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[See table of contents](#)

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Article abstract

Michael Servetus was a theologian, physician, astrologer, and editor. In the latter capacity he edited two editions of Ptolemy's *Geographia*, to which he added some apparatus and several articles that described European countries and peoples. Following in the footsteps of medieval and Renaissance geographical writers before him, Servetus did his research less by travelling and more by reading. His "original" pieces, like the works of the authors upon whom he drew, were thus a patchwork of quotations and borrowings from earlier books. This article examines both what Servetus said about Great Britain, a place he never visited, and the nature and quality of the information that he, his predecessors, and his followers provided for their readers. Such an examination helps us understand the way a learned polymath such as Servetus worked in composing his heretical critique of the Trinity and in gaining the insights that led him to make the first European description of the circulation of blood through the lungs.

Michael Servetus's Britain: Anatomy of a Renaissance Geographer's Writing

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Michael Servetus was a theologian, physician, astrologer, and editor. In the latter capacity he edited two editions of Ptolemy's Geographia, to which he added some apparatus and several articles that described European countries and peoples. Following in the footsteps of medieval and Renaissance geographical writers before him, Servetus did his research less by travelling and more by reading. His "original" pieces, like the works of the authors upon whom he drew, were thus a patchwork of quotations and borrowings from earlier books. This article examines both what Servetus said about Great Britain, a place he never visited, and the nature and quality of the information that he, his predecessors, and his followers provided for their readers. Such an examination helps us understand the way a learned polymath such as Servetus worked in composing his heretical critique of the Trinity and in gaining the insights that led him to make the first European description of the circulation of blood through the lungs.

Michael Servetus était théologien, médecin, astrologue et éditeur. Dans ce dernier rôle, il a révisé deux éditions de la Geographia de Ptolémée, à laquelle il a ajouté un apparat critique ainsi que plusieurs articles décrivant des pays et des peuples d'Europe. Suivant les traces des écrivains géographes du Moyen Âge et de la Renaissance qui l'ont précédé, Servetus a mené ses recherches par ses lectures bien plus que par des voyages. Ses ajouts « originaux » empruntent aux travaux de plusieurs auteurs, faisant de ses textes des assemblages de citations et d'extraits pris d'ouvrages préexistants. Cet article examine ce que Servetus dit de la Grande Bretagne, qu'il n'a jamais visitée, ainsi que la nature et la qualité des informations qu'il propose aux lecteurs, qu'elles soient de son cru ou d'autres auteurs. Cet examen nous permet de mieux comprendre comment un polymathe tel que Servetus a pu composer sa critique hétérodoxe de la Trinité et développer des idées conduisant à décrire pour la première fois en Europe le passage du sang par les poumons.

In late 1534 a young man calling himself Michel de Villeneuve, a student in his mid-to-late twenties, arrived in Lyon. He was a refugee from the religious turmoil and persecution in Paris that had followed the notoriously Lutheran address of Nicolas Cop at the University of Paris in 1533 and the posting of placards denouncing the Mass in October of the following year.¹ To explain

1. Unless otherwise indicated, biographical information about Servetus comes from Roland Bainton, *Hunted Heretic*, rev. ed., ed. Peter Hughes, intro. Ángel Alcalá (Providence: Blackstone Editions, 2005).

why a Frenchman such as he spoke with a Spanish accent, Villeneuve claimed to be from Navarre.² His true birthplace, however, was in Aragon and he was actually Michael Servetus, an arch-heretic, author of *De trinitatis erroribus* (On the errors of the Trinity; 1531), and a fugitive from the Inquisition. Having travelled extensively and having studied at the universities in both Toulouse and Paris, he knew Latin, spoke French and Spanish as well as some Italian and German, and read biblical languages.³ Thus, as long as the secret of his identity was secure, Servetus was eminently employable in the third largest book publishing centre in Europe. Here he was commissioned by the firm run by the brothers Melchior and Gaspard Trechsel, whose bookselling operation had branches in Spain, to edit their new Latin edition of Ptolemy's *Geographia*. This work, published in 1535, brought "Michael Villanovanus" some modest celebrity in the world of geographers and ethnologists during the later part of the sixteenth century.

Today, however, Michael Servetus is celebrated chiefly as the Spanish theologian whose critique of the doctrine of the Trinity led to his being burned at the stake in 1553 in John Calvin's Geneva, thereby making his name a rallying cry in the emerging controversy over religious toleration.⁴ Servetus was also a pioneering anatomist and physician who—shortly before he died, and several generations before William Harvey revolutionized the scientific world with his landmark treatise on the circulation of the blood throughout the entire body—published the first European description of the transit of the blood through the lungs.⁵

2. For a discussion of Servetus's age and birthplace see Peter Hughes, "The Early Years of Servetus and the Origin of His Critique of Trinitarian Thought," *Journal of Unitarian Universalist History* 37 (2013–14): 32–99, 36–39.

3. Michael Servetus, introduction to *Claudii Ptolomaei geographicae enarrationis libri octo* (Lyon: Melchioris et Gasparis Trechsel, 1535).

4. There was an immediate controversy instigated by Sebastian Castellio's *De haereticis* (1554) and Matteo Gribaldi's *Apologia pro Michaelae Serveto* (1554), neither of which had an immediate positive effect. Much later, in the eighteenth century, writers such as Voltaire and Edward Gibbon used the case of Servetus in order to further their campaigns against the religious intolerance of their time. See François Marie Arouet de Voltaire, *Essai sur l'histoire générale, et sur les mœurs et l'esprit des nations* (Geneva: Cramer, 1756), ch. 134, and Edward Gibbon, *The Decline and Fall of the Roman Empire* (London: W. Strahan and T. Caldell, 1776–89), ch. 54, n. 36.

5. William Harvey, *De motu cordis et sanguinis in animalibus* (1628). There are other European claimants, besides Servetus, to priority in discovering the "lesser circulation." Among them is Matteo Realdo

Servetus was, clearly, a polymath, capable of significant achievement in several fields. His contributions to theology and medicine are well acknowledged, but claims that Servetus was also an important pioneer in the field of geography have been largely discounted.⁶ Nevertheless, his work in geography is important in that it gives us a picture of the state of the sciences of geography and ethnology in his time and for the insight it gives us into the methods he used in his later, more significant work in medicine and theology.

The focus of my discussion in this article is Servetus's contributions to the 1535 Trechsel edition of Ptolemy's *Geographia*,⁷ especially the geographical annotations and ethnographic descriptions that he composed, which may be looked upon as a sort of apprenticeship for his later work. His methodology may not be what we would expect, or should necessarily approve, in a modern scholar, but it is consistent with contemporary standards and was based upon the Renaissance program of reclaiming and re-establishing the wisdom and the information of the ancients.

Furthermore, we can better understand Servetus's mental universe if we follow all of the intertwined intellectual pathways that shaped his mature

Colombo, whose description of the pulmonary transit was published in *De re anatomica* (1559). The Syrian physician Ibn al-Nafis (1213–88) was actually the very first to describe the pulmonary transit, but his work on the subject, written in Arabic, was unknown in Europe. See Walter Pagel, *William Harvey's Biological Ideas* (New York: Hafner, 1967), 127–209.

6. In 1875 a German scholar, Henri Tollin, having studied the apparatus that he found attached to the 1535 edition of Ptolemy, nominated Servetus as “the father of comparative geography” (“der Vater der vergleichenden Geographie”); see Henri Tollin, “Michael Servet als Geograph,” *Zeitschrift der Gesellschaft für Erdkunde zu Berlin* 10 (1875): 182–222, 196. This claim, at first widely accepted by Servetus scholars, has come under increasing scrutiny and, ultimately, has been abandoned. Eloy Bullón y Fernandez, who in 1928 wrote the first substantial monograph on the subject, called Tollin's claim a gross exaggeration (“notoria exageración”) and demonstrated how Servetus's additions to the 1535 Ptolemy *Geographia* did not measure up when compared to the contributions of such eminent eighteenth-century pioneer geographers as Alexander von Humboldt and Karl Ritter, who much more properly might be called the founders of their field; see Eloy Bullón y Fernandez, *Miguel Servet y la geografía del renacimiento* (Madrid: Velasco, 1928), 69. Bullón and later analysts, such as Charles Donald O'Malley and Ángel Alcalá, have worked to demarcate the limits of Servetus's additions to *Geographia*, to prevent further extravagant claims on behalf of Servetus based upon work that was not actually his. See Bullón, 62; Ángel Alcalá, ed., *Miguel Servet, Obras completas: III. Escritos científicos* (Zaragoza: Larumbe, 2005), li–lxii; Charles Donald O'Malley, *Michael Servetus: A Translation of His Geographical, Medical, and Astrological Writings* (Philadelphia: American Philosophical Society, 1953), 16.

7. There is also a 1541 edition edited by Servetus that contains a little additional material.

thought. To gather these threads together we have to remember the connections that existed in his time between subjects that seem quite unrelated now. There are unities that underlie the seeming eclectic diversity of the fields that were of interest to him, having their basis in how these disciplines were categorized and practised in ancient through early modern times. For instance, Ptolemy, who wrote *Almagest* as well as *Geographia*, treated geography and astronomy as complementary aspects of the same discipline. He also wrote *Quadripartitum*, on astrology. Astrology, which was much less separated than it is now from the study of astronomy in both Ptolemy's and Servetus's time, was in those times used as a tool in the practice of medicine.⁸ And we should remember that, since ancient times, anatomy and physiology dealt with questions such as the location and the operation of consciousness, desire, reason, memory, and the soul, making the study of the human body an area of intense philosophical and theological interest.⁹

Servetus saw the respiratory system primarily as the principal portal through which God's spirit enters the body.¹⁰ He believed that the soul is contained in the blood and that the battle between good and evil takes place in cavities, or ventricles, in the brain that are surrounded by arteries containing a form of blood that has been refined into psychic spirit.¹¹ Accordingly, he published his description of the function of the lungs, heart, arteries, and blood not in a medical treatise but in his massive theological magnum opus, *Christianismi restitutio* (1553; in book 5, which dealt with the Holy Spirit).¹² Unfortunately, shortly after he had this volume printed, Servetus was arrested by the Inquisition and almost the entire press run was confiscated and destroyed by both Catholic and Protestant authorities. Because only three copies survived

8. Roger French, *Medicine before Science* (Cambridge: Cambridge University Press, 2003), 132–34.

9. Every philosopher or theologian who prepared a commentary on Aristotle's *De anima* (including Albertus Magnus, Thomas Aquinas, and Duns Scotus) was interested in these questions.

10. Servetus believed that a smaller portion of spirit and air enters the cavities of the brain more directly through gaps in the ethmoid bone. See Michael Servetus, *Christianismi Restitutio* (Hagenau: s.n., 1553), 173, 175.

11. Servetus, *Christianismi restitutio*, 174, 178.

12. Servetus, *Christianismi restitutio*, 168–78.

this holocaust,¹³ it was not until almost 1700 that Servetus began to be discussed by historians of medicine.¹⁴

Servetus discovered his interest in medicine in the course of his editorial work in Lyon. There he met the humanist physician, Symphorien Champier, one of the authors published by the Trechsels. In 1536 he graduated from editing medical literature to writing a pamphlet in defence of Champier, against the Lutheran physician Leonard Fuchs, entering into a theological and medical controversy that dealt with both salvation by faith and the origin of syphilis.¹⁵ Probably under the sponsorship of Champier, Servetus then began studying medicine. For a number of years after he had embarked on this new interest of his, Servetus continued working for the Trechsels, editing a new edition of Sante Pagnini's Bible,¹⁶ correcting texts in Hebrew, Greek, and Latin, as well as preparing his second edition of Ptolemy's *Geographia*.

Like other works of Greek literature, Ptolemy's *Geographia* had only recently been rediscovered in western Europe. The first Latin translation dates from around 1406, and the first printed version of it, in Latin, from 1470.¹⁷ Sixteenth-century interest in Ptolemy was not merely antiquarian or historical, but actual and modern. Just as medicine in Servetus's time was based upon the works of the second-century physician Galen, so was early modern geography founded on the surviving works by Ptolemy. In an age bent on the recovery of ancient knowledge and wisdom, *Geographia* was considered to be both relevant and authoritative. Moreover, it emerged from a thousand years of neglect to serve a European culture that, in the dawning years of the age of exploration, was ripe with new curiosity about the distant corners of the world.

13. These copies now reside in Vienna, Paris, and Edinburgh. The story of their survival is told in David Cuthbertson, *A Tragedy of the Reformation* (Edinburgh: Oliphant, Anderson & Ferrier, 1912) and Lawrence Goldstone and Nancy Goldstone, *Out of the Flames* (New York: Broadway Books, 2002).

14. The first published notice was written by William Wotton, *Reflections upon Ancient and Modern Learning* (London: Printed by J. Leake for Peter Buck, 1697), 229–30. He indicates that there was a chain of unpublished communication on the subject prior to this.

15. Michael Servetus, *In Leonardum Fuchsiū apologia* (Paris: n.p., 1536).

16. Michael Servetus, ed., *Biblia Sacra ex Sanctis Pagnini tralatione* (Lyon: Apud Hugonem à Porta, 1542). The first edition, also from Lyon, was Santes Pagnino, *Veteris et Novi Testamenti nova translatio* (1527).

17. Wilberforce Eames, *A List of Editions of Ptolemy's Geography, 1475–1730* (New York: n.p., 1886).

Thus Servetus was not the first editor of a Latin edition of Ptolemy's *Geographia*. His edition built upon the labour of Willibald Pirckheimer, whose edition of *Geographia* was issued in 1525. He also consulted the Latin editions of Leonard Fries (1522) and Johannes Werner (1514).¹⁸ Just as he got his start in medicine through editing, Servetus began his geographical education on the job, while pursuing the task of correcting and updating Ptolemy. Not one to quietly proofread and invisibly correct, he must have felt that he had to leave his mark upon this culturally important work.

In his introduction Servetus wrote, "I have employed all my skill and all the resources that I can muster in order to correct textual corruptions as well as to explain and expand upon the information given to us" by Ptolemy ("Quod ad nos attinet, vires omnes ac nervos intendimus, in corruptis emendandis, et reclusis explicandis").¹⁹ Accordingly, in order to update and improve Pirckheimer's edition, Servetus set himself three tasks: (1) to restore the original Ptolemaic names and coordinates that in the course of time, transmission, and transliteration had become corrupted; (2) to add better-known classical and familiar modern names to places that corresponded with those mentioned by Ptolemy—"in the margins, since I wish to preserve Ptolemy's text as it was originally written" ("in margine quidem, nam ipsum Ptolemaei scriptum inviolatum"); and (3) to edit or revise the modern essays that had become attached to the various maps. (It should be noted that Servetus did no work upon the maps themselves, which were all retained from the previous edition.)

In order to keep this analysis of Servetus's textual alterations and additions within a reasonable compass, I have chosen to confine close examination of his work on Ptolemy's *Geographia* to the sections that are concerned with Great Britain.²⁰ I have made this particular choice because the modern essay on Britain was one of the few to which Servetus made substantial modifications, and because it is extremely unlikely that he ever travelled there. For most of the

18. Willibald Pirckheimer, ed., *Claudii Ptolomaei Alexandrini geographicae enarrationis libri octo* (Argentorati: Grieninge, 1525); Leonard Fries, ed., *Claudii Ptolomaei Alexandrini mathematicorum principis. Opus geographiae* (Strasbourg: Ioannes Grieninger, 1522); Johannes Werner, ed., *Claudii Ptolemei viri Alexandrini mathematicae disciplinae philosophi doctissimi geographicae* (Nuremberg: Johann Stuchs, 1514).

19. All translations are either my own or drawn from works co-translated by Peter Zerner and me.

20. Servetus, ed., *Claudii Ptolomaei geographicae* (1535), 26–28 and the essay on the back of European Map 1.

other essays that he newly composed or extensively revised—Spain, France, Germany, Italy, and Sicily—he had first-hand information.²¹ In his introduction he boasted, “I have visited all these lands, and know their languages quite well” (“quorum omnium regiones vidimus, et linguas utcunque novimus”). His essay on Spain, quite different in nature from all of the others, is largely a personal rant, with no little vitriol, entitled “On Spain and a Comparison of It to France” (“De Hispania et eius ad Galliam comparatione”).²² It appears to have been entirely written by him, relying little on other sources. When he wrote the essay on England and Scotland, however, Servetus had to depend almost entirely on literary sources. This gives us the clearest picture of Servetus's emerging scholarly methodology and, at the same time, draws a picture of how Britain was perceived, from the outside, by an earnest early sixteenth-century Renaissance mind.

In his edition of Ptolemy's *Geographia*, in the section devoted to the coordinates of the place names in Great Britain, Servetus altered five of the settlement names used in the previous (Pirckheimer) edition, based upon his reading and transliteration of the Greek. Judging by the laconic equivalents of modern footnotes embedded in his marginal and other notes, he must have consulted, in addition to the Fries and Pirckheimer editions, at least four older versions, codices which he referred to as *Graecus* (Greek), *manuscriptus* (manuscript), *antiquus* (old), and *regius* (royal).²³ The codex he calls *Graecus* was almost certainly the Greek edition published by Froben in 1533 with an introductory epistle by Erasmus²⁴ to which Servetus refers in his own introduction.

Four of Servetus's five alterations were slight improvements on Pirckheimer's versions. The most important of these was to change *Vinnonium*

21. One can gather the extent of Servetus's changes to the various modern essays by comparing the 1535 edition of Ptolemy to the 1522 Pirckheimer and 1525 Fries editions. There is no essay on Sicily in these earlier editions. Servetus also made minor changes to the articles on Asia, Arabia, and the New World and added some significant new material to the essay “De Mahometo et Turcarum origine et moribus” (On the origin and customs of Muhammad and the Turks) that is printed along with the modern map of Asia Minor.

22. Servetus, ed., *Claudii Ptolomaei geographicae* (1535), the essay on the back of European Map 2.

23. Servetus, ed., *Claudii Ptolomaei geographicae* (1535), 25, 31–32

24. Hieronymus Froben and Nikolaus Episcopus, eds., *Claudii Ptolomaei Alexandrini philosophi cum primis eruditi, De geographia libri octo* (Basel: Hieronymus Froben, 1533).

to *Vinnovium* (now identified as Binchester in Durham). One change, *Rage* to *Rege*—the actual Roman town was *Ratae* or *Rhagae*, corresponding to modern Leicester—represented a slight move away from both the Roman spelling and the Greek (ρατε or ραγε). In one case the spelling in neither edition (*Calcua/Caleva*) was close to the Greek spelling (*ναλκούα*) in the Froben edition, but was drawn from the Greek (*καλκούα*) and Latin spellings in the 1513 and 1522 versions.²⁵ Servetus's rendering (taken from Werner and Fries) closely reflects the name of the Roman town, *Calleva Atrebatum*, that has since been excavated at Silchester (near Reading).

Servetus identified *Caleva* as Oxford, where we now believe there was no Roman settlement. He wrongly places *Caturactonium* (Catterick) in Carlisle (Roman *Luguvalium*), thinks *Mediolanium* (Whitchurch) is Manchester (Roman *Mancunium*), believes *Devana* (Chester) to be Doncaster, and identifies *Darvernum* (Canterbury) with nearby Dover (Roman *Portus Dubris*). But, at the same time, he correctly and helpfully identifies *Eboracum* as York, *Lindum* as Lincoln, *Vrolanium* as St. Albans, *Londinium* as London, *Aquae Calidae* as Bath (Roman *Aquae Sulis*), and *Isca* as Exeter. He is right about *Camulodanum* being Colchester, but he hedges his bets by also calling it Winchester (which he more correctly also links to *Venta*, the Roman *Venta Icenorum*).²⁶ Centuries later, archaeology has aided us greatly in better matching Ptolemy's list of settlements with actual Roman forts, towns, and cities. Out of the Ptolemaic names that we can now identify as Romano-British settlements, Servetus makes a correct identification about half the time. No one, even today, can make much out of the place-names Ptolemy assigned to locations in Scotland. Servetus's accuracy, and our current knowledge, both increase as we move south.

Servetus, of course, fares better against other sixteenth-century geographers. Mercator, in his 1584 edition of *Geographia*, did not emulate Servetus in making correspondences between ancient and modern names.²⁷ But other later editors of Ptolemy, such as Sebastian Münster (1540, 1542, 1545) and Joseph Moletius (1562), did copy his place-name identifications, making only a

25. Servetus, ed., *Claudii Ptolomaei geographicae* (1535), 27; Werner, ed., 12v; Fries, ed., 47v.

26. Pirckheimer, ed., 27–28.

27. Gerardus Mercator, ed., *Geographiae libri octo* (Cologne: Typis Godefridi Kempensis, 1584). See Nicolas Crane, *Mercator: The Man Who Mapped the Planet* (London: Phoenix, 2002), 240–41.

few additions and adjustments.²⁸ Entries in two encyclopedic works published by the Estienne firm, Robert Estienne's *Dictionarium propriorum nominum* (Dictionary of proper names; 1541) and Charles Estienne's *Dictionarium historicum ac poeticum* (Historical and poetical dictionary; 1553), make a set of identifications that at times seem to be copied from those in the Servetus Ptolemy while in other cases are sharply different. A 1546 revision of Ambrogio Calepino's *Dictionarium* (Calepino himself died in 1510) contains a number of identifications that are also similar to those of Servetus, but these, as a whole, are closer to the variants printed by the Estiennes. Interestingly, in the case of the Ptolemaic name *Orrea* (possibly referring to the Caledonian Roman fort *Horrea Classis*) all of these dictionaries, along with Servetus, identify it with modern Newcastle-on-Tyne and all add "ubi carbonum copia" (where coal is plentiful).²⁹ This additional piece of information may be appropriate in a dictionary but seems rather odd and superfluous in the spare place-name lists found in the various sixteenth-century editions of Ptolemy.

All of this makes one wonder if there could be an earlier source from which Servetus and Estienne each drew the bulk of their information. It is not to be found in the earlier editions of *Geographia* upon which Servetus based the Trechsel edition. If such a source exists, it might further limit the claim that Servetus made a contribution to the study of geography. But I have yet to find such a source. There is a short list of town and city name correspondences in Fries's 1522 edition of *Geographia*. Bainton speculates that Servetus may have got the idea for his marginal annotations from this source.³⁰ However, since the list is only three pages long and contains no British place names, it could not have been a major source of Servetus's information.

On the other hand, Servetus claimed the Ptolemaic-modern place name correspondences as his own contribution—"scriptorum autoritate, propria experientia, certissimus coniecturis, quoad eius fieri potuit sumus connixi" (I have relied, as much as possible, on authoritative writings, personal experience, and the best educated guesses)—and hoped that "nostram operam ad provinciarum orbis notitiam, et praesentium cum praeteritis collationem, [...]"

28. Sebastian Münster, ed., *Geographia universalis, vetus et nova* (Basel: Heinrich Petri 1540; 1542; 1545); Joseph Moletius, ed., *Geographia Cl. Ptolemaei Alexandrini* (Venice: Vincenzo Valgrisi, 1562).

29. Servetus, *Claudii Ptolomaei geographicae* (1535), 27.

30. Bainton, 58.

maxime facere” (the fruit of my labour will contribute greatly to knowledge of all the regions of the world, as well as to an acquaintance with past [geography] as compared with that of the present). It is possible, then, that Servetus, unaided, drew his place name identifications directly from the many sources that he cites in the marginal and intertextual notes. This would, however, have been miraculously swift work as he may not have been engaged to work for the Trechsels until late 1534 and their Ptolemy was issued sometime during the following year.

The list of sources, mainly for place-name identifications, that can be compiled from Servetus’s notes for the whole of the 1535 Ptolemy *Geographia* is a formidable one. The ancient authors he mentions include, at least, Agathias Scholasticus, Ammianus Marcellinus, Apollonius, Apollodorus of Artemita, Arrian, Artemidorus Ephesius (as quoted by Strabo), Athenodorus Cananites (as quoted by Strabo), the Bible, Caesar, Callimachus, Claudian, Quintus Curtius Rufus, Diodorus Siculus, Dionysius Chalcus, Eratosthenes, Euclid, Eusebius of Caesarea, Sextus Rufus, Hellanicus, Herodotus, Homer, St. Jerome, Josephus, Juvenal, Lucan, Macrobius, Marinus of Neapolis, Martianus Capella, Ovid, Pliny the Elder, Plutarch, Polybius, Pomponius Mela, Priscus of Panium, Priscian, Procopius, Sallust, Silius Italicus, Solinus, Statius, Stephen of Byzantium, Strabo, Tacitus, Thucydides, Valerius Maximus, Virgil, and the anonymous author of *Historia Augusta* (Augustan history).³¹ For many of these authors a number of works would have been consulted. Although Servetus rarely mentions the works themselves, these can often be readily identified. For example, when Pliny is mentioned the reference must be to *Naturalis historia* (Natural history). In the case of Tacitus, it is clear that three works—*Agricola*, *Germania*, and *Annales*—must have been consulted by the compiler of these notes.

The list of Renaissance authorities that can be culled from Servetus’s notes, while shorter, is, in its own way, even more impressive: al-Farghani, Petrus Apianus, Ermolao Barbaro, Marin Barleti, Flavio Biondo, Boccaccio, Ludovico Boccadiferro, Jacopo Bracelli, Brochardus monachus, Ca’ da Mosto, Paulo Giovio, Haytonus, Raffaello Maffei of Volterra (Volaterranus), Manuel

31. This list is not quite complete as I am sure that there are other names to be found by further exploring the marginal and intertextual notes. Bullón, in his much shorter list, claims to have found reference in Servetus’s notes to Aristotle, Cicero, Cnaeus Pompeius Trogus, and Lucius Annaeus Florus as well; see Bullón, 60.

I of Portugal, Peter Martyr d'Anghiera, Enea Silvio Bartolomeo Piccolomini (Pius II), Marco Polo, Pomponius Laetus, Marcus Antonius Coccius Sabellicus, Joachim Vadian (von Watt), Ludovico di Varthema, Amerigo Vespucci, and Jacob Ziegler.³²

Accordingly, it seems likely that Servetus had considerable help in preparing his notes for the 1535 *Geographia*. If the bulk of the information did not originate in some earlier published source, then it may have been partly, or largely, the work of some other scholar or scholars who had been earlier engaged by the Trechsels. Perhaps the source books, with many or most of the relevant passages already marked, existed as a collection in the possession of, or available to, the publishers. With such help it seems more probable that Servetus could have accomplished the task of editing the Ptolemaic work in the few months that were available to him. Alternatively, Servetus might have been engaged by the Trechsels when he visited Lyon earlier, possibly in 1532,³³ and received the Ptolemy assignment then or while he was a student in Paris. For the Trechsels may have acquired possession of the set of woodcuts of the Ptolemy maps that had been prepared by Martin Waldseemüller, and used in previous editions of *Geographia*, from the estate of the German publisher Johann Grüninger as early as 1532. Yet the fact that Servetus completely rewrote only a fraction of the modern essays strongly argues that Servetus had only a limited budget of time in which to complete his assignment.

These modern essays have long been a feature of particular interest to those studying the work of the various editors of *Geographia*. The bulk of the Ptolemy text itself, consisting of lists of places with global coordinates, useful as it was, and made more useful by the addition of the marginal notes, made fairly dry reading for most readers, from the sixteenth century onwards. The maps, which conjured up fantasies of far-away places, seemed to demand descriptive,

32. In addition, on his short list of Servetus's authorities, Tollin claims to have found reference to Joannes Jovianus Pontanus and Mathias de Michou (Maciej Miechowita); see Tollin, 192. And we could increase this list even more if we were to add the authors from whose works passages were copied, often uncredited, into the modern essays.

33. According to his testimony while being interrogated in Geneva, on trial for his life, Servetus travelled to Lyon in 1530. But he also claimed to have gone there directly from Toulouse and before he went to Basel and Strasbourg, which cannot be true. It may well be that Servetus went through Lyon after fleeing Strasbourg and before he arrived in Paris. If so, that would have had to have been in 1532. *Actes du procès de Michel Servet*, in *Calvini opera*, vol. 8. (Brunswick: n.p., 1870), 767.

ethnographic texts that would inform readers of the conditions of life and culture to be found in these countries. Fortunately, the ancient Greeks and Romans provided Renaissance revivers of Ptolemy with this kind of literature as well. Strabo, in *Geographica*; Pomponius Mela, in *De situ orbis* (A description of the world); Pliny the Elder, in *Naturalis historia*; Solinus, in *De mirabilibus mundi* (The wonders of the world); and Isidore of Seville, in *Etymologiae*, wrote surveys of the various lands known to them. And bits and pieces of regional lore could be picked up in other ancient and early medieval works, such as Julius Caesar's *De bello gallico* (The Gallic War), Tacitus's *Agricola*, and Bede's *Historia ecclesiastica gentis Anglorum* (The ecclesiastical history of the English people).

But the early editors of *Geographia* were not content merely to pair up Ptolemy and the likes of Strabo. They had, as well, at their disposal several more recent bodies of literature, written during the later part of the Middle Ages and the early Renaissance. They could mine the works of world chroniclers such as *Chronicon* of the early thirteenth century and *Chronica* of Johannes Naukler, published in 1516. They could also consult histories of particular regions. In the case of Britain, they had available, among other things, Geoffrey of Monmouth's highly fictional *Historia regum Britanniae* (History of the kings of Britain), written in the twelfth century, and *De gestis Scotorum* (The deeds of the Scots; 1521), the history of England and Scotland written by the scholastic theologian John Mair (Major). They could also examine works of cartography and descriptive geography such as Pierre D'Ailly's *Imago mundi* (A representation of the world; 1410), Heinrich Glarean's *De geographia* (1527), Joachim Vadian's *Epitome trium terrae partium, Asiae, Africae et Europae* (Highlights of three parts of the earth: Asia, Africa, and Europe; 1534), and Jacob Ziegler's *Quae intus continentur Syria, Palestina, Arabia* (Containing Syria, Palestine, Arabia etc.; 1532). Then there were the early encyclopedias, such as Bartolomeus Anglicus's thirteenth-century *De rerum proprietatibus* (On the properties of things) and Calepino's *Dictionarium* (1510). Finally, there was the pioneering, and recent, work of ethnography: Johann Boemus's *Omnium gentium mores, leges et ritus* (Customs, laws, and rites of all nations; 1520).

These books were not, of course, independent sources. Among the Renaissance writers there was so much copying from the earlier sources, and from each other, that establishing the genealogy of the information contained in the descriptive essays added to the sixteenth-century editions of Ptolemy

would be a major undertaking. To indicate what I am talking about, let me give an example: the claim, passed on by Servetus, that Britain was called Albion because the white cliffs of Dover were the first things visible to those who crossed the channel to Britain from the continent.

The earliest source that I have so far found for this is the thirteenth-century encyclopaedist, Bartolomeus Anglicus: “quondam Albion ab albis rupibus alonge circa maris litora apparentib[us] est vocata” (it was formerly called Albion from the white cliffs near the seacoast which are visible from a distance).³⁴ This bit of geographical place-name etymology, using most of the same words, is also found in a number of other late medieval and early Renaissance reference works.³⁵ But Calepino, who in the early sixteenth century paraphrased Bartolomeus, or possibly some intermediate source—“quondam ab albis rupibus: quas mare undique abluit Albion dicebatur” (it was formerly called Albion from the white cliffs which were everywhere washed by the sea)³⁶—is the source from which a much later writer derived this information. In the nineteenth century, James Grant, misreading the contents of the entry “Anglia” in the 1558 edition of Calepino’s *Dictionary*, wrongly credited the “ab albis rupibus” etymology to Pliny the Elder’s *Naturalis historia*, an incorrect attribution that can be found in countless books and articles to this day.³⁷ Calepino’s wording, and that of Bartolomeus, was then adapted by Boemus—“quondam ab albis rupibus, [quae] ad eam nauigantibus primo apparent, Albion dicebatur”—from whom it was then copied by Pirckheimer word-for-word into the 1525 edition of Ptolemy.³⁸ Servetus, when he edited the 1535 edition

34. Bartolomeus Anglicus, *De rerum proprietatibus* (Nuremberg: Per Fridericus Peypus impressum, 1519), bk. 15, ch. 14.

35. For example, “Primitus haec insula vocabatur Albion ab albis rupibus circa littora maris a longe apparentibus” (At first this island was called Albion from the white cliffs near the seacoast which are visible from a distance). Ranulph Higden, *Polychronicon* (London: Longman, 1865 and 1869), bk. 1, ch. 39.

36. Ambrogio Calepino, s.v. “Anglia” (England), *Dictionarium* (Paris: Ponset le Preux, 1510).

37. James Grant, *Thoughts on the Origin and Descent of the Gael* (Edinburgh: A. Constable and Co., 1814), 264. Jannoc [sic], in “Albion and Her White Roses,” *Notes and Queries* (5 Sept. 1863): 193–94, tried to clear up the confusion, but clearly to no avail.

38. “It was formerly called Albion from the white cliffs, which are the first things people see when sailing to it.” Johann Boemus, *Omnium gentium mores, leges et ritus* (Augsburg: In officina Sigismundi Grim[m], 1520), 134v. Servetus, ed., *Claudii Ptolomaei geographicae* (1525), “De Anglia.”

of Ptolemy's *Geographia*, slightly reworded the Boemus text—"Haec primo Albion, ab albis rupibus (quae primum illuc navigantibus apparent) dicta est" (it was first called Albion, from the white cliffs, which are the first things people see when sailing there).³⁹ All retained the crucial verbal formula, that Albion was thus called "from the white cliffs" (ab albis rupibus).

From our modern point of view, we might be tempted to condemn Calepino, Boemus, Pirckheimer, and Servetus—as well as later geographers and reference writers, such as Sebastian Münster and Charles Estienne, who copied Boemus and Servetus—for their appropriation of ideas and wording, which we might today label plagiarism. The major difference in the later writers is that they are more likely to mark out quotations and to credit their sources.⁴⁰ But Servetus himself only gave source credit when it was important to him to invoke the authority of the original author. He took the trouble to credit Caesar, Plutarch, and Bede, but did not think it necessary to acknowledge more recent authors, even Erasmus. Boemus, in particular, was considered fair game by subsequent writers and editors as a source not only of information but of huge blocks of unaltered prose. Servetus got about 30 percent of his article on Great Britain and Ireland from Boemus. This, however, represented an improvement—by our standards—from the preceding edition of Ptolemy. Its editor, Pirckheimer, took virtually everything in his essay on these islands from Boemus's book.

The reference works being constructed in those days remind me of a huge encyclopedia in our own time: *Wikipedia*. In *Wikipedia*, whole articles are taken from reference works in the public domain, often written a hundred or more years ago. This, ironically, gives our current electronic information a rather antique cast. In some entries the *Wikipedia* text is spliced together from various places without the sources of specific texts being identified. And the creators of other, lesser reference websites feel no compunction whatever about displaying *Wikipedia* articles, in whole or in part. In this age of information explosion, it seems that we may have, in our methods, regressed a half-millennium back to the early days of printing—admittedly an exciting time and, except for the

39. Servetus, ed., *Claudii Ptolomaei geographicae* (1535), "De Britannia et Hybernia" (On Britain and Ireland).

40. For example, Paul Merula, *De Gallia* (Amsterdam: Apud Guilielmum Blaev, 1636), 101, quoting the passage in Servetus's article on Gaul on the purported power of anointed French kings to cure scrofula by touch.

ever-present bubonic plague, not a bad time to regress to—and have, once again, resorted to using expedients that late Renaissance-era authors, editors, and publishers turned to in order to rapidly fill the great public demand for information.

Then, as now, what passed for information in reference books was, at best, of uneven quality. Servetus included only a few bits of historical narrative in his entry on Britain. All of these are now known to be fictional. For example, concerning the founding of Britain he says,

Postea Britannia appellabatur a Bruto Sylvii Posthumi latinorum Regis filio Duce quorundam Troianorum, qui quadraginta annis post Troiam a Graecis deletam, classe in hanc insulam venere: atque Aborigines, tunc eam incolentes ad unum occidere.

(Afterwards it was called Britain by Brutus Sylvius Postumus, son of [Aeneas,] the king of the Latins, and leader of a band of Trojans, who, forty years after the destruction of Troy by the Greeks, came to this island with a fleet and then killed the indigenous people down to the last man.)

Following the example set by Virgil's *Aeneid*, which relates a Trojan origin story for the people of Rome, an early ninth-century work, *History of Britain*, attributed to the Welsh monk Nennius, related this story, providing a Trojan genealogy for the people of Britain.⁴¹ It was retold more elaborately a few centuries later by Geoffrey of Monmouth, and, from him, taken up by others.⁴² This pseudo-history was debunked by the expatriate Italian scholar Polydore Virgil in his pioneering book of English history, *Anglica historia*, first published in 1534, which was probably too recent to have been consulted by Servetus.⁴³

At the end of the section on Ireland, in the 1541 edition of *Geographia*, Servetus added an origin story for the Irish, claiming that Iberians, from what is now northwest Spain, sailed north, on a three day's voyage, to colonize the

41. Nennius, *Historia Britonum* (London: Bertram, 1758), ch. 2–4.

42. Geoffrey of Monmouth, *Historia Britonum* (London: Nutt, 1844) bk. 1, ch. 3 – bk. 2, ch. 1. See Higden, bk. 2, ch. 27.

43. Polydore Virgil, *Anglicae historiae libri XXVI* (Basel: Bebelius, 1534), bk. 1.

island.⁴⁴ This legendary migration is set in historical times, and, as such, has long been dismissed.⁴⁵ (Interestingly, arguments have been made recently, from DNA evidence, for a prehistoric Iberian origin for the early people of both Ireland and Great Britain.⁴⁶)

Admittedly, Servetus made no claim to be writing British or Irish history. He selected stories that purported to explain the origin of place names: Britain, England, Ireland, Scotland, and Albion. He appears, like the authors he borrowed from, to take no notice of the fact that the information he was providing concerning dress, customs, diet, longevity, agriculture, flora and fauna, and mineral resources came from books written in different periods of history. It is as if the current condition of the United States and Canada were to be presented to interested European readers by excerpts from William Bradford's *Of Plymouth Plantation*, Alexis de Tocqueville's *Democracy in America*, the Durham Report, and Susanna Moodie's *Roughing It in the Bush*. Nevertheless, on the whole, the information on Britain presented by Servetus seems rather more accurate than—given his outdated, motley, and unreliable sources—it has any right to be. For example, while he did take from Boemus the inaccurate old chestnut about the absence of bees in Ireland, which derives originally from ancient sources,⁴⁷ he was nevertheless aware of the then quite recent extinction of wolves in England. Perhaps he was personally educated on the subject by someone who was better informed than he was.

Could Servetus have made a trip to England? We do not know that he did, but, at the same time, we have no positive knowledge that he did not. He studied for several years in Paris, which is not that far from England, so it is possible that he ventured there on at least one occasion. If he did go there, or if, more likely, he met people from Britain while in France, he may have been

44. "Ab Hyberno Hispano, tridui navigatione in eam vecto dicti sunt Hyberni. Unde factum, ut in plerisque ritum eorum referant Hispanorum, qui eis sunt vicini, nempe Cantabrorum." (From Hibernian Spain the Irish were said to have been conveyed [to Ireland] by a three days' voyage. Whence it happens that a good many of their ceremonies are reminiscent of those of the Spaniards, the Cantabrians, who were their neighbours.)

45. One such legendary telling is in Nennius, ch. 6–8.

46. Stephen Oppenheimer, *The Origins of the British: A Genetic Detective Story* (London: Constable and Robinson, 2006).

47. Solinus, *De mirabilibus mundi* (Venice: Theodorus de Ragazonibus, 1491), ch. 22. See John O'Donovan, "Pre-Christian Notices of Ireland," *Ulster Journal of Archaeology* 8 (1860): 239–51, 249–51.

dissuaded from any protracted sojourn there by the language. For, in his essay on Britain in *Geographia*, Servetus wrote, “Anglorum lingua ex populorum diversitate composita intellectu scientiaque loquendi difficilima est” (The language of the English, which is a combination of the tongues of a variety of peoples, is extremely difficult to comprehend and speak knowledgeably).

Servetus has been taken to task by writers of the past few centuries for the rather unflattering things that he said not only about his Spanish countrymen, but about the Scots and Irish as well. In his original essay on Spain he said that almost all learned Spaniards were exiles like himself. On the other hand, the disparaging comments about the Scots and Irish were largely copied from Boemus, including the following:

Invidi natura ac caeterorum mortalium contemptores: ostentant plus nimio nobilitatem suam, ut in summa etiam egestate suum genus ad regiam stirpem referant: gaudent mendacio, [...] Gens tamen inhospita, inculta, et crudelis. Venationi et ludis, magis quam agrestibus operibus dediti.

([The Scots] are jealous by nature and despise all other mortals. They are far too inclined to show off their own noble lineage, so that even in the most dire poverty they connect their descent to the royal line. They take pleasure in pronouncing falsehoods. [...] The Irish are inhospitable, uncouth, and savage. They are more devoted to hunting and athletic contests than to agricultural labour.)

Of course Servetus must bear some responsibility for anything that he included in his publications, whether he wrote it himself or merely chose to retain it. He found himself subject to strong criticism, soon after the 1535 edition of Ptolemy's *Geographia* was issued, for some sarcastic word-play on the subject of Palestine that in fact originated in the 1522 edition edited by Lorenz Fries, who wrote,

Scias tamen, lector optime, iniuria aut iactantia pura, tantam huic terrae bonitatem fuisse adscriptam, eo quod ipsa experientia, mercatorum et peraeagre proficiscentium, hanc incultam, sterilem, omni dulcedine

carentem depromit. Quare promissam terram, pollicitam, et non vernacula lingua lauda[n]tem pronuncies.

(Nevertheless know, good reader, that it is quite incorrect and a complete exaggeration to attribute so much goodness to this land, which the experience of merchants and travellers shows to be uncultivated, sterile, and devoid of every charm. Hence, using the vernacular tongue, you may call it the promised land, in the sense that it was promised, and not that it was promising.)⁴⁸

Because of the furor stirred up by this passage, Servetus was compelled to remove it from the 1541 edition. This did not prevent the passage from being listed as one of the many offences with which he was charged when he was put on trial for heresy in Geneva in 1553.⁴⁹

There are a few even-handed things that Servetus said about the Scots and their relationship to the English, whose wording I have so far not been able to trace to any literary antecedent. It may well be that these are items that Servetus learned as current information. He writes, “Angliae et Vualiae rex unus imperat, Scotiae alter” (One king rules England and Wales, and another rules Scotland). A little later he confides that the Scots are “Gallis amicissimi, Anglorumque Regi maxime infesti” (very friendly with the French, but extremely hostile to the English King). Distinguishing those Scots who are not wild highlanders, he says, “Reliqui vero Scoti et Angli communi lingua civiliter degunt” (However, the rest of the Scots and the English, sharing a common tongue, conduct themselves in a civilized way).

Another morsel of information about Britain that I can attribute with moderate confidence to Servetus himself is an observation about the current religious situation in England that he added to the 1541 edition. He said, “Nuper autem ab ecclesia Romana desciverunt sicut bona Germaniae pars” (Lately, however, [the English] have fallen away from the church of Rome, as has a good part of Germany). At the time this must have been fairly common knowledge, requiring only awareness of current events in politics and religion,

48. The vernacular was German, Fries's language. The implied pun here is on the German word, *gelobte*. See the discussion in Alexander Gordon, “Miguel Serveto-y-Reves,” *Theological Review* 15 (1878): 281–307, 294, and Bainton, 61–62 and 182–83.

49. *Actes du procès*, 727, 732, 738, 741, 745.

and no special literary source or even an informant with special knowledge of the British.

Servetus's overall method seems to have been one of critical collage. He used the technique of cut-and-paste to appropriate what appeared to him the best information, whether deriving from ancient, medieval, or relatively modern sources, and assembled it to form a new pattern. Unlike Pirckheimer, he did not select his material entirely from one source, but copied and adapted sentences and phrases from quite a number of pre-existing texts, including, but not limited to, Caesar's *Gallic War*, Plutarch's *Moralia* (On customs and mores), Pomponius Mela, Solinus, Bede, Higden's *Polychronicon*, *Eulogium historiarum*, Philip of Bergamo's *Supplementum chronicarum* (Chronicles supplement), Andreas Franciscius's *Ritratti del regno de Inghilterra* (Portraits of the kingdom of England), Erasmus's *Moriae Encomium* (The praise of folly), Boemus, Mair's *Historia*, Fries's 1522 edition of Ptolemy's *Geographia*, and Johann Schöner's *Opusculum geographicum* (Little book of geography). And though Servetus used much of the Boemus material employed by Pirckheimer in the 1525 Ptolemy, he did not use all of it and helped himself liberally to Boemus text not already borrowed by Pirckheimer.

The picture that Servetus presents in his essay on Britain is one of a warm temperate region, with long days in the summer. The land is filled with agricultural and pastoral bounty, and with an abundance of game and fish. He lists the natural resources: metals, precious stones, and coal. The people are ferocious fighters, very musical, and hearty eaters. Interestingly he omits a mention of the comeliness of the women that was in the Pirckheimer edition, but he passes on an ancient anecdote, drawn from Bede, and also related in Boemus, about the general beauty of the English:

Caeruleis sunt oculis, et facie adeo sunt venusta, et statura procera, ut Beatus Gregorius cum forte Anglorum pueros Romae videret venales (alludens patriae vocabulo): Bene inquit Angli dicuntur quia vultu nitent ut Angeli, oportet illis iter salutis aeternae administrare. Quod factum est (ut ait Beda) anno a virgineo partu 156. Lucio Britannorum Rege id per epistolam ab Eleuterio Papa postulante, Antonio et Commodo Romae imperantibus.

(They are blue-eyed, their faces are comely, and they are tall in stature, so much so that the blessed [Saint] Gregory, when he chanced to see some English boys for sale in Rome, alluding to the name of their country, exclaimed, “They are well called Angles, because their faces shine like angels. They must be shown the road to eternal salvation.” This happened, as Bede relates, in the year 156 after the Virgin Birth, when Lucius, King of the Britons, in a letter, requested this from Pope Eleutherius. This was when Anthony and Commodus were emperors of Rome.)

Servetus must have got the latter part of this passage, which purports to date the anecdote, from another secondary source, and not directly from Bede, because he seems unaware that the two passages are unrelated, come from different centuries, and are found in quite separate parts of Bede’s history.⁵⁰

Coming from so many asynchronous sources, his essay is a patchwork digest of information and misinformation about the British Isles. We cannot today believe his claim, that the British in his time were especially long-lived, if his source was Plutarch. Nevertheless, Servetus’s essay on Britain does succeed, perhaps more than some other works of the same ilk, in giving us a perspective of what those people of the early modern period, who had no direct personal or even second-hand acquaintance with Britain, thought about the conditions prevailing in England, Ireland, Scotland, and Wales. As a contribution to the discipline of geography, if it was, as Bullón asserted, a link in “la áurea cadena del progreso científico” (the golden chain of scientific progress),⁵¹ Servetus’s Ptolemy was a modest one. It stands more as a representative sample of the kind of work that scholars educated according to the backwards-looking principles of the Renaissance were beginning to produce when they were called upon, in an age of exploration, to look more widely around themselves and to navigate intellectual seas as yet unexplored.

Aside from any contribution to geography and ethnography Servetus may have made in his presentation of Trechsel’s Ptolemy, the editorial labour that was required of him enhanced his own education and helped him to develop the scholarly research skills that he used in crafting his more significant and original medical and theological works. Comparing his earliest theological

50. Bede, *Historia ecclesiastica* (London: Whittaker, 1843), bk. 2, ch. 1; bk. 1, ch. 4.

51. Bullón, 11.

work, *De trinitatis erroribus*, to his later *Christianismi Restitutio*, one finds ample evidence of the widening scope of his reading. He wrote *De trinitatis erroribus* during the late 1520s while working for Juan de Quintana, a chaplain and confessor in the court of Emperor Charles V.⁵² His employer was an expert on Duns Scotus, and it was likely he who provided Servetus access to the works of a number of scholastic philosophers.⁵³ At that time the later Church Fathers, including Augustine and Hilary, were known to Servetus mainly through Peter Lombard's *Sententia* (Sentences). In *Christianismi Restitutio*, largely written in the 1540s, he began to delve into the Church Fathers directly, finding new references and correcting his old quotations by comparing them with the original texts.⁵⁴ Already familiar with Erasmus, the middle-aged Servetus drew on Ficino (without attribution) and the Hermetic works that Ficino had translated.⁵⁵ In *De trinitatis erroribus* he had been able to cite the Quran only secondarily, through the works of such writers as Nicolas of Cusa and his *Cribratio Alcorani* of 1461.⁵⁶ In *Christianismi restitutio* he quoted the Quran directly, and extensively, at least in the Latin translation of Robert of Ketton.⁵⁷

How did Servetus direct his reading? In common with others under the influence of the spirit of the Renaissance, Servetus looked back in time to find writers and works that were generally considered to have authority.

52. Hughes, "Early Years," 80–85.

53. James Farge, *Biographical Register of Paris Doctors of Theology, 1500–1536* (Toronto: Pontifical Institute of Mediaeval Studies, 1980), 385. Hughes, "Early Years," 57, 82–83.

54. The second-hand quotations of the Church Fathers can be detected when Servetus uses the variant wording found in the patristic quotes contained in Peter Lombard. One example of this is in Servetus, *De Trinitatis erroribus libri septem* (Hagenau: Johann Setzer, 1531), 24b and in the corresponding passage in Servetus, *Christianismi restitutio*, 75. The quote "natura intelligentiae humanae, rationem huius dicti non capit" (Human intelligence cannot grasp the meaning of these words) is ultimately from Hilary of Poitiers, *De trinitate* (Basel: Froben, 1523), bk. 3, ch. 1. Peter Lombard changed Hilary's "istius" to "huius." Peter Lombard, *Sententia*, in *Patrologiae cursus completus*, ed. Jacques-Paul Migne (a.k.a. *Patrologia Latina*), vol. 192 (Paris: Garnier, 1880), bk. 1, distinction 19, section 5.

55. Servetus, *Christianismi restitutio*, 54. Marsilio Ficino, *Theologia Platonica de immortalitate animorum* (Florence: Antonio Miscomini, 1482), bk. 3, ch. 1, para. 3. For a table of Servetus's references to Hermetic literature see Bainton, 187.

56. Peter Hughes, "Servetus and the Quran," *Journal of Unitarian Universalist History* 30 (2005): 55–70.

57. Published by Theodore Bibliander in 1543 as *Machumetis Saracenorum principis eiusque successorum vitae, ac doctrina, ipsesque Alcoran* (The lives of Muhammad, the chief of the Saracens, and of his successors, their teachings, and the Quran itself).

In his theological works he felt that the older his sources were, the better, because, being closer in time to the lifetime of Christ, they preserved the most uncorrupted traditions of the Church and the most reliable witness of the revelation of God. Similarly, the recovery of Galen and Ptolemy brought a kind of scientific revelation to the early modern world. At a time when the greatest of the ancient writers were considered unsurpassed authorities on their respective subjects, it was natural for Servetus to think that the information that had been passed down to his own era from ancient sources was well-founded, polished, and as reliable as any. At the same time, Servetus was open to newer sources of information that came from competing traditions. As a physician and a writer on medicine, Servetus took a mediating position in the battle between those who learned from Galen only by reading his works in the original Greek and those who read translations of Galen from Arabic and accepted Muslim additions to medical knowledge. In his treatise *Syruporum* (On syrups; 1537), he claims to be a thorough Galenist, yet accepts the value of syrups, a Muslim form of medication, in the treatment of human ailments.⁵⁸

Servetus paid special attention to those works that were central to his areas of interest. As a theologian who believed that the orthodox view of the Trinity was mistaken, he made sure that he looked at every available volume entitled “De Trinitate” and any books having “The Trinity” as a major sub-heading. This latter category encompassed Peter Lombard’s *Sententia*, whose book 1 is called “De mysterio trinitatis” (On the mystery of the Trinity) and other scholastic works modelled after or commenting on this seminal work. In medicine, he consulted general works of anatomy and physiology that contained descriptions of the heart, lungs, and brain, and took special interest in works that discussed the spirit or the soul, including all available works that commented on, or followed in the steps of, Aristotle’s *De anima* (On the soul). In geography and ethnography, Servetus clearly sought out works whose titles indicated that they were comprehensive sources of information: dictionaries and books that we would call encyclopedias and atlases, plus chronicles and overviews of specific countries and regions.

On the other hand, he was less interested in the pagan “classics” as such. Servetus encountered ancient classical works of history, philosophy, poetry etc.

58. Among the Ancients and Muslims he mentions or quotes in his medical works are Aetius of Amida, Alexander of Tralles, Avicenna, Celsus, Dioscorides, Galen, Hippocrates, Menardus, Mesue, Oribasius, Paul of Aegineta, Plato, Pythagoras, Rhazes, Rufus of Ephesus, and Thales.

largely secondarily, through later books that were targets of his more focused interest. He did not have a liberal or general education, nor did he seem greatly interested in acquiring one. His interests were always technical; that is, to find out what the ancients knew about mathematics, geography, the human body, and God.

Even so, in his introduction to *Geographia* Servetus hopes to be of service to readers of the ancient classics:

In evolvendis sane cum Graecorum tum Latinorum poematibus, historiis, et aliis scriptis: quum de regionibus, civitatibus, montibus, et fluminibus, quod per saepe sit, sermo inciderit: si se tunc ad nostri Ptolemaei lectionem quis deflectat: urbium nomina cum priscis et poetarum nominibus coniuncta, et ad nostri temporis sermonem coaptata, iucunditatis nonnihil procul dubio lectori sunt allatura:

(When reading the poems, histories, and other writings of both the Greeks and Latins, when regions, cities, mountains, and rivers are mentioned, as they very often are, if one should take a moment to consult my edition of Ptolemy, where one can find, together with the ancient names and the names by which the poets knew them, the names by which they are now known in the speech of our day, it will undoubtedly afford no small degree of pleasure to the reader.)

From a study of the nature of Servetus's working method one may, I think, be able to gain some insight into one of the central mysteries of his life: how did he, who was not known to be a great dissector,⁵⁹ come to be in possession of revolutionary information about the pulmonary transit of the blood, when many other contemporary physicians, including his fellow student at the University of Paris, Andreas Vesalius, apparently did not know about it?

Until Servetus's time it had been thought that venous blood, originating in the liver, was sent throughout the body, including into the right ventricle of the heart. Blood sent from this ventricle to the lungs was only to nourish the lungs themselves. The function of the lungs was to breathe in air, or spirit, which then would be sent into the left ventricle of the heart, to be mixed with

59. Winter von Andernach, *Anatomicarum institutionum*, 7.

blood from the right ventricle, which had come through the wall between the two ventricles. Here, in the left ventricle, this mixture was transformed into the “vital spirit,” which was sent through the arterial system.⁶⁰ This was the physiological system that was bequeathed by Galen to the early modern world; the one which Servetus challenged.

It is possible that he got a hint of the pulmonary transit while studying Galen’s *De usu partium corporis humani* (On the usefulness of the parts of the human body), and, under the influence of his own heretical theological ideas, made an interpretation at variance with those of other Galenists, including his own teachers Jacobus Sylvius and Johann Winter von Andernach. Or he may have made his leap in understanding and grasped what he called a “veritatem [...] ab ipso Galeno non animaduersam” (a truth unnoticed by Galen himself)⁶¹ after reading *De humani corporis fabrica* (On the construction of the human body), in which Vesalius marvelled that God had caused blood to seep from the right ventricle to the left “per meatus visum fugientes” (through undetectable channels).⁶² Or he might have been inspired after reading Niccolò Massa, who described the wall between the two cardiac ventricles as “densa dura et sine cavitate” (dense and hard and without any cavity) and, at the same time, refrained from mentioning any passage of blood through this wall.⁶³ For if blood did not pass directly from one ventricle to the other, it must have taken some other route, and one possibility was the longer pathway through the lungs. A careful study needs to be made of all the anatomical manuals and treatises available to Servetus in the 1530s and 1540s in order to determine if he could have inferred the secret of the pulmonary transit of blood entirely through reading. For, if he did so, it would be entirely consistent with his methods in other areas of study, including geography.

In Servetus’s geographical writings we can easily detect the shortcomings in his eclectic and book-bound method of doing research. But it was the wide range of his reading and his sometimes uncritical openness to varied sources of information that led him, in his theological and medical works, to overturn

60. For an overview of Galenic physiology, see Charles Singer and C. Rabin, *A Prelude to Modern Science* (Cambridge: Cambridge University Press, 1946), xxxviii–xl.

61. Servetus, *Christianismi restitutio*, 171.

62. Andreas Vesalius, *De humani corporis fabrica* (Basel: Ex officina Ioannis Oporini, 1543), bk. 6, ch. 11.

63. Niccolò Massa, *Liber introductorius anatomiae* (Venice, 1536), 56v.

orthodox ideas and to consider new ways of thinking. Since he did not apply the scientific method, as we know it—which requires testing and retesting results—his approach to scientific advance was hit-or-miss. But being such an intensive researcher, finding what he thought were the best old sources and interpreting them carefully, he was, on occasion, gloriously in advance of his time.