Parker Snyder

CISTERCIAN NETWORK ANALYSIS:
A ROAD MAP THROUGH THE MENTAL IMAGINATION
OF THE FIRST GENERATIONS OF MONKS

MA Thesis in Medieval Studies

CENTRAL EUROPEAN UNIVERSITY

Budapest

May 2008

CISTERCIAN NETWORK ANALYSIS:
A ROAD MAP THROUGH THE MENTAL IMAGINATION
OF THE FIRST GENERATIONS OF MONKS

by

Parker Snyder

(USA)

Thesis submitted to the Department of Medieval Studies,
Central European University, Budapest, in partial fulfillment of the requirements
of the Master of Arts degree in Medieval Studies
Accepted in conformance with the standards of the CEU.

_____

Chair, Examination Committee

_____

Thesis Supervisor

_____

Thesis Supervisor

_____

Examiner

CISTERCIAN NETWORK ANALYSIS:

A ROAD MAP THROUGH THE MENTAL IMAGINATION

OF THE FIRST GENERATIONS OF MONKS

by

Parker Snyder

(USA)

Thesis submitted to the Department of Medieval Studies,

Central European University, Budapest, in partial fulfillment of the requirements

of the Master of Arts degree in Medieval Studies

Accepted in conformance with the standards of the CEU

_____

External Examiner

Budapest

May 2008

ABSTRACT

The Cistercians were a twelfth century monastic reform originating in Burgundy. After a slow start, they expanded quickly to number some 350 foundations by the death of their notable promoter Bernard of Clairvaux. But was there a master plan for the development of the Order? Even though the Cistercians were a contemplative reform and largely self sufficient in their economic life, they recognized the importance of regular communication between abbeys. To connect the members, the twin pillars of the Cistercian Constitution were 1. parental visitation among filia and 2. an annual chapter in Burgundy. Because of these two features, the Cistercian expansion can be modeled as a network. From the nineteenth century, scholars have studied the chronological sequence of early foundations and one major mapping project has been completed to date, but no one has analyzed network relationships. I argue that Cistercian foundations can be read like a charter to present a general picture of the monks' strategy before administrative structures had been formalized. This thesis treats each foundation as a node and each filial relationship as a link, while the network in its entirety is read like a road map to discover the mental imagination of the first generations of monks.

Parker Snyder
May 11, 2008

Keywords: cistercian cistercians network analysis early expansion constitution carta caritatis bernard clairvaux spatial temporal distribution patterns italy hungary

I, the undersigned, Parker Snyder, candidate for the MA degree in Medieval Studies declare herewith that the present thesis is exclusively my own work, based on my own research and only such external information as properly credited in notes and bibliography. I declare that no unidentified and illegitimate use was made of the work of others, and no part of the thesis infringes on any person's or institution's copyright. I also declare that no part of the thesis has been submitted in this form to any other institution of higher education for an academic degree.

Budapest, 21 May 2008

_____

Signature

TABLE OF CONTENTS

LIST OF MAPS AND TABLES viii
STYLES SHEET ix
ACKNOWLEDGEMENTS x
DEDICATION xi
LIST OF FIGURES xii
CHAPTER 1 1
Discussion Limits 3
Patterns 4
Past Research 6
Research Gap 9
Research Questions 10
Research Innovations 10
Data Sources 11
Research Methodology 12
Network Analysis 15
Pond Model 19
S-Curve 21
Network Model 22
CHAPTER 2 25
Patterns 25
[1098 – 1128] - A Slow Start 26
[1128 – 1158] - Explosive Growth 30
[1158 – 1218] - Steady Growth 37
[1218 – 1398] - Scattered Growth 40
CHAPTER 3 43
Network Analysis 43
The Cistercian Network 43
Network Geography 48
Distribution 48
Size 50
Clairvaux [1098 – 1158] 51
Morimond [1098 – 1158] 54
Cîteaux [1098 – 1158] 57
Influential Abbeys 61
Network Summary 63
CHAPTER 4 67
Part 1 – Bernard's Travels in Italy 67
Part 2 – The Kingdom of Hungary 80
CHAPTER 5 89
Conclusions 89
Topography 94
Historical GIS 96
Summary 96
GLOSSARY 98
BIBLIOGRAPHY 100

LIST OF MAPS AND TABLES

Territorial Boundaries Defining Expansion
(Appendix: A.1 – A.3)
- A.1 Map: Europe Circa 1100
- A.2 Map: Europe Circa 1200
- A.3 Map: Europe Circa 1400

Spatial Distribution of Monasteries [1098 – 1398]
(Appendix: A.4 – A.13)
- A.4 Map: Distribution of Entire Network under Cîteaux
- A.5 Map: Distribution of Clairvaux Genealogical Line
- A.6 Map: Distribution of Morimond Genealogical Line
- A.7 Map: Distribution of only Cîteaux, La Ferté and Pontigny
- A.8 Map: Burgundy Core Area Distribution
- A.9 Map: West Iberian Peninsula Distribution
- A.10 Map: North-Central Distribution
- A.11 Map: Central-Eastern Europe Distribution
- A.12 Map: South Italian Peninsula Distribution
- A.13 Map: North Isles & Ireland Distribution

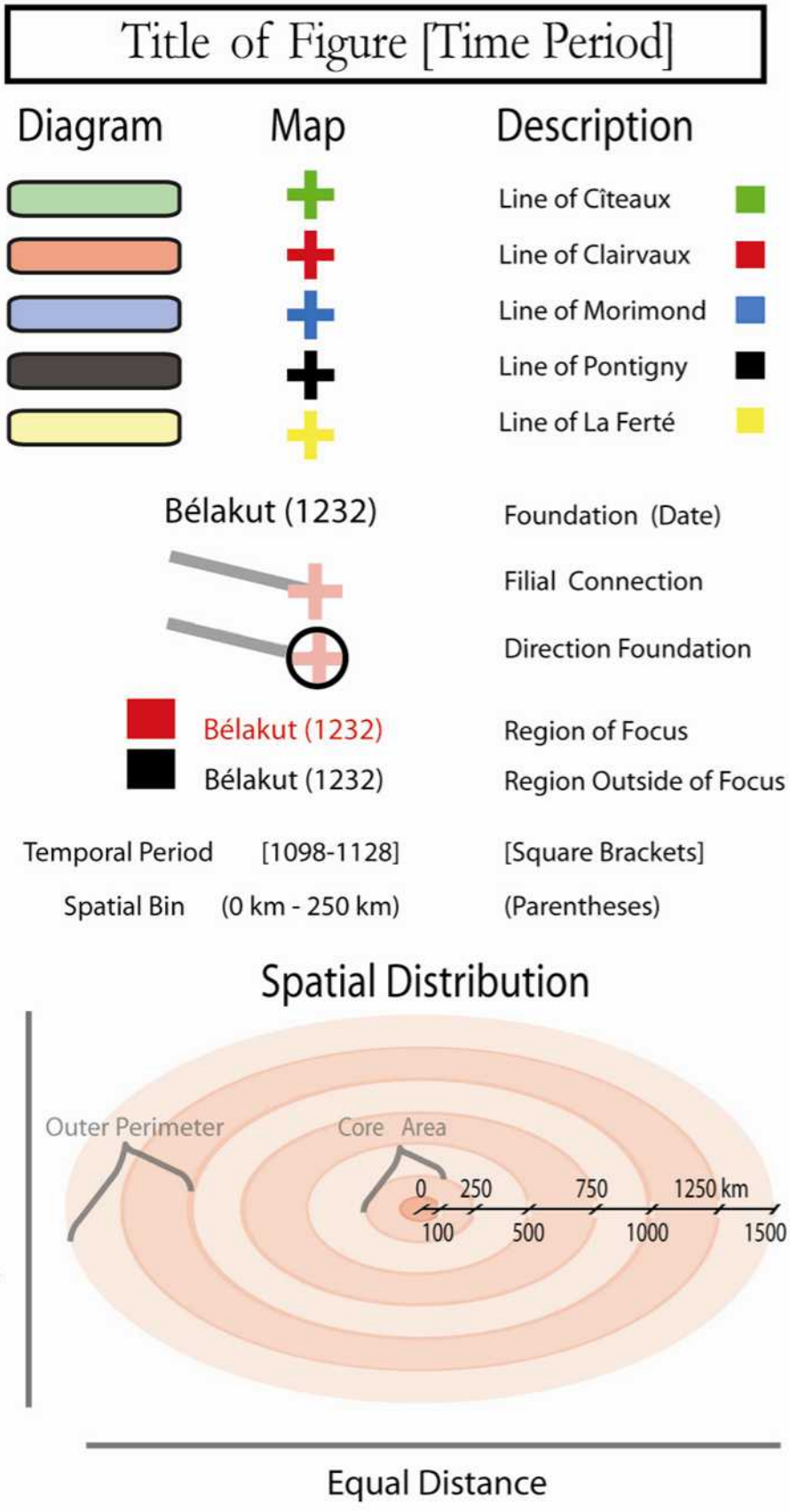
Temporal Growth of Cistercian Monasteries [1098 – 1398]
(Appendix: A.14 – A.18)
- A.14 Map: Cistercian Foundations from 1098 – 1128 [30 Year Interval]
- A.15 Map: Cistercian Foundations from 1128 – 1158 [30 Year Interval]
- A.16 Map: Cistercian Foundations from 1158 – 1218 [60 Year Interval]
- A.17 Map: Cistercian Foundations from 1218 – 1398 [120 Yr Interval]
- A.18 Map: Period of Takeoff from 1128 – 1158 [5 Year Intervals]

