* (Redlands, CA: Esri, 2014).

<sup>7</sup> Robert Rose, "From Here to There: Mapping a Better Route from the Shire to Mount Doom with GIS," Blog, *ArcGIS Blog*, 16 May 2019, <https://www.esri.com/arcgis-blog/products/story-maps/mapping/mapping-a-better-route-from-the-shire-to-mount-doom/>.

<sup>8</sup> Andrew W. Hill, "The Complete Works of Mark Twain Mapped," 26 January 2014, <https://andrewxhill.com/maps/writers/twain/index.html>.

measure the influence of Homer's *Odyssey* and Dante's *Inferno* on Joyce's *Ulysses*.<sup>9</sup>

---

<sup>9</sup> Charles B. Travis, *Abstract Machine: Humanities GIS* (Redlands, CA: Esri, 2015). More examples, i.a., can be found in Bodenhamer, "History and GIS: Implications for the Discipline"; J.B. Owens et al., "Visualizing Historical Narratives: Geographically-Integrated History and Dynamics GIS," in *National Endowment for the Humanities Workshop "Visualizing the Past: Tools and Techniques for Understanding Historical Processes"* (Richmond, VA, 2009); David J. Bodenhamer, John Corrigan, and Trevor M. Harris, eds., *The Spatial Humanities: GIS and the Future of Humanities Scholarship*, TSH (Bloomington, IN: Indiana University Press, 2010); May Yuan, "Mapping Text," in *The Spatial Humanities: GIS and the Future of Humanities Scholarship*, ed. David J. Bodenhamer, John Corrigan, and Trevor M. Harris, TSH (Bloomington, IN: Indiana University Press, 2010), 109–23; Michael J. Dear, ed., *Geohumanities: Art, History, Text at the Edge of Place* (London: Routledge, 2011); Sébastien Caquard, "Cartography I: Mapping Narrative Cartography," *PIHG* 37.1 (2013): 135–44, <https://doi.org/10.1177/0309132511423796>; David J. Bodenhamer, Trevor M. Harris, and John Corrigan, "Deep Mapping and the Spatial Humanities," *IJHAC* 7.1–2 (2013): 170–75, <https://doi.org/10.3366/ijhac.2013.0087>; Alexander von Lünen and Charles B. Travis, eds., *History and GIS: Epistemologies, Considerations and Reflections* (Dordrecht: Springer, 2013); Luís Espinha da Silveira, "Geographic Information Systems and Historical Research: An Appraisal," *IJHAC* 8.1 (2014): 28–45, <https://doi.org/10.3366/ijhac.2014.0118>; Sébastien Caquard and William Cartwright, "Narrative Cartography: From Mapping Stories to the Narrative of Maps and Mapping," *Caj* 51.2 (2014): 101–6, <https://doi.org/10.1179/0008704114Z.000000000130>; Gregory and Geddes, *Toward Spatial Humanities*; May Yuan, John McIntosh, and Grant Delozier, "GIS as a Narrative Generation Platform," in *Deep Maps and Spatial Narratives*, ed. David J. Bodenhamer, John Corrigan, and Trevor M. Harris, TSH (Bloomington, IN: Indiana University Press, 2015), 179–202; David J. Bodenhamer, John Corrigan, and Trevor M. Harris, eds., *Deep Maps and Spatial Narratives*, TSH (Bloomington, IN: Indiana University Press, 2015); Ian N. Gregory et al., "Spatializing and Analyzing Digital Texts - Corpora, GIS and Places," in *Deep Maps and Spatial Narratives*, ed. David J. Bodenhamer, John Corrigan, and Trevor M. Harris, TSH (Bloomington, IN: Indiana University Press, 2015), 150–78; Juvan, "From Spatial Turn to GIS-Mapping of Literary Cultures"; Juvan and Dokler, "Towards"; Charles B. Travis and Alexander von Lünen, eds., *The Digital Arts and Humanities: Neogeography, Social Media and Big Data Integrations and Applications*, Springer Geography (Cham: Springer, 2016).

### 4.3 Spatiality and biblical research

In the later twentieth century, an increasing awareness that many phenomena are inherently spatial, caused a *spatial turn* in various disciplines.<sup>10</sup> Foundational are the contributions of philosopher Henri Lefebvre and social geographer Edward Soja. The principal concept within these studies is that space has implications to understand reality, since it influences life, and the way life is experienced. Space can be divided according to three epistemological distinctions: physical space, the realm of perception and empiricism; theoretical, idealized space, the realm of design or conception; and social, lived space.<sup>11</sup>

Biblical scholars have incorporated these insights under different terminology,<sup>12</sup> to consider how space fits in an analysis of texts, and have researched how these texts and its main actors fit within their contemporary spaces, “in some cases contesting

---

<sup>10</sup> Barney Warf and Santa Arias, eds., *The Spatial Turn: Interdisciplinary Perspectives*, RSHG 26 (London: Routledge, 2009). Compare Schreiners comment: “A spatial turn is sweeping through the wider scholarly world in the social sciences, humanities, and philosophy. Across the disciplines, the study of space has undergone a profound and sustained resurgence.” P. Schreiner, “Space, Place and Biblical Studies: A Survey of Recent Research in Light of Developing Trends,” *CBR* 14.3 (2016): 340, <https://doi.org/10.1177/1476993X15580409>.

<sup>11</sup> Henri Lefebvre, *The Production of Space*, trans. Donald Nicholson-Smith (Malden, MA: Blackwell, 2011), 38–39; Soja, *Thirdspace*; Edward W. Soja, *Postmodern Geographies: The Reassertion of Space in Critical Social Theory*, Radical Thinkers (London: Verso, 2011). Sleeman coins Lefebvre, Harvey and Soja as the “three key theoreticians”, see Matthew Sleeman, *Geography and the Ascension Narrative in Acts.*, SNTSMS 146, ed. John M. Court (Cambridge: Cambridge University Press, 2013), 43.

<sup>12</sup> Stewart, “NT Space” uses the term “Spatiality”; Claudia V. Camp, “Storied Space, or, Ben Sira Tells a Temple,” in *Foundations for Sociorhetorical Exploration: A Rhetoric of Religious Antiquity Reader*, ed. Vernon K. Robbins, Robert H. Von Thaden, and Bart B. Bruehler, 2016; and Schreiner, “Space” use Critical Spatial(ity) (Theory). Somewhat related is the term Geocriticism, see Bertrand Westphal, *Geocriticism: Real and Fictional Spaces*, trans. Robert T. Tally Jr. (Les Éditions de Minuit, 2007; New York, NY: Macmillan, 2011), <https://doi.org/10.1057/9780230119161>. The German term is Raumdiskurse, cf. Moisés Mayordomo, “Raumdiskurse in der neutestamentlichen Forschung,” *V&F* 62.1 (2017): 50–56, <https://doi.org/10.14315/vf-2017-0108>.

dominant meanings and practices, while in other cases adopting the dominant spatial practices of their cultural contexts.”<sup>13</sup> This use of critical spatial perspectives for biblical research has been welcomed, but also received criticism.<sup>14</sup>

#### 4.4 Biblical studies and GIS

Examples of the actual application of GIS within Biblical studies are sparse. S.A. Korobtsov utilised GIS technology in cooperation with the Russian Biblical Society for data capture and the production of maps covering the Mediterranean area and Ancient Palestine.<sup>15</sup> The

---

<sup>13</sup> Stewart, “NT Space,” 139. Notable examples are the contributions from the Constructions of Ancient Space Seminar (2000-2005) in: Jon L. Berquist and Claudia V. Camp, eds., *Constructions of Space I: Theory, Geography, and Narrative*, Library of Biblical Studies 481 (New York, NY: Clark, 2007); Jon L. Berquist and Claudia V. Camp, eds., *Constructions of Space II: The Biblical City and Other Imagined Spaces*, Library of Hebrew Bible / Old Testament Studies 490 (New York, NY: Clark, 2008); Jorunn Økland, Karen Wenell, and Cornelis J. de Vos, eds., *Constructions of Space III: Biblical Spatiality and the Sacred*, The Library of Hebrew Bible/Old Testament Studies 540 (New York, NY: Clark, 2016); Mark K. George, ed., *Constructions of Space IV: Further Developments in Examining Ancient Israel’s Social Space*, Library of Hebrew Bible/Old Testament Studies 569 (London: Bloomsbury, 2013); Gert T.M. Prinsloo, Cristl M. Maier, and Society of Biblical Literature, eds., *Constructions of Space V: Place, Space and Identity in the Ancient Mediterranean World*, Library of Hebrew Bible Old Testament Studies 576 (New York, NY: Bloomsbury, 2013); More up to date are the review articles by Stewart, “NT Space”; Schreiner, “Space”; Mayordomo, “Raumdiskurse.”

<sup>14</sup> “Vom spatial turn – von einer veritablen Forschungswende also – ist in der neutestamentlichen Wissenschaft wenig zu spüren. Damit ist natürlich nicht gesagt, dass raumbezogene Fragestellungen inexistent wären.”, Mayordomo, “Raumdiskurse,” 50. And similarly: “Eine Revolution ist vom spatial turn in der neutestamentlichen Exegese kaum zu erwarten.” Mayordomo, “Raumdiskurse,” 56. See also “Dennoch können alte Fragestellungen in neuem Licht betrachtet und ... Ergebnisse präsentiert werden, die exegetisch wie theologisch produktiv sind. In einem so überlaufenen Gebiet, wie es die Auslegung des Neuen Testaments nun einmal ist, sind solche kleinen Neuperspektivierungen bereits recht viel.” Mayordomo, “Raumdiskurse,” 56.

<sup>15</sup> S.A. Korobtsov, “Integrirovannye geoinformatsionnye i izdatel’skiye tekhnologii v proekte Karty Bibleyskoy istorii,” in *Proceedings of InterKat08: GIS for Sustainable Land*

Polish Institute for Geodesy and Cartography researched the design and implementation of a spatial-temporal information system of events and historical sources underlying biblical texts and identified potential digital and paper resources.<sup>16</sup> The institute published a number of articles: Albina Mościcka proposed a system to collect and process time-oriented information on geographical objects and events described in the Bible.<sup>17</sup> She also studied data-modelling, classification, input and attributes of geographical features mentioned in biblical texts together with Małgorzata Brzezińska.<sup>18</sup> Adam Linsenbarth and Mościcka co-authored a discussion on the issues in toponymy in biblical text fragments and presented a database architecture.<sup>19</sup> Linsenbarth furthermore researched the implications of climatic and geopolitical conditions<sup>20</sup> and orographic reference data for the lands of the Bible by GIS.<sup>21</sup> Geologist Stephen Moshier and biblical scholar James Hoffmeier employed satellite imagery to reconstruct ancient coastlines and river channels at the

---

*Development*. (Helsinki, 2002); S.A. Korobtsov, "GIS and the Bible: The Cartographic Reconstruction of Ancient Bible Lands in the World of the Bible Project," in *Proceedings of the 21st International Cartographic Conference* (Durban: ICA, 2003).

<sup>16</sup> Instytut Geodezji i Kartografii, "The Idea of the Complex Spatio-Temporal Information System of Events and Historical Sources Based on the Example of the Bible Lands," 2006; Instytut Geodezji i Kartografii, "Kartograficzne materiały źródłowe możliwe do wykorzystania w projekcie „Koncepcja kompleksowego systemu informacji czasowo – przestrzennej o zdarzeniach i źródłach historycznych na przykładzie terenów biblijnych” (Instytut Geodezji i Kartografii, Warszawa, 1 November 2006).

<sup>17</sup> A. Mościcka, "Spatio-Temporal Information System about Events and Historical Sources on the Basis of Bible's Regions," in *Proceedings of the 4th Bi-Annual Conference on Globalization, Digitization, Access and Preservation of Cultural Heritage* (Sofia, 2006).

<sup>18</sup> A. Mościcka and M. Brzezińska, "Postawy metodyczne tworzenia indeksu nazw geograficznych występujących w Starym i Nowym Testamencie," *Prace Instytutu Geodezji i Kartografii* 53.111 (2007): 100–107.

<sup>19</sup> A. Linsenbarth and A. Mościcka, "The Influence of the Bible Geographic Objects Peculiarities on the Concept of the Spatio-Temporal Geoinformation System," *GeoInfs* 2.1 (2) (2010): 37–47.

<sup>20</sup> A. Linsenbarth, "Geoprzestrzeń wydarzeń biblijnych," *RG* 5.8 (2007): 57–66.

<sup>21</sup> A. Linsenbarth, "Rola geoinformacji obrazowej w badaniach geoprzestrzeni biblijnej," *AFKIT* 18 (2008): 365–75.

times of the Bible and used GIS routines to model surface hydrology.<sup>22</sup> They suggest that their reconstruction could provide background which advances understanding of the Exodus narrative. These studies are limited to reconstructing geography and topography of Biblical times, but none of them studied how interpretation of Bible texts could be advanced using GIS.

Spatial analysis has also been introduced to the domain of New Testament studies. Lillian Larsen and Stephen Benzek used GIS as a geo-hermeneutical tool to equate travel movements in the book of Acts with the geographical picture derived from Pauline letters.<sup>23</sup> They applied spatial-temporal analysis as a hermeneutical tool in a classroom setting for undergraduate students. Jan Fousek et al. studied the expansion of early Christianity using a gravity model,<sup>24</sup> and Mark Wilson used GIS to reconstruct the route of Paul's travels.<sup>25</sup>

---

<sup>22</sup> Stephen O. Moshier and James K. Hoffmeier, "Which Way Out of Egypt? Physical Geography Related to the Exodus Itinerary," in *Israel's Exodus in Transdisciplinary Perspective: Text, Archaeology, Culture, and Geoscience*, ed. Thomas E. Levy (New York, NY: Springer, 2014), 101-8.

<sup>23</sup> Lillian I. Larsen and Stephen Benzek, "Min(d)ing the Gaps: Exploring Ancient Landscapes through the Lens of GIS," *Transf* 25.1 (2014): 45-58; Lillian I. Larsen and Stephen Benzek, "Min(d)ing the Gaps: Digital Refractions of Ancient Texts," in *Ancient Worlds in Digital Culture*, ed. Claire Clivaz, Paul Dilley, and David Hamidovic, DBS 1, ed. Claire Clivaz and David Hamidovic (Leiden: Brill, 2016), 128-47; Lillian I. Larsen and Stephen Benzek, "Mapping Religiously, or Religiously Minding the Map?," in *Mapping Across Academia* (Dordrecht: Springer, 2017), 323-47, [https://doi.org/10.1007/978-94-024-1011-2\\_16](https://doi.org/10.1007/978-94-024-1011-2_16).

<sup>24</sup> Jan Fousek et al., "Spatial Constraints on the Diffusion of Religious Innovations: The Case of Early Christianity in the Roman Empire," *PLoS One* 13.12 (2018): 1-14, <https://doi.org/10.1371/journal.pone.0208744>.

<sup>25</sup> Mark Wilson, "The Route of Paul's First Journey to Pisidian Antioch," *NTS* 55.4 (2009): 471-83, <https://doi.org/10.1017/S002868850999004X>; Mark Wilson, "The Lukan Periplus of Paul's Third Journey with a Textual Conundrum in Acts 20: 15," *AcT* 36.1 (2016): 229-54, <http://dx.doi.org/10.4314/actat.v36i1.13>; Mark Wilson, "The 'Upper Regions' and the Route of Paul's Third Journey from Apamea to Ephesus," *SCRIP* 117.1 (2018): 1-21, <https://doi.org/10.7833/117-1-1368>; Mark Wilson, "Paul's Journeys in 3D: The Apostle as Ideal Ancient Traveller," *JECH* 8.2 (2018): 16-34, <https://doi.org/10.1080/2222582X.2017.1411204>.

Daniel Browning Jr. used spatial data and technology to verify William Ramsay's malaria theory to explain the account in Acts 16.<sup>26</sup>

Given the sparsity of these studies the next chapter will explain the scope and contribution of this research.

---

<sup>26</sup> Daniel C. Browning Jr., "Malaria Risk on Ancient Roman Roads: A Study and Application to Assessing Travel Decisions in Asia Minor by the Apostle Paul" (University of Southern Mississippi, Master's Thesis, 2020).



## 5

# CONTRIBUTION OF THIS RESEARCH

The previous chapter demonstrates that the application of spatial-temporal analysis to interpret early Christian literature is rather limited in scope and complexity. Most endeavours are grounded in human geography and especially in the field of spatiality.

The aim of this research is to contribute to the methodical toolbox of the biblical scholar by applying spatial-temporal analysis to the interpretation of texts. This contribution will be on two levels. First, the research will contribute by providing examples of application of spatial-temporal analysis in both the establishment as well as the interpretation of texts (parts 2 and 3). Second, the research will provide a reflection on the benefits, limitations, and hermeneutical value of the applied methods to the interpretation of early Christian literature (part 4). In that reflection, insights from GIScience and hermeneutics will be interwoven.



ΜΕΝ ΠΑΡΘΟΙΚΑΙ  
ΜΗΔΟΙΚΑΙ ΟΙΚΑΤ  
ΟΙΚΟΥΝΤΕΣ ΤΗΝ ΜΕ  
ΣΟΠΟΤΑΜΙΑΝ ΟΥ  
ΠΑΡΤΕΚΑΙ ΚΑΠ  
ΡΑΧΟΚΙΝ ΠΟΝΤ  
ΚΑΙ ΤΗΝ ΑΣΙΑΝ  
ΦΡΥΓΙΑΝ ΤΕ ΚΑΙ ΠΑΜ  
ΦΥΛΙΑΝ ΑΙΓΥΠΤΟ  
ΚΑΙ ΤΑ ΜΕΡΗ ΤΗΣ ΛΙ  
ΒΥΗΣ ΤΗΣ ΚΑΤΑ ΚΥ  
ΡΗΝΗΝ ΚΑΙ ΟΙ ΕΠΙ  
ΔΗΜΟΥΝΤΕΣ ΡΩ  
ΜΑΙΟΙ ΟΥΔΑΙΟΙ ΤΕ  
ΚΑΙ ΠΡΟΧΛΥΤΟΙ  
ΚΡΗΤΕΣ ΚΑΙ ΑΡΑΒΕΣ  
ΑΚΟΥΟΜΕΝ ΑΛΛΟΥ  
ΤΩΝ ΑΥΤΩΝ ΤΑΙΣ  
ΗΜΕΤΕΡΑΙΣ ΓΛΩΣ  
ΣΑΙΣ ΤΑ ΜΕΓΑΛΕΙΑ  
ΤΟΥ ΘΕΟΥ

## PART 2

# ESTABLISHING TEXTS



## 6

# SPATIAL ANALYSIS OF NEW TESTAMENT TEXTUAL EMENDATIONS UTILIZING CONFUSION DISTANCES

The original documents of almost all ancient writings have been lost, and the writings of the New Testament form no exception.<sup>1</sup> Therefore, before any interpretation of a New Testament text, a researcher first must face the challenge of establishing its original wording by critically evaluating the differences in the existing manuscripts. The discipline of textual criticism provides criteria for systematic evaluation of such texts. Besides identified differences, there are texts where the different manuscripts do correspond, but where the content of the text puzzles the researcher. In these cases, some researchers assume a corruption of the text and emend the text by conjecture. Both the establishment of the original text from differing manuscripts and conjectural emendation are traditionally based on qualitative criteria, which is not to say that the discipline does not utilize quantitative methods.<sup>2</sup>

---

<sup>1</sup> This chapter is based on Vincent van Altena et al., “Spatial Analysis of New Testament Textual Emendations Utilizing Confusion Distances,” *OpTh* 5.1 (2019): 44–65, <https://doi.org/10.1515/opth-2019-0004>.

<sup>2</sup> Two prominent projects are *Text und Textwert* (TuT) and the *Coherence Based Genealogical Method* (CBGM). The TuT volumes offer an inventory of differences

In this chapter, I propose a method to estimate the probability of palaeographic confusion to explain the origination of conjectural emendations. Therefore, I introduce the *confusion distance*, a quantitative metric which indicates the relative proximity in orthography of alternative readings. This metric is based on the Levenshtein edit distance but is here expanded in two directions. First, the algorithm now accounts for the probability of a particular combination of (adjacent) letters; these combinations can be provided by the user as a confusion table. The table used in the experiments (Table 18 on page 249) was derived using data from Metzger and Rutgers,<sup>3</sup> and provides a first *approximation* of the ease with which certain letters or combinations of letters could be confused. The probability score is based on the experience of a textual critic in dealing with manuscripts.<sup>4</sup> Second, the algorithm evaluates three additional operations (contraction, explosion, and complex substitution) besides the three operations provided in the original Levenshtein algorithm (which are substitution, insertion, and deletion). The resulting distances of words are subsequently

---

between New Testament manuscripts for a selection of test passages. The goal of the *CBGM* is to gain an overall understanding of the origin and history of the transmission of a text, and it therefore uses a set of computer tools to combine the results of text critical decisions for the composition of genealogical trees in the most effective and simple way. Kurt Aland, *Text und Textwert der griechischen Handschriften des neuen Testaments*, ANTF (Berlin: De Gruyter, 1987–2022); Tommy Wasserman and Peter J. Gurry, *A New Approach to Text Criticism: Introduction to the Coherence-Based Genealogical Method*, ed. Michael W. Holmes, RBS 80, ed. Tom Thatcher (Atlanta, GA: Society of Biblical Literature, 2017).

<sup>3</sup> Johannes Rutgers, “Index Palaeographicus,” *Mnemosyne* 8a (1859): 85–110; Bruce M. Metzger, *A Textual Commentary on the Greek New Testament, a Companion Volume to the United Bible Societies’ Greek New Testament (4th Rev. Ed.)*, 2nd ed. (London: United Bible Societies, 1994).

<sup>4</sup> In future experiments, this confusion table could, and likely should, be replaced by a table based on frequency statistics on the occurrence of character combinations in textual variants. It is important to note that although such a refinement will yield better results in recognizing patterns and trends, this must not be confused with objectivity. The capriciousness of scribes in deviating from their own habits illustrate the complexity of the issue.

translated to a two-dimensional non-geographical space utilizing Multi-Dimensional Scaling (MDS). To demonstrate the potential of the confusion distance, I apply spatial analysis to evaluate the probability of the originality of variant readings. To my understanding this is the first time spatial analysis and a quantitative metric are used to compare the orthographic features of textual variants in New Testament manuscripts.

Since spatial analyses are relatively new to the field of New Testament textual criticism, and conversely, textual criticism may be an unexplored area for the spatial scientist, sections 6.1 and 6.2 contain some background information and references to important literature. In section 6.1 I elaborate on the transmission of manuscripts and introduce the reader to the disciplines of textual and conjectural criticism. Section 6.2 provides criteria for equating words, evaluates the appropriateness of existing metrics to establish edit distances, and it describes the adaptations to the Levenshtein algorithm to better simulate transcriptional confusion. In section 6.3 and section 6.4, I use two case studies to experiment with the application of spatial analysis to the results from my algorithm. I conclude with a discussion of the findings and recommendations for further research in section 6.5.

## 6.1 Scribal errors in the transmission of manuscripts

Before the invention of printing (around 1450 CE for the Western world), the multiplication of documents was performed by copyists. In a digital age like ours, the painstaking effort, which was basic to the multiplication of written documents in the past, is easily overlooked. Metzger and Ehrman illustrate the physiological effects of the prolonged labour of copying by a traditional formula appearing at the close of many manuscripts: “Writing bows one’s

back, thrusts the ribs into one's stomach, and fosters a general debility of the body."<sup>5</sup>

The available manuscripts for the New Testament documents show both resemblance and variance with the textual tradition of other ancient works. Like other ancient texts, the *autographa* (the original manuscripts from the original authors) of the New Testament are not available.<sup>6</sup> The perishable materials used for writing had a significant impact on the sustainability of the manuscripts. While moisture was devastating for papyrus, drought was disastrous for wooden writing materials. Only a few places offered the right conditions for conservation of ancient texts.<sup>7</sup> Considering the availability of manuscripts on the other hand, more than 5,000 ancient manuscripts for the Greek New Testament are extant, which is an unusual amount of textual evidence for ancient manuscripts.<sup>8</sup>

The first substantive portions of the New Testament text date from the third and fourth centuries CE.<sup>9</sup> Although the texts have been transmitted from generation to generation with great care, inevitably differences between the several manuscripts exist.

---

<sup>5</sup> Bruce M. Metzger and Bart D. Ehrman, *The Text of the New Testament: Its Transmission, Corruption, and Restoration*, 4th ed. (New York, NY: Oxford University Press, 2005), 29.

<sup>6</sup> Wasserman and Gurry, *Introduction to CBGM*, 1.

<sup>7</sup> E. Randolph Richards, "Reading, Writing, and Manuscripts," in *The World of the New Testament: Cultural, Social, and Historical Contexts*, ed. Joel B. Green and Lee Martin McDonald (Grand Rapids, MI: Baker Academic, 2013), 345.

<sup>8</sup> Metzger and Ehrman, *The Text of the New Testament*, 50–51; Barbara Aland, "New Testament Textual Research, Its Methods and Its Goals," in *Translating the New Testament: Text, Translation, Theology*, ed. Stanley E. Porter and Mark J. Boda, McMaster New Testament Studies (Grand Rapids, MI: Eerdmans, 2009), 18.

<sup>9</sup> The earliest known example of the New Testament, P52, contains a fragment of John 18 and is dated approximately 125–150 CE. However, this dating is contested. Alternatively, a window between the second half of the second and the first quarter of the third century is proposed as the possible date of P52, Brent Nongbri, "The Use and Abuse of P52: Papyrological Pitfalls in the Dating of the Fourth Gospel," *HTR* 98.1 (2005): 23–48, <https://doi.org/10.1017/S0017816005000842>.

ΜΕΝΠΑΡΘΟΙΚΑΙ  
ΜΗΔΟΙΚΑΙΟΙΚΑΤ  
ΟΙΚΟΥΝΤΕΣΤΗΝΜΕ  
ΣΟΠΟΤΑΜΙΑΝΙΟΥ  
ΔΑΙΑΝΤΕΚΑΙΚΑΠ  
ΠΑΔΟΚΙΑΝΠΟΝΤ  
ΚΑΙΤΗΝΑΣΙΑΝ  
ΦΡΥΓΙΑΝΤΕΚΑΙΠΑΜ  
ΦΥΛΙΑΝΑΙΓΥΠΤΟ  
ΚΑΙΤΑΜΕΡΗΤΗΣΛΙ  
ΒΥΗΣΤΗΣΚΑΤΑΚΥ  
ΡΗΝΗΝΚΑΙΟΙΕΠΙ  
ΔΗΜΟΥΝΤΕΣΡΩ  
ΜΑΙΟΙΗΟΥΔΑΙΟΙΤΕ  
ΚΑΙΠΡΟΣΧΑΥΤΟΙ  
ΚΡΗΤΕΣΚΑΙΑΡΑΒΕΣ  
ΑΚΟΥΟΜΕΝΑΛΛΟΥ  
ΤΩΝΑΥΤΩΝΤΑΙΣ  
ΗΜΕΤΕΡΑΙΣΓΛΩΣ  
ΣΑΙΣΤΑΜΕΓΑΛΛΕΙΑ  
ΤΟΥΘΥ

πάρθοι καὶ Μῆδοι καὶ Ἑλαμίται καὶ οἱ  
κατοικοῦντες τὴν Μεσοποταμίαν, Ἰουδαίαν τε  
καὶ Καππαδοκίαν, Πόντον καὶ τὴν Ἀσίαν,  
Φρυγίαν τε καὶ Παμφυλίαν, Αἴγυπτον καὶ τὰ  
μέρη τῆς Λιβύης τῆς κατὰ Κυρήνην, καὶ οἱ  
ἐπιδημοῦντες Ῥωμαῖοι Ἰουδαῖοί τε καὶ  
προσῆλυτοι, Κρήτες καὶ Ἄραβες, ἀκούομεν  
λαλοῦντων αὐτῶν ταῖς ἡμετέροις γλώσσαις τὰ  
μεγαλεῖα τοῦ θ[εοῦ].

<sup>9</sup> Πάρθοι καὶ Μῆδοι [καὶ Ἑλαμίται] καὶ οἱ  
κατοικοῦντες τὴν Μεσοποταμίαν, Ἰουδαίαν τε καὶ  
Καππαδοκίαν, Πόντ[ον] καὶ τὴν Ἀσίαν, <sup>10</sup> Φρυγίαν  
τε καὶ Παμφυλίαν, Αἴγυπτον καὶ τὰ μέρη τῆς  
Λιβύης τῆς κατὰ Κυρήνην, καὶ οἱ ἐπιδημοῦντες  
Ῥωμαῖοι, <sup>11</sup> Ἰουδαῖοί τε καὶ προσῆλυτοι, Κρήτες καὶ  
Ἄραβες, ἀκούομεν λαλοῦντων αὐτῶν ταῖς ἡμετέροις  
γλώσσαις τὰ μεγαλεῖα τοῦ θ[εοῦ].

Figure 4. Acts 2:9-11 in three types of Greek script.<sup>10</sup>

Over the ages, writing style, script, and material used for manuscripts evolved.<sup>11</sup> The earliest New Testament texts have survived in papyrus codices; but parchment and eventually paper gradually became the common media for copying the texts. The choice of script also changed from majuscule script (which shows resemblance with our system of capital letters) to minuscule script (which could be compared to modern small italic letters). In the case of majuscule scripts, *scriptio continua* was usually applied. In effect, spacing between words and punctuation are scarce, and words are often split across lines (without hyphens). Minuscule script, in

<sup>10</sup> On the left in majuscule script, top right in minuscule script, and bottom right in modern script with verse numbers and some editorial information. Words in brackets are omitted or abbreviated in the ancient manuscript.

<sup>11</sup> D.C. Parker, *An Introduction to the New Testament Manuscripts and Their Texts* (Cambridge: Cambridge University Press, 2008).

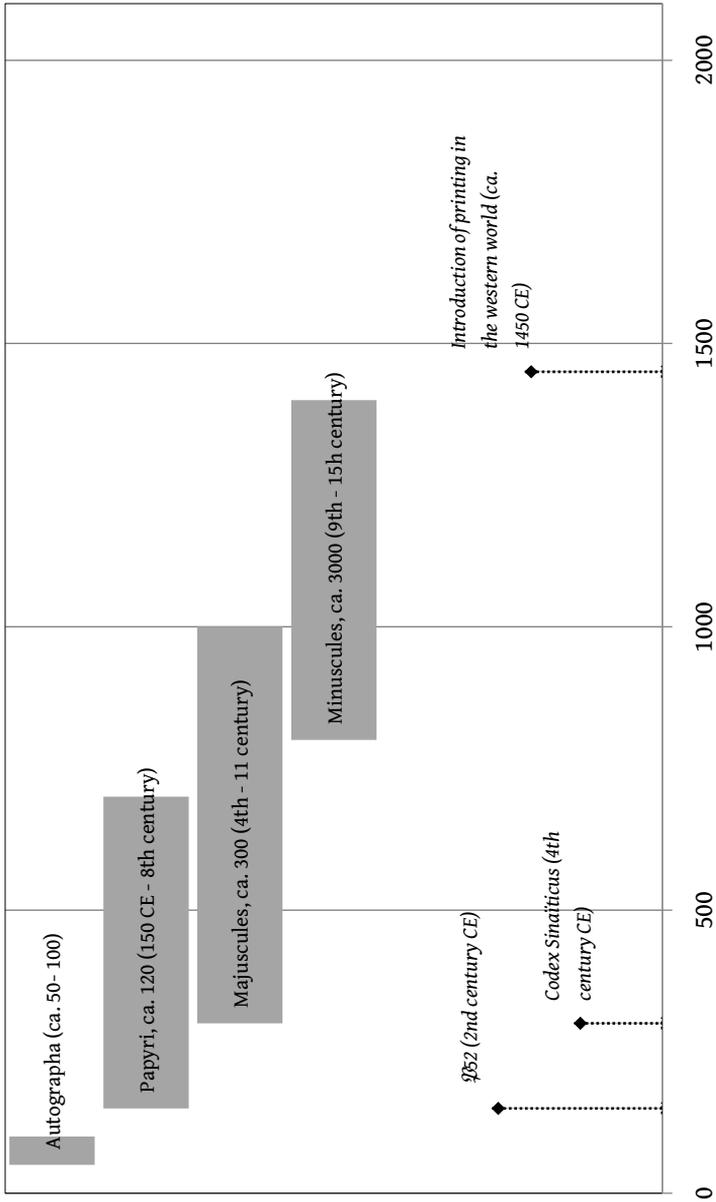


Figure 5. Manuscript types and dating.<sup>12</sup>

contrast, contained spaces between words. An impression of the different scripts can be gained from Figure 4.<sup>13</sup>

Nowadays, Greek New Testament manuscripts are classified into four categories: papyri, majuscules, minuscules, and lectionaria.<sup>14</sup> The classification system is based on three criteria: writing material, type of script, and content. The timeline in Figure 5 summarises the history of textual transmission.

### 6.1.1 Textual Criticism

Mistakes in the transmission of texts were likely to occur during activities of reading (or hearing), remembering, and writing the contents of the original manuscript and were easily made due to bad sight, letter confusion, sloppy handwriting, misinterpretation of abbreviations, attrition, lack of attention or simple stupidity. In effect, variant readings were produced containing differences in punctuation and misspellings, but also alterations of words or omission of complete verses or paragraphs.<sup>15</sup> In addition to this

---

<sup>12</sup> James Alfred Loader and Oda Wischmeyer, "Twentieth Century Interpretation," *DBCI*, 371–83; Parker, *An Introduction to the New Testament Manuscripts and Their Texts*.

<sup>13</sup> The image on the left resembles the script of Codex Sinaiticus, the earliest extant complete copy of the Christian New Testament written in the middle of the fourth century. Its hand-written text is in Greek. Images can be found online, <http://www.codexsinaiticus.org>. The image on the top right is a free rendering of minuscule script. A digital example of an original manuscript in minuscule hand, GA 133, is available online (for scholarly research only) from the Institut für neutestamentliche Textforschung. This manuscript originates from the eleventh century and is currently located in the Vatican Library, <http://ntvmr.uni-muenster.de/community/modules/papyri/?site=INTF&image=30133/undefined/3480/20/2293>.

<sup>14</sup> About 135 papyri have been discovered, some of which contain the oldest witnesses to the text of the New Testament. Currently, ca. 300 majuscules (parchment codices) and ca. 3,000 minuscules are known. Papyri, majuscules and minuscules can be consulted online, Institut für Neutestamentliche Textforschung, "Liste," *Institut Für Neutestamentliche Textforschung*, n.d., <http://ntvmr.uni-muenster.de/liste>.

<sup>15</sup> Michael W. Holmes, "Reconstructing the Text of the New Testament," in *The Blackwell Companion to the New Testament*, ed. David Edward Aune, Blackwell Companions to Religion (Malden, MA: Wiley-Blackwell, 2010), 77–89.

unintentional production of errors, copyists sometimes also intentionally altered the reading of the same text, perhaps motivated by their understanding or dogmatic convictions.<sup>16</sup>

To account for this existence of variant readings and given the lack of *autographs* (originals), the aim of textual criticism was traditionally perceived as the reconstruction of the *original* text from available manuscripts.<sup>17</sup> However, this definition has been increasingly criticized due to the ambiguity of the terminology.<sup>18</sup> For this discussion, I adopt the goal of the Editio Critica Maior (ECM): textual criticism aims to establish the “initial text” or *Ausgangstext* of a document. This *Ausgangstext* (hereafter: *Aus*) must be distinguished from the “original text” or *Ur-text*.<sup>19</sup> Very early in the process of copying the *Ur-text*, the original readings might have been lost without leaving a trace in the surviving manuscripts.<sup>20</sup> On the other hand, *Aus* must also be distinguished from the “established text” in critical editions for the simple reason that some readings cannot be attributed to *Aus* with sufficient certainty. In such cases, the only reasonable conclusion for the editor is to postpone the decision and to inform the reader about the difficulties in establishing *Aus*. For the following discussion on conjectural emendations, it is important to note that scribal changes are both

---

<sup>16</sup> Metzger and Ehrman, *The Text of the New Testament*, 259–71.

<sup>17</sup> Holmes, “Reconstructing the Text of the New Testament.”

<sup>18</sup> Wasserman and Gurry, *Introduction to CBGM*, 11; For an overview of the debate, one should consult Michael W. Holmes, “From ‘Original Text’ to ‘Initial Text’: The Traditional Goal of New Testament Textual Criticism in Contemporary Discussion,” in *The Text of the New Testament in Contemporary Research: Essays on the Status Quaestionis*, ed. Bart D. Ehrman and Michael William Holmes, 2nd ed., NTTSD 42 (Leiden: Brill, 2013), 637–88.

<sup>19</sup> Aland, “New Testament Textual Research, Its Methods and Its Goals,” 16–17.

<sup>20</sup> “Between the autograph and the initial text considerable changes may have taken place for which there may not be a single trace in the surviving textual tradition. Even if this should not be the case, differences between the original and the initial text must be taken into account.” Aland, “New Testament Textual Research, Its Methods and Its Goals,” 17.

presumed between *Ur-text* and *Ausgangstext* or between attested readings and the *Ausgangstext*.<sup>21</sup>

To establish *Aus*, generally agreed principles are applied to distinguish between intrinsic (how would an *author* have written) and transcriptional probabilities (how would a *scribe* have transcribed) in the transmission process of the text. This is accomplished by asking whether any of the readings may be the result of “scribal slips, errors, or alterations in the copying process [... or ...] scribal tendencies to smooth over or resolve difficulties rather than create them, to harmonize passages, and to add rather than omit material.... the variant most likely to be original is the one that best accounts for, in terms of both external and internal considerations, the origin of the others.”<sup>22</sup>

Traditionally, the discipline has been concerned with existing variant readings, which are known from manuscripts, glosses, and lectionaries; however, the discipline has broadened its scope to gain insights in the transmission history of texts and, hence, into the convictions and guiding principles of the transmitting communities.

### 6.1.2 Conjectural criticism

Sometimes deciding between existing competing variant readings is not enough. Scholars occasionally face difficulties in the text, such as logical contradictions and inconsistencies, and “cannot assert that the original form of the text has for certain survived at every point somewhere or other among our witnesses.”<sup>23</sup> According to Metzger and Ehrman, therefore, the “only remaining resource is to conjecture what the original reading must have been.”<sup>24</sup> These so-called conjectural emendations (speculative alterations of the texts

---

<sup>21</sup> So far ECM has adopted conjectures at 2 Pet 3:10 (cj11713) and Acts 13:23 (cj10092)

<sup>22</sup> Holmes, “Reconstructing the Text of the New Testament,” 180.

<sup>23</sup> George D. Kilpatrick, “Conjectural Emendation in the New Testament,” in *New Testament Textual Criticism: Its Significance for Exegesis: Essays in Honour of Bruce M. Metzger*, ed. Eldon Jay Epp and Gordon D. Fee (New York, NY: Oxford University Press, 1981), 351.

<sup>24</sup> Metzger and Ehrman, *The Text of the New Testament*, 227.

for which no manuscript evidence exists) have also become the object of scrutiny for the textual critic.<sup>25</sup>

#### 6.1.2.1 John the Baptist's food as an example

The practice of conjectural emendation can be illustrated from Matt 3:4 and its parallel text Mark 1:6. In these passages the character of John the Baptist is being introduced in the narrative. John wears a camel skin garment and is girded with a leather belt. According to the textual evidence John ate *locusts and wild honey* (ἀκρίδες καὶ μέλι). Although there is no reason to doubt the reading uniformly attested by the manuscript evidence, the text nicely sketches how conjectures originate and is therefore suitable to illustrate the study of conjectures as historical phenomena. In this study, the researcher is not so much concerned with emending the text with the most suitable conjecture, but rather with the reconstruction of the reasoning which led to the origination of the conjectures for the particular locus.

Any conjecture starts with an observation on the text, in which a critic guided of course by some pre-understanding detects an oddity. In the example text, the substance of John's food has puzzled some critics: how could someone possibly eat insects? Others presumed John must have been a vegetarian and they therefore raised objections to the reading "locusts."<sup>26</sup>

---

<sup>25</sup> A more extensive introduction on *Conjectural Emendation* can be found in Jan Krans, "Conjectural Emendation and the Text of the New Testament," in *The Text of the New Testament in Contemporary Research: Essays on the Status Quaestionis*, ed. Bart D. Ehrman and Michael William Holmes, 2nd ed., NTTSD 42 (Grand Rapids, MI: Eerdmans, 2013), 613–35. Conjectural Emendations themselves are collected systematically and presented online in the Amsterdam Database of New Testament Conjectural Emendation (ANTDCE), see Jan Krans and Bert Jan Lietaert Peerbolte, "The Amsterdam Database of New Testament Conjectural Emendation," 2022 2016, <http://ntvmr.uni-muenster.de/nt-conjectures>.

<sup>26</sup> See Ulrich Luz, *Matthew 1-7: A Commentary*, ed. Helmut Koester, trans. James E. Crouch, Rev. ed., Herm (Minneapolis, MN: Augsburg, 2007), 137, n. 18.

After the detection of the textual problem, the critic needs to suggest an alternative that (1) fits the grammatical function of the disputed reading, (2) makes sense in the internal logic of the text, and (3) solves the assumed difficulties. In John the Baptist's case, some critics have suggested emendations, including *cake* (ἐγκρίδες),<sup>27</sup> *coconuts* (καρίδες), *sea-crabs / shrimps* (γαρίδες), *wild pears* (ἀχράδες), *crops* (ἀκρεμώνες) or *root and fruit* (ρίζας καὶ καρπόν).<sup>28</sup> Here we should observe speculations cannot be boundless. (a) The proposed alternative must have the same grammatical function in the text and should therefore be a noun. (b) However, not every available noun in Greek is suitable, since the internal logic of the text demands something that can be eaten. (c) Likewise, not everything that can be eaten is suitable since it must fit within the contemporary context. Having John eating a Big Mac would be anachronistic (and ridiculous). (d) Furthermore, not all food available during the time of John fits in the geographical context of the narrative. It is, for instance, hard to conceive how John, living in the desert, would have been able to catch shrimps. To summarize, the credibility of a conjecture is restricted by grammar, semantics, and by its historical, cultural, and geographical suitedness.

Finally, the critic must also explain how the attested reading or readings could have originated from the proposed conjecture. Usually, a very early corruption during the transcription process is assumed, which could have been caused by palaeographic or phonetic confusion of letters.

---

<sup>27</sup> Despite the fact that Epifanius' attribution of ἐγκρίδες to the Ebionites is apparently incorrect; this conjecture has a historically interesting reception history.

<sup>28</sup> Examples are taken from ADNTCE and can be located by their identifier at cj10147 (ἐγκρίδες), cj11182 (καρίδες), cj11183 (ἀχράδες), cj13821 (ἀκρεμώνες) and cj12987 (ρίζας καὶ καρπόν), see Krans and Lietaert Peerbolte, "The Amsterdam Database of New Testament Conjectural Emendation." The conjecture γαρίδες is not yet available in the ADNTCE.

In the example of John the Baptist’s food, it is not hard to conceive how  $\lambda\kappa\pi\iota\alpha\epsilon\kappa$  [locusts] could easily be confused with  $\kappa\lambda\pi\iota\alpha\epsilon\kappa$  [coconuts].<sup>29</sup> Such a confusion only requires the transposition of the letters  $\lambda$  and  $\kappa$ . In the case of  $\gamma\lambda\pi\iota\alpha\epsilon\kappa$  [sea-crabs], two confusions might have occurred: first the substitution of the letters  $\gamma$  and  $\kappa$  and second the transposition of the letters  $\lambda$  and  $\kappa$ . This second example is a bit more complex, but the combination of a phonetic and a palaeographic confusion is still conceivable. The other alternatives seem less likely due to palaeographic confusion.

ID	Ref.	NA <sup>a</sup>	Conjecture	Author	Short Reference	Year	Operation	E	A	N	M	Rem.	Cit.
q152770	Acts 2:7-11	ἑβραῖοι ἢ οὐκ ἰθαίμαχοι ... ζαλοδωρα σιδήρῳ τῶν ἡγεμόνων γυδωραῖς	om.	Johannes Schabbers	Schabbers, <i>De charismatibus</i> (1818), pp. 122-133	1818	Omission						
q14371	Acts 2:9	Παῖσι καὶ Μῆδο καὶ Ἑλαφθῶν καὶ	om.	Harald Sahlin	Sahlin, "Vorschläge II" (1982), p. 181	1982	Omission						
q12421	Acts 2:9-11	Παῖσι καὶ Μῆδο ... Ἀραβῶν, ἑσθίωνες ζαλοδωρα σιδήρῳ τῶν ἡγεμόνων	ζαλοδωρα σιδήρῳ	Werner Carl Ludwig Ziegler	Ziegler, "Apostelgeschichte" (1861), pp. 134-135	1861	Omission						
q14673	Acts 2:9	Μακεδωνῶν, Τροβαίων	Μακεδωνῶν Τροβαίων	Adolf Hilgenfeld	Hilgenfeld, "Apostelgeschichte I" (1865), pp. 94-95	1865	Punctuation	✓	✓				
q13597	Acts 2:9	Τροβαίων	Αραβίων	Eberhard Götting	Götting, "Völkerliste" (1975), p. 163	1975	Substitution						
q13598	Acts 2:9	Τροβαίων	Εβραίων ἢ Εβλαίων	Martin Dibelius	Dibelius, "Text of Acts" (1941), p. 429	1941	Substitution						

Figure 6. Interface of ADNTCE.

### 6.1.2.2 Amsterdam Database of New Testament Conjectural Emendation

An important tool to study the conjectures critically is the Amsterdam Database of New Testament Conjectural Emendation (ADNTCE).<sup>30</sup> This database contains approximately 6500 conjectures for the New Testament text, collected from theological literature, such as commentaries. It also includes data on the discussion of particular emendations. Unfortunately, the data is thus far presented in tabular form (Figure 6) which restricts analysis to

<sup>29</sup> In the remainder of this article, we use the Greek majuscule script. In the earliest period of textual transmission this was the commonly used type of script and, therefore, it best simulates the palaeographic appearance of the earliest texts and provides insights in the probability of confusion of typical letter combinations.

<sup>30</sup> Krans and Liettaert Peerbolte, "The Amsterdam Database of New Testament Conjectural Emendation."

individual conjectures and makes an analysis of the filiation of conjectures difficult.

### 6.1.3 Summary

An enormous amount of manuscripts is available for the New Testament, but due to differences, lack of the originals and additional speculation, textual criticism aims to (1) reconstruct the initial texts and (2) study the history of textual transmission to gain insights in the convictions of the transmitting communities. Today both are not limited to existing manuscript evidence (variant readings), but also encompass speculations (conjectural emendations). This material will be used in the following analyses.

In previous paragraphs, I discussed the ways in which textual critics deal with transcriptional and internal difficulties to reconstruct the original manuscript and what insights are gained from the history of textual transmission. One of these insights is that not every suggestion is equally probable. Some alternatives are more related, (that is in closer proximity) while others are more distant (and therefore unlikely). As has been observed, textual criticism tries to establish how one reading could originate from another using qualitative evaluation criteria. Palaeographic confusion is a feature of textual transmission that often explains the origin of different readings.

## 6.2 String matching and edit distances

Algorithms for string matching which have been developed within the field of computer science might be helpful to approach the issue of textual variants from a different angle.<sup>31</sup> These algorithms calculate edit distances to quantify the relationship(s) of strings. In

---

<sup>31</sup> The concept *string* is used in computer processes to define a piece of text consisting of letters, numbers, and / or symbols. *String matching* is a process to establish (dis)similarity of strings. An *edit distance* is a metric (unit of measurement) to express the (dis)similarity of strings and it quantifies the number of operations to change string *a* into string *b*.

this section, I first establish criteria for assessing the applicability of string-matching algorithms to the establishment of texts. Next, I explore existing algorithms and evaluate their applicability to textual criticism. Finally, I propose my own algorithm, which basically is an extension of an existing algorithm.

### 6.2.1 Evaluation criteria

An algorithm for string-matching should simulate the process of textual corruption in the case of transcriptional confusion and should be based on the palaeographic appearance of characters. Therefore, the algorithm must at least account for (1) the comparison of strings of different length, since the length of a conjecture is not always equal to the length of the reading found in the manuscripts; (2) a minimal set of operations (insertion, deletion, substitution, and transposition of characters) to change a string into another string; (3) the dissimilarity of words instead of their resemblances; (4) the outcome must be reciprocal, which means the calculated distance based on the operations to change string  $a$  into string  $b$  should be the same as the calculated distance to change string  $b$  into string  $a$ ; and (5) the probability of confusion of characters. The underlying assumption is that the more similar two characters are, the more likely they can be confused.

In a handwritten English text, it is easy to confuse a small letter  $l$  ( $l$ ) with a capital letter  $i$  ( $I$ ) or even with the number 1. Likewise, when writing a text in majuscule script, it is, for instance, more likely to confuse an  $\lambda$  for a  $\Delta$ , than an  $\lambda$  for an  $\epsilon$ . To elaborate this a bit more, specific combinations of characters also are likely to be confused. For example, when  $\Gamma$  and  $I$  appear as adjacent characters ( $\Gamma I$ ) within a word, a confusion with  $\Pi$  is not difficult to perceive.

### 6.2.2 Edit operations and existing string-matching algorithms

Multiple functions have been developed in the domain of computer science to measure the (dis-)similarity between strings and these all conform to a basic form:

The distance  $\delta(x,y)$  between two strings  $x$  and  $y$  is the minimal cost of a sequence of operations that transform  $x$  into  $y$  (and  $\infty$  if no such sequence exists). The cost of a sequence of operations is the sum of the costs of the individual operations. The operations are a finite set of rules of the form  $\delta(z,w)=t$  where  $z$  and  $w$  are different strings and  $t$  is a nonnegative real number. Once the operation has converted a substring  $z$  into  $w$ , no further operations can be done on  $w$ .<sup>32</sup>

Most commonly implemented operations in string matching are insertion, deletion, substitution, and transposition (Table 2), although the actual number of operations implemented within several functions differs.

Table 2. Common edit operations in string matching.

Operator	Function	constraints	Description
Insertion	$\delta(\varepsilon, a)$		inserting the letter $a$
Deletion	$\delta(a, \varepsilon)$		deleting the letter $a$
Substitution	$\delta(a, b)$	$a \neq b$	substituting letter $a$ by letter $b$
Transposition	$\delta(ab, ba)$	$a \neq b$	swap the adjacent letters $a$ and $b$ .

According to Navarro four metrics are most prominent in string matching.<sup>33</sup> But despite the fact they are commonly used, the Hamming distance,<sup>34</sup> the Longest common subsequence (LCS),<sup>35</sup> and Episode matching<sup>36</sup> should be discarded. These metrics do not fit the required type of operations (Hamming only allows substitution, LCS

<sup>32</sup> Gonzalo Navarro, "A Guided Tour to Approximate String Matching," *CSUR* 33.1 (2001): 37.

<sup>33</sup> Navarro, "Guided Tour," 37.

<sup>34</sup> R.W. Hamming, "Error Detecting and Error Correcting Codes," *BSTJ* 29.2 (1950): 147–60, <https://doi.org/10.1002/j.1538-7305.1950.tb00463.x>.

<sup>35</sup> Saul B. Needleman and Christian D. Wunsch, "A General Method Applicable to the Search for Similarities in the Amino Acid Sequence of Two Proteins," *JMB* 48.3 (1970): 443–53, [https://doi.org/10.1016/0022-2836\(70\)90057-4](https://doi.org/10.1016/0022-2836(70)90057-4).

<sup>36</sup> Gautam Das et al., "Episode Matching," in *Combinatorial Pattern Matching*, ed. Alberto Apostolico and Jotun Hein, ed. Gerhard Goos, Juris Hartmanis, and Jan Leeuwen (Berlin: Springer, 1997), 12–27, [https://doi.org/10.1007/3-540-63220-4\\_46](https://doi.org/10.1007/3-540-63220-4_46).

only allows insertions and deletions, and Episode matching only allows insertions). Furthermore, they do not meet the criteria of complexity, dissimilarity, and reciprocity (section 6.2.1).

The Levenshtein-distance,<sup>37</sup> however, has potential for estimating the probability of palaeographic confusion to explain the origination of conjectural emendations (and likewise, but secondary, textual variants). It measures the minimal number of insertions, deletions, and substitutions of one character for another that will transform one string into the other. The distance is also reciprocal and might “be useful in spelling correction, where for example because of the conventional keyboard arrangement it may be far more likely that a character ‘A’ be mistyped as an ‘S’ than as a ‘Y’.”<sup>38</sup> I will use the Wagner-Fischer-implementation since it is available in many programming languages, including Python.<sup>39</sup>

Table 3. *Sophisticated edit operations in string matching.*

Operator	Function	constraints	Description
Complex substitution	$\delta(ab, cd)$	$a \neq b \neq c \neq d$	substituting the adjacent pair of letters $ab$ by a different pair of letters $cd$
Contraction	$\delta(ab, c)$	$a \neq b \neq c$	substituting the adjacent pair of letters $ab$ by a single letter $c$
Explosion	$\delta(a, bc)$	$a \neq b \neq c$	substituting a single letter $a$ by a pair of adjacent letters $bc$

### 6.2.3 Expansion of the algorithm

To even better meet my requirements, I have tailored the Levenshtein-algorithm (1) by providing a confusion table (Table 18 on page 249) which contains character pairs together with an integer indicating the probability of palaeographic confusion; and (2) by

<sup>37</sup> Vladimir I. Levenshtein, “Binary Codes Capable of Correcting Deletions, Insertions, and Reversals,” *DoPh* 10.8 (1966): 707–10.

<sup>38</sup> Robert A. Wagner and Michael J. Fischer, “The String-to-String Correction Problem,” *JACM* 21.1 (1974): 169.

<sup>39</sup> Wagner and Fischer, “The String-to-String Correction Problem.”

adding three sophisticated operations to simulate better the origination of scribal errors (Table 3).

My adaptation of the Levenshtein-algorithm can be summarized using a mathematical function: the confusion distance between two strings  $a, b$  (of length  $|a|$  and  $|b|$  respectively) is given by  $confdist_{a,b}(|a|, |b|)$  where

$$confdist_{a,b}(i, j) \begin{cases} \max(i, j) & \text{if } \min(i, j) = 0 \\ \min \begin{cases} confdist_{a,b}(i-1, j) + del \\ confdist_{a,b}(i, j-1) + ins \\ confdist_{a,b}(i-1, j-1) + sub[i, j]_{(a \neq b)} \\ confdist_{a,b}(i-1, j) + cont[(i, i-1), j] \end{cases} & \text{if } i > 1 \text{ and } j = 1 \\ \min \begin{cases} confdist_{a,b}(i-1, j) + del \\ confdist_{a,b}(i, j-1) + ins \\ confdist_{a,b}(i-1, j-1) + sub[i, j]_{(a \neq b)} \\ confdist_{a,b}(i, j-1) + expl[i, (j, j-1)] \end{cases} & \text{if } i = 1 \text{ and } j > 1 \\ \min \begin{cases} confdist_{a,b}(i-1, j) + del \\ confdist_{a,b}(i, j-1) + ins \\ confdist_{a,b}(i-1, j-1) + sub[i, j]_{(a \neq b)} \\ confdist_{a,b}(i-1, j) + cont[(i, i-1), j] \\ confdist_{a,b}(i, j-1) + expl[i, (j, j-1)] \\ confdist_{a,b}(i-2, j-2) + com_{\in}(0 \dots 1) \end{cases} & \text{otherwise} \end{cases}$$

where the value of a substitution  $sub[i, j]$  is expressed as

$$sub[i, j] = \begin{cases} 0, & \text{if } i = j \\ D, & \text{if } (i, j) \text{ in } conftable \\ 1, & \text{otherwise} \end{cases}$$

the value of a contraction  $cont[(i, i-1), j]$  as

$$cont[(i, i-1), j] = \begin{cases} D, & \text{if } [(i, i-1), j] \text{ in } conftable \\ 3, & \text{otherwise} \end{cases}$$

the value of an explosion  $expl[i, (j, j-1)]$  as

$$expl[i, (j, j-1)] = \begin{cases} D, & \text{if } [i, (j, j-1)] \text{ in } conftable \\ 3, & \text{otherwise} \end{cases}$$

and the value of a complex substitution as

$$cont[(i, i-1), (j, j-1)] = \begin{cases} D, & \text{if } [(i, i-1), (j, j-1)] \text{ in } conftable \\ 5, & \text{otherwise} \end{cases}$$

The confusion distance then equals the sum of the minimal costs of the sequential individual operations to translate string  $a$  into string

b. The function  $confdist_{a,b}(|a|, |b|)$  will compute values for all possible operations on the individual  $(i, j)$  and complex character combinations  $(i, (j, j - 1))$ ;  $(i, i - 1), j$ ;  $[(i, i - 1), (j, j - 1))$  for both strings  $a$  and  $b$ .

To avoid bias, I added two constants: 3 for contractions and explosions and 5 for complex substitutions. These values guarantee that a combination not present in the confusion table will always result in a value higher than the ones resulting from other, simpler, operations. Furthermore, using the different constants 3 and 5 resembles the complexity of the operation.

### 6.3 Methodology

Until now, researches evaluated textual differences and conjectural emendations by well-established qualitative norms, but the central thesis of this chapter is that the probability of palaeographic confusion can also be evaluated by quantitative means utilizing spatial analysis methods.

The expressions “he is a close relative of mine” or “their views were miles apart” illustrate that spatial metaphors are omnipresent in everyday language to explain abstract concepts and their relatedness.<sup>40</sup> To take advantage of this spatial language for visualisation, several researchers developed methods for information visualization and analysis. These methods are identified under the umbrella “spatialization,” which Yuan defines as the process to transform “non-geographic data to spatial forms for visual analysis.”<sup>41</sup> As such, spatialization should be distinguished

---

<sup>40</sup> André Skupin and Sara I. Fabrikant, “Spatialization,” in *The Handbook of Geographic Information Science*, ed. John P. Wilson and A. Stewart Fotheringham (Oxford: Blackwell, 2007), 61–79, <https://doi.org/10.1002/9780470690819.ch4>.

<sup>41</sup> Yuan, “Mapping Text,” 111.

from various geocoding techniques that aim to extract geographical references from unstructured text.<sup>42</sup>

Transforming raw data into a visual form is dependent on the data's degree of structure and size. Data can be structured, semi-structured or unstructured and this characteristic influences the necessity for pre-visualisation manipulation. Furthermore, the size of the raw data determines whether a specific technique is applicable. Self-Organizing Maps (SOM) are for instance very suited for large text corpora, while Multi-Dimensional Scaling (MDS) best fits small data sets.<sup>43</sup> Due to the limited size of the conjectural data, I will apply MDS for spatialization.<sup>44</sup>

MDS has been applied previously to visualise unknown geographical data in geographical space, for example by Tobler and Wineburg to estimate the geospatial locations of merchant colonies in Bronze Age Anatolia.<sup>45</sup> The technique has also been used by Louwerse and Zwaan to visualize locations from large text corpora such as newspaper article archives.<sup>46</sup> These two researches obtained the locations from the texts using Latent Semantic Analysis (LSA). Davies applied MDS to explore the geographic component of large-scale semantic networks contained in text and cognitive

---

<sup>42</sup> Fernando Melo and Bruno Martins, "Automated Geocoding of Textual Documents: A Survey of Current Approaches," *TIG* 21.1 (2017): 3–38, <https://doi.org/10.1111/tgis.12212>.

<sup>43</sup> André Skupin and Sara Fabrikant, "Spatialization Methods: A Cartographic Research Agenda for Non-Geographic Information Visualization," *CaGIS* 30.2 (2003): 95–115, <https://doi.org/10.1559/152304003100011081>.

<sup>44</sup> More background on classical Multi-Dimensional Scalling (cMDS) can be found in K.V. Mardia, "Some Properties of Classical Multi-Dimensional Scalling," *CSTM* 7.13 (1978): 1233–41, <https://doi.org/10.1080/03610927808827707>. Implementations of the algorithm exist in R and Python as well as other programming languages.

<sup>45</sup> Waldo R. Tobler and S. Wineburg, "A Cappadocian Speculation," *Nature* 231.5297 (1971): 39–41, <https://doi.org/10.1038/231039a0>.

<sup>46</sup> Max M. Louwerse et al., "Cognitively Inspired NLP-Based Knowledge Representations: Further Explorations of Latent Semantic Analysis," *IJAIT* 15.6 (2006): 1021–39, <https://doi.org/10.1142/S0218213006003090>; Max M. Louwerse and Rolf A. Zwaan, "Language Encodes Geographical Information," *CoSc* 33 (2009): 51–73, <https://doi.org/10.1111/j.1551-6709.2008.01003.x>.

geographies.<sup>47</sup> Additionally, MDS has been used to visualize non-geographic data in non-geographical space, for instance by Goodchild and Janelle to spatialize the interrelatedness of special interest groups,<sup>48</sup> by Skupin and Buttenfield to spatialize articles from the New York Times based solely on the information content,<sup>49</sup> and by Old to enable spatial analysis and visualization of co-citation data.<sup>50</sup>

Although all these studies spatialize the individual entities of interest using MDS, my approach deviates from these studies in several ways. Considering pre-visualisation manipulation techniques to define the mutual distances between the entities, Louwse et al., Louwse and Zwaan, and Davies used Latent Semantic Analysis;<sup>51</sup> Tobler and Wineburg interactively defined them,<sup>52</sup> and Old re-used data from previous research without explicitly stating the distance retrieval methods.<sup>53</sup> In contrast to these studies, this study uses the palaeographic confusion distance to establish these distances.

Furthermore, Tobler and Wineburg, Louwse *et al.*, Louwse and Zwaan, and Davies aim at establishing the geographical location

---

<sup>47</sup> Clare Davies, "Reading Geography between the Lines: Extracting Local Place Knowledge from Text," in *Spatial Information Theory*, ed. Thora Tenbrink et al., ed. David Hutchison et al. (Cham: Springer, 2013), 320–37, [https://doi.org/10.1007/978-3-319-01790-7\\_18](https://doi.org/10.1007/978-3-319-01790-7_18).

<sup>48</sup> Michael F. Goodchild and Donald G. Janelle, "Specialization in the Structure and Organization of Geography," *AAAG* 78.1 (1988): 1–28, <https://doi.org/10.1111/j.1467-8306.1988.tb00189.x>.

<sup>49</sup> André Skupin and Barbara P. Buttenfield, "Spatial Metaphors for Visualizing Very Large Data Archives," in *Proceedings of GIS/LIS '96 Annual Conference and Exposition* (GIS/LIS '96 Denver, CO, presented at the GIS/LIS '96, 1996), 607–17.

<sup>50</sup> L. John Old, "Utilizing Spatial Information Systems for Non-Spatial-Data Analysis," *SciMet* 51.3 (2001): 563–71.

<sup>51</sup> Louwse et al., "Cognitively Inspired NLP-Based Knowledge Representations"; Louwse and Zwaan, "Language Encodes Geographical Information"; Davies, "Reading Geography between the Lines."

<sup>52</sup> Tobler and Wineburg, "A Cappadocian Speculation."

<sup>53</sup> Old, "Utilizing."

of unknown geographical places,<sup>54</sup> while I am approximating the relative locations of conjectures in palaeographic confusion space. I exemplify this space using two cases: one use-case examines the food of John the Baptist, and the other looks at the alternatives for the toponym Judea. As such this study is more related to studies that apply MDS to other abstract spaces.<sup>55</sup>

In the remainder of this chapter, I develop a method to measure palaeographic confusion between textual variants and experiment with spatial analysis, thus integrating concepts from textual criticism, computer science and spatial science.

Starting with a set of conjectural emendations for a particular text, the first step in my approach is to adapt this set for processing in my algorithm. Therefore, an array containing all individual variants / conjectures is translated to a table. In addition, I developed an algorithm which I implemented in Python to calculate the confusion distance for each combination of words in the array.<sup>56</sup> This algorithm results in a distance matrix.

Next, I translate the data in the distance matrix to Euclidean space using an existing Python implementation of classical MDS.<sup>57</sup> MDS is a visualization technique to analyse the (dis)similarity of data. It attempts to model such data as distances among points in a geometric space. This is useful when one “wants a graphical display of the structure of the data, one that is much easier to understand

---

<sup>54</sup> Tobler and Wineburg, “A Cappadocian Speculation”; Louwse et al., “Cognitively Inspired NLP-Based Knowledge Representations”; Louwse and Zwaan, “Language Encodes Geographical Information”; Davies, “Reading Geography between the Lines.”

<sup>55</sup> Skupin and Battenfield, “Spatial Metaphors”; Goodchild and Janelle, “Structure and Organization”; Old, “Utilizing.”

<sup>56</sup> The software *confdist* is implemented as a command line application in the Python programming language and can be run on all three major operating systems. As input it takes a table of confusion distances and a table of word pairs. As output, it returns the table of word pairs with the computed distances. The algorithm is freely available, and its source code is open. It can be downloaded from <https://github.com/balazsdukai/confdist>.

<sup>57</sup> Mardia, “Properties of CMDS.”

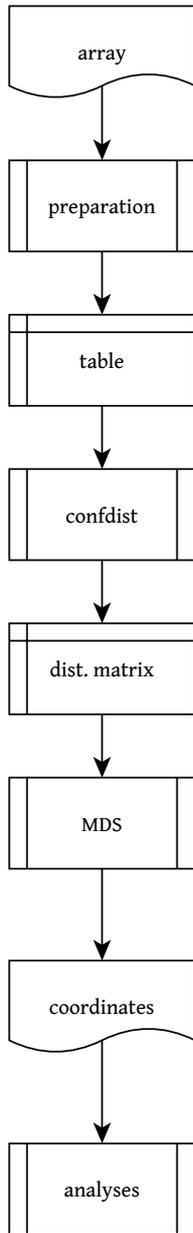


Figure 7. Proces to “spatialize” textual variants.

than an array of numbers.”<sup>58</sup> Since MDS seeks to find the most optimal visualisation of multi-dimensional phenomena in lower dimensional space within a given time frame and with a minimum of distortion, the results are only an approximation of this correlation.

My MDS analysis results in a file containing x,y coordinates for each entry in the array. Finally, I analyse the data with proximity tools and visualization techniques. This approach is summarized in Figure 7.

## 6.4 Results

I test my approach with two case studies. The first case study uses the example on the food of John the Baptist, while the second case study scrutinizes the conjectures on the toponym Judea in Acts 2:9.

### 6.4.1 Case study 1: the food of John the Baptist

In section 6.1.2.1 I used the conjectures which were proposed for the food of John the Baptist as an example. I will now apply my approach to this case to demonstrate the preparation of the data for calculation of a confusion matrix and its subsequent translation to Euclidean space and apply spatial analyses. As I have already mentioned, several conjectures have been suggested as a substitution for the *locusts and wild honey* (ΑΚΡΙΔΕΣ ΚΑΙ ΜΕΛΙ) in the diet of John the Baptist: *coconuts and wild honey* (ΚΑΡΙΔΕΣ ΚΑΙ ΜΕΛΙ), *cake and wild honey* (ΕΓΚΡΙΔΕΣ ΚΑΙ ΜΕΛΙ), *shrimps and wild honey* (ΓΑΡΙΔΕΣ ΚΑΙ ΜΕΛΙ), *wild pears and wild honey* (ΑΧΡΑΔΕΣ ΚΑΙ ΜΕΛΙ), *crops and wild honey* (ΑΚΡΕΜΩΝΕΣ ΚΑΙ ΜΕΛΙ), and *root and fruit* (ΡΙΖΑΣ ΚΑΙ ΚΑΡΠΟΝ). Feeding this array of conjectures to my algorithm results in a distance matrix, shown in Table 4. Figure 8 visualizes the outcomes of MDS and provides insights into the correlation and

---

<sup>58</sup> Ingwer Borg and Patrick J.F. Groenen, *Modern Multidimensional Scaling: Theory and Applications*, 2nd ed., SSS (New York, NY: Springer, 2005), 37. To gain an understanding of MDS a typical example is to translate a distance matrix of cities to Euclidean space. Borg and Groenen, *Modern Multidimensional Scaling*, 19–22 can be consulted for a neat example using the distances between European cities as input.

proximity between the conjectures and  $\lambda\kappa\rho\iota\delta\epsilon\varsigma$  (*locusts*), which is the text included in the critical edition of the New Testament.

It can for instance be perceived that the conjecture  $\kappa\alpha\rho\iota\delta\epsilon\varsigma$  (*coconuts*) is closest to  $\lambda\kappa\rho\iota\delta\epsilon\varsigma$  (*locusts*), but the data can also be used to build a lineage of conjectures. For instance, is it necessary to presume a direct connection between a conjecture and  $\lambda\kappa\rho\iota\delta\epsilon\varsigma$ ? It can be argued on the basis of this figure that there could have been a sequence of scribal errors with its accompanying error propagation. Just as an experiment, it could be assumed that  $\gamma\alpha\rho\iota\delta\epsilon\varsigma$  (*shrimps*) must have been the original, which was first corrupted into  $\kappa\alpha\rho\iota\delta\epsilon\varsigma$  (*coconuts*), which was in turn corrupted in  $\lambda\kappa\rho\iota\delta\epsilon\varsigma$  (*locusts*). The MDS visualization supports this kind of reasoning, although it remains speculative.

Table 4. Confusion distances for conjectures on  $\lambda\kappa\rho\iota\delta\epsilon\varsigma$ .

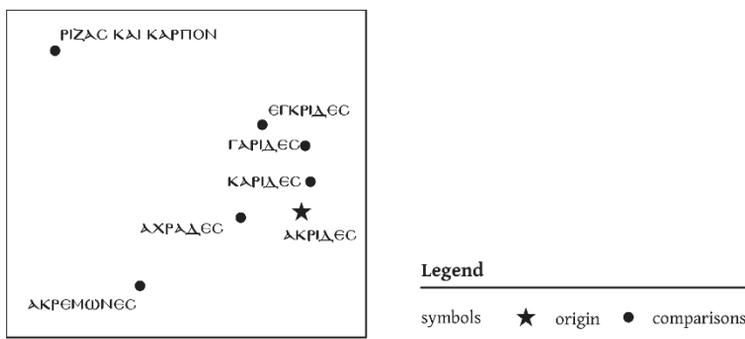
	$\lambda\kappa\rho\iota\delta\epsilon\varsigma$ και $\mu\epsilon\lambda\iota$	$\kappa\alpha\rho\iota\delta\epsilon\varsigma$ και $\mu\epsilon\lambda\iota$	$\epsilon\gamma\kappa\rho\iota\delta\epsilon\varsigma$ και $\mu\epsilon\lambda\iota$	$\gamma\alpha\rho\iota\delta\epsilon\varsigma$ και $\mu\epsilon\lambda\iota$	$\lambda\chi\rho\alpha\delta\epsilon\varsigma$ και $\mu\epsilon\lambda\iota$	$\lambda\kappa\rho\epsilon\mu\omega\eta\eta\epsilon\varsigma$ και $\mu\epsilon\lambda\iota$	$\rho\iota\upsilon\alpha\varsigma$ και $\kappa\alpha\rho\iota\omicron\upsilon\eta$
$\lambda\kappa\rho\iota\delta\epsilon\varsigma$ και $\mu\epsilon\lambda\iota$	0	1	2	2	2	4	7.105
$\kappa\alpha\rho\iota\delta\epsilon\varsigma$ και $\mu\epsilon\lambda\iota$	1	0	3	1	3	5	7.105
$\epsilon\gamma\kappa\rho\iota\delta\epsilon\varsigma$ και $\mu\epsilon\lambda\iota$	2	3	0	2	4	6	7.188
$\gamma\alpha\rho\iota\delta\epsilon\varsigma$ και $\mu\epsilon\lambda\iota$	2	1	2	0	3	6	6.188
$\lambda\chi\rho\alpha\delta\epsilon\varsigma$ και $\mu\epsilon\lambda\iota$	2	3	4	3	0	5	7.155
$\lambda\kappa\rho\epsilon\mu\omega\eta\eta\epsilon\varsigma$ και $\mu\epsilon\lambda\iota$	4	5	6	6	5	0	9.135
$\rho\iota\upsilon\alpha\varsigma$ και $\kappa\alpha\rho\iota\omicron\upsilon\eta$	7.105	7.105	7.188	6.188	7.155	9.135	0

This experimental analysis could be taken one step further. From the x,y plot in Figure 8 a general understanding of the clustering and grouping of the conjectures can be gained. However, the specific confusion distances for a particular conjecture, (a single column in the distance matrix) can also be visualised simultaneously.

In this way, the structure in proximity can be equated for individual conjectures. For that purpose, I applied the Natural Neighbor tool within ArcGIS 10.5, which interpolates a raster surface

based on the weighted confusion distances with a particular conjecture-and repeated this for each column.

From the results (Figure 9) it can be observed that a palaeographic confusion of ΡΙΖΑΣ ΚΑΙ ΚΑΡΠΙΟΝ (cj12987 – *root and fruit*) with either of the other conjectures is unlikely. This can also be concluded from the results of the proximity analysis, which are definitely different than the results for the other conjectures and also from the distances with all other conjectures. A similar conclusion could be drawn for ΑΚΡΕΜΩΝΕΣ (cj13821 – *crops*), but one should observe the majority of other conjectures is less distant than in the case of ΡΙΖΑΣ ΚΑΙ ΚΑΡΠΙΟΝ. In other words, if a choice had to be made between ΑΚΡΕΜΩΝΕΣ ΟΡ ΡΙΖΑΣ ΚΑΙ ΚΑΡΠΙΟΝ, the first deems to be more likely the consequence of palaeographic confusion.



NA28: ἀκριδες καὶ μέλι

Figure 8. MDS visualization of conjectures on AKPIΔΕΣ.

The results of the proximity analyses for ΑΚΡΙΑΕΣ (NA28 – *locusts*), ΑΧΡΑΔΕΣ (cj11183 – *wild pears*), and ΚΑΡΙΑΕΣ (cj11182 - *coconuts*) are most equivalent in their graphical visualization. From this it can be concluded that in these three cases the mutual confusion distances between the different conjectures show significant correspondence. Likewise, ΓΑΡΙΑΕΣ (cj\* - *shrimps, sea crabs*) and ΕΓΚΡΙΑΕΣ (cj10147 - *cake*) are correlated.

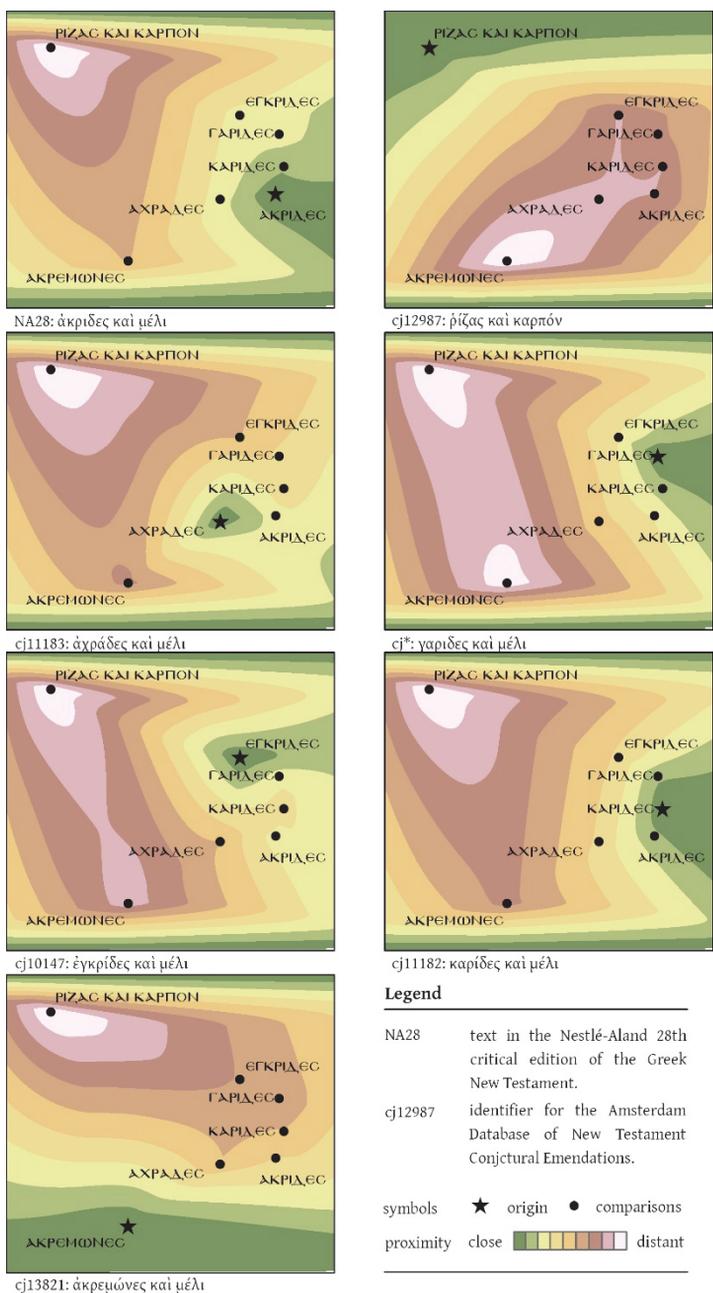


Figure 9. Proximity analysis of individual conjectures.

In the end, a conjecture cannot be discarded based solely on this analysis, since these results need to be interpreted with caution (the results of MDS remain an approximation), and other considerations and arguments such as semantics, grammar, phonetics or even geography might add weight to the probability of a particular conjecture. For instance, although a palaeographic confusion with ΓΑΡΙΑΕC (shrimps, sea crabs) might be probable, the suggestion does not fit the geographical setting of the narrative. However, this analysis is helpful to discern grouping and clustering in the data and stimulates reasoning about lineages between the conjectures. This provides another perspective to the domain of conjectural criticism.

#### 6.4.2 Case study 2: Judea in the table of nations in Acts 2:9-11

A second example of an intrinsic difficulty in interpretation of a New Testament text which led to a vast amount of discussion and numerous conjectures can be found in the list of nations in Acts 2:9-11:<sup>59</sup>

<sup>9</sup>Parthians and Medes and Elamites and residents of Mesopotamia, Judea and Cappadocia, Pontus and Asia, <sup>10</sup>Phrygia and Pamphylia, Egypt and the parts of Libya belonging to Cyrene, and visitors from Rome, <sup>11</sup>both Jews and proselytes, Cretans and Arabians—we hear them telling in our own tongues the mighty works of God.

(Acts 2:9-11, ESV)

Mapping these locations results in Figure 10:

---

<sup>59</sup> The geographical scope is rather exceptional for conjectures. I will use it as an extra dimension in my analyses.

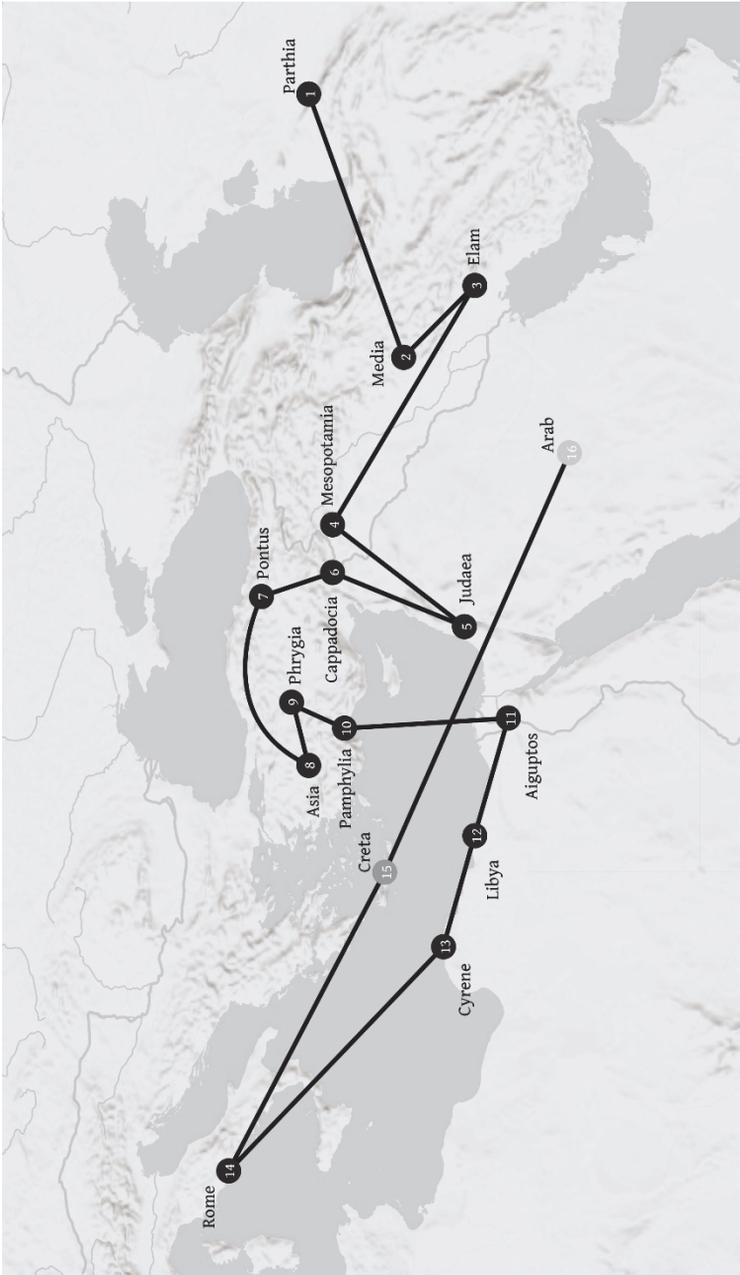


Figure 10. Geographical structure of Acts 2:9-11.



Figure 11. Alternative locations to Judea.<sup>60</sup>

Several scholars observed three difficulties in this text which led them to question the authenticity of the toponym Judea. For the moment, I will only briefly summarize these issues to provide a basic understanding of the context:<sup>61</sup> (1) the reference to Judea and hence Jews in verse 9 seems a bit awkward since the list refers to Jews anyway;<sup>62</sup> (2) the reference to Judea does not fit very well in the geographical arrangement<sup>63</sup> between Mesopotamia in the east and Cappadocia in the north;<sup>64</sup> and (3) the Greek word *ΙΟΥΔΑΙΑΝ* (*Judea*) might be regarded as an adjective, not as a noun and therefore does not fit the grammatical function in the sentence.<sup>65</sup>

To solve these difficulties, several critics proposed to exchange Judea for an alternative location. To date, at least eighteen<sup>66</sup> alternative geographical locations have been suggested: Cilicia, Armenia, Ida (a mountain range on Crete), Iounaia, Ionia, Yaudi, Iberia, Bithynia, Adiabene, Aramea, Idumea, Lydia, Gordyaa, Lycia, Galatia, Gallia, India, and Syria.<sup>67</sup> These locations are mapped in Figure 11.

---

<sup>60</sup> The cj-numbers refer to the corresponding entries in the ADNTCE.

<sup>61</sup> A more detailed discussion is provided in chapter seven.

<sup>62</sup> Bruce M. Metzger, "Ancient Astrological Geography and Acts 2:9-11," in *Apostolic History and the Gospel: Biblical and Historical Essays Presented to F. F. Bruce on His 60th Birthday*, ed. W. Ward Gasque and Ralph P. Martin (Exeter: Paternoster, 1970), 123-33; F.F. Bruce, *The Book of the Acts*, rev. ed., NICNT (Grand Rapids, MI: Eerdmans, 1988); Witherington, *Acts*.

<sup>63</sup> C.K. Barrett, *A Critical and Exegetical Commentary on the Acts of the Apostles, Vol. 1*, ICC, ed. J.A. Emerton, C.E.B. Cranfield, and G.N. Stanton (Edinburgh: Clark, 1994).

<sup>64</sup> E.F.F. Bishop, "Professor Burkitt and the Geographical Catalogue," *JRS* 42.1-2 (1952): 1952, <https://doi.org/10.2307/297518>; Metzger, "Ancient Astrological Geography and Acts 2:9-11"; Witherington, *Acts*.

<sup>65</sup> Metzger, "Ancient Astrological Geography and Acts 2:9-11"; Barrett, *Acts, Vol. 1*; Bruce, *Acts*.

<sup>66</sup> *Syria and Judean Syria* are counted as a single emendation.

<sup>67</sup> The Greek conjectures are: Κιλικίαν, Ἀρμενίαν, Ἰδαίαν, Ἰουναίαν, Ἰωνίαν, Ἰβηρίαν, Βιθυνίαν, Ἀδιαβαίαν, Ἀραμαίαν, Ἰδουμαίαν, Λυδίαν, Γορδυαίαν, Λυκίαν, Γαλατίαν, Γαλλίαν, Ἰνδίαν, Συρίαν.

Since “ancient and modern times no one conjecture has proved generally acceptable”,<sup>68</sup> and therefore I will use this case to test my methodology. First, I calculated the palaeographic confusion distance and created a distance matrix for the array of conjectures.<sup>69</sup> These results are reflected in Table 5 on page 84. Next, using classical Multi-Dimensional Scaling, I created Figure 12 from the distance matrix. This representation gives an approximation of the palaeographic distances among the conjectures and the reading found in NA28.

Finally, instead of applying the same visualization techniques I used for representing the palaeographic confusion distances for John the Baptist’s food (Figure 9); I took advantage of the geographical character of these conjectures to experiment with multi-criteria-evaluation (MCE).

In this experiment, I used the geographical locations and added the palaeographic confusion distance with  $\text{IOYΔAJAN}$  (*Judea*) as an attribute. Next, I used the Natural Neighbor tool in ArcGIS 10.5 to create a palaeographic confusion raster – an interpolated continuous surface based on the weighted confusion distances of each toponym with Judea. Finally, I created a visualisation which displays the geographical data on top of the palaeographic confusion raster, and also added the original geographical arrangement which is found in Acts 2:9-11 (Figure 13). This representation can be used to simultaneously evaluate the probability of the conjectures against the criteria of (1) palaeographic confusion and (2) geographical arrangement.

As illustrated in Figure 13, the proposed conjectures are widely dispersed. Several conjectures are more likely in respect of palaeographic confusion (for example  $\text{IAAJAN}$  [*Ida*],  $\text{INAJAN}$  [*India*]

---

<sup>68</sup> Kilpatrick, “Conjectural Emendation in the New Testament,” 351.

<sup>69</sup> Yaudi was excluded from this analysis as it presupposes a Hebrew transliteration which would cause bias in the results for all Greek conjectures, see note 77 on page 103.

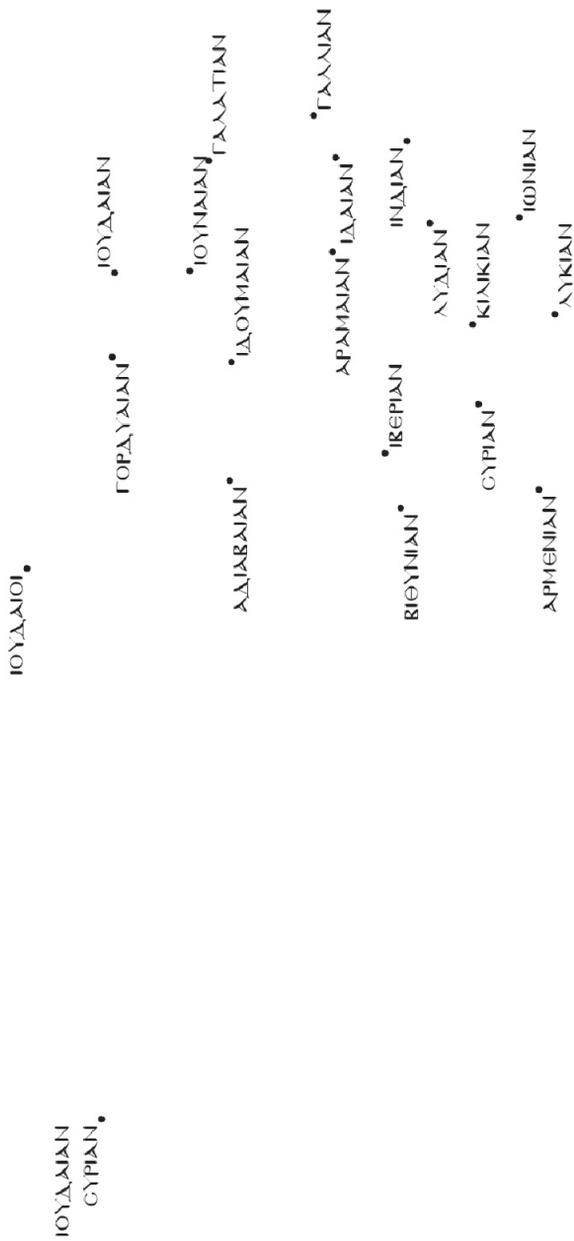


Figure 12. Palaeographic confusion distances for Judea.

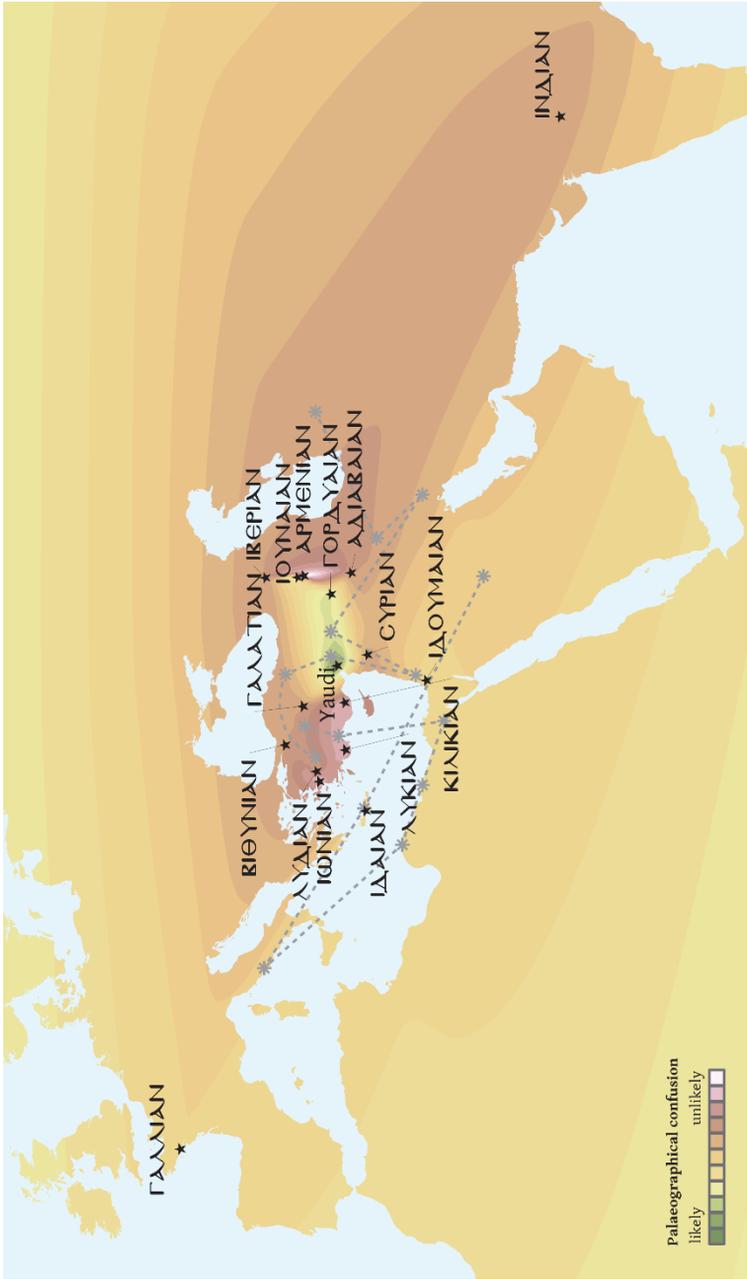


Figure 13. Palaeographic confusion imposed on geography.

Table 5. Confusion distances for alternatives to Judea.

	ΙΟΥΔΑΙΑΝ	ΙΔΟΥΜΑΙΑΝ	ΛΥΔΙΑΝ	ΙΝΔΙΑΝ	ΓΟΡΔΥΑΙΑΝ	ΚΙΝΚΙΑΝ	ΑΡΜΕΝΙΑΝ	ΒΙΘΥΝΙΑΝ	ΚΥΡΙΑΝ
ΙΟΥΔΑΙΑΝ	0	2.000	3.000	3.000	1.083	4.050	5.000	3.010	3.010
ΙΔΟΥΜΑΙΑΝ	2.000	0	3.020	3.060	3.083	4.060	4.060	3.060	4.010
ΛΥΔΙΑΝ	3.000	3.020	0	2.000	3.020	3.050	3.060	4.000	2.000
ΙΝΔΙΑΝ	3.000	3.060	2.000	0	4.033	2.025	3.100	4.000	3.000
ΓΟΡΔΥΑΙΑΝ	1.083	3.083	3.020	4.033	0	3.110	5.000	4.043	3.110
ΚΙΝΚΙΑΝ	4.050	4.060	3.050	2.025	3.110	0	4.050	3.050	3.100
ΑΡΜΕΝΙΑΝ	5.000	4.060	3.060	3.100	5.000	4.050	0	3.050	4.050
ΒΙΘΥΝΙΑΝ	3.010	3.060	4.000	4.000	4.043	3.050	3.050	0	3.010
ΚΥΡΙΑΝ	3.010	4.010	2.000	3.000	3.110	3.100	4.050	3.010	0
ΑΔΙΑΒΑΙΑΝ	3.060	4.000	3.070	3.060	3.060	4.010	4.050	5.000	5.050
ΑΡΑΜΑΙΑΝ	3.060	3.010	2.070	2.110	3.010	3.060	3.000	4.050	4.050
ΛΥΚΙΑΝ	4.000	4.010	1.000	3.000	4.010	2.050	3.060	4.000	2.000
ΓΑΛΛΑΤΙΑΝ	3.043	4.043	3.020	2.076	3.043	4.000	5.000	5.000	5.000
ΓΑΛΛΙΑΝ	2.053	3.053	2.020	1.076	3.020	3.043	3.066	3.066	4.000
ΙΘΝΙΑΝ	4.000	4.050	3.000	2.000	5.033	3.025	3.050	3.000	3.000
ΙΒΕΡΙΑΝ	3.060	3.060	4.000	3.000	4.043	4.000	3.050	2.060	3.000
ΙΟΥΔΑΙΑΝ ΚΥΡΙΑΝ	6.000	7.100	8.070	9.000	5.133	8.060	7.110	8.010	8.000
ΙΟΥΔΑΙΟΙ	2.000	4.000	5.000	5.000	3.083	6.050	7.000	5.010	5.010
ΙΔΑΙΑΝ	2.000	3.000	2.010	1.010	3.033	3.010	4.050	4.000	3.000
ΙΟΥΝΑΙΑΝ	1.000	1.050	3.010	2.010	2.083	3.075	4.050	2.010	3.010

and ΓΑΛΛΙΑΝ [*Gallia*]), but these should be discarded because they violate the geographical arrangement. Other conjectures better suit the geographical arrangement but are less likely the result of a palaeographic confusion (such as ΙΒΕΡΙΑΝ [*Iberia*], ΑΡΜΕΝΙΑΝ [*Armenia*] and ΑΔΙΑΒΑΙΑΝ [*Adiabaia*]).

Although the method does not provide conclusive results, as a

(Table 5 continued)

ΑΔΙΑΡΙΑΝ	ΑΡΑΜΑΙΑΝ	ΛΥΚΙΑΝ	ΓΑΛΑΤΙΑΝ	ΓΑΛΛΙΑΝ	ΙΟΝΙΑΝ	ΙΒΗΡΙΑΝ	ΙΟΥΔΑΙΑΝ	ΚΥΡΙΑΝ	ΚΑΡΙΑΝ	ΙΟΥΝΙΑΝ
3.060	3.060	4.000	3.043	2.053	4.000	3.060	6.000	2.000	2.000	1.000
4.000	3.010	4.010	4.043	3.053	4.050	3.060	7.100	4.000	3.000	1.050
3.070	2.070	1.000	3.020	2.020	3.000	4.000	8.070	5.000	2.010	3.010
3.060	2.110	3.000	2.076	1.076	2.000	3.000	9.000	5.000	1.010	2.010
3.060	3.010	4.010	3.043	3.020	5.033	4.043	5.133	3.083	3.033	2.083
4.010	3.060	2.050	4.000	3.043	3.025	4.000	8.060	6.050	3.010	3.075
4.050	3.000	3.060	5.000	3.066	3.050	3.050	7.110	7.000	4.050	4.050
5.000	4.050	4.000	5.000	3.066	3.000	2.060	8.010	5.010	4.000	2.010
5.050	4.050	2.000	5.000	4.000	3.000	3.000	8.000	5.010	3.000	3.010
0	2.050	4.060	4.010	3.030	5.000	5.000	7.020	5.060	3.010	4.050
2.050	0	3.060	3.033	2.043	3.100	4.050	7.100	5.060	2.060	3.050
4.060	3.060	0	4.000	3.010	3.000	4.000	9.010	6.000	3.000	4.000
4.010	3.033	4.000	0	1.010	3.066	4.033	6.086	5.043	2.043	3.066
3.030	2.043	3.010	1.010	0	1.083	3.033	7.063	4.053	1.053	2.076
5.000	3.100	3.000	3.066	1.083	0	3.000	9.000	6.000	2.000	3.000
5.000	4.050	4.000	4.033	3.033	3.000	0	8.010	5.060	3.000	3.060
7.020	7.100	9.010	6.086	7.063	9.000	8.010	0	6.010	8.000	7.000
5.060	5.060	6.000	5.043	4.053	6.000	5.060	6.010	0	4.000	3.000
3.010	2.060	3.000	2.043	1.053	2.000	3.000	8.000	4.000	0	3.000
4.050	3.050	4.000	3.066	2.076	3.000	3.060	7.000	3.000	3.000	0

preliminary result ΓΟΡΔΥΑΙΑΝ (*Gorduaia*) or ΙΟΥΝΑΙΑΝ (*Iounaia*) provide the best fit to both geographical and palaeographic criteria. To settle the issue – and it is doubtful if this even can be done – would require weighing more criteria. However, the suitability of spatial analysis and multi-criteria evaluation as an approach to evaluate the probability of conjectures in more detail was demonstrated within the context of this study.

## 6.5 Discussion

As can be seen from the results of both case studies, the method proposed in this chapter provides a new approach to weighing the probability of palaeographic confusion for conjectural emendations. Furthermore, when spatial analyses are applied to these results, patterns and correlations can be made visible that otherwise remain hidden in the data. This can be observed specifically in the results of the first case study on the food of John the Baptist.

It should be noted, however, that although MDS has a certain potential to spatialize relationships of non-spatial phenomena for subsequent visualization and analysis, no objectively repeatable results will be generated. This is mainly due to the fact that MDS gives an approximation of the higher dimensional “distances” of phenomena in a lower dimensional space.

Conversely, the method offers two opportunities to reduce the subjectivity. First, this approach unlocks a new tool set that makes quantitative analysis possible. Second, it enables the researcher to literally visualize connections in the data, thus providing insight into indirect kinships of phenomena. This distinguishes the tool from being a mere heuristic exercise. Though the tool provides insights which can be achieved by, for instance, philological observation, its additional benefit is that it visualizes implicit relationships, which are not easily perceived from the raw data themselves, especially in the case of larger datasets. Beside these general remarks I will elaborate on the potential and limitations of my approach and point at further research for both the algorithm and the spatial analyses.

### 6.5.1 Confusion distances algorithm

My expansion of the Levenshtein-distance with three operators and the implementation in Python where specific distances can be calculated for specific letter combinations, has proven to be a valuable tool in providing more insights into the relations between

different conjectures. Furthermore, the algorithm can be applied in other domains. In this chapter an application for Greek texts was developed, but such palaeographic confusion distances can be determined as well for other ancient or modern scripts, for example, Latin or Hebrew. Moreover, the algorithm is generic in another way: it could be used equally well to calculate the probability of typing errors or phonetic confusion. The only requirement for such an application is to have an expert from the discipline to design the specific confusion table.

The current implementation, however, also has limitations in the way it simulates palaeographic confusion. Palaeographic errors that could occur while copying texts are not fully covered by the six implemented operators, and the algorithm could be refined by taking *haplography*, *dittography*, *compendia*, and abbreviations (including *nomina sacra*) into account as well.<sup>70</sup>

Besides this finetuning of the algorithm, the confusion distance table (Table 18 on page 249) could be refined by calculating frequency statistics on the occurrence of character combinations in textual variants.

### 6.5.2 Spatial analysis

Despite its exploratory nature, the application of spatial analysis and visualisation techniques offer fundamental insights into the (im) probability of textual variants based on palaeographic confusion. Based on these analyses, palaeographic relationships between

---

<sup>70</sup> *Haplography* is the omission of a letter or word usually due to a similar letter or word in context. *Dittography* is a duplication of a letter or word. *Compendia* or ligatures are monograms created from a combination of two (or more) alphabetic characters. *Nomina sacra* are a collection of words written in special abbreviated forms in Christian sources, for example, ΘΣ = θεός, ΧΣ = χριστός, and ΚΣ = κύριος. This list is far from comprehensive and also neglects other factors which have been of influence in the copying process. For an introduction on scribal habits, the article by Royse might be consulted, see James R. Royse, “Scribal Tendencies in the Transmission of the Text of the New Testament,” in *The Text of the New Testament in Contemporary Research: Essays on the Status Quaestionis*, ed. Bart D. Ehrman and Michael William Holmes, 2nd ed., NTTSD 42 (Leiden: Brill, 2013), 461–78.

conjectures and textual variants can be traced. From the experiments, spatial visualisation and analysis have proven to be helpful literally to “look” at the reciprocal proximity of the several proposals.

However, the study only scratched the surface of spatial analyses for this application since these activities were solely restricted to visualization of proximity relationships between textual variants based on palaeographic confusion distances. As has been argued above, several criteria to distinguish unlikely from likely readings should be taken into account. In future work, the potential of GIS could be used for more sophisticated multi-criteria evaluation (such as semantics, grammar, palaeography, phonetics, and even geography) to identify more suitable textual variants. GIS has proven itself to be useful for this kind of analysis in other fields such as land use suitability assessment. Application of this type of analyses, however, requires standardization and quantification of qualitative data. While not impossible, careful consideration is needed to translate the data to appropriate scales of measurement.

In chapter eight, I will use and extend the *confusion distance* algorithm to see whether it can identify a fitting toponym to emend the text in Acts 2:9 on the assumption that the text could be corrupted due to palaeographical confusion. But first I will give an overview in chapter seven of the emendations which have already been proposed during history.

# 7

## ΙΟΥΔΑΙΑΝ IN ACTS 2:9: A DIACHRONIC OVERVIEW OF ITS CONJECTURED EMENDATIONS

The appearance of Ἰουδαίαν in the table of nations (Acts 2:9-11) has troubled interpreters for centuries.<sup>1</sup> Several scholars have proposed to emend the text. The argumentation for such conjectures varies in elaboration and support. This chapter gives a diachronic overview of the conjectured emendations. It concludes with an evaluation of the discussion from a phenomenological perspective and a summary of the used argumentation, thereby providing input for a reversed engineering approach to the issue (chapter eight).

### 7.1 Introduction

In the context of the Pentecost story (Acts 2:1-13), the author mentions a list of nations, inhabitants of which miraculously hear the apostles speak in their own language. Over the centuries, this list gave rise to a vast amount of discussion.<sup>2</sup> Especially Ἰουδαίαν in 2:9 has been regarded as intrinsically difficult on the basis of three

---

<sup>1</sup> This chapter is based on Vincent van Altena et al., “Ἰουδαίαν in Acts 2:9: A Diachronic Overview of Its Conjectured Emendations,” *OpTh* 6.1 (2020): 306–18, <https://doi.org/10.1515/opth-2020-0114>.

<sup>2</sup> The commentaries of Pervo and Keener could be consulted for a fuller discussion of the issues, Richard I. Pervo, *Acts: A Commentary*, ed. Harold W. Attridge, Herm (Minneapolis, MN: Fortress, 2009), 58–71; Keener, *Acts: Introduction and 1:1-2:47*, 1:335–51.

observations: (1) the reference to Judea and hence Jews hearing the apostles speak in their native tongue, seems awkward;<sup>3</sup> (2) the reference to Judea (v. 9) does not fit very well in the geographical arrangement<sup>4</sup> between Mesopotamia in the east and Cappadocia in the north<sup>5</sup> (Figure 14); and (3) Ἰουδαίαν should be regarded as an adjective.

The difficulties are not equally weighed by interpreters,<sup>6</sup> and diverse solutions have been offered. Literary connections with either Old Testament table of nation traditions (esp. Gen 10),<sup>7</sup> Old Testament prophecies like Isa 11:11, contemporary Jewish<sup>8</sup> and astrological<sup>9</sup> geographical lists have been suggested and debated. Furthermore, a background in contemporary classical geography

---

<sup>3</sup> Metzger, "Ancient Astrological Geography and Acts 2:9-11"; Bruce, *Acts*; Witherington, *Acts*.

<sup>4</sup> Barrett, *Acts*, Vol. 1.

<sup>5</sup> Bishop, "Burkitt," 1952; Metzger, "Ancient Astrological Geography and Acts 2:9-11"; Witherington, *Acts*.

<sup>6</sup> "Percellit utique, in exterarum gentium recensu legere et Iudaeos. ... Verum in fluxu orationis prolata haec sunt adeoque non ad vivum reseccanda..." [In any case it is strange to read also the Jews in the survey of the foreign peoples. ... But they are mentioned in the flow of the discourse and should not be taken in too strict a sense...], Joannes Henricus Heinrichs, *Novum Testamentum Graecae perpetua annotatione illustratum. Editionis Koppianae vol. III. part. I. complectens Acta Apostolorum Cap. I-XII* (Göttingen: Dieterich, 1809), 108.

<sup>7</sup> James M. Scott, "Luke's Geographical Horizon," in *The Book of Acts in Its Graeco-Roman Setting*, ed. David W. J. Gill and Conrad H. Gempf, vol. 2 of *The Book of Acts in Its First Century Setting* (Grand Rapids, MI: Eerdmans, 1994), 483-544.

<sup>8</sup> Ernst von Dobschütz, "Zu der Völkerliste Act. 2, 9-11," *ZWT* 45 (1902): 407-10; Barrett, *Acts*, Vol. 1.

<sup>9</sup> Stefan Weinstock, "The Geographical Catalogue in Acts II, 9-11," *JRS* 38.1-2 (1948): 43-46, <https://doi.org/10.2307/298169>; Bishop, "Burkitt."

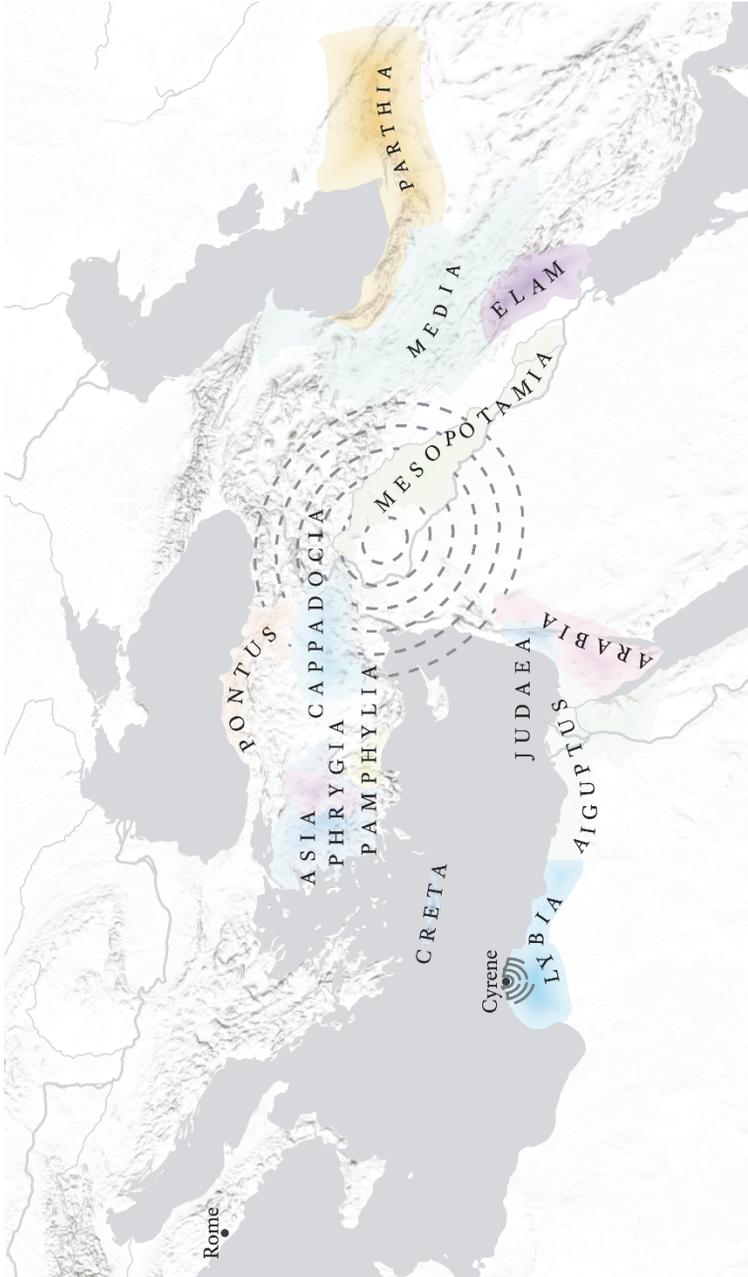


Figure 14. Geography of the list of nations in Acts 2:9-11.

(Strabo) has been discussed,<sup>10</sup> as well as the influence of the geographic viewpoint on Luke's programmatic perspective.<sup>11</sup> Wendt's suggestion that the Pentecost miracle presupposes a "new language" solves the problem but is as ingenious as it is speculative.<sup>12</sup>

Other interpreters tried to solve the difficulty by assuming a very early corruption in the transmission of the text. The next step, to speculate about an alternative location in exchange for Judea was easily made and a plethora of toponyms have been offered to emend the text. A partial overview of this discussion has been provided by Clemen, Hatch, and Metzger,<sup>13</sup> but the emendations proposed in the 20<sup>th</sup> and 21<sup>st</sup> century have not been discussed systematically.

This chapter presents the discussion to date by providing an overview of the proposed conjectures, including the corresponding considerations, argumentation and reception history in section 7.2. Section 7.3 concludes this chapter with an evaluation of the discussion from a phenomenological perspective and a summary of the used argumentation.

---

<sup>10</sup> Richard Bauckham, "James and the Jerusalem Church," in *The Book of Acts in Its Palestinian Setting*, ed. Richard Bauckham, vol. 4 of *The Book of Acts in Its First Century Setting* (Grand Rapids, MI: Eerdmans, 1995), 415–80. Van Houwelingen adopts this view in his commentary, P.H.R. van Houwelingen, *Apostelen: dragers van een spraakmakend evangelie*, CNT<sup>3</sup> (Kampen: Kok, 2010), 23.

<sup>11</sup> Kilpatrick, "Conjectural Emendation in the New Testament"; Gary Gilbert, "The List of Nations in Acts 2: Roman Propaganda and the Lukan Response," *JBL* 121.3 (2002): 497–529.

<sup>12</sup> Hans Hinrich Wendt, *Kritisch exegetisches Handbuch über die Apostelgeschichte*, 5th ed., KEK 3 (Göttingen: Vandenhoeck & Ruprecht, 1880), 85.

<sup>13</sup> Carl Clemen, "Die Zusammensetzung von Apg. 1–5," *TSK* 68.1 (1895): 318–19; William Henry Paine Hatch, "Zur Apostelgeschichte 2, 9," *ZNW* 9 (1908): 255–56; Bruce M. Metzger, *A Textual Commentary on the Greek New Testament. A Companion Volume to the United Bible Societies' Greek New Testament (Third Edition)*, 1st ed. (London: United Bible Societies, 1975), 293.

## 7.2 A history of conjectures on Ἰουδαίαν in Acts 2:9

The way interpreters have tried to emend the text of Acts 2:9 can be distinguished in three categories: (1) a change of grammatical function, (2) a correction to an assumed corruption of the text, and (3) by conjecture of a different toponym.

### 7.2.1 Ἰουδαίαν as an adjective

It has been proposed to interpret the grammatical function of Ἰουδαίαν as an adjective. This proposal poses the question to which toponym it should be attached. In 1858, Heinrich Ewald, a German orientalist, Protestant theologian, and Biblical exegete, evaluates Ἰουδαίαν as “völlig unpassend” in the geographic arrangement since he expects “das große Syrien” in the enumeration. He suggests Συρίαν might have been omitted during textual transmission.<sup>14</sup> According to Ewald, the text should be restored to Ἰουδαίαν Συρίαν. He reaffirmed his position in 1872, now adding the error is Luke’s who was unable to finish his work.<sup>15</sup> Both Meyer and Wendt rejected this conjecture.<sup>16</sup> However, a similar case is made by Martin Hengel, who interprets Ἰουδαίαν as Greater Judea, which can be identified with Syria.<sup>17</sup>

Adolf Hilgenfeld (1895) also took Ἰουδαίαν as an adjective.<sup>18</sup> He attached it however to Μεσσοποταμίαν Ἰουδαίαν. Sahlin supported this proposal but wrongly attributed it to Von Harnack.<sup>19</sup> Metzger

---

<sup>14</sup> Heinrich Ewald, *Geschichte des apostolischen Zeitalters bis zur Zerstörung Jerusalem’s* (Göttingen: Dieterich, 1858), 120.

<sup>15</sup> Heinrich Ewald, *Die drei ersten Evangelien und die Apostelgeschichte übersetzt und erklärt. Zweite, vollständige Ausgabe. Zweite Hälfte* (Göttingen: Dieterich, 1872), 67–68.

<sup>16</sup> Heinrich August Wilhelm Meyer, *Kritisch-exegetisches Handbuch über die Apostelgeschichte*, 3rd ed., KEK 3 (Göttingen: Vandenhoeck & Ruprecht, 1861), 59; Wendt, *Apostelgeschichte*, 66.

<sup>17</sup> Martin Hengel, “Ἰουδαία in the Geographical List of Acts 2:9–11 and Syria as ‘Greater Judea,’” *BBR* 10.2 (2000): 161–80.

<sup>18</sup> Adolf Hilgenfeld, “Die Apostelgeschichte nach ihren Quellenschriften untersucht,” *ZWT* 38 (1895): 94–95.

<sup>19</sup> Harald Sahlin, “Emendationsvorschläge zum griechischen Text des Neuen Testaments II,” *NovT* 24.2 (1982): 181.

rebutted the idea since it is not clear to him “why Mesopotamia should deserve to be called ‘Judean’.”<sup>20</sup>

### 7.2.2 When in doubt, leave it out

Of the many solutions to the interpretive problem of Ἰουδαίαν in Acts 2:9, the remedy to regard it as a later inclusion<sup>21</sup> or a very early corruption<sup>22</sup> of the text for which we are not able to identify the original has been widely discussed. The idea to regard it as a corruption was introduced by the English theologian, historian, and mathematician William Whiston (1746); although an early citation in Theophylact (1097) might hint in its direction.<sup>23</sup> This line of reasoning stems from the observation that a certain geographical clustering can be perceived in the enumeration of countries and peoples if Ἰουδαίαν is left out.<sup>24</sup> The view has been

---

<sup>20</sup> Metzger, “Ancient Astrological Geography and Acts 2:9-11,” 123.

<sup>21</sup> Compare Rovers: “Onzes inziens is het niet onwaarschijnlijk, dat Cappadocië oorspronkelijk op Mesopotamië volgde en Ἰουδαίαν in den tekst gevoegd werd door iemand, die zich ergerde, dat onder al de opgenoemde volken de bewoners van Judea vergeten waren.” Marinus Anne Nicolaas Rovers, *Submission to “Prijsvraag G 94: een verhandeling over de toepassing van de conjecturaal-kritiek op den tekst van de schriften des Nieuwen Testaments (1877)”*, ATS 1257 (Haarlem: Archief Teylers Stichting, 1879), 200.

<sup>22</sup> Johannes Marinus Simon Baljon, *Novum Testamentum Graece. Praesertim in usum studiosorum recognovit et brevibus annotationibus instruxit* (Groningen: Wolters, 1898), 323; Paul Wilhelm Schmiedel, “Pfungsterzählung und Pfungstereignis,” *PM* 24 (1920): 73–86.

<sup>23</sup> William Whiston, *The Sacred History from the Beginning of the World 'till the Days of Constantine; Part the Second. Or, the Times of the New Testament. Containing, a General Ecclesiastical History, from the Nativity of Our Blessed Saviour, to the First Establishment of Christianity by Human Laws, under the Emperor Constantine the Great. Including the Interval of 317 Years* (London: s.n., 1746), V:290. Cf. Theophylact of Ohrid, “Ex S. Joannis Chrysostomi exegeticis et nonnullorum patrum expositiones in Acta Apostolorum concise ac breviter collectae a ...,” in *Opera quae reperiri potuerunt omnia*, ed. Jacques-Paul Migne, PG 125 (Paris: Migne, 1864) c. 536B.

<sup>24</sup> Samuel Thomas Bloomfield, *Ἡ Καινή Διαθήκη. The Greek Testament, with English Notes, Critical, Philological, and Exegetical*, 1st ed. (Cambridge: Smith, 1832), 1:447.

reinvented twice<sup>25</sup> and has been equally opposed<sup>26</sup> as advocated.<sup>27</sup> Among its advocates it finds Richard Pervo.<sup>28</sup>

Pervo's other option, to mark the spot with a blank space, indicating that the original cannot be identified with reasonable certainty, resonates the opinion of Johannes Marinus Simon Baljon (1898), who was familiar with the readings Συριαν, Αρμενιαν, Βιθυνιαν, Ιδουμαιαν and Ποντον τε και Ασιαν and their originators. Ultimately, Baljon regarded Ἰουδαίαν as a corruption. He did not adopt any of the offered emendations.<sup>29</sup>

---

<sup>25</sup> Samuel Thomas Bloomfield, *Ἡ Καινὴ Διαθήκη. The Greek Testament, with English Notes, Critical, Philological, and Exegetical. Second Edition, Corrected, Greatly Enlarged, and Considerably Improved* (London: Longman, Rees & Co., 1836), 1:447; Weinstock, "Acts II, 9–11," 46. In the second edition Bloomfield supports another conjecture.

<sup>26</sup> Christianus Theophilus Kuinoel, *Commentarius in libros Novi Testamenti historicos.*, vol. IV of *Acta Apostolorum* (Leipzig: Barth, 1818), 60–61; Hermann Olshausen, *Biblischer Commentar über sämtliche Schriften des Neuen Testaments zunächst für Prediger und Studierende. Zweiter Band. Das Evangelium des Johannes, die Leidensgeschichte und die Apostelgeschichte enthaltend* (Königsberg: Unzer, 1832), 583–84; Granville Penn, *Annotations to the Book of the New Covenant: With an Expository Preface* (London: Duncan, 1837), 295; von Dobschütz, "Act. 2, 9–11," 407–10; Wendt, *Apostelgeschichte*, 85; Gustav Hoennicke, *Die Apostelgeschichte* (Leipzig: Quelle & Meyer, 1913), 30; James Hardy Ropes, *The Beginnings of Christianity. Part I. The Acts of the Apostles. Vol. III. The Text of Acts* (London: Macmillan, 1926), 3:14; Bishop, "Burkitt," 84–85; Metzger, *TC*<sup>1</sup>, 293.

<sup>27</sup> William Bowyer, *Conjectures on the New Testament, Collected from Various Authors, as Well in Regard to Words as Pointing: With the Reasons on Which Both Are Founded*, 2nd ed. (London: Nichols, 1772), 129; Jan Hendrik Adolf Michelsen, *Submission to "Prijsvraag G 94: een verhandeling over de toepassing van de conjecturaal-kritiek op den tekst van de schriften des Nieuwen Testaments (1877)"*, ATS 1258 (Haarlem: Archief Teylers Stichting, 1879), II–14; Rovers, *Submission to Prijsvraag*, 200; Adolf von Harnack, *Die Apostelgeschichte*, Beiträge zur Einleitung in das Neue Testament 3 (Leipzig: Hinrichs, 1908), 65–66; Erwin Preuschen, *Die Apostelgeschichte*, vol. 1 of *HNT* 4 (Tübingen: Mohr, 1912), 12; Julius Wellhausen, *Kritische Analyse der Apostelgeschichte*, AGW.PH NF 15.2 (Berlin: Weidmannsche Buchhandlung, 1914), 4; Alfred Firmin Loisy, *Les Actes des Apôtres* (Paris: Nourry, 1920), 190–91; Charles Stephen Conway Williams, *A Commentary on the Acts of the Apostles*, BNTC, ed. Henry Chadwick (New York, NY: Harper & Row, 1957), 65; Ernst Haenchen, *Die Apostelgeschichte. Neu übersetzt und erklärt. 7., durchgesehene und verbesserte Auflage dieser Neuauslegung*, 16th ed., KEK 3 (Göttingen: Vandenhoeck & Ruprecht, 1977), 173; Pervo, *Acts*, 67.

<sup>28</sup> Pervo, *Acts*, 67.

<sup>29</sup> Baljon, *NTG*.

### 7.2.3 Conjectured emendations

One of the earliest proposals to substitute Ἰουδαίαν with another toponym might be found in a writing of Aurelius Augustine (397).<sup>30</sup> He quoted Acts 2:9 with Ἀρμενίαν, but there is no accompanying remark. Although Tertullian (*Adv. Jud.* 7.4) cited the bible verse in a similar way, Augustine's solution did not convince many.<sup>31</sup>

Some 15 years later, in 410, Jerome cited Acts 2:7–11 in his commentary on Isa 4:11.<sup>32</sup> In his citation Ἰουδαίαν was substituted with Συρίαν. There is no discussion of the reading and therefore it is debatable whether it should be regarded as a proper conjecture.

---

<sup>30</sup> Aurelius Augustine, "Contra epistulam quam vocant fundamenti," in *De utilitate credendi, de duabus animabus, contra Fortunatum, contra Adimantum, contra epistulam fundamenti, contra Faustum*, vol. 1 of CSEL 25, ed. Joseph Zycha (Vienna: Tempsky, 1891), 204.

<sup>31</sup> Stephen Weston is the only known example in favour, see William Bowyer and John Nichols, *Critical Conjectures and Observations on the New Testament, Collected from Various Authors, as Well in Regard to Words as Pointing: With the Reasons on Which Both Are Founded*, 4th ed. (London: Nichols, 1812), 339. Pervo, Acts, 67 regards "Armenia" the strongest conjectural alternative, though he prefers omission or corruption of the text. It is being rejected by many others, though without much argumentation, see Johann Albrecht Bengel, *Gnomon Novi Testamenti, in quo ex nativa verborum vi simplicitas, profunditas, concinnitas, salubritas sensuum coelestium indicatur*, 1st ed. (Tübingen: Schramm, 1742), 417b–18; Jodocus Heringa, *Vertoog over het vereischt gebruik, en hedendaegsch misbruik der kritiek, in de behandeling der heilige Schriften*, VGVCG (Amsterdam: Allart, van der Aa & Scheurleer, 1793), 471; Heinrichs, *NTG* 3.1, 108; Kuinoel, *Commentarius in libros Novi Testamenti historicos.*, 60; Olshausen, *Commentar* 2, 583–84; Meyer, *Apostelgeschichte*, 59; Michelsen, *Submission to Prijsvraag*, II–14; Wendt, *Apostelgeschichte*, 66; Willem Christiaan van Manen, *Conjecturaal-kritiek toegepast op den tekst van de Schriften des Nieuwen Testaments*, VRNGG n.s. 9.1 (Haarlem: Bohn, 1880), 231; Baljon, *NTG*, 323; Hatch, "Apostelgeschichte 2, 9," 255; Preuschen, *Apostelgeschichte*, 12; Hoennicke, *Apostelgeschichte*, 30; Theodor Zahn, *Die Herausgabe der Apostelgeschichte des Lucas*, FGnKaL 9 (Leipzig: Deichert, 1916), 134–35; Theodor Zahn, *Die Apostelgeschichte des Lucas: Erste Hälfte Kap. 1–12*, KNT 5 (Leipzig: Deichert, 1919), 87–89; Ropes, *Beginnings*, 3:14; Metzger, *TC*<sup>1</sup>, 293.

<sup>32</sup> Jerome, *Commentariorum in Esaiam libri I–XI*, ed. Marcus Adriaen, CCSL 73 (Turnhout: Brepols, 1963), 155.

Baljon<sup>33</sup> and Blass<sup>34</sup> lend some support to it, but do not seem very confident. Opponents simply advocate omission<sup>35</sup> or prefer different conjectures.<sup>36</sup>

The German philologist and writer, Caspar Barthius, proposed Ἰδουμαίαν in 1624. Since the narrative is located in Judaea it seems redundant to explicitly mention Jews in the enumeration of countries.

He therefore proposes to read Ἰδουμαίαν. Support for this conjecture can be found in Josephus and Pliny who distinguish Ἰδουμαία as a separate region from Palestine. Further support might be found in Stephanus who calls the Idumeans Ἐβραίων ἔθνος.<sup>37</sup>

This suggestion was reinvented in 1720 by Richard Bentley<sup>38</sup> and once again by Otto Lagercrantz in 1910.<sup>39</sup> A few scholars were in

---

<sup>33</sup> Baljon, *NTG*, 52.

<sup>34</sup> Friedrich Blass, *Acta apostolorum sive Lucae ad Theophilum liber alter. Editio philologica apparatu critico, commentario perpetuo, indice verborum illustrata* (Göttingen: Vandenhoeck & Ruprecht, 1895), 52.

<sup>35</sup> Preuschen, *Apostelgeschichte*, 12.

<sup>36</sup> Hatch, "Apostelgeschichte 2, 9," 255; Hoennicke, *Apostelgeschichte*, 30; Zahn, *Urausgabe*, 134–35. Also opposed are Michelsen, *Submission to Pijsvraag*, II–14; Ropes, *Beginnings*, 3:14; Metzger, *TC*, 293. van Manen, *Conjecturaal-kritiek*, 231; and Baljon, *NTG*, 323 only mention the conjecture.

<sup>37</sup> Caspar Barthius, *Adversariorum commentariorum libri LX quibus ex universa antiquitatis serie, omnis generis, ad vicies octies centum, auctorum, plus centum quinquaginta millibus, loci, tam gentilium quam christianorum, theologorum, iureconsultorum, medicorum, philosophorum, philologorum, oratorum, rhetorum etc. obscuri, dubii, maculati, illustrantur, constituuntur, emendantur, cum rituum, morum, legum, sanctionum, sacrorum, ceremoniarum, pacis bellique artium, formularum, locutionum denique, observatione et elucidatione tam locuplete et varia, ut simile ab uno homine nihil umquam in litteras missum videri possit. Eduntur praeterea ex vetustatis monumentis praeclara hoc opere non pauca, nec visa hactenus, nec videri sperata. Cum undecim indicibus, VII auctorum, IV rerum et verborum* (Frankfurt, Main: Aubrius, n.d.).

<sup>38</sup> Richard Bentley, *Bentleii Critica Sacra: Notes on the Greek and Latin Text of the New Testament, Extracted from the Bentley Mss. in Trinity College Library*, ed. Arthur Ayres Ellis (Cambridge: Deighton, Bell, 1862).

<sup>39</sup> Otto Lagercrantz, "Zu Act. Ap. 2:9," *Er* 10 (1910): 58–60.

favour of this conjecture.<sup>40</sup> Both Bloomfield<sup>41</sup> and Penn<sup>42</sup> argue for palaeographical confusion and they also provide manuscript support. Bloomfield claims support for this confounding from Josephus and Penn refers to textual variants on Mark 3:7. Furthermore, understanding Ἰδουμαίαν as “that tract of country situated on the other side of Jordan, and south-east of Judaea, which was sometimes called Arabia Petraea”,<sup>43</sup> “exactly fits the geographical order”.<sup>44</sup> Others were at least familiar with the proposal.<sup>45</sup> However, quite a number of opponents can be found for this conjecture.<sup>46</sup>

---

<sup>40</sup> Friedrich Spitta, *Die Apostelgeschichte, ihre Quellen und deren geschichtlicher Wert* (Halle: Verlag der Buchhandlung des Waisenhauses, 1891); Bloomfield, *Greek Testament 1*, vol. 1; Hoennicke, *Apostelgeschichte*; Penn, *Annotations*.

<sup>41</sup> Bloomfield, *Greek Testament 1*, 1:497.

<sup>42</sup> Penn, *Annotations*, 295–296.

<sup>43</sup> Bloomfield, *Greek Testament 1*, vol. 1.

<sup>44</sup> Penn, *Annotations*.

<sup>45</sup> Johann Jakob Griesbach, *Novum Testamentum Graece. Textum ad fidem codicum versionum et patrum recensuit et lectionis varietatem adiecit D. Io. Iac. Griesbach. Volumen II. Acta et epistolas apostolorum cum Apocalypsi complectens. Editio secunda emendatior multoque locupletior* (Halle: Curtius, 1806); Baljon, *NTG*; Georg Christian Knapp, “Sylloge notabiliorum aut celebratiorum coniecturarum de mutanda lectione in ll. N. T.,” in *Novum Testamentum Graece. Recognovit atque insignioris lectionum varietatis et argumentorum notationes subiunxit ...*, by Georg Christian Knapp (Halle: Verlag der Buchhandlung des Waisenhauses, 1813), 767–84; van Manen, *Conjecturaal-kritiek op den tekst des Nieuwen Testaments*, VRNGG n.s. 9.2 (Haarlem: Bohn, 1880); Paul Wilhelm Schmiedel, “Spiritual Gifts,” *Encyclopaedia Biblica. A Critical Dictionary of the Literary, Political, and Religious History, the Archaeology, Geography, and Natural History of the Bible*. IV. Q to Z:4755–76.

<sup>46</sup> Gottlieb Spitzel, *Sacra bibliothecarum illustrium arcana resecta, sive mss. theologicorum, in praecipuis Europa bibliothecis extantium designatio, cum praeliminari dissertatione, specimine novae bibliothecae universalis, et coronide philologica* (Augsburg: Goebel, 1668); Johann Christoph Wolf, *Curae philologicae et criticae in IV. SS. Evangelia et Actus apostolicos, quibus integritati contextus Graeci consulitur, sensus verborum ex praesidiis philolog. illustratur, diversae interpretum sententiae summatim enarrantur, et modesto examini subiectae vel approbantur vel repelluntur* (Hamburg: Kisner, 1725); Zachary Pearce, *A Commentary, with Notes, on the Four Evangelists and the Acts of the Apostles*;

The intrinsic difficulty of native Jews hearing their native language, seems to have led another German, Erasmus Schmidius,<sup>47</sup> mathematician and philologist, to propose Ἰνδίαν in 1634.<sup>48</sup> The logic behind this conjecture assumes a clustering according to the four cardinal directions on the compass rose. Exchanging Ἰουδαία for Ἰνδία would create a geographical cluster of Persia, Media, Parthia, Mesopotamia and India in the East, before proceeding to the geographical clusters in the North, South and West. Interestingly, there is a passage in John Chrystom (403) which seems to offer support for this conjecture. Although Schmidius' proposal was considered by some in the early twentieth century,<sup>49</sup> the overarching opinion was against it.<sup>50</sup> One of the reasons to discard the suggestions was the misfit of the geographical order.

---

*Together with a New Translation of St. Paul's First Epistle to the Corinthians, with a Paraphrase and Notes. To Which Are Added Other Theological Pieces*, ed. John Derby, vol. II (London: Cadell, 1777); Heringa, *Vertoog*; Johannes Schulthess, *De charismatibus spiritus sancti. Pars prima. De vi et natura, ratione et utilitate dotis linguarum, in primos discipulos Christi collatae atque in posteros omnes deinceps ad finem usque seculi perennantis. Quam prolusionem muneris ineundi dedit ...* (Leipzig: Reclam, 1818); Kuinoel, *Commentarius in libros Novi Testamenti historicos.*, vol. IV; Meyer, *Apostelgeschichte*; Michelsen, *Submission to Prijsvraag*, II-14; Wendt, *Apostelgeschichte*; Hatch, "Apostelgeschichte 2, 9"; Zahn, *Urausgabe*; Zahn, *Apostelgeschichte 1*; Ropes, *Beginnings*, vol. 3; Metzger, "Ancient Astrological Geography and Acts 2:9-11."

<sup>47</sup> Knapp, "Sylloge", abbreviates Erasmus Schmidius to *Erasm*. He thereby creates an ambiguity which led later scholars, such as van Manen, *Conjecturaal-kritiek*, 231; Hatch, "Apostelgeschichte 2, 9," 255; and Metzger, *TC*<sup>1</sup>, 293 to assume Desiderius Erasmus as the originator of the conjecture Ἰνδίαν.

<sup>48</sup> His formulation ("sunt ... aliqui") might attribute the conjecture to others, although it could also imply his own authorship. Erasmus Schmidius, *Versio Novi Testamenti nova, ad Graecam veritatem emendata, et notae ac animadversiones in idem: quibus partim mutatae alicubi Versionis redditur ratio, partim alia necessaria monentur. Accedit sacer contextus Graecus, cum Versione veteri: nec non Index Rerum et Verborum locupletissimus* (Nuremberg: Endter, 1658), 751.

<sup>49</sup> Hoennicke, *Apostelgeschichte*; Theodor Zahn, *Einleitung in das Neue Testament. Erster Band* (Leipzig: Deichert, 1897).

<sup>50</sup> Spitzel, *Arcana*; Wolf, *Curae 1*; Pearce, *Commentary 2*, vol. II; Heringa, *Vertoog*; Heinrichs, *NTG 3.1*; Kuinoel, *Commentarius in libros Novi Testamenti historicos.*, vol. IV; Olshausen, *Commentar 2*; Meyer, *Apostelgeschichte*; Michelsen, *Submission to Prijsvraag*; Zahn, *Urausgabe*; Zahn, *Apostelgeschichte 1*; Ropes, *Beginnings*, vol. 3; Metzger, *TC*<sup>1</sup>.

In 1703, Joannes Georgius Graevius, a German-Dutch classical philologist and professor in Duisburg, Deventer, and Utrecht, proposed Γορδυαίαν or Γορδαίαν, some region of Armenia.<sup>51</sup> The conjecture was reinvented by Francis Crawford Burkitt, Norris Professor of Divinity at the University of Cambridge.<sup>52</sup> Burkitt discards Ἰουδαίαν based on the geographical arrangement and discusses Tertullian's Ἀρμενίαν. Although both Γορδυαία and Ἀρμενία appear to be ideal candidates from a geographical point of view; ultimately Burkitt prefers Γορδυαία on palaeographic grounds. His argumentation gained some support,<sup>53</sup> but was mainly rejected.<sup>54</sup>

In 1720 the English classical scholar, critic, and theologian, Richard Bentley, preferred Λυδίαν over Ἰδουμαίαν. His emendation did not receive much support. Although it was sometimes only mentioned;<sup>55</sup> it was already rejected by Heringa in 1793,<sup>56</sup> followed by many others in subsequent years.<sup>57</sup> A variation to this suggestion can be found in the proposal Καππαδοκίαν τε καὶ Λυδίαν by Jacob Bryant (1767) who substitutes and transposes the word order.<sup>58</sup> Not

---

<sup>51</sup> Johannes Hendrik Verschuur, *Opuscula in quibus de variis S. Literarum locis, et argumentis exinde desumptis, critice et libere disseritur*, ed. Johannes Anthonie Lotze (Utrecht: Wild & Altheer, 1810), 380–381.

<sup>52</sup> Francis Crawford Burkitt, "Text and Versions," *Encyclopaedia Biblica. A Critical Dictionary of the Literary, Political, and Religious History, the Archaeology, Geography, and Natural History of the Bible*. IV. Q to Z:4977–5031 c.4992.

<sup>53</sup> Bishop, "Burkitt," 84–85.

<sup>54</sup> Hatch, "Apostelgeschichte 2, 9," 255; Ropes, *Beginnings*, 3:14; Metzger, *TC*, 293.

<sup>55</sup> Griesbach, *NTG* 2, 8; Knapp, "Sylloge," 771; van Manen, *Conjecturaal-kritiek*, 231.

<sup>56</sup> Heringa, *Vertoog*, 471.

<sup>57</sup> Heinrichs, *NTG* 3.1, 108; Schulthess, *De charismatibus*, 143; Michelsen, *Submission to Prijsvraag*, II–13; Hatch, "Apostelgeschichte 2, 9," 231; Zahn, *Urausgabe*, 135; Zahn, *Apostelgeschichte* 1, 89; Ropes, *Beginnings*, 3:14; Metzger, "Ancient Astrological Geography and Acts 2:9–11"; Eberhard Güting, "Der geographische Horizont der sogenannten Völkerliste des Lukas (Acts 2 9–11)," *ZNW* 66.3–4 (1975): 149–69, <https://doi.org/10.1515/zntw.1975.66.3-4.149>.

<sup>58</sup> Jacob Bryant, *Observations and Inquiries Relating to Various Parts of Ancient History; Containing Dissertations on the Wind Euroclydon, and on the Island Melite, Together with an Account of Egypt in Its Most Early State, and of the Shepherd King* (Cambridge: Archdeacon, 1767), 310–11.

much is known about its reception. It is mentioned by Van Manen,<sup>59</sup> and criticised by Michelsen.<sup>60</sup>

Gustav Georg Zeltner, a Lutheran theologian from Germany, introduced Ἰδαίαν or Ἰδαίαν (1738). His view is opposed by Schulthess.<sup>61</sup>

In 1742 Thomas Mangey, an English clergyman and scholar, known for his edition of Philo, proposed to restore Κιλικίαν in the text.<sup>62</sup> Some support can be found in geographical lists in Philo as well as in Acts 6:9. However, Mangey himself already observed Jas 1:1 and 1 Pet 1:1 seem to contradict his proposal. Although his suggestion suits the geographical arrangement, it did not find acclaim.<sup>63</sup>

The Dutch theologian and philologist Tiberius Hemsterhuis, Greek professor in Franeker and Delft, proposed Βιθυνίαν in 1766. A

---

<sup>59</sup> van Manen, *Conjecturaal-kritiek*, II-13.

<sup>60</sup> Michelsen, *Submission to Prijsvraag*, 231.

<sup>61</sup> Schulthess, *De charismatibus*, 143.

<sup>62</sup> Thomas Mangey, ed., *Φιλωνος του Ιουδαιου τα ευρισκομενα απαντα. Philonis Judaei opera quae reperiri potuerunt omnia. Textum cum MSS. contulit, quamplurima etiam e Codd. Vaticano, Mediceo, et Bodleiano, Scriptoribus item vetustis, necnon Catenis Graecis ineditis, adiecit, Interpretationemque emendavit, universa Notis et Observationibus illustravit ...* (London: Bowyer, 1742), 587.

<sup>63</sup> Griesbach, Knapp and Van Manen mention the suggestion, see Griesbach, *NTG* 2, 8; Knapp, "Sylloge," 771; van Manen, *Conjecturaal-kritiek*, 231. Others rebuked it, cf. Pearce, *Commentary* 2, II:12; Heinrichs, *NTG* 3.1, 108; Schulthess, *De charismatibus*, 143; Michelsen, *Submission to Prijsvraag*, II-13; Hatch, "Apostelgeschichte 2, 9," 255; Ropes, *Beginnings*, 3:14; Metzger, *TC*<sup>1</sup>, 293.

few scholars followed.<sup>64</sup> Van de Sande Bakhuyzen<sup>65</sup> and Valckenaer<sup>66</sup> were most explicit in their support and from these resources we can reconstruct the line of reasoning, which is based on geographic and palaeographic arguments, and supported from classical sources where these regions are usually united.<sup>67</sup> The conjecture was widely discussed, and though some scholars did not take a stance<sup>68</sup> they recognized a possible allusion to 1 Pet 1:1.<sup>69</sup> Others however rebutted this proposal, mainly because they favoured other emendations.<sup>70</sup>

---

<sup>64</sup> Although Verschuur, *Opuscula*, 380–81 remains undecided, he regards the conjecture brilliant: “Speciosa est Hemsterhusii coniectura.” Alexandros Pallis, *Notes on St Luke and the Acts* (London: Milford, 1928), 12. Johann Christoph Döderlein, “Review of Tiberius Hemsterhuis, *Ti. Hemsterhusii orationes, quarum prima est de Paulo apostolo. L.C. Valckenari tres orationes, quibus subiectum est schediasma, specimen exhibens adnotationum criticarum in loco quaedam librorum sacrorum Novi Foederis. Praefiguntur duae orationes Ioannis Chrysostomi in laudem Pauli apostoli, cum veteri versione Latina Aniani, ex cod. MS. hic illic emendata ed. Lodewijk Casper Valckenaer; Leiden: Luchtman & Honkoop, 1784*,” *AuThB* 3.4 (1785): 275–76.

<sup>65</sup> van de Sande Bakhuyzen, *Conjecturaal-kritiek*, 206.

<sup>66</sup> Lodewijk Casper Valckenaer, “*Schediasma, specimen exhibens adnotationum criticarum in loco quaedam librorum sacrorum novi foederis in Ti. Hemsterhusii orationes, quarum prima est de Paulo apostolo. L.C. Valckenari tres orationes, quibus subiectum est schediasma, specimen exhibens adnotationum criticarum in loco quaedam librorum sacrorum Novi Foederis. Praefiguntur duae orationes Ioannis Chrysostomi in laudem Pauli apostoli, cum veteri versione Latina Aniani, ex cod. MS. hic illic emendata*” (Leiden: Luchtman & Honkoop, 1784), 371–72.

<sup>67</sup> Lucian, *Alex.* 9,10,18,57, Cicero, *Phil.* 11.12, Diodorus Siculus, *Bib. hist.* 2.2, and Hdt. 1.28

<sup>68</sup> Griesbach, *NTG* 2, 8; van Manen, *Conjecturaal-kritiek*, 231; Baljon, *NTG*, 323.

<sup>69</sup> Knapp, “Sylloge”; Georg Christian Knapp, “Sylloge notabiliorum aut celebrationum coniecturarum de mutanda lectione in ll. N. T.,” in *Novum Testamentum Graece. Recognovit atque insignioris lectionum varietatis et argumentorum notationes subiunxit ...*, ed. Moritz Rödiger (Halle: Verlag der Buchhandlung des Waisenhauses, 1829), 767–91.

<sup>70</sup> Pearce, *Commentary* 2, II:12; Friedrich Hülsemann, “Dritte Fortsetzung der allgemeinen Bemerkungen über das Bibelstudium u. s. w. Ueber die Anwendung der Conjecturalkritik auf das N. T.,” *NThBl* 3 (1800): 331; Heinrichs, *NTG* 3.1, 108; Kuinoel, *Commentarius in libros Novi Testamenti historicos.*, 61; Schulthess, *De charismatibus*, 143–44; Olshausen, *Commentar* 2, 583–84; Meyer, *Apostelgeschichte*, 38; Michelsen, *Submission to Prijsvraag*, II–13; Wendt, *Apostelgeschichte*, 66; Hatch, “Apostelgeschichte 2, 9,” 255; Ropes, *Beginnings*, 3:14; Metzger, *TC*<sup>1</sup>, 293.

Several other proposals, although less widely and rigorously debated, have been offered: in 1818 Johannes Schulthess, a Swiss, Reformed theologian, assumed that the original reading Ἰουναίαν is a half-correct rendering of a Semitic name near Ararat.<sup>71</sup>

As alternative to the option to omit Ἰουδαίαν, Jan Hendrik Adolf Michelsen, an Evangelical-Lutheran minister and modest adept of the Dutch radical critics, suggested Ἀραμαίαν (1879).<sup>72</sup> This position has also been put forward independently by Hatch in 1908.<sup>73</sup>

Professor of New Testament and religious history at the University of Bonn, Carl Clemen (1895) ascribed the conjecture *Jaudi* to Gunkel.<sup>74</sup> This proposal was supported by Eissfeldt,<sup>75</sup> but opposed by Hatch.<sup>76</sup> The conjecture, however, appears to be based on erroneous transcription of Hebrew words.<sup>77</sup>

Thomas Kelly Cheyne, Oriel Professor of the Interpretation of Holy Scripture at Oxford, suggested Ἰωνίαν in 1901.<sup>78</sup> However, Hatch preferred Ἀραμαίαν against it.<sup>79</sup>

---

<sup>71</sup> Schulthess, *De charismatibus*, 147–48.

<sup>72</sup> Michelsen, *Submission to Prijsvraag*.

<sup>73</sup> Hatch, “Apostelgeschichte 2, 9.”

<sup>74</sup> Clemen, “Ap. 1–5,” 318. In the same article, Clemen refers “nur der Kuriosität halber” to the conjecture Ayodhya, which was proposed by Edward Scott. Scott argues that Ἰουδαία was a synonym for Ayodhya with a similar sounding. His evidence stems from the Middle Ages, but he extrapolates this without any hesitation to the first century. “To put the problem in a nutshell, as Judaea = Ayodhya throughout the Middle Ages, so Ayodhya = Ἰουδαία = Judea in the first century after Christ”, see Edward Scott, “Acts II. 9,” *Ath* 1.3459 (1894): 180.

<sup>75</sup> Otto Wilhelm Hermann Leonhard Eissfeldt, “Juda’ in 2. Könige 14, 28 und ‘Judäa’ in Apostelgeschichte 2, 9,” *WZ(H)GS* 12 (1963): 234–35.

<sup>76</sup> Hatch, “Apostelgeschichte 2, 9,” 255.

<sup>77</sup> Instead of assuming some sort of corruption, the creative suggestion is to presuppose a Hebrew source from which the word יאדי (y’dy) could be rendered Judea equally well as Yaudi. However, since the Hebrew root for Judea is יהודה and not יאדי, this suggestion can be safely rejected.

<sup>78</sup> Thomas Kelly Cheyne, “India,” *Encyclopaedia Biblica. A Critical Dictionary of the Literary, Political, and Religious History, the Archaeology, Geography, and Natural History of the Bible*. II. E to K:1145–2688 c. 2169.

<sup>79</sup> Hatch, “Apostelgeschichte 2, 9,” 255.

The eminent German biblical scholar, textual critic, orientalist and editor of *Novum Testamentum Graece*, Eberhard Nestle, proposed Ἀδιαβαίαν in 1908.<sup>80</sup> His suggestion was implicitly contested by Samuel Krauss,<sup>81</sup> who deduced from Rabbinic sources that “Erez Israel” could be used for (a part of) Mesopotamia, which in consequence might explain the occurrence of Ἰουδαίαν in Acts 2:9. Hoennicke simply preferred Ἰνδίαν or Ἰδουμαίαν over Ἀδιαβαίαν.<sup>82</sup>

Although the German scholar Theodar Zahn previously expressed sympathy for Ἰνδίαν,<sup>83</sup> in 1916 he argued for Ἰουδαῖοι.<sup>84</sup> He appealed to an Old Latin translation to support his position.<sup>85</sup> Weinstock referred to this solution,<sup>86</sup> but suggests to either omit Ἰουδαίαν or, preferably, to read Ἀρμενίαν.<sup>87</sup> Ropes contested Zahn’s claim to support from an ancient Latin manuscript.<sup>88</sup>

Γαλατίαν or Γαλλίαν (both indicating the same area in Asia Minor) was suggested in 1941 by Martin Dibelius, professor of New Testament in Heidelberg.<sup>89</sup> He remarked “Judea may have been substituted by an unthinking copyist, especially since Judea is always close to the mind of a Bible reader.”<sup>90</sup> Dibelius admitted there

---

<sup>80</sup> Eberhard Nestle, “Ein eilfter Einfall zu Apostelgeschichte 2, 9,” *ZNW* 9 (1908): 254.

<sup>81</sup> Samuel Krauss, “Erez Israel’ im weiteren Sinne,” *ZDPV* 33.4 (1910): 225.

<sup>82</sup> Hoennicke, *Apostelgeschichte*, 30.

<sup>83</sup> Zahn, *Einleitung* 1, 43.

<sup>84</sup> Zahn, *Urausgabe*, 337–38.

<sup>85</sup> Zahn, *Apostelgeschichte* 1, 89.

<sup>86</sup> Weinstock, “Acts II, 9–11,” 46.

<sup>87</sup> This last suggestion suits Weinstock’s argumentation for an astrological background of the list as a whole, see 9.3.2.

<sup>88</sup> Ropes, *Beginnings*, 3:14.

<sup>89</sup> This toponym also occurs in a textual variant of 2 Tim 4:10, see  $\kappa$  C 81. 104. 326 vgst.ww sa bopt; Eus Epiph, see NA28, 649. The articles by Vincent van Altena, Henk Bakker, and Jantien Stoter, “Advancing New Testament Interpretation Through Spatio-Temporal Analysis: Demonstrated by Case Studies,” *TIG* 22.3 (2018): 697–720, <https://doi.org/10.1111/tgis.12338>; and van Altena et al., “Spatial Analysis” erroneously confuse Γαλλία (Asia Minor) for Γαλλία (Gaul).

<sup>90</sup> Martin Dibelius, “The Text of Acts: An Urgent Critical Task,” *JR* 21.4 (1941): 429.

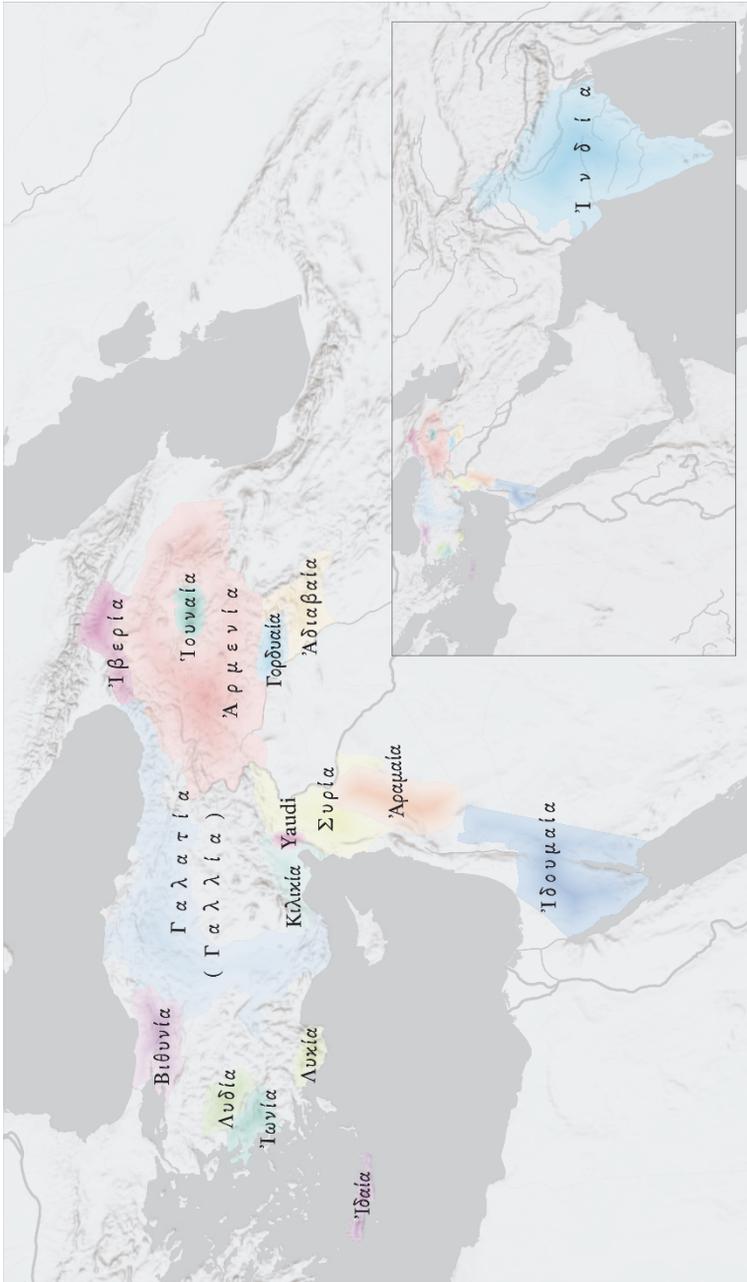


Figure 15. Locations of the conjectural emendations to Ίουδαία.

is no specific palaeographic reason, but thought his proposal fitted the geographical arrangement well. Metzger<sup>91</sup> referred in his rebuttal to Weinstock's argument about a geographic arrangement according to the zodiac circle,<sup>92</sup> but he seems neither convinced by that view.<sup>93</sup>

After having evaluated several other conjectures, with special attention for *Λυδίαν*, Eberhard Güting (1975) suggested *Λυκίαν*, which he regarded "im hohem Maß als passend" due to its importance in Roman times.<sup>94</sup>

Based on the geographical arrangement, John MacDonald Ross (1985) expected "a territory somewhere between Syria and the Caucasus Mountains." In his opinion, *Ἰβερίαν* (an ancient name for modern Georgia) fits this requirement.<sup>95</sup>

### 7.3 Conclusions

The survey in the preceding section demonstrates the challenge posed by the text in Acts 2:9. Although interpreters detected serious internal difficulties with the reading *Ἰουδαίαν*, the supporting external manuscript evidence for this reading has been regarded as overwhelming.<sup>96</sup>

Simultaneously the internal difficulties are not easily solved. Therefore, conjectural emendations abound: Cilicia, Armenia, Ida, Iounaia, Ionia, Yaudi, Iberia, Bithynia, Adiabene, Aramea, Idumea, Lydia, Gorduaia, Lycia, Galatia, Gallia, India, and Syria have all been suggested during the past centuries (Figure 15).

---

<sup>91</sup> Bruce M. Metzger, "Methodological Weakness" (Review of Martin Dibelius, *Studies in the Acts of the Apostles* [Ed. Heinrich Greeven; London: SCM, 1956]), *Int* 11.1 (1957): 95.

<sup>92</sup> Weinstock, "Acts II, 9–11."

<sup>93</sup> Metzger, "Ancient Astrological Geography and Acts 2:9–11."

<sup>94</sup> Güting, "Der geographische Horizont," 163, 169.

<sup>95</sup> John MacDonald Ross, "'Judea' in Acts 2 9," *ExpTim* 96.7 (1985): 217–a.

<sup>96</sup> "Despite internal difficulties, the Committee was impressed by the overwhelming preponderance of external evidence supporting *Ἰουδαίαν*, and therefore retained it in the text", see Metzger, *TC*<sup>1</sup>, 294.

When evaluating the historical overview from a phenomenological perspective, it can be observed that the issues with the originality of Ἰουδαίαν have been considered that serious, and each proposed conjectured emendation that unconvincing, that numerous new attempts to solve the issue were attracted. Furthermore, confusion was created by imprecise formulation (see the case of Indian, note 47), or by attributing a conjecture erroneously ascribed to an honoured scholar (the case of *Yaudi*, see notes 74 and 77).

The overview is also illustrative in showing the diversity of considerations to opt for a certain candidate. In some cases, the fittingness in the geographical arrangement seems to have been the main motivation, while others sought to solve the issues by presuming a scribal interpolation, taking Ἰουδαίαν as an adverb (thus interpreting a different grammatical function) to a different toponym, or by presuming palaeographical confusion.

In the end, “no one conjecture has proved generally acceptable.”<sup>97</sup> The unease remains, and the discussion is undecided. In the next chapter the issue will be revisited by addressing the question whether it might be possible to identify an acceptable alternative toponym assuming palaeographical confusion. It will use a computer algorithm to gauge the probability that Ἰουδαίαν could have been the result of a misreading of the original toponym due to letter confusion of majuscule script.

---

<sup>97</sup> Kilpatrick, “Conjectural Emendation in the New Testament,” 352. In his evaluation of conjectural emendation to solve the issue in Acts 2:9, Kilpatrick arrives at a remarkable conclusion: “that emendation may destroy valuable evidence for the history of the list”, “Conjectural Emendation in the New Testament,” 353. In my opinion, this remark must be regarded as a *non sequitur*, since it is not clear to me how this conclusion can be logically derived from the previous statements or could be used to advocate against conjectural emendation in general. The diversity in proposed emendations demonstrates the difficulty to find conclusive evidence for a single emendation since the requirements, which are palaeographically explainable, geographically fitting, and supposed familiarity to the author, allow multiple solutions.



## 8

# ΙΟΥΔΑΙΑΝ IN ACTS 2:9: REVERSE ENGINEERING TEXTUAL EMENDATIONS

In the previous chapter, I demonstrated that several textual emendations have been conjectured to solve the alleged interpretive problems with ΙΟΥΔΑΙΑΝ in Acts 2:9. In the history of interpretation solutions have been explored in three directions: (1) ΙΟΥΔΑΙΑΝ has been interpreted as an adjective instead of a noun; (2) ΙΟΥΔΑΙΑΝ has been regarded as a corruption or later interpolation in the text; and (3) several toponyms have been proposed as a solution to emend the text. None of these suggestions have been generally accepted.

The first aim of this chapter<sup>1</sup> is to contribute to the discussion by testing the hypothesis that the text might have been corrupted during transmission due to palaeographical confusion of Greek characters, which means the text might originally have contained a different Greek word. To test this hypothesis, a Greek toponym needs to be identified that is palaeographical, historical, and geographical suitable to replace ΙΟΥΔΑΙΑΝ in Acts 2:9. Therefore, I will use a reverse engineering approach:<sup>2</sup> instead of starting from

---

<sup>1</sup> This chapter is based on Vincent van Altena et al., “Ιουδαίαν in Acts 2:9: Reverse Engineering Textual Emendations,” *OpTh* 6.1 (2020): 378–91, <https://doi.org/10.1515/opth-2020-0113>.

<sup>2</sup> Reverse engineering is terminology employed in technology related disciplines. The Cambridge Dictionary defines it as “the process of studying another company's

the text itself, trying to find a fitting explanation of the interpretive problem concerning  $\text{IOY}\Delta\text{AJAN}$ , I start with a list of toponyms and research which toponyms are likely alternatives based on the criterion of palaeographical confusion. The results of this test will be further analysed to see whether I can solve the interpretive problem in Acts 2:9 or if I can exclude palaeographical confusion as possible explanation of the alleged corruption of the text.

The second aim of this chapter is to evaluate whether the method is helpful to identify possible cases of palaeographical confusion in problematic texts.

The chapter has been organised as follows: section 8.1 is concerned with the method and data used for this study. Section 8.2 presents the findings after application of the method for  $\text{IOY}\Delta\text{AJAN}$  in Acts 2:9. Section 8.3 evaluates these results by considering the implications of the experiment for the list in Acts 2:9-11 and provides a critical appraisal whether the experiment recommends a wider application of the method for other cases. Section 8.4 finalizes the chapter with a conclusion and outlook for further research.

## 8.1 Method, algorithm, and data

To gauge the probability of confusion between a toponym and the supposedly corrupted  $\text{IOY}\Delta\text{AJAN}$  I will research how easy it might have been that during textual transmission, a scribe misread one character for another character, and that this resulted in the current reading.

I propose the following method (Figure 16): I will use a computer algorithm and three datasets compromised of toponyms occurring in early Christian literature, Greek Jewish Scriptures and Classic texts to identify possible palaeographic alternatives.

---

product to see how it is made, sometimes in order to be able to copy it.” In this chapter I use this concept in a looser way: I start with a hypothesis about the textual transmission process and a dataset of semantical candidates, and subsequently prune the number of likely toponyms by adding additional criteria.

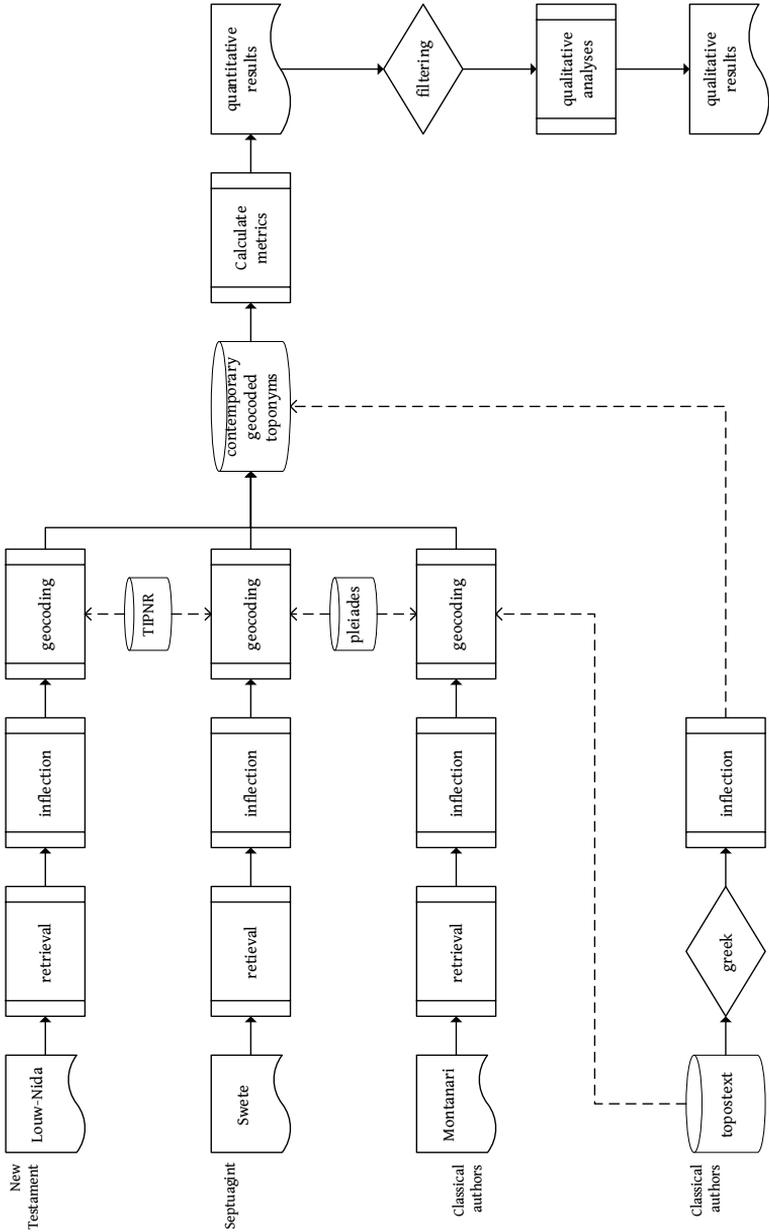


Figure 16. Method and data.

Furthermore, I will test the appropriateness of the most likely results in their wider historical and geographical contexts.

### 8.1.1 Confusion distances

The *confusion distance* has been proposed by van Altena, et. al.<sup>3</sup> as a metric to calculate the probability of palaeographical confusion between two words. The underlying assumption is that the text could have been corrupted at a very early stage in the transmission process. When this corruption was unintentional it might have been caused by a misreading of the *Vorlage*, possibly due to the confusion of Greek majuscule characters.

In their study, van Altena, et. al. propose that the probability of confusion of Greek majuscule characters is not equally likely, and that combinations of characters might be confused for a single character and vice versa. They therefore propose a confusion table, which contains character pairs and a digit representing the assumed ease of confusion. This study uses their algorithm and the accompanying confusion table to establish confusion distances of toponyms.

### 8.1.2 Data

The second ingredient for this study is a collection of place names (toponyms) with geographic locations, also known as an *onomasticon* or *gazetteer*.<sup>4</sup> For the purpose of my study, this dataset should contain Greek toponyms that correspond in grammatical function with ἰουδαϊσταν, are supposed to be familiar to the original author of Acts, and fit the geographical arrangement in Acts 2:9-11.<sup>5</sup> To the best of my knowledge, a gazetteer that fits these requirements does not exist. I therefore retrieved toponyms from textual resources,

---

<sup>3</sup> van Altena et al., “Spatial Analysis.”, see chapter six.

<sup>4</sup> In a modern sense a gazetteer consists of “three core elements: toponyms (and their history), spatial location (in various representations, such as points, lines, and polygons), and classification (e.g., types and categories of places),” see Yuan, “Mapping Text,” 115.

<sup>5</sup> van Altena et al., “Spatial Analysis,” 48–49.

inflected them to the proper grammatical case (which is the accusative, or the nominative in case of uninflected nouns), and assigned geographical coordinates to each toponym.

#### 8.1.2.1 Retrieval of toponyms

I used three types of literary resources. For the New Testament, I created a dataset from a semantic dictionary.<sup>6</sup> This dataset contains 259 location-related pronouns, including toponyms, demonyms and derivatives such as adjectives which occur in the 27 books of the New Testament. Furthermore, I argue that it is reasonable to construct a list of toponyms which appear in the Septuagint (LXX)<sup>7</sup> and take them to reflect contemporary toponyms which might have been known to an author contributing to the tradition of early Christian literature in the time of writing the book of Acts.<sup>8</sup> For this purpose, I

---

<sup>6</sup> Johannes P. Louw and Eugene Albert Nida, *Greek-English Lexicon of the New Testament: Based on Semantic Domains*, 2nd ed. (New York, NY: United Bible Societies, 1996). I selected all entries in the range 93.389–93.615 (Places) and exported them to a spreadsheet.

<sup>7</sup> The Septuagint is an ancient Greek translation of the Hebrew Old Testament. The term and its abbreviation LXX are derived from the Latin *septuaginta* = 70, which refers to a legendary story that 72 (or 70 or 75) Jewish elders translated the Pentateuch into Greek. Later on the term became to be used for the entire Greek translation of the Old Testament, including Old Testament apocrypha, see Melvin K.H. Peters, “Septuagint,” *AYBD* 5:1093–1104.

<sup>8</sup> Van der Meer identifies five problems to temper expectations in a reconstruction of LXX topography: “[1] most of the geography and topography of the word in which the Septuagint was made ... is not reflected in the Greek translations of Hebrew Scripture, [2] that the corpus for the study is a heterogeneous collection, [3] that several Greek renderings of Hebrew toponyms rest on misinterpretations or [4] deliberate actualizations, and finally [5] that several Greek toponyms were misunderstood in the course of textual transmission”, see Michaël N. van der Meer, “The Natural and Geographical Context of the Septuagint: Some Preliminary Observations,” in *Die Septuaginta. Entstehung, Sprache, Geschichte. 3. Internationale Fachtagung Veranstalter von Septuaginta Deutsch (LXX.D), Wuppertal 22.-25. Juli 2010*, ed. W. Kraus, M. Karrer, and M. Sigismund, WUNT 286 (Tübingen: Mohr-Siebeck, 2012), 393. However, since the aim of this article is not to reconstruct an actual topography of the LXX, but to construct a list of toponyms that the author of Acts might have been familiar with, these caveats will not affect my main conclusion.

retrieved toponyms from the Septuagint.<sup>9</sup> The third group pertains to toponyms occurring in classical authors. I used the website Topostext<sup>10</sup> and the Greek-English dictionary by Montanari et al.<sup>11</sup> as the two major sources to compile this list of toponyms. Especially the retrieval of topo- and demonyms from a dictionary appeared to be a tedious endeavour.<sup>12</sup> Eventually, I have made the resulting lists of toponyms in singular nominative form available online.<sup>13</sup>

### 8.1.2.2 Inflection of toponyms

Subsequently I had to inflect these lists of toponyms, since data retrieved from dictionaries and online databases are in nominative singular form. Instead of looking up almost 10,000 individual

---

<sup>9</sup> The search of the Septuagint was performed with the aid of the computer program Logos Bible Software version 8.6.0.0052. See <https://www.logos.com/>. I used a two-step approach. First, I created a concordance for the whole Septuagint, which I filtered on Biblical Entities and subsequently on Places. Next, I used the retrieved place names to query the Septuagint and retrieve the Greek words and the biblical references. The Septuagint text I used is based on Henry Barclay Swete, *The Old Testament in Greek: According to the Septuagint*, 4th ed. (Cambridge: Cambridge University Press, 1909); I also used the tagged text which is provided by Randall K. Tan, David A. deSilva, and Isaiah Hoogenydyk, *The Lexham Greek-English Interlinear Septuagint: H.B. Swete Edition* (Bellingham, WA: Lexham, 2012).

<sup>10</sup> John Brady Kiesling and Aikaterini Laskaridis Foundation, "Topostext," *Gazetteer, Topostext Web Version 3.0*, 2019, <https://topostext.org/>.

<sup>11</sup> Franco Montanari, *The Brill Dictionary of Ancient Greek*, ed. Madeleine Goh and Chad Schroeder (Boston, MA: Brill, 2015).

<sup>12</sup> Montanari's dictionary is lacking an arrangement according to semantic field. Neither is there any explicit indication (such as *n. pr. loc.*) that the particular lemma is dealing with a toponym. As such, the dictionary conforms to the general practice to which Louw-Nida and Swanson appear to be an exception. To tackle this obstacle, I retrieved toponyms from Montanari doing multiple searches for the terms cape, city, country, district, ethnic, island, mountain, pass, people, place, port, province, region, settlement, tribe, urban and village.

<sup>13</sup> Vincent van Altena, "New Testament Toponyms" (Zenodo, 10 July 2019), <https://doi.org/10.5281/zenodo.3463567>; Vincent van Altena, "Greek Old Testament Toponyms" (Zenodo, 10 July 2019), <https://doi.org/10.5281/zenodo.3244386>; Vincent van Altena, "Greek Toponyms Collected from Classical Literature" (Zenodo, 19 February 2020), [10.5281/zenodo.3675315](https://doi.org/10.5281/zenodo.3675315).

toponyms (see Table 6), I created a computer script<sup>14</sup> which inflected the toponyms to the different cases in singular and plural form.<sup>15</sup> The results of these processes will be evaluated using qualitative criteria (see section 8.3).

Table 6. Statistics about the toponym-datasets.

	indeclinable	localized	total
Louw-Nida	35	322	322
LXX	917	1780	1783
Montanari	61	1548	3389
ToposText	123	4454	4454
	1136	8104	9948

### 8.1.2.3 Geographical parsing

The position of each toponym on the skin of the earth has to be expressed in x,y-coordinates to enable geographical analysis. This is achieved by geographical parsing, which could be defined as “the task of identifying and resolving toponyms to their geographical coordinates.”<sup>16</sup> Due to their nature, it is not equally straightforward to acquire coordinates by geoparsing for the three datasets which I introduced in the previous section.

---

<sup>14</sup> Vincent van Altena, *Greek Noun Inflection Script*, Python (Zenodo, 2020), 10.5281/zenodo.3604255.

<sup>15</sup> My inflection script worked well for regular nouns, but I needed a solution for exceptions and nouns which theoretically can be inflected in multiple ways if its gender is unknown (for instance nouns ending on -ος could either be inflected to the accusative singular ending -ος or -ον dependent on the gender of the noun). Instead of figuring out the correct inflection for each individual case, I implemented a solution which produces all possible variant inflections. This means that the script inflects these nouns in multiple ways. Though I expect only one of these inflections will be correct for most of the cases, I used this inflected list of toponyms as an intermediate input for subsequent processing.

<sup>16</sup> Milan Gritta et al., “What’s Missing in Geographical Parsing?,” *LRE* 52 (2017): 3, <https://doi.org/10.1007/s10579-017-9385-8>.

New Testament toponyms are easily tied to the Tyndale Individualised Proper Names with all References (TIPNR).<sup>17</sup> Toponyms from the Septuagint can be linked to a toponym in TIPNR using their Hebrew equivalents but need to be checked since some Greek toponyms seem to have been actualized during translation.<sup>18</sup> Therefore the LXX toponyms have also been linked to their equivalents in the Pleiades dataset<sup>19</sup> as far as possible. Toponyms from classical resources had already been given a location in Topostext.<sup>20</sup> For the geoparsing of the additional toponyms I retrieved from the Montanari dictionary, I used the Pleiades dataset.

---

<sup>17</sup> The Tyndale Individualised Proper Names with all References (TIPNR) is a collection of every proper or geographical name in the Bible, which are linked to the original languages. That is, Hebrew for names occurring in the Old Testament, and Greek for those found in the New Testament. The dataset does not contain alternative readings, neither references to Greek names found in the Septuagint, nor toponyms occurring in the Aramaic parts of the Old Testament. Geographical names have been enriched with a geolocation which was derived from the OpenBible dataset, see David Instone-Brewer, "Tyndale Individualised Proper Names with All References," digital (Cambridge: Tyndale House, 2 November 2019), <https://github.com/tyndale/STEPBible-Data>; and Stephen Smith, "Bible Geocoding - Bible Maps in Google Earth and Google Maps," *Bible Geocoding*, n.d., <http://www.openbible.info/geo/>.

<sup>18</sup> See also note 8.

<sup>19</sup> The Pleiades dataset is a community-built gazetteer of ancient places, covering the Greek and Roman world extensively, and currently broadening its scope to Ancient Near Eastern, Byzantine, Celtic, and Early Medieval geography. The dataset is maintained by the Ancient World Mapping Center (AWMC) and the Institute for the Study of the Ancient World (ISAW) and is available through services to individual human researches as well as for consummation by computational humanities research. See Roger Bagnall et al., "Pleiades: A Community-Built Gazetteer and Graph of Ancient Places," 2022 2006, <http://pleiades.stoa.org>.

<sup>20</sup> ToposText is an online database which contains location references relevant to Greek history and mythology. More than 5000 references to Greek toponyms were collected from ancient texts covering a timespan starting in the Neolithic period up through the 2nd century CE, see Kiesling and Aikaterini Laskaridis Foundation, "ToposText."

## 8.2 Results

The confusion distance algorithm was used to estimate the probability of palaeographical confusion with  $\text{IOY}\Delta\text{AIA}\text{N}$  for each toponym in my list. From the results shown in Figure 17 and Table 7 it is apparent that very few toponyms are palaeographically close to  $\text{IOY}\Delta\text{AIA}\text{N}$ .

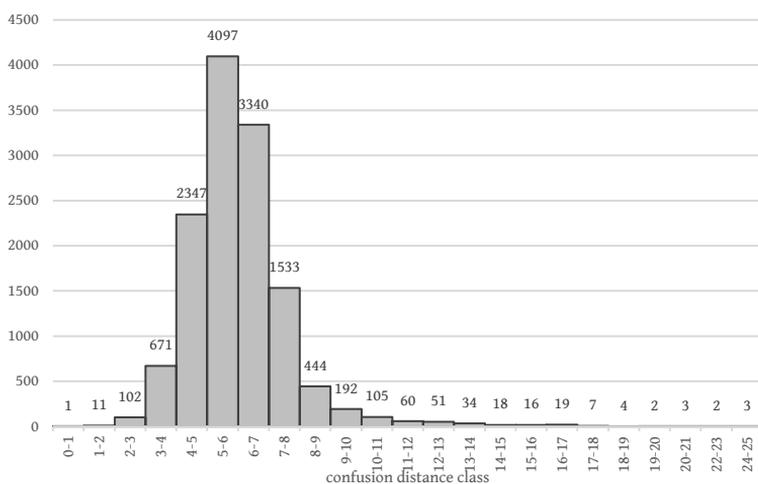


Figure 17. Palaeographical confusion distances with  $\text{IOY}\Delta\text{AIA}\text{N}$ .<sup>21</sup>

Only six percent of the toponyms has a confusion distance smaller than 4 and even 0.9 percent a confusion distance smaller than 3. Table 7 presents the toponyms which are palaeographically closest to  $\text{IOY}\Delta\text{AIA}\text{N}$ , which means they are the most likely to be confused.

Taken on its own, the confusion distance might however give a distorted picture since a low confusion distance does not automatically imply a small number of operations to change one word in another. For example,  $\text{IEPA}\ \text{PIYAN}$  has a small confusion distance with  $\text{IOY}\Delta\text{AIA}\text{N}$ , but this metric conceals that the

<sup>21</sup> The horizontal axis shows the classes of confusion distances. The vertical axis represents the number of toponyms in a class.

transformation needed to change *ΙΕΡΑ ΠΥΛΗ* into *ΙΟΥΔΑΙΑΝ* requires seven operations (neglecting the space).

Table 7. The twenty closest alternatives to *ΙΟΥΔΑΙΑΝ*.

toponym	confdist	toponym	confdist
<i>ΙΟΥΔΑΙΑ</i>	1	<i>ΠΕΤΑΛΙΑ</i>	2.063
<i>ΙΕΡΑ ΠΥΛΗ</i>	1.15	<i>ΣΤΑΔΙΑ</i>	2.063
<i>ΙΔΟΥΜΑΙΑΝ</i>	2	<i>ΣΤΑΔΙΟΝ</i>	2.063
<i>ΙΟΥΔΑΙΟΣ</i>	2	<i>ΙΕΒΛΑΑΜ</i>	2.07
<i>ΙΣΤΙΑΙΑΝ</i>	2.043	<i>ΙΕΡΑΚΙΑ</i>	2.07
<i>ΕΟΡΔΑΙΑΝ</i>	2.05	<i>ΓΟΡΔΙΟΝ</i>	2.083
<i>ΙΟΡΔΑΝΗΝ</i>	2.05	<i>ΓΑΛΓΑΛ</i>	2.119
<i>ΡΟΥΔΙΑ</i>	2.05	<i>ΣΙΛΛΥΟΝ</i>	2.13
<i>ΓΥΛΛΙΟΝ</i>	2.053	<i>ΓΕΡΑΡΑ</i>	2.143
<i>ΙΤΑΛΙΑ</i>	2.053	<i>ΓΕΡΑΡΩΝ</i>	2.143

To account for this bias, I here introduce a second metric, the probability index, *Probdx*, which accounts for bias in the confusion distance, *confdist*, by multiplying it with the required number of operations, *ops*:

$$Probdx = confdist \times ops$$

The results show a small shift to the right in the frequency diagram of the operations (Figure 18) compared to the distribution in the histogram of the confusion distance (Figure 17). This can be easily explained since the confusion distance is the result of a weighted score of the individual operations.

For the remainder of this study, I have selected the first 49 toponyms which have the closest probability index with *ΙΟΥΔΑΙΑΝ*.<sup>22</sup>

<sup>22</sup> The 56 entries in Table 8 can be divided in 32 places (settlements, towns, or cities) 16 regions, 8 miscellaneous features (hydrography, building structures or landmarks) and one false positive. In the remainder of this article these entries have been reduced to 48 unique toponyms by eliminating the false positive *ΙΕΡΕΙΑΝ* and redundant toponyms. Redundancy occurs in the cases of *ΕΟΡΔΑΙΑ*, *ΕΟΡΔΑΙΑΝ* and *ΕΟΡΔΙΑΝ*; *ΙΟΥΔΑΙΑ*, *ΙΟΥΔΑΙΟΝ*, *ΙΟΥΔΑΙΟΣ* and *ΙΟΥΔΑΝ*; *ΙΣΤΙΑΙΑ* and *ΙΣΤΙΑΙΑΝ*; *ΡΟΥΔΙΑ* and *ΡΟΥΔΙΑΝ*.

This is of course an arbitrary selection based on the assumption that a maximum of four unintentional confusions might still be conceivable.

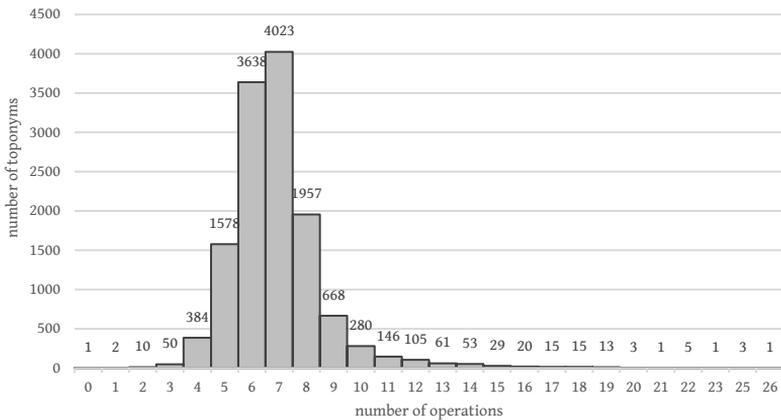


Figure 18. Operations to change a toponym in IOYΔAIAN.<sup>23</sup>

### 8.3 Discussion

This section discusses the semantical, geographical, and historical likeliness of the 49 palaeographically fitting toponyms (Table 8) and evaluates the applicability of the method.

#### 8.3.1 Candidature for emendation

The results in the previous section show that only for a few instances it is reasonable to argue palaeographical confusion. To advance the establishment of criteria for the evaluation whether any of the toponyms listed in Table 8 might be a plausible substitute for IOYΔAIAN in Acts 2:9, I will first discuss considerations about the variety of attestation, the validity of temporal attestation, and the probability of Jewish communities in a region.

<sup>23</sup> The horizontal axis shows the number of operations to change a toponym into IOYΔAIAN. The vertical axis represents the number of toponyms.

Table 8. Palaeographically close toponyms to Ἰουδαίαν.

toponym	confdist	ops	Probidx	toponym	confdist	ops	Probidx
ΙΟΥΔΑΙΑ	1.000	1	1.000	ΟΥΓΑΥΑΝ	2.050	3	6.150
ΙΟΥΔΑΙΟΝ	1.000	1	1.000	ΕΟΡΔΙΑΝ	2.050	3	6.150
ΡΟΥΔΙΑΝ	1.050	2	2.100	ΡΟΔΙΑΝ	2.050	3	6.150
ΕΟΡΔΙΑΝ	1.050	2	2.100	ΙΕΡΑ ΠΥΛΗ	1.150	7	8.050
ΙΣΤΙΑΙΑΝ	1.043	3	3.129	ΟΙΧΑΛΙΑΝ	2.020	4	8.080
ΙΔΟΥΜΑΙΑΝ	2.000	2	4.000	ΕΛΑΙΑΝ	2.020	4	8.080
ΙΟΥΔΑΙΟΣ	2.000	2	4.000	ΘΥΑΜΙΑΝ	2.020	4	8.080
ΙΟΥΔΑΝ	2.000	2	4.000	ΕΥΠΑΛΙΑΝ	2.030	4	8.120
ΒΟΥΔΕΙΑΝ	2.000	2	4.000	ΙΣΤΙΑΙΑ	2.043	4	8.172
ΛΟΥΔΙΑΝ	2.000	2	4.000	ΕΣΤΙΑΙΑΝ	2.043	4	8.172
ΜΟΝΔΑΙΑΝ	2.000	2	4.000	ΛΕΥΚΑΤΑΝ	2.043	4	8.172
ΙΤΑΛΙΑΝ	1.053	4	4.212	ΙΣΤΡΙΑΝ	2.043	4	8.172
ΣΤΑΔΙΑΝ	1.063	4	4.252	ΑΣΤΡΙΑΝ	2.043	4	8.172
ΙΕΡΑΚΙΑΝ	1.070	4	4.280	ΧΕΤΤΑΙΑΝ	2.043	4	8.172
ΠΕΤΑΛΙΑΝ	1.063	5	5.315	ΙΕΡΕΙΑΝ	2.060	4	8.240
ΓΕΡΑΡΑΝ	1.143	5	5.715	ΠΙΣΙΔΙΑΝ	2.060	4	8.240
ΕΥΤΑΙΑΝ	2.010	3	6.030	ΛΙΑΙΑΝ	2.060	4	8.240
ΙΟΥΑΙΝ	2.010	3	6.030	ΙΣΑΡΑΝ	2.060	4	8.240
ΝΟΥΑΡΙΑΝ	2.010	3	6.030	ΣΟΥΑΤΡΑΝ	2.060	4	8.240
ΟΥΑΡΙΑΝ	2.010	3	6.030	ΠΡΟΠΥΛΑΙΑΝ	2.060	4	8.240
ΟΥΘΕΙΑΝ	2.010	3	6.030	ΓΟΡΔΙΟΝ	2.083	4	8.332
ΟΥΑΙΑΝ	2.010	3	6.030	ΓΑΔΑΡΑΝ	2.083	4	8.332
ΝΟΜΑΔΙΑΝ	2.020	3	6.060	ΓΡΑΙΑΝ	2.083	4	8.332
ΟΥΑΓΑΝ	2.033	3	6.099	ΤΡΙΤΑΙΑΝ	2.083	4	8.332
ΤΟΥΙΑΝ	2.033	3	6.099	ΠΟΤΕΙΔΑΙΑΝ	2.093	4	8.372
ΙΟΥΔΑΝΗΝ	2.050	3	6.150	ΙΜΙΧΑΡΑΝ	2.100	4	8.400
ΡΟΥΔΙΑ	2.050	3	6.150	ΡΙΠΑΙΑΝ	2.100	4	8.400
ΕΟΡΔΑΙΑ	2.050	3	6.150	ΥΔΡΑΜΙΑΝ	2.110	4	8.440

Widespread attestation in Classical, Jewish and / or Christian literary sources does not help. Evidence for the familiarity of a toponym can be used to advocate the likeliness as well as the improbability of a specific toponym simultaneously. The ambiguity is that while a wider attestation in literary sources might increase the probability that the author of Acts might have used the toponym; simultaneously such an attestation might reduce the chance that a scribe would have replaced a toponym for a better-known candidate.

Likewise, the time span for which a toponym is attested, does not contribute much to resolve the issue. Though it is tempting to advocate that a particular toponym might have been anachronistic to the author of Acts since we only have attestation from later sources, this *argumentum ex silentio* can never be conclusive since we cannot prove that the author was unfamiliar with the toponym. We simply do not know.

On a similar vein the observation that the catalogue in Acts 2 designates *Jews* from several nations and regions (Acts 2:5, 11) does not help to further exclude toponyms as possible candidates since the presence or absence of Jewish settlements in a specific region cannot be demonstrated beyond doubt from the partial historical evidence, nor do rhetorical statements such as Philo's "not only are the main lands full of Jewish colonies but also the most highly esteemed of the islands" (Philo, *Embassy* 282)<sup>24</sup> contribute to settle the issue. The statement is too generic to establish evidence for Jewish population in a specific location.

More is to be expected from exclusion according to semantic subtype, fitting in the geographic progression, and contextual appropriateness within Acts 2:9. The results from Table 8 will be discussed using these three criteria.<sup>25</sup>

#### 8.3.1.1 Exclusion according to semantic subtype

The majority of palaeographically probable toponyms can be discarded as likely replacements for  $\text{IOYΔΑΙΑΝ}$  when their semantical subtype is considered in relation to the structure of the catalogue. The function of the catalogue is to clarify the identity of

---

<sup>24</sup> Philo, *The embassy to Gaius*, trans. Francis Henry Colson, G. H. Whitaker, and J. W. Earp, LCL 379 (London: Harvard University Press, 1962). See also Figure 21.

<sup>25</sup> Toponyms that are referred to in the discussion that follows are taken from: Kiesling and Aikaterini Laskaridis Foundation, "ToposText"; Bagnall et al., "Pleiades"; Hubert Cancik and Helmut Schneider, *New Pauly Online* (Leiden: Brill, n.d.), <https://brill.com/view/package/bnpo>; and the MGS dictionary. A full bibliography of the referenced toponyms is available online, see van Altena, "GTCCL."

the audience in Acts 2:8. The catalogue consists of four units ordered in a chiasmic structure.<sup>26</sup> The first and last unit consist of groups of demonyms, while the second and third groups start with an active participle, respectively οἱ κατοικοῦντες (residents) and οἱ ἐπιδημοῦντες (sojourners). ἸΟΥΔΑΙΑΝ appears in the second group as an object of κατοικοῦντες. This constrains the possibility of toponyms by excluding the hydrography-related toponyms Λουδίας, Ἰορδάνης, and Ἰσάρας and names pertaining to building structures, Ἱερά πύλη, Προπύλαια, Εὐπαλία, Θυαμία; or a landmark such as Λευκάτας.

Besides pairing κατοικοῦντες with regions (Acts 2:9, 13), Luke combines it with city names (Jerusalem in Acts 2:14; 13:27 and Lydda in Acts 9:35). The author of Revelation uses the nomen in a construction to refer to “those who dwell on the earth” (Rev 11:10; 13:8; 17:2, 8). However, although a city name would technically fit the second unit of the catalogue, this would be a surprising deviation of its pattern: in parallel to the other regional toponyms, one would also expect a region name at the spot of ἸΟΥΔΑΙΑΝ. Heuristic support for this observation is found in the historical discussion of proposed emendations, which all describe regions.<sup>27</sup>

Therefore, neither the palaeographical related settlements Ἄστραια, Γραῖα, Ἐλαία, Οἰχαλία and Ὑδραμία; nor the towns Χετταία, Σουάτρα, Τριταία, Γεραρα and Ἱμίχαρα; nor the cities Βούδεια, Γάδαρα, Γόρδιον, Ἐστίαια, Εὔταια, Ἰουλίς, Ἰστίαια, Ἰστρία, Λίλαια, Μονδαία, Νουαρία, Οὐγαυά, Οὐάγα, Οὐαρία, Οὐελία, Οὐλία, Ποτεΐδαια, Ῥουδία, Στάδια, and Τουία are found to be fitting alternatives to emend ἸΟΥΔΑΙΑΝ in Acts 2:9. This means that 38 of the palaeographically likely unique toponyms can be safely discarded as potential emendations of ἸΟΥΔΑΙΑΝ on basis of their semantic subtype.

---

<sup>26</sup> J.A. Brinkman, “The Literary Background of the ‘Catalogue of the Nations’ (Acts 2,9-11),” *CBQ* 25.4 (1963): 418–19.

<sup>27</sup> See the previous chapter Ἰουδαίαν in Acts 2:9: a Diachronic Overview of its Conjectured Emendations.

### 8.3.1.2 Fitting in the geographic progression

The remaining eleven toponyms pertain to regions which all are palaeographically close to *ΙΟΥΔΑΙΑΝ*. For these regions the question needs to be addressed whether they do fit in the geographical progression of Acts 2:9-11, somewhere between Mesopotamia and Cappadocia.

To visualise the potential search area, I used ArcGIS Pro software to create a multiple ring buffer from the centre point of the straight line between the centre points of Mesopotamia and Cappadocia (Figure 19). These artificial zones can be used as a visual aid in the evaluation of the geographically fitting of the individual regions.

Unfortunately, none of the palaeographically related regions form geographically fitting alternatives for *ΙΟΥΔΑΙΑΝ*. *Ῥιπαῖα* refers to a mythical range of mountains which were thought to form the northern edge of the world.<sup>28</sup> The region was thought to be uninhabited, and already in classical times authors doubted its existence.<sup>29</sup>

The other alternatives break the geographical progression and have additional issues: *Ἰστρία* could either be a region or people on the north-eastern Adriatic coast as well as a city at the Black Sea. The region *Πισιδία* in Asia Minor is both attested in the book of Acts as well as in classical works. *Ἰταλία* roughly corresponds to modern Italy and is very well attested in both classical, Jewish, and Christian texts. It is also hard to conceive in which way this toponym could fit the geographical progression and how the overlap with Rome (Acts 2:10) should be explained.

Additionally, the African region *Νομαδία*, the Macedonian landscape *Ἑορδαία* or *Ἑορδία*, the Aegean islands *Ἰεράκια* and

---

<sup>28</sup> Plutarch, *Cam.* 15.1, Sophocles, *Oed.* col.1248, Dionysius of Halicarnassus, *Ant. rom.* 14.1.3. See, however, Athenaeus, *Deipn.* 6.233d for a nuance of this identification.

<sup>29</sup> Strabo, *Geogr.* 7.3.1.

Ῥοδία, and the island group Πεταλία do not fit the geographical arrangement better than ἸΟΥΔΑΙΑΝ.

### 8.3.1.3 Contextual appropriateness of Ἰδουμαία

The remaining toponym ἸΔΟΥΜΑΙΑ has already been proposed as alternative to ἸΟΥΔΑΙΑΝ by several authors.<sup>30</sup> The designation was first applied to the country of Edom and later also to the southern part of Judah. This region had an important strategic position for controlling trade routes.

In favour of ἸΔΟΥΜΑΙΑΝ is that it is palaeographically close to ἸΟΥΔΑΙΑΝ.<sup>31</sup> Only two operations are required to transform it to ἸΟΥΔΑΙΑΝ and a variant reading on Mark 3:7 transposes the two words.<sup>32</sup> Furthermore, the toponym was valid and common during the time of writing, and the region had Jews among its population from various ethnic backgrounds (Mark 3:8; Jos. J.W. 2.43).

If ἸΔΟΥΜΑΙΑΝ is assumed as the original reading, additional support is still needed to show how the current reading ἸΟΥΔΑΙΑΝ could have come into existence. One might speculate that a copyist wanted to remove a reference to ἸΔΟΥΜΑΙΑ especially because of the turbulent relationship between ἸΔΟΥΜΑΙΑ and ἸΟΥΔΑΙΑ. During Nebuchadnezzar's besiege of Jerusalem the Edomites scorned and mocked the endangered Jews. After Jerusalem was defeated in 587 BCE its Jewish population was deported into Babylonian captivity and their homes and possessions were confiscated by Edomites (Amos 10-14, cf. Ps 137:7). When decades later Jews returned from being exiled, they found the homes of their families occupied by

---

<sup>30</sup> Barthius, *Adversariorum commentariorum libri LX*; Bentley, *Critica Sacra*; Bloomfield, *Greek Testament 1*, vol. 1; Penn, *Annotations*.

<sup>31</sup> Bloomfield, *Greek Testament 1*, vol. 1.

<sup>32</sup> According to the critical apparatus of UBS5, minuscule 579 reads Ἰουδαίας instead of Ἰδουμαίας in Mark 3:8, but what is actually happening is the transposition of the two toponyms, see NA28, 126.



Figure 19. Search area for alternative regions.

Edomites. A few centuries later, after the Arabs had invaded the territory, the Jewish high priest John Hyrcanus forced the Idumeans to follow the Jewish law and thus had them circumcised (1 Macc 4:46; 2 Macc 10:1-8; Jos. *Ant* 13.9.1). Later on, the tyrant king Herod the Great was a born Idumean.<sup>33</sup> A mutual hostility between these two peoples is not difficult to perceive.

This is however pure conjecture, and it does not explain why such a well-known topographic name like Ἰουδαία could have been confused with Ἰουδαίαν, which introduces even more difficulties. Furthermore, Ἰουδαία does not provide a better solution to the odd geographic progression (which however could also be argued in favour of its originality).<sup>34</sup>

#### 8.3.1.4 Summary of findings on alternatives

Though it is tempting to draw firm conclusions about likely candidates for Ἰουδαίαν in Acts 2:9, there is no significant evidence to warrant any of them.

What can be concluded is that an unintentional scribal error based on palaeographical confusion of Ἰουδαίαν with one of the toponyms that were retrieved from the New Testament, Greek Old Testament and Classical literature seems very unlikely. A fitting candidate which was palaeographically close enough to Ἰουδαίαν that might have been altered unintentionally in only a few operations, and that – on top of this – is also meeting the historical geographical and contextual requirements to fit the catalogue in Acts 2:9-11, simply was not identified.

For the moment this leaves the problem unsolved. However, the possibility remains that a new artefact might be discovered which contains a different spelling of an existing or even a hitherto completely unknown toponym that fits the geographical

---

<sup>33</sup> Gary A. Herion, "Herod Philip," *AYBD* 3:160–61.

<sup>34</sup> So Michelsen, *Submission to Prijsvraag*, II-13-II–14.



Figure 20. Toponyms palaeographically close to Ioudaia.

progression, corresponds to the expected semantic subtype (a region) and also suits the wider historical and literary context. Such a discovery would provide an ideal toponym to emend ἸΟΥΔΑΙΑΝ in Acts 2:9.

Until such a discovery is done, it might be better to refrain from speculation about unintentional palaeographical confusion and to accept that the catalogue of nations in Acts 2 is a peculiar list in multiple facets.<sup>35</sup> The mention of ἸΟΥΔΑΙΑΝ is just one of these peculiarities.

### 8.3.2 Critical appraisal of method

The assessment of the method elaborated in this research is however much more positive. Given the right conditions (see below) this method provides new insights which otherwise are difficult to obtain or would be cumbersome since they require an enormous amount of manual work. Using a computer algorithm to gauge whether palaeographical confusion of words might be a solution to an interpretive problem seems promising for several cases.

A first case can be found in the gospel narratives (see Matt 3:4 and its parallel text Mark 1:6), where the character of John the Baptist is introduced. His portrayal as someone who is wearing a camel-skin garment and eating locusts has been interpreted as a reference to Old Testament prophets. However, some have doubted that a man could have actually been eating locusts and therefore conjectured what John could have been eating instead. At this point, the method presented in this research might be helpful to identify a Greek noun

---

<sup>35</sup> Compare Metzger, "Ancient Astrological Geography and Acts 2:9-11:" "probably the least unsatisfactory solution to an admittedly difficult problem is to accept the reading attested by the overwhelming weight of witnesses"; and Jan Krans, "Die Amsterdamer Datenbank als Arbeitsinstrument der Konjekturenforschung," in *Workshop Das Editionsprojekt Novum Testamentum Graece und das Problem des Berücksichtigung der Konjekturen* (Düsseldorf, 2016), 5: "Meines Erachtens ist es nicht angebracht in Apg. 2:9 eine Konjektur zu akzeptieren oder sogar in den Text aufzunehmen. Die Schwierigkeiten, die exegetischer, textkritischer, und historischer Art sind, sind vielleicht nicht zu lösen. Somit bleibt die Vielfalt von Konjekturen und anderer Vorschläge stehen als ebenso viele Zeugen dieser Schwierigkeiten".

belonging to the semantic field of food to test whether alternatives could be detected that might be explained by palaeographical confusion. Similar to this study, these results should be analysed along qualitative conditions to decide between possible and plausible alternatives.

A second case where the method might be helpful is the quest for a fitting verb in Heb 11:37. While most of the manuscripts here have ἐπειράσθησαν (“they were tempted”) this is strange within the enumeration of rather specific violent deaths. To solve this puzzle seventeen divergent emendations have been proposed. It might be helpful to test which verbs are likely to be confused palaeographically with ἐπειράσθησαν. This requires an inflection of the verbs to the identical grammatical-morphological form, and a semantic discussion of the found alternatives.

A third case where the method can add value is in the interpretation of 2 Pet 3:10. Here the verb εὐρεθήσεται (“shall be found”) is unintelligible and several other verbs with a diversity of meanings have been conjectured.<sup>36</sup> The algorithm might contribute to identify verbs which are palaeographically close to εὐρεθήσεται and that would make sense in the sentence.

Each of these cases could greatly benefit from a grammatical-morphological dataset as well as from a semantic dictionary, which should be both available in digital format.

The scope of the method could also be extended to different types of confusion, for instance phonetical. This would require a second confusion table expressing the ease of mispronunciation, mishearing (or mis-vocalization) of a text. Furthermore, scenarios assuming Hebrew, Aramaic or Syriac sources to Greek texts can be scrutinized using the algorithm and a tailored confusion table. The same exercise could for instance be performed supposing a Hebrew origin for the list of nations.

---

<sup>36</sup> For a discussion of the issues with the variant readings and the conjectured emendations see Metzger, *TC<sup>2</sup>*, 636–37; and Krans and Lietaert Peerbolte, “The Amsterdam Database of New Testament Conjectural Emendation.”

## 8.4 Conclusions

This case study dealt with the alleged corruption of  $\text{IOY}\Delta\text{AJAN}$  in Acts 2:9. As was summarised in the previous chapter, a plethora of suggestions have been proposed to solve the problem in the text, and these suggestions were argued from differing perspectives: a background in contemporary textual sources, the intrinsic logic of the narrative, the fittingness in the geographical arrangement, and the probability of palaeographical confusion.

To offer a contribution to this discussion, this study set out to investigate the fittingness of alternative toponyms in the text assuming palaeographical confusion. It therefore used a confusion table which enabled the researcher to quantify the likeliness by which a scribe would confuse particular letter combinations, and an algorithm designed to simulate operations during confusion. The results of this experiment showed there are only a few candidates for  $\text{IOY}\Delta\text{AJAN}$  in Acts 2:9 which could be regarded as real alternatives. Due to the ambiguity of additional qualitative historical, geographical, linguistic, and contextual arguments, the study did not produce conclusive arguments in favour of a particular conjecture.

The second aim of this study was to scrutinize whether reverse engineering palaeographical confusion has potential as a method. The experiment confirmed the suitability of the algorithm to test the probability of palaeographical confusion and proposed three cases for further experimentation. To be successful in establishing probable conjectures for these cases there is a need for a dictionary dataset arranged by semantic fields.

Future research should concentrate on the retrieval and subdivision of semantic dictionaries as well as ways to implement perceived scribal habits as operations in the algorithm to refine its outcomes. Additionally, the outcomes would greatly benefit from a way to “ground-truth” the scores in the confusion distance table: currently these scores are based upon expert knowledge, but it

would be beneficial to improve the scores utilizing statistical data assembled from manuscript evidence.

Many options require further study, for instance an accommodation of the algorithm to better reflect scribal habits, an expansion of the confusion table, and an expansion of the data with hitherto unknown toponyms. However, this dissertation will now leave the field of conjectural and textual criticism to explore the discipline of text interpretation with some case studies.



ΜΕΝ ΠΑΡΘΟΙΚΑΙ  
ΜΗΔΟΙΚΑΙ ΟΙΚΑΤ  
ΟΙΚΟΥΝΤΕΣ ΤΗΝ ΜΕ  
ΣΟΠΟΤΑΜΙΑΝ ΟΥ  
ΠΑΡΤΕΚΑΙ ΚΑΠ  
ΡΑΦΟΚΥΝΠΟΝΤ  
ΚΑΙ ΤΗΝ ΑΣΙΑΝ  
ΦΡΥΓΙΑΝ ΤΕ ΚΑΙ ΠΑΜ  
ΦΥΛΙΑΝ ΑΙΓΥΠΤΟ  
ΚΑΙ ΤΑ ΜΕΡΗ ΤΗΣ ΛΙ  
ΒΥΗΣ ΤΗΣ ΚΑΤΑ ΚΥ  
ΡΗΝΗΝ ΚΑΙ ΟΙ ΕΠΙ  
ΔΗΜΟΥΝΤΕΣ ΡΩ  
ΜΑΙΟΙ ΟΥΔΑΙΟΙ ΤΕ  
ΚΑΙ ΠΡΟΧΑΛΥΤΟΙ  
ΚΡΗΤΕΣ ΚΑΙ ΑΡΑΒΕΣ  
ΑΚΟΥΟΜΕΝ ΑΛΛΟΥ  
ΤΩΝ ΑΥΤΩΝ ΤΑΙΣ  
ΗΜΕΤΕΡΑΙΣ ΓΛΩΣ  
ΣΑΙΣ ΤΑ ΜΕΓΑΛΕΙΑ  
ΤΟΥ ΘΕΟΥ

**PART 3**  
**INTERPRETING**  
**TEXTS**



## 9

# ADVANCING NEW TESTAMENT INTERPRETATION THROUGH SPATIAL-TEMPORAL ANALYSIS

In previous chapters I discussed in which way spatial-temporal analysis methods, and more generally computer algorithms, can contribute to *establishing* the wording of ancient texts. For that purpose, I have explored alternatives to the locusts in John the Baptist's diet (Matt 3:4 and Mark 1:6), and – more extensively – to the allegedly corrupted toponym Ἰουδαίαν in Acts 2:9.

In the following chapters, I will shift the focus to the potentials of spatial-temporal analysis for the *interpretation* of texts. For that purpose, I will again use case studies. In the next chapter I will reconstruct travel movements of Paul and his companions comparing the accounts in Acts 17 and 1 Thessalonians 3 using space-time cubes. Thereafter, I will study the background concerning logistics, travels, and care for prisoners from the letters of Ignatius.

In this chapter I revisit Acts 2:9-11 to elaborate two interpretive issues of the list of nations.<sup>1</sup> The first issue concerns the identity of the audience present at Pentecost (section 9.2), and the second issue explores whether the list is geographically related to other contemporary geographical lists (section 9.3). To put these

---

<sup>1</sup> This chapter is based on van Altena, Bakker, and Stoter, “Advancing.”

issues into context I start with a concise overview of the book of Acts (section 9.1).

## 9.1 Acts 2:9-11 in their context

The Acts of the Apostles are the sequel to the Gospel of Luke. Whereas Luke narrates the story of Jesus with a specific focus on his public performance, crucifixion, and resurrection; Acts continues the story for some thirty years. Starting in Jerusalem on the day of Jesus' ascension, the narrative tells "the progress of the gospel along the road leading from Judaea via Antioch to Rome."<sup>2</sup>

The first part of Acts (1:1-15:35) has the apostle Peter as its main character, and the inclusion of gentile Christians into an originally Jewish sect as its main concerns. The second part (15:36-28:31) follows the apostle Paul on his missionary journeys. Due to the redundancy and unproportionable amount of space dedicated to Paul's defences to Jewish and Roman officials in Acts 22, 24 and 26, it has been suggested that the author of Acts uses this part for providing an apology for Paul.<sup>3</sup>

The list of nations (Acts 2:9-11) is found in the first part of the book. These topo- and demonyms describe the background of the audience attending the Jewish Pentecost – a religious festival occurring annually fifty days after Passover in Jerusalem, to celebrate the harvest of first fruits. The list consists of fifteen geographical names and is grouped according to a chiastic pattern<sup>4</sup> of both "races and nations"<sup>5</sup> which "embrace a wide sweep of the eastern Mediterranean."<sup>6</sup>

---

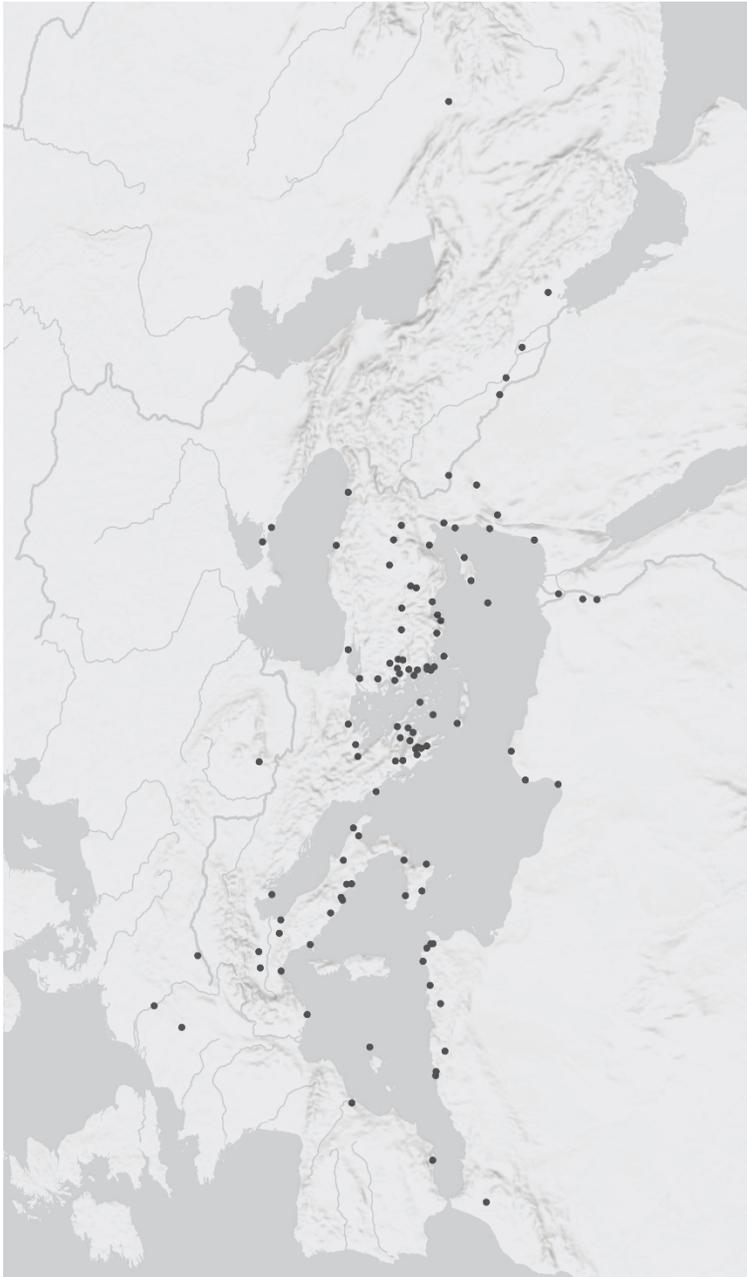
<sup>2</sup> Bruce, *Acts*, 8.

<sup>3</sup> Keener, *Acts: Introduction and 1:1-2:47, 1:223-224; 435-458*.

<sup>4</sup> Brinkman, "Literary Background," 418; compare Pervo, *Acts*, 66.

<sup>5</sup> Barrett, *Acts, Vol. 1*, 121. See also Hengel, "Ιουδαία in the Geographical List," 162.

<sup>6</sup> James D.G. Dunn, "Pentecost, Feast Of," *NIDNTT* 2:786.



*Figure 21. Known Jewish diaspora communities.*

It has been advocated that the list resembles the Jewish diaspora<sup>7</sup> in the ancient world.<sup>8</sup> Ancient authors, such as the Greek geographer Strabo (quoted in *Jos. Ant.* 14.114-8) and the Alexandrian philosopher Philo (*Embassy* 281-2), indicate the widespread dispersion of the Jewish people in the first century CE. Figure 21 gives a general impression of known Jewish diaspora communities.

Popular Bible Atlases provide maps locating the peoples and nations of Acts 2,<sup>9</sup> but conceal the text's "frequently problematic

---

<sup>7</sup> The term *diaspora* is used to refer to dispersion of the Jewish people over the world. It was initiated when the Northern part of the Jewish Kingdom was taken into captivity to Assyria, in 720 BCE. In 586 BCE, a second exile followed when the Babylonians besieged Jerusalem and took the southern part of the Jewish Kingdom into exile. However, though many Jews left their homeland by force, more chose deliberately to live outside of Judea being either the offspring of Jewish captives or migrants seeking to improve the life of their family. In this sense, the diaspora was not a unique phenomenon: likewise, a Greek, Aramaic and Phoenician dispersion existed due to the conquerings of Alexander the Great and his subsequent effort to unify his empire.

What sets the Jewish diaspora apart from the other dispersed peoples, is the fact it has caused theological reflection. From a "Palestinian" perspective, it was regarded as the consequence of disobedience to the Torah; however, from a "diaspora" perspective it seems to have been interpreted as the fulfilment of the promises given to Abraham (*Jos. Ant.* 4.114-116, see Gen 12:1-3) See David A. Desilva, "Jews in the Diaspora," in *The World of the New Testament: Cultural, Social, and Historical Contexts*, ed. Joel B. Green and Lee Martin McDonald (Grand Rapids, MI: Baker Academic, 2013), 272-90; Paul R. Trebilco, "Diaspora Judaism," *DLNTD*, 287-300; Paul R. Trebilco, "Diaspora Judaism," *DNTB*, 281-96.

<sup>8</sup> See for instance Colin J. Hemer, *The Book of Acts in the Setting of Hellenistic History*, ed. Conrad H. Gempf (1989; repr., Winona Lake, IN: Eisenbrauns, 1990), 217, 222-23; Hans Conzelmann, *Acts: A Commentary*, ed. Eldon Jay Epp and Christopher R. Matthews, trans. James Limburg, A. Thomas Kraabel, and Donald H. Juel, Herm (Tübingen: J. C. B. Mohr (Paul Siebeck), 1972; Philadelphia, PA: Fortress Press, 1987), 14; John B. Polhill, *Acts*, NAC 26, ed. E. Ray Clendenen (Nashville, TN: Broadman & Holman, 1992), 102. Barrett, *Acts*, Vol. 1, 119; and Pervo, *Acts*, 67 nuance this identification.

<sup>9</sup> See for instance John D. Currid and David P. Barrett, *Crossway ESV Bible Atlas* (Wheaton, IL: Crossway, 2010), map 12-13; Barry J. Beitzel, *The Moody Atlas of Bible Lands* (Chicago, IL: Moody, 1985) map 85; Anson F. Rainey and R. Steven Notley, *The Sacred Bridge: Carta's Atlas of the Biblical World*, 2nd ed. (Jerusalem: Carta, 2014), 371.

geography,”<sup>10</sup> its difficulties “in various respects”<sup>11</sup> and its “severe problems.”<sup>12</sup>

While most scholars agree that the list has a symbolic value, some (also) assume that the list indeed mentions nations attending the celebration of Pentecost in Jerusalem. These scholars do not agree on the identity of the audience. On the other hand, when the list should be interpreted symbolically, as a literary construct conveying the idea of universality,<sup>13</sup> questions about a resemblance with contemporary literature come to the fore. In the remainder of this chapter, I will investigate the identity of the audience (section 9.2) and the suggested literary backgrounds of the list (section 9.3).

## 9.2 The identity of the audience

Acts 2:5 describes the audience as κατοικοῦντες (residents), “pious Jews from every nation under heaven dwelling in Jerusalem”, which “recognised the indigenous languages and dialects of their native lands.”<sup>14</sup> But were these people residents of Jerusalem, who migrated from the Jewish Diaspora colonies<sup>15</sup> or visitors to the festival and residents of respectively Mesopotamia, Judea, Cappadocia etc. who travelled to Jerusalem to attend the religious festival? <sup>16</sup> Considerations based on the Greek terminology used for the audience, as well as parallels in ancient literature have been explored to answer these questions.

---

<sup>10</sup> Sleeman, *Geography*, 96.

<sup>11</sup> Witherington, *Acts*, 136.

<sup>12</sup> Barrett, *Acts*, Vol. 1, 121.

<sup>13</sup> Pervo, *Acts*, 60.

<sup>14</sup> Bruce, *Acts*, 54.

<sup>15</sup> Luke Timothy Johnson, *The Acts of the Apostles*, ed. Daniel J. Harrington, SP 5 (Collegeville, MN: Liturgical Press, 1992), 43.

<sup>16</sup> Bruce, *Acts*, 55. Dunn, “Pentecost,” 2:786; and Sleeman, *Geography*, 96 escape the dilemma by stressing that the multitudes “represent ‘every nation under heaven’ (2:5)”, but especially the comment of Sleeman should be read against his aims to explain the overarching concept of ascension geography in Acts.

Witherington contrasts κατοικοῦντες to ἐπιδημοῦντες (visitors).<sup>17</sup> That is, only the Romans are indicated as visitors. This might be explained “because of the narrative’s geographical goal (28:11-31)”,<sup>18</sup> as a possible allusion of “how there came to be a Christian community in Rome prior to the arrival of Paul or Peter or other major missionaries”,<sup>19</sup> or to distinguish between provincials and roman citizens.

Most English Bibles also translate the word κατοικοῦντες as residents and the general usage of the noun throughout the book of Acts indeed indicates permanent settlement.<sup>20</sup> However, the term is used in the direct context for residents of Jerusalem (2:5) and for those of Mesopotamia (2:10). As Keener states: “they cannot be both long-term residents of Mesopotamia in 2:10 and long-term residents of Judea in 2:5.”<sup>21</sup> This means an exclusive meaning of κατοικοῦντες as residents is not upholdable. The term may also include visitors.

Others have compared extra-biblical descriptions about the audience at Pentecost with the texts in Acts to elucidate the issue. Josephus (*Ant.* 14.337) refers to large crowds from *outside* Jerusalem, attending Pentecost, but Johnson alludes to a mixed population *in* Jerusalem.<sup>22</sup> These interpretations neither settle the case. For instance, Acts 6:9 could be interpreted to favour the interpretation of κατοικοῦντες as returned Diaspora Jews and hence, long term settlers.<sup>23</sup>

---

<sup>17</sup> Witherington, *Acts*, 135.

<sup>18</sup> Keener, *Acts: Introduction and 1:1-2:47*, 1:850.

<sup>19</sup> Witherington, *Acts*, 137, note 32.

<sup>20</sup> 1:19; 4:16 72, 74; 9:22, etc. However, see 7:2, 4 which “might suggest temporary (but lengthy) residence as aliens.” Keener, *Acts: Introduction and 1:1-2:47*, 1:833, note 450.

<sup>21</sup> Keener, *Acts: Introduction and 1:1-2:47*, 1:833, note 452.

<sup>22</sup> Johnson, *Acts*, 43.

<sup>23</sup> Johnson refers to three locations in Josephus (*J.W.* 1.397, 1.437, 1.672) which seem to imply the existence of a mixed population in Jerusalem. This inference seems illegitimate. It is unclear in which way these quotations from Josephus offer a direct connection with the public in Acts 2, or with Pentecost in general. They do not bring us much further than a general inference that the residents of Jerusalem consisted of

In conclusion, the evidence about the identity of the audience is not convincing for either position: “Luke – the author of Acts – simply does not sacrifice the space to explain this detail.... Certainly, there must have been many visitors for the festival ..., and perhaps Luke would have included temporary residents who stayed for the seven weeks after Passover among his κατοικοῦντες.”<sup>24</sup>

### 9.2.1 Research questions and methodology

If at least some of the people in the audience were *visiting* Jerusalem, what routes could they have taken? And might the time of year (and therefore weather) have had an influence on their travels?

To gain an impression of the routes which could have been taken, I used the Stanford Geospatial Network Model of the Roman World.<sup>25</sup> Unfortunately, the tool deliberately contains only a selection of geographical locations. Neither does it fully cover the geographical extent of Acts 2:9-11. This complicated the identification of representative locations for the list of nations. Whenever possible, I choose the most central location for each geographical area in Acts 2:9-11. For the areas Parthia, Media, and Elam, I selected Ad fl. Tigrum, which is the most eastern location (somewhere near the river Tigris) available in Orbis. For Mesopotamia, I selected Dura, the most southern location along the river Euphrates, and for Libya I selected Kardamis. I used Orbis’ entry Jerusalem as destination (Table 9).

---

both Jews and foreigners. Furthermore, these texts clearly indicate that these foreigners (Thracians, Gauls and Germans) were all part of the guard of Herod (the Idumean king), which was established by Caesar (the Roman Emperor). This implies a heathen context and makes the identification with the audience in Acts 2 unlikely.

<sup>24</sup> Keener, *Acts: Introduction and 1:1-2:47*, 1:834.

<sup>25</sup> Available at [www.orbis.stanford.edu](http://www.orbis.stanford.edu). Orbis is a tool for route planning in the ancient Mediterranean and considers many factors that might have had an impact on travel time. For example, in ancient times, travelling in summer conditions was significantly easier than in winter conditions when fewer ships were sailing.

I also established the time frame: the date of Pentecost depends on the date of Passover and is obscured by several issues.<sup>26</sup> Jews celebrated Passover on the 14<sup>th</sup> day of the first month, the Hebrew month Nisan, starting at the spring new moon.<sup>27</sup> This would have been somewhere in the second half of March or the first half of April.

*Table 9. Locations in Acts 2 and equivalents in Orbis.*

Acts 2	Orbis
Jerusalem	Ierusalem
Parthia	Ad fl. Tigrum
Media	Ad fl. Tigrum
Elam	Ad fl. Tigrum
Mesopotamia	Dura
Judaea	Ascalon
Cappadocia	Caesarea (Cappadocia)
Pontus	Nico polis (Pontus)
Asia	Pergamum
Phrygia	Caesarea (Phrygia)
Pamphylia	Side
Egypt	Alexandria
Libya	Kardamis
Cyrene	Cyrene
Rome	Roma
Crete	Chersonasos
Arabia	Petra

So, Pentecost was likely to be in the second half of May or the first half of June.<sup>28</sup> Table 10 shows my choices for additional parameters required by Orbis.

<sup>26</sup> For example, the existence of several calendars in the ancient world, but also the dependence on the phase of the moon and a controversy between Qumran sectarians and Jewish rabbis about the starting point for the calculation of the fifty-day-period, see Douglas R. De Lacey, “Holy Days,” *DPL*, 402–4.

<sup>27</sup> Num 28:16, Lev 23:5, and Josh 5:10. See Martin G. Abegg Jr., “Calendars, Jewish,” *DNTB*, 180–83.

<sup>28</sup> Pentecost is the Greek name for the Jewish Feast of Weeks. The term is derived from its occurrence 50 (πεντηκοστή) days after Passover, see Mark J. Olson, “Pentecost,” *AYBD* 5:222–23. The dating of Passover is based on William Barclay, ed., *The Acts of the Apostles*, 3rd ed., NDSB (Louisville, KY: Westminster John Knox, 2003), 23.

For each location in Table 9, I calculated the cheapest, shortest, and fastest routes to Jerusalem. I also corrected the resulting travel time because pious Jews would not travel on Sabbath,<sup>29</sup> and, to give map readers a sense of distances, I calculated Euclidean distances between the locations and Jerusalem.<sup>30</sup>

*Table 10. Travel condition parameters used in the analysis.*

Parameter	Value
Network Modes – road	true
Network Modes – river	true
Network Modes – open sea	true
Network Modes – coastal sea	true
Network Modes – high resolution	false
Mode - road	Foot (30km / day) (Donkey) <sup>31</sup>
Mode - river	Civilian
Mode - sea	Fast
Transfer costs - river	0
Transfer costs - sea	0

### 9.2.2 Results

Table 11 and Table 12 show the results of these analyses, and the graph in Figure 22 shows the travel distance in kilometres from each location to Jerusalem differentiated by four routing preferences: cheapest, shortest, fastest, and Euclidean distance. Figure 23 shows the amount of days that these travels might have taken. As mentioned before, the travel duration has been corrected to account for Sabbath.

<sup>29</sup> Keener, *Acts: Introduction and 1:1-2:47*, 1:587, see Exo 16:39, Isa 58:13. The output was corrected by dividing each output by 6 (days) and subsequently multiplying it by 7 (days).

<sup>30</sup> The algorithm is available in ArcMap – Analysis Tools – Proximity Near. Used parameter values are: Input features: Locations, Near Features: Jerusalem, Search Radius: <empty>, Location: False, Angle: False; Method: Geodesic.

<sup>31</sup> Remarkably, the option “Foot (30km /day)” is not available as parameter value when the priority type is changed to cheapest in Orbis.

Table 11. Travel distances and durations to Jerusalem.

	May			
	cheapest		fastest	
	du	di	du	di
Ad fl. Tigrim	60.6	1758	27.5	1317
Dura	58.2	1460	29.3	1369
Ascalon	2.6	143	2.6	77
Caesarea (Cappadocia)	18.9	1142	20.1	1142
Nicopolis (Pontus)	29.3	3177	30.5	3177
Pergamum	12.7	1671	12.7	1671
Caesarea (Phrygia)	15.6	1098	15.6	1098
Side	6.3	755	6.3	755
Alexandria	6.2	737	6.2	670
Kardamis	9.7	1293	9.6	1226
Cyrene	12.9	1713	12.8	1647
Roma	20.4	3048	20.4	2982
Chersonasos	9.6	1329	9.6	1329
Petra	8.9	354	8.9	288
	days	km	days	km

Table 12. Travel duration - corrected for sabbath.

Toponym in Acts	Orbis (point of departure)
Parthia, Media, Elam	Ad fl. Tigrim
Mesopotamia	Dura
Judaea	Ascalon
Cappadocia	Caesarea (Cappadocia)
Pontus	Nicopolis (Pontus)
Asia	Pergamum
Phrygia	Caesarea (Phrygia)
Pamphylia	Side
Egypt	Alexandria
Libya	Kardamis
Cyrene	Cyrene
Rome	Roma
Creta	Chersonasos
Arabia	Petra

(Table 11 continued)

		June					
shortest		cheapest		fastest		shortest	
du	di	du	di	du	di	du	di
37.2	1115	60.9	1758	27.7	1317	37.2	1115
30.4	912	58.4	1460	29.5	1369	30.4	912
2.6	77	2.7	143	2.6	77	2.6	77
30.9	1026	19.1	1142	20.3	1142	30.8	1026
45.9	1323	29	3178	30.2	3178	45.9	1323
15.7	1365	12.8	1672	12.8	1672	15.8	1366
17.5	1040	15.9	1098	15.9	1098	17.8	1040
7.3	734	6.7	755	6.7	755	7.6	734
26.6	582	6.7	737	6.6	670	26.6	582
35.7	1121	10.6	1293	10.6	1226	35.9	1121
47.6	1432	14.1	1713	14	1647	47.8	1432
33.3	2769	20.4	3058	20.4	3058	33.1	2770
10.6	1308	9.7	1330	9.7	1330	10.7	1309
9.5	286	9	354	8.9	288	9.5	286
days	km	days	km	days	km	days	km

du = duration, di = distance

(Table 12 continued)

May			June		
c	f	s	c	f	s
70.7	32.1	43.4	71.1	32.3	43.4
67.9	34.2	35.5	68.1	34.4	35.5
3.0	3.0	3.1	3.2	3.0	3.0
22.1	23.5	36.1	22.3	23.7	35.9
34.2	35.6	53.6	33.8	35.2	53.6
14.8	14.8	18.3	14.9	14.9	18.4
18.2	18.2	20.4	18.6	18.6	20.8
7.4	7.4	8.5	7.8	7.8	8.9
7.2	7.2	31.0	7.8	7.7	31.0
11.3	11.2	41.7	12.4	12.4	41.9
15.1	14.9	55.5	16.45	16.3	55.8
23.8	23.8	38.9	23.8	23.8	38.6
11.2	11.2	12.4	11.3	11.3	12.5
10.4	10.4	11.1	10.5	10.4	11.1

c = cheapest, f = fastest, s = shortest

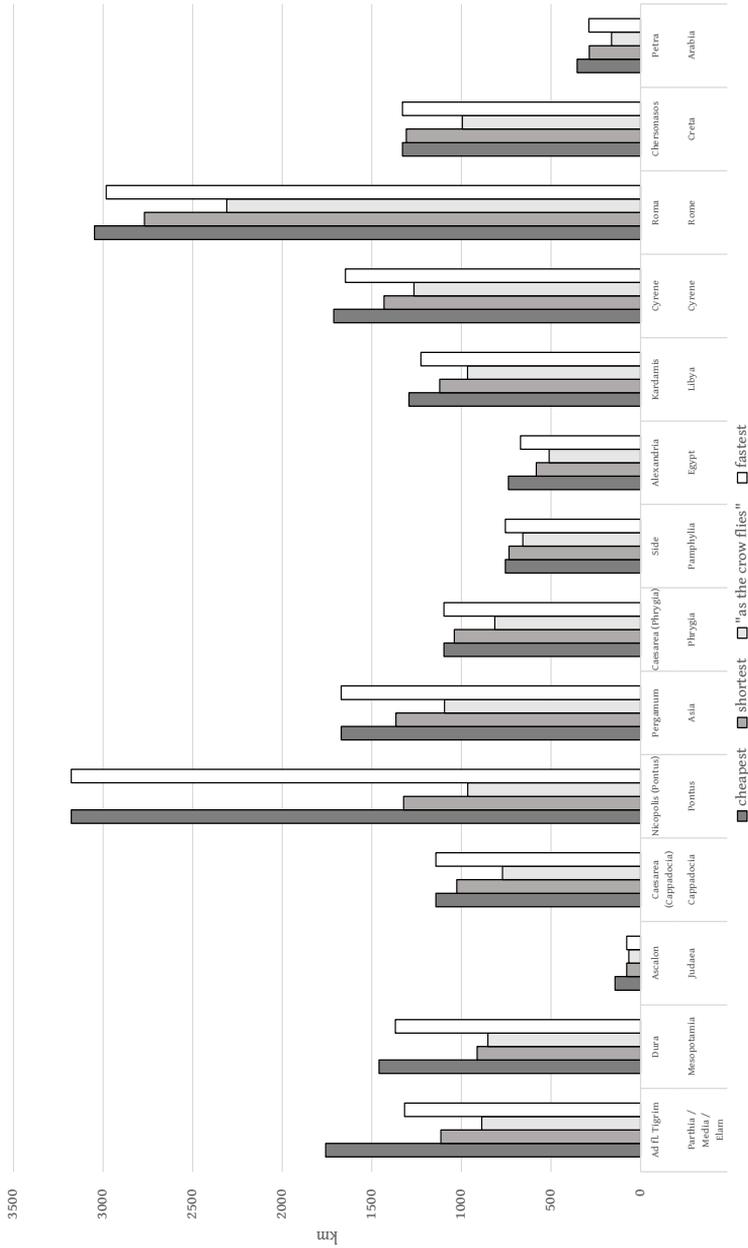


Figure 22. Travel distances in km towards Jerusalem.

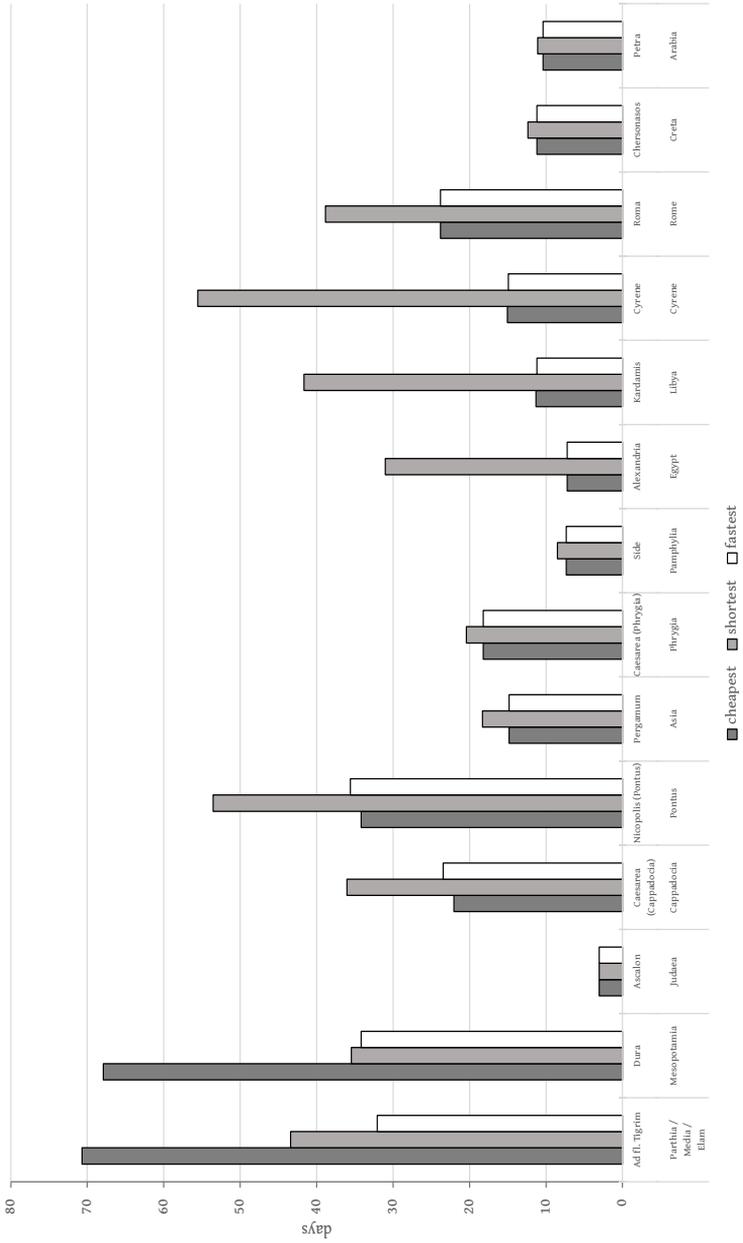


Figure 23. Travel duration in days towards Jerusalem.

### 9.2.3 Conclusion of case study 1

From these results, I conclude that if there were non-residents among the κατοικοῦντες, they must have had more than average financial resources to afford traveling and being away for a longer period. The results show that travel durations range from 3 up to 71 days for the cheapest, and from 3 up to 36 days for the fastest travels to Jerusalem in May (Table 12). Although first-century travellers had the extensive Roman road network and seafaring at their disposal, travelling remained quite an endeavour. It required the financial luxury to allow one to be away from home for a longer period.

The results also show that travel time was far from trivial, and not directly related to distance nor to costs. Travellers who came from closer locations did not necessarily have shorter travel times. Compare for example the amount of days for the cheapest and fastest distance from Dura (Mesopotamia), and from Caesarea (Phrygia) to Jerusalem. For the cheapest route respectively 68 and 34 days were required, while the fastest route demanded 18 days from either location. However, the Euclidian distances between either location and Jerusalem amounted respectively to 912 and 1040 kilometres.

### 9.3 Comparison with ancient catalogues of nations

When the list of nations should be interpreted as a literary construct with a symbolic value the author of Acts might have based the list on existing ancient geographical traditions. Halévy and Cumont proposed that the list in Acts 2 stands in the tradition of astrological geography.<sup>32</sup> Weinstock and Brinkman elaborated this suggestion by identifying parallels with the list in the Rudiments of Paulus Alexandrinus, a writing from the fourth century CE, which

---

<sup>32</sup> Joseph Halévy, "Nouvelles considérations sur le cycle turc des animaux," *T'oung Pao* 1.7 (1906): 279–81; Franz Cumont, "La plus ancienne géographie astrologique," *Klio* 9.9 (1909): 263–73, <https://doi.org/10.1524/klio.1909.9.9.263>.

classifies countries by the signs of the zodiac.<sup>33</sup> In their view both lists correspond on several features (Table 13).

*Table 13. Alleged parallels between Paulus Alexandrinus & Acts.*<sup>34</sup>

Sign	Paul of Alexandria	Acts 2:9-11
Ram (Aries)	Persia	Parthians, Medians and Elamites
Bull (Taurus)	Babylonia	Mesopotamia
Twins (Gemini)	Cappadocia	Cappadocia
Crab (Cancer)	Armenia	Pontus
Lion (Leo)	Asia	Asia
Virgin (Virgo)	Hellas, Ionia	Phrygia and Pamphylia
Scales (Libra)	Libya, Cyrene	Parts of Libya near Cyrene
Scorpion (Scorpio)	Italy	Romans
Archer (Sagittarius)	Cilicia, Crete	Cretans
Ibex (Capricorn)	Syria	Judea
Water carrier (Aquarius)	Egypt	Egypt
Fish (Pisces)	Red Sea, India	Arabians

Other scholars think that the closest analogy to the list in Acts 2 can be found in “accounts of the distribution of the Jews throughout the world”.<sup>35</sup> Examples of such accounts can be found in contemporary Jewish authors such as Josephus (*Ag. Ap.* 2.282; *J.W.* 2.398; 7.43; 14.114-8 and *Ant.* 15.21) and Philo (*Flacc.* 45f. and especially *Embassy* 281f.).

<sup>33</sup> Weinstock, “Acts II, 9–11”; Brinkman, “Literary Background.” The idea is not that the book of Acts is directly dependent on the Rudiments, which would be impossible since the Rudiments are of later date, but that both writings belong to a wider astrological-geographical tradition and might be based on a common source.

<sup>34</sup> Keener, *Acts: Introduction and 1:1-2:47*, 1:839. Both Weinstock, “Acts II, 9–11,” 43; and Brinkman, “Literary Background,” 421 have different names for the signs of the Zodiac.

<sup>35</sup> Barrett, *Acts*, Vol. 1, 122.

### 9.3.1 Research question and method

In this case study, I will study the list in Acts 2 against the background of these two geographical traditions. Can new insights be obtained from plotting the locations enumerated in different geographical lists on a map and does this advance the assessment and evaluation of suggested backgrounds to the list of nations in Acts 2?

To answer this question, I have conducted a literature study and reconstructed the geographies behind Acts 2:9-11, the Rudiments of Paulus Alexandrinus, and Philo. First, I created a list of locations in Acts 2:9-11 and contemporary texts. Next, I automatically matched these data to the coordinates from the Pleiades dataset.<sup>36</sup> Subsequently, I reviewed and, when necessary, corrected these matches,<sup>37</sup> and as a final step, I connected the locations according to the order in which they appear in the respective lists using the algorithm Points to Line in ArcMap. The results are visualised in Figure 24, Figure 25, and Figure 26. I will now evaluate these results for either option.

### 9.3.2 Signs of the Zodiac

Although the studies of Bruce and Metzger make it highly implausible to uphold the view of exclusive dependencies between the two lists and nowadays the theory is regarded as obsolete,<sup>38</sup> it remains possible to compare the arrangement of Paulus' list (Figure 25) to the catalogue in Acts 2 (Figure 24). The overall geographical

---

<sup>36</sup> The Pleiades project ([www.pleiades.stoa.org](http://www.pleiades.stoa.org)) was initiated by the Ancient World Mapping Center (AWMC) and the Institute for the Study of the Ancient World (ISAW).

<sup>37</sup> Some toponyms are used for more than one place. For example, *Caesarea* is used to indicate Caesarea Maritima, Caesarea Phillipi, Caesarea in Cappadocia, and Caesarea in Phrygia.

<sup>38</sup> Which could be inferred from the quotation and discussion by Brinkman, "Literary Background," 422 note 12. In his revised commentary, *Acts*, 55-59, Bruce still upholds this view. See also Metzger, "Ancient Astrological Geography and Acts 2:9-11." Barrett, *Acts*, Vol. 1. However, see the discussion Pervo, *Acts*, 67, note 74.

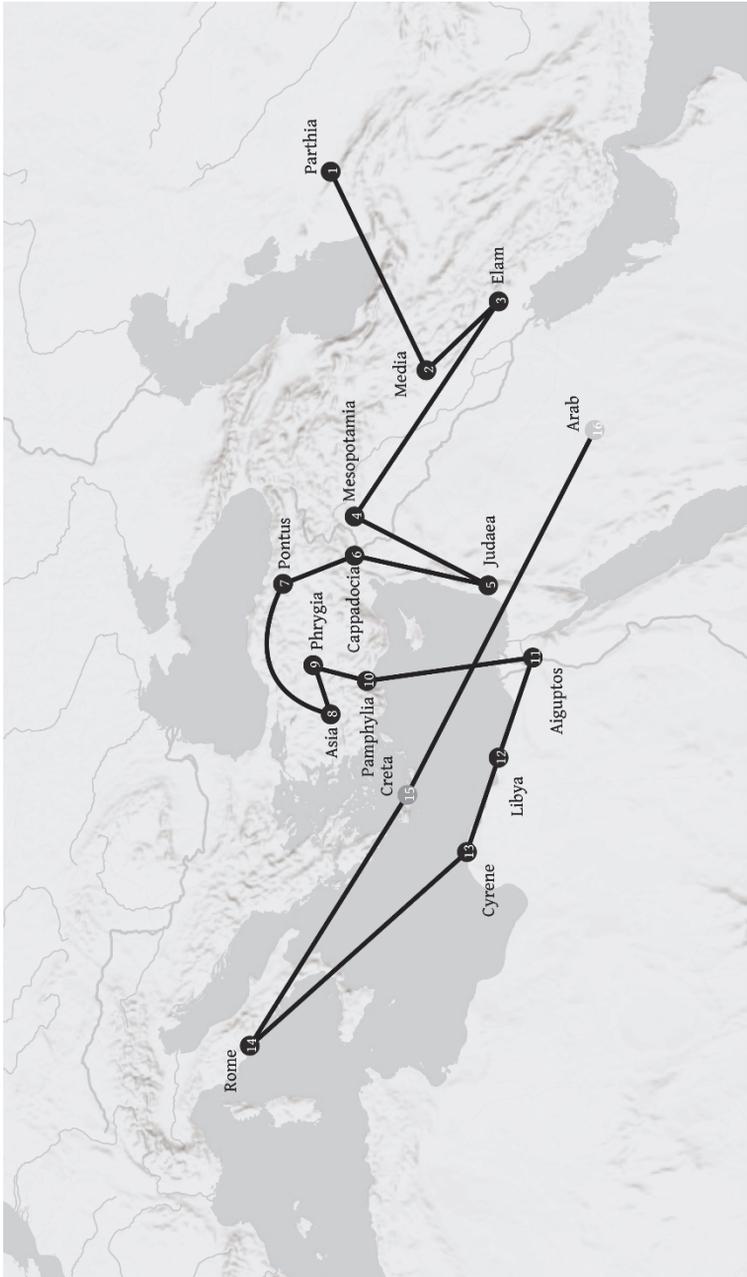


Figure 24. Locations in Acts 2 uncategorized.

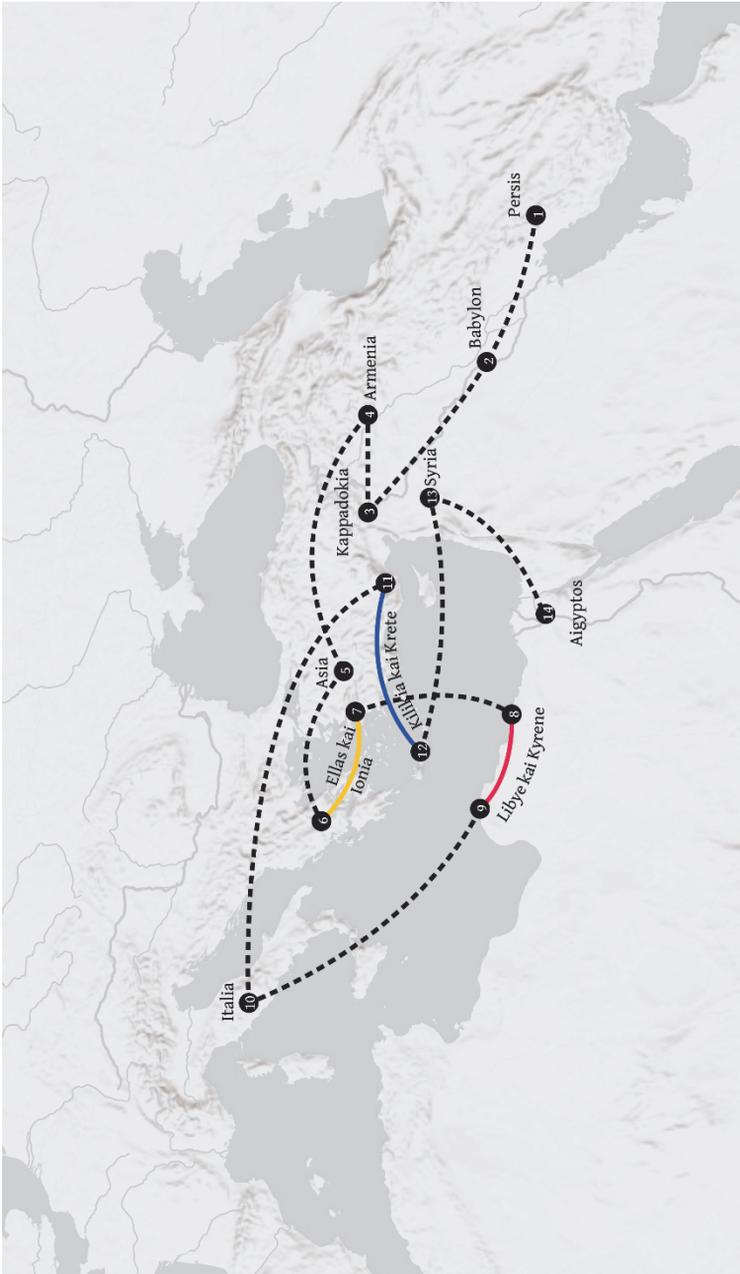


Figure 25. Geograpy of Paulus Alexandrinus's list.

extent and arrangement show some resemblance with Acts 2. But although both lists start with a similar ordering, later on the two lists do not hold a real resemblance.

After comparison of the individual locations, I affirm Metzger's conclusion that there is not much resemblance between the two catalogues (only five actual parallels). I also agree with Keener's observation that both Acts 2 and Paulus' Rudiments "resemble the more general form of lists of nations."<sup>39</sup>

### 9.3.3 Jewish catalogues of nations

Barrett proposed that the list in Acts 2 belongs to the tradition of lists describing "the distribution of the Jews throughout the world."<sup>40</sup>

At first glance, the maps based on respectively Philo's lists (Figure 26) and Acts 2 (Figure 24), show little resemblance, due to difference in starting point. However, in *Embassy* 281f. Philo distinguishes between mainland, islands, and lands beyond the Euphrates, and he classifies the countries as close neighbours of Judea (1-4), settlements in Asia Minor (5-9), cities in Europe (10-18), isles (19-21), and the remainder beyond the Euphrates (22).

At the risk of superimposing a structure on the list of nations in Acts 2, both the main classification in mainland, islands, and desert; and the regional subdivision have been projected to the list in Acts 2, resulting in Figure 27. As can be seen from this figure, both structures can be perceived in the list in Acts 2 and therefore a certain resemblance between the list in Acts 2 and the list of Philo is defensible.

---

<sup>39</sup> Keener, *Acts: Introduction and 1:1-2:47*, 1:840.

<sup>40</sup> Barrett, *Acts*, Vol. 1, 122. Although Barrett concludes there is no question of dependency or a common source, he regards the list in Philo (*Embassy* 281f.) interesting because of its similar form.

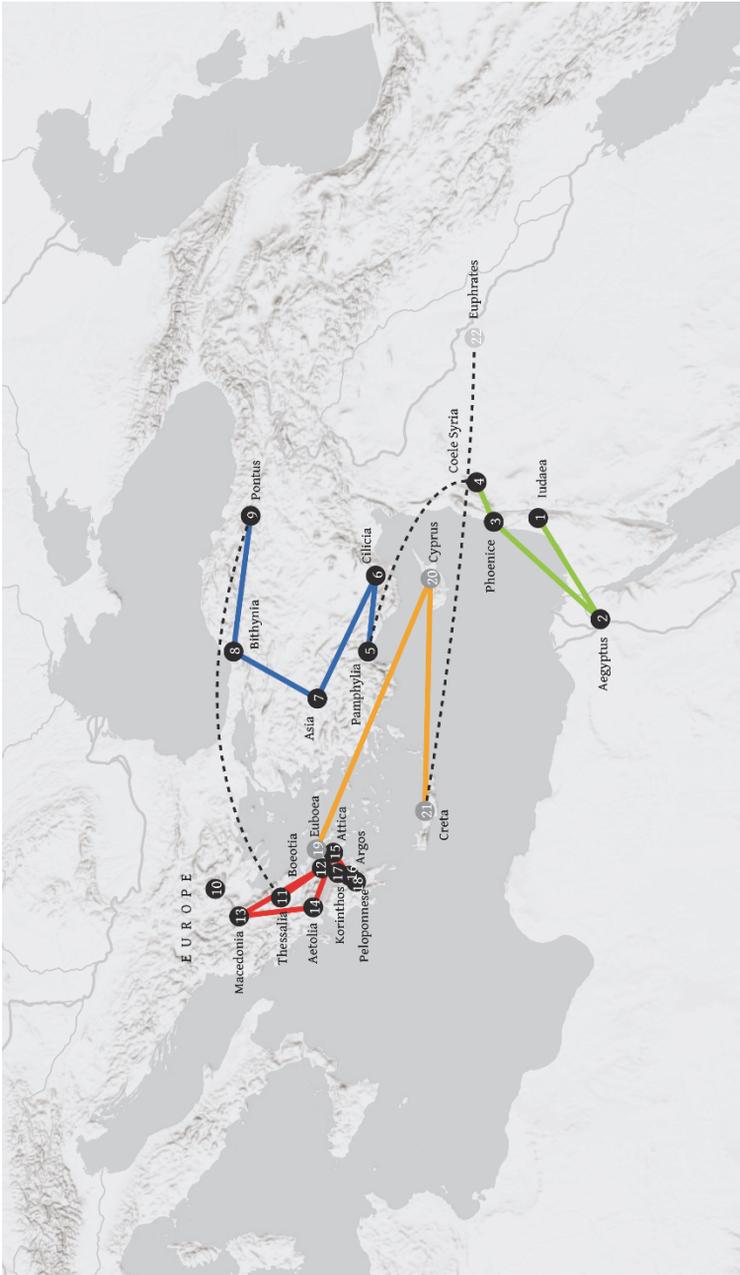


Figure 26. Geographical clusters in Philo's list of nations.

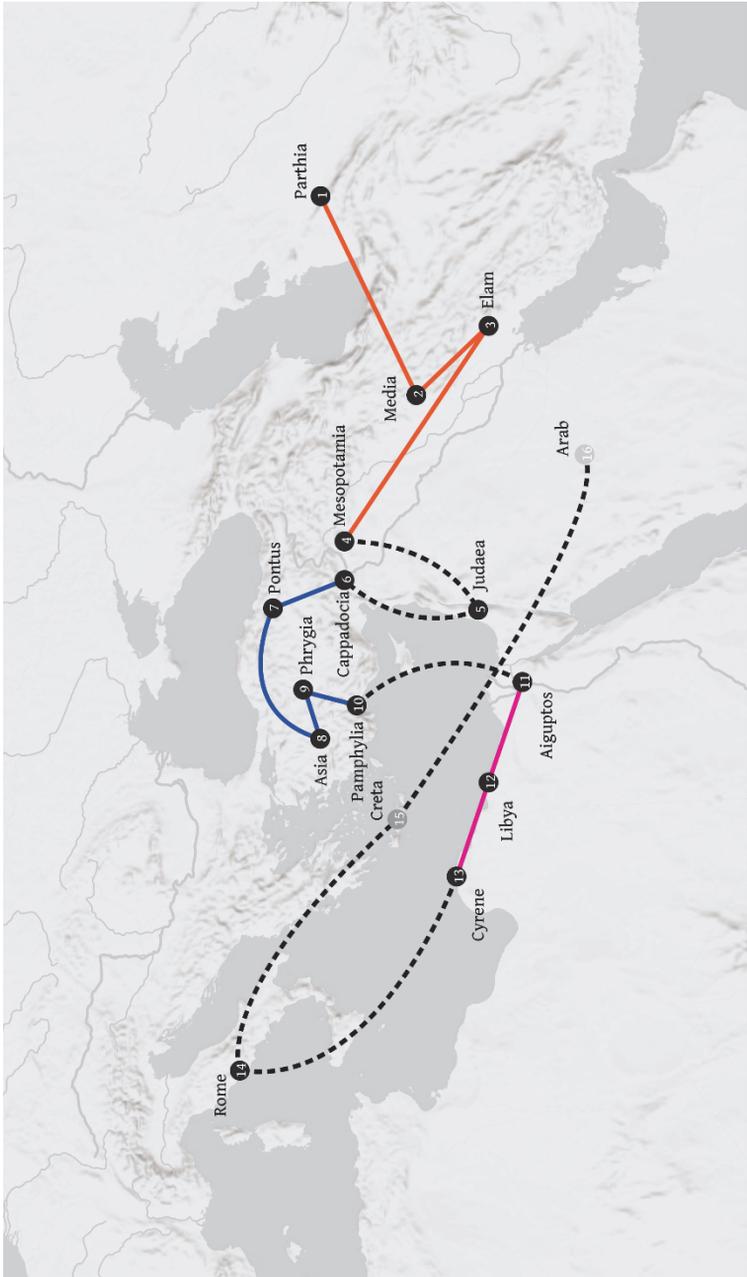


Figure 27. Locations in Acts 2 categorized.

#### 9.3.4 Conclusion of case study 2

The question of this case study was whether the cartographic portrayal of the different geographical lists would be helpful in evaluating suggested backgrounds to the list of nations in Acts 2. I tend to answer that question positively.

From this research, it can be concluded that cartographical portrayal confirms that a background in ancient astrological geography is unlikely for the list in Acts 2. The maps reveal dissimilarities between locations in Paulus Alexandrinus and Acts 2. At the same time, a background in Jewish diaspora lists looks more realistic.

A comparison of the nations in Acts 2 with those in Philo shows similarities, especially when projecting the classification of Philo on the list in Acts 2. This projection reveals that both lists contain similar groupings. These insights might help to further the interpretation of Acts 2.

### 9.4 Conclusions

From these case studies, it can be concluded that visualisation and spatial analysis can contribute to the interpretation of the text in Acts 2:9-11. The application of network analysis on data representing the Roman road network constrained by parameters valid for ancient times has provided additional insights into a possible identity of the audience, especially into their financial position and the requested offers concerning time, distance, and costs they were willing to bring – if the assumption is correct that they were visitors (case study 1).

It was also shown that cartographic visualisation is helpful to equate contemporary textual resources (case study 2). The results underscore observations and conclusions that have been reached via other methods.

The results of either case study are not conclusive on their own (and as such might be challenged), but they contribute to

interpretation by making the backgrounds of a single narrative more vivid. In the next chapter spatial-temporal analysis methods will be applied in a comparative study of two narrative accounts on (supposedly) the same events.



# 10

## GIS AS A HEURISTIC TOOL TO INTERPRET ANCIENT HISTORIOGRAPHY

This chapter explores the question “in which way can GIS be used as a heuristic tool to reconstruct spatial-temporal events from narratives to examine whether a scenario is conceivable within the narrative world?” I will answer this question using the narrative about Paul’s escape from Berea (Acts 17:14-15).<sup>1</sup>

The structure of this chapter is as follows: first I will introduce the case study, the narrative in Acts 17:14-15. Subsequently, I will use GIS to create reconstructions of what might have happened in history. I will evaluate these reconstructions on their viability in the overall context of the narrative of Acts, testing what is fitting the established events and the contemporary physical geography of the book of Acts. In the final section of this chapter, I will evaluate the findings.

### 10.1 Case study: a reconstruction of Acts 17:14-15

The second half of the Acts of the Apostles describes the ramblings of the apostle Paul. Paul is first portrayed as the great persecutor of the early Christian movement, but his portrait changes drastically to

---

<sup>1</sup> This chapter is based on Vincent van Altna et al., “GIS as a Heuristic Tool to Interpret Ancient Historiography,” *TIG* 27.3 (2021): 20, <https://doi.org/10.1111/tgis.12762>.

that of an itinerant missionary, being persecuted himself. Within this larger narrative framework of what traditionally is coined “Paul's missionary journeys”, we find an episode taking place in the ancient regions of Macedonia and Achaëa.

After Paul had been called in a dream by a Macedonian man to come over to the European mainland from Troas, Paul travelled the *Via Egnatia*, visiting the Roman colony Philippi and Thessalonica. Soon he, however, had to flee by night since his life was endangered due to fierce opposition stirred up by Thessalonian Jews. After escaping, Paul arrived at Berea where the local Jewish community was willingly investigating his message. Again, the situation changed very quickly when Thessalonian Jews came over to the city and started agitating the crowds. Then the narrative continues:

“Then the brothers immediately sent Paul off on his way to the sea, but Silas and Timothy remained there. Those who conducted Paul brought him as far as Athens, and after receiving a command for Silas and Timothy to come to him as soon as possible, they departed.”

--Acts 17:14-15 (ESV)

After an intermezzo about Paul's stay and speech to Epicurean and Stoic philosophers on the Areopagus in Athens (Acts 17:16-34), Paul proceeded from Athens to Corinth (Acts 18:1). Here, Silas and Timothy reunited with the apostle (Acts 18:5).

At first sight the narrative in Acts provides a coherent picture of the events that happened during Paul's second missionary journey which is smoothly mapped in many popular Bible Atlases (Figure 28).<sup>2</sup>

Upon a closer look, it appears to be less straightforward to create a map from the narrative. This is due to two interpretive

---

<sup>2</sup> Even though Anne-Maria Wittke, Eckart Olshausen, and Richard Szydlak, *Historischer Atlas der antiken Welt, Sonderausgabe., DNPSup 3* (Stuttgart: Metzler, 2012), 228 provide an overall well-researched atlas, they also follow the portrayal of popular Bible Atlases.

issues: Paul's route to Athens (10.1.1) and the ambiguity of the travels of his companions (10.1.2).<sup>3</sup>

### 10.1.1 Paul's route to Athens

Concerning Paul's route from Berea to Athens (17:14), there is an ongoing discussion whether Paul and his escort embarked on a ship at the coast of the Aegean Sea and sailed in three to four days to Athens,<sup>4</sup> or that they went over land to Athens, which would have taken 12 to 21 days.<sup>5</sup> Multiple facets influence the differences in interpretation. First, the difficulty to establish the wording of the Greek text. Three textual variants exist which indicate the travel direction, and these could be rendered respectively as "to the sea,"<sup>6</sup>

---

<sup>3</sup> Since there is an enormous amount of literature on these topics, I will refer to the earliest source I have identified for a particular argument.

<sup>4</sup> K.G. Wieseler, *Chronologie des apostolischen Zeitalters bis zum Tode der Apostel Paulus und Petrus* (Göttingen: Vandenhoeck & Ruprecht, 1848), 43, for instance, estimates the travel by ship on three days. William Owen Carver, *The Acts of the Apostles* (Nashville, TN: Broadman, 1916), 176 assumes four days "under favorable conditions"; but this estimation excludes the first part of the journey over land to reach the harbour, see Eckhard J. Schnabel, *Acts*, expanded digital ed., ZECNT (Grand Rapids, MI: Zondervan, 2012).

<sup>5</sup> Horatio Balch Hackett, *A Commentary on the Original Text of the Acts of the Apostles*, 2nd ed. (1852; repr., Boston, MA: Gould & Lincoln, 1859), 276 estimated the land route at 251 roman miles (402 kms). This would take 12 days. Eckhard J. Schnabel, "Paul's Missionary Work in Macedonia and Achaia (Acts 16:6–18:28)," in *Lexham Geographic Commentary on Acts through Revelation*, ed. Barry J. Beitzel, Jessica Parks, and Doug Mangum, LGC (Bellingham, WA: Lexham, 2019), 342 deviates with an estimation of 320 miles (515 km) and 21 days.

<sup>6</sup> The Western tradition reads "ἐπὶ τὴν θάλασσαν"



Figure 28. Suggested routes for Paul's flight from Berea.

“as it were to the sea,”<sup>7</sup> and “as far as the sea.”<sup>8</sup> The first and second variant, respectively, convey the idea of journeying by sea or land, while the third variant is ambivalent in its meaning. Unfortunately, textual evidence, grammar, and idiom do not offer conclusive evidence for either a land or sea journey.<sup>9</sup>

Therefore, interpreters resorted to complementary argumentation. Clues were found in what the text is omitting: intermediate stations might be suspected when journeying over land.<sup>10</sup> However, such an *argumentum e silentio* is not valid: Olshausen

---

<sup>7</sup> The Byzantine tradition reads “ὡς ἐπὶ τὴν θάλασσαν” and indicates a route over land. J.A.W. Neander, *Geschichte der Pflanzung und Leitung der christlichen Kirche durch die Apostel*, 5th ed., BThK 26 (1832; repr., Gotha: Perthes, 1862), 241 interpreted this as implying a ruse to confuse Paul’s pursuers; but Joseph Addison Alexander, *The Acts of the Apostles: Explained* (New York, NY: Scribner, 1857), 2:142–43 remarks “As it were is in Greek a single word (ὡς) strictly meaning as, but often used by the best prose writers, with the preposition following it here (ὡς ἐπὶ), to signify the mere direction in which any thing or person moves, or at most the design to move in that direction. The full force of the phrase may be, to journey as (he must if he would get) to the sea. This idiom is so common in Thucydides, Polybius and Xenophon, that it cannot be considered as implying an intention to elude pursuit, by seeming to go to the sea, but really journeying by land.” The Greek grammars of Georg Benedikt Winer, *Grammatik des neutestamentlichen Sprachidioms*, 6th ed. (Leipzig: Vogel, 1855), 544; and James H. Moulton, Wilbert F. Howard, and Nigel Turner, eds., *A Grammar of New Testament Greek. 3: Syntax* (Edinburgh: Clark, 1963), 3:321 mention the confusion of ὡς and ἕως and the ambiguity in translation.

<sup>8</sup> The Alexandrian tradition has ἕως ἐπὶ τὴν θάλασσαν which is grammatical the hardest reading and found in more ancient manuscripts.

<sup>9</sup> The reconstruction of the Greek text is always a process of weighing arguments. In this particular case, the UBS committee argues for the Alexandrian tradition which is grammatical the hardest reading and found in more ancient manuscripts, see Metzger, *TC*<sup>2</sup>, 404. Alan Meers, “Who Went Where and How? A Consideration of Acts 17.14,” *BT* 44.2 (1993): 201–6, <https://doi.org/10.1177/026009439304400201>, however, argues for the Byzantine tradition.

<sup>10</sup> Already in 1527, Erasmus mentions the issue: “Incertum est autem an Paulus Athenas pervenerit navigio an itinere pedestri. Nisi quod probabilius est eum navigavisse, vel quia refertur deductus ad mare, vel quia nulla mentio fit eorum quae Paulus in itinere gesserit, cui fuerant tot civitates peragrandae, quum ille non soleat ullam civitatem transire tacitus, nisi forte solus et collegis destitutus tacuit” ASD, vol.

remarks that Acts leaves whole regions “unnoticed, through which Paul passed and where he certainly laboured.”<sup>11</sup> Furthermore, Clark and Witherington observed that the narrative is also silent about the possible port of embarkation.<sup>12</sup> This might be taken as evidence against a sea journey.

The safety-argument similarly runs both ways. Multiple scholars see an allusion to a land journey in that Paul was conducted to Athens by an envoy<sup>13</sup> and some added that this would imply protection and care.<sup>14</sup> Stokes and Carver infer from 1 Thess 2-3 that Paul was in a bad physical and mental condition, which would have

---

VI-6 p. 282 ll. 380-385. ET: “It is uncertain whether Paul arrived at Athens by boat or by land. Yet it is more likely that he sailed, either because he is reported to have been taken to the sea, or because nothing is said about the things Paul did on the way, though he had to travel through so many cities and was not used to traverse any city in silence, unless perhaps he kept silent because he was alone and without companions.” Wieseler, *Chronologie des apostolischen Zeitalters bis zum Tode der Apostel Paulus und Petrus*, 42 adds that some of these stations were “eben so groß ... wie Amphipolis und Apollonia.”

<sup>11</sup> Hermann Olshausen, *Biblical Commentary on the Gospels: Adapted Especially for Preachers and Students; Translated from the German, with Additional Notes*, trans. Richard Garvey and William Lindsay, 3rd ed. (Edinburgh: Clark, 1860), 4:437.

<sup>12</sup> Albert C. Clark, *The Acts of the Apostles: A Critical Edition with Introduction and Notes on Selected Passages* (1933; repr., Oxford: Clarendon, 1970), 166; Witherington, *Acts*, 510 n. 172; Wieseler, *Chronologie des apostolischen Zeitalters bis zum Tode der Apostel Paulus und Petrus*, 43 suggests Dion; Hermann Strack and Otto Böckler, *Das Evangelium des Johannes und die Apostelgeschichte*, 2nd ed., KK 2 (München: Beck Verlagsbuchhandlung, 1894), 264 mention Pydna and Methone.

<sup>13</sup> οἱ δὲ καθιστῶντες ... ἤγαγον αὐτὸν; see for example Olshausen, *Biblical Commentary on the Gospels*, vol. 4. Craig S. Keener, *Acts: An Exegetical Commentary - 15:1-23:35*, vol. 3 (Grand Rapids, MI: Baker Academic, 2014) agrees that this might refer to a land journey, but he prefers a sea journey on other grounds. Hans Hinrich Wendt, *Kritisch exegetisches Handbuch über die Apostelgeschichte*, 6th ed., KEK 3 (Göttingen: Vandenhoeck & Ruprecht, 1888) however, sees support for a sea journey in the use καθιστᾶναι in Homer, *Od.* 13.274: τοὺς μ' ἐκέλευσα Πίλονδε καταστῆσαι. ET: “I bade them take me aboard and land me at Pylos.”

<sup>14</sup> William J. Larkin Jr., *Acts*, IVPNTC 5, ed. Grant R. Osborne (Downers Grove, IL: InterVarsity Press, 1995).

required a rapid departure.<sup>15</sup> Schnabel suggests that “it might have seemed advisable not to take a ship to Athens, which involved the possibility of encountering enemies.”<sup>16</sup> Hemer, however, posits that “opponents might be expecting” Paul on the land route.<sup>17</sup> Therefore, it would have been safer to embark on a ship, especially if Paul’s companions wanted to get him away from the scene to a different jurisdiction as soon as possible.<sup>18</sup>

Keener also comments that a sea travel would have required fares.<sup>19</sup> Schnabel infers from this that the phrase “those who escorted Paul” in Acts 17:15 might suggest a travel by land”.<sup>20</sup> But this is not decisive. Travelling over land would take considerably more time than a sea journey and being away for a long time would require housing and food expenses. Either way, Pervo correctly concludes that “these persons had the resources to send an escort ... all the way to Athens.”<sup>21</sup>

#### 10.1.2 The travel movements of Paul’s companions

The travel movements of Paul’s companions are another source of conjecture, especially when some verses from Paul’s first letter to the Thessalonians are interpreted as referring to the same event:

“Therefore ...we were willing to be left behind at Athens alone, and we sent Timothy.... But now that Timothy has come to us...”

-- 1 Thess 3:1-2a and 6, (ESV)

---

<sup>15</sup> George Thomas Stokes, *The Acts of the Apostles*, Vol. 2, EBR (New York, NY: Armstrong & Son, 1908), 303; Carver, *The Acts of the Apostles*, 176.

<sup>16</sup> Schnabel, “Macedonia and Achaia,” 340.

<sup>17</sup> Hemer, *The Book of Acts in the Setting of Hellenistic History*, 116.

<sup>18</sup> Bernhard Weiss, *Die Apostelgeschichte, Katholischen Briefe, Apokalypse: im berichtigten Text*, 2nd ed., NTD 3 (Leipzig: Hinrichs, 1902), 161; Schnabel, *Acts*; James D.G. Dunn, *The Acts of the Apostles* (Grand Rapids, MI: Eerdmans, 2016), 229.

<sup>19</sup> Keener, *Acts*, 3:2563.

<sup>20</sup> Schnabel, “Macedonia and Achaia,” 340.

<sup>21</sup> Pervo, *Acts*, 422.

Meyer and, more recently, Lüdemann claimed that it is impossible to harmonise these verses with Acts 17:14-15,<sup>22</sup> but these accounts are not necessarily excluding each other.<sup>23</sup> The reconstruction of travels of Paul and his companions is however challenged by the sparse data available in the book of Acts and the Pauline letters.<sup>24</sup> Multiple reconstructions have been offered, which sometimes simply summarize the narrative in Acts,<sup>25</sup> while others try to harmonize Acts with 1 Thessalonians. In the remainder of this chapter, I will investigate three reconstructions more closely.<sup>26</sup>

---

<sup>22</sup> Heinrich August Wilhelm Meyer, *Kritisch-exegetisches Handbuch über die Apostelgeschichte*, 4th ed., KEK 3 (Göttingen: Vandenhoeck & Ruprecht, 1870), 379; Gerd Lüdemann, *Paul, Apostle to the Gentiles: Studies in Chronology* (Philadelphia, PA: Fortress, 1984), 14; Gerd Lüdemann, *Early Christianity According to the Traditions in Acts: A Commentary*, trans. John Bowden (Göttingen: Van den Hoeck & Ruprecht, 1987; Minneapolis, MN: Fortress, 1989), 188.

<sup>23</sup> A hasty pattern can also be recognised in Acts 8:13, 25, see Eduard Zeller, *Die Apostelgeschichte nach ihrem Inhalt and Ursprung kritisch untersucht* (Stuttgart: Mäcken, 1854), who remarks that Luke is often a “flüchtigen Erzähler.”

<sup>24</sup> To further complicate the reconstruction there is a textual variant which adds “He moved on past Thessaly, for he was prevented from preaching the Word to them.” to Acts 17:15, see Ernst Haenchen, *The Acts of the Apostles: A Commentary* (Philadelphia: Westminster Press, 1971), 509; Pervo, *Acts*, 417, 422. Additionally, this led to more conjecture, presupposing an undocumented corruption of the text in Acts 17:14, which wants to read ΘΕΣΣΑΛΙΑΝ (*thessalian*, Thessaly) for ΘΑΛΑΣΣΙΑΝ (*thallassan*, sea), see Krans and Lietaert Peerbolte, “The Amsterdam Database of New Testament Conjectural Emendation” on Acts 17:14.

<sup>25</sup> Thomas V. Brisco, *Holman Bible Atlas: A Complete Guide to the Expansive Geography of Biblical History*, Holman Reference (Nashville, TN: Broadman & Holman, 1998), 247–48; Adrian Curtis, *Oxford Bible Atlas*, 4th ed. (Oxford: Oxford University Press, 2007), 167; and Currid and Barrett, *Crossway ESV Bible Atlas*, 244 simply follow the events as described in Acts 17:14-15: leaving Timothy and Silas behind in Berea, Paul flees to Athens. Immediately after arriving, he urges them to re-join him there.

<sup>26</sup> This is not to say that these are the only three possible reconstructions, but most of the suggestions offer a variation to Lake and revolve about the question whether Timothy and Silas might have travelled together or apart from each other, see Neander, *Geschichte*; Hackett, *Acts*; and Alan Hugh McNeile and Charles Stephen Conway Williams, *An Introduction to the Study of the New Testament*, 2nd rev. ed. (1927; repr., Oxford: Clarendon, 1953). In the latter case that would require more travels over the same trajectories, but this does not involve the sequence of the cities.

### 10.1.2.1 First reconstruction

According to the traditional reconstruction of Kirsopp Lake (Figure 29),<sup>27</sup> Paul, Silas, and Timothy travelled from Troas over Philippi [1] and Thessalonica [2] to Berea [3].<sup>28</sup> When Paul again is assaulted by Thessalonian Jews, he leaves Silas and Timothy behind in Berea and goes to Athens, under the escort of Berean brethren [4 or 5]. From there the escort returns to Berea [6] with a message for Silas and Timothy to join Paul as soon as possible (Acts 17:14-15).

From 1 Thess 3:1 Lake infers that Silas and Timothy joined Paul in Athens [7]. Timothy is immediately being sent to Thessalonica [8] and Silas somewhere else in Macedonia [10] (1 Thess 3:1-5, not in Acts).<sup>29</sup> After both companions returned to Macedonia, Paul finishes his short stay in Athens and relocates to Corinth ([9]; see Acts 18:1).

---

<sup>27</sup> Kirsopp Lake, *The Earlier Epistles of St. Paul: Their Motive and Origin*, 1st ed. (London: Rivingtons, 1911), 74–77.

<sup>28</sup> The text is not clear about the ramblings of Timothy, since it is not explicitly stated that he travelled along with Paul and Silas. Some scholars, therefore, assume that he remained behind in Philippi and reunited later on with the traveling party in Thessalonica or Berea, see Paton J. Gloag, *A Critical and Exegetical Commentary on the Acts of the Apostles, Vol. 2: 12:26-28:30*, ICC (Edinburgh: Clark, 1870), 142; August Bisping, *Erklärung der Apostelgeschichte*, vol. 4 of *EHNT* (Münster: Aschendorff, 1871), 277; Jos Keulers, *Handelingen der Apostelen*, 1st ed., *De boeken van het Nieuwe Testament IV* (Roermond: Romen & Zonen, 1937), 350–51; and esp Theodor Zahn, *Die Apostelgeschichte des Lucas: Zweite Hälfte Kap. 13–28*, KNT 6 (Leipzig: Deichert, 1919), 597–98 who assume that Timothy acted as liaison between Paul and the church of Philippi and travelled between Philippi, Thessalonica, and Berea.

<sup>29</sup> J. de Zwaan, *Inleiding tot het Nieuwe Testament: Evangelien en Handelingen*, 2nd ed., VUB<sup>2</sup> 15 (Haarlem: Bohn, 1948), 156; Williams, *Acts*, 199; I. Howard Marshall, *Acts: An Introduction and Commentary*, TNTC 5 (Downers Grove, IL: InterVarsity Press, 1980), 297; Darrell L. Bock, *Acts*, BECNT (Grand Rapids, MI: Baker Academic, 2007), 557; and Paul H. Wright, *Rose Then and Now Bible Map Atlas with Biblical Background and Culture* (Torrance, CA: Rose Publishing, 2012), 244 conjecture Paul sent Silas probably to Philippi.

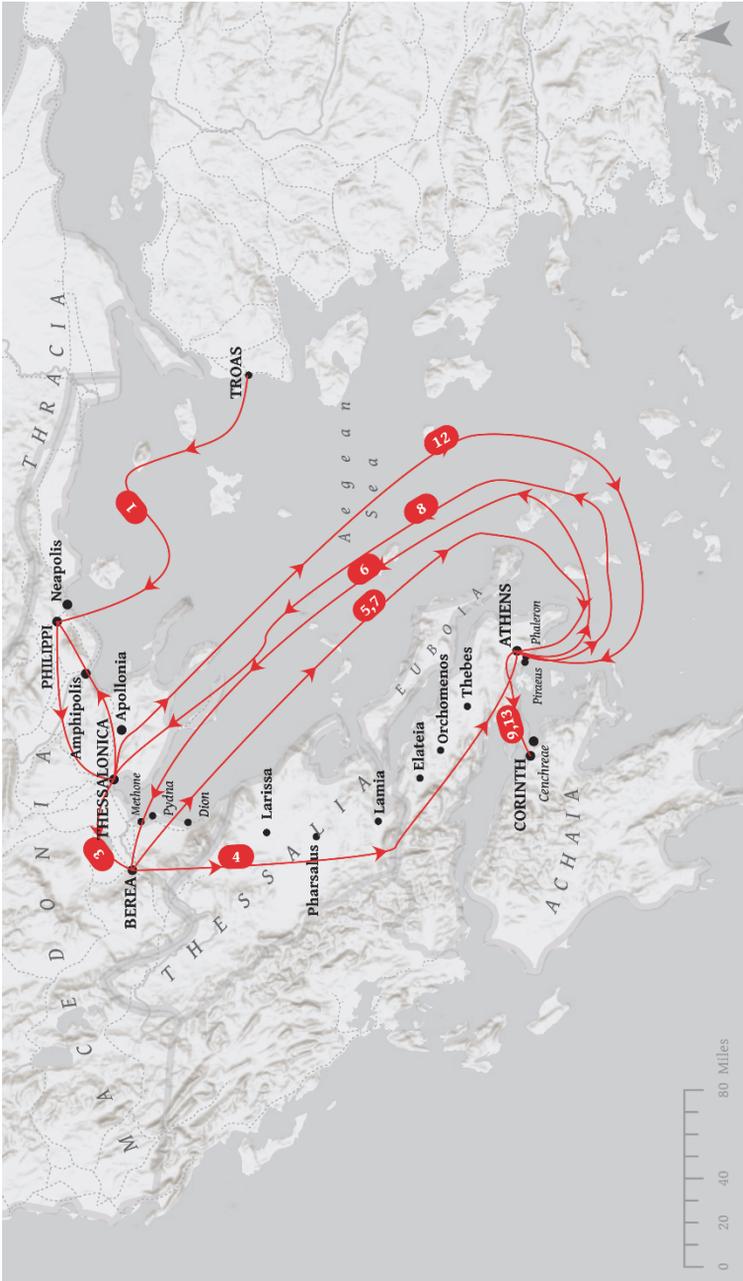


Figure 29. Lake's reconstruction.

Silas starts travelling again (from Philippi?) and reunites with Timothy in Thessalonica [11]. Together they travel from Macedonia probably over Athens [12] to Corinth [13] and there they reunite with Paul (Acts 18:5; 1 Thess 3:6).

#### 10.1.2.2 Second reconstruction

A second reconstruction (which follows Lake's sequence for [1-5]) is offered by De Zwaan: Timothy (and probably Silas) may never have been in Athens. Instead, while Paul himself is in Athens, he gives his envoy orders to return to Berea [6] with a message for Timothy and Silas to go from Berea to Thessalonica [8] and Philippi [9] respectively. Paul, meanwhile, traversed from Athens to Corinth [7], and Silas and Timothy were expected to come as quickly as possible after they had completed their tasks [10, 11 and 12].<sup>30</sup> In this view there is no necessity for a meeting between Timothy, Silas, and Paul in Athens.<sup>31</sup>

---

<sup>30</sup> de Zwaan, *Inleiding tot het Nieuwe Testament: Evangelien en Handelingen*, 154–57.

<sup>31</sup> Gloag, *Acts II* also mentions Timothy's absence in Athens as an option to reconcile the accounts of Acts and 1 Thessalonians. Alexander, *Acts Explained*, 2:144; Strack and Böckler, *Johannes & Apostelgeschichte*, 264; and Hans Hinrich Wendt, *Kritisch exegetisches Handbuch über die Apostelgeschichte*, 9th ed., KEK 3 (Göttingen: Vandenhoeck & Ruprecht, 1913), 253–54 suppose that Paul must have changed his mind and send a letter to Timothy with orders to travel to Thessalonica instead of Berea. More recently, Donfried questioned on philological grounds that Timothy ever had been in Athens, see Karl P. Donfried, "Was Timothy in Athens? Some Exegetical Reflections on 1 Thess. 3.1-3," in *Paul, Thessalonica and Early Christianity: Labour Law and the Public Procurement Process* (Bloomsbury: Clark, 2002), 209–19, <https://doi.org/10.5040/9780567661166>.

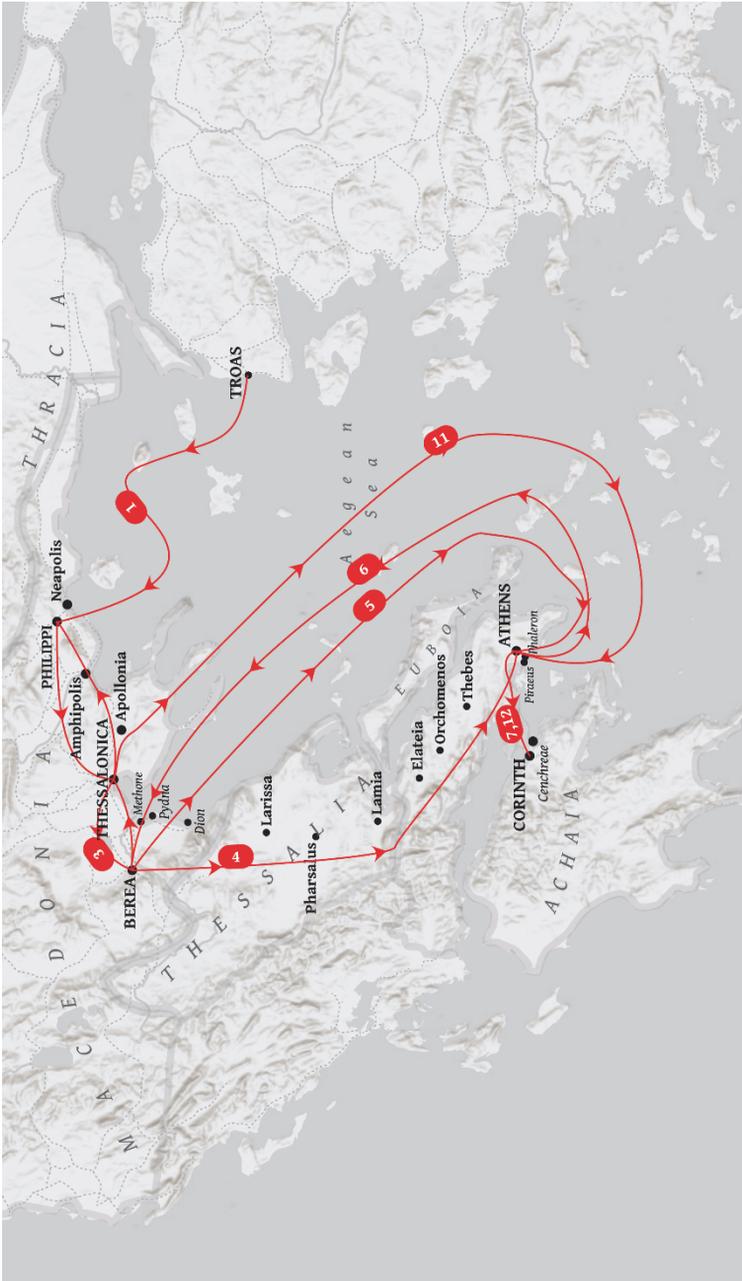


Figure 30. De Zwaan's reconstruction.

### 10.1.2.3 Third reconstruction

More recently, Meers developed another reconstruction (Figure 31).<sup>32</sup> Two days after leaving Troas by boat, Paul, Silas, Timothy, and Luke arrive in Philippi [1] (see Acts 16:12ff. ). Paul is imprisoned together with Silas. After their release, Paul and Silas continue their travel to Thessalonica [2] and Berea [3], leaving Timothy and Luke behind in Philippi. When Paul again is assaulted by Thessalonian Jews, he leaves Silas behind in Berea and goes over land to Athens, under the escort of Berean brethren [4].

Meanwhile, Silas returns from Berea, over Thessalonica [5] to Philippi [6] and reunites with Timothy (and Luke). After some time, the escort of Berean brethren returns from Athens and arrives in Philippi [7] with a message for Silas and Timothy to join Paul as soon as possible.

Silas and Timothy travel from Philippi to Athens [8]. Shortly after their arrival Paul sends them back to Thessalonica [9], where Timothy stays. Silas, however, immediately continues his travel to Philippi [10].

Paul then moves on from Athens to Corinth [11] and starts a ministry there. Then Silas returns from Philippi to Thessalonica [12], collects Timothy and together they travel probably over Athens [13] to Corinth [14], where they reunite with Paul.

---

<sup>32</sup> Meers, "Who Went Where and How?"

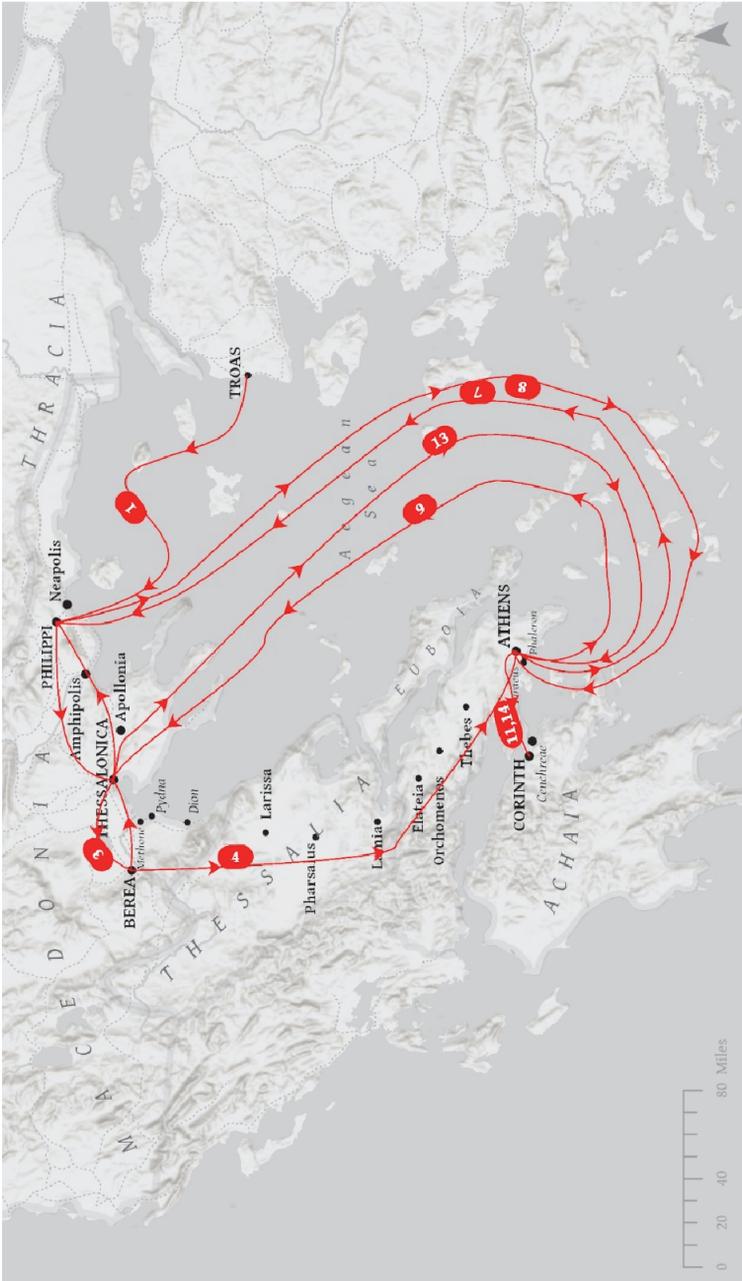


Figure 31. Meers' reconstruction.

## 10.2 Data, methods, and experiments

In the remainder of this chapter, I will study the narrative conceivability of these reconstructions using spatial-temporal technology: my aim is not to establish what actually happened in history, but to examine whether a scenario is conceivable within the narrative world for the model reader.<sup>33</sup> The narrative world is the world as outlined in the story. A story (even a fairy-tale or a science fiction story) must be consistent and meet certain laws to be credible for the reader. The model reader is the reader that the author had in mind when writing the story and an author will assume certain knowledge, while (s)he will explain other data in detail for his or her implied reader.<sup>34</sup> In the story in Acts 17 and 18 such assumed knowledge would for example be a general impression of distances and duration. In other words, the model reader would have been able to create a mental map from the story. For modern readers, it might be difficult to create a mental map from the narrative. Our geographical knowledge of the Greco-Roman world is limited, as is our understanding of the time travelling involved.

---

<sup>33</sup> Compare section 3.2.5.

<sup>34</sup> “Many texts make evident their Model Readers by implicitly presupposing a specific encyclopedic competence.” Eco, *The Role of the Reader*, 7.

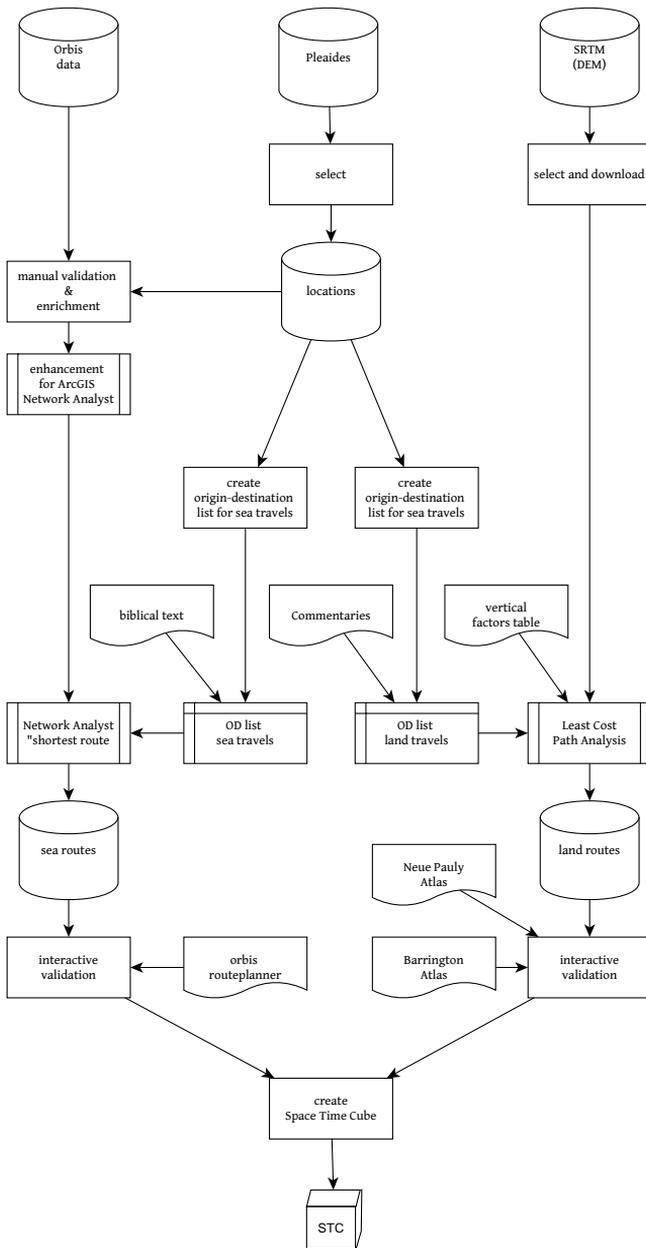


Figure 32. Overview of methods, data, and sources.

To assess the narrative conceivability of the scenarios in section 10.1.2, I created a spatial-temporal model, using the methods outlined in Figure 32. Besides ingredients such as locations<sup>35</sup> and elevation data,<sup>36</sup> the spatial-temporal model is built from reconstructed journeys over land and by sea (10.2.1), and temporal data (10.2.2).

### 10.2.1 Method and data to reconstruct journeys

A few digital road datasets and network analysis tools exist for the Roman roads, but these are unfortunately not suitable for spatial analysis. Exemplary is the Roman road dataset provided by the Ancient World Mapping Center<sup>37</sup> which has two disadvantages: the roads have been digitized from a generalised 1:1M map which negatively affects the positional accuracy. Moreover, these data do not contain information about travel time. And although ORBIS, the sophisticated Stanford Geospatial Network Model of the Roman World,<sup>38</sup> contains multi-modal travel time information for the Roman world, this tool is neither usable: the set of available cities to

---

<sup>35</sup> Besides coordinates for the locations mentioned in Acts, we also retrieved positional data from the Pleiades project for geographical features mentioned in reference works, see Bagnall et al., “Pleiades.” Pleiades is nowadays a partaker in the Pelagios Network, see “The Pelagios Network,” 2021, <https://pelagios.org/>. The network focuses on semantic annotation of texts and artefacts to link and explore historical place information. Pelagios employs a linked open data model to stimulate collaboration on and sharing of sources. Besides the conceptual difference in data-modelling, my research also distinguishes itself from Pelagios in its aim to use geographical data and tools to interpret ancient historiography, while Pelagios wants to provide methods and tools for data discovery and information retrieval about ancient places.

<sup>36</sup> Digital elevation rasters in 30m resolution retrieved from the Shuttle Radar Topography Mission (SRTM) Elevation Dataset, see “Shuttle Radar Topography Mission (SRTM) Elevation Dataset,” dataset (Sioux Falls: U.S. Geological Survey, 2002), <https://search.earthdata.nasa.gov/search>.

<sup>37</sup> “Roads,” dataset, Resources (Chapel Hill, NC: Ancient World Mapping Center, 2012), [http://awmc.unc.edu/awmc/map\\_data/shapefiles/ba\\_roads/](http://awmc.unc.edu/awmc/map_data/shapefiles/ba_roads/).

<sup>38</sup> Walter Scheidel and Elijah Meeks, “ORBIS: The Stanford Geospatial Network Model of the Roman World,” n.d., <http://orbis.stanford.edu/>.

travel to and from is limited and the network's coverage of the Greek peninsula is very sparse.

Therefore, I used ArcGIS Pro algorithms for Least Cost Paths Analysis (LCPA) to estimate the trajectory of roman roads.<sup>39</sup> Input for the calculation were a list of origin-destination pairs including coordinates, digital elevation rasters, and Tobler's anisotropic hiking function.<sup>40</sup> This formula takes the ratio between elevation to speed into account and estimates travel time in hours. Factors including soil condition, temperature, and availability of water would also influence the speed of hiking but were left out of the analysis. However, the results of the analysis were corrected for daylight, breaks, and lodging by assuming a maximum of eight hours of hiking per day.<sup>41</sup>

The account of Acts follows road stations on the Via Egnatia (a roman road evidenced by milestones) for the trajectory in Macedonia, between Philippi and Thessalonica. Intermediate road stations, lacking in the narrative in Acts, but necessary to create a finer coarse, were easily retrieved from the Barrington Atlas<sup>42</sup> and used as origin-destination pairs for LCPA. For the next trajectory, between Thessalonica and Berea, a coastal and a domestic route existed and either option would have taken 2 days (LCPA estimates

---

<sup>39</sup> I followed section B: Anisotropic time estimate using path distance from Nicholas Tripcevich and Lisa Johnson, "In-Class Exercise 11.2 Cost-Distance: Geospatial Archaeology," *Geospatial Archaeology*, 2015, <https://bcourses.berkeley.edu/courses/1289761/pages/in-class-exercise-11-dot-2-cost-distance>.

<sup>40</sup> Waldo R. Tobler, *Three Presentations on Geographical Analysis and Modeling: Non-Isotropic Geographic Modeling; Speculations on the Geometry of Geography; and Global Spatial Analysis* (Santa Barbara, CA: National Center for Geographic Information and Analysis, February 1, 1993).

<sup>41</sup> Wilson, "Paul's Journeys in 3D: The Apostle as Ideal Ancient Traveller." Although Paul was escaping and therefore may have walked more hours a day, he did not have modern ultra-light weight equipment and tools which might have slowed him down.

<sup>42</sup> Richard J.A. Talbert and Roger S. Bagnall, *Barrington Atlas of the Greek and Roman World*, BAGRW (Princeton, NJ: Princeton University Press, 2000) map 50.

16 hours). I selected the domestic route since it partly followed the Via Egnatia.

As I already have discussed, the mode of travelling between Berea and Athens is disputed. To reach Athens from Berea over land, three routes have been suggested (Figure 33).<sup>43</sup> These routes can be split into four trajectories and agree on the trajectories from Berea to Larissa, and from Lamia to Thronion.<sup>44</sup> For the trajectory from Larissa to Lamia two options have been suggested: a domestic route via Pharsallos,<sup>45</sup> or a coastal route.<sup>46</sup> Only the coastal route is evidenced by milestones.<sup>47</sup> For the final trajectory between Thronion and Athens also a coastal route<sup>48</sup> and a domestic route

---

<sup>43</sup> Clark, *Acts*, 166–67; and C.K. Barrett, *A Critical and Exegetical Commentary on the Acts of the Apostles*, Vol. 2, ICC, ed. J.A. Emerton, C.E.B. Cranfield, and G.N. Stanton (Edinburgh: Clark, 1998), 820 suggested a trajectory from Berea, over Pydna, Dion, Larissa, Demetrias, Opus, Chalcis, Thebes, Oropus, to Athens. Johannes Weiss, “Griechenland in der Apostolischen Zeit,” *RE* 7:160–68; and Haenchen, *The Acts of the Apostles*, 509 suggested Berea, Larissa, Lamia, Elateia, Thebes and Athens. Schnabel, “Macedonia and Achaia” suggests Berea, Pydna, Dion, Heracleion, Homolion, Gonnoi, Larissa, Pherai, Pyrasos, Halos, Pteleon, Antrones, Echinus, Lamia, Thermopylae, Alpenos, Nikaia, Thronion, Elateia, Parapotamioi, Panopeos, Chaeroneia, Lebadeia, Coronea, Haliartos, Thebes, Potniai, Tanagra, Aphidna, Oeum Deceleicum, and Athens.

<sup>44</sup> The LCPA-trajectories for each proposal coincide more or less for this trajectory.

<sup>45</sup> Weiss, “Griechenland”; Haenchen, *The Acts of the Apostles*.

<sup>46</sup> Clark, *Acts*; Barrett, *Acts*, Vol. 2; and Schnabel, “Macedonia and Achaia.” Although Schnabel has a much more detailed reconstruction than Clark and Barrett, he shortcuts the road between Pherai and Pyrasos, omitting the attested road via Demetrias.

<sup>47</sup> Wittke, Olshausen, and Szydlak, *Historischer Atlas der antiken Welt*, 196, Karte B.

<sup>48</sup> Clark, *Acts*; and Barrett, *Acts*, Vol. 2. Although there is evidence for a roman road for this trajectory, this proposal is problematic: Chalcis on the isle Euboea is not accessible over land and Oropus lies way out of the direction to reach Athens. Moreover, LCPA approximates a length of 221 kms and a travel time of 47 hrs against the trajectory suggested by Schnabel (196 km and 41 hrs).

have been suggested.<sup>49</sup> I used the route suggested by Schnabel to create a list of origin-destination pairs as input for my LCPA analysis.

Least Cost Path Analysis is not suitable to establish the routes Paul and his companions could have taken over sea. For that reason, I returned to the Stanford Geospatial Network Model of the Roman World.<sup>50</sup> The web version has some issues for sea routes (for example, a limited set of ports), and yielded some biased results (the route from Philippi to Athens). Therefore, it was unsuitable for my analysis. I downloaded the Orbis network data from its GitHub repository<sup>51</sup> and pre-processed the data for application within ArcGIS Pro's Network Analyst. Furthermore, I created links to the network for the ports of Methone, Pydna, Dion and the isle Samothrace. Finally, I created a set of origin-destination pairs for each sea journey and used Network Analyst to establish the fastest route. The edgy geometries of the yielded routes have been used in all analyses but were smoothed for the cartographic presentation.

#### 10.2.2 Duration, dating and possible time frame

The previous section established a possible spatial reconstruction of the events. These results can be used to construct a (tentative!) temporal framework. Besides these spatial data, this reconstruction is based upon data about the available timeslot, travel duration, and the inferred duration of stays.

---

<sup>49</sup> Weiss, "Griechenland"; Haenchen, *The Acts of the Apostles*; and Schnabel, "Macedonia and Achaia." Weiss and Haenchen do not seem sufficiently aware of ancient geography, since a direct journey from Orchomenos to Thebes was impossible in ancient times. Lake Copais was not drained before the end of the 19th century, which disqualifies Orchomenos as an intermediate station. Schnabel offers two possibilities to reach Tanagara from Thebes. The route over Potniai would have been approx. 27 km and might have taken 5.6 hrs. The route over Skolos 24.2 km and 5.1 hrs. In subsequent analysis I will use the shorter Skolos-variant.

<sup>50</sup> Scheidel and Meeks, "ORBIS." The only source for sea travels are itineraries. The Orbis network used modern knowledge about for instance wind directions, wave heights and sailing speed and projected this on the classical Mediterranean world.

<sup>51</sup> Karl Grossner, *Orbis Source Code and Data* (Pittsburgh: Center for Interdisciplinary Digital Research, 2018), [https://github.com/sul-cidr/orbis\\_pub](https://github.com/sul-cidr/orbis_pub).

### 10.2.2.1 Available timeslot

Dating the events in Acts is a study in itself and reconstructions are tentative.<sup>52</sup> The available timeframe for the texts under scrutiny can only be inferred by conflating sparse information from the text with archaeological findings and references from classical literature. Table 14 shows an example of a reconstruction of the events.<sup>53</sup>

Table 14. *Paul's mission in Macedonia and Achaia.*

Location	Period
Troas	Aug 49 CE
Philippi	Aug–Oct? 49 CE
Thessalonica	Oct–Dec 49 CE
Berea	Dec 49 CE / Jan? 50 CE
Athens	?
Corinth	Feb / Mar 50 to Sep 51

The possible time frame in which the events could have happened, has to be based upon a relative chronology: the date before which the events must have occurred (the *terminus ad quem*) is set by Paul's arrival in Corinth. This can roughly be dated to Feb / March 50, although this is not undisputed.<sup>54</sup> The date after which the events

---

<sup>52</sup> For an explanation of the issues the articles Loveday C.A. Alexander, "Chronology of Paul," *DPL*, 115–23; and Karl P. Donfried, "Chronology: New Testament," *AYBD* 1:1011–22 are helpful.

<sup>53</sup> Eckhard J. Schnabel, *Early Christian Mission* (Downers Grove, IL: IVP Academic, 2004), 1:46.

<sup>54</sup> To establish the latest possible date of Paul's eighteen-month-stay in Corinth, an inscription which mentions the reign period of Gallio (18:12) is used. Suggestions vary between early 50 CE - mid summer 51 CE, see Barrett, *Acts*, Vol. 2, lvi; and Keener, *Acts*, 3:2761–63, fall 50 CE-spring 52 CE, see Bruce, *Acts*, 351; and Witherington, *Acts*, 551; and early 51 CE-summer 52 CE, see Joseph A. Fitzmyer, *The Acts of the Apostles*, AB 31 (New York, NY: Doubleday, 1998), 622–23. This dating is dependent on the period in which Gallio was proconsul in Achaia, which since the discovery of the Gallio inscription is usually dated to 51 or maybe 52 CE, and of the moment when Paul was brought before the proconsul (Acts 18:12), which usually is situated at the end of Paul's stay in Corinth. Dating the events between Sept 51 CE- Mar 53 CE, as for example William Mitchell Ramsay, *St. Paul the Traveller and the Roman Citizen* (London: Hodder & Stoughton, 1895), 226 did, is obsolete since the discovery of the Gallio inscription.

must have happened (the *terminus post quem*) is set to the moment when Paul must have left Troas (August 49 CE) This date is even more difficult to establish and based on inferences itself. These *termini* provide a time slot of 189 days between August 1, 49 CE and March 31, 50 CE for Paul's mission in Macedonia and Achaia.

#### 10.2.2.2 Duration of travels

The next step in creating the temporal framework is to establish the required travelling time. Table 15 summarizes the length and duration for the trajectories which were established for the land journeys with LCPA, as well as the optimal sea travels, which were detected with Network Analysis. I assumed that sea travels could have been continuous (=24h/day), while land journeys would have required breaks for food and lodging. Therefore, I assumed a maximum of eight hours of journeying over land, which might of course have been dispersed over the day.

Paul's movements are especially relevant for a reconstruction. His departure from Troas and arrival at Corinth limit the available time and the explicit sequence of his journeys in Acts can be used to calculate the available time for stays: 189 days are available for all travels and stays. The duration of Pauls travels (the trajectories 4, 6, 7, 9, 11, 14 and 17, see Table 15) amount to approximate 22 days, which should be corrected for three Sabbaths.<sup>55</sup>

#### 10.2.2.3 Inferred duration of stays

The time available for residence is 164 days (189 days - 25 days). Acts describes Paul visited Philippi, Thessalonica, Berea, and Athens on

---

<sup>55</sup> A pious Jew would not have travelled on sabbat, see Keener, *Acts: Introduction and* 1:1-2:47, 1:587.

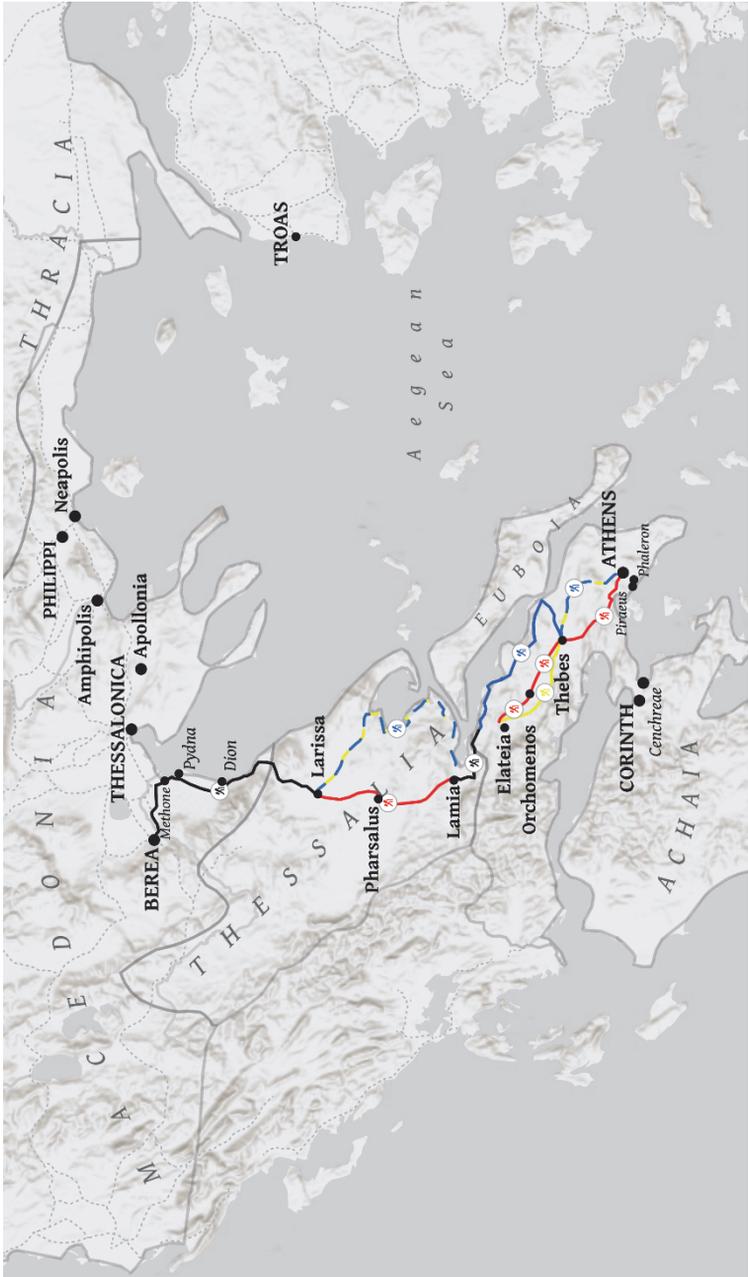


Figure 33. Suggested routes over land from Berea to Athens.

*Table 15. Trajectories including distance and duration.*

Traject	Origin	Destination	mode	km	hrs	days
1	Athens	Pydna	sea	479	71,0	3,0
2	Athens	Thessalonica	sea	504	73,6	3,1
3	Athens	Neapolis	sea	450	71,9	3,0
4	Athens	Corinth	land	85	17,7	2,2
5	Berea	Thessalonica	land	78	15,6	1,9
6	Berea	Pydna	land	40	8,2	1,0
7	Neapolis	Philippi	land	15	3,2	0,4
8	Neapolis	Athens	sea	547	95,6	4,0
9	Philippi	Thessalonica	land	160	32,6	4,1
10	Philippi	Neapolis	land	15	3,2	0,1
11	Pydna	Athens	land	475	98,5	12,3
12	Pydna	Athens	sea	511	85,4	3,6
13	Pydna	Berea	land	40	8,2	1,0
14	Thessalonica	Berea	land	78	15,7	2,0
15	Thessalonica	Philippi	land	160	32,6	4,1
16	Thessalonica	Athens	sea	552	90,2	3,8
17	Troas	Neapolis	sea	290	36,8	1,5

the road to Corinth but is rather vague about the durations.<sup>56</sup> Therefore the duration of the individual stays can only be conjectured.

Usually, a very short duration of 14 days is assumed for Paul's stay in Athens. This still provides enough time for the journeys from and to Athens<sup>57</sup> in Meers' and Lake's scenarios.<sup>58</sup> For Philippi, Thessalonica, and Berea I assume respectively 8, 8 and 5 weeks. Other distributions are possible.

---

<sup>56</sup> It is disputed whether something can be concluded about the time Paul stayed in Thessalonica from Acts 17:2, esp. since 1 Thessalonians gives the impression of a longer period of Paul's residence in the town, see Pervo, *Acts*, 418; and Keener, *Acts*, 3:2539.

<sup>57</sup> For De Zwaan's scenario this is not an issue since there is no meeting in Athens.

<sup>58</sup> Meers: (1) Paul's escort to Philippi (3.1 days) and (2) Paul's companions from Philippi to Athens (4.1 days). Lake: (1) Paul's escort to Berea (4.3 days) and (2) Paul's companions from Berea to Athens (4.6 days).

### 10.3 Results

From the data presented in section 10.1 and 10.2 I constructed a sequence of events<sup>59</sup> to integrate the spatial-temporal aspects of the case study in a three-dimensional visualisation. I used information about position and duration of journeys (10.1.2, 10.2.1, and Table 15) and residences (10.2.2) to visualize a scenario in a Space Time Cube (STC).<sup>60</sup> The x- and y-axes of the cube represent geography, the third dimension represents time. This enables the evaluation of the feasibility of Lake's, Meers's, and De Zwaan's scenarios (Figure 34, Figure 35 and Figure 36).

The presented reconstructions are tentative and should be interpreted with caution. Data about the Greco-Roman world are not as precise as one would require for current day analyses, and much of the applied analyses are based on assumptions and mere conjecture.<sup>61</sup> However, for a historian, accustomed to dealing with ambivalent material, open ends, and frayed edges in the reconstruction of history, the method provided insights that otherwise would be hard to beget.

---

<sup>59</sup> Each sequence consists of residences and travels, and the numbers between {} represent the trajectories in Table 15 needed for a travel. The sequences are (1) Lake: Troas - 1{17, 7} - Philippi - 2{9} - 8{2} - Thessalonica - 9{15} - Philippi - 10{4} - Corinth - 11{9} - 12{16} - 13{4} - Corinth. (2) De Zwaan: Troas - 1{17, 7} - Philippi - 2{9} - Thessalonica - 8{15} - Philippi - 9{4} - Corinth - 10{9} - 11{16} - 12{4} - Corinth. Meers: Troas - 1{17, 7} - Philippi - 2{9} - Thessalonica - 3{14} - Berea - {5} - {14} - 4{6, 11} - 5{5} - 6{15} - Philippi - Athens - 7{2, 7} - 8{10, 8} - 9{2} - Thessalonica - 10{15} - Philippi - 11{4} - Corinth - 12{9} - 13{16} - 14{4} - Corinth.

<sup>60</sup> Torsten Hägerstrand, "What about People in Regional Science?," *Papers of the Regional Science Association* 24.1 (1970): 6-21, <https://doi.org/10.1007/BF01936872> proposed the space-time cube to visualize and analyse geographic and temporal aspects of data simultaneously. A noteworthy example is the 3D reconstruction of Napoleon's raid to Moscow, see Kraak, *Mapping Time*.

<sup>61</sup> Though Tobler's hiking formula might yield too positive figures for speed, that would not render any of the three reconstructions impossible. Likewise, the durations of individual stays are completely based on conjecture, but that makes them very flexible to adjust.



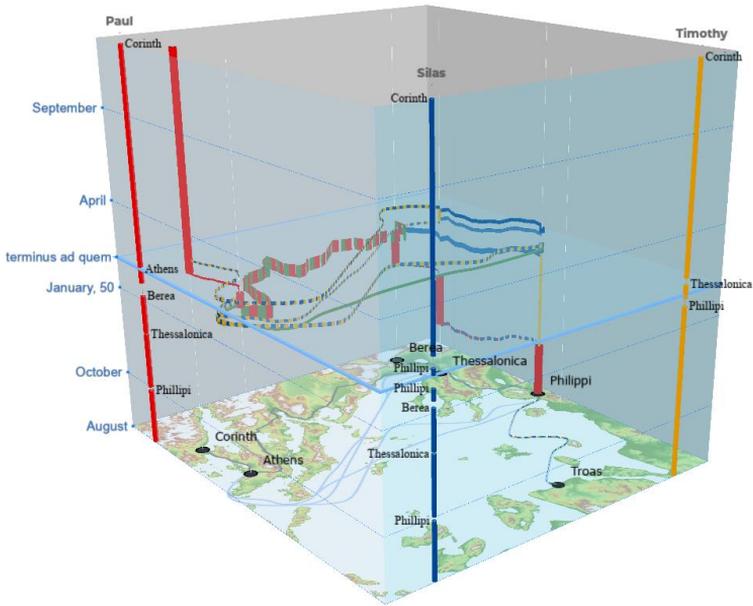


Figure 36. Space-time cube for Meers's scenario.

Considering Paul's mode of travelling from Berea to Athens we cannot be decisive. Both options are conceivable within the given timeframe. The issue is still open and either option has pro- and counterarguments.

My spatial-temporal analysis did not deliver any objections to harmonize the events in Acts 17:14-15 with the events in 1 Thess 3. On the contrary, the visualization in a STC yielded valid results for all three scenarios within the set time slot, as can be concluded from Figure 34, Figure 35 and Figure 36. Since the temporal indications are sparse in the text and the movements of especially Paul's companions are vague, we cannot choose a particular scenario for what has happened in history.

This may seem disappointing but is a valuable hermeneutical key to unlock a text for interpretation, as my case study on Acts 17:14-15 demonstrated. The author of Acts clearly was not interested in accurately reconstructing all travel movements of all characters. Instead, he lays emphasis on the repeating hostility to Paul's

message. Going into full details might rather distract the reader from this emphasis.

#### 10.4 Conclusions

In this chapter I studied in which way GIS can be used as a heuristic tool to aid the reconstruction of spatial-temporal events from narratives and for that purpose I compared the accounts on Paul's flight from Berea to Athens in Acts 17:14-15 with that in 1 Thess 3:1-5 in a case study. I identified several interpretative issues from literature and translated the information in the text about locations and travels to spatial-temporal information using Least Cost Path Analysis and Network Analysis. Eventually, I created space time cubes to test the narrative conceivability of three different scenarios.

Though these spatial-temporal models did not produce decisive pointers to interpret the stories (all scenarios appear to be possible), the method yields insights into the spatial-temporal dynamics of the narrative. This geo-hermeneutic helps a modern reader to better understand the narrative conceivability of a story in the mind of a first-century reader.

# 11

## INVESTIGATIONS INTO THE LOGISTICS OF IGNATIUS' ITINERARY

From the post-apostolic era several writings have been handed down which provide a glimpse into the developments of Christianity in the early second century CE.<sup>1</sup> Among these writings are seven letters of Ignatius, the bishop of Antioch who had been led into captivity to Rome to die a martyr's death. During his travel Ignatius wrote a number of letters to Christian churches with whom he might already have had a relationship or now made friendly contact for the first time.

### 11.1 Introduction

The aims of this chapter are to create possible geographical reconstructions of Ignatius' travel to Rome, and to analyse the social world that can be extracted from Ignatius' letters and other contemporary sources (for example Polycarp's letter to the Philippians). This may enable us to visualize the diverse relationships between Ignatius and individual members of the congregations as well as to gain insights into the social coherence of a specific branch of early Christianity.

---

<sup>1</sup> This chapter is based on Vincent van Altena, "Investigations into the Logistics of Ignatius' Itinerary," *JESB* 21.2 (2021): 51–76.

### 11.1.1 The man Ignatius

Apart from the seven letters from his own hand, not much is known about Ignatius. He is “without beginning or ending”,<sup>2</sup> and although tradition tells he died a martyr’s death in the Colosseum under Trajan,<sup>3</sup> both date,<sup>4</sup> place,<sup>5</sup> and cause of death are disputed. Possibly, he was of Syrian origin, and Lightfoot inferred from his negative self-designation<sup>6</sup> that he might have been a pagan persecutor of

---

<sup>2</sup> Christine Trevett, *A Study of Ignatius of Antioch in Syria and Asia*, SBEC 29 (Lewiston, NY: Mellen, 1992); Markus Vinzent, *Writing the History of Early Christianity: From Reception to Retrospection* (New York, NY: Cambridge University Press, 2019), 268, <https://doi.org/10.1017/9781108647052>.

<sup>3</sup> Jerome (*Vir. ill.* 16) dates his death to the eleventh year of Trajan (107-108 CE). Trebilco and Mellink are inclined to follow this traditional dating, see Paul R. Trebilco, “Christian Communities in Western Asia Minor into the Early Second Century: Ignatius and Others as Witnesses Against Bauer,” *JETS* 49.1 (2006): 17–44; and Albert Osger Mellink, “Death as Eschaton - A Study of Ignatius of Antioch’s Desire for Death” (Universiteit van Amsterdam, PhD diss., 2000), 50.

<sup>4</sup> Nowadays, most scholars opt for a death between 100 - 117 CE at the end of Trajan’s reign or in the early days of Hadrian, e.g. Virginia Corwin, *St. Ignatius and Christianity in Antioch*, Yale Publications in Religion 1 (New Haven, CT: Yale University Press, 1960); and William R. Schoedel, *Ignatius of Antioch: A Commentary on the Letters of Ignatius of Antioch*, Herm, ed. Helmut Koester (Philadelphia, PA: Fortress, 1985), 5. Bakker and Decreet propose 114 -117 CE as a more fixed date which enables them to be more specific on the persecution in Antioch, see Hendrik Adrianus Bakker, *Exemplar Domini: Ignatius of Antioch and His Martyrological Self-Concept* (Leuven: Peeters, 2003); and Étienne Decreet, “Circonstances et Interprétations du Voyage D’Ignace D’Antioche,” *RSR* 82.3 (2008): 389–99, <https://doi.org/10.4000/rsr.433>. Because of an assumed relationship to Ptolemy’s writings, Barnes suggests a date in the 140s CE, see Timothy D. Barnes, “The Date of Ignatius,” *ExpTim* 120.3 (2008): 119–30, <https://doi.org/10.1177/0014524608098730>.

<sup>5</sup> Alternative locations for his martyrdom have been suggested. From Pol. *Phil.* 9.1-2 has been inferred that Ignatius was martyred in Philippi. In a 6th century document John Malalas suggests Antioch as location of trial and execution (John Malalas *Chron.* XI).

<sup>6</sup> Ignatius describes himself as ἔκτρωμα: a child untimely born (Ign. *Rom.* 9.2) and he uses ἕσχατος to depict himself as being the least of the Antiochian Christians (Ign. *Eph.* 21.2, *Trall.* 13.1, *Smyrn.* 11.1). Ignatius mimics the terminology and self-designation of the apostle Paul, cf. 1 Cor 15:9.

Christians before his conversion.<sup>7</sup> He was the second or third bishop of the church in Syrian Antioch and (indirectly) succeeded Peter in that office (Origen *Hom. Luc.*, 6.4 and Eusebius *Hist. eccl.* 3.22.1, 3.36.2).

Most about Ignatius is known from his letters, in which he introduces himself consistently as “Theophoros.”<sup>8</sup> Under the guard of ten Roman soldiers (Ign. *Rom* 5.1), he travelled from Antioch to face a martyr’s death in Rome. On the way the company halted in Philadelphia, Smyrna, and Troas (respectively Ign. *Phld.* 7, 12.1; *Smyr.* 10.1; *Phld* 11.2, *Smyr.* 12.1 and *Pol.* 8.1). Despite his captivity, Ignatius met representatives of the churches of Philadelphia, Smyrna, Ephesus, Tralles, and Magnesia. Subsequently he wrote letters to each (and to the church of Rome), in which he exhorts them, warns against heresies, and expresses his yearning for martyrdom. From Troas he was deported to Neapolis (Ign. *Pol.* 8.1)

From the letter of his contemporary Polycarp, bishop of Smyrna, and recipient of Ignatius’ only personal letter, it can be inferred that Ignatius visited Philippi (*Pol. Phil.* 9.1) After these events Ignatius disappears from sight. The final trajectory of his travel and his death are hidden in the past and can only be conjectured.

### 11.1.2 His letters

Ignatius’ letters were held in high esteem in the early church, but their number and authenticity have been disputed.<sup>9</sup> Three “recensions” (i.e. different collections) of the Ignatian epistles exist. Most elaborated are the Latin and Greek editions of the long

---

<sup>7</sup> Joseph Barber Lightfoot, *The Apostolic Fathers - Part II: S. Ignatius S. Polycarp Revised Texts* (1891; repr., London: Macmillan, 1885), 1:28.

<sup>8</sup> Θεοφορος could be rendered as θεοφόρος, “bearer of God”, or θεόφορος, “borne by God”. The latter gave rise to the legend (known since the 9th century CE) that Ignatius was the child Jesus took in his arms (Mark 8:9), cf. Schoedel, *Ignatius of Antioch*, 36.

<sup>9</sup> See Allen Brent, *Ignatius of Antioch: A Martyr Bishop and the Origin of Monarchical Episcopacy*, T & T Clark Theology (London: Continuum, 2007); Barnes, “Date.”

recension, which were published during the late Middle Ages<sup>10</sup> and contain an interpolated collection of the seven letters in the middle recension, appended with other letters claiming Ignatian authorship.<sup>11</sup> Older Roman Catholic scholars accepted this collection as authentic, but Protestant scholars rejected them mainly due to their strong emphasis on episcopacy.

In 1848, Cureton maintained that only the three letters in the so-called “short recension” are authentic.<sup>12</sup> His view was rebutted in 1885 by Lightfoot who advocated the authenticity of the “middle recension”: the letters to the Ephesians, the Romans, the Magnesians, the Trallians, the Philadelphians, and the Smyrnaeans, and a personal letter to Polycarp. Although most scholars nowadays follow Lightfoot and accept the seven letters as authentic, this position has not been uncontested.<sup>13</sup>

---

<sup>10</sup> Faber published a Latin edition of 11 letters in 1498, Ussher a Latin edition in 1644 and Vos a Greek edition in 1648, see F.L. Cross and Elizabeth A. Livingstone, eds., *The Oxford Dictionary of the Christian Church*, 3rd rev. ed. (Oxford: Oxford University Press, 2005), 822.

<sup>11</sup> An English translation of the letters can be found in ANF1. The volume contains the epistles to the Ephesians, the Magnesians, the Trallians, the Romans, the Philadelphians, the Smyrnaeans, and Polycarp. Furthermore, it provides a translation of the Syriac versions of epistles to Polycarp, the Ephesians and Romans; as well as letters to the churches of Tarsus, Antioch, and Philippians and personal communication with Hero, Maria the Proselyte, St. John the Apostle and the Virgin Mary, see Alexander Roberts, James Donaldson, and A. Cleveland Coxe, eds., *The Apostolic Fathers with Justin Martyr and Irenaeus*, Protestant Edition., ANF 1 (Buffalo, NY: Christian Literature Company, 1885).

<sup>12</sup> Cureton based his work on a Syriac manuscript which only contained shortened versions of the Epistle to the Ephesians, the Romans, and Polycarp, see William Cureton, *Corpus Ignatium: A Complete Collection of the Ignatium Epistles, Genuine, Interpolated and Spurious; Together with Numerous Extracts from Them, as Quoted by Ecclesiastical Writers down to the Tenth Century: In Syriac, Greek, and Latin; an English Translation of the Syriac Text, Copious Notes and Introduction* (London: Rivington, 1849).

<sup>13</sup> See for example Robert Joly, *Le Dossier d'Ignace d'Antioche*, Faculté de Philosophie et Lettres 69 (Bruxelles: Université libre de Bruxelles, 1979); and Vinzent, *Writing the History of Early Christianity*.

### 11.1.3 Previous research

Ignatius's letters have been examined from different angles in modern study.<sup>14</sup> Initially, the question of the authenticity of the letters was dominant, but gradually the emphasis shifted to researching the relationship of Ignatius to other Christian and contemporary thought.<sup>15</sup>

Topics that have been researched comprise, for instance, church structure,<sup>16</sup> gifts and ministries.<sup>17</sup> Further topics concerned intertextuality of the Ignatian letters with the canonical<sup>18</sup> and apocryphal<sup>19</sup> gospels, and with contemporary writings; questions about an Ignatian eschatology;<sup>20</sup> the relationship with and attitude of Ignatius towards Jewish Christianity;<sup>21</sup> and the background(s) of

---

<sup>14</sup> Schoedel, *Ignatius of Antioch*, 2.

<sup>15</sup> Corwin, *Ignatius and Christianity*, 10.

<sup>16</sup> Joseph Azize, "Ignatius of Antioch on the Ecclesiastical Hierarchy: Logic and Methodology," *Phronema* 30.2 (2015): 105–36; Allen Brent, "The Ignatian Epistles and the Threefold Ecclesiastical Order," *JRH* 17.1 (1992): 18–32.

<sup>17</sup> Joel C Elowsky, "The Ministry in the Early Church," *CTQ* 76.3–4 (2012): 295–311; Kenneth Berding, "'Gifts' and Ministries in the Apostolic Fathers," *WTJ* 78.1 (2016): 135–58.

<sup>18</sup> Walter J Burghardt, "Did Saint Ignatius of Antioch Know the Fourth Gospel?," *TS* 1.2 (1940): 130–56.

<sup>19</sup> Pier Franco Beatrice, "The 'Gospel According to the Hebrews' in the Apostolic Fathers," *NovT* 48.2 (2006): 147–95.

<sup>20</sup> Fritz Guy, "'The Lord's Day' in the Letter of Ignatius to the Magnesians," *AUSS* 2.1 (1964): 1–17; Richard B Lewis, "Ignatius and the Lord's Day," *AUSS* 6.1 (1968): 46–59; Edward Fudge, "The Eschatology of Ignatius of Antioch: Christocentric and Historical," *JETS* 15.4 (1972): 231–37.

<sup>21</sup> Paul J Donahue, "Jewish Christianity in the Letters of Ignatius of Antioch," *VC* 32.2 (1978): 81–93; Robert R Hann, "Judaism and Jewish Christianity in Antioch: Charisma and Conflict in the First Century," *JRH* 14.4 (1987): 341–60.

his opponents.<sup>22</sup> More recent studies approached the texts from sociological<sup>23</sup> and psychological<sup>24</sup> perspectives.

#### 11.1.4 Outline of this research

Although Lightfoot, Corwin, Barnard, and Schoedel have already researched much of the geographical background and societal aspects of the Ignatian letters, the logistics surrounding Ignatius' travels have not been researched thoroughly. My aim in this chapter is to fill this research lacuna by offering possible geographical reconstructions of Ignatius' travel to Rome, and by analysing the social world which appears from Ignatius' letters. For this reconstruction, I will use knowledge about travelling in the ancient world and information from literature in conjunction with technical tools to gain a better understanding of the reality behind Ignatius' epistles.

In 11.2 I explore what it meant to travel in Roman times: what modes of travel were available to a second-century traveller and how did lodging function? Furthermore, I examine the social cohesion and the far-reaching efforts to support fellow-believers in the first centuries of Christianity. I use these generic insights in 11.3 to reconstruct a mental picture of the social cohesion and logistics surrounding the movements in Ignatius' letters. In 11.4 I summarize the findings.

---

<sup>22</sup> Daniel L Hoffman, "Ignatius and Early Anti-Docetic Realism in the Eucharist," *FiHi* 30.1 (1998): 74–88; Michael D. Goulder, "Ignatius' 'Docetists,'" *VC* 53.1 (1999): 16–30.

<sup>23</sup> Drake Williams III, "Pointing to a Paragon in Early Christian Communities: Considering Prototypical Behavior in the Letters Which Ignatius of Antioch Wrote," in *Drawing and Transcending Boundaries in the New Testament and Early Christianity*, ed. Jacobus (Kobus) Kok, Martin Webber, and Jermo Van Nes, *BZVB* 38 (Berlin: LIT, 2019), 115–35.

<sup>24</sup> Mellink, "Death as Eschaton"; Bakker, *Exemplar Domini*.

## 11.2 Background

### 11.2.1 Travelling

The ancients had multiple motives for travelling.<sup>25</sup> Many travels were made for business reasons, to further trade or government, but also for the sake of health issues, for pilgrimage, to attend festivals, and sometimes merely to see the world or to take a holiday.

In the first two centuries CE, almost the whole Mediterranean could be traversed without crossing a border, utilizing Latin for the western, and Greek for the eastern part of the empire. Travellers only needed Roman coins, and a planned network of waterways and Roman roads, primarily intended for fast military actions, was at their disposal.

If the time of the year was right and budget permitted, the traveller could journey by sea. The fear of pirates was almost completely banished.<sup>26</sup> Nevertheless seafaring was still highly dependent on the weather conditions and was most favourable in the months May to October. In the other half of the year weather conditions could be so unfavourable, and the risk of shipwreck so great, that a sea voyage was only undertaken for exceptional reasons such as the transport of military troops or to alleviate an urban food crisis. Weather also had its impact on the navigation capabilities of the crew. They needed to rely on landmarks during daylight, and stars at night to determine their position. Cloudiness by day and night was to be avoided. It would take centuries before the compass would be applied in nautical navigation.

Although travelling by boat had its advantages, it was there primarily for the transport of cargo. Passenger vessels did not exist, and a traveller was completely dependent upon the availability of a freight ship which was sailing in the desired direction. Cargo ships did not provide facilities, so passengers would stay on deck during

---

<sup>25</sup> Lionel Casson, *Travel in the Ancient World* (Baltimore: Johns Hopkins University Press, 1974), 147.

<sup>26</sup> Casson, *Travel*, 122.

the journey, where they were on their own, and if they had the luxury were catered for from their own foods by their own servants.

Other factors that increased the unpredictability of seafaring were not only the changeability of the weather conditions, but also the widespread belief of the Romans that dreams and real-life occurrences provided omens that encouraged or deterred a sea journey.

Travelling over land was more time-consuming and required the necessary physical effort, not only for crossing distances, but also since camping equipment, such as kitchenware and bedding, had to be taken along. On the other hand, a land journey was less sensitive to seasonal influences or bad weather.<sup>27</sup> Weather though did have its influences on a daily travelling schedule. Not only daylight, but also acceptable temperatures were needed to travel safely and comfortably.<sup>28</sup>

#### 11.2.2 Transport and lodging

The Emperor Augustus introduced the *cursus publicus*, a system primarily intended for official messaging in the Roman Empire. It consisted initially of a network of places where the official messages had to be transferred regularly to new couriers. The system was revised so that now carriages and (pack)animals were replaced, which also had the advantage that the courier could provide additional information to the official message. Later, the system also

---

<sup>27</sup> Casson, *Travel*, 180.

<sup>28</sup> Compare the account of the lecturer Aristides leaving Smyrna to travel to Pergamum in a summer in the late 160s CE: "When the preparations had all finally been completed, it was noon and too hot for him to be out on the road. He waited around a few hours until the sun lost some of its bite, and about half past three in the afternoon he and his party got into their carriages and started off." Aristides *Or.* 27: 1-8, see Casson, *Travel*, 193.

provided facilities for the transportation and housing of individuals.<sup>29</sup>

Usage of the *cursus publicus* was strictly reserved for officials from the government or the military. They received a *diploma*, or warrant, to grant them permission to use designated facilities (including transport but also often subsistence) for a specific purpose over a delimited period. These facilities needed to be provided by the local population, but it was also decreed that the locals should be compensated financially. The certainty of having transport and housing facilities available for a journey made a *diploma* a treasured possession.<sup>30</sup> Well-to-do people had their own outdoor villas or a large network of other officials or friends to turn to for a stay, but these first-class facilities of transport and lodging were certainly not at the disposal of a captive second-century bishop, who was being deported by a band of Roman soldiers.<sup>31</sup>

If the rank-and-file traveller was to avoid camping in the open field or sleeping on the street, their only option available was an inn. Inns were situated at a day's travel distance along Roman roads, and a town usually contained a multiplicity of them. They provisioned food for guests as well as the general public, offered lodging amenities, shelter and care for pack animals, and repair facilities for travel equipment. In addition, inns functioned as centres of *divertissement* (entertainment, gambling, and prostitution).

---

<sup>29</sup> Casson, *Travel*; Anne Kolb, "Transport and Communication in the Roman State: The *Cursus Publicus*," in *Travel and Geography in the Roman Empire*, ed. Colin Adams and Ray Laurence (New York, NY: Taylor & Francis, 2012), 95–105.

<sup>30</sup> These advantages inevitably led to misuse and abuse. See Pliny the Younger's fairly harmless example: "up to this moment, I have never accommodated anyone with a diploma.... However, my wife heard that her grandfather died, and since she wanted to run to see her aunt, I thought it unnecessarily severe to deny her the use of a diploma." (Pliny *Ep.* 10:1 20). Abuse however grew to great proportions and ultimately selling one's *diploma* could be punished by death, see Casson, *Travel*, 188–89, 351–52.

<sup>31</sup> Time and circumstances changed during the centuries. Eusebius (*Hist. eccl.* 10.5.23) documented a letter from the Emperor Constantine to Chrestus, bishop of Syracuse, in which he grants him a *diploma* to use the *cursus publicus* for himself, two companions and three servants when travelling to the synod of Arles (314 CE).

Hygiene was an issue, as a legend in the apocryphal Acts of John illustrates. While returning from Laodicea to Ephesus, John and his servants spent the night at a deserted inn. It appears to have been past midnight that the apostle, having been given the only available bed, cried out “I tell you, you bugs, to behave yourselves, one and all; you must leave your home for tonight and be quiet in one place and keep your distance from the servants of God.” His servants laughed at the event, but the next morning they were surprised when they found the bugs properly lined up at the front door.<sup>32</sup>

### 11.2.3 Hospitality in the early church

Given the deplorable state of inns, not much was to be expected from commercial hospitality. For that reason, high-placed officials preferred private hospitality offered by friends and relatives, or the hospitality gained from strangers upon the display of a diploma.<sup>33</sup> Though hospitality to strangers was a virtue in the Roman world, hospitality in reality was limited to people of similar social standing.<sup>34</sup>

In Judaism private hospitality (which included strangers) was a virtue (Lev 19:33-34 and Deut 10:17-19) and was a by-product of personal piety towards God. This virtue was held in high esteem in the Jewish tradition,<sup>35</sup> but even then, ideal and reality were not completely interchangeable.<sup>36</sup>

---

<sup>32</sup> Acts John 60, 61, see Schneemelcher, *NT Apocrypha II*, 2:193-94.

<sup>33</sup> John T. Fitzgerald, “Hospitality,” *DNTB*, 522-26.

<sup>34</sup> A passage in Justin Martyr’s *Apology* probably illustrates the change in stance towards outsiders “...we who hated and destroyed one another, and on account of their different manners would not live with men of a different tribe, now, since the coming of Christ, live familiarly with them” (Justin 1 *Apol.* 14.3).

<sup>35</sup> See the Mishnah tractate *Abot*: “Jose b. Joezer used to say: let thy house be a house of meeting for the Sages and sit amid the dust of their feet, and drink in their words with thirst [...] Shammai said: Make thy [study of the] Law a fixed habit; say little and do much, and receive all men with a cheerful countenance” (*m. ’Abot* 1.4, 15). See Herbert Danby, trans., *The Mishnah: Translated from the Hebrew with Introduction and Brief Explanatory Notes* (1933; repr., Oxford: Oxford University Press, 1988), 446,447.

<sup>36</sup> See Gen 44:4; Sir 29:21-28.

The New Testament continues the exhortations to be hospitable (Rom 12:13; Heb 13:2; 1 Pet 4:9), especially for those who preach the gospel (3 John 8). It also offers several examples of hospitality within the early Christian congregations: in Acts 18:27 Apollos receives a letter of recommendation from the disciples in Ephesus with a request to provide him hospitality in Achaia. Similar requests to the congregations in respectively Rome, Corinth, and Colossae were made for Phoebe (Rom 16:1-2), Barnabas (Col 4:10), and Timothy (1 Cor 16:10-11). In the last case this also included material support for travelling. John even commends a congregation for its hospitality to strangers (3 John 5-7).<sup>37</sup>

Ign. *Trall.* 12.1; *Eph.* 2; *Magn.* 15; and *Smyrn.* 9. 12 show that Ignatius also experienced such hospitality, both from congregations and individuals. He uses ἀναπαύω (*to cause to halt, rest and therefore: refresh*) several times to describe how he was received by the congregations, and this support was probably expressed mentally and materially.<sup>38</sup> In the context of Ignatius' deportation this also shows the social cohesion in the early church. It is not coincidental that Ignatius uses the expression ἡ καθολικὴ ἐκκλησία to emphasize the unbreachable unity of the church (Ign. *Smyrn.* 8.2)

Other illustrations of the early church's social cohesion are abundantly available in second- and third-century writings. For instance, Tertullian describes a voluntary monthly offering which is spend for caring for the needy, the aged, and the imprisoned (Tertullian, *Apol.* 39,5-6).<sup>39</sup>

---

<sup>37</sup> The identity of the author of the 3rd epistle attributed to John is obscure.

<sup>38</sup> "in all things": ἐν πᾶσιν (Ign. *Eph.* 2.1), κατὰ πάντα, (Ign. *Smyrn.* 9.2, 12.1,2); "by body and spirit": σαρκί τε καὶ πνεύματι (Ign. *Trall.* 12.1).

<sup>39</sup> "Even if there is a chest of a sort.... Every man once a month brings some modest coin—or whenever he wishes, and only if he does wish, and if he can; for nobody is compelled; it is a voluntary offering. ...but to feed the poor and to bury them, for boys and girls who lack property and parents, and then for slaves grown old and shipwrecked mariners; and any who may be in mines islands or prisons...." Tertullian, *Apology. De Spectaculis. Minucius Felix: Octavius*, trans. T.R. Glover and G.H. Rendall, LCL 250 (Cambridge, MA: Harvard University Press, 1931).

In *De Morte Peregrini* (the passing of Peregrinus) the Roman satirist Lucian depicts a hilarious portrait of the pre-Christian, Christian and stoic phases in the life of Peregrinus Proteus, and his “heroic” death. Although Lucian is at times evidently misinformed about Christianity,<sup>40</sup> his information about Peregrinus’ Christian phase of life is illustrative for the social cohesion in the local church.<sup>41</sup>

Peregrinus joined the Christians of Palestine where he quickly gained a prominent position among them, which eventually led to his capture and imprisonment.

Well, when he had been imprisoned, the Christians, regarding the incident as a calamity, left nothing undone in the effort to rescue him. Then, as this was impossible, every other form of attention was shown him, not in any casual way but with assiduity; and from the very break of day aged widows and orphan children could be seen waiting near the prison, while their officials even slept inside with him after bribing the guards. Then elaborate meals were brought in, and sacred books of theirs were read aloud.... Indeed, people carried even from the cities in Asia, sent by the Christians at their common expense, to succour and defend and encourage the hero. They show incredible speed whenever any such public action is taken; for in no time they lavish their all....

Lucian *Peregr.* 11-13<sup>42</sup>

---

<sup>40</sup> “Lucian's ignorance of Christianity and Christian doctrine is really monumental”, so asserts Gilbert Bagnani, “Peregrinus Proteus and the Christians,” *Historia* 4.1 (1955): 111.

<sup>41</sup> Lucian’s portrait of the Christian Peregrinus shows some resemblances with the portrait of Ignatius. This seems to presuppose knowledge on Lucian’s side of Ignatius’ letters. These resemblances are however not of such a kind that they justify Völter’s odd claim: “Vielmehr müssen der Verfasser der kleinasiatischen Ignatiusbriefe und Peregrinus Proteus eine und dieselbe Person gewesen sein”, see Daniël Völter, *Polykarp und Ignatius und die Ihnen Zugeschriebenen Briefe* (Leiden: Brill, 1910), 174.

<sup>42</sup> Lucian, *The Passing of Peregrinus. The Runaways. Toxaris or Friendship. The Dance. Lexiphanes. The Eunuch. Astrology. The Mistaken Critic. The Parliament of the Gods. The*

Lucian's disdain for the charlatan and profiteer Peregrinus is evident in the story's sequel where he describes that Peregrinus continued to live off the wallet of early Christianity after being released.<sup>43</sup>

Several passages in the Didache confirm the potential abuse of the early church's hospitality.<sup>44</sup> The document not only exhorts to test the teachings of traveling preachers, but also to limit their stay to a maximum of one, two, or, occasionally, three days and to support them only with bread, not with money. Such admonitions were to prevent profiteers from parasitizing the early Christian communities (Did. 11.1-12.5).

#### 11.2.4 Care for prisoners

Besides the general care for and hospitality to strangers the involvement with imprisoned co-believers is a relevant feature of the social world behind Ignatius' letters.

Incarceration had no formal legal status as a punishment in Roman times. Rather, it was intended as a remand awaiting execution. However, delays in the judicial process, combined with poor circumstances and psychological pressure, meant that imprisonment was experienced as punishment.<sup>45</sup> The mode of custody to which one was sentenced depended on "the nature of the charge brought, the honourable status, or the great wealth, or the harmlessness, or the rank of the accused' and an accused could "be

---

*Tyrannicide. Disowned*, trans. A.M. Harmon, LCL 302 (Cambridge, MA: Harvard University Press, 1936).

<sup>43</sup> See Lucian, *Peregr. 16*: ἰκανὰ ἐφόδια τοὺς Χριστιανοὺς ἔχων, - "possessing an ample source of funds in the Christians." D. Plooi and J.C. Koopman, *Lucianus, de dood van Peregrinus van inleiding en aantekeningen voorzien*, Aetatis Imperatoriae Scriptorum Graeci et Romani Adnotationibus Instructi I, ed. P.J. Enk and D. Plooi (Utrecht: Ruys, 1915), 79 see this as an allusion to the generic hospitality commonly displayed within early Christianity.

<sup>44</sup> The Didache is an early Christian document that probably can be dated to the late first or early second century CE and might have originated in Syria, the same period and region as Ignatius' letters, but within a more Jewish context.

<sup>45</sup> Brian M. Rapske, "Prison, Prisoner," *DNTB*, 827-30.

sent to prison, delivered to a soldier, or committed to the care of their sureties, or to that of themselves.” (Justinian *Dig.* 48.3.1)

The severity of military custody (including transport and incarceration) depended on several factors. In the case of military transit, the rank, experience, and number of soldiers assigned for guarding could be brought into accordance with the custodian’s importance or status.<sup>46</sup> Prisoners and guards were often chained together. The conditions in a prison were very poor. Often the places were overcrowded, poorly ventilated, devoid of natural light and extremely filthy. Daily diets were merely intended for survival. Against this background the care for prisoners becomes a necessity instead of a luxury and it is known from second-century sources that even bribing of guards was utilized to facilitate contact.<sup>47</sup>

The story about the martyrdom of Perpetua and Felicitas<sup>48</sup> supports this picture. The deacons Tertius and Pomponius bribed the soldiers to obtain better conditions for the imprisoned (*Pass. Perp.* 3.7), and many believers visited the prisoners for mutual comfort (*Pass. Perp.* 9.1).<sup>49</sup>

---

<sup>46</sup> Rapske, “Prison, Prisoner,” 828 seems to imply that this explains the huge number of soldiers appointed to guard Ignatius (*Ign. Rom.* 5.1). It is however not convincing that an aged bishop, who desired his martyrdom, had such status and importance. The number of soldiers could equally well be explained by other factors, for example, by the need to collect several prisoners in Asia Minor and Macedonia to deport them to Rome (*Pol. Phil.* 9.1). This suggestion has the advantage that it also explains why the band took the inefficient land route instead of making the voyage by sea.

<sup>47</sup> *The Martyrs of Lyons*, a writing which should probably be dated to 177 CE, was written by the churches of Lyons and Vienne in Gaul to the churches of Asia and Phrygia. It relates of a very cruel persecution. The whole atmosphere was so hostile that the Christians were not allowed to bury their martyrs. Neither supplications nor efforts to bribe could persuade the guards (*MartLugd* 1.61), see Musurillo, vol. 2.

<sup>48</sup> *The Passio Sanctarum Passio Perpetuae et Felicitatis*, presents five second-century martyrs from the early African Christian movement. In the work, the spotlight is on Perpetua, a high-born, twenty-two-year-old, breastfeeding woman, and her pregnant slave Felicitas, see *Pass. Perp.* 2.2, 7.4, 16.2.

<sup>49</sup> That they even had the opportunity to dinner together twice (*Pass. Perp.* 16.2; 17.1) seems to be an exceptional treatment by a guard.

Tertullian, the North African apologist from Carthage, is also familiar with the custom among early Christians to support imprisoned Christians. He writes that “also individual brethren from their own private resources supply to you in your prison” (Tert., *Mart.* 1). In a different passage, Tertullian exhorts the early Christians not to exaggerate their concern for martyrs: “Plainly, your habit is to furnish cookshops in the prisons to untrustworthy martyrs, for fear they should miss their accustomed usages, grow weary of life, (and) be stumbled at the novel discipline of abstinence” (Tert., *Jejun.* 12.3). Apparently, Tertullian believed that only true martyrs were worthy of the care of the early Christian community.

It is against this background that the letters of Ignatius should be read. During his travel in custody, under the guard of Roman soldiers, he probably was taken from barracks to barracks, or to some other sort of military station where he was imprisoned in whatever kind of jail was available. Conditions must have been poor and his relationship with his custodians was grim (Ign. *Rom.* 5.1).

Still, his letters provide evidence that he was able to be in contact with fellow Christians and to write letters to the churches which sent him delegates. These delegates appear to have been instrumental in sending his letters, as ordinary people had to rely on their own couriers.<sup>50</sup>

These examples demonstrate that hospitality for fellow believers and care for prisoners in the early church were not limited to ideals, but part of church policy.<sup>51</sup> This widely practiced early

---

<sup>50</sup> The prime service of the *cursus publicus* was only available to officials or the well-to-do who gained access to the system through bribery or influence, see Casson, *Travel*, 223.

<sup>51</sup> A recommendable study says that “from a very early point ... church help was structured” and comprised several roles where “church members donate; church leaders visit and disburse help” which was especially evident “where churches come to the prisoner from a distance”, see Brian M. Rapske, “The Importance of Helpers to the Imprisoned Paul in the Book of Acts,” *TynBul* 42.1 (1991): 13, 14.

Christian tradition can be traced back to Jesus' words,<sup>52</sup> and the early church's passion to obey them is also evident from the logistics people were willing to organize to assist their fellow believers. The next section will elaborate these geographical aspects.

### 11.3 Geography of Ignatius' letters

Somewhere in the second half of the first quarter of the second century, Ignatius was arrested in Antioch at the Orontes. Local persecution appears to have prompted his arrest and his *damnatio ad bestias*. Since the sentence had to be executed in Rome, the bishop was deported under the guard of ten Roman soldiers. It is probable that an envoy was despatched from Antioch to inform the local church in Rome (Ign. *Rom.* 10.2).<sup>53</sup> Such a journey would have been most efficient over sea and might have taken approximately twenty-one days (Figure 37).<sup>54</sup>

---

<sup>52</sup> "Luke is also speaking to the Christian community of his day, relating details of its missionary endeavours to the ministry of Jesus himself. Thus the teaching of the Christian community in the Period of the Church is rooted in his teaching and in a command of Jesus himself." (Joseph A. Fitzmyer, *The Gospel According to Luke: Introduction, Translation, and Notes*, AB 28.2 (Garden City, NY: Doubleday, 1985), 845.) Jesus' instructions to the seventy(two) in Luke 10:3-11 "are economic" and place "his emissaries in a place of tension between dependence on and the abuse of hospitality", see Joel B Green, *The Gospel of Luke*, NICNT (Grand Rapids, MI: Eerdmans, 1997), 413-14.

<sup>53</sup> Schoedel, *Ignatius of Antioch*, 11-12; and Corwin, *Ignatius and Christianity*, 14 consider it likely that the ones preceding Ignatius were also victims of the same persecution.

<sup>54</sup> Modes, durations, and distances of the individual travels have been derived from The Stanford Geospatial Network Model of the Roman World, [orbis.stanford.edu](http://orbis.stanford.edu) (expect for the trajectory over land from Laodicea ad Lycum - Philadelphia - Smyrna where GIS data was used). When using Orbis, it should be borne in mind that it is a reconstruction based on documented, historical, and conjectured data. Therefore, actual journeys may have taken much longer due to the unpredictability of the weather or the unavailability of vessels. Cicero (*Cicero Fam.* 16.21.1) wrote that it took 46 days to despatch a letter from Rome to Athens since there was no ship readily available, but he also accounts a different occasion where the same travel was made *sane strenue*, mightily quickly, in only 21 days (*Fam.* 14.5.1).



Figure 37. Possible trajectory from Antioch to Rome.

Instead of a direct journey by sea, the band of soldiers took an indirect route through Asia Minor, Macedonia, and Italy.<sup>55</sup> The first trajectory, between Antioch at the Orontes and Philadelphia in Asia (Figure 38), can only be conjectured. One possibility is that they went from Antioch to Seleucia to embark on a ship heading for a southern port in Asia Minor, for example, Atallia,<sup>56</sup> which was approximately

---

<sup>55</sup> Mellink, “Death as Eschaton,” 20–21 deems it likely that already at this point the group consisted of multiple prisoners. This might be conjectured from the size of the squad, but it is unclear whether and when other prisoners were added. The indirect course of the route across Asia Minor and Macedonia might be explained if the squad had the assignment to pick up other prisoners along the way to the capital, see Schoedel, *Ignatius of Antioch*, 11–12.

<sup>56</sup> For instance Trebilco, “Christian Communities,” 20; and Schoedel, *Ignatius of Antioch*, 11 suggest that *Ign. Rom.* 5.1 could provide evidence that the first trajectory of Ignatius’ travel was partially over sea. However this inference is not conclusive, since the verse could also apply to future sea voyages, see Corwin, *Ignatius and Christianity*, 14, 16.

678 kilometres and would have taken five to six days. From there they might have continued their journey over land to Laodicea ad Lycum, a journey of eight days and 225 kilometres.



Figure 38. Possible trajectories from Antioch to Laodicea.

The alternative is that the military escort and captive(s) left Antioch and headed northwest towards Tarsus in Cilicia. After crossing the Taurus mountains, passing through the Cilician gates, they probably would have continued their land journey till they reached Laodicea ad Lycum.<sup>57</sup> The total distance of 900 kilometres could have been covered in thirty-one days.

---

<sup>57</sup>Since Rheus Agathopous and Philo from Cilicia have followed Ignatius (Ign. *Phld.* 11.2), it has been inferred that the journey must have been over land. Bart Ehrman supports a land journey, though he does not reference Ign. *Phld.* 11.2, see Bart D. Ehrman, trans., *The Apostolic Fathers, Volume II: Epistle of Barnabas. Papias and Quadratus. Epistle to Diognetus. The Shepherd of Hermas*, LCL 25 (Cambridge, MA: Harvard University Press, 2003), 204.

Close to Laodicea ad Lycum, where the rivers Maeander and Lycus converged, the road branched in a northern and western stretch. Some scholars suggested that Ignatius might have expected that they would have proceeded in their journey over the main highway across Southern Asia Minor to embark in Ephesus.<sup>58</sup>

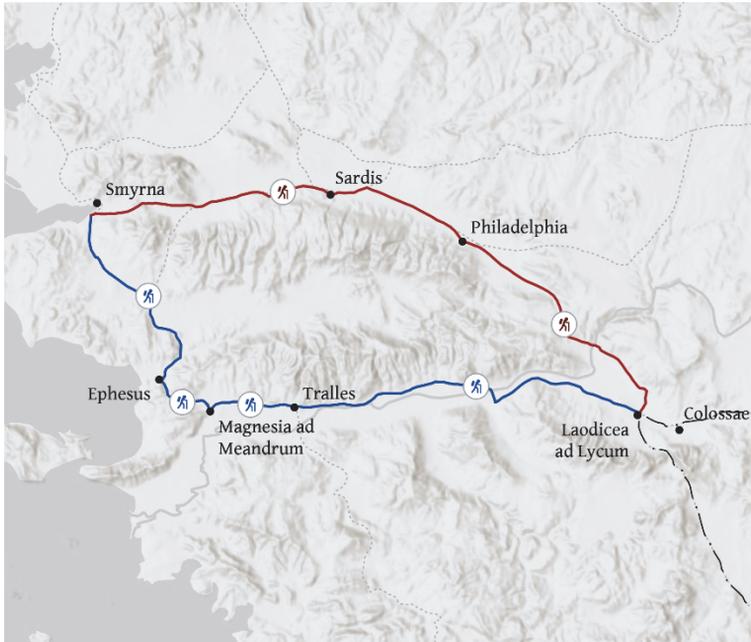


Figure 39. Ignatius' route and the route of the messengers.

The squad of soldiers, however, preferred the northern branch towards Philadelphia (88 kilometres, 3 days). Here the company halted. Probably, as will have been the case in earlier, unnamed villages where they needed to spend the night, the soldiers made use of accommodations in military encampments, perhaps even from the *cursus publicus*, and otherwise of existing inns. Ignatius probably

<sup>58</sup> Schoedel, *Ignatius of Antioch*, 73. Ignatius' description of the Ephesian church as "You are a passageway [πάροδος] for those slain for God" (Ign. Eph. 12.2) might not only be taken as metaphorical, but also as an allusion to the highway in reality, see Corwin, *Ignatius and Christianity*, 16; BDAG, s.v. πάροδος; MGS, s.v. πάροδος.

was locked up in whatever cell available. In Philadelphia Ignatius had the freedom to meet and teach local Christians (Ign. *Phld.* 7.1), but there appears to have been a conflict between him and some of the Philadelphians.<sup>59</sup>

The stay in Philadelphia probably lasted only a few days before the band continued its travel to Smyrna. The distance (130 kilometres) would have required a multi-day travel (4.5 days) and it seems very likely that they spend one of the nights in Sardis, the capital of the roman province Asia Minor.

The squad of soldiers and their captive(s) appear to have reached Smyrna sometime in the middle of August. The most probable scenario is that Ignatius was placed into custody again, perhaps together with other captives. Possibly the delay was due to some arrangements the soldiers had to make or they might have halted to pick up some other captives. It could also have been that they had to wait for a ship heading in the direction of Troas to become available.

Whatever the reason, the delay provided an opportunity for Ignatius to meet with local Christians, among whom bishop Polycarp. These individuals became dear to him and expressed their support both mentally and materially (Ign. *Smyr.* 9.2, *Magn.* 15, *Eph.* 2.1; 5.1). Besides the Smyrnaeans, Ignatius could also rely on representatives of the local churches in Ephesus, Magnesia, and Tralles.

At what moment these churches had been informed about Ignatius' journey of captivity and his prospective stay in Smyrna is not stated in the epistles. One option is that the churches may have been informed when Ignatius had already reached Smyrna.<sup>60</sup> This would require the despatch of an envoy towards Ephesus, a distance of 72 kilometres that could be traversed in two and a half days, subsequently to Magnesia, (1 day - 21 km), and to Tralles (1 day, 28

---

<sup>59</sup> It might be that the quarrel with some of the Philadelphians (cf. *τινες... τινων*, Ign. *Phld.* 7.1) was over the authority of the verbal tradition against the Jewish scripture.

<sup>60</sup> Corwin, *Ignatius and Christianity*, 17.

kms). This seems not a very likely option since the journey vice versa (when done by foot) would have taken ten days.

It seems more likely that an envoy was despatched via the southern route from Laodicea to Smyrna, informing the churches of Tralles, Magnesia and Ephesus that Ignatius was on his way to Smyrna.<sup>61</sup> It took about four days to reach Tralles (120 kms). There, bishop Polybius joined the envoy (*Ign. Tral.* 1.1) and together they traversed 28 kilometres to reach Magnesia in one day. In that town, the company of travellers expanded with the addition of presbyters Apollonius and Bassus, bishop Damas, and the deacon Zotion (*Ign. Mag.* 2.1). They continued their journey and reached Ephesus after another day (21 kms) where they met representatives of the local church. Receiving the news about Ignatius' journey in captivity, an Ephesian delegation of at least five persons (Bishop Onesimus, deacon Burrhus, Crocus, Euplus and Fronto, *Ign. Rom.* 10.1) were enabled to meet Ignatius in Smyrna (*Ign. Eph.* 1.2; 21.1). The travel party, which meanwhile had grown to more than ten people, will have covered the final 70 kms to reach Smyrna in two and a half days and there they became acquainted with the imprisoned bishop.

Ignatius and these representatives must have had some time and opportunity to build a relationship and to discuss the situation of the local churches, especially in the case of the deputies from the Ephesian and Magnesian churches (the Trallian bishop Polybius seems to have returned earlier to his hometown (*Ign. Tral.* 1.1; 13.1)). In response to their support and the reports concerning the local situation, Ignatius wrote letters to each of these churches. The delegates from Ephesus and Magnesia may have delivered them to their hometowns and to Tralles.

On 24 August, Ignatius wrote a fourth letter to the church in Rome (*Ign. Rom.* 10.3). He announced his arrival to the Roman congregation to prepare their stance towards him. He wanted to prevent any action on their side that might hinder his martyrdom.

---

<sup>61</sup> Lightfoot, *Apostolic Fathers II*, vol. 1; Schoedel, *Ignatius of Antioch*; Mellink, "Death as Eschaton"; Corwin, *Ignatius and Christianity*.

Therefore, the letter had to reach Rome before the arrival of Ignatius himself, and it has been suggested that Crocus acted as the courier for the letter to the Romans (Ign. Rom. 10.1).<sup>62</sup> If he was the one carrying the letter to Rome and there was some sense of urgency, seafaring might have been the best option. Crocus could have embarked in Smyrna on a ship for Corinth, where he continued to Regium. From there the final trajectory would have led him to Rome. The journey from Smyrna to Rome was about 2100 kilometres and would have taken at least seventeen days (Figure 40). The letter-carrier probably arrived in Rome mid-September.



Figure 40. Possible route from Smyrna to Rome.

It is quite possible that the group of soldiers and their prisoners resumed their journey soon after the letter was sent (Figure 41). Whether their journey to Troas continued over land (9.3 days) or by sea (2.1 days), is unknown, but Ignatius was now accompanied by

<sup>62</sup> Schoedel, *Ignatius of Antioch*, 12.

Burrhus, the deacon from Ephesus (Ign. *Eph.* 2.1). This man was generously facilitated by the Smyrnaeans and Ephesians to support Ignatius and would also serve as Ignatius' amanuensis (Ign. *Phld.* 11.2; *Smyrn.*12.1).<sup>63</sup>



Figure 41. Options for Ignatius' route from Smyrna to Troas.

Ignatius had been followed by Philo from Cilicia, and Rheus Agathopous from Syrian Antioch. The texts are silent about whether Rheus Agathopous, after having left Antioch, picked up Philo in Cilicia, but it appears that they had both been informed that Ignatius had taken the northern route to Smyrna, and they continued their travel jointly to Philadelphia. In that town they visited the local church, but not every member of the Philadelphian community received them positively (Ign. *Phld.*11.1).

---

<sup>63</sup> Schoedel, *Ignatius of Antioch*, 216, 251 suggests Burrhus could also have served as the letter carrier for the three epistles that were sent from Troas.

From Philadelphia, Philo and Rheus Agathopous travelled to Smyrna (Ign. *Smyrn.* 10.1) and the attitude of the Smyrnaean church towards them appears to have been very positive: the Smyrnaeans refreshed both men in every way (Ign. *Smyrn.* 10.1, cf. 9.1-2), probably informing them that Ignatius already left for Troas. So, they travelled on.

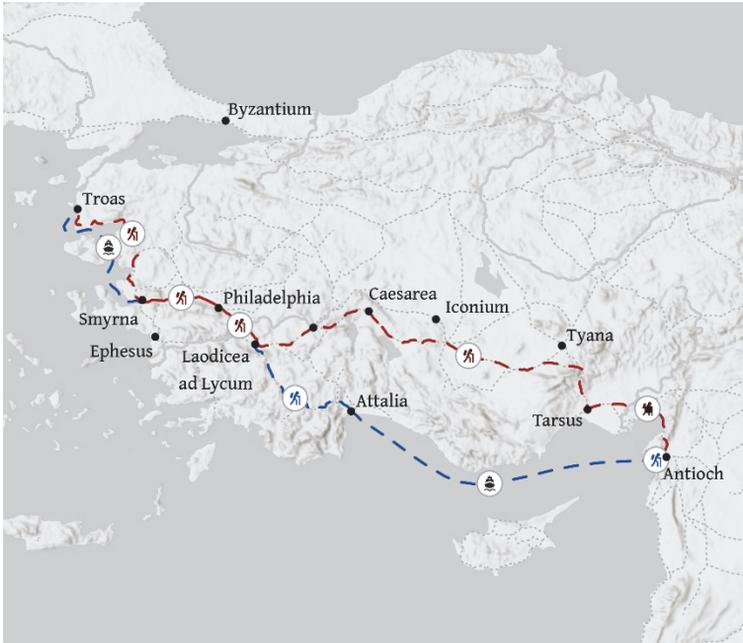


Figure 42. Trajectory of Philo and Rheus Agathopous.

Having travelled more than 1400 kilometres,<sup>64</sup> they were finally able to catch up with Ignatius in Troas (Ign. *Phld.* 11.1; *Smyrn.* 13.1), and to bring him the good tidings about the church in Antioch (Ign. *Pol.* 7.1; *Smyrn.* 7.1; and *Phld.* 10.1). This news brought the troubled mind of

---

<sup>64</sup> If the voyage was partially over sea, it could be traversed in 24 days. If it was fully over land, on foot, it would have taken about 48 days to reach Troas from Antioch.

Ignatius to rest (cf. *Ign. Eph.* 21; *Magn.* 14). Rheus Agathopous seems to have left Ignatius before Philo (*Ign. Smyrn.* 13.1).<sup>65</sup>

Subsequently, Ignatius wrote letters to the churches of Philadelphia and Smyrna, and to the Smyrnaean bishop Polycarp. In these letters he expressed his gratitude for the restored peace in Antioch and exhorts his addressees to rejoice with him. He also urged them to send ambassadors to the church of Antioch in Syria to congratulate them (*Ign. Phld.* 10.1; *Pol.* 7.1; 8.2; *Smyrn.* 7.1-3), as neighbouring churches had already done in person or by letter (*Ign. Phld.* 10.2, *Poly.* 8.1).

Considering the short letters written from Troas (*Ign. Phld.* 11.2; *Smyrn.* 12.1; *Pol.* 8.1), Ignatius' stay was apparently rather short and abruptly terminated (*Ign, Pol.* 8.1). Maybe a change of weather conditions or favourable omens made a vessel available to transport the band to the European continent.

The distance between Troas and Neapolis, the seaport of Philippi, was 347 kilometres and could be traversed in two and a half days. From the harbour they probably proceeded on foot to reach Philippi in half a day (19 kilometres). In that city, two other captives appeared to have been added to the band (*Pol. Phil.* 9.1). Unfortunately, the contemporary accounts stop here, and it is not certain about what happened next. Ignatius might have died a martyr's death in Philippi,<sup>66</sup> or he might have faced his execution in Rome.

Assuming the possibility of a martyr's death in Rome, the squad of soldiers presumably continued their travel from Philippi over the Roman highway, the *Via Egnatia*. The journey of 540 kilometres would have taken approximately eighteen days and

---

<sup>65</sup> The fastest mode of travel to return to Antioch would have been a sea voyage of 9 days, but this was dependent on the availability of transport. Furthermore, the time of year was less favourable.

<sup>66</sup> Vinzent, *Writing the History of Early Christianity*, 278 claims that the ninth chapter of Polycarp's letter "introduces Ignatius together with his companions Zosimus and Rufus as martyrs who together with others were killed in Philippi." However, it is unclear on what basis Vinzent infers that the place of death should be Philippi.

would have led them via Thessalonica and Herakles. When they finally reached the harbour in Dyrrachium, they probably embarked on a ship to cross the Adriatic Sea to land at Brundisium, a distance of 169 kilometres which took a little more than one day.

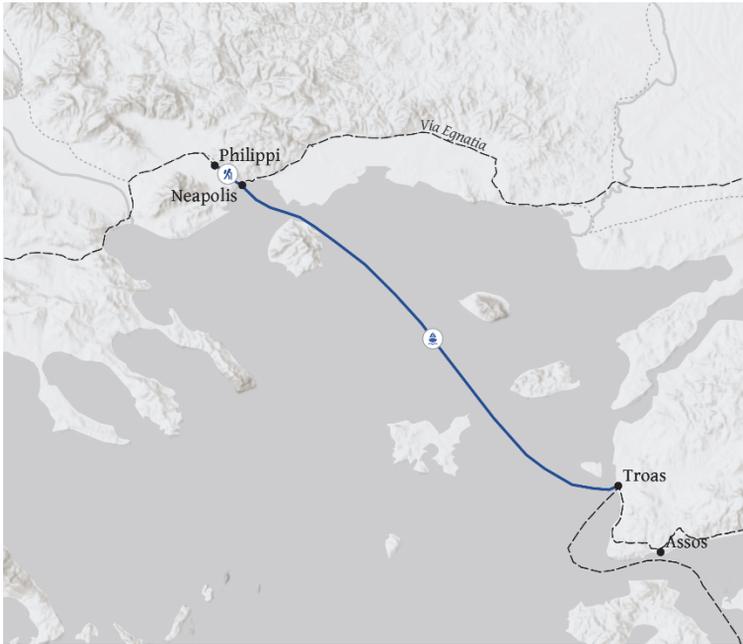


Figure 43. Route of Ignatius to Neapolis and hence Philippi.

To reach Rome a land journey along one of the usual routes, for instance the Via Appia, has often been proposed.<sup>67</sup> In September or October, they could have reached the city in eighteen days, covering 539 kilometres. However, an alternative route over sea is also possible: they could have set sail from Brundisium to round the southern Italian coast. Comprising 1174 kilometres, this route is significantly longer, but it only would have taken approximately nine days. Along the way they might have docked in various harbours. A clue that earlier generations found such a sea voyage

---

<sup>67</sup> See Corwin, *Ignatius and Christianity*; Schoedel, *Ignatius of Antioch*; Mellink, “Death as Eschaton.”

from Brundisium over Regium to Rome plausible, might be discovered in the spurious letter from Ignatius to the Philippians.<sup>68</sup> On the other hand, in this time of year sea travel was less favourable.



Figure 44. Trajectory from Philippi to Rome.

Probably, after spending more than forty-two days on certainly more than 3000 kilometres (Table 16) – a journey with several stops that enabled the bishop to communicate with representatives of local churches – the band finally reached Rome (probably no earlier than halfway through October). There, Ignatius likely died his desired martyr’s death fighting the beasts. During his travel and imprisonments, he had met local church members, but also delegates and envoys who were willing to travel over 10,000 kilometres to lend their support (Table 17).

<sup>68</sup> “I have sent you this letter through Euphанийus ... happening to meet with him at Rhegium, just as he was going on board ship” psIgn. *Phil.* XV.

Table 16. Trajectories in Ignatius' travel.<sup>69</sup>

Trajectory		distance	duration	mode
Antioch - Attalia	1a	678	6	sea
Attalia - Laodicea	1a	225	8	land
<i>Antioch - Laodicea</i>	<i>1b</i>	900	31	land
Laodicea - Philadelphia	2	88	3	land
Philadelphia - Smyrna	3	130	5	land
Smyrna - Troas	4a	277	9	land
<i>Smyrna - Troas</i>	<i>4b</i>	295	2	sea
Troas - Neapolis	5	347	2.5	sea
Neapolis - Philippi	6	19	0.5	land
Philippi - Dyrrachium	7	540	18	land
Dyrrachium - Brundisium	8	169	1	sea
Brundisium - Rome	9a	539	18	land
<i>Brundisium - Rome</i>	<i>9b</i>	1174	9	sea

Table 17. Summary of distances, durations, and travel modes.

	trajectory	distance	duration	mode
1. envoy to Rome	Antioch - Rome	2910	24	sea
2. envoy and delegates	Laodicea - Tralles - Magnesia - Ephesus - Smyrna	241	9	land
3. letter to Rome	Smyrna - Rome	2133	17	hybrid
4. letters from Smyrna	Smyrna - Ephesus - Magnesia - Tralles - Magnesia	149	6	land
5. Rheus Agathopous	Antioch - Atallia - Philadelphia - Smyrna - Troas	1416	24	hybrid
6. Philo	Cilicia (Tarsus ?) - Philadelphia - Smyrna - Troas	1470	27	land
7. letters from Troas	Troas - Smyrna - Philadelphia - Smyrna	555	7	hybrid
8. Phil. envoy to Antioch	Philadelphia - Ephesus - Antioch	1314	15	hybrid
9. Sm. envoy to Antioch	Smyrna - Antioch	1303	8	sea

<sup>69</sup> Alternative trajectories are italicized.

## 11.4 Conclusions

What exactly happened to the bishop from Syria on his way to Rome remains hidden in the past. Nonetheless, this study has shown that it is possible to enhance the image that emerges from Ignatius's letters based on historical-geographical details.

The extensive infrastructure of roads, waterways and inns made it relatively easy to travel from the farthest corners to the capital of the Roman Empire. Yet there were also the inevitable obstacles, including the weather and the availability of accommodation, that made the speed of travel unpredictable. Likewise, the quality of lodging could be very poor, and hygiene problematic for the rank-and-file who could not use first class facilities.

The situation would probably have been worse for captives since they were condemned to whatever meagre prison available. Since the only aim of the Roman soldiers was that Ignatius survived the journey to fight the beasts, he did not have to expect any care. But he received much.

From early Christian tradition it appears to have been customary to provide hospitality to unknown fellow believers and to support the imprisoned. Likewise, no expenses nor efforts were spared to support an unknown bishop morally and materially. Envoys were sent over long distances and stewards enabled for longer periods of time. Moreover, delegates provided company to an unknown; the captivated, needy Ignatius. Here we see that neither space, time nor expenses hinder the words of Jesus in Matt 25:35-36; 40 from materialising.



ΜΕΝ ΠΑΡΘΟΙΚΑΙ  
ΜΗΔΟΙΚΑΙ ΟΙΚΑΤ  
ΟΙΚΟΥΝΤΕΣ ΤΗΝ ΜΕ  
ΣΟΠΟΤΑΜΙΑΝ ΟΥ  
ΠΑΡΤΕΚΑΙ ΚΑΠ  
ΕΥΧΟΚΙΑΝ ΠΟΝΤ  
ΚΑΙ ΤΗΝ ΑΣΙΑΝ  
ΦΡΥΓΙΑΝ ΤΕ ΚΑΙ ΠΑΜ  
ΦΥΛΙΑΝ ΑΙΓΥΠΤΟ  
ΚΑΙ ΤΑ ΜΕΡΗ ΤΗΣ ΛΙ  
ΒΥΗΣ ΤΗΣ ΚΑΤΑΚΥ  
ΡΗΝΗΝ ΚΑΙ ΟΙ ΕΠΙ  
ΔΗΜΟΥΝΤΕΣ ΡΩ  
ΜΑΙΟΙ ΟΥΔΑΙΟΙ ΤΕ  
ΚΑΙ ΠΡΟΧΑΛΥΤΟΙ  
ΚΡΗΤΕΣ ΚΑΙ ΑΡΑΒΕΣ  
ΑΚΟΥΟΜΕΝ ΑΛΛΟΥ  
ΤΩΝ ΑΥΤΩΝ ΤΑΙΣ  
ΗΜΕΤΕΡΑΙΣ ΓΛΩΣ  
ΣΑΙΣ ΤΑ ΜΕΓΑΛΕΙΑ  
ΤΟΥ ΘΕΟΥ

**PART 4**  
**DISCUSSION**  
**AND**  
**CONCLUSION**



# 12

## PRELIMINARY CONCLUSIONS

This research set out to answer the question “In which way can spatial-temporal analysis methods contribute to the interpretation of early Christian literature?” To answer this question, the research first scrutinized two disciplines. The discipline of spatial-temporal analysis was presented in chapter two. Important observations were that reality is ontologically spatial and that due to the inherent spatial relationships there exists a mutual influence, both for physical and social entities. All phenomena that can be modelled in geographical or mathematical space can be analysed spatial-temporally using GIS tools.

Chapter three introduced several aspects involved with the interpretation of early Christian literature, a textual corpus that consists of canonical and heterodox writings from the first three centuries CE that originated within movements that emerged from, were affiliated to, or identified themselves with the figure and memory of Jesus of Nazareth. During history, there has been a lot of hermeneutical reflection on the aspects that are involved with interpretation in general, but also of narrative, Christian texts. The chapter highlighted a few of these notions, by indicating the existence of subconscious and hidden motives in texts *and* interpreters, such as *possession*, *power*, and *passion*. Furthermore, it discussed the historicity of the interpreter: interpreters do not have a *God-point-of-view* but are themselves part of history and products of their time. This subjectivity however also creates common ground between reader and text where interaction can take place. Eco’s

model of Textual corporation was introduced to illustrate the complexity of components that are involved in the act of meaning discovery.

Chapter four provided a potted overview of previous research applying spatial-temporal perspectives to historical, literary, critical-spatial, and biblical studies. Few research projects have been identified that specifically use GIS tools for biblical research. These have been mainly limited to data collection, cartography and data storage. It appeared that only a few researchers attempted to model scenarios and that hermeneutical and critical methodical reflections on the usage of GIS tools are almost completely lacking. To fill in this research lacuna, this research set out to showcase the applicability of GIS-tooling in interpreting documents from the earliest period of the Christian church, using a broad array of several case studies and examples (chapter five).

The case studies were divided into two categories. Chapters six, seven, and eight entailed the *establishment* of texts. This activity to reconstruct the initial form of the words and sentences of a text, which is the domain of textual criticism, is necessary due to the existence of multiple variant readings and conjectured textual emendations. In chapter six, an algorithm to calculate confusion distances was introduced, which aims to aid the study of different variant readings (and conjectured textual emendations). It hypothesizes that different readings could have originated from the misreading of single or composite character(s) in individual words. To test the algorithm, the cases of the food of John the Baptist and Judea in the list of nations have been studied. Especially the latter case has shown to be very interesting since it gave rise to an ongoing discussion (see the overview of conjectured emendations in chapter seven). It has been used for testing whether an alternative could be identified based on the hypothesis of character confusion (chapter eight). Along the way relationships in abstract and geographical space were visualised using GIS tools.

The third part shifted the focus from the establishment to the interpretation of texts.<sup>1</sup> Chapter nine revisited the interpretation of the list of nations by studying potential backgrounds from contemporary writings. Using cartographic visualisation, the study revealed that it is possible to analyse differences and resemblances in clustering between respectively astrological and Jewish catalogues of nations, and the biblical list. Two narrative accounts about Paul's escape from Berea were studied in chapter ten. Based on two interpretative issues – the route Paul might have followed from Berea to Athens and the complexity to harmonize the journeys in the larger narratives of Acts and 1 Thessalonians – the spatial-temporal viability of three reconstructions was explored. For that purpose, space-time cubes were created on the basis of textual details and physical-geographical features. Chapter eleven synthesised geographic details from the seven letters of Ignatius of Antioch to create a reconstruction of his interactions with fellow believers during his captivity journey to Rome. These case studies demonstrated that the interpretation of early Christian literature profits from the application of spatial-temporal data and analysis.

However, despite the vivid pictures that can be constructed, one question remains to be answered: what is the contribution of this research in terms of results, methods, and methodology? Chapter 13 will discuss the results of the case studies and their methodical contributions to the establishment of texts. Subsequently, chapter 14 will critically discuss the reconstruction of geographical models from narrative accounts in general, and the consequences for interpretation of texts. Before finally answering the research question, and providing suggestions for further research in chapter 16, some methodological considerations will be offered in chapter 15.

---

<sup>1</sup> This distinction should not be taken too rigid: the establishment of the initial texts requires a lot of interpretative choices.



# 13

## ESTABLISHING TEXTS

Part two of this dissertation researched the usage of spatial-temporal methods to simulate palaeographical confusion in the copying of texts with the aid of an algorithm. Although the research was limited to palaeographic confusion and only visualised proximity relationships of conjectural emendations, it demonstrated the applicability of distance metrics to conjectural criticism and the subsequent potential of spatial analysis and visualisation. Therefore, the method provides an additional toolset to analyse conjectural emendations and, supposedly, extant textual variants. It also reveals insights that otherwise would remain hidden in the data.

This section assesses whether the results of the case studies affect the interpretation of the text, and subsequently discusses the method itself. Here questions will be addressed like: What benefit does the method bring to the traditional qualitative reasoning? Could the method be falsified? How objective are the results? Does the method reflect scribal practice? What are potential extensions (and pitfalls) to the method?

### 13.1 Results

Although John the Baptist's food in Matt 3:4 and Mk 1:6 is very illustrative to explain the phenomenon of conjectural emendation, there is no reason to doubt the originality of  $\lambda\kappa\pi\lambda\epsilon\varsigma$  (*locusts*) in the

transmitted texts. Clearly, the interpreters' assumptions on what is eatable influenced what they deemed to be the original content of the text.<sup>1</sup> Using Eco's terminology: it demonstrates how one's encyclopaedia (and one's willingness or refusal to explore alternatives strange to one's encyclopaedia) can limit and influence interpretation.

Considering the originality of the toponym Judea in Acts 2:9, the method did not produce any results that justify a conclusion that a hitherto unknown toponym must have been corrupted into  $\text{IOY}\Delta\Lambda\text{IAN}$  due to palaeographical confusion. However, this conclusion is based on the assumption that the algorithm correctly simulates misreading due to character confusion, and on an inevitably incomplete list of topo- and demonyms. Three interpretations, an intentional alteration in the tradition, the originality of Judea, or a misreading of the original toponym, remain possible. However, the third interpretation requires either the extension of the algorithm to better simulate scribal habits, or the discovery of a hitherto unknown, perfectly fitting topo- or demonym.

## 13.2 Methods

The method provides the critic with quantitative information about the likeliness of differences in spelling due to palaeographic confusion. As such, it does not replace the reasoning of the critic, but provides insights for one aspect (orthography) in the overall

---

<sup>1</sup> "Many, probably, will agree with the view expressed in the *Encyclopaedia Biblica* (v. "Husks," p. 2136): "Common sense tells us that locusts would not have been preferred by the Baptist as his habitual food to nourishment supplied by the soil." This observation derives considerable support from the fact that, in other instances where Jewish tradition represents men as having been driven into the desert either by stress of circumstances or by a passion for asceticism, their food is said to have been what the soil produced", Alexandros Pallis, *A Few Notes on the Gospels According to St. Mark and St. Matthew, Based Chiefly on Modern Greek* (Liverpool: The Liverpool Booksellers, 1903), 3–6. Pallis then continues with an elaborated, learnt, and equally farfetched argument of the corruption of both ἀκρίδες and μέλι.

reasoning. Additionally, the method provides insights into the *relative probability* of conjectural emendations (and extant variants) based on palaeographic confusion which is illustrated by the case study on John the Baptist's food.<sup>2</sup> Though the method provides insights which can be achieved by for instance philological observation, its additional asset is to visualize these implicit relationships, which are not easily perceived from the raw data itself.<sup>3</sup> It therefore combined insights from the realm of computer sciences (extended string comparison algorithm) with digital humanities (spatial analysis methods for abstract, non-geographical space).

Theoretically, the method might be falsified if one would be able to make plausible scribes never made orthographic mistakes. However, the manuscripts show ample evidence this claim cannot be made and it is also beyond doubt that misreading did occur on character level. One simply could misread a word by confusing characters for one another. For instance, compare Rom 16:15 where  $\text{IOYNAI}\Lambda\text{N}$  was replaced with  $\text{IOYNIAN}$  (an  $\text{N}$  for an  $\text{\Lambda}$ );<sup>4</sup> or the substitution of  $\text{EKAYCAI}\mu\text{ENOI}$  for  $\text{EKAYCAI}\mu\text{ENOI}$  in the case of 2 Cor 5:3 ( $\text{\Lambda}$  for  $\text{\Delta}$ ).<sup>5</sup> Our method is able to identify and rate these kind of character confusion errors.

A second critique might be that this method suggests having advantage over "qualitative criteria" which tend to be subjective. However, as human judgments are still required to determine the proximity values and thus the quantities that the computer measures, it might be argued that the apparent objectivity of the

---

<sup>2</sup> See section 6.4.1 and especially Figure 8 and Figure 9.

<sup>3</sup> See section 6.5.

<sup>4</sup> The contrary scribal error (an  $\text{\Lambda}$  for an  $\text{N}$ ) appears in Rom 16:7, see Metzger, *TC*<sup>2</sup>, 475–76.

<sup>5</sup> Metzger, *TC*<sup>2</sup>, 511. There is also another textual variant which replaces  $\text{ENAYCAI}\mu\text{ENOI}$  with  $\text{EKAYCAI}\mu\text{ENOI}$ . This  $\text{N-K}$  exchange seems most likely to have been caused by intrinsic difficulties in understanding the text, not by palaeographical confusion. See Murray J. Harris, *The Second Epistle to the Corinthians: A Commentary on the Greek Text*, NIGTC (Grand Rapids, MI: Eerdmans, 2005), 368.

computer's algorithm actually masks a deeper subjectivity in that the proximity values, once fixed, cannot account for differences in handwriting style. However, the research does not wish to create a false dichotomy between qualitative and quantitative methods. The method is best regarded as supplemental to already existing tools for conjectural and textual criticism. Results delivered by the tool must be made part of the bigger picture of a qualitative reasoning, both in the case of conjectural and textual criticism.

Furthermore, it should be observed that the algorithm is limited in its reflection of scribal practice.<sup>6</sup> It might be objected that the trichotomy for textual divergence (omission, substitution, or expansion) does not reflect scribal practice and although the discernment of patterns and trends in scribal hands is possible, this does not out rule the proven historical capriciousness of scribal changes. Patterns should never be taken for granted: scribes could easily deviate from their own habit for a variety of reasons.

The method provides a first approximation to quantify perceived scribal changes and is not intended to deliver undebatable facts. It could be refined by incorporating insights about the semantic proximity and grammatical relatedness of textual variants and emendations. Additionally, the proposed palaeographic confusion table could be refined by basing it on frequency statistics of textual variants, and additional confusion tables (e.g. based on phonetics) could be provisioned.

For now, the method can provide additional arguments and will not replace the overarching text critical reasoning. In the end it is up to the critical analyst to weigh the evidence and to decide whether or not to give the method any credence and to what extent.

---

<sup>6</sup> See footnote 70 on page 87.

# 14

## INTERPRETING TEXTS

The potential contribution of spatial-analysis methods for the interpretation of texts has been researched in the third part of this dissertation. For that purpose, three case studies were carried out, which respectively focussed on (1) the analysis of the geographical background of a single text, (2) a comparison of the spatial-temporal details in two narrative accounts which discuss the same events, and (3) the reconstruction of the im- and explicit itineraries from an epistolary textual corpus. This section assesses the results per case study and provides a methodical reflection on reconstructing geographies from narrative accounts.

### 14.1 Results

Chapter nine scrutinized geographical backgrounds for the table of nations in Acts 2:9-11. With the use of cartographic visualisation, it was possible to compare the biblical list with two contemporary lists. This visual comparison supports the interpretation that a connection with astrological traditions is unlikely and that a direct dependency between the biblical list and the list of Paulus Alexandrinus can be ruled out. The comparison of the biblical list with those found in the writings of Philo seems to reveal similarity in geographic clustering. But this should not be given too much emphasis, since the cartographic visualisation might be

superimposing clusters which were not in the mind of the original author(s).

Chapter ten studied the events and accompanying travel movements of Paul and his companions in Macedonia and Greece. The textual problems in Acts 17:14-15, which gave rise to different opinions on the mode of travel, as well as three harmonisation attempts to bring the account of Acts into accord with 1 Thess 3:1-2a and 6 were explored. From the spatial-temporal reconstructions, it was concluded that firm conclusions on the incompatibility of the two accounts are not warranted by the data and should be avoided.<sup>1</sup> Furthermore, the available data from the texts do not exclusively support a single reconstruction. Based on spatial and temporal constraints each of the three scenarios is conceivable. The addition of more criteria into the analysis (such as availability of water, weather conditions, housing options) might refine the results, but the details from the texts are too ambiguous to produce a more conclusive result. It, therefore, seems appropriate to show a certain reluctance in reconstructing scenarios for these narratives.

The case study in chapter eleven synthesized the geographic details found in the Ignatian letters into one coherent picture. While it is impossible to verify every single detail beyond doubt,<sup>2</sup> data on infrastructure, travel conditions and facilities, combined with an analysis of travel distances, information on incarceration, and testimonies on the circumstances of captives from early Christian literature, enhanced the picture that can be construed from the Ignatian epistles.

Two questions arise from these case studies. First, how should the act of reconstructing spatial-temporal narrative events in a

---

<sup>1</sup> Contra Meyer and Lüdemann, see section 10.1.2.

<sup>2</sup> Compare for example the alternative routes the messengers could have taken to signify the local churches about the upcoming arrival of Ignatius in Smyrna (section 11.3 and Figure 39). Though the research prefers the southern route, the other route would not affect the general conclusion on the generosity of the early church in supporting an unknown bishop.

geographic model be understood methodically? And then, in which way does this contribute to the interpretation of early Christian literature?

## 14.2 Methods

Taken at face value, the mapping of geographical details from narratives does not seem to be a very difficult task. As long as it is known where to locate features on the skin of the earth, whether places, regions or trajectories have to be depicted, and how these geographic entities should be modelled, the main challenge appears to be the identification of specific locations by their foreign, sometimes long-forgotten, and oftentimes ambiguous toponyms. Given its modelling opportunities, it has been advocated that GIS can be a tool that helps to “post-dict the past.”<sup>3</sup>

Is it, however, intellectually defensible to jump from an ancient text to modern spatial-temporal analysis methods, neglecting the problematic relationship between text and history and omitting ancient literal and cultural standards? Can geography be reconstructed from literary sources and how should this be assessed? Marko Juvan has warned against naive mimetic materialism since “a cartographic representation of fictional settings ... placed on the base map of a real geospace” could be misleading, wrongly identifying the fictional places with a position in the perceived world and as such distorting the analysis of the spatial picture inside the narrative.<sup>4</sup> Moreover, what to do with the balance between mappable and unmappable features within a narrative? Robert Stockhammer signifies that ancient writers were aware of this partial mappability of literature, and he demonstrates how Eratosthenes used the term *ἐξωκεᾶνισμός* (outoceanism) for the literary trait to move “things to the margin of the mappable” in

---

<sup>3</sup> Gleni Peterman, “Geographic Information Systems: Archaeology’s Latest Tool,” *BA* 55.3 (1992): 162–67.

<sup>4</sup> Juvan, “From Spatial Turn to GIS-Mapping of Literary Cultures,” 89.

order “to develop each incident in the direction of the more awe-inspiring and the more marvellous”.<sup>5</sup>

### 14.3 Interpreting narratives with GIS: a proposal

Despite these caveats, spatial-temporal tools and methods can help to interpret narrative texts. For instance, by discovering possible dissimilarities between the referential, imaginative world inside the text and the referenced, empirical world. This requires a conscientious, balanced approach in which attention is paid to several aspects. These aspects will be discussed with reference to Figure 45 which incorporates terms from both hermeneutical theory and GIScience.<sup>6</sup>

First, it should be recognized that both literature and geography can only represent the real world ❶ mediated. There is no direct access to the events in the real world. Selection, simplification, generalisation, and numerous other literal and cartographic devices are being used to isolate features for description or modelling. This is inevitable and useful for sensemaking, but requires attention to the literary license, that is the extent to which an author has changed the appearance and content of their story without affecting its accuracy. In a similar way, geospatial license influences the way in which media (such as datastores and maps) reflect reality.

At this point narrative criticism contributes the insight that a text ❷, after having been critically established, does not reveal the real author but only gives entry to the implied author. In a similar way, the initial selection of events is also inaccessible. A text only provides data about its implied author and their implied selection of events. This is what appears to the reader as the story world ❸ .

---

<sup>5</sup> See Strabo, *Geogr.* 1.2.19 and Robert Stockhammer, “Exokeanismós: The (Un)Mappability of Literature,” *PKn* 36.2 (2013): 123–38.

<sup>6</sup> See chapters two and three.

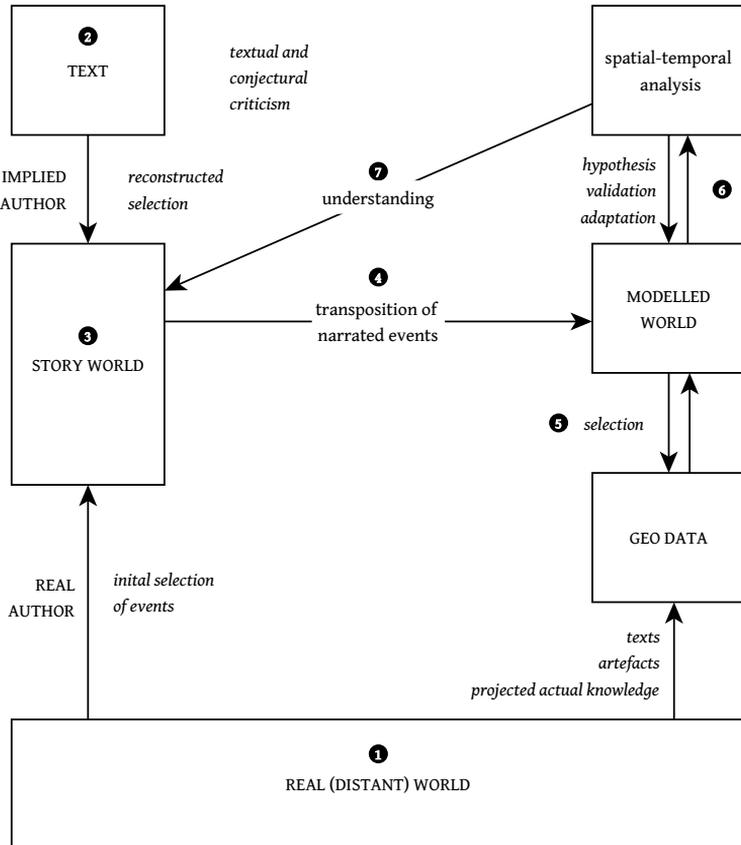


Figure 45. Interpreting narrative events with GIS.

Opening the story world for spatial-temporal analysis requires the initial transposition of narrated events ④, based on preliminary understanding, to a modelled world. This requires selection of appropriate data ⑤ either from existing geodata-collections or by capturing implicit geodata from existing media such as texts and artefacts, as well as the hindcasting of knowledge about the current world. Additionally, several issues should be accounted for, such as the sparse availability of geodata for the given time period and geographic extent, the awareness that existing geodata might never have been “collected with the interests and concerns of researchers

and analysts in mind,”<sup>7</sup> and the best way to model the data. For example, are the narrative events under scrutiny best modelled by a vector- or raster-based approach?<sup>8</sup>

Spatial-temporal analysis of the model ⑥ can start when appropriate geodata are available and a method has been selected that fits the issue that is being studied. The investigations and interrogations happen on the basis of a formal hypothesis or a preunderstanding of the research challenge ⑦. Since “a model is only as good as the rules and hypotheses about behavior on which it is based,”<sup>9</sup> validation and adaptation of hypothesis, geodata and methods can be necessary.

In the end, these spatial-temporal analyses might lead to the enrichment of understanding of narrative texts ③. However, the scheme should not be envisioned as a linear road map, but as an iterative process, in which the activities of transposing narrative events ④, geodata selection and capturing ⑤, hypothesis formulation ⑦, and enrichment of understanding ③ are being revisited and validated.

---

<sup>7</sup> Goodchild and Longley, “Geocomputation and GIScience.”

<sup>8</sup> Goodchild, “Geographical Information Science,” 39.

<sup>9</sup> Goodchild and Longley, “Geocomputation and GIScience,” 1605.

# 15

## METHODOLOGICAL CONSIDERATIONS

The previous chapters evaluated the exegetical insights that were obtained for the individual case studies and assessed the applied methods for the establishment and interpretation of texts. They also reflected on what components are involved when spatial-temporal analysis is applied to the interpretation of early Christian literature, which resulted in a critical framework for interpreting narrative events with GIS. Thereby it provided insights on what *can* be done by applying spatial-temporal analysis to the interpretation of texts and, by providing methodical caveats, also *how* this should be done.

In this chapter, I want to offer some considerations *why* this might be done. What are the methodological contributions of this research?

### 15.1 Early Christian Literature

For the discipline of interpretation of early Christian literature, it was already noted that the application of spatial-temporal analysis might lead to a richer understanding of texts. This happens in the cooperation between text and reader by providing means to depict the narrative. The method might enlarge the interpreter's encyclopaedia by providing notions about the story world from available geodata.

Mieke Bal is correct when she notes that "Determination is ... achieved on the basis of the reader's frame of reference. When a

certain event is situated in Dublin, this will mean something different to the reader who is well acquainted with the city than to the reader who only knows that Dublin is a large city.”<sup>1</sup> Chapters ten and eleven demonstrated how the reader’s encyclopaedia could be enlarged using spatial-temporal analysis and tools to depict the narratives. The usefulness of these depictions is underscored by Marco Rotman: “[e]ven in fictional stories with spatial settings that exists in the ‘real world,’ readers use their knowledge of the real world ... in interpreting these stories. That is, the mental map the reader creates while reading the story is supplemented by real world knowledge, activated from the reader’s encyclopaedia.”<sup>2</sup>

Alternative depictions can be used to “blow up” or “narcotise” different elements of the narrative. Hypotheses about the text can be tested, using what Charles Sanders Peirce coined abductive reasoning. This form of logic does not “lead to a *certain* conclusion ... nor to a *probable* conclusion, ... but to the most *plausible* conclusion, that is the likeliest explanation for the observations.”<sup>3</sup> Although abduction is subjective and plausible conclusions might still be incorrect, the critical employment of abduction, based on general agreed standards for historical reasoning, helps to revise and re-interrogate theories when additional evidence becomes available.<sup>4</sup> In other words, abductive reasoning, which entails the critical engagement with the narrative events in a story world using a modelled world and spatial-temporal analyses, can expand, but also

---

<sup>1</sup> Mieke Bal, *Narratology: Introduction to the Theory of Narrative*, 4th ed. (Toronto: University of Toronto Press, 2017), 226.

<sup>2</sup> Marco Rotman, *The Call of the Wilderness: The Narrative Significance of John the Baptist’s Whereabouts*, CBET 96 (Leuven: Peeters, 2020), 26.

<sup>3</sup> Bart D. Ehrman, Craig A. Evans, and Robert B. Stewart, *Can We Trust the Bible on the Historical Jesus?* (Louisville, KY: Westminster John Knox Press, 2020), 6. Italics mine.

<sup>4</sup> Umberto Eco, ed., *The Sign of Three: Dupin, Holmes, Peirce*, AiS (Milton Keynes: Lightning Source, 2010); Francesco Bellucci, “Eco and Peirce on Abduction,” *EJPAP* X.1 (2018), <https://doi.org/10.4000/ejpap.1122>.

challenge the researcher's encyclopaedic assumptions. In that way it critically enhances one's encyclopaedic competence.<sup>5</sup>

Furthermore, spatial-temporal analysis helps to enliven the narratives. This corresponds to what Friedrich Schleiermacher (1768-1834) meant when he emphasized divination (*Divination*) in addition to the technical, historical-grammatical aspects of interpretation (*Komparation*). Schleiermacher argues that real understanding (*Verstehen*) only occurs under certain conditions. "The magic" happens when in a literary text other individual human life is being recognized, when their thought and experiences can be felt or experienced intrinsically.<sup>6</sup>

In summary: spatial-temporal analysis methods can contribute to three methodological components of interpretation by expanding and challenging the reader's encyclopaedia, by aiding and supporting abductive reasoning, and by enhancing divination.

---

<sup>5</sup> Examples of such heuristic exercises can be found in John S. Kloppenborg, *Christ's Associations: Connecting and Belonging in the Ancient City* (New Haven, CT: Yale University Press, 2019). Also compare the study by J. Cheryl Exum, *Virtual History and the Bible* (Leiden: Brill, 2000); Richard Bauckham, "What if Paul Had Travelled East Rather than West?," in *Virtual History and the Bible*, ed. J. Cheryl Exum (Leiden: Brill, 2000), 171–84. These studies however do not apply spatial-temporal methods.

<sup>6</sup> To paraphrase de Knijff: "Reading texts means: to delve into something alien, something strange. To a certain extent, this is also the case for the author: they too are moved (or inspired or surprised) by thoughts, ideas, and things that come to them, which want to 'become word' in and through them. Yet in their writing and poetry, they experience them as the most personal one can imagine. These things are simultaneously strange and unique to them. Similarly, for the hearers or readers, the things are strange: written by someone else, from another time, 'things' outside themselves. But, if they recognize the things, if they can say: 'this is what it says', then it has also become their own", cf. H.W. de Knijff, *Sleutel En Slot: Beknopte Geschiedenis van de Bijbelse Hermeneutiek* (Kampen: Kok, 1980), 77; Zwiep, *Tussen tekst en lezer 1*, 411–13, 419.

## 15.2 GIScience

While most of this study interacted with spatial-temporal analysis as a tool, a short reflection regarding the discipline of GIScience might be in place.

An important reminder from this study is the observation that geodata for ancient history are much sparser and less rigid than what a twenty-first century spatial-temporal analyst is accustomed to. This might be seen as a drawback but yields an important methodological insight: *all* geodata are just partial representations of reality, no exceptions! Therefore, the most important challenge is to justify whether the data provide acceptable representations of the phenomena under scrutiny.

Furthermore, discretization choices are being made in the process of collection, interpretation, and compilation, that affect the ultimate uses of data.<sup>7</sup> At this point, the critique of the Masters of Suspicion is equally apt: both in data collection, modelling, *and* analysis explicit and implicit motives are present which affect outcomes.

It should therefore never be taken for granted that data and models provide the objective facts or that interpreters are unbiased. Critical interrogation of data and models on conscious and unconscious motives paired with a critical reflection on personal bias should be part of the basic repertoire of the spatial-temporal investigator.

---

<sup>7</sup> Goodchild, "Geographical Information Science," 35.

# 16

## CONCLUSIONS AND FURTHER RESEARCH

The question researched in this dissertation was “In which way can spatial-temporal analysis methods contribute to the interpretation of early Christian literature?” After a thorough examination in previous chapters, it can be concluded that this contribution is multi-layered: spatial-temporal analysis methods have potential to advance both the establishment and the interpretation of texts in terms of insights, methods, and reflections.

### 16.1 Research contribution

Since reality is ontologically spatial, all phenomena that can be modelled in geographical or mathematical space can be analysed spatial-temporally using GIS tools. Consequently, previous research has applied spatial-temporal analysis to physical, human, and literary geography. Within biblical studies particular attention has been given to the way space is experienced, but only a few studies applied spatial-temporal analysis to the interpretation of texts. Moreover, a reflection on the potential contribution of results, methods, and tools is almost completely lacking.

The aim of this study was to contribute to this lacuna by expanding the number of examples in which spatial-temporal analysis can be applied to the establishment and interpretation of texts, and by contributing a critical reflection on using these tools.

### 16.1.1 Establishing texts

Both the critical establishment of the initial text (the domain of text criticism) and the interpretation of the text (the domain of exegesis) are closely interwoven. Interpretation of texts presupposes their existence. Challenges to establish an initial text arise when multiple contradictory variants of a single text exist. Hence, textual variants require interpretive decisions. Difficulties in the evidence can lead the interpreter to suppose an early corruption of the transmitted evidence, which eventually might evoke a textual emendation by conjecture.

This dissertation contributed the confusion distance algorithm to research the possibility of one possible explanation of textual corruption, i.e. palaeographical confusion. Though the tool does not yield objective, undebatable results, it provides the textual critic with a heuristic tool to evaluate (assumed) textual corruption in terms of palaeographic confusion. While several considerations should be taken into account when arguing for the probability and plausibility of a corruption, the algorithm can help to (con)test the intuition of the scholar.<sup>1</sup>

### 16.1.2 Interpreting texts

Considering the interpretation, that is the derivation of meaning from a narrative, this dissertation used spatial-temporal analysis to visualise implicit geographical structures, reconstructed narrative events, and enhanced aspects of ancient travelling. These observations appeared to be helpful in the interpretation of the case studies, either by contesting certain interpretive conclusions, or by complementing and enlivening one's initial impression.

In terms of results, this dissertation was not able to put forward an incontestable argument for the individual case studies. The exegetical insights are disputable, and a different weighing of

---

<sup>1</sup> Chapters six, seven and eight have demonstrated how results of the algorithm can be integrated in an overarching argument.

the evidence can result in other conclusions. This is an inevitable feature of historical research.

The main contribution of the research, however, lies in its consideration of the relationship of literature interpretation and spatial-temporal research. The proposed framework to explain which aspects are involved in the use of narrative events for spatial-temporal analysis, that is the iterative process of transposition, selection, hypothesizing, testing, and interpretation, contributes in several ways to interpretation.<sup>2</sup>

First, it incorporates the notion that both GIScience and literature research study reality mediated. Reality is not directly accessible and is already interpreted in data and text. Considerations to in- or exclude data are oftentimes not explicitly stated. Second, the framework acknowledges that motives of author and reader are oftentimes hidden and implicit. For that reason, it provides the ability to interrogate the data, the text, but also to consider specific motives of the implied author or to challenge the assumptions of the reader.

The methods demonstrated in this dissertation contribute to and challenge the reader's encyclopaedia and provide means to build scenarios in which certain aspects of the narrative can be narcotised or "blown-up". As such they develop the intuition of the reader to better internalise the story. These two aspects echo Eco's model of textual cooperation and Schleiermacher's notion of *Divination*.

## 16.2 Suggestions for further research

This research aims to encourage the application of spatial-temporal analysis to advance insights into the exegesis and history of early Christian literature. However, several preconditions must be met before the average scholar of early Christian literature will engage in using spatial-temporal analysis methods. These have to do with

---

<sup>2</sup> See section 14.3.

data, the initial impression of complexity, and the required investment to learn to use and understand spatial-temporal analysis methods.

Although during the previous decade the access to easy-to-use tools, computer modelling, and analysis codes have in general advanced, one major obstacle appears to be the limited availability of datasets, lacking metadata, and missing interoperability (specifically when focussing on data for ancient studies and early Christian literature in particular). Thus there is a pressing need for the creation of a comprehensive spatial-temporal database on early Christian literature, which not only contains the points, lines and polygons portraying physical features, but also an initial transposition of narrative events (provided by textual sources and artefacts) to spatial-temporal features.<sup>3</sup> Subsequently, a natural progression would be to create a spatial-temporal knowledge graph for early Christian literature which enables the interaction with the semantic web, particularly with initiatives that study the ancient world spatial-temporally.<sup>4</sup>

The availability of such data sets will open doors for further historical research. For example, it could be used to scrutinize Wayne Meeks' hypothesis about early Christianity as an urban

---

<sup>3</sup> Much information is available in textual resources. For the classical primary sources, initiatives like the Pleiades project and topostext.org exist. A similar initiative to geoparse the texts of Josephus and Eusebius (respectively Jewish and early ecclesiastical history) should be welcomed. A number of scholars have already interacted with the primary resources to compile geographical overviews of early Christianity. Among these are Adolf von Harnack, *The Mission and Expansion of Christianity in the First Three Centuries*, trans. James Moffatt, Second, Enlarged and Revised Edition., vol. 2 (London: Williams and Norgate, 1908); Roderic L. Mullen, *The Expansion of Christianity: A Gazetteer of Its First Three Centuries*, VCSup 69 (Leiden: Brill, 2004). However, much more work is required to make this information available for interaction in a GIS.

<sup>4</sup> Such initiatives are the Pelagios network ([www.pelagios.org](http://www.pelagios.org)) and Pleiades ([pleiades.stoa.org](http://pleiades.stoa.org)), a gazetteer and graph of ancient places.

phenomenon.<sup>5</sup> Another case might be a study of the geographical distribution of early Christianity in comparison to other ancient religions or cults.<sup>6</sup> Furthermore, a closer investigation of the rise of Christianity in the first three centuries CE becomes possible when much more detailed data are made available and truly spatial regression techniques are employed. This might refine or correct previous insights gained by other scientific methods.<sup>7</sup> Also, the spatial distribution of religious persecution in the first three centuries might contribute new insights to Candida Moss's claim on the myth of widespread religious persecution.<sup>8</sup>

Isagogic studies, dealing with introductory questions about for instance author, origin, place, and date of writing, might also benefit from spatial-temporal analysis methods. For instance, for the place of writing of the letter to the Philippians several cities have been proposed: Rome, Ephesus, Corinth, or Caesarea; and spatial-temporal reconstructions of the meta-story might contribute insights to this query. Similarly, the challenge of establishing the identity and locality of the addressees of the letter to the Galatians could be scrutinized. Pursuing answers to these questions is interesting since it might provide clues on the development of

---

<sup>5</sup> Wayne A. Meeks, *The First Urban Christians: The Social World of the Apostle Paul*, 2nd ed. (New Haven, CT: Yale University Press, 2003); See also the critique by Thomas A. Robinson, *Who Were the First Christians? Dismantling the Urban Thesis* (New York, NY: Oxford University Press, 2017).

<sup>6</sup> Compare von Harnack, *Mission and Expansion of Christianity*, 2:318: "Lay a map of the spread of Mithraism (in the East) beside a map of the spread of Christianity, and you will observe that what is marked white in the one is black in the other, and vice versa. The historian at once sees that the former had to perish, and the latter to survive."

<sup>7</sup> Compare Rodney Stark, *The Rise of Christianity: A Sociologist Reconsiders History* (Princeton, NJ: Princeton University Press, 1996) which uses only 22 cities to study the spread of early Christianity; and Rodney Stark, *Cities of God: The Real Story of How Christianity Became an Urban Movement and Conquered Rome* (New York, NY: HarperOne, 2009) where the number only slightly increased to 31 cities. Likewise, Kloppenborg, *Christ's Associations* uses a small amount of data from a large period and a wide geographic distribution.

<sup>8</sup> Candida R Moss, *The Myth of Persecution: How Early Christians Invented a Story of Martyrdom* (New York, NY: HarperOne, 2013).

thought within early Christianity. Due to the nature of the sources, the major challenge in all the aforementioned cases is how to obtain reliable (workable) data. Textual sources can contain multiple layers of tradition which are extracted from older sources, edited for rhetorical purposes, and embedded in new contexts.

For the text-critical domain, a further elaboration of spatial-temporal clustering and dispersion of textual variants, artefacts and reception might help to further discriminate within the history of textual transmission of (New Testament) manuscripts. Although the idea of geographical manuscript families<sup>9</sup> has nowadays been abandoned for the study of hierarchical trees in textual transmission,<sup>10</sup> spatial-temporal analysis might contribute by synthesizing both concepts. The challenge then would be to include a geographical element in the clustering of manuscripts while avoiding the oversimplification of the classical geographical approach. This should be done while acknowledging (1) the phenomenon that manuscripts tend to 'travel' and (2) the difficulty to determine the geographic origin of a manuscript. Careful consideration of the manuscript evidence concerning these aspects is needed, but the tools do offer potential for exploration of different scenarios.

A further study could also explore and assess the spatial-temporal dispersion and developments of dogmatic convictions within the first three centuries CE. Such research could, for example, shed light on the geographical composition of the Christological debate that raged in the first three centuries. How were the positions divided and is it possible to gain insight into whether and which geographical, physical, political, and economic factors played a role in this?

---

<sup>9</sup> J.M.A Scholz (1794-1852) was the first to emphasise manuscripts' geographical provenance. His idea was elaborated by B.H. Streeter, see Metzger and Ehrman, *The Text of the New Testament*, 169.

<sup>10</sup> Wasserman and Gurry, *Introduction to CBGM*.

Additionally, broadening the scope of spatial-temporal narrative interpretation to the works of historiographers, such as Homer, Pausanias, and Strabo, might yield new insights which advance the understanding of ancient geography, add to the researcher's encyclopaedia, and provide a better understanding of the methods themselves.

Spatial-temporal analysis might also provide a stimulus to conjectural criticism in two distinguished ways. First, it could contribute to the study of individual cases, thereby providing insights to the critic on the reception history of a particular case, and, second, it could advance the evaluation of conjectural emendation as a scientific phenomenon, which might address questions like what were the heydays of conjectural emendation, are there particular schools of propagators or contesters of the phenomenon, is the practice bound to a specific geographical territory and how does that differ from other text-critical phenomena?

Considering the confusion distance algorithm, future research could address the question in which way the algorithm could be expanded. First, would it be possible to incorporate other forms of confusion as parameters within the algorithm without distorting the measurements? Ultimately, it should be avoided that addition of parameters results in measurements that distort a clear interpretation. A second way to refine the algorithm's results would be the incorporation of statistical evidence about character confusions (additions, deletions, substitutions, combinations, and explosions), occurring in existing manuscripts to improve the confusion distance table. This requires careful consideration about how such phenomena can be measured in the existing sources, paying due attention to the nature of the evidence as well as to theories of statistics and textual transmission.

Regarding the question in which way spatial-temporal analysis methods could be further integrated into early Christian literature studies, it seems important to further assess existing data modelling

techniques for the analysis of historical spatial-temporal events. In which way do these reflect the subject under scrutiny and what limitations should be addressed to make the application of methods viable? Specifically, a comparison on the ways in which the issues of uncertainty and ambiguity of sources and data have been addressed within GIScience and early Christian literature studies should be undertaken to gain more insights into the domain-specific challenges, but also to find a common language for mutual understanding. This should contribute to a more thorough reflection and further development of interpretative framework that was proposed in this thesis giving explicit attention to hermeneutical considerations and technological challenges.

Likely, potential future studies applying spatial-temporal analysis to early Christian literature will not be the kind of incentives that start engaging other biblical scholars in this method. Therefore, not only results are needed, but also exposure to and experience with the method, which culminate in critical spatial thinking. A future study that engages with students and scholars (on several levels within the academic enterprise) on how their spatial-temporal toolbox could be expanded, is recommended.

Regardless of whether these suggestions for further research will be implemented, it can be concluded that the spatial-temporal analysis methods contribute to the interpretation of early Christian texts. Not only by advancing exegetical insights and providing additional methods, but also by expanding the researcher's encyclopaedia and (hopefully by) developing the reader's intuition to better internalise the story.





ΜΕΝ ΠΑΡΘΟΙΚΑΙ  
ΜΗΔΟΙΚΑΙ ΟΙΚΑΤ  
ΟΙΚΟΥΝΤΕΣ ΤΗΝ ΜΕ  
ΣΟΠΟΤΑΜΙΑΝ ΟΥ  
ΑΠΕΚΑΙ ΚΑΠ  
ΠΟΥ ΟΚΙΝ ΠΟΝΤ  
ΚΑΙ ΤΗΝ ΑΣΙΑΝ  
ΦΡΥΓΙΑΝ ΤΕ ΚΑΙ ΠΑΜ  
ΦΥΛΙΑΝ ΑΙΓΥΠΤΟ  
ΚΑΙ ΤΑ ΜΕΡΗ ΤΗΣ ΛΙ  
ΒΥΗΣ ΤΗΣ ΚΑΤΑ ΚΥ  
ΡΗΝΗΝ ΚΑΙ ΟΙ ΕΠΙ  
ΔΗΜΟΥΝΤΕΣ ΡΩ  
ΜΑΙΟΙ ΟΥΔΑΙΟΙ ΤΕ  
ΚΑΙ ΠΡΟΧΑΛΥΤΟΙ  
ΚΡΗΤΕΣ ΚΑΙ ΑΡΑΒΕΣ  
ΑΚΟΥΟΜΕΝ ΑΛΛΟΥ  
ΤΩΝ ΑΥΤΩΝ ΤΑΙΣ  
ΗΜΕΤΕΡΑΙΣ ΓΛΩΣ  
ΣΑΙΣ ΤΑ ΜΕΓΑΛΕΙΑ  
ΤΟΥ ΘΕΟΥ

**APPENDIX,  
BIBLIOGRAPHY,  
INDEXES,  
AND SUMMARY**



# APPENDIX:

## LETTER CONFUSION TABLE

Table 18 is based on Metzger and Rutgers and provides a first approximation of the ease with which certain letters or combinations of letters could be confused because of their orthographic – not phonetic – resemblance (the column weight).<sup>1</sup> It is then used to calculate the transcriptional distance between two readings. The probability index *P* for each operation is easily inverted to a confusion distance *D* using the formula

$$D = \frac{1}{P}$$

Needless to say, the table cannot be exact.<sup>2</sup> Letter forms changed over time, and scribes must have had their individual patterns of error.

*Table 18. Letter confusion table.*

1	2	weight	example	NT ref.	op.
Α	Δ	100			s
Α	Λ	100			s
Γ	Ι	30			s
Γ	Π	30	ΑΠΑΤΑΙΣ – ΑΓΑΠΑΙΣ	2 Pet 2:13	s
Γ	Ρ	30			s
Γ	Τ	40	ΑΡΑΓΕ – ΑΡΑΤΕ	1 Cor 6:20	s
			ΟΛΙΓΩΣ – ΟΝΤΩΣ	2 Pet 2:18	s
Γ	Υ	30			s
Δ	Λ	100	ΕΠΙΛΕΞΑΜΕΝΟΣ – ΕΠΙΔΕΞΑΜΕΝΟΣ	Acts 15:50	s

<sup>1</sup> Metzger, *TC*<sup>2</sup>; Rutgers, “Index Palaeographicus.”

<sup>2</sup> Textual critics can make remarks such as for instance on Col 1:12: “confusion between ΤΩΙΚΑΝΩΣΑΝΤΙ and ΤΩΚΑΛΕΣΑΝΤΙ would be easy” see Metzger, *TC*<sup>2</sup>, 553.

		ΕΚΔΥΣΑΜΕΝΟΙ - ΕΚΛΥΣΑΜΕΝΟΙ	2 Cor 5:3	s
ε	ο	100		s
ε	ο	100		s
ε	ς	100	ΚΟΠΙΩΝΤΑΣ ΔΕΙ - ΚΟΠΙΩΝΤΑ ΕΔΕΙ	Acts 20:25 s
η	κ	20		s
η	ν	50	ΠΟΝΗΡΙΑ - ΠΟΡΝΕΙΑ	Rom 1:29 s
η	π	40		s
ο	ο	100	ΟC - ΘC	1 Tim 3:16 s
ο	ς	100		s
ι	ρ	20		s
ι	τ	30		s
ι	υ	20		s
λ	ν	30	ΙΟΥΝΙΑΝ - ΙΟΥΛΙΑΝ	Rom 16:15 s
μ	ν	20		s
ν	π	20		s
ο	ς	100		s
π	τ	40	ΑΠΑΤΑΙC - ΑΓΑΠΑΙC	2 Pet 2:13 s
ρ	υ	20		s
τ	υ	30		s
τ	ψ	40		s
ηι	ιν	40		cs
ην	μι	40		cs
ιη	πι	30		cs
ιπ	πτ	40		cs
ιτ	πι	20		cs
πι	τη	50		cs
πι	π	100	ΑΠΟ - ΑΠΟΙ	2 Pet 1:21 c/e
Δι	ν	20		c/e
ει	η	20		c/e
ζ	τ	10		c/e
η	ιγ	20		c/e
η	ιρ	30		c/e
η	ιτ	30		c/e
η	τι	40		c/e
η	η	20		c/e
η	π	20		c/e
η	τ	10		c/e
ις	κ	100		c/e
ιτ	ν	10		c/e
ιτ	π	100		c/e
λ	ν	40	ΟΛΙΓΩC - ΟΝΤΩC	2 Pet 2:18 c/e
λλ	μ	100	ΑΛΛΑ - ΑΜΑ	Rom 6:5 c/e

λλ	н	20	c/e
н	π	20	c/e
π	π	100	c/e
π	ππ	80	c/e

---



## BIBLIOGRAPHY

- Abegg, Martin G., Jr. "Calendars, Jewish." *DNTB*, 180–83.
- Aland, Barbara. "New Testament Textual Research, Its Methods and Its Goals." Pages 13–26 in *Translating the New Testament: Text, Translation, Theology*. Edited by Stanley E. Porter and Mark J. Boda. McMaster New Testament Studies. Grand Rapids, MI: Eerdmans, 2009.
- Aland, Kurt. *Text und Textwert der griechischen Handschriften des neuen Testaments*. ANTF. Berlin: De Gruyter, 1987–2022.
- Alexander, Joseph Addison. *The Acts of the Apostles: Explained*. Vol. 2. New York, NY: Scribner, 1857.
- Alexander, Loveday C.A. "Chronology of Paul." *DPL*, 115–23.
- van Altena, Vincent. *Greek Noun Inflection Script*. Python. Zenodo, 2020. 10.5281/zenodo.3604255.
- . "Greek Old Testament Toponyms." Zenodo, 10 July 2019. <https://doi.org/10.5281/zenodo.3244386>.
- . "Greek Toponyms Collected from Classical Literature." Zenodo, 19 February 2020. 10.5281/zenodo.3675315.
- . "Investigations into the Logistics of Ignatius' Itinerary." *JEBS* 21.2 (2021): 51–76.
- . "New Testament Toponyms." Zenodo, 10 July 2019. <https://doi.org/10.5281/zenodo.3463567>.
- van Altena, Vincent, Henk Bakker, and Jantien Stoter. "Advancing New Testament Interpretation Through Spatio-Temporal Analysis: Demonstrated by Case Studies." *TIG* 22.3 (2018): 697–720. <https://doi.org/10.1111/tgis.12338>.
- van Altena, Vincent, Jan Krans, Henk Bakker, Balász Dukai, and Jantien Stoter. "Spatial Analysis of New Testament Textual

- Emendations Utilizing Confusion Distances.” *OpTh* 5.1 (2019): 44–65. <https://doi.org/10.1515/opth-2019-0004>.
- van Altena, Vincent, Jan Krans, Henk Bakker, and Jantien Stoter. “GIS as a Heuristic Tool to Interpret Ancient Historiography.” *TIG* 27.3 (2021): 20. <https://doi.org/10.1111/tgis.12762>.
- . “Ιουδαίαν in Acts 2:9: A Diachronic Overview of Its Conjectured Emendations.” *OpTh* 6.1 (2020): 306–18. <https://doi.org/10.1515/opth-2020-0114>.
- . “Ιουδαίαν in Acts 2:9: Reverse Engineering Textual Emendations.” *OpTh* 6.1 (2020): 378–91. <https://doi.org/10.1515/opth-2020-0113>.
- Alves, Daniel, and Ana Isabel Queiroz. “Exploring Literary Landscapes: From Texts to Spatiotemporal Analysis through Collaborative Work and GIS.” *IJHAC* 9.1 (2015): 57–73. <https://doi.org/10.3366/ijhac.2015.0138>.
- Ancient World Mapping Center. “Roads.” Dataset. Resources. Chapel Hill, NC: Ancient World Mapping Center, 2012. [http://awmc.unc.edu/awmc/map\\_data/shapefiles/ba\\_roads/](http://awmc.unc.edu/awmc/map_data/shapefiles/ba_roads/).
- Armstrong, Marc P. “Temporality in Spatial Databases.” Pages 880–89 in *Accessing the World Third Annual International Conference, Exhibits, and Workshops*. American Society for Photogrammetry and Remote Sensing, 1988.
- Arroyo Ohori, Ken, Hugo Ledoux, and Jantien Stoter. “Modelling and Manipulating Spacetime Objects in a True 4D Model.” *JOSIS* 14 (2017): 61–93. <https://doi.org/10.5311/JOSIS.2017.14.297>.
- Augustine, Aurelius. “Contra epistulam quam vocant fundamenti.” Pages 193–248 in *De utilitate credendi, de duabus animabus, contra Fortunatum, contra Adimantum, contra epistulam fundamenti, contra Faustum*. Vol. 1 of CSEL 25. Edited by Joseph Zycha. Vienna: Tempsky, 1891.

- Azize, Joseph. "Ignatius of Antioch on the Ecclesiastical Hierarchy: Logic and Methodology." *Phronema* 30.2 (2015): 105–36.
- Bagnall, Roger, Richard J.A. Talbert, Sarah Bond, Jeffrey Becker, Tom Elliott, Sean Gillies, Ryan Horne, Michael McCormick, Adam Rabinowitz, et al. "Pleiades: A Community-Built Gazetteer and Graph of Ancient Places," 2022–2006. <http://pleiades.stoa.org>.
- Bagnani, Gilbert. "Peregrinus Proteus and the Christians." *Historia* 4.1 (1955): 107–12.
- Baird, William. *History of New Testament Research*. Vol. 1. Minneapolis, MN: Augsburg Fortress, 1992.
- . *History of New Testament Research*. Vol. 2. Minneapolis, MN: Augsburg Fortress, 2002.
- Bakker, Hendrik Adrianus. *Exemplar Domini: Ignatius of Antioch and His Martyrological Self-Concept*. Leuven: Peeters, 2003.
- Bal, Mieke. *Narratology: Introduction to the Theory of Narrative*. 4th ed. Toronto: University of Toronto Press, 2017.
- Baljon, Johannes Marinus Simon. *Novum Testamentum Graece. Praesertim in usum studiosorum recognovit et brevibus annotationibus instruxit*. Groningen: Wolters, 1898.
- Barclay, William, ed. *The Acts of the Apostles*. 3rd ed. NDSB. Louisville, KY: Westminster John Knox, 2003.
- Barnes, Timothy D. "The Date of Ignatius." *ExpTim* 120.3 (2008): 119–30. <https://doi.org/10.1177/0014524608098730>.
- Barrett, C.K. *A Critical and Exegetical Commentary on the Acts of the Apostles, Vol. 1*. ICC. Edited by J.A. Emerton, C.E.B. Cranfield, and G.N. Stanton. Edinburgh: Clark, 1994.
- . *A Critical and Exegetical Commentary on the Acts of the Apostles, Vol. 2*. ICC. Edited by J.A. Emerton, C.E.B. Cranfield, and G.N. Stanton. Edinburgh: Clark, 1998.
- Barthius, Caspar. *Adversariorum commentariorum libri LX quibus ex universa antiquitatis serie, omnis generis, ad vicies octies centum, auctorum, plus centum quinquaginta millibus, loci, tam gentilium quam christianorum, theologorum, iureconsultorum, medicorum,*

*philosophorum, philologorum, oratorum, rhetorum etc. obscuri, dubii, maculati, illustrantur, constituuntur, emendantur, cum rituum, morum, legum, sanctionum, sacrorum, ceremoniarum, pacis bellicae artium, formularum, locutionum denique, observatione et eludicatione tam locuplete et varia, ut simile ab uno homine nihil umquam in litteras missum videri possit. Eduntur praeterea ex vetustatis monumentis praeclara hoc opere non pauca, nec visa hactenus, nec videri sperata. Cum undecim indicibus, VII auctorum, IV rerum et verborum.* Frankfurt, Main: Aubrius, n.d.

- Basoglu, Umit, and Joel Morrison. "The Efficient Hierarchical Data Structure for the Us Historical Boundary File." *Harvard Papers on Geographic Information Systems*. Edited by Geoffrey Dutton. Vol. 4. Addison-Wesley, 1978.
- Bauckham, Richard. "James and the Jerusalem Church." Pages 415–80 in *The Book of Acts in Its Palestinian Setting*. Edited by Richard Bauckham. Vol. 4 of *The Book of Acts in Its First Century Setting*. Grand Rapids, MI: Eerdmans, 1995.
- . "What If Paul Had Travelled East Rather than West?" Pages 171–84 in *Virtual History and the Bible*. Edited by J. Cheryl Exum. Leiden: Brill, 2000.
- Beatrice, Pier Franco. "The 'Gospel According to the Hebrews' in the Apostolic Fathers." *NovT* 48.2 (2006): 147–95.
- Beitzel, Barry J. *The Moody Atlas of Bible Lands*. Chicago, IL: Moody, 1985.
- Bellucci, Francesco. "Eco and Peirce on Abduction." *EJPAP* X.1 (2018). <https://doi.org/10.4000/ejpap.1122>.
- Bengel, Johann Albrecht. *Gnomon Novi Testamenti, in quo ex nativa verborum vi simplicitas, profunditas, concinnitas, salubritas sensuum coelestium indicatur*. 1st ed. Tübingen: Schramm, 1742.
- Bentley, Richard. *Bentleii Critica Sacra: Notes on the Greek and Latin Text of the New Testament, Extracted from the Bentley Mss. in Trinity*

- College Library*. Edited by Arthur Ayres Ellis. Cambridge: Deighton, Bell, 1862.
- Berding, Kenneth. "'Gifts' and Ministries in the Apostolic Fathers." *WTJ* 78.1 (2016): 135–58.
- de Berg, Mark, Otfried Cheong, Marc van Kreveld, and Mark Overmars. *Computational Geometry*. Berlin: Springer, 2008. <https://doi.org/10.1007/978-3-540-77974-2>.
- Berquist, Jon L., and Claudia V. Camp, eds. *Constructions of Space I: Theory, Geography, and Narrative*. Library of Biblical Studies 481. New York, NY: Clark, 2007.
- , eds. *Constructions of Space II: The Biblical City and Other Imagined Spaces*. Library of Hebrew Bible / Old Testament Studies 490. New York, NY: Clark, 2008.
- Bishop, E.F.F. "Professor Burkitt and the Geographical Catalogue." *JRS* 42.1–2 (1952): 84–85. <https://doi.org/10.2307/297518>.
- Bisping, August. *Erklärung der Apostelgeschichte*. Vol. 4 of *EHNT*. Münster: Aschendorff, 1871.
- Blass, Friedrich. *Acta apostolorum sive Lucae ad Theophilum liber alter. Editio philologica apparatu critico, commentario perpetuo, indice verborum illustrata*. Göttingen: Vandenhoeck & Ruprecht, 1895.
- Bloomfield, Samuel Thomas. *Ἡ Καινή Διαθήκη. The Greek Testament, with English Notes, Critical, Philological, and Exegetical*. 1st ed. Vol. 1. Cambridge: Smith, 1832.
- . *Ἡ Καινή Διαθήκη. The Greek Testament, with English Notes, Critical, Philological, and Exegetical. Second Edition, Corrected, Greatly Enlarged, and Considerably Improved*. Vol. 1. London: Longman, Rees & Co., 1836.
- Bock, Darrell L. *Acts*. BECNT. Grand Rapids, MI: Baker Academic, 2007.
- Bodenhamer, David J. "History and GIS: Implications for the Discipline." Pages 219–34 in *Placing History: How Maps, Spatial Data, and Gis Are Changing Historical Scholarship*. Edited by

- Anne Kelly Knowles and Amy Hillier. Redlands, CA: Esri, 2008.
- Bodenhamer, David J., John Corrigan, and Trevor M. Harris, eds. *Deep Maps and Spatial Narratives*. TSH. Bloomington, IN: Indiana University Press, 2015.
- , eds. *The Spatial Humanities: GIS and the Future of Humanities Scholarship*. TSH. Bloomington, IN: Indiana University Press, 2010.
- Bodenhamer, David J., Trevor M. Harris, and John Corrigan. "Deep Mapping and the Spatial Humanities." *IJHAC* 7.1–2 (2013): 170–75. <https://doi.org/10.3366/ijhac.2013.0087>.
- Borg, Ingwer, and Patrick J.F. Groenen. *Modern Multidimensional Scaling: Theory and Applications*. 2nd ed. SSS. New York, NY: Springer, 2005.
- Bowyer, William. *Conjectures on the New Testament, Collected from Various Authors, as Well in Regard to Words as Pointing: With the Reasons on Which Both Are Founded*. 2nd ed. London: Nichols, 1772.
- Bowyer, William, and John Nichols. *Critical Conjectures and Observations on the New Testament, Collected from Various Authors, as Well in Regard to Words as Pointing: With the Reasons on Which Both Are Founded*. 4th ed. London: Nichols, 1812.
- Brannan, Rick. *Greek Apocryphal Gospels, Fragments and Agrapha: Introductions and Translations*. Bellingham, WA: Lexham Press, 2013.
- Brent, Allen. *Ignatius of Antioch: A Martyr Bishop and the Origin of Monarchical Episcopacy*. T & T Clark Theology. London: Continuum, 2007.
- . "The Ignatian Epistles and the Threefold Ecclesiastical Order." *JRH* 17.1 (1992): 18–32.
- Brinkman, J.A. "The Literary Background of the 'Catalogue of the Nations' (Acts 2,9-11)." *CBQ* 25.4 (1963): 418–27.

- Brisco, Thomas V. *Holman Bible Atlas: A Complete Guide to the Expansive Geography of Biblical History*. Holman Reference. Nashville, TN: Broadman & Holman, 1998.
- Browning, Daniel C., Jr. "Malaria Risk on Ancient Roman Roads: A Study and Application to Assessing Travel Decisions in Asia Minor by the Apostle Paul." Master's Thesis, University of Southern Mississippi, 2020.
- Bruce, F.F. "Literature, Early Christian." AYBD 4:340–45.
- Bruce, F.F. *The Book of the Acts*. Rev. ed. NICNT. Grand Rapids, MI: Eerdmans, 1988.
- Bryant, Jacob. *Observations and Inquiries Relating to Various Parts of Ancient History; Containing Dissertations on the Wind Euroclydon, and on the Island Melite, Together with an Account of Egypt in Its Most Early State, and of the Shepherd King*. Cambridge: Archdeacon, 1767.
- Burghardt, Walter J. "Did Saint Ignatius of Antioch Know the Fourth Gospel?" *TS* 1.2 (1940): 130–56.
- Burke, Tony, ed. *New Testament Apocrypha: More Noncanonical Scriptures*. Vol. 2. Grand Rapids, MI: Eerdmans, 2020.
- Burke, Tony, and Brent Landau, eds. *New Testament Apocrypha: More Noncanonical Scriptures*. Vol. 1. Grand Rapids, MI: Eerdmans, 2016.
- Burkitt, Francis Crawford. "Text and Versions." *Encyclopaedia Biblica. A Critical Dictionary of the Literary, Political, and Religious History, the Archaeology, Geography, and Natural History of the Bible*. IV. Q to Z:4977–5031.
- Cameron, Donald, and Ian G Jones. "John Snow, the Broad Street Pump and Modern Epidemiology." *IJE* 12.4 (1983): 393–96. <https://doi.org/10.1093/ije/12.4.393>.
- Camp, Claudia V. "Storied Space, or, Ben Sira Tells a Temple." *Foundations for Sociorhetorical Exploration: A Rhetoric of Religious Antiquity Reader*. Edited by Vernon K. Robbins, Robert H. Von Thaden, and Bart B. Bruehler, 2016.

- Cancik, Hubert, and Helmuth Schneider. *New Pauly Online*. Leiden: Brill, n.d. <https://brill.com/view/package/bnpo>.
- Caquard, Sébastien. "Cartography I: Mapping Narrative Cartography." *PiHG* 37.1 (2013): 135–44. <https://doi.org/10.1177/0309132511423796>.
- Caquard, Sébastien, and William Cartwright. "Narrative Cartography: From Mapping Stories to the Narrative of Maps and Mapping." *Caj* 51.2 (2014): 101–6. <https://doi.org/10.1179/0008704114Z.000000000130>.
- Carson, D.A., and Douglas J. Moo. *An Introduction to the New Testament*. 2nd ed. Grand Rapids, MI: Zondervan, 2005.
- Carver, William Owen. *The Acts of the Apostles*. Nashville, TN: Broadman, 1916.
- Casson, Lionel. *Travel in the Ancient World*. Baltimore: Johns Hopkins University Press, 1974.
- Cheyne, Thomas Kelly. "India." *Encyclopaedia Biblica. A Critical Dictionary of the Literary, Political, and Religious History, the Archaeology, Geography, and Natural History of the Bible*. II. E to K:1145–2688.
- Chrisman, Nicholas R. "The Role of Quality Information in the Long-Term Functioning of a Geographic Information System." *Cartographica* 21.2–3 (1984): 79–88.
- Claramunt, Christophe, Christine Parent, Stefano Spaccapietra, and Marius Thériault. "Database Modelling for Environmental and Land Use Changes." Pages 181–202 in *Geographical Information and Planning*. Edited by John Stillwell, Stan Geertman, and Stan Openshaw. Berlin: Springer, 1999. [https://doi.org/10.1007/978-3-662-03954-0\\_10](https://doi.org/10.1007/978-3-662-03954-0_10).
- Claramunt, Christophe, and Marius Thériault. "Managing Time in GIS: An Event-Oriented Approach." Pages 23–42 in *Proceedings of the International Workshop on Temporal Databases: Recent Advances in Temporal Databases*. Springer-Verlag, 1995.

- Clark, Albert C. *The Acts of the Apostles: A Critical Edition with Introduction and Notes on Selected Passages*. 1933. Repr., Oxford: Clarendon, 1970.
- Clemen, Carl. "Die Zusammensetzung von Apg. 1–5." *TSK* 68.1 (1895): 297–357.
- Conzelmann, Hans. *Acts: A Commentary*. Edited by Eldon Jay Epp and Christopher R. Matthews. Translated by James Limburg, A. Thomas Kraabel, and Donald H. Juel. Herm. Tübingen: J. C. B. Mohr (Paul Siebeck), 1972. Repr., Philadelphia, PA: Fortress Press, 1987.
- Corwin, Virginia. *St. Ignatius and Christianity in Antioch*. Yale Publications in Religion 1. New Haven, CT: Yale University Press, 1960.
- Cross, F.L., and Elizabeth A. Livingstone, eds. *The Oxford Dictionary of the Christian Church*. 3rd rev. ed. Oxford: Oxford University Press, 2005.
- Cumont, Franz. "La plus ancienne géographie astrologique." *Klio* 9.9 (1909): 263–73. <https://doi.org/10.1524/klio.1909.9.9.263>.
- Cureton, William. *Corpus Ignatium: A Complete Collection of the Ignatium Epistles, Genuine, Interpolated and Spurious; Together with Numerous Extracts from Them, as Quoted by Ecclesiastical Writers down to the Tenth Century: In Syriac, Greek, and Latin; an English Translation of the Syriac Text, Copious Notes and Introduction*. London: Rivington, 1849.
- Currid, John D., and David P. Barrett. *Crossway ESV Bible Atlas*. Wheaton, IL: Crossway, 2010.
- Curtis, Adrian. *Oxford Bible Atlas*. 4th ed. Oxford: Oxford University Press, 2007.
- Danby, Herbert, trans. *The Mishnah: Translated from the Hebrew with Introduction and Brief Explanatory Notes*. 1933. Repr., Oxford: Oxford University Press, 1988.
- Danker, Frederick W., Walter Bauer, William Arndt, and F. Wilbur Gingrich. *A Greek-English Lexicon of the New Testament and*

- Other Early Christian Literature*. 3rd ed. Chicago, IL: University of Chicago Press, 2000.
- Das, Gautam, Rudolf Fleischer, Leszek Gasieniec, Dimitris Gunopulos, and Juha Kärkkäinen. "Episode Matching." Pages 12–27 in *Combinatorial Pattern Matching*. Edited by Alberto Apostolico and Jotun Hein. Edited by Gerhard Goos, Juris Hartmanis, and Jan Leeuwen. Berlin: Springer, 1997. [https://doi.org/10.1007/3-540-63220-4\\_46](https://doi.org/10.1007/3-540-63220-4_46).
- Davies, Clare. "Reading Geography between the Lines: Extracting Local Place Knowledge from Text." Pages 320–37 in *Spatial Information Theory*. Edited by Thora Tenbrink, John Stell, Antony Galton, and Zena Wood. Edited by David Hutchison, Takeo Kanade, Josef Kittler, Jon M. Kleinberg, Friedemann Mattern, John C. Mitchell, Moni Naor, Oscar Nierstrasz, C. Pandu Rangan, et al. Cham: Springer, 2013. [https://doi.org/10.1007/978-3-319-01790-7\\_18](https://doi.org/10.1007/978-3-319-01790-7_18).
- De Lacey, Douglas R. "Holy Days." *DPL*, 402–4.
- Dear, Michael J., ed. *Geohumanities: Art, History, Text at the Edge of Place*. London: Routledge, 2011.
- Decrept, Étienne. "Circonstances et Interprétations du Voyage D'Ignace D'Antioche." *RSR* 82.3 (2008): 389–99. <https://doi.org/10.4000/rsr.433>.
- Desilva, David A. "Jews in the Diaspora." Pages 272–90 in *The World of the New Testament: Cultural, Social, and Historical Contexts*. Edited by Joel B. Green and Lee Martin McDonald. Grand Rapids, MI: Baker Academic, 2013.
- Dibelius, Martin. "The Text of Acts: An Urgent Critical Task." *JR* 21.4 (1941): 421–31.
- von Dobschütz, Ernst. "Zu der Völkerliste Act. 2, 9–11." *ZWT* 45 (1902): 407–10.
- Döderlein, Johann Christoph. "Review of Tiberius Hemsterhuis, *Ti. Hemsterhusii orationes, quarum prima est de Paulo apostolo. L.C. Valckenari tres orationes, quibus subiectum est schediasma, specimen exhibens adnotationum*

criticarum in loco quaedam librorum sacrorum Novi Foederis. Praefiguntur duae orationes Ioannis Chrysostomi in laudem Pauli apostoli, cum veteri versione Latina Aniani, ex cod. MS. hic illic emendata ed. Lodewijk Casper Valckenaer; Leiden: Luchtmans & Honkoop, 1784.” *AuThB* 3.4 (1785): 268–78.

Donahue, Paul J. “Jewish Christianity in the Letters of Ignatius of Antioch.” *VC* 32.2 (1978): 81–93.

Donfried, Karl P. “Chronology: New Testament.” *AYBD* 1:1011–22.

———. “Was Timothy in Athens? Some Exegetical Reflections on 1 Thess. 3.1-3.” Pages 209–19 in *Paul, Thessalonica and Early Christianity: Labour Law and the Public Procurement Process*. Bloomsbury: Clark, 2002. <https://doi.org/10.5040/9780567661166>.

Dong, Ensheng, Hongru Du, and Lauren Gardner. “An Interactive Web-Based Dashboard to Track COVID-19 in Real Time.” *TLID* 20.5 (2020): 533–34. [https://doi.org/10.1016/S1473-3099\(20\)30120-1](https://doi.org/10.1016/S1473-3099(20)30120-1).

Dueker, Kenneth J., and Nicholas R. Chrisman. “Cartographic Data Structures: Alternatives for Geographic Information Systems.” *ACM SIGG* 10.2 (1976): 167–72. <https://doi.org/10.1145/965143.563306>.

Dunn, James D.G. “Pentecost, Feast Of.” *NIDNTT* 2:783–88.

———. *The Acts of the Apostles*. Grand Rapids, MI: Eerdmans, 2016.

Eco, Umberto. *The Role of the Reader: Explorations in the Semiotics of Texts*. AiS. Edited by Thomas A. Sebeok. 1979. Repr., Bloomington, IN: Indiana University Press, 1984.

———, ed. *The Sign of Three: Dupin, Holmes, Peirce*. AiS. Milton Keynes: Lightning Source, 2010.

Ehrman, Bart D., ed. *Lost Scriptures: Books That Did Not Make It into the New Testament*. New York, NY: Oxford University Press, 2003.

Ehrman, Bart D., trans. *The Apostolic Fathers, Volume II: Epistle of Barnabas. Papias and Quadratus. Epistle to Diognetus. The*

- Shepherd of Hermas*. LCL 25. Cambridge, MA: Harvard University Press, 2003.
- . *The New Testament: A Historical Introduction to the Early Christian Writings*. New York, NY: Oxford University Press, 1997.
- Ehrman, Bart D., Craig A. Evans, and Robert B. Stewart. *Can We Trust the Bible on the Historical Jesus?* Louisville, KY: Westminster John Knox Press, 2020.
- Ehrman, Bart D., and Zlatko Pleše, eds. *The Apocryphal Gospels: Texts and Translations*. New York, NY: Oxford University Press, 2011.
- Eissfeldt, Otto Wilhelm Hermann Leonhard. “‘Juda’ in 2. Könige 14, 28 und ‘Judäa’ in Apostelgeschichte 2, 9.” *WZ(H).GS* 12 (1963): 229–38.
- Elliott, J.K., ed. *The Apocryphal New Testament: A Collection of Apocryphal Christian Literature in an English Translation*. Oxford: Oxford University Press, 1993.
- Elowsky, Joel C. “The Ministry in the Early Church.” *CTQ* 76.3–4 (2012): 295–311.
- Erasmus, Desiderius, and P.E. Hovingh. *Opera Omnia Desiderii Erasmi Roterodami Recognita et Adnotatione Critica Instructa Notisque Illustrata (Vol. Ordinis Sexti Tomus Sextus, Annotationes in Novum Testamentum (Pars Secunda))*. Vol. VI–6 of ASD. Elsevier, 2003.
- Ewald, Heinrich. *Die drei ersten Evangelien und die Apostelgeschichte übersetzt und erklärt. Zweite, vollständige Ausgabe. Zweite Hälfte*. Göttingen: Dieterich, 1872.
- . *Geschichte des apostolischen Zeitalters bis zur Zerstörung Jerusalem’s*. Göttingen: Dieterich, 1858.
- Exum, J. Cheryl. *Virtual History and the Bible*. Leiden: Brill, 2000.
- Fitzgerald, John T. “Hospitality.” *DNTB*, 522–26.
- Fitzmyer, Joseph A. *The Acts of the Apostles*. AB 31. New York, NY: Doubleday, 1998.
- . *The Gospel According to Luke: Introduction, Translation, and Notes*. AB 28.2. Garden City, NY: Doubleday, 1985.

- Fousek, Jan, Vojtěch Kaše, Adam Mertel, Eva Výtvarová, and Aleš Chalupa. "Spatial Constraints on the Diffusion of Religious Innovations: The Case of Early Christianity in the Roman Empire." *PLoS One* 13.12 (2018): 1–14. <https://doi.org/10.1371/journal.pone.0208744>.
- Fudge, Edward. "The Eschatology of Ignatius of Antioch: Christocentric and Historical." *JETS* 15.4 (1972): 231–37.
- Gadamer, Hans-Georg. *Truth and Method*. Translated by Joel Weinsheimer and Donald G. Marshall. 1st ed. BRS. 1960. Repr., London: Bloomsbury, 2013.
- George, Mark K., ed. *Constructions of Space IV: Further Developments in Examining Ancient Israel's Social Space*. Library of Hebrew Bible/Old Testament Studies 569. London: Bloomsbury, 2013.
- Gilbert, Gary. "The List of Nations in Acts 2: Roman Propaganda and the Lukan Response." *JBL* 121.3 (2002): 497–529.
- Gloag, Paton J. *A Critical and Exegetical Commentary on the Acts of the Apostles, Vol. 2: 12:26–28:30*. ICC. Edinburgh: Clark, 1870.
- Gold, C.M., J. Nantel, and W. Yang. "Outside-in: An Alternative Approach to Forest Map Digitizing." *IJGIS* 10.3 (1996): 291–310. <https://doi.org/10.1080/02693799608902080>.
- Goodchild, Michael F. "Geographical Information Science." *IJGIS* 6.1 (1992): 31–45. <https://doi.org/10.1080/02693799208901893>.
- Goodchild, Michael F., and Donald G. Janelle. "Specialization in the Structure and Organization of Geography." *AAAG* 78.1 (1988): 1–28. <https://doi.org/10.1111/j.1467-8306.1988.tb00189.x>.
- Goodchild, Michael F., and P.A. Longley. "Geographic Information Science." Pages 1597–1614 in *Handbook of Regional Science*. Edited by M.M Fischer and P. Nijkamp. 2nd ed. Heidelberg: Springer, 2018.
- Goulder, Michael D. "Ignatius' 'Docetists.'" *VC* 53.1 (1999): 16–30.
- Green, Joel B. *The Gospel of Luke*. NICNT. Grand Rapids, MI: Eerdmans, 1997.

- Gregory, Ian N., David Cooper, Andrew Hardie, and Paul Rayson. "Spatializing and Analyzing Digital Texts - Corpora, GIS and Places." Pages 150–78 in *Deep Maps and Spatial Narratives*. Edited by David J. Bodenhamer, John Corrigan, and Trevor M. Harris. TSH. Bloomington, IN: Indiana University Press, 2015.
- Gregory, Ian N., and A. Geddes, eds. *Toward Spatial Humanities: Historical GIS and Spatial History*. TSH. Bloomington, IN: Indiana University Press, 2014.
- Gregory, Ian N., Karen K. Kemp, and Ruth Mostern. "Geographical Information and Historical Research: Current Progress and Future Directions." *HisCom* 13.1 (2001): 7–23.
- Griesbach, Johann Jakob. *Novum Testamentum Graece. Textum ad fidem codicum versionum et patrum recensuit et lectionis varietatem adiecit D. Io. Iac. Griesbach. Volumen II. Acta et epistolae apostolorum cum Apocalypsi complectens. Editio secunda emendatior multoque locupletior*. Halle: Curtius, 1806.
- Gritta, Milan, Mohammad Taher Pilehvar, Nut Limsopatham, and Nigel Collier. "What's Missing in Geographical Parsing?" *LRE* 52 (2017): 603–23. <https://doi.org/10.1007/s10579-017-9385-8>.
- Grossner, Karl. *Orbis Source Code and Data*. Pittsburgh: Center for Interdisciplinary Digital Research, 2018. [https://github.com/sul-cidr/orbis\\_pub](https://github.com/sul-cidr/orbis_pub).
- Güting, Eberhard. "Der geographische Horizont der sogenannten Völkerliste des Lukas (Acts 2 9-11)." *ZNW* 66.3–4 (1975): 149–69. <https://doi.org/10.1515/zntw.1975.66.3-4.149>.
- Guy, Fritz. "'The Lord's Day' in the Letter of Ignatius to the Magnesians." *AUSS* 2.1 (1964): 1–17.
- Hackett, Horatio Balch. *A Commentary on the Original Text of the Acts of the Apostles*. 2nd ed. 1852. Repr., Boston, MA: Gould & Lincoln, 1859.

- Haenchen, Ernst. *Die Apostelgeschichte. Neu übersetzt und erklärt. 7., durchgesehene und verbesserte Auflage dieser Neuauslegung.* 16th ed. KEK 3. Göttingen: Vandenhoeck & Ruprecht, 1977.
- . *The Acts of the Apostles: A Commentary.* Philadelphia: Westminster Press, 1971.
- Hägerstrand, Torsten. “What about People in Regional Science?” *Papers of the Regional Science Association* 24.1 (1970): 6–21. <https://doi.org/10.1007/BF01936872>.
- Hahmann, Stefan, Dirk Burghardt, and Beatrix Weber. ““80% of All Information Is Geospatially Referenced”??? Towards a Research Framework: Using the Semantic Web for (In) Validating This Famous Geo Assertion.” *Proceedings of the 14th AGILE Conference on Geographic Information Science.* Utrecht, 2011.
- Halévy, Joseph. “Nouvelles considérations sur le cycle turc des animaux.” *T’oung Pao* 1.7 (1906): 279–81.
- Hamming, R.W. “Error Detecting and Error Correcting Codes.” *BSTJ* 29.2 (1950): 147–60. <https://doi.org/10.1002/j.1538-7305.1950.tb00463.x>.
- Hann, Robert R. “Judaism and Jewish Christianity in Antioch: Charisma and Conflict in the First Century.” *JRH* 14.4 (1987): 341–60.
- von Harnack, Adolf. *Die Apostelgeschichte. Beiträge zur Einleitung in das Neue Testament* 3. Leipzig: Hinrichs, 1908.
- . *The Mission and Expansion of Christianity in the First Three Centuries.* Translated by James Moffatt. Second, Enlarged and Revised Edition. Vol. 2. London: Williams and Norgate, 1908.
- Harris, Murray J. *The Second Epistle to the Corinthians: A Commentary on the Greek Text.* NIGTC. Grand Rapids, MI: Eerdmans, 2005.
- Hatch, William Henry Paine. “Zur Apostelgeschichte 2, 9.” *ZNW* 9 (1908): 255–56.

- Hauser, Alan J., and Duane F. Watson, eds. *A History of Biblical Interpretation: The Enlightenment through the Nineteenth Century*. HBInt 3. Grand Rapids, MI: Eerdmans, 2017.
- , eds. *A History of Biblical Interpretation: The Medieval through the Reformation Periods*. HBInt 2. Grand Rapids, MI: Eerdmans, 2009.
- Heidegger, Martin. *Being and Time: A Translation of Sein Und Zeit*. Translated by Joan Stambaugh. SUNY Series in Contemporary Continental Philosophy. Edited by Dennis J. Schmidt. Albany, NY: State University of New York Press, 1996.
- . *Sein und Zeit*. Elfte, Unveränderte Auflage. Tübingen: Niemeyer, 1967.
- Heinrichs, Joannes Henricus. *Novum Testamentum Graecae perpetua annotatione illustratum. Editionis Koppianae vol. III. part. I. complectens Acta Apostolorum Cap. I-XII*. Göttingen: Dieterich, 1809.
- Hemer, Colin J. *The Book of Acts in the Setting of Hellenistic History*. Edited by Conrad H. Gempf. 1989. Repr., Winona Lake, IN: Eisenbrauns, 1990.
- Hengel, Martin. “Ιουδαία in the Geographical List of Acts 2:9-11 and Syria as ‘Greater Judea.’” *BBR* 10.2 (2000): 161–80.
- Heringa, Jodocus. *Vertoog over het vereischt gebruik, en hedendaegsch misbruik der kritiek, in de behandeling der heilige Schriften*. VGVCG. Amsterdam: Allart, van der Aa & Scheurleer, 1793.
- Herion, Gary A. “Herod Philip.” *AYBD* 3:160–61.
- Hilgenfeld, Adolf. “Die Apostelgeschichte nach ihren Quellenschriften untersucht.” *ZWT* 38 (1895): 65–115.
- Hill, Andrew W. “The Complete Works of Mark Twain Mapped,” 26 January 2014. <https://andrewxhill.com/maps/writers/twain/index.html>
- 
- Hoennicke, Gustav. *Die Apostelgeschichte*. Leipzig: Quelle & Meyer, 1913.

- Hoffman, Daniel L. "Ignatius and Early Anti-Docetic Realism in the Eucharist." *FiHi* 30.1 (1998): 74–88.
- Holmes, Michael W. "From 'Original Text' to 'Initial Text': The Traditional Goal of New Testament Textual Criticism in Contemporary Discussion." Pages 637–88 in *The Text of the New Testament in Contemporary Research: Essays on the Status Quaestionis*. Edited by Bart D. Ehrman and Michael William Holmes. 2nd ed. NTTSD 42. Leiden: Brill, 2013.
- . "Reconstructing the Text of the New Testament." Pages 77–89 in *The Blackwell Companion to the New Testament*. Edited by David Edward Aune. Blackwell Companions to Religion. Malden, MA: Wiley-Blackwell, 2010.
- van Houwelingen, P.H.R. *Apostelen: dragers van een spraakmakend evangelie*. CNT<sup>3</sup>. Kampen: Kok, 2010.
- Hülsemann, Friedrich. "Dritte Fortsetzung der allgemeinen Bemerkungen über das Bibelstudium u. s. w. Ueber die Anwendung der Conjekuralkritik auf das N. T." *NThBl* 3 (1800): 316–36.
- Hunter, Gary J., and Ian P. Williamson. "The Development of a Historical Digital Cadastral Database." *IJGIS* 4.2 (1990): 169–79. <https://doi.org/10.1080/02693799008941538>.
- Institut für Neutestamentliche Textforschung. "Liste." *Institut Für Neutestamentliche Textforschung*, n.d. <http://ntvmr.uni-muenster.de/liste>.
- Instone-Brewer, David. "Tyndale Individualised Proper Names with All References." Digital. Cambridge: Tyndale House, 2 November 2019. <https://github.com/tyndale/STEPBible-Data>.
- Institut Geodezji i Kartografii. "Kartograficzne materiały źródłowe możliwe do wykorzystania w projekcie „Koncepcja kompleksowego systemu informacji czasowo – przestrzennej o zdarzeniach i źródłach historycznych na przykładzie terenów biblijnych.” Instytut Geodezji i Kartografii, Warszawa, 1 November 2006.

- . “The Idea of the Complex Spatio-Temporal Information System of Events and Historical Sources Based on the Example of the Bible Lands,” 2006.
- International Ebola Response Team, Junerlyn Agua-Agum, Archchun Ariyarajah, Bruce Aylward, Luke Bawo, Pepe Bilivogui, Isobel M. Blake, Richard J. Brennan, Amy Cawthorne, et al. “Exposure Patterns Driving Ebola Transmission in West Africa: A Retrospective Observational Study.” Edited by Lorenz von Seidlein. *PLoS Med* 13.11 (2016): e1002170. <https://doi.org/10.1371/journal.pmed.1002170>.
- Jerome. *Commentariorum in Esaiam libri I-XI*. Edited by Marcus Adriaen. CSSL 73. Turnhout: Brepols, 1963.
- Johnson, Luke Timothy. *The Acts of the Apostles*. Edited by Daniel J. Harrington. SP 5. Collegeville, MN: Liturgical Press, 1992.
- Joly, Robert. *Le Dossier d'Ignace d'Antioche*. Faculté de Philosophie et Lettres 69. Bruxelles: Université libre de Bruxelles, 1979.
- Juvan, Marko. “From Spatial Turn to GIS-Mapping of Literary Cultures.” *EurRev* 23.1 (2015): 81–96. <https://doi.org/10.1017/S1062798714000568>.
- Juvan, Marko, and Joh Dokler. “Towards a GIS Analysis of Literary Cultures: The Making of the Slovenian Ethnoscape through Literature.” *IJHAC* 9.2 (2015): 196–218.
- Keener, Craig S. *Acts: An Exegetical Commentary - 15:1-23:35*. Vol. 3. Grand Rapids, MI: Baker Academic, 2014.
- . *Acts: An Exegetical Commentary - Introduction and 1:1-2:47*. Vol. 1. Grand Rapids, MI: Baker Academic, 2012.
- Kennedy, Heather, ed. *The ESRI Press Dictionary of GIS Terminology*. Redlands, CA: Esri, 2001.
- Kennedy, Michael. *Introducing Geographic Information Systems with ArcGIS®: A Workbook Approach to Learning GIS*. 3rd ed. Hoboken, NJ: Wiley, 2013.
- Keulers, Jos. *Handelingen der Apostelen*. 1st ed. De boeken van het Nieuwe Testament IV. Roermond: Romen & Zonen, 1937.

- Kiesling, John Brady and Aikaterini Laskaridis Foundation. "ToposText." Gazetteer. *ToposText Web Version 3.0*, 2019. <https://topostext.org/>.
- Kilpatrick, George D. "Conjectural Emendation in the New Testament." Pages 349–60 in *New Testament Textual Criticism: Its Significance for Exegesis: Essays in Honour of Bruce M. Metzger*. Edited by Eldon Jay Epp and Gordon D. Fee. New York, NY: Oxford University Press, 1981.
- Kloppenborg, John S. *Christ's Associations: Connecting and Belonging in the Ancient City*. New Haven, CT: Yale University Press, 2019.
- Knapp, Georg Christian. "Sylloge notabiliorum aut celebratorum coniecturarum de mutanda lectione in ll. N. T." Pages 767–84 in *Novum Testamentum Graece. Recognovit atque insignioris lectionum varietatis et argumentorum notationes subiunxit ....* By Georg Christian Knapp. Halle: Verlag der Buchhandlung des Waisenhauses, 1813.
- . "Sylloge notabiliorum aut celebratorum coniecturarum de mutanda lectione in ll. N. T." Pages 767–91 in *Novum Testamentum Graece. Recognovit atque insignioris lectionum varietatis et argumentorum notationes subiunxit ....* Edited by Moritz Rödiger. Halle: Verlag der Buchhandlung des Waisenhauses, 1829.
- de Knijff, H.W. *Sleutel En Slot: Beknopte Geschiedenis van de Bijbelse Hermeneutiek*. Kampen: Kok, 1980.
- Knowles, Anne Kelly, and Amy Hillier, eds. *Placing History: How Maps, Spatial Data, and GIS Are Changing Historical Scholarship*. Redlands, CA: Esri, 2008.
- Kolb, Anne. "Transport and Communication in the Roman State: The Cursus Publicus." Pages 95–105 in *Travel and Geography in the Roman Empire*. Edited by Colin Adams and Ray Laurence. New York, NY: Taylor & Francis, 2012.
- Korobtsov, S.A. "GIS and the Bible: The Cartographic Reconstruction of Ancient Bible Lands in the World of the Bible Project."

- Proceedings of the 21st International Cartographic Conference.*  
Durban: ICA, 2003.
- . “Integrirrovannye geoinformatsionnye i izdatel’skiye tekhnologii v proekte Karty Bibleyskoy istorii.” *Proceedings of InterKat08: GIS for Sustainable Land Development.* Helsinki, 2002.
- Kraak, Menno-Jan. *Mapping Time: Illustrated by Minard’s Map of Napoleon’s Russian Campaign of 1812.* Redlands, CA: Esri, 2014.
- Krans, Jan. “Conjectural Emendation and the Text of the New Testament.” Pages 613–35 in *The Text of the New Testament in Contemporary Research: Essays on the Status Quaestionis.* Edited by Bart D. Ehrman and Michael William Holmes. 2nd ed. NTTSD 42. Grand Rapids, MI: Eerdmans, 2013.
- . “Die Amsterdamer Datenbank als Arbeitsinstrument der Konjekturenforschung.” *Workshop Das Editionsprojekt Novum Testamentum Graece und das Problem des Berücksichtigung der Konjekturen.* Düsseldorf, 2016.
- Krans, Jan, and Bert Jan Lietaert Peerbolte. “The Amsterdam Database of New Testament Conjectural Emendation,” 2022 2016. <http://ntvmr.uni-muenster.de/nt-conjectures>.
- Krauss, Samuel. “Erez Israel’ im weiteren Sinne.” *ZDPV* 33.4 (1910): 224–25.
- Kuinoel, Christianus Theophilus. *Commentarius in libros Novi Testamenti historicos.* Vol. IV of *Acta Apostolorum.* Leipzig: Barth, 1818.
- Kwan, Mei-Po. “From Oral Histories to Visual Narratives: Representing the Post-September 11 Experiences of the Muslim Women in the USA.” *SCG* 9.6 (2008): 653–69. <https://doi.org/10.1080/14649360802292462>.
- Lagercrantz, Otto. “Zu Act. Ap. 2:9.” *Er* 10 (1910): 58–60.
- Lake, Kirsopp. *The Earlier Epistles of St. Paul: Their Motive and Origin.* 1st ed. London: Rivingtons, 1911.
- Langran, Gail, and Nicholas R. Chrisman. “A Framework For Temporal Geographic Information.” *Cartographica* 25.3

- (1988): 1–14. <https://doi.org/10.3138/K877-7273-2238-5Q6V>.
- Larkin, William J., Jr. *Acts*. IVPNTC 5. Edited by Grant R. Osborne. Downers Grove, IL: InterVarsity Press, 1995.
- Larsen, Lillian I., and Stephen Benzek. “Mapping Religiously, or Religiously Minding the Map?” Pages 323–47 in *Mapping Across Academia*. Dordrecht: Springer, 2017. [https://doi.org/10.1007/978-94-024-1011-2\\_16](https://doi.org/10.1007/978-94-024-1011-2_16).
- . “Min(d)Ing the Gaps: Digital Refractions of Ancient Texts.” Pages 128–47 in *Ancient Worlds in Digital Culture*. Edited by Claire Clivaz, Paul Dilley, and David Hamidovic. DBS 1. Edited by Claire Clivaz and David Hamidovic. Leiden: Brill, 2016.
- . “Min(d)Ing the Gaps: Exploring Ancient Landscapes through the Lens of GIS.” *Transf* 25.1 (2014): 45–58.
- Lefebvre, Henri. *The Production of Space*. Translated by Donald Nicholson-Smith. Malden, MA: Blackwell, 2011.
- Levenshtein, Vladimir I. “Binary Codes Capable of Correcting Deletions, Insertions, and Reversals.” *DoPh* 10.8 (1966): 707–10.
- Lewis, Richard B. “Ignatius and the Lord’s Day.” *AUSS* 6.1 (1968): 46–59.
- Lightfoot, Joseph Barber. *The Apostolic Fathers - Part II: S. Ignatius S. Polycarp Revised Texts*. Vol. 1. 1891. Repr., London: Macmillan, 1885.
- Linsenbarth, A. “Geoprzestrzeń wydarzeń biblijnych.” *RG* 5.8 (2007): 57–66.
- . “Rola geoinformacji obrazowej w badaniach geoprzestrzeni biblijnej.” *AFKIT* 18 (2008): 365–75.
- Linsenbarth, A., and A. Mościcka. “The Influence of the Bible Geographic Objects Peculiarities on the Concept of the Spatio-Temporal Geoinformation System.” *GeoInIs* 2.1 (2) (2010): 37–47.

- Loader, James Alfred, and Oda Wischmeyer. "Twentieth Century Interpretation." *DBCI*, 371–83.
- Loisy, Alfred Firmin. *Les Actes des Apôtres*. Paris: Nourry, 1920.
- Louw, Johannes P., and Eugene Albert Nida. *Greek-English Lexicon of the New Testament: Based on Semantic Domains*. 2nd ed. New York, NY: United Bible Societies, 1996.
- Louwerse, Max M., Zhiqiang Cai, Xiangen Hu, Matthew Ventura, and Patrick Jeuniaux. "Cognitively Inspired NLP-Based Knowledge Representations: Further Explorations of Latent Semantic Analysis." *IJAIT* 15.6 (2006): 1021–39. <https://doi.org/10.1142/S0218213006003090>.
- Louwerse, Max M., and Rolf A. Zwaan. "Language Encodes Geographical Information." *CoSc* 33 (2009): 51–73. <https://doi.org/10.1111/j.1551-6709.2008.01003.x>.
- Lucian. *The Passing of Peregrinus. The Runaways. Toxaris or Friendship. The Dance. Lexiphanes. The Eunuch. Astrology. The Mistaken Critic. The Parliament of the Gods. The Tyrannicide. Disowned*. Translated by A.M. Harmon. LCL 302. Cambridge, MA: Harvard University Press, 1936.
- Lüdemann, Gerd. "Acts of Impropriety: The Imbalance of History and Theology in Luke-Acts." *TJT* 24.1 (2008): 65–80.
- . *Early Christianity According to the Traditions in Acts: A Commentary*. Translated by John Bowden. Göttingen: Van den Hoeck & Ruprecht, 1987. Repr., Minneapolis, MN: Fortress, 1989.
- . *Paul, Apostle to the Gentiles: Studies in Chronology*. Philadelphia, PA: Fortress, 1984.
- von Lünen, Alexander, and Charles B. Travis, eds. *History and GIS: Epistemologies, Considerations and Reflections*. Dordrecht: Springer, 2013.
- Luz, Ulrich. *Matthew 1-7: A Commentary*. Edited by Helmut Koester. Translated by James E. Crouch. Rev. ed. Herm. Minneapolis, MN: Augsburg, 2007.

- MacIntyre, Alasdair C. *After Virtue: A Study in Moral Theory*. 3rd ed. Notre Dame, IN: University of Notre Dame Press, 2007.
- van Manen, Willem Christiaan. *Conjecturaal-kritiek toegepast op den tekst van de Schriften des Nieuwen Testaments*. VRNGG n.s. 9.1. Haarlem: Bohn, 1880.
- Mangey, Thomas, ed. *Φιλωνος του Ιουδαιου τα ευρισκομενα απαντα. Philonis Judaei opera quae reperiri potuerunt omnia. Textum cum MSS. contulit, quamplurima etiam e Codd. Vaticano, Mediceo, et Bodleiano, Scriptoribus item vetustis, necnon Catenis Graecis ineditis, adiecit, Interpretationemque emendavit, universa Notis et Observationibus illustravit ...* London: Bowyer, 1742.
- Mardia, K.V. "Some Properties of Classical Multi-Dimensional Scaling." *CSTM* 7.13 (1978): 1233–41. <https://doi.org/10.1080/03610927808827707>.
- Marguerat, Daniel. *The First Christian Historian: Writing the "Acts of the Apostles"*. Translated by Ken McKinney, Gregory J. Laughery, and Richard Bauckham. Cambridge: Cambridge University Press, 2002.
- Marshall, I. Howard. *Acts: An Introduction and Commentary*. TNTC 5. Downers Grove, IL: InterVarsity Press, 1980.
- Mayordomo, Moisés. "Raumdiskurse in der neutestamentlichen Forschung." *V&F* 62.1 (2017): 50–56. <https://doi.org/10.14315/vf-2017-0108>.
- McGrath, Alister E. *Christianity: An Introduction*. 3rd ed. Somerset: Wiley-Blackwell, 2015.
- McKim, Donald K., ed. *Dictionary of Major Biblical Interpreters*. 2nd ed. Downers Grove, IL: InterVarsity Press, 2007.
- , ed. *Historical Handbook of Major Biblical Interpreters*. Downers Grove, IL: InterVarsity Press, 1998.
- McNeile, Alan Hugh, and Charles Stephen Conway Williams. *An Introduction to the Study of the New Testament*. 2nd rev. ed. 1927. Repr., Oxford: Clarendon, 1953.

- Meeks, Wayne A. *The First Urban Christians: The Social World of the Apostle Paul*. 2nd ed. New Haven, CT: Yale University Press, 2003.
- van der Meer, Michaël N. "The Natural and Geographical Context of the Septuagint: Some Preliminary Observations." Pages 387–421 in *Die Septuaginta. Entstehung, Sprache, Geschichte*. 3. Internationale Fachtagung Veranstaltet von Septuaginta Deutsch (LXX.D), Wuppertal 22.-25. Juli 2010. Edited by W. Kraus, M. Karrer, and M. Sigismund. WUNT 286. Tübingen: Mohr-Siebeck, 2012.
- Meers, Alan. "Who Went Where and How? A Consideration of Acts 17.14." *BT* 44.2 (1993): 201–6. <https://doi.org/10.1177/026009439304400201>.
- Mellink, Albert Osger. "Death as Eschaton - A Study of Ignatius of Antioch's Desire for Death." PhD diss., Universiteit van Amsterdam, 2000.
- Melo, Fernando, and Bruno Martins. "Automated Geocoding of Textual Documents: A Survey of Current Approaches." *TIG* 21.1 (2017): 3–38. <https://doi.org/10.1111/tgis.12212>.
- Metzger, Bruce M. *A Textual Commentary on the Greek New Testament, a Companion Volume to the United Bible Societies' Greek New Testament (4th Rev. Ed.)*. 2nd ed. London: United Bible Societies, 1994.
- . *A Textual Commentary on the Greek New Testament. A Companion Volume to the United Bible Societies' Greek New Testament (Third Edition)*. 1st ed. London: United Bible Societies, 1975.
- . "Ancient Astrological Geography and Acts 2:9-11." Pages 123–33 in *Apostolic History and the Gospel: Biblical and Historical Essays Presented to F. F. Bruce on His 60th Birthday*. Edited by W. Ward Gasque and Ralph P. Martin. Exeter: Paternoster, 1970.
- . "'Methodological Weakness' (Review of Martin Dibelius, *Studies in the Acts of the Apostles* [Ed. Heinrich Greeven; London: SCM, 1956])." *Int* 11.1 (1957): 94–96.

- Metzger, Bruce M., and Bart D. Ehrman. *The Text of the New Testament: Its Transmission, Corruption, and Restoration*. 4th ed. New York, NY: Oxford University Press, 2005.
- Meyer, Heinrich August Wilhelm. *Kritisch-exegetisches Handbuch über die Apostelgeschichte*. 3rd ed. KEK 3. Göttingen: Vandenhoeck & Ruprecht, 1861.
- . *Kritisch-exegetisches Handbuch über die Apostelgeschichte*. 4th ed. KEK 3. Göttingen: Vandenhoeck & Ruprecht, 1870.
- Michelsen, Jan Hendrik Adolf. *Submission to “Prijsvraag G 94: een verhandeling over de toepassing van de conjecturaal-kritiek op den tekst van de schriften des Nieuwen Testaments (1877).”* ATS 1258. Haarlem: Archief Teylers Stichting, 1879.
- Montanari, Franco. *The Brill Dictionary of Ancient Greek*. Edited by Madeleine Goh and Chad Schroeder. Boston, MA: Brill, 2015.
- Mortimer, Ian. “What Isn’t History? The Nature and Enjoyment of History in the Twenty-First Century.” *History* 93.312 (2008): 454–74.
- Mościcka, A. “Spatio-Temporal Information System about Events and Historical Sources on the Basis of Bible’s Regions.” *Proceedings of the 4th Bi-Annual Conference on Globalization, Digitization, Access and Preservation of Cultural Heritage*. Sofia, 2006.
- Mościcka, A., and M. Brzezińska. “Postawy metodyczne tworzenia indeksu nazw geograficznych występujących w Starym i Nowym Testamencie.” *Prace Instytutu Geodezji i Kartografii* 53.111 (2007): 100–107.
- Moshier, Stephen O., and James K. Hoffmeier. “Which Way Out of Egypt? Physical Geography Related to the Exodus Itinerary.” Pages 101–8 in *Israel’s Exodus in Transdisciplinary Perspective: Text, Archaeology, Culture, and Geoscience*. Edited by Thomas E. Levy. New York, NY: Springer, 2014.
- Moss, Candida R. *The Myth of Persecution: How Early Christians Invented a Story of Martyrdom*. New York, NY: HarperOne, 2013.

- Moulton, James H., Wilbert F. Howard, and Nigel Turner, eds. *A Grammar of New Testament Greek. 3: Syntax*. Vol. 3. Edinburgh: Clark, 1963.
- Mullen, Roderic L. *The Expansion of Christianity: A Gazetteer of Its First Three Centuries*. VCSup 69. Leiden: Brill, 2004.
- Musurillo, Herbert A., ed. *The Acts of the Christian Martyrs*. Vol. 2 of *Oxford Early Christian Texts*. Oxford: Clarendon, 1972.
- Navarro, Gonzalo. "A Guided Tour to Approximate String Matching." *CSUR* 33.1 (2001): 31–88.
- Neander, J.A.W. *Geschichte der Pflanzung und Leitung der christlichen Kirche durch die Apostel*. 5th ed. BThK 26. 1832. Repr., Gotha: Perthes, 1862.
- Needleman, Saul B., and Christian D. Wunsch. "A General Method Applicable to the Search for Similarities in the Amino Acid Sequence of Two Proteins." *JMB* 48.3 (1970): 443–53. [https://doi.org/10.1016/0022-2836\(70\)90057-4](https://doi.org/10.1016/0022-2836(70)90057-4).
- Nestle, Eberhard. "Ein eilfter Einfall zu Apostelgeschichte 2, 9." *ZNW* 9 (1908): 253–54.
- Nongbri, Brent. "The Use and Abuse of P52: Papyrological Pitfalls in the Dating of the Fourth Gospel." *HTR* 98.1 (2005): 23–48. <https://doi.org/10.1017/S0017816005000842>.
- Økland, Jorunn, Karen Wenell, and Cornelis J. de Vos, eds. *Constructions of Space III: Biblical Spatiality and the Sacred*. The Library of Hebrew Bible/Old Testament Studies 540. New York, NY: Clark, 2016.
- Old, L. John. "Utilizing Spatial Information Systems for Non-Spatial-Data Analysis." *SciMet* 51.3 (2001): 563–71.
- Olshausen, Hermann. *Biblical Commentary on the Gospels: Adapted Especially for Preachers and Students; Translated from the German, with Additional Notes*. Translated by Richard Garvey and William Lindsay. 3rd ed. Vol. 4. Edinburgh: Clark, 1860.
- . *Biblischer Commentar über sämtliche Schriften des Neuen Testaments zunächst für Prediger und Studierende. Zweiter Band*.

- Das Evangelium des Johannes, die Leidensgeschichte und die Apostelgeschichte enthaltend.* Königsberg: Unzer, 1832.
- Olson, Mark J. "Pentecost." *AYBD* 5:222–23.
- van Oosterom, Peter. "Maintaining Consistent Topology Including Historical Data in a Large Spatial Database." Pages 327–36 in *Proceedings of Auto-Carto*, 1997.
- Owens, J.B., May Yuan, Monica Wachowicz, Vitit Kantabutra, E.A. Coppola, Daniel P. Ames, and Aldo Gangemi. "Visualizing Historical Narratives: Geographically-Integrated History and Dynamics GIS." *National Endowment for the Humanities Workshop "Visualizing the Past: Tools and Techniques for Understanding Historical Processes.* Richmond, VA, 2009.
- Pallis, Alexandros. *A Few Notes on the Gospels According to St. Mark and St. Matthew, Based Chiefly on Modern Greek.* Liverpool: The Liverpool Booksellers, 1903.
- . *Notes on St Luke and the Acts.* London: Milford, 1928.
- Parent, Christine, Stefano Spaccapietra, and Esteban Zimányi. "Spatio-Temporal Conceptual Models: Data Structures + Space + Time." Pages 26–33 in *GIS '99.* ACM Press, 1999. <https://doi.org/10.1145/320134.320142>.
- Parker, D.C. *An Introduction to the New Testament Manuscripts and Their Texts.* Cambridge: Cambridge University Press, 2008.
- Pearce, Zachary. *A Commentary, with Notes, on the Four Evangelists and the Acts of the Apostles; Together with a New Translation of St. Paul's First Epistle to the Corinthians, with a Paraphrase and Notes. To Which Are Added Other Theological Pieces.* Edited by John Derby. Vol. II. London: Cadell, 1777.
- Pelagios. "The Pelagios Network," 2021. <https://pelagios.org/>.
- Penn, Granville. *Annotations to the Book of the New Covenant: With an Expository Preface.* London: Duncan, 1837.
- Pervo, Richard I. *Acts: A Commentary.* Edited by Harold W. Attridge. Herm. Minneapolis, MN: Fortress, 2009.
- Peterman, Gleni. "Geographic Information Systems: Archaeology's Latest Tool." *BA* 55.3 (1992): 162–67.

- Peters, Melvin K.H. "Septuagint." *AYBD* 5:1093–1104.
- Peuquet, Donna J. "It's About Time: A Conceptual Framework for the Representation of Temporal Dynamics in Geographic Information Systems." *AAAG* 84.3 (1994): 441–61. <https://doi.org/10.1111/j.1467-8306.1994.tb01869.x>.
- . *Representations of Space and Time*. New York, NY: Guilford, 2002.
- Peuquet, Donna J., and Niu Duan. "An Event-Based Spatiotemporal Data Model (ESTDM) for Temporal Analysis of Geographical Data." *IJGIS* 9.1 (1995): 7–24. <https://doi.org/10.1080/02693799508902022>.
- Philo. *The embassy to Gaius*. Translated by Francis Henry Colson, G. H. Whitaker, and J. W. Earp. LCL 379. London: Harvard University Press, 1962.
- Piatti, Barbara, Anne-Kathrin Reuschel, and Lorenz Hurni. "Literary Geography—or How Cartographers Open up a New Dimension for Literary Studies." *Proceedings of the 24th International Cartography Conference, Chile, 2009*.
- Plooij, D., and J.C. Koopman. *Lucianus, de dood van Peregrinus van inleiding en aanteekeningen voorzien*. Aetatis Imperatoriae Scriptorum Graeci et Romani Adnotationibus Instructi I. Edited by P.J. Enk and D. Plooij. Utrecht: Ruys, 1915.
- Polhill, John B. *Acts*. NAC 26. Edited by E. Ray Clendenen. Nashville, TN: Broadman & Holman, 1992.
- Porter, Stanley E. "A Multidisciplinary Approach to Exegesis." Pages 93–112 in *Linguistic Analysis of the Greek New Testament: Studies in Tools, Methods, and Practice*. Grand Rapids, MI: Baker Academic, 2015.
- Powell, Mark Allan. *What Is Narrative Criticism?* Minneapolis, MN: Fortress, 1991.
- Preuschen, Erwin. *Die Apostelgeschichte*. Vol. 1 of HNT 4. Tübingen: Mohr, 1912.
- Price, Rosanne, Nectaria Tryfona, and Christian S. Jensen. "Extended Spatiotemporal UML: Motivations, Requirements and

- Constructs.” *JDM* 11.4 (2000): 14–27.  
<https://doi.org/10.4018/jdm.2000100102>.
- Prinsloo, Gert T.M., Cristl M. Maier, and Society of Biblical Literature, eds. *Constructions of Space V: Place, Space and Identity in the Ancient Mediterranean World*. Library of Hebrew Bible Old Testament Studies 576. New York, NY: Bloomsbury, 2013.
- Purves, Ross S., and Curdin Derungs. “From Space to Place: Place-Based Explorations of Text.” *IJHAC* 9.1 (2015): 74–94.  
<https://doi.org/10.3366/ijhac.2015.0139>.
- Rainey, Anson F., and R. Steven Notley. *The Sacred Bridge: Carta’s Atlas of the Biblical World*. 2nd ed. Jerusalem: Carta, 2014.
- Ramsay, William Mitchell. *St. Paul the Traveller and the Roman Citizen*. London: Hodder & Stoughton, 1895.
- Rapske, Brian M. “Prison, Prisoner.” *DNTB*, 827–30.
- . “The Importance of Helpers to the Imprisoned Paul in the Book of Acts.” *TynBul* 42.1 (1991): 3–30.
- Renolen, A. “History Graphs: Conceptual Modeling of Spatio-Temporal Data.” *GIS Frontiers* 2 (1996).
- Resseguie, James L. *Narrative Criticism of the New Testament: An Introduction*. Grand Rapids, MI: Baker Academic, 2005.
- Richards, E. Randolph. “Reading, Writing, and Manuscripts.” Pages 345–66 in *The World of the New Testament: Cultural, Social, and Historical Contexts*. Edited by Joel B. Green and Lee Martin McDonald. Grand Rapids, MI: Baker Academic, 2013.
- Ricoeur, Paul. *Freud and Philosophy: An Essay on Interpretation*. Translated by Denis Savage. New Haven, CT: Yale University Press, 1970.
- Roberts, Alexander, James Donaldson, and A. Cleveland Coxe, eds. *Latin Christianity: Its Founder, Tertullian*. Protestant Edition. ANF 3. Buffalo, NY: Christian Literature Company, 1885.
- , eds. *The Apostolic Fathers with Justin Martyr and Irenaeus*. Protestant Edition. ANF 1. Buffalo, NY: Christian Literature Company, 1885.

- Robinson, Thomas A. *Who Were the First Christians? Dismantling the Urban Thesis*. New York, NY: Oxford University Press, 2017.
- Ropes, James Hardy. *The Beginnings of Christianity. Part I. The Acts of the Apostles. Vol. III. The Text of Acts*. Vol. 3. London: Macmillan, 1926.
- Rose, Robert. "From Here to There: Mapping a Better Route from the Shire to Mount Doom with GIS." Blog. *ArcGIS Blog*, 16 May 2019. <https://www.esri.com/arcgis-blog/products/story-maps/mapping/mapping-a-better-route-from-the-shire-to-mount-doom/>.
- Ross, John MacDonald. "'Judaea' in Acts 2 9." *ExpTim* 96.7 (1985): 217.
- Rossignac, Jaroslaw R., and Michael A. O'Connor. "SGC: A Dimension-Independent Model for Pointsets with Internal Structures and Incomplete Boundaries,." Pages 145–80 in *Proceedings of the IFIP Workshop on CAD/CAM*. Edited by M. Wosny, J. Turner, and K. Preiss. IBM Watson, 1989.
- Rotman, Marco. *The Call of the Wilderness: The Narrative Significance of John the Baptist's Whereabouts*. CBET 96. Leuven: Peeters, 2020.
- Rovers, Marinus Anne Nicolaas. *Submission to "Prijsvraag G 94: een verhandeling over de toepassing van de conjecturaal-kritiek op den tekst van de schriften des Nieuwen Testaments (1877)"*. ATS 1257. Haarlem: Archief Teylers Stichting, 1879.
- Royse, James R. "Scribal Tendencies in the Transmission of the Text of the New Testament." Pages 461–78 in *The Text of the New Testament in Contemporary Research: Essays on the Status Quaestionis*. Edited by Bart D. Ehrman and Michael William Holmes. 2nd ed. NTTSD 42. Leiden: Brill, 2013.
- Rutgers, Johannes. "Index Palaeographicus." *Mnemosyne* 8a (1859): 85–110.
- Sahlin, Harald. "Emendationsvorschläge zum griechischen Text des Neuen Testaments II." *NovT* 24.2 (1982): 180–89.

- van de Sande Bakhuyzen, Willem Hendrik. *Over de toepassing van de conjecturaal-kritiek op den tekst des Nieuwen Testaments*. VRNGG n.s. 9.2. Haarlem: Bohn, 1880.
- Scheidel, Walter, and Elijah Meeks. "ORBIS: The Stanford Geospatial Network Model of the Roman World," n.d. <http://orbis.stanford.edu/>.
- Schmidius, Erasmus. *Versio Novi Testamenti nova, ad Graecam veritatem emendata, et notae ac animadversiones in idem: quibus partim mutatae alicubi Versionis redditur ratio, partim alia necessaria monentur. Accedit sacer contextus Graecus, cum Versione veteri: nec non Index Rerum et Verborum locupletissimus*. Nuremberg: Endter, 1658.
- Schmiedel, Paul Wilhelm. "Pfungsterzählung und Pfungstereignis." *PM* 24 (1920): 73–86.
- . "Spiritual Gifts." *Encyclopaedia Biblica. A Critical Dictionary of the Literary, Political, and Religious History, the Archaeology, Geography, and Natural History of the Bible*. IV. Q to Z:4755–76.
- Schnabel, Eckhard J. *Acts*. Expanded digital ed. ZECNT. Grand Rapids, MI: Zondervan, 2012.
- . *Early Christian Mission*. Vol. 1. Downers Grove, IL: IVP Academic, 2004.
- . "Paul's Missionary Work in Macedonia and Achaia (Acts 16:6–18:28)." Pages 332–43 in *Lexham Geographic Commentary on Acts through Revelation*. Edited by Barry J. Beitzel, Jessica Parks, and Doug Mangum. LGC. Bellingham, WA: Lexham, 2019.
- Schneemelcher, Wilhelm, ed. *New Testament Apocrypha*. Translated by R. McL Wilson. Vol. 1. Louisville, KY: Westminster John Knox, 1992.
- , ed. *New Testament Apocrypha*. Translated by R. McL Wilson. Vol. 2. Louisville, KY: Westminster John Knox, 1992.
- Schoedel, William R. *Ignatius of Antioch: A Commentary on the Letters of Ignatius of Antioch*. Herm. Edited by Helmut Koester. Philadelphia, PA: Fortress, 1985.

- Scholten, Henk J., Rob van de Velde, and Niels van Manen, eds. *Geospatial Technology and the Role of Location in Science*. 1st ed. GJL 96. Edited by Daniel Z. Sui, Wolf Tietze, Paul Claval, Yehuda Gradus, Sam Ock Park, and Herman van der Wusten. Dordrecht: Springer, 2009.
- Schreiner, P. "Space, Place and Biblical Studies: A Survey of Recent Research in Light of Developing Trends." *CBR* 14.3 (2016): 340–71. <https://doi.org/10.1177/1476993X15580409>.
- Schulthess, Johannes. *De charismatibus spiritus sancti. Pars prima. De vi et natura, ratione et utilitate dotis linguarum, in primos discipulos Christi collatae atque in posteros omnes deinceps ad finem usque seculi perennantis. Quam prolusionem muneri ineundi dedit ...* Leipzig: Reclam, 1818.
- Scott, Edward. "Acts II. 9." *Ath* 1.3459 (1894): 180.
- Scott, James M. "Luke's Geographical Horizon." Pages 483–544 in *The Book of Acts in Its Graeco-Roman Setting*. Edited by David W. J. Gill and Conrad H. Gempf. Vol. 2 of *The Book of Acts in Its First Century Setting*. Grand Rapids, MI: Eerdmans, 1994.
- da Silveira, Luís Espinha. "Geographic Information Systems and Historical Research: An Appraisal." *IJHAC* 8.1 (2014): 28–45. <https://doi.org/10.3366/ijhac.2014.0118>.
- Skupin, André, and Barbara P. Buttenfield. "Spatial Metaphors for Visualizing Very Large Data Archives." Pages 607–17 in *Proceedings of GIS/LIS '96 Annual Conference and Exposition*. Denver, CO, 1996.
- Skupin, André, and Sara Fabrikant. "Spatialization Methods: A Cartographic Research Agenda for Non-Geographic Information Visualization." *CaGIS* 30.2 (2003): 95–115. <https://doi.org/10.1559/152304003100011081>.
- Skupin, André, and Sara I. Fabrikant. "Spatialization." Pages 61–79 in *The Handbook of Geographic Information Science*. Edited by John P. Wilson and A. Stewart Fotheringham. Oxford: Blackwell, 2007. <https://doi.org/10.1002/9780470690819.ch4>.

- Sleeman, Matthew. *Geography and the Ascension Narrative in Acts*. SNTSMS 146. Edited by John M. Court. Cambridge: Cambridge University Press, 2013.
- Smith, Dennis E. "How Acts Constructed the Itinerary of Paul: Conclusions Excerpted from The Acts Seminar Report." *Westar* (2013): 69–79.
- Smith, Stephen. "Bible Geocoding - Bible Maps in Google Earth and Google Maps." *Bible Geocoding*, n.d. <http://www.openbible.info/geo/>.
- Snow, John. *On the Mode of Communication of Cholera*. 1st ed. London: Churchill, 1849.
- . *On the Mode of Communication of Cholera*. 2nd enlarged edition. London: Churchill, 1855.
- Soja, Edward W. *Postmodern Geographies: The Reassertion of Space in Critical Social Theory*. Radical Thinkers. London: Verso, 2011.
- . *Thirdspace: Journeys to Los Angeles and Other Real-and-Imagined Places*. Malden, MA: Blackwell, 1996.
- Spitta, Friedrich. *Die Apostelgeschichte, ihre Quellen und deren geschichtlicher Wert*. Halle: Verlag der Buchhandlung des Waisenhauses, 1891.
- Spitzel, Gottlieb. *Sacra bibliothecarum illustrium arcana resecta, sive mss. theologorum, in praecipuis Europa bibliothecis extantium designatio, cum praeliminari dissertatione, specimine novae bibliothecae universalis, et coronide philologica*. Augsburg: Goebel, 1668.
- Stark, Rodney. *Cities of God: The Real Story of How Christianity Became an Urban Movement and Conquered Rome*. New York, NY: HarperOne, 2009.
- . *The Rise of Christianity: A Sociologist Reconsiders History*. Princeton, NJ: Princeton University Press, 1996.
- Steinberg, Sheila L., and Steven J. Steinberg. *GIS Research Methods: Incorporating Spatial Perspectives*. Redlands, CA: Esri, 2015.
- Stewart, E.C. "New Testament Space/Spatiality." *BTB* 42.3 (2012): 139–50. <https://doi.org/10.1177/0146107912452245>.

- Stockhammer, Robert. "Exokeanismós: The (Un)Mappability of Literature." *PKn* 36.2 (2013): 123–38.
- Stokes, George Thomas. *The Acts of the Apostles, Vol. 2*. EBR. New York, NY: Armstrong & Son, 1908.
- Story, P.A., and Michael F. Worboys. "A Design Support Environment for Spatio-Temporal Database Applications." Pages 413–30 in *Spatial Information Theory A Theoretical Basis for GIS*. Edited by Andrew U. Frank and Werner Kuhn. Edited by Gerhard Goos, Juris Hartmanis, and Jan Leeuwen. Berlin: Springer, 1995. [https://doi.org/10.1007/3-540-60392-1\\_27](https://doi.org/10.1007/3-540-60392-1_27).
- Strack, Hermann, and Otto Böckler. *Das Evangelium des Johannes und die Apostelgeschichte*. 2nd ed. KK 2. München: Beck Verlagsbuchhandlung, 1894.
- Strutwolf, Holger, Institut für Neutestamentliche Textforschung, Barbara Aland, Kurt Aland, Johannes Karavidopoulos, Carlo M. Martini, and Bruce M Metzger, eds. *Novum Testamentum Graece*. 28. revidierte Auflage. Stuttgart: Deutsche Bibelgesellschaft, 2012.
- Swete, Henry Barclay. *The Old Testament in Greek: According to the Septuagint*. 4th ed. Cambridge: Cambridge University Press, 1909.
- Talbert, Richard J.A., and Roger S. Bagnall. *Barrington Atlas of the Greek and Roman World*. BAGRW. Princeton, NJ: Princeton University Press, 2000.
- Tan, Randall K., David A. deSilva, and Isaiah Hoogendyk. *The Lexham Greek-English Interlinear Septuagint: H.B. Swete Edition*. Bellingham, WA: Lexham, 2012.
- Tate, W. Randolph. *Interpreting the Bible A Handbook of Terms and Methods*. Grand Rapids, MI: Baker Academic, 2006.
- Tertullian. *Apology. De Spectaculis. Minucius Felix: Octavius*. Translated by T.R. Glover and G.H. Rendall. LCL 250. Cambridge, MA: Harvard University Press, 1931.
- Theophylact of Ohrid. "Ex S. Joannis Chrysostomi exegeticis et nonnullorum patrum expositiones in Acta Apostolorum

- concise ac breviter collectae a ....” *Opera quae reperiri potuerunt omnia*. Edited by Jacques-Paul Migne. PG 125. Paris: Migne, 1864.
- Tobler, Waldo R. “A Computer Movie Simulating Urban Growth in the Detroit Region.” *EG* 46 (1970): 234. <https://doi.org/10.2307/143141>.
- . *Three Presentations on Geographical Analysis and Modeling: Non-Isotropic Geographic Modeling; Speculations on the Geometry of Geography; and Global Spatial Analysis*. Santa Barbara, CA: National Center for Geographic Information and Analysis, February 1, 1993.
- Tobler, Waldo R., and S. Wineburg. “A Cappadocian Speculation.” *Nature* 231.5297 (1971): 39–41. <https://doi.org/10.1038/231039a0>.
- Tomlinson, Roger F. “A Geographic Information System for Regional Planning.” Pages 200–210 in *Land Evaluation (Papers of a CSIRO Symposium, Organized in Cooperation with UNESCO, 26–31 08 1968)*. Edited by G.A. Stewart. Melbourne: Macmillan, 1968.
- Travis, Charles B. *Abstract Machine: Humanities GIS*. Redlands, CA: Esri, 2015.
- Travis, Charles B., and Alexander von Lünen, eds. *The Digital Arts and Humanities: Neogeography, Social Media and Big Data Integrations and Applications*. Springer Geography. Cham: Springer, 2016.
- Trebilco, Paul R. “Christian Communities in Western Asia Minor into the Early Second Century: Ignatius and Others as Witnesses Against Bauer.” *JETS* 49.1 (2006): 17–44.
- . “Diaspora Judaism.” *DLNTD*, 287–300.
- Trebilco, Paul R. “Diaspora Judaism.” *DNTB*, 281–96.
- Trevett, Christine. *A Study of Ignatius of Antioch in Syria and Asia*. SBEC 29. Lewiston, NY: Mellen, 1992.
- Tripcevich, Nicholas, and Lisa Johnson. “In-Class Exercise 11.2 Cost-Distance: Geospatial Archaeology.” *Geospatial Archaeology*,

2015.

<https://bcourses.berkeley.edu/courses/1289761/pages/in-class-exercise-11-dot-2-cost-distance>.

- Tryfona, Nectaria, and Christian S. Jensen. "Conceptual Data Modeling for Spatiotemporal Applications." *GeoInf* 3 (1999): 245–68.
- Urbanc, Mimi, and Marko Juvan. "At the Juncture of Literature and Geography: Literature as a Subject of Geographic Inquiry in the Case of Slovene Istria." *SlavRev* 60.3 (2012): 317–33.
- Valckenaer, Lodewijk Casper. "Schediasma, specimen exhibens adnotationum criticarum in loco quaedam librorum sacrorum novi foederis in Ti. Hemsterhusii orationes, quarum prima est de Paulo apostolo. L.C. Valckenari tres orationes, quibus subiectum est schediasma, specimen exhibens adnotationum criticarum in loco quaedam librorum sacrorum Novi Foederis. Praefiguntur duae orationes Ioannis Chrysostomi in laudem Pauli apostoli, cum veteri versione Latina Aniani, ex cod. MS. hic illic emendata." Pages 324–414 in . Leiden: Luchtmans & Honkoop, 1784.
- Verschuur, Johannes Hendrik. *Opuscula in quibus de variis S. Literarum locis, et argumentis exinde desumptis, critice et libere disseritur*. Edited by Johannes Anthonie Lotze. Utrecht: Wild & Altheer, 1810.
- Vinzent, Markus. *Writing the History of Early Christianity: From Reception to Retrospection*. New York, NY: Cambridge University Press, 2019. <https://doi.org/10.1017/9781108647052>.
- Völter, Daniël. *Polykarp und Ignatius und die Ihnen Zugeschriebenen Briefe*. Leiden: Brill, 1910.
- Wagner, Robert A., and Michael J. Fischer. "The String-to-String Correction Problem." *JACM* 21.1 (1974): 168–73.
- Warf, Barney, and Santa Arias, eds. *The Spatial Turn: Interdisciplinary Perspectives*. RSHG 26. London: Routledge, 2009.

- Wasserman, Tommy, and Peter J. Gurry. *A New Approach to Text Criticism: Introduction to the Coherence-Based Genealogical Method*. Edited by Michael W. Holmes. RBS 80. Edited by Tom Thatcher. Atlanta, GA: Society of Biblical Literature, 2017.
- Watson, Duane F., and Alan J. Hauser, eds. *A History of Biblical Interpretation: The Ancient Period*. HBInt 1. Grand Rapids, MI: Eerdmans, 2008.
- Weinstock, Stefan. "The Geographical Catalogue in Acts II, 9–11." *JRS* 38.1–2 (1948): 43–46. <https://doi.org/10.2307/298169>.
- Weiss, Bernhard. *Die Apostelgeschichte, Katholischen Briefe, Apokalypse: im berichtigten Text*. 2nd ed. NTD 3. Leipzig: Hinrichs, 1902.
- Weiss, Johannes. "Griechenland in der Apostolischen Zeit." *RE* 7:160–68.
- Wellhausen, Julius. *Kritische Analyse der Apostelgeschichte*. AGW.PH NF 15.2. Berlin: Weidmannsche Buchhandlung, 1914.
- Wendt, Hans Hinrich. *Kritisch exegetisches Handbuch über die Apostelgeschichte*. 5th ed. KEK 3. Göttingen: Vandenhoeck & Ruprecht, 1880.
- . *Kritisch exegetisches Handbuch über die Apostelgeschichte*. 6th ed. KEK 3. Göttingen: Vandenhoeck & Ruprecht, 1888.
- . *Kritisch exegetisches Handbuch über die Apostelgeschichte*. 9th ed. KEK 3. Göttingen: Vandenhoeck & Ruprecht, 1913.
- Westphal, Bertrand. *Geocriticism: Real and Fictional Spaces*. Translated by Robert T. Tally Jr. Les Éditions de Minuit, 2007. Repr., New York, NY: Macmillan, 2011. <https://doi.org/10.1057/9780230119161>.
- Whiston, William. *The Sacred History from the Beginning of the World 'till the Days of Constantine; Part the Second. Or, the Times of the New Testament. Containing, a General Ecclesiastical History, from the Nativity of Our Blessed Saviour, to the First Establishment of Christianity by Human Laws, under the Emperor Constantine the Great. Including the Interval of 317 Years*. Vol. V. London: s.n., 1746.

- White, L. Michael. "Christianity: Early Social Life and Organization." *AYBD* 1:927–35.
- WHO Ebola Response Team. "Ebola Virus Disease in West Africa — The First 9 Months of the Epidemic and Forward Projections." *NEJM* 371.16 (2014): 1481–95. <https://doi.org/10.1056/NEJMoa1411100>.
- . "West African Ebola Epidemic after One Year — Slowing but Not Yet under Control." *NEJM* 372.6 (2015): 584–87. <https://doi.org/10.1056/NEJMc1414992>.
- Wieseler, K.G. *Chronologie des apostolischen Zeitalters bis zum Tode der Apostel Paulus und Petrus*. Göttingen: Vandenhoeck & Ruprecht, 1848.
- Williams, Charles Stephen Conway. *A Commentary on the Acts of the Apostles*. BNTC. Edited by Henry Chadwick. New York, NY: Harper & Row, 1957.
- Williams, Drake, III. "Pointing to a Paragon in Early Christian Communities: Considering Prototypical Behavior in the Letters Which Ignatius of Antioch Wrote." Pages 115–35 in *Drawing and Transcending Boundaries in the New Testament and Early Christianity*. Edited by Jacobus (Kobus) Kok, Martin Webber, and Jermo Van Nes. BZVB 38. Berlin: LIT, 2019.
- Wilson, Mark. "Paul's Journeys in 3D: The Apostle as Ideal Ancient Traveller." *JECH* 8.2 (2018): 16–34. <https://doi.org/10.1080/2222582X.2017.1411204>.
- . "The Lukan Periplus of Paul's Third Journey with a Textual Conundrum in Acts 20: 15." *AcT* 36.1 (2016): 229–54. <http://dx.doi.org/10.4314/actat.v36i1.13>.
- . "The Route of Paul's First Journey to Pisidian Antioch." *NTS* 55.4 (2009): 471–83. <https://doi.org/10.1017/S002868850999004X>.
- . "The 'Upper Regions' and the Route of Paul's Third Journey from Apamea to Ephesus." *SCRIP* 117.1 (2018): 1–21. <https://doi.org/10.7833/117-1-1368>.

- Winer, Georg Benedikt. *Grammatik des neutestamentlichen Sprachidioms*. 6th ed. Leipzig: Vogel, 1855.
- Witherington, Ben. *The Acts of the Apostles: A Socio-Rhetorical Commentary*. SRC. Grand Rapids, MI: Eerdmans, 1998.
- Wittke, Anne-Maria, Eckart Olshausen, and Richard Szydlak. *Historischer Atlas der antiken Welt*. Sonderausgabe. DNPSup 3. Stuttgart: Metzler, 2012.
- Wolf, Johann Christoph. *Curae philologicae et criticae in IV. SS. Evangelia et Actus apostolicos, quibus integritati contextus Graeci consulitur, sensus verborum ex praesidiis philolog. illustratur, diversae interpretum sententiae summam enarrantur, et modesto examini subiectae vel approbantur vel repelluntur*. Hamburg: Kisner, 1725.
- Worboys, Michael F. "A Model for Spatio-Temporal Information." Pages 602–11 in *Proceedings of the 5th International Symposium on Spatial Data Handling*. Charleston, SC, 1992.
- Worboys, Michael F., Hilary M. Hearnshaw, and David J. Maguire. "Object-Oriented Data Modelling for Spatial Databases." *IJGIS* 4.4 (1990): 369–83. <https://doi.org/10.1080/02693799008941553>.
- Wright, Dawn J. "Theory and Application in a Post-GISystems World." *IJGIS* 26.12 (2012): 2197–2209. <https://doi.org/10.1080/13658816.2012.713957>.
- Wright, Dawn J., Michael F. Goodchild, and James D. Proctor. "GIS: Tool or Science? Demystifying the Persistent Ambiguity of GIS as 'Tool' Versus 'Science.'" *AAAG* 87.2 (1997): 346–62. <https://doi.org/10.1111/0004-5608.872057>.
- Wright, N.T. *The New Testament and the People of God*. Vol. 1 of *Christian Origins and the Question of God*. Minneapolis, MN: Fortress, 1992.
- Wright, Paul H. *Rose Then and Now Bible Map Atlas with Biblical Background and Culture*. Torrance, CA: Rose Publishing, 2012.
- Yuan, May. "Mapping Text." Pages 109–23 in *The Spatial Humanities: GIS and the Future of Humanities Scholarship*. Edited by David

- J. Bodenhamer, John Corrigan, and Trevor M. Harris. TSH. Bloomington, IN: Indiana University Press, 2010.
- . “Wildfire Conceptual Modeling for Building GIS Space-Time Models.” Pages 860–69 in *Proceedings of GIS/LIS*, 1994.
- Yuan, May, John Mcintosh, and Grant Delozier. “GIS as a Narrative Generation Platform.” Pages 179–202 in *Deep Maps and Spatial Narratives*. Edited by David J. Bodenhamer, John Corrigan, and Trevor M. Harris. TSH. Bloomington, IN: Indiana University Press, 2015.
- Zahn, Theodor. *Die Apostelgeschichte des Lucas: Erste Hälfte Kap. 1–12*. KNT 5. Leipzig: Deichert, 1919.
- . *Die Apostelgeschichte des Lucas: Zweite Hälfte Kap. 13–28*. KNT 6. Leipzig: Deichert, 1919.
- . *Die Urausgabe der Apostelgeschichte des Lucas*. FGnKaL 9. Leipzig: Deichert, 1916.
- . *Einleitung in das Neue Testament. Erster Band*. Leipzig: Deichert, 1897.
- Zeller, Eduard. *Die Apostelgeschichte nach ihrem Inhalt and Ursprung kritisch untersucht*. Stuttgart: Mäcken, 1854.
- de Zwaan, J. *Inleiding tot het Nieuwe Testament: Evangelien en Handelingen*. 2nd ed. VUB<sup>2</sup> 15. Haarlem: Bohn, 1948.
- Zwiep, Arie W. “Bible Hermeneutics from 1950 to the Present: Trends and Developments.” Pages 933–1008 in *Handbuch Der Bibelhermeneutiken: Von Origenes Bis Zur Gegenwart*. Edited by Oda Wischmeyer. Boston, MA: De Gruyter, 2016.
- . *Tussen tekst en lezer: een historische inleiding in de bijbelse hermeneutiek. Deel 1: de vroege kerk - Schleiermacher*. 2nd ed. Amsterdam: VU University Press, 2009.
- . *Tussen tekst en lezer: een historische inleiding in de bijbelse hermeneutiek. Deel 2: van moderniteit naar postmoderniteit*. 2nd ed. Amsterdam: VU University Press, 2014.
- “Industries,” n.d. <http://www.esri.com/industries>.

“Shuttle Radar Topography Mission (SRTM) Elevation Dataset.”  
Dataset. Sioux Falls: U.S. Geological Survey, 2002.  
<https://search.earthdata.nasa.gov/search>.



# INDEXES

## INDEX OF ANCIENT SOURCES

### Old Testament

<i>Genesis</i>		<i>Deuteronomy</i>	
10	90	10:17-19	196
12:1-3	138	<i>Joshua</i>	
44:4	196	5:10	142
<i>Exodus</i>		<i>Psalms</i>	
16:39	143	137:7	124
<i>Leviticus</i>		<i>Isaiah</i>	
19:33-34	196	4:11	96
23:5	142	11:11	90
<i>Numbers</i>		58:13	143
28:16	142	<i>Amos</i>	
		10-14	124

### Apocrypha

<i>1 Maccabees</i>		<i>Sirach</i>	
4:36	126	29:21-28	196
<i>2 Maccabees</i>			
10:1-8	126		

## New Testament

<i>Matthew</i>		6:9	140
3:4	60, 135, 223	7:2	140
25:35-36	215	7:4	140
25:40	215	9:22	140
		9:35	122
<i>Mark</i>		13:23	59
1:6	60, 128, 135, 223	13:27	122
3:7	98, 124	15:36	136
3:8	124	16:12	171
<i>Luke</i>		17	173
10:3-11	202	17:2	182
<i>Acts of the Apostles</i>		17:14	161, 163, 166
1:1-15:35	136	17:14-15	159, 160, 166, 167, 185, 186, 228
1:19	140	17:15	165, 166
2:5	121, 139, 140	17:16-34	160
2:8	122	18	173
2:9	109, 110, 119, 121, 122, 126, 128, 130, 135	18:1	160, 167
2:9-11	112, 123, 126, 135, 136, 141, 149, 150	18:5	160, 169
2:10	123, 140	18:12	179
2:11	121	18:27	197
2:13	122	28:11	140
2:14	122	22	136
4:16	140	24	136
4:72	140	26	136
4:74	140	<i>Romans</i>	
		1:29	250
		6:5	250

12:13	197	<i>2 Timothy</i>	
16:1-2	197	4:10	104
16:7	225	<i>Hebrews</i>	
16:15	225, 250	11:37	129
<i>1 Corinthians</i>		13:2	197
6:20	249	<i>James</i>	
15:9	188	1:1	101
16:10-11	197	<i>1 Peter</i>	
<i>2 Corinthians</i>		1:1	101, 102
5:3	225, 250	4:9	197
<i>Colossians</i>		<i>2 Peter</i>	
4:10	197	1:21	250
<i>1 Thessalonians</i>		2:13	249, 250
2-3	164	2:18	249, 250
3:1	167	3:10	59, 129
3:1-2a	165, 228	<i>3 John</i>	
3:1-3	169	5-7	197
3:1-5	167	8	197
3:6	165, 169, 228	<i>Revelation</i>	
<i>1 Timothy</i>		11:10	122
3:16	250	13:8	122
		17:2, 8	122

## Josephus

<i>Against Apion</i>		15.21	149
2.282	149	<i>Jewish War</i>	
<i>Jewish Antiquities</i>		1.397	140
13.9.1	126	1.437	140
14.337	140	1.672	140

2.43	124	7.43	149
2.398	149	14.114-118	149

## Philo

<i>Against Flaccus</i>		<i>On the Embassy to Gaius</i>	
45f.	149	281f.	149, 153
		282	121

## Rabbinic Literature

<i>Pirke 'Abot</i>	
1.4, 15	196

## Graeco-Roman Literature

Appian, <i>Bella civilian</i>		11.12	102
2.35	19	Diodorus Siculus,	
Aristides, <i>Orationes</i>		<i>Bibliotheca historica</i>	
27:1-8	194	2.2	102
Athenaeus, <i>Deipnosophistae</i>		Dionysius of	
6.233d	123	Halicarnassus,	
Cicero, <i>Epistulae ad</i>		<i>Antiquitates romanae</i>	
<i>familiares</i>		14.1.3	123
14.5.1	202	Herodotus <i>Histories</i>	
16.21.1	202	1.28	102
Cicero, <i>Orationes</i>		Homer, <i>Odyssea</i>	
<i>philippicae</i>		13.274	164
6.3	19		

Lucanus, *Pharsalia*

1.185 19

1.213-217 19

Lucian, *Alexander*

(*Pseudomantis*)

9 102

10 102

18 102

57 102

Lucian, *De Morte Peregrini*

11-13 198

16 199

Pliny the Younger,

*Epistulae*

10:1 20 195

Plutarch, *Caesar*

32 19

Plutarch, *Camillus*

15.1 123

Sophocles, *Oedipus*

*coloneus*

1248 123

Strabo, *Geographica*

1.2.19 230

7.3.1 123

Suetonius, *Divius Julius*

31 19

### Early Christian Literature

*Acts of John*

60, 61 196

Augustine, *Contra*

*epistulam Manichaei*

*quam vocant Fundamenti*

9 96

*Didache*

11.1-12.5 199

Eusebius, *Historia*

*ecclesiastica*

10.5.23 195

3.22.1 189

3.36.2 189

Ignatius, *To Polycarp*

7.1 211

8.1 189, 211

8.2 211

Ignatius, *To the Ephesians*

1.2 207

2 197

2.1 197, 206, 209

5.1 206

12.2 205

21 211

21.1 207

21.2	188	Ignatius, <i>To the Trallians</i>	
Ignatius, <i>To the Magnesians</i>		1.1	207
2.1	207	12.1	197
14	211	13.1	188, 207
15	197, 206	Jerome, <i>De Viris Illustribus</i>	
Ignatius, <i>To the Philadelphians</i>		16	188
7.1	206	John Malalas, <i>Chronographia</i>	
10.1	210, 211	XI	188
10.2	211	Justin, <i>Apologia i</i>	
11.1	209, 210	14.3	196
11.2	189, 204, 209, 211	Justinian, <i>Digest</i>	
12.1	189	48.3.1	200
7	189	Origen, <i>Homiliae in Lucam</i>	
Ignatius, <i>To the Romans</i>		6.4	189
5.1	189, 200, 201, 203	<i>Passio Perpetuae et Felicitatis</i>	
9.2	188	2.2	200
10.1	207, 208	3.7	200
10.2	202, 203	7.4	200
10.3	207	9.1	200
Ignatius, <i>To the Smyrnaeans</i>		16.2	200
7.1	210	17.1	200
7.1-3	211	Polycarp, <i>To the Philippians</i>	
8.2	197	9.1	189, 200, 211
9.1-2	210	9.1-2	188
9.2	197, 206	pseudo-Ignatius, <i>To the Philippians</i>	
10.1	189, 210	15	213
11.1	188		
12.1	189, 211		
12.1, 2	197		
13.1	210, 211		

Tertullian, <i>Ad martyras</i>		Tertullian, <i>De jejunio</i>	
1	201	<i>adversus psychicos</i>	
Tertullian, <i>Adversus</i>		12.3	201
<i>Judaeos</i>		Tertullian, <i>De</i>	
7.4	96	<i>praescriptione</i>	
Tertullian, <i>Apologeticus</i>		<i>haereticorum</i>	
39.5-6	197	7.19	3
		<i>The Letter of the Churches of</i>	
		<i>Lyons and Vienne</i>	
		1.61	200

#### INDEX OF MODERN AUTHORS

Abegg, Martin G.	142	Bakker, Henk A.	104, 135, 188, 192
Aland, Barbara	54, 58	Bal, Mieke	234
Aland, Kurt	52	Baljon, Johannes M. S.	94, 95, 96, 97, 98, 102
Alexander, Joseph A.	163, 169	Barclay, William	142
Alexander, Loveday C.A.	179	Barnes, Timothy D.	188, 189
Altena, Vincent van	51, 89, 104, 112, 114, 115, 121, 135, 159	Barrett, C.K.	80, 90, 136, 138, 139, 149, 150, 153, 177, 179
Alves, Daniel	39	Barrett, David P.	138, 166
Arias, Santa	41	Barthius, Caspar	97, 124
Armstrong, Marc P.	12	Basoglu, Umit	13
Arroyo Ogori, Ken	12	Bauckham, Richard	34, 92, 235
Azize, Joseph	191	Beatrice, Pier F.	191
Bagnall, Roger S.	116, 121, 175, 176	Beitzel, Barry J.	138, 161
Bagnani, Gilbert	198	Bellucci, Francesco	234
Baird, William	26	Bengel, Johann A.	96

Bentley, Richard 97, 100, 124  
 Benzek, Steve 44  
 Berding, Kenneth 191  
 Berg, Mark de 13  
 Berquist, Jon L. 42  
 Bishop, E.F.F. 80, 90, 95, 100  
 Bisping, August 167  
 Blass, Friedrich 97  
 Bloomfield, Samuel T. 94, 95,  
     98, 124  
 Bock, Darrell L. 167  
 Böckler, Otto 164, 169  
 Bodenhamer, David J. 38, 40  
 Borg, Ingwer 73  
 Bowyer, William 95, 96  
 Brannan, Rick 21  
 Brent, Allen 189, 191  
 Brinkman, J.A. 122, 136, 148,  
     149, 150  
 Brisco, Thomas V. 166  
 Browning, Daniel C. 45  
 Bruce, F.F. 24, 80, 90, 136,  
     139, 150, 179  
 Bryant, Jacob 100  
 Brzezińska, Małgorzata 43  
 Burghardt, Dirk 11  
 Burghardt, Walter J. 191  
 Burke, Tony 21  
 Burkitt, Francis C. 100  
 Bittenfield, Barbara P. 70, 71  
  
 Cameron, Donald 9  
 Camp, Claudia V. 41, 42  
 Cancik, Hubert 121  
  
 Caquard, Sébastien 40  
 Carson, D.A. 21  
 Cartwright, William 40  
 Carver, William O. 161, 164,  
     165  
 Casson, Lionel 193, 194, 195,  
     201  
 Cheyne, Thomas K. 103  
 Chrisman, Nicholas R. 13  
 Claramunt, Christophe 14, 15  
 Clark, Albert C. 164, 177  
 Clemen, Carl 92, 103  
 Conzelmann, Hans 138  
 Corrigan, John 40  
 Corwin, Virginia 188, 191,  
     192, 202, 203, 205, 206,  
     207, 212  
 Coxe, A. Cleveland 190  
 Cross, F.L. 190  
 Cumont, Franz 148  
 Cureton, William 190  
 Currid, John D. 138, 166  
 Curtis, Adrian 166  
  
 Danby, Herbert 196  
 Das, Gautam 65  
 Davies, Clare 69, 70, 71  
 De Lacey, Douglas R. 142  
 Dear, Michael J. 40  
 Decrept, Étienne 188  
 Delozier, Grant 40  
 Derungs, Curdin 39  
 Desilva, David A. 138  
 Dibelius, Martin 104, 106

Dobschütz, Ernst von 90, 95  
 Döderlein, Johann C. 102  
 Dokler, Joh 39, 40  
 Donahue, Paul J. 191  
 Donaldson, James 190  
 Donfried, Karl P. 169, 179  
 Dong, Ensheng 9  
 Du, Hongru 9  
 Duan, Niu 14  
 Dueker, Kenneth J. 13  
 Dunn, James D.G. 136, 139,  
 165  
  
 Eco, Umberto 29, 30, 31, 32,  
 173, 219, 234  
 Ehrman, Bart D. 53, 54, 58, 59,  
 60, 87, 204, 234  
 Eissfeldt, Otto W.H.L. 103  
 Elliott, J.K. 21  
 Elowsky, Joel C. 191  
 Erasmus, Desiderius 99  
 Evans, Craig A. 234  
 Ewald, Heinrich 93  
 Exum, J.Cheryl 235  
  
 Fabrikant, Sara I. 68, 69  
 Fischer, Michael J. 66  
 Fitzgerald, John T. 196  
 Fitzmyer, Joseph A. 179, 202  
 Fousek, Jan 44  
 Fudge, Edward 191  
  
 Gadamer, Hans-Georg 28  
 Gardner, Lauren 9  
 Geddes, A. 38, 40  
  
 George, Mark K. 42  
 Gilbert, Gary 92  
 Gloag, Patton J. 167, 169  
 Gold, C.M. 13  
 Goodchild, Michael F. 12, 16,  
 17, 70, 71, 232, 236  
 Goulder, Michael D. 192  
 Green, Joel B. 54, 138, 202  
 Gregory, Ian N. 38, 40  
 Griesbach, Johann J. 98, 100,  
 101, 102  
 Gritta, Milan 115  
 Groenen, Patrick J.F. 73  
 Grossner, Karl 178  
 Gurry, Peter J. 52, 54, 58  
 Güting, Eberhard 100, 106  
 Guy, Fritz 191  
  
 Hackett, Horatio B. 161, 166  
 Haenchen, Ernst 95, 166, 177,  
 178  
 Hägerstrand, Torsten 183  
 Hahmann, Stefan 11  
 Halévy, Joseph 148  
 Hamming, R.W. 65  
 Hann, Robert R. 191  
 Harnack, Adolf von 93, 95,  
 240  
 Harris, Murray J. 225  
 Harris, Trevor M. 40  
 Hatch, William H. P. 92, 96,  
 97, 99, 100, 101, 102, 103  
 Hauser, Alan J. 26  
 Hearnshaw, Hilary M. 15

Heidegger, Martin 24, 25, 28  
 Heinrichs, Joannes H. 90, 96,  
     99, 100, 101, 102  
 Hemer, Colin J. 138, 165  
 Hengel, Martin 93, 136  
 Heringa, Jodocus 96, 99, 100  
 Herion, Gary A. 126  
 Hilgenfeld, Adolf 93  
 Hillier, Amy 38  
 Hoennicke, Gustav 95, 96, 97,  
     98, 99, 104  
 Hoffman, Daniel L. 192  
 Hoffmeier, James K 43, 44  
 Holmes, Michael W. 52, 57,  
     58, 59, 60, 87  
 Hoogendyk, Isaiah 114  
 Houwelingen, P.H.R.van 92  
 Howard, Wilbert F. 163  
 Hülsemann, Friedrich 102  
 Hunter, Gary J. 13  
 Hurni, Lorenz 39  
  
 Instone-Brewer, David 116  
  
 Janelle, Donald G. 70, 71  
 Jensen, Christian S. 15  
 Johnson, Lisa 176  
 Johnson, Luke T. 139, 140  
 Joly, Robert 190  
 Jones, Ian G. 9  
 Juvan, Marko 39, 40, 229  
  
 Keener, Craig S. 35, 89, 136,  
     140, 141, 143, 149, 153,  
     164, 165, 179, 180, 182  
  
 Kennedy, Heather 12, 16  
 Kennedy, Michael 16  
 Keulers, Jos 167  
 Kiesling, John B. 114, 116, 121  
 Kilpatrick, George D. 59, 81,  
     92, 107  
 Kloppenborg, John S. 235, 241  
 Knapp, Georg C. 98, 99, 100,  
     101, 102  
 Knijff, Henri W. de 235  
 Knowles, Anne K. 38  
 Kolb, Anne 195  
 Koopman, J.C. 199  
 Korobtsov, S.A. 42, 43  
 Kraak, Menno-Jan 39, 183  
 Krans, Jan 60, 61, 62, 128, 129,  
     166  
 Krauss, Samuel 104  
 Kuinoel, Christianus T. 95, 96,  
     99, 102  
 Kwan, Mei-Po 39  
  
 Lagercrantz, Otto 97  
 Lake, Kirsopp 166, 167, 168,  
     169, 182, 183, 184  
 Landau, Brent 21  
 Langran, Gail 13  
 Larkin, William J. 164  
 Larsen, Lillian I. 44  
 Laughery, Gregory J. 34  
 Ledoux, Hugo 12  
 Lefebvre, Henri 41  
 Levenshtein, Vladimir I. 66  
 Lewis, Richard B. 191

Lietaert Peerbolte, Bert Jan  
     60, 61, 62, 129, 166  
 Lightfoot, Joseph B. 188, 189,  
     190, 192, 207  
 Linsenbarth, A. 43  
 Livingstone, Elizabeth A. 190  
 Loader, James A. 57  
 Loisy, Alfred F. 95  
 Longley, P.A. 17, 232  
 Louw, Johannes P 113, 114,  
     115  
 Louwse, Max M. 69, 70, 71  
 Lüdemann, Gerd 35, 166, 228  
 Lünen, Alexander von 40  
 Luz, Ulrich 60  
  
 MacDonald Ross, John 106  
 MacIntyre, Alasdair C. 19, 20  
 Maguire, David J. 15  
 Maier, Cristl M. 42  
 Manen, Niels van 16  
 Manen, Willem C. van 96, 97,  
     98, 99, 100, 101, 102  
 Mangey, Thomas 101  
 Mardia, K.V. 69, 71  
 Marshall, I.Howard 167  
 Martins, Bruno 69  
 Mayordomo, Moisés 41, 42  
 McGrath, Alister E. 19  
 McKim, Donald K. 26  
 McNeile, Alan H. 166  
 Meeks, Elijah 175, 178  
 Meeks, Wayne A. 241  
 Meer, Michaël N.van der 113  
  
 Meers, Alan 163, 171, 172,  
     182, 183, 185  
 Mellink, Albert O. 188, 192,  
     203, 207, 212  
 Melo, Fernando 69  
 Metzger, Bruce M. 52, 53, 54,  
     58, 59, 80, 90, 92, 93, 94,  
     95, 96, 97, 99, 100, 101,  
     102, 106, 128, 129, 150,  
     153, 163, 225, 249  
 Meyer, Heinrich A.W. 93, 96,  
     99, 102, 166, 228  
 Michelsen, Jan H.A. 95, 96, 97,  
     99, 100, 101, 102, 103, 126  
 Montanari, Franco 114, 115,  
     116, 121  
 Moo, Douglas J. 21  
 Morrison, Joel 13  
 Mościcka, A. 43  
 Moshier, Stephen O. 43, 44  
 Moss, Candida R. 241  
 Mostern, Ruth 38  
 Moulton, James H. 163  
 Mullen, Roderic L. 240  
 Musurillo, Herbert A. 22, 200  
  
 Nantel, J. 13  
 Navarro, Gonzalo 65  
 Neander, J.A.W. 163, 166  
 Needleman, Saul B. 65  
 Nestle, Eberhard 104  
 Nida, Eugene A. 113, 114, 115  
 Nongbri, Brent 54  
 Notley, R.Steven 138, 240

O'Connor, Michael A. 13

Økland, Jorunn 42

Old, L. John 70, 71

Olshausen, Eckart 160, 177

Olshausen, Hermann 95, 96,  
99, 102, 163, 164

Olson, Mark J. 142

Oosterom, Peter van 13, 14

Owens, J.B. 40

Pallis, Alexandros 102, 224

Parent, Christine 15

Parker, D.C. 55, 57

Pearce, Zachary 99, 101, 102

Peirce, Charles S. 234

Penn, Granville 95, 98, 124

Pervo, Richard I. 89, 95, 96,  
136, 138, 139, 150, 165,  
166, 182

Peterman, Gleni 229

Peters, Melvin K.H. 113

Peuquet, Donna J. 9, 10, 11, 14

Piatti, Barbara 39

Pleše, Zlatko 21

Plooij, D. 199

Polhill, John B. 138

Porter, Stanley E. 25, 54

Powell, Mark A. 33, 173

Preuschen, Erwin 95, 96, 97

Price, Rosanne 15

Prinsloo, Gert T.M. 42

Proctor, James D. 17

Purves, Ross S. 39

Queiroz, Ana I. 39

Rainey, Anson F. 138

Ramsay, William M. 45, 179

Rapske, Brian M. 199, 200,  
201

Renolen, A. 14

Resseguie, James L. 33, 173

Richards, E. Randolph 54

Ricoeur, Paul 26, 27

Roberts, Alexander 190

Robinson, Thomas A. 241

Ropes, James H. 95, 96, 97, 99,  
100, 101, 102, 104

Rossignac, Jaroslaw R. 13

Rotman, Marco 234

Rovers, Marinus A.N. 94, 95

Royse, James R. 87

Rutgers, Johannes 52, 249

Safrai, Zeev 240

Sahlin, Harald 93

Sande Bakhuyzen, Willem H.  
van de 98, 102

Scheidel, Walter 175, 178

Schmidius, Erasmus 99

Schmiedel, Paul W. 94, 98

Schnabel, Eckhard J. 161, 165,  
177, 178, 179

Schneemelcher, Wilhelm 21,  
196

Schneider, Helmuth 121

Schoedel, William R. 188, 189,  
     191, 192, 202, 203, 205,  
     207, 208, 209  
 Schoedel, William R., Markus  
     212  
 Scholten, Henk J. 16  
 Schreiner, P. 41, 42  
 Schulthess, Johannes 99, 100,  
     101, 102, 103  
 Scott, Edward. 103  
 Scott, James M. 90  
 Silveira, Luís E. da 40  
 Skupin, André 68, 69, 70, 71  
 Sleeman, Matthew 41, 139  
 Smith, Dennis E. 35  
 Smith, Stephen 116  
 Snow, John 7, 8, 9  
 Soja, Edward W. 10, 41  
 Spaccapietra, Stefano 15  
 Spitzel, Gottlieb 99  
 Stark, Rodney 241  
 Steinberg, Sheila L. 10  
 Steinberg, Steven J. 10  
 Stewart, Eric C. 10, 41, 42  
 Stewart, Robert B. 234  
 Stockhammer, Robert 229,  
     230  
 Stokes, George T. 164, 165  
 Story, P.A. 15  
 Stoter, Jantien E. 12, 104, 135  
 Strack, Hermann 164, 169  
 Strutwolf, Holger xxx  
 Swete, Henry B. 114  
 Szydlak, Richard 160, 177  
 Talbert, Richard J.A. 176  
 Tan, Randall K. 114, 177  
 Tate, W.Randolph 21, 22, 25,  
     28  
 Thériault, Marius 14  
 Tobler, Waldo R. 11, 69, 70,  
     71, 176, 183  
 Tomlinson, Roger F. 15, 16  
 Travis, Charles B. 39, 40  
 Trebilco, Paul R. 138, 188, 203  
 Trevett, Christine 188  
 Tryfona, Nectaria 15  
 Turner, Nigel 163  
  
 Valckenaer, Lodewijk C. 102  
 Velde, Rob van de 16  
 Verschuur, Johannes H. 100,  
     102  
 Vinzent, Markus 188, 190,  
     211  
 Völter, Daniël 198  
 von Harnack, Adolf 241  
 Vos, Cornelis J.de 42  
  
 Wagner, Robert A. 66  
 Warf, Barney 41  
 Wasserman, Tommy 52, 54,  
     58  
 Watson, Duane F. 26  
 Weber, Beatrix 11  
 Weinstock, Stefan 90, 95, 104,  
     106, 148, 149  
 Weiss, Bernhard 165  
 Weiss, Johannes 177, 178

Wellhausen, Julius 95  
Wendt, Hans H. 92, 93, 96, 99,  
102, 164, 169  
Wenell, Karen 42  
Westphal, Bertrand 41  
Whiston, William 94  
White, L.Michael 20  
Wieseler, K.G. 161, 164  
Williams, Charles S. C. 95,  
166, 167  
Williams, Drake 192  
Williamson, Ian P. 13  
Wilson, Mark 44, 176  
Wineburg, S. 69, 70, 71  
Winer, Georg B. 163  
Wischmeyer, Oda 26, 57  
Witherington, Ben 35, 80, 90,  
139, 140, 164, 179  
Wittke, Anne-Maria 160, 177  
Wolf, Johann C. 99  
Worboys, Michael F. 14, 15  
Wright, Dawn J. 15, 17  
Wright, N.T. 35  
Wright, Paul H. 167  
Wunsch, Christian D. 65  
Yang, W. 13  
Yuan, May 14, 40, 68, 112  
Zahn, Theodor 96, 97, 99, 100,  
104, 167  
Zeller, Eduard 166  
Zimányi, Esteban 15  
Zwaan, J. de 167, 169, 170,  
182, 183, 184  
Zwaan, Rolf A. 69, 70, 71  
Zwiep, Arie W. 25, 26, 27, 28,  
29, 31, 32, 33, 235

## SUMMARY

This dissertation examines “in which way spatial-temporal analysis methods can contribute to the interpretation of early Christian literature”. A first, and fundamental, observation is that reality is spatial, and both physical and social entities influence each other. All phenomena that can be modelled in geographic or mathematical space can be analysed using GIS tools. This also includes geographical or abstract-spatial data from literature.

There are several aspects to the interpretation of early Christian literature (a collection of texts from the first three centuries CE that were written in communities that were somehow associated with the person and the memory of Jesus of Nazareth). Much thought has gone into this throughout history, with reference to the existence of subconscious and hidden motives in texts and interpretations, such as *possession*, *power* and *passion*. Furthermore, interpreters are not outside history, but are themselves part of it as products of their own time. This subjectivity is not necessarily negative, it also creates interfaces between reader and text which allow interaction. This collaboration between text and reader consists of a complex of components that together lead to a discovery of meaning.

Spatial-temporal perspectives have been introduced in historical and literary studies before, but the few research projects that have used GIS tools for biblical research are limited to data collection, cartography, and data modelling. Only a few have attempted to model scenarios. In addition, a critical hermeneutic-methodical reflection on the use of these tools for interpretation is

lacking. The research in this thesis therefore aims to demonstrate the applicability of GIS tooling in interpreting early Christian literature, as well as to provide a critical reflection on the results obtained, the methods used and their methodological value.

Interpretation begins with the critical establishment of the text. For New Testament writings there are often several variants of a text. Therefore, the original words and sentences must be critically reconstructed before a text can be further interpreted. When the textual variants are difficult to understand or appear to have been corrupted during transmission, there might also be conjecture about the original wording of the text and the cause for modification. One possible cause might be that during the transcription process a different word has entered the text because very similar letters have been confused. For this problem specifically, this study introduces an algorithm that can calculate the probability of such letter confusion. In order to test the potential of the algorithm, two interpretive problems are examined: the composition of the food of John the Baptist and the authenticity of the toponym Judea in a list of nations. For both cases, spatial relationships are visualized with GIS tools.

The interpretation of the list of nations is again examined in a comparison with the geographical background of contemporary writings. With the aid of cartographic visualization, it appears to be possible to analyse differences and similarities in clustering between respectively astrological and Jewish catalogues and the Biblical list of nations. Furthermore, two accounts of Paul's flight from Berea are studied. On the basis of two interpretive issues—the route Paul may have taken from Berea to Athens, and the complexity of connecting the travel movements in the book of Acts with those in the 1st Thessalonians letter—the spatial-temporal viability of three reconstructions is examined using space-time cubes. On the basis of these reconstructions, it can be concluded that it is *not*—as claimed by some interpreters—*impossible* to connect the spatial-temporal data, but also that the texts contain insufficient details to

definitively choose one of the proposed scenarios. The final case study synthesizes the geographic details from the seven letters of Ignatius of Antioch with the aim of reconstructing his captive journey to Rome and his interaction with fellow believers during that journey. These case studies show that the interpretation of early Christian literature benefits from the input of spatial-temporal data and the application of geographical analysis methods.

From the evaluation of the results, methods and methodological contribution of this research, the following emerges. Although the letter confusion algorithm does not produce objective, indisputable results, it provides the textual critic with a heuristic tool to evaluate (supposed) textual corruption in terms of palaeographic confusion. While multiple considerations will be taken into account, the algorithm can help substantiate the text critic's intuition. Spatial-temporal analysis appears to be helpful in reconstructing and visualizing implicit geographic structures, events and aspects related to ancient travel. This can challenge certain interpretive conclusions, but it also makes it possible for an interpreter to empathize a story by enlivening certain details. However, these exegetical insights for the individual case studies do not lead to conclusive evidence. A different weighting of the evidence may lead to different conclusions. This is an unavoidable feature of historical research.

The relationship between methods of literature interpretation and of spatial-temporal research is elaborated in a framework. The proposed components describing in which way spatial-temporal methods can be used for the analysis of narrative events (the iterative process of transposition, selection, hypothesis building, testing and interpretation) contribute to interpretation of texts in various ways. In the first place, it becomes clear that both GIScience and literature research study reality in a mediated way: reality is not directly accessible and is already interpreted in data and text. Considerations to in- or exclude data are often not explicitly stated. Second, the framework recognizes that motives of author and reader

are often implicit and hidden. For these reasons, the framework is designed to provide the opportunity to interrogate the data and text, as well as to consider specific considerations of the implied author or question the reader's assumptions.

The methods demonstrated in this thesis add to *and* challenge the reader's encyclopaedia. The methods provide means to construct scenarios in which certain aspects of the story can be "narcotized" or "blown up". In this way, the framework can contribute to developing the reader's intuition and thus a better internalization of the story. These two aspects—both encyclopaedic reassessment and narrative imaginability—reflect Eco's model of textual collaboration and Schleiermacher's notion of *divination*.

This research encourages the application of spatial-temporal analysis as it can advance insights into the exegesis and history of early Christian literature. But before the average researcher of early Christian literature will engage in the use of spatial-temporal analysis methods, a number of conditions must be met. This has to do with data and the possible complexity of learning to use and understand spatial-temporal analysis methods. In addition, the limited availability of datasets, the lack of metadata and the lack of interoperability (particularly in studies that focus on ancient history and early Christian literature in particular) provide obstacles. Therefore, there is an urgent need for a comprehensive spatial-temporal database for early Christian literature, containing not only the points, lines and polygons for physical objects, but also an initial transposition of narrative events. A logical next step would be to create a spatial-temporal knowledge graph allowing interaction with the semantic web, in particular with initiatives that study the ancient world spatial-temporally. In the future, it is recommended that students and scientists (at different levels within the academic enterprise) investigate how their spatial-temporal toolset can be expanded, thereby stimulating their critical spatial thinking.

Ultimately, it can be concluded that spatial-temporal analysis methods contribute to the interpretation of early Christian

literature. Not only by providing exegetical insights and additional methods to aid imagination, but also by expanding (and challenging) the interpreter's encyclopaedia, and, hopefully, developing his intuition to better internalize a story.



## SAMENVATTING

Deze dissertatie onderzoekt “op welke manier ruimtelijk-temporele analysemethoden bij kunnen dragen aan de interpretatie van vroegchristelijke literatuur”. Een eerste, en fundamentele, observatie is dat de werkelijkheid ruimtelijk is, waarbij zowel fysieke als sociale entiteiten elkaar beïnvloeden. Alle fenomenen die in geografische of wiskundige ruimte gemodelleerd kunnen worden, kunnen worden geanalyseerd met behulp van GIS-tools. Daaronder vallen ook geografisch of abstract-ruimtelijke gegevens uit literatuur.

De interpretatie van vroegchristelijke literatuur (een verzameling teksten uit de eerste drie eeuwen na Christus die vervaardigd zijn in gemeenschappen die zich op een of andere manier verbonden wisten met de persoon en de herinnering aan Jezus van Nazereth) kent verschillende aspecten. Daarover is veel nagedacht in de loop van de geschiedenis, waarbij is gewezen op het bestaan van onderbewuste en verborgen motieven in teksten en interpretaties, zoals *bezit*, *macht* en *passie*. Verder staan uitleggers niet buiten de geschiedenis, maar zijn zij daar zelf onderdeel van als product van hun eigen tijd. Deze subjectiviteit is niet noodzakelijkerwijs negatief, ze creëert ook raakvlakken tussen lezer en tekst. Hierdoor kan interactie plaatsvinden. Deze samenwerking tussen tekst en lezer bestaat uit een complex van componenten die samen leiden tot ontdekking van betekenis.

Binnen historische en literaire studies zijn al eerder ruimtelijk-temporele perspectieven ingebracht, maar de weinige onderzoeksprojecten die GIS-tools gebruikt hebben voor bijbels onderzoek beperken zich tot gegevensverzameling, cartografie en

data-modellering. Slechts een enkeling heeft getracht om scenario's te modelleren. Daarnaast ontbreekt een kritische hermeneutisch-methodische reflectie op het gebruik van deze tools voor interpretatie. Het onderzoek in dit proefschrift stelt zich daarom ten doel de toepasbaarheid van GIS-tooling bij het interpreteren van vroegchristelijke literatuur te demonstreren, en daarnaast om een kritische reflectie op de behaalde resultaten, gebruikte methoden en diens methodologische waarde te bieden.

Interpretatie begint met de kritische vaststelling van de tekst. Voor nieuwtestamentische geschriften bestaan er vaak meerdere varianten van een tekst. Daarom moeten de oorspronkelijke woorden en zinnen kritisch worden gereconstrueerd voordat een tekst nader kan worden geïnterpreteerd. Wanneer de tekstuele varianten moeilijk te begrijpen zijn of corrupt lijken te zijn geraakt tijdens de overlevering, wordt ook wel gespeculeerd over de oorspronkelijke verwoording van de tekst en de reden dat deze is aangepast. Eén mogelijke oorzaak is dat tijdens het overschrijfproces een ander woord in de tekst is komen te staan doordat sterk op elkaar lijkende letters verward zijn. Voor specifiek dit probleem introduceert deze studie een algoritme dat de waarschijnlijkheid van zo'n letterverwarring kan berekenen. Om de potentie van het algoritme te testen worden twee uitlegkundige problemen onderzocht: de samenstelling van het voedsel van Johannes de Doper en de authenticiteit van het toponiem Judea in een volkerenlijst. Voor beide gevallen worden ruimtelijke relaties gevisualiseerd met GIS-tools.

De interpretatie van de volkerenlijst wordt nogmaals onder de loep genomen door deze te vergelijken met de geografische achtergrond van contemporaine geschriften. Met behulp van cartografische visualisatie blijkt het mogelijk te zijn om verschillen en overeenkomsten in clustering tussen respectievelijk astrologische en joodse volkencatalogi en de Bijbelse volkerenlijst te analyseren. Verder worden twee verslagen van Paulus' vlucht uit Berea bestudeerd. Op basis van twee interpretatieve kwesties – de

route die Paulus mogelijk gevolgd kan hebben van Berea naar Athene, en de complexiteit om de reisbewegingen in het boek Handelingen met die in de 1<sup>e</sup> Thessalonicenzenbrief te verbinden – wordt de ruimtelijk-temporele levensvatbaarheid van drie reconstructies onderzocht met behulp van ruimte-tijdkubussen. Op basis van deze reconstructies mag worden geconcludeerd dat het *niet* – zoals door sommige uitleggers wordt beweerd – *onmogelijk* is om de ruimtelijk-temporele gegevens met elkaar te verbinden, maar ook dat de teksten *onvoldoende details* bevatten om definitief voor één van de voorgestelde scenario's te kiezen. De laatste casestudy synthetiseert de geografische details uit de zeven brieven van Ignatius van Antiochië met als doel om een reconstructie te maken van zijn gevangenschapsreis naar Rome en de daarmee gepaard gaande interactie met medegelovigen. Deze casestudies tonen aan dat de interpretatie van voegchristelijke literatuur gebaat is bij de inbreng van ruimtelijk-temporele gegevens en de toepassing van geografische analysemethoden.

Uit de evaluatie van de resultaten, methoden en methodologische bijdrage van dit onderzoek komt het volgende naar voren. Alhoewel het algoritme voor letterverwarring geen objectieve, onbetwistbare resultaten oplevert, biedt het de tekstcriticus een heuristisch instrument om (veronderstelde) tekstuele corruptie te evalueren in termen van paleografische verwarring. Daarbij zullen altijd meerdere overwegingen in aanmerking worden genomen, maar het algoritme kan helpen om de intuïtie van de tekstcriticus te staven. Ruimtelijk-temporele analyse blijkt behulpzaam te zijn om impliciete geografische structuren, gebeurtenissen en aspecten die betrekking hebben op reizen in de oudheid te reconstrueren en te visualiseren. Hiermee kunnen bepaalde interpretatieve conclusies betwist worden, maar het wordt ook mogelijk voor een uitlegger om zich beter in te leven door bepaalde details van een verhaal te verlevendigen. Deze opgedane exegetische inzichten voor de individuele casestudies leiden echter niet tot onomstotelijk bewijs. Een andere weging van het bewijs kan

tot andere conclusies leiden. Dit is een onvermijdelijk kenmerk van historisch onderzoek.

De relatie tussen methoden van literatuurinterpretatie en van ruimtelijk-temporeel onderzoek wordt in een raamwerk uitgewerkt. De voorgestelde componenten die beschrijven hoe ruimtelijk-temporele methoden gebruikt kan worden voor de analyse van narratieve gebeurtenissen (het iteratieve proces van transpositie, selectie, hypothesevorming, testen en interpretatie) dragen op verschillende manieren bij aan interpretatie van teksten. In de eerste plaats wordt hiermee inzichtelijk dat zowel geografische informatiewetenschap als literatuuronderzoek de werkelijkheid bemiddeld bestuderen: de werkelijkheid is niet direct toegankelijk en dient zich reeds geïnterpreteerd aan in data en tekst. Overwegingen om gegevens in- of uit te sluiten worden vaak niet expliciet vermeld. Ten tweede erkent het raamwerk dat motieven van auteur en lezer vaak impliciet en verborgen zijn. Om deze redenen is het raamwerk zo ingericht dat het de mogelijkheid biedt om de data en de tekst te ondervragen, maar ook om specifieke overwegingen van de impliciete auteur te overwegen of aannames van de lezer in twijfel te trekken.

Met de methoden die in dit proefschrift zijn gedemonstreerd, is bijgedragen aan de encyclopedie van de lezer, maar wordt die ook uitgedaagd. De methoden verschaffen middelen om scenario's te construeren waarin bepaalde aspecten van het verhaal kunnen worden "genarcotiseerd" of "opgeblazen". Daarmee kan het raamwerk bijdragen om de intuïtie van de lezer te ontwikkelen en daarmee het verhaal beter te internaliseren. Deze twee aspecten – zowel encyclopedische herijking als narratieve voorstelbaarheid – weerspiegelen Eco's model van tekstuele samenwerking en Schleiermachers notie van *divinatie*.

Dit onderzoek moedigt de toepassing van ruimtelijk-temporele analyse aan omdat daarmee inzichten in de exegese en geschiedenis van vroegchristelijke literatuur bevorderd kunnen worden. Maar voordat de gemiddelde onderzoeker van vroegchristelijke literatuur

zich bezig zal gaan houden met het gebruik van ruimtelijk-temporele analysemethoden moet wel aan een aantal voorwaarden worden voldaan. Dit heeft te maken met data en de mogelijke complexiteit om ruimtelijk-temporele analysemethoden te leren gebruiken en begrijpen. Daarnaast kunnen de beperkte beschikbaarheid van datasets, het ontbreken van metadata en het gemis aan interoperabiliteit (met name bij studies die zich richten op antieke geschiedenis en vroegchristelijke literatuur in het bijzonder) obstakels vormen. Daarom is er een dringende behoefte aan een uitgebreide ruimtelijk-temporele database voor vroegchristelijke literatuur, die niet alleen de punten, lijnen en polygonen bevat voor fysieke objecten, maar ook een eerste transitie van verhalende gebeurtenissen. Een logische vervolgstap zou het creëren van een ruimtelijk-temporele knowledge graph zijn waardoor interactie met het semantisch web mogelijk wordt, in het bijzonder met initiatieven die de antieke wereld ruimtelijk-temporeel bestuderen. Het wordt aanbevolen om in de toekomst samen met studenten en wetenschappers (op verschillende niveaus binnen de academische onderneming) te onderzoeken hoe hun ruimtelijk-temporele gereedschap uitgebreid, en daarmee hun kritisch ruimtelijk denken gestimuleerd, kan worden.

Uiteindelijk mag worden geconcludeerd dat ruimtelijk-temporele analysemethoden bijdragen aan de interpretatie van vroegchristelijke literatuur. Niet alleen door exegetische inzichten te verschaffen en aanvullende methoden aan te reiken die het voorstellingsvermogen bevorderen, maar ook door de encyclopedie van de uitlegger uit te breiden (en uit te dagen), en, hopelijk, door diens intuïtie te ontwikkelen waarmee een verhaal beter geïnternaliseerd wordt.



# CURRICULUM VITAE

Vincent van Altena (1977) was born in Emmen, the Netherlands. He studied from 1995-1999 at the ETH Veenendaal (nowadays Christian University of Applied Science, Ede) and obtained his bachelor (BTh) in 2008 with a study on Education in the Vrije Baptistengemeente Groningen. From 2008-2014 he studied Geographical Information Science at the Vrije Universiteit Amsterdam (UNIGIS). His MSc-thesis on the Improvement of Automated Generalization of Artificial Water Networks, was awarded the first prize for Academic Excellence within the global UNIGIS programme (Salzburg, 2015). In 2016, Vincent continued his study as external PhD candidate at Delft University of Technology, faculty of Architecture and the Built Environment, and guest PhD researcher at the Vrije Universiteit Amsterdam, faculty of Religion and Theology.

Vincent is married to Ruth and together they have two adult sons. He likes cooking (not cleaning), and in his very sparse free time playing piano and synthesizer, experimenting with reharmonization techniques, as well as composing music.



# LIST OF PUBLICATIONS

## THIS PROJECT

### JOURNAL ARTICLES (PEER-REVIEWED)

- van Altena, Vincent. "Investigations into the Logistics of Ignatius' Itinerary." *JEBS* 21.2 (2021): 51-76.
- van Altena, Vincent, Henk Bakker, and Jantien Stoter. "Advancing New Testament Interpretation Through Spatio-Temporal Analysis: Demonstrated by Case Studies." *TIG* 22.3 (2018): 697-720. <https://doi.org/10.1111/tgis.12338>.
- van Altena, Vincent, Jan Krans, Henk Bakker, Balász Dukai, and Jantien Stoter. "Spatial Analysis of New Testament Textual Emendations Utilizing Confusion Distances." *OpTh* 5.1 (2019): 44-65. <https://doi.org/10.1515/opth-2019-0004>.
- van Altena, Vincent, Jan Krans, Henk Bakker, and Jantien Stoter. "GIS as a Heuristic Tool to Interpret Ancient Historiography." *TIG* 27.3 (2021): 20. <https://doi.org/10.1111/tgis.12762>.
- . "Ἰουδαίαν in Acts 2:9: A Diachronic Overview of Its Conjectured Emendations." *OpTh* 6.1 (2020): 306-18. <https://doi.org/10.1515/opth-2020-0114>.
- . "Ἰουδαίαν in Acts 2:9: Reverse Engineering Textual Emendations." *OpTh* 6.1 (2020): 378-91. <https://doi.org/10.1515/opth-2020-0113>.

### DATA SETS

- van Altena, Vincent. "Greek Old Testament Toponyms." Zenodo, 10 July 2019. <https://doi.org/10.5281/zenodo.3244386>.
- . "Greek Toponyms Collected from Classical Literature." Zenodo, 19 February 2020. [10.5281/zenodo.3675315](https://doi.org/10.5281/zenodo.3675315).

- . “List of Toponyms Which Are Palaeographically Close to Ioudaian.” Zenodo, 19 February 2020. <http://doi.org/10.5281/zenodo.3675151>.
- . “New Testament Toponyms.” Zenodo, 10 July 2019. <https://doi.org/10.5281/zenodo.3463567>.

#### PRESENTATION RECORDINGS

- van Altena, Vincent. A Digital Humanities Approach to Textual Emendations with a Special Focus on Ἰουδαίαν in Acts 2:9. Amsterdam: Vrije Universiteit, 2021. <https://doi.org/10.5281/zenodo.4486756>.
- van Altena, Vincent. GIS as a Heuristic Tool to Interpret Ancient History. Online presentation. San Diego, CA: Science track of the Esri User Conference, 2021. <https://doi.org/10.5281/zenodo.5918230>.

#### OTHER

##### JOURNAL ARTICLES (PEER-REVIEWED)

- van Altena, Vincent, and Jantien Stoter. “Context-Aware Thinning of Artificial Water Networks for Map Generalization.” *GI\_Forum* 2016 1 (2016): 12–29. [https://doi.org/10.1553/giscience2016\\_01\\_s12](https://doi.org/10.1553/giscience2016_01_s12).
- Amiranti, A. Y., M. N. Koeva, M. Kuffer, V. van Altena, and M. Post. “Investigating Standardized 3d Input Data for Solar Photovoltaic Potentials in the Netherlands.” *Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci.* XLIII-B4-2020 (2020): 639–46. <https://doi.org/10.5194/isprs-archives-XLIII-B4-2020-639-2020>.
- Dukai, B., R. Peters, T. Wu, T. Commandeur, H. Ledoux, T. Baving, M. Post, V. van Altena, W. van Hinsbergh, et al. “Generating, Storing, Updating and Disseminating a Countrywide 3d Model.” *Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci.*

XLIV-4/W1-2020 (2020): 27–32. <https://doi.org/10.5194/isprs-archives-XLIV-4-W1-2020-27-2020>.

Stoter, Jantien, Marc Post, Vincent van Altena, Ron Nijhuis, and Ben Bruns. “Fully Automated Generalization of a 1:50k Map from 1:10k Data.” *CaGIS 41.1* (2014): 1–13. <https://doi.org/10.1080/15230406.2013.824637>.

#### CONFERENCE ARTICLES

van Altena, Vincent, Jan Bakermans, Peter Lentjes, Ron Nijhuis, Marc Post, Marcel Reuvers, and Jantien Stoter. “Generalisation of a 1:10k Map from Municipal Data.” Vienna, Austria, 2014. [http://generalisation.icaci.org/images/files/workshop/workshop2014/genemr2014\\_submission\\_9.pdf](http://generalisation.icaci.org/images/files/workshop/workshop2014/genemr2014_submission_9.pdf).

van Altena, Vincent, Ron Nijhuis, Marc Post, Ben Bruns, and Jantien Stoter. “Automated Generalisation in Production at Kadaster NL.” *Proceedings of the 26th International Cartographic Conference*. Edited by Manfred F Buchroithner. Dresden: International Cartographic Association, 2013.

van Altena, Vincent, Marc Post, Ron Nijhuis, and Jantien Stoter. “Generalisation of 1:50k Roads Centrelines from 1:10k Road Polygons.” Dresden, 2013. [http://generalisation.icaci.org/images/files/workshop/workshop2013/genemappro2013\\_submission\\_18.pdf](http://generalisation.icaci.org/images/files/workshop/workshop2013/genemappro2013_submission_18.pdf).

Beek, Wouter, Erwin Folmer, Laurens Rietveld, Tony Baving, and Vincent van Altena. “Adding 3D GIS Visualization and Navigation to the SPARQL Query Loop.” Dar es Salaam, Tanzania, 2018.

Stoter, Jantien, Vincent van Altena, Marc Post, Dirk Burghardt, and Cecile Duchêne. “Automated Generalisation within NMAs in 2016.” *ISPRS - International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences XLI-B4* (2016): 647–52. <https://doi.org/10.5194/isprs-archives-XLI-B4-647-2016>.

Stoter, Jantien, Ron Nijhuis, Marc Post, Vincent van Altena, Jan Bulder, Ben Bruns, and John van Smaalen. "Feasibility Study on an Automated Generalisation Production Line for Multiscale Topographic Products" (2011). [http://www.gdmc.nl/publications/2011/Automated\\_generalisation\\_production\\_line.pdf](http://www.gdmc.nl/publications/2011/Automated_generalisation_production_line.pdf).

#### BOOK CHAPTERS

Duchêne, Cécile, Blanca Baella, Cynthia A. Brewer, Dirk Burghardt, Barbara P. Buttenfield, Julien Gaffuri, Dominik Käuferle, Francois Lecordix, Emmanuel Maugeais, et al. "Generalisation in Practice Within National Mapping Agencies." Pages 329–92 in *Abstracting Geographic Information in a Data Rich World Methodologies and Applications of Map Generalisation*. Edited by Dirk Burghardt, Cécile Duchêne, and William A Mackaness. Lecture Notes in Geoinformation and Cartography. Cham: Springer International Publishing, 2014.

#### BOOKS

Bakker, Nico, Vincent van Altena, Tamar Berkhout, and Mariëlle Verberck, eds. 200 jaar kaarten maken in beeld. 1st ed. 12 Provinciën / Kadaster, 2015.

#### MISCELLANEOUS

Post, Marc, and Vincent van Altena. "Recente ontwikkelingen en nieuwe toepassingen in het topografisch domein." GEO-INFO, 2015.

Post, Marc, Jan Bulder, Vincent van Altena, Jantien Stoter, Ron Nijhuis, and Ben Bruns. "Automatische generalisatie voor nieuwe BRT-productielijn Kadaster." GEO-INFO, 2012.

Stoter, Jantien, Vincent van Altena, and Marc Post. "Automated Map Generalisation- Meeting Today's Information Demands." GIM International, September 2014.





# PROPOSITIONS

1. It is (intellectually) defensible to interpret an ancient text by means of modern spatial-temporal analysis methods, taking into account the relationship between text and history and acknowledging ancient literal and cultural standards. (*This proposition pertains to this dissertation.*)
2. The quest for a fitting conjecture to emend the text in Acts 2:9 should be paused until new Greek topo- or demonyms are discovered. (*This proposition pertains to this dissertation.*)
3. In the laboratory of scientific thinking, every experiment should be possible.
4. Doing science *etsi deus non daretur*<sup>1</sup> is either irrelevant or inevitably subjective.
5. One scholar mastering multiple disciplines will be relatively more effective, efficient, and, hence, productive in research than a combination of multiple scholars mastering one discipline each.
6. There is no inversely proportional relationship between high-quality and legible research.
7. Automation should always be considered an aid to science, not an end in itself.
8. Those who are full of themselves have little room for others.

These propositions are regarded as opposable and defensible, and have been approved as such by the promoters prof. dr. J.E. Stoter, prof. dr. H.A. Bakker and co-promotor dr. J.L.H. Krans-Plaisier.

---

<sup>1</sup> ET: as if God didn't exist.





ΜΕΝΠΑΡΘΟΙΚΑ  
ΜΗΔΟΙΚΑΙΟΙΚ  
ΟΙΚΟΥΝΤΕΣ  
ΣΟΠΟΤΑΜΙΑ  
ΔΑΙΑΝΤΕΚΑΙ  
ΠΑΔΟΚΙΑΝΠ  
ΚΑΙΤΗΝΑΣΙΑ  
ΦΡΥΓΙΑΝΤΕΚ  
ΦΥΛΙΑΝΑΙΓΥ  
ΚΑΙΤΑΜΕΡΗΤ  
ΒΥΗΣΤΗΣΚΑ  
ΡΗΝΗΝΚΑΙΟΙΕ  
ΔΗΜΟΥΝΤΕΣ  
ΜΑΙΟΙΙΟΥΔΑΙΟ  
ΚΑΙΠΡΟΣΧΛΥ  
ΚΡΗΤΕΣΚΑΙΑ  
ΑΚΟΥΟΜΕΝΑΛΛΟ  
ΤΩΝΑΥΤΩΝ  
ΗΜ  
ΣΑ  
ΤΟΥΘΥ

The early Christian apologist Tertullian (ca. 160 - ca. 230 CE) queries in his *De praescriptione haereticorum*:

“What indeed has Athens to do with Jerusalem? What concord is there between the Academy and the Church? What between heretics and Christians?”

As the question raised by Tertullian is about the relation between different disciplines and possible mutual relevance, it shows resemblance with this research: what does spatial-temporal analysis have to do with the interpretation of early Christian literature? Are these two disciplines in some way compatible with each other?

This research hypothesizes that spatial-temporal analyses could bring additional and new insights to the interpretation of early Christian literature. The main question in this research is: in which way can spatial-temporal analysis methods contribute to the interpretation of early Christian literature?

To answer this question, an inventory of relevant work in related disciplines is made and a case-study approach is applied to demonstrate the application of spatial-temporal analysis methods for the interpretation of early Christian literature.

Furthermore, the potential and limitations of developed methods and data solutions are assessed. The study concludes by suggesting improvements and further developments to advance the use of spatial-temporal analysis in the interpretation of texts.

ISBN 978-94-6456-168-3



9 789464 581683

  
**TU Delft**

Delft  
University of  
Technology

  
**VU**

**VRIJE  
UNIVERSITEIT  
AMSTERDAM**