Network Patterns of Cistercian Monasteries
(Appendix: A.19 – A.29)
- A.19 Map: Entire Network from 1098 – 1158 [60 Year Interval]
- A.20 Map: Clairvaux from 1098 – 1158 [60 Year Interval]
- A.21 Map: Morimond from 1098 – 1158 [60 Year Interval]
- A.22 Map: Cîteaux, La Ferté & Pontigny 1098 – 1158 [60 Yr Interval]
- A.23 Map: Top 25 Most Influential Abbeys by Influence Index
- A.24 Map: Influential Abbeys with 5 or More Daughters
- A.25 Map: Some Influence Abbeys with 1 to 4 Daughters
- A.26 Map: No Influence Abbeys with Zero Daughters
- A.27 Map: Foundations at Second Level of Hierarchy
- A.28 Map: Foundations at Third Level of Hierarchy
- A.29 Map: Foundations at Fifth Level and Below of Hierarchy

Statistical Tables
(Appendix: A.30 – A.34)
- A.30 Table: Temporal Analysis from 1098 – 1398
- A.31 Table: Spatial Analysis from 1098 – 1398
- A.32 Table: Abbeys with the Most Daughters
- A.33 Table: Abbeys with the Greatest Influence Index
- A.34 Table: Topographical Analysis

Data Only
(Appendix: A.35 – A.36)
- A.35 Data: Cistercian Monastic Foundations by Chronology
- A.36 Data: Cistercian Monastic Foundations Alphabetically

STYLES SHEET



ACKNOWLEDGEMENTS

I am in debt to a number of scholars who directed my inquiries in subject matter for which I had no formal training: Cistercian scholars Constance Hoffman Berman at the University of Iowa and Brian Patrick McGuire at Roskilde University provided early input into the scope and aim of this study.

At the Central European University, I had valuable conversations with Laszlo Csirmaz in statistical analysis and Avner Ben Ner in organizational economics, while professor Wiktor Osiatyński in the Open Society Institute encouraged my wife and I in our professional interests. Anne Kelly Knowles at Middlebury College helped me with GIS and mapping.

I would like to thank my colleagues in the Medieval Studies department: Professors Katalin Szende and Gerhard Jaritz, as well as Iryna Polets, Alin Mihailescu, Wojciech Kozlowski, Valentina Covaci and Ilona Ferenczi for helping me to train as a historian. I would like to thank Csilla Dobos and Annabella Pál for their kindness and patience.

Especially I would like to thank my advisor József Laszlovszky for his enthusiasm for monasticism and for believing in me before I had means to prove his faith.

But above all, Kasia, you encouraged me even after I began to repeat the monks' story on our walks along Margaret Island. Thank you.

DEDICATION

To my Dad
who encouraged me to graduate studies

LIST OF FIGURES

Figure 1. **Distribution of Cistercian Foundations**: A scatter plot can be appreciated even without a map. The spatial distribution [1098 - 1400] reveals a rough outline of the continent. Look for evidence that the reform began in Burgundy in east-central France. The white spaces on the map reveal irregularities in a uniform Christian landscape—mountains, sea, Arab Spain and so on. 3

Figure 2. **Cistercian Genealogical Line**: The structure of the Cistercian genealogical hierarchy makes possible a discussion of influence based on the notion that one abbey is subject to the authority of another. The line of Morimond has been chosen to explain the so-called *Influence Index* of Bellevaux (1120), a measure which considers both the number of its daughters and its position in the hierarchy. (See footnote 9). 14

Figure 3. **Morimond Hierarchy in the Landscape**: The genealogical line of Przmet (1285), a filia of Morimond, placed in the landscape as a line of successive foundations in Burgundy, the Holy Roman Empire and the Polish kingdom during the twelfth and thirteenth centuries. This pattern suggests patronage obtained locally in contrast to long distance foundations characteristic of the Clairvaux line. 16

Figure 4. **Pond Model**: A rock enters a pond at time zero and waves begin to disperse. Provided there is no obstruction waves propagate outward, but as the waves get further away from the center they get weaker. This model will be used to describe the Cistercian expansion as the dispersion of an innovation through a uniform plane. 20

Figure 5. **S-Curve:** The *S-Curve* describes the diffusion of an innovation. It begins with a period of slow growth, followed by an upsurge known as the *takeoff*, and concluding with a plateau of slow growth along a horizontal asymptote. The curve's shape derives from the aggregate effects of adoption—*early adopters* assume the most risk while the *late adopters* are risk averse. 21

Figure 6. **Network Model**: English foundations connected with a network model. Each node (foundation) is connected by a link (filia). The coefficient of connectivity describes how well a given node is connected to adjacent nodes. The Clairvaux node in (A) is well connected to those around it but in (B) the Morimond node is not connected to any of those around it. 23

Figure 7. **Spatial Distribution [1098 – 1128]:** The zones of influence are well defined in the first 30 years. (A) Clairvaux is prominent to the north. (B) Morimond to the east. (C) La Ferté to the southeast. (D) Pontigny and Cîteaux to the west. Each line would go on to found daughters in the same region. As early as the 1130s, these zones of influence would begin

to overlap, although their primary axes would remain articulated throughout the expansion. 29

Figure 8. **Cumulative Growth of Cistercian Reform [1098 - 1400]:** The slow start is followed by a surge of foundations. The curve takes a characteristic shape: that of an S-Curve, associated with the diffusion of an innovation. The period [1120 - 1050] frames the *takeoff* and coincides with the activities of Bernard..... 31

Figure 9. **Spatial Distribution [1128 - 1158]**: About 330 foundations were added. Notice that affiliation lines continue to stay confined to the geographical regions of influence established in the first 30 years. Clairvaux and Morimond however expand to new regions. The core area receives many foundations, while the outer perimeter receives comparably fewer. The next figure shows this same distribution over {5 year intervals} to analyze temporal patterns..... 33

Figure 10 **Spatial Distribution in Five Year Intervals [1128 - 1157]:** Left to right, top to bottom, see the distribution in 5 year intervals move away from the core area. Compare [1133 - 1137] with the interval one decade later [1143 - 1147] for a noticeable shift outward. This is consistent with the period of takeoff in the S-Curve as the Cistercians are welcomed by a wider population. See [1153 - 1157] for evidence that growth slowed after death of Bernard (ob. 1153) and 1152 proclamation..... 35

Figure 11 **Spatial Distribution [1158 – 12 18]:** Foundations during the time period [1158-1218] generally fill into the blank spaces upon the map. According to the assumptions of a uniform and constant distribution of resources in Central Place Theory, monasteries will locate to blank spaces..... 38

Figure 12 **Cistercian Network [1098 - 1128]:** Each foundation was connected to its filia in a web of relationships. For instance, the first two Italian foundations, Locedio and Tiglieto, were filia of La Ferté. Network connections would become paths for the transfer of resources..... 45

Figure 13 **Cistercian Network [1098 - 1158]:** The "Road Map" –At first glance it appears complicated but upon closer inspection patterns are definitely visible in the 360 connections after sixty years. Notice different modes of organization. (A) The Clairvaux line is dominated by *radial-aligned* long distance foundations and (B) the Morimond line by short *non-aligned* connections. These patterns are discussed in the section *Network Geography* about Clairvaux and Morimond. 48

Figure 14 **Network by Affiliation [1098 - 1398]:** Each branch is roughly twice the size of the one below it. Notice that after 1278, growth is declining quicker for Clairvaux than for the others. 50

Figure 15.A **STATS BOX: Clairvaux as Dominant Network Player**.

Figure 15.B **Clairvaux Network [1098 - 1158]:** A great many monasteries are subordinate to Clairvaux through long distance foundations in Scandinanvia, Portugal, Italy and

Ireland; although most foundations are positioned on an axis running diagonal top-left to bottom-right, the predominant network pattern is radial outward. 52

Figure 16.A **STATS BOX: Morimond as Team Player**.

Figure 16.B **Morimond Network [1098 - 1158]:** Morimond's links are parallel and randomly oriented to the east and radial-aligned to the southwest, while the prevailing pattern is that of colonization. Notice the regional character of the line—the great bulk is confined to the Holy Roman Empire. The foundation not shown is Belmont in the Holy Land. 55

Figure 17.A **STATS BOX: Cîteaux, Depth and Proximity**.

Figure 17.B **Cîteaux Network [1098 - 1158]:** Discussion about the line of Cîteaux presumes La Ferté and Pontigny small enough to be included. As such, Cîteaux represents 23% or approximately one quarter of the network hierarchy, a line of 24 direct foundations in two distinct periods [1098-1147] and [1200-1240]. In the first sixty years its influence remains confined to the medieval France and England. 58

Figure 18.A **Map of Influential Abbeys:** A spatial distribution of the influential abbeys in the network based on the *Influence Index* given in the appendix and described in footnote 9. The majority of influence is concentrated in Burgundy in the core area, while Kamp, Tre-Fontane, Escale-Dieu and Mellifont are regional hubs that prospered foundations further a field..... 61

Figure 18.B **Table of Influential Abbeys:** The *Influence Index* is given above is greatest for the abbey of Clairvaux. Despite fewer foundations, Cîteaux has a greater index than Morimond because of its higher position in the hierarchy..... 61

Figure 19 **Conceptual Cistercian Network:** A conceptual model of the Giant Percolating Cluster (GPC) located just north of the epicenter. To opacity and size of the circles corresponds loosely to network strength; where lines connect to circles are approximate locations of regional hubs..... 64

Figure 20 **A Chronology of the Travels of St. Bernard**: from A. Bredero's *Between Cult and History*. In many circumstances, it was likely that on his way to Rome, for example, Bernard made repeated trips to locations he had already visited. There were certainly unaccounted trips made in the regions mentioned. See footnote 81 for further discussion..... 72

Figure 21 **Network Map Italian Peninsula [1120 - 1180]:** The Cistercian network map of Italy through 1180 shows the dominance of Clairvaux foundations. The name "Chiaravalle" means *clear valley* (Clairvaux); these northern foundations were named after the mother house in Burgundy. Sambucina, given to Clairvaux by Roger of Sicily, was responsible for further growth to the south. Note that all genealogical lines are present in Italy. 73

Figure 22 **Temporal Dist. of Italian Foundations [1120 - 1180]:** Italian foundation chart constructed on the basis of date and affiliation. Three temporal periods can be roughly defined.

The first is incipient with the foundation of Tiglieto and Locedio. The second is one of considerable growth dominated by Clairvaux which can be correlated with the dates of Bernard's travels through the peninsula. A period of renewed growth follows after a decade of conflict. 77

Figure 23 **Hungarian Network [1139 - 1300]:** The map shows the network connections between Cistercian foundations in Hungary. Half of the Clairvaux foundations have direct connections to the west in Burgundy, whereas the Morimond foundations exhibit patterns typical of central-eastern Europe, where monasteries are affiliated to nearby neighbors, such as Savnik in the north, which is believed to have been involved in the north-south trade with Poland. 81

Figure 24 **Temporal Dist. of Hungarian Network [1098 - 1300]:** This genealogical tree describes the relations between Hungarian Cistercian monasteries internal to the organization. Resources were exchanged along these network lines, such as the translation of John of Limoges, who was abbot of Zirc (1208 – 1218) before becoming prior of Clairvaux. Drawn with time increasing vertically; monasteries aligned horizontally were founded at approximately the same time. 1

Figure 25.A **Growth Chart**: A Comparison of Cistercian growth by ten year intervals with two notable monastic reforms of the twelfth century. The Cistercians and the Premonstratensians show growth similar curves, although the Cistercian peak is greater, while the Carthusians are noticeably smaller. (Source: Bond and Aston, *In Search of Cult*, 1993)..... 90

Figure 25.B **Growth Chart Adjusted**: The curves are adjusted to factor out differences in size. The Cistercians and Premonstratensians grow earlier and share similar growth curves, while the Carthusian growth is protracted over some three centuries. These estimates do not include closures or dissolutions..... 90

Figure 26 **Topography of Hauterive Abbey**: An image taken from *Google Earth* of the site chosen for the abbey of Hauterive. Though much has been changed since the Middle Ages, the general contours of the land and the watercourses are likely the same. If this information could be correlated to foundation data, a GIS study could be done to examine proximity to water, general site features and so on..... 95

Figure 27 **Topography of Expansion**: An image from Google Earth provides a means of visualizing the spatial context of the expansion. Each of the pins represents a foundation in Europe, Asia Minor and the Holy Land. Potentially, attribute data could be analyzed for topographical information..... 95

CHAPTER 1

Introduction

Omnia erat Cistercium.
- Ordericus Vitalis

A century after the start of the Cistercian reform some 500 monasteries dotted a map of Europe. Each foundation had a geo-spatial location and a position in a genealogical hierarchy. Although some of these attributes changed with time, Cistercian foundations in their form as aggregate data can be studied to gauge the character of the expansion at chronological intervals.

Recent scholarship has suggested that the Order was still in development for much of the twelfth century, [1] and few extant sources suggest the monks' motivations beyond the most general. This current study proposes a landscape map can be read like a charter to hypothesize motivations. It fills a gap in Cistercian scholarship by analyzing the spatial distribution and network connections of some 700 foundations, as scholars have done for the Premonstratensians and Carthusians.[2] Furthermore, this study takes advantage of new research methods in *Historical GIS*, relying upon analytical computer methods to enrich scholarly understanding of a twelfth century

[1] See Constance Hoffman Berman, The Cistercian Evolution: The Invention of a Religious Order in Twelfth-Century Europe, (Philadelphia: University of Pennsylvania Press, 2000), 1-23, in which she argues that the earliest reference to a text allegedly authored by Abbot Stephen Harding in 1119 can be dated no earlier than 1160, later challenged by Chrysogonus Waddell in "The myth of Cistercian Origins: C.H. Berman and the Manuscript Sources," Citeaux 51 (2000): 299-386. For Wadell's own philological and diplomatic work on early Cistercian documents, see "The Cistercian Institutions and their Early Evolution," L'espace cistercien, ed. Léon Pressouyre, (Paris: Comité des travaux historiques et scientifiques, 1994), 27-38. In my opinion, Wadell's analysis of early Cistercian documents is quite thorough and his argumentation sensible. He is more nuanced than Berman and doesn't dismiss out of hand the 1119 papal bull Berman regards as a forgery; rather he is hesitant to assign dates to early documents. Instead, he gives a range of possible dates and takes pains to correct scholarship in previous critical editions. A sensible and brief explanation of the early institutional life of the order is given by John R. Sommerfeldt in a review of C.H. Berman's, *Cistercian Evolution* (2000) in *Church History*, 70: 2001, 786-788.

[2] These studies can both be found in a volume dedicated to archaeologist Philip Rhatz. See James Bond, "The Premonstratensian Order. A Preliminary Survey of the Growth and Distribution in Medieval Europe," *In Search of Cult*, ed. Martin Carver, (Woodbridge: Boydell Press, 1993) and in the same volume: Mick Aston, "The Development of the Carthusian Order in Europe and Britain: A Preliminary Survey."

monastic reform.[3] As in any organization, the connections in a planned network help to diffuse information. This study demonstrates how the connections between filia did just that—helped to diffuse a new ideal.

My interest in the Cistercians began after a visit to Le Thoronet in southern France, captivated as I was by the dignity and austerity of the cloister. After that visit, I decided to study the monastic reform, though my incipient interest had more to do with their economic program. My curiosity in the Cistercians as an organization began with a question: did the growth of the reform have more to do with the spirit of the age or with the economic innovations they prospered? The choice of a network model for a study of the expansion derives from my professional training as an engineer, as I was taught to analyze a system's properties by defining its limits and proposing one or more hypothetical models. I do that here, though I bring my study in line with the bounds of a proper historical inquiry by diligent reference to primary and secondary sources.

[3] Historical GIS relies upon attribute-based data to study history. For a primer to the subject and a diverse number of applied mapping projects, see Anne Kelly Knowles, *Placing History, How Maps, Spatial Data and GIS are Changing Historical Scholarship*, (Redlands, CA: ESRI Press, 2008).

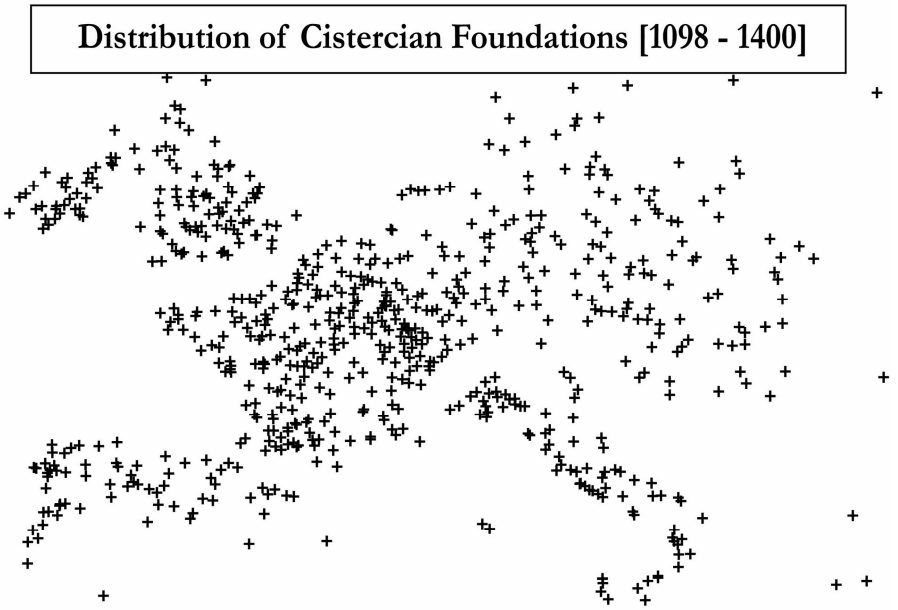


Figure 1. A scatter plot can be appreciated even without a map. The spatial distribution [1098 - 1400] reveals a rough outline of the continent. Look for evidence that the reform began in Burgundy in east-central France. The white spaces reveal irregularities in a uniform Christian landscape—mountains, sea, Arab Spain and so on.

Discussion Limits

This is a study about the Cistercian expansion beginning with the foundation of Cîteaux in the year 1098 and continuing for three centuries up until 1400. Growth during this time period was highly irregular—moderate up until about 1130—followed by a quarter century of explosive growth until the death of Bernard (ob. 1153). Thereafter the reform entered a period of consistent steady growth until 1300, though foundations from 1300 – 1400 averaged only one every ten years. The basic network structures, such as the core area, regional hubs and long-distance connections were in place by 1158, so I chose to focus especially on the first 60 years [1098-1158].[4] The geographical limits are defined by the furthest foundations (N: Scandinavia, S: Italy, E: Syria, W: Portugal) though for practical purposes the maps

[4] See the Styles Sheet following the table of contents for conventions: [temporal periods] are in square brackets and (spatial bins) are in parentheses in this current study. Definitions for terms about networks that may be unfamiliar are given in the glossary and when necessary included in the main body of the text. *Core area* refers to the region immediately surrounding the origin of the reform, in the case of the Cistercians, within about 250 km of the foundation of Cîteaux.

depict continental Europe and the British Isles; case studies are placed in the Italian peninsula and the medieval Kingdom of Hungary. I do not discuss monastic closures although they were not infrequent. Also, it is not a comparative study, though I draw inspiration from several others on the Premonstratensians and Carthusians.

It is a significant challenge to define historical boundaries in a geo-spatial study, often changing during the twelfth century and widely variable during the three centuries under consideration. Furthermore historical boundaries vary between sources. After consulting several atlases, I chose to fix boundary lines at the year 1200 using Josef Engel's, *Großer Historischer Weltatlas, Zweiter Teil Mittelalter*.[5] This decision was somewhat arbitrary, as the primary period of focus is rather the first part of the twelfth century, but this was done to include the territorial claims of Hungary, expanding during the twelfth century to include the coastline of present day Croatia. I wished to account for these territorial claims so that Hungary in Chapter four would be pictured in its historic geographic extent. See the appendix (A.1 through A.3) for historical maps that refer to boundaries for the years 1100 and 1400 that frame the beginning and end of the period under consideration.

Patterns

The Cistercians made 700 foundations in the first 300 years, and these settlements made patterns in the landscape. If all of the foundations are plotted together, even without a map of Europe, the distribution reveals a picture of the approximation of the origin.[6] See Figure 1 for a scatter-plot of Cistercian foundations.

[5] Josef Engel, *Großer Historischer Weltatlas, Zweiter Teil Mittelalter*, [Historical Atlas of the Middle Ages], (Munich: Bayerischer Schulbuch-Verlag, 1979).

[6] The data for Cistercian foundations derives from two sources. The first is a list of foundations organized alphabetically in a catalogue in Marcel Pacaut, *Les Moines Blancs: Histoire de l'ordre de Cîteaux*. (Paris: Fayard, 1993). The data obtained from Pacaut was cross-referenced with the chronology given in Leopold Janauschek, *Originum Cisterciensium Liber Primus* (Vienna: Vindobonae, 1877). Janauschek was the arbiter when there was a discrepancy between sources.

Looking at the scatter-plot, certain questions can be answered, such as what was the distance between foundations? In what regions were foundations absent? Furthermore, the foundations present *de facto* evidence that the Cistercians wished to be present in certain locations, even if we find lacking supporting textual evidence about their motivation for going there.[7] Active regions are easily visible, such as northern France, western Germany, the western Italian peninsula and the British Isles. Taken a step further, foundation patterns suggest resource chains that were catalysts for growth. The investment capital of the monks' benefactors was just as critical as the popular enthusiasm for coenobitic monasticism throughout Europe, and these resources were acquired through political, social and ecclesiastical networks. Patterns may provide evidence from which resource networks can be deduced.

To give just one example that illustrates the concept upon which this study is based, as Bernard of Clairvaux traveled on political missions to Italy (1135) and to preach the crusade in Belgium (1146), foundations followed in his footsteps. If the foundations that followed Bernard's preaching can be read on a landscape map, these may be analyzed as *exogenous* networks external the organization itself. As new foundations connect to existing ones, the sequence of connections creates an emergent network, an evolving resource chain that itself becomes a catalyst for future growth. Consider that resolutions of the General Chapter weren't recorded as individual decisions before 1180, and for this reason, the distribution of abbeys on a map of Europe presents our only evidence to make judgments about why the monks settled

[7] There are textual sources for the Cistercian expansion but little to surmise the organization's motivation or strategy to expand beyond Burgundy. The source base includes the resolutions of the General Chapter, which are referred to in this study, and charters of individual foundations; but these are lacking evidence that could elucidate motives for growth.

where they did. Seen in this way, patterns are valuable sources of information when textual sources are few. [8]

Past Research

A vast body of literature about the Cistercians has been written and each major volume about the Order deals in some aspect with the expansion since it was integral to the overall development of the reform. It is my purpose here only to describe a few exemplary studies and to point out others which served as a model for my own.

L.J. Lekai in a volume that remains influential among scholars writes about the early expansion in *Ideals and Realities* (1977).[9] He describes the monks' expansion program and suggests reasons why the organization grew so speedily through the twelfth century. Marcel Pacaut's monograph *Les Moines Blancs* (1993) includes a number of useful statistical tables and a data analysis of affiliation networks, although the maps in the appendix are only approximations derived from an earlier work.[10] These two may be considered handbooks for a study about the Cistercians.

Regional studies are helpful for reconstructing the network. R.A. Donkin, a historical geographer, explores the economic program of the Cistercians in England.[11] He connects patterns in the landscape to the networks that lie beneath these patterns.

[8] On the basis of dating charters and statutes, C. H. Berman argues in *Cistercian Evolution* that the notion of an *Order* didn't exist until the latter half of the twelfth century. Because Berman's study suggests a lack of conclusive evidence for when an order was formed I chose to term the grouping of monasteries under Cîteaux as a *network*, a term I believe is apropos to the Cistercians because of their use of the filiation system. Evidence for a network derives from sheer relationships which had begun from the mother house as early as La Ferté (1113).

[9] L. J. Lekai, *The Cistercians: Ideals and Reality*, (Ohio: Kent State University Press, 1977).

[10] Marcel Pacaut, *Les Moines Blancs: Histoire de l'ordre de Cîteaux*. (Paris: Fayard, 1993).

[11] R.A. Donkin, "Settlement and Depopulation on Cistercian estates During the Twelfth and Thirteenth Centuries," *Bulletin of the Institute of Historical Research* (University of London), 33 (1960), 141-165; "The Cistercian Grange in England in the Twelfth and Thirteenth Centuries, with Special Reference to Yorkshire," *Studia Monastica*, 6 (1964), 95-144; "The Cistercian Order in Medieval England: Some Conclusions," Transactions and Papers (Institute of British Geographers), No. 33, (1963), 181-198.

For instance, he correlates the location of royal forests with charters to reveal the identity of patrons and argues that royal patronage was quite strong in England. His work has influenced my own by its emphasis on networks; he too uses maps to connect monasteries to urban centers to hypothesize avenues for trade.

Constance Hoffman Berman's *Cistercian Evolution* (2003) discusses adoption and incorporation in southern France and demonstrates how atypical patterns in the region should be looked for elsewhere on the continent. Her previous monograph on medieval agriculture in southern France should be noted for exploring relationships in the landscape.[12] James France's (1992) study of the Cistercians in Scandinavia traces the influence of ecclesiastical networks[13] and Michała Walickiego (1968) explores the diffusion of Cistercian architecture through Poland; this edition, the work of a number of scholars, included a set of local maps and network charts.[14]

On a continental scale, Frédéric Van der Meer's *Atlas de l'ordre cistercien* (1967) stands alone in mapping Cistercian foundations and their affiliations.[15] Van der Meer's work includes a set of detailed, color-coordinated maps and charts. I am indebted to this work for inspiration but do not rely upon it as source, as a number of corrigenda have been published to correct its mistakes. With respect to the merits of Van der Meer's endeavor, I retained his color scheme—Cîteaux: *green*, Morimond: *blue*, Clairvaux: *red*, and so on. In the nineteenth century, Leopold Janauschek, a Cistercian monk and scholar, compiled the *Originum Cisterciensium Liber Primus* (1877), a catalogue of foundation dates and alternative place names, including such

[12] Constance Hoffman Berman, *Medieval Agriculture, the Southern-French Countryside, and the Early Cistercians: A Study of Forty-Three Monasteries*, Transactions of the American Philosophical Society 76, 5, (Philadelphia: American Philosophical Society, 1986).
[13] James France, *The Cistercians in Scandinavia*, (Kalamazoo: Cistercian Publications, 1992).
[14] Ewa Łużyniecka, *Architektura Klasztorów Cysterskich*, [The Architecture of Cistercian Monasteries], trans. Marzena Łuczkiewicz, (Wrocław: Oficyna Wyd. Politechniki Wrocławskiej, 2002).
[15] Frédéric Van der Meer, *Atlas de l'ordre cistercien.* [Atlas of the Cistercian Order], (Paris-Bruselles: Edition Sequioa, 1965); see fn 25 for publications that discuss mistakes in Van de Meer's *Atlas*.

minutiae as the succession of abbots and dates of relocation. A chart of the Cistercian affiliation system can found in the appendix, which I relied upon to construct the genealogical hierarchy which is essential for a study of the Cistercian expansion. Many published works still cite Janauschek's nineteenth century catalogue.

Recent scholarship may be seen to follow as a reaction to early twentieth century scholarship that upheld the monks' economic program as commendatory and the grange based farming method as a precursor to modern agriculture. Historians had looked back to the Cistercians' accomplishments to celebrate the roots of their own nations' agricultural achievements. Contemporary historians who would like to debunk these myths look painstakingly for examples where the monks acted as *rentiers*, exploiting labor and depopulating villages. There are challenges however with these contemporary studies, especially when historians would wish to extrapolate their conclusions to the rest of the continent. James Thompson's (1920) study of the Cistercians reveals that even the historic lands of western Germany are not patterned like foundations in Bohemia.[16] Settlement patterns vary between regions because foundation methods are different and the system grows in complexity as it evolves. It is precisely because regional studies are limited for extrapolating wider conclusions that I have returned to a continental study of the expansion. Furthermore, there are uncertainties inherent in the early life of any organization where practices are widely varying and administrative structures have yet to be defined.

[16] James Thompson, "The Cistercian Order and Colonization in Mediaeval Germany," *The American Journal of Theology*, 24, (1920), 67-93.

Research Gap

The specific gap this study fills is the need for dynamic mapping at the continental level to produce a network analysis of some 700 monasteries.[17] Furthermore, this study is unique in modeling early growth of the Cistercians as the development of a network, suggesting that in its infancy, the internal structures of the Cistercian network were still in formation and patterns arose out of the "multiplicity of simple interactions."[18] This study demonstrates how the time-space physical attributes of foundations can be valuable sources about the internal motivations of the first generations of monks.

Previous studies have assigned maps only a minor importance. Those in Pacaut's (1993) monograph appear to be copied from Van der Meer's (1967) *Atlas de l'ordre cistercien*. It is unfortunate that Pacaut's otherwise cogent monograph could be so careless with the maps, perpetuating mistakes and conveying patterns in only general terms. This current study depends upon maps as analytical tools and suggests that maps can represent patterns across temporal periods and spatial distances in a way that textual sources cannot. After all, monasticism is a way of life so intimately connected with the landscape and notions of space.

[17] The 700 monasteries in my data set were quite a challenge as each monastery had to be inputted, positioned, connected and analyzed. By contrast, a study of the Premonstratensians numbers some 600 monasteries, the Carthusians 250, and fewer still for other monastic reforms. (See Figure (28 in chapter five for a comparison between the Cistercians and other reforms of the same period.) The Cistercians, notwithstanding the nunneries, were the largest. I acknowledge there are likely mistakes in the maps. When possible, I corrected coordinates or noted mistakes in the appendix so scholars might not build upon false data.

[18] It was my early intention to describe the Cistercians network as a "complex system." Although the patterns that arise out of these interactions are themselves complex, it is rather not all that complex of a system and one for which we have a great wealth of information. R.A. Donkin writes, "Of all societies, the monastic is perhaps the most circumscribed and stylized; there is virtually no problem of definition, and both the period and area with which we are concerned are likely to be at least fairly precisely determinable." *The Cistercian Order*, 181.

Research Questions

Mapping can create pretty pictures but its usefulness as a methodological tool depends upon the research questions a scholar asks. The questions this current study posits relate to patterns, networks and patronage. What were the geo-spatial characteristics of the expansion? Did zones of influence at the continental scale relate to genealogical branches? If so, which branch had influence in which region and during what time period? Secondary questions to be answered in a later chapter relate to resource networks: Along which networks did the expansion diffuse? Did the foundations follow the travels of Bernard? Was the role of royalty in Hungary substantial in rejuvenating growth in the late twelfth century? Lastly, in the concluding chapter I discuss topographical analysis using satellite imagery to posit further questions about motivations.

Research Innovations

GIS may be used to analyze any type of spatial data and medieval monasteries are no exception. Just about anything that can be mapped can be studied with the use of GIS. [19] In recent years the cost of the technology has fallen; complicated and expensive methods are now easily done on a personal computer. In monastic studies, GIS can complement a textual inquiry because foundations are themselves primary sources embedded in the landscape. For the Cistercians, few sources are specific about motivations before the year 1180 but by that time some 450 abbeys were part of the extant network. Furthermore, GIS mapping allows for the comparison of a wide range of disparate data and empowers a researcher with a tool to overcome linguistic

[19] GIS, Geographical Information Systems, describes any kind of research inquiry that assigns attributes to a data set—such as time, location and duration. GIS allows a researcher to position entities in the landscape and study the time-space relationships between them. The same could be done for other medieval topics, such as castles, and the attributes chosen to consider number of towers, depth of moat, sieges withstood, and so on.

barriers that might constrain continental analyses. On a final note, this study hopes to demonstrate a method of topographical analysis that has only become possible within the last decade as satellite imagery has been made public.

Data Sources

The geographical coordinates were obtained for a great majority of foundations from a database compiled by scholar monks at the Cistercian abbey of Certosa di Firenze. I am indebted to the monks for the use of their data.[20] Genealogical lines and parent abbeys derives from a list in Pacaut's *Les Moines Blancs* (1990). The name and date of each foundation can be found in Janauschek's *Originum Cisterciensium Liber Primus* (1877).[21] Where there was a discrepancy between the two, I sided with Janauschek, a bias not strictly warranted, although his attention to detail is something to be admired.

As for reliability, a systematic effort was made to sample the data for accuracy by looking for abbey remains in current satellite imagery. Those abbeys still extant are easily verified. Whenever possible, I compared the maps produced for this current study with published regional studies of Cistercian foundations, such as those in Hungary and Poland. Data for abbeys with no known coordinates were obtained by other means. For these, I consulted secondary literature for mention of the abbey by name. For those few abbeys with no mention in the literature save for a diocese

[20] Cistercians, "Monateries in Alphabetical, Chronologial and Geographical Order"; available from http://cistercensi.info/abbazie/monasteri.asp?lin=en; Internet; accessed 9 May 2008. It is a challenge in GIS to obtain accurate data; the monks at Certosa di Firenze have published Cistercian foundation data online which I accessed for the first time on Sep. 1, 2007 and the last time on May 9, 2008. Doubtless, Cistercian scholars will find this an invaluable resource, but I believe it remains the responsibility of the data provider to disclose sources so that mistakes are not perpetuated and a degree of error may be judged. The source basis for the data set is not made clear. I contacted the monks to ask from what source they obtained their geographical coordinates but received no response. Needless to say the errors are present in this current study are my fault alone.

[21] Generations of Cistercian scholars owe a debt to Janauschek for his painstaking endeavor to gather foundation data from cartularies and charters. He had planned to do the same for the nunneries. Although nunneries were quite numerous and present in the life of the Order as early as the twelfth century, I will not deal with them in this current study.

perhaps, I relied on toponyms to relate the abbey to its historic location.[22] For the remaining ten or so abbeys with no known location, I positioned the abbey at the center point of the smallest determinable geographical extent. These abbeys have been highlighted in the data table in yellow in (A.35 and A.36) for subsequent scholars, should they want to improve on my study where time constraints prevented me from doing so.[23]

Research Methodology

Network Introduction

In contrast to the centralized empire of Cluny, Cîteaux grew by way of the affiliation system, a hierarchical organizational structure that placed each abbey subordinate to one above. [24] Cîteaux, as the mother house, had eight levels of filia below. By contrast, the abbey of Przmet (1285) in Poland had eight levels of filia above. If the hierarchy is taken from an abstract space into a geo-spatial space its characteristic features define it as a *network*. The ratio of the levels above to below can be seen as an index that returns the abbey's position in the network hierarchy. [25]

This calculation, as for others in the study, was done only for the 698 whose geographical coordinates could be reasonably determined. For example, the abbey of

[22] Locating medieval monasteries is sometimes challenging. Consider the Cistercian foundation Pilis in the town of Pilisszentkereszt, a Hungarian place name that refers to a certain Holy Cross monastery. The monastery after which Piliszentkereszt takes its name is not a Holy Cross monastery but rather a Pauline monastery that was incorrectly identified after the Ottoman Turkish period. The monastery for which Pilis was mistaken lies some distance away, though Pilis continues to rest where it always has—in the place where it was built.

[23] An approximation for the minority of abbeys where information was lacking or was unable to be verified is justified because of the role of uncertainty on a continental scale. If kept to a minimum, say less than 2%, the statistical majority would fall within an acceptable degree of error.

[24] See C.H. Lawrence, *Medieval Monasticism, Forms of Religious Life in Western Europe in the Middle Ages*, 2nd Ed, (London: Longman, 1989), 86-104. The Cluny system was controlled by a single abbot whereas the Cistercian organization functioned as an interconnected network. Lawrence describes the basic tenets of the latter's organization in the chapter "The Cistercian Model," 174-197.

[25] The filliation network (or genealogical tree) was constructed by Janauschek in the *Originum Cistercensium*. In the twentieth century Cistercian filiations and foundations were drawn by Frédéric Van der Meer, *Atlas de l'ordre cistercien*, (Paris-Bruselles: Edition Sequioa, 1965). However, this work has been corrected; see Maur Cocheril in *Cîteaux*, 17 (1966), 119-44; Edgar Krausen and Polycarpe Zakar in *Analecta Citerciensia*, 22 (1966), 279-90.

Bellevaux (1120), founded by Pons of Morimond in Cirey in Haute-Saône, occupies a third level position under Morimond. (Citeaux → Morimond → Bellevaux). Its daughter abbeys are positioned in four levels of hierarchy below. If we define the hierarchy ratio as a ratio of the levels below to the levels below and above [levels below / (levels above + levels below)], the hierarchy ratio of Bellevaux is [4 / (2 + 4) = 0.67]. The *Influence Index* can be calculated by multiplying the hierarchy ratio by the number of daughter abbeys. Bellevaux has an *Influence Index* of (0.67 * 5 daughter abbeys = 3.33), mean 1.7, standard deviation 5.4, and is the "eighteenth most influential" abbey in the network. It is also true of its corollary in physical space; Bellevaux was only a 150 km from Cîteaux and as such it had access to greater resources than an abbey in distant Bohemia or Poland. The Influence Index derives from the properties of a network; the greater the connectivity the greater the influence.

To understand what made the Cistercian network unique, consider the prevailing organizational model of the time, akin to the feudal structures of lordship and serfdom, a centralized and vast land-management system put in place by the abbot of Cluny. Hugh Lawrence in his survey of medieval monasticism describes the essential difference between the system of Cluny and that of Cîteaux:

> The problem that faced the founders of Cîteaux and their successors was how to reconcile autonomy with the need to preserve standards and to ensure uniformity. The model of the centralized Cluny Empire was rejected: the Charter of Charity (*Carta Caritatis*) expressly asserted that the bond which kept the Cistercian abbeys in relationship with one another and with the mother-house was not that of subordination but that of mutual love. Instead, a solution to the problem was found by creating a strong federal framework which ensured strict and uniform observance of the Rule by a system of mutual supervision. The chief agencies in this were the general chapter attended annually by all abbots or their deputies, and the system of affiliation.

The affiliation system of the Cistercians was somewhat novel in its origin, and the relations between filia reveals much about the organization as a whole, so the basic form of this current study takes is that of a *network analysis*. Consider an abbey's influence to take into account both its hierarchical position in the network

and the number of its daughter abbeys. The Cistercian network structure gives rise to a measure of the relationships between abbeys, and the *Influence Index* is defined to quantify a monastery's probable influence over another. Each of the 698 monasteries founded before 1400 was assigned an Influence Index; these values can be found in the data tables A.35 and A.36 in the appendix and the top fifty most influential abbeys are summarized in a statistical table A.33. What does an abbey's Influence Index suggest? It describes how important the abbey's role was in the developing network.

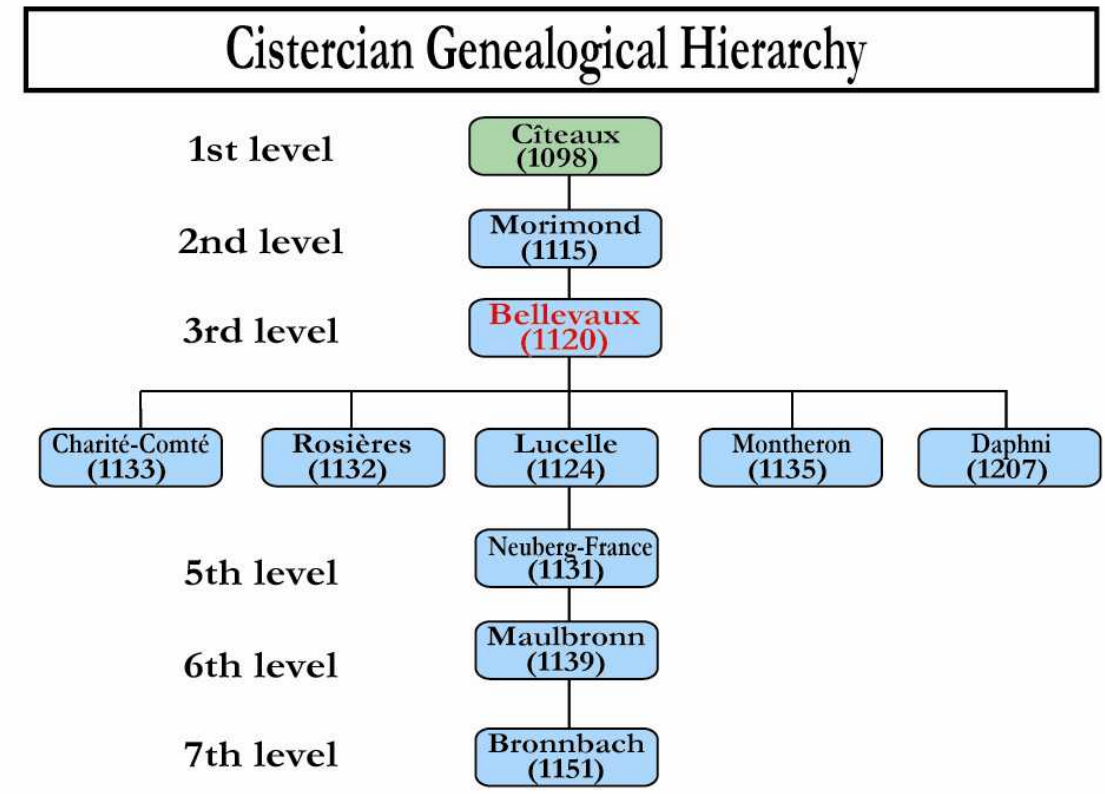


Figure 2 The structure of the Cistercian genealogical hierarchy makes possible a discussion of influence based on the notion that one abbey is subject to the authority of another. The line of Morimond has been chosen to explain the so-called *Influence Index* of Bellevaux (1120), a measure which considers both the number of its daughters and its position in the hierarchy.

When plotted on a map or compared in a chart, the Influence Index gives a power-space distribution of the key monasteries in the network. See Figure 2 for evidence that Bellevaux (1120) went on to establish daughter abbeys, as the

Cistercians as an organization—in contrast to the centralized Cluniac system—gave its members authority to prosper their own foundations. The fact that Bellevaux has daughter abbeys is evidence that Cîteaux wanted to share the responsibilities of the expansion with its members. The network can be understood as both the catalyst by which the Cistercians grew and the means by which one abbey was held accountable to another. For the purpose of this study, I assume the closer the abbey was to the top of the hierarchy the better access it had to resources and the better able it was to assist in further expansion. An abbey's Influence Index is greatest for those monasteries at the top of the hierarchy network with many daughters.

Network Analysis

The expansion can be better understood by studying the social context in which the network developed. Who financed the foundations? From where did the original population of monks derive? The answers to these questions do not derive from the data but rather just the opposite—the patterns revealed by the data suggest the questions to be asked.

For instance, a number of distant foundations suggest growth by an invitation from nobility or royalty. Evenly spaced, chronological foundations suggest a pattern of colonization, whereby a detachment of monks depart to settle a neighboring region. A large number of concurrent foundations at any one time suggest adoption, the consolidation or acquisition of monasteries into the network. All of these network patterns are present in this current study, drawn in a series of maps and depicted as straight lines linking filia of the same genealogical branch.

The Cistercians were divided into circaries or administrative divisions but no evidence suggested the divisions were more important than affiliations. Furthermore, the patterns in the landscape suggest that the Cistercian affiliation system seldom paid

heed to boundary lines. Abbeys in central France were connected to distant Scandinavia and the shores of the Iberian Peninsula. Abbots shifted from one house to another and monks resettled from region to region. It makes little sense, aside from the pragmatic limits of language, to confine a survey to linguistic, nation-state or kingdom boundaries—or any boundaries for that matter—therefore this study transcends artificial delimiters and crosses kingdom divisions of Bohemia, Poland, Hungary and so on.

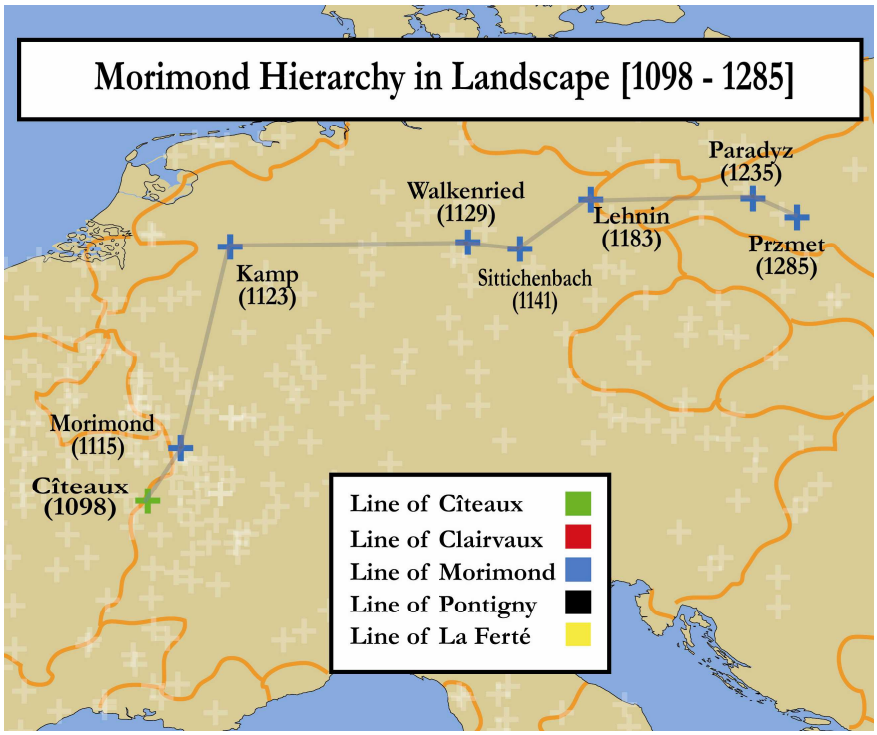


Figure 3 The genealogical line of Przmet (1285), a filia of Morimond, placed in the landscape as a line of successive foundations in Burgundy, the Holy Roman Empire and the Polish kingdom during the twelfth and thirteenth centuries. This pattern suggests patronage obtained locally in contrast to long distance foundations characteristic of the Clairvaux line.

It is not my intention to construct an argument on the basis of connect-the-dots. I will use the maps as analytical tools to prosper questions about the monks' motivations and intentions. Specific case studies will be presented in a later chapter to explore the social context in which the expansion took place, to posit a few general conclusions to what are rather a number of complex historical problems.

Monastic foundations cause patterns to emerge in the landscape that can be read like a charter to hypothesize motivations and intentions. Site locations are chosen because resources are available to a population of monks who would wish to make a foundation. A range of conditions make a foundation possible, such as ecclesiastical approval, popular piety, investment capital, productive land and a labor supply, whether provided by the monks, lay brothers or tenant farmers. Patterns, influence and patronage are related to one another. Foundations cause patterns to emerge in the landscape. This is so because a group of monks depart from place to another to make a foundation and this act structures the relationship of one monastery over another. Patterns in the landscape suggest sources of patronage because abbeys are founded where resource chains can furnish a monastery with labor, capital, land and so on.

A network analysis can help a historian better understand the development of an *order* at a time before its administrative structures were even formalized. I propose to make network structures explicit in the landscape by drawing them on a map as in Figure 3. Furthermore, GIS mapping, distribution statistics and network analysis are useful tools for a Cistercian scholar who would wish to return to a continental-wide study of the early reform. The method for this current study follows the precedent of James Bond in his (1990) study of the Premonstratensians.[26] Bond discussed a twelfth century reform with the aid of a set of analytical maps drawn with respect to foundation dates and longevity. Michael Aston did the same with the Carthusians (1990), a study aided by a series of charts organizing growth into 20-year bins.[27] Neither of these studies examined network relationships nor connected foundations to resource networks in the style of R.A. Donkin, though both are outstanding in the dynamic picture they put forward of two notable twelfth century monastic reforms.

[26] Bond, "The Premonstratensian Order."
[27] Aston, "Carthusian Order."

Bond's was a narrative history, complemented by statistical summaries and a set of spatial distribution maps. Aston's study on the Carthusians in Britain and continental Europe places the reform in the context of others. Both analyze an order's entire chronological development and deal with the dissolution and closure. This current study builds upon the work of Aston and Bond with a focus on network relationships, as I argue that these can be explored just like the narrative histories of individual abbeys.[28] A set of analytical maps drawn for this current study can be found in the appendix (A.4 – A.29). The analysis that follows is based upon these maps and a few statistical tables found also in the appendix (A.30 – A.34).Where necessary to elucidate a part of my argumentation I place a map or part of one in the main body. When my argumentation refers to a sequence of maps that were too bulky to insert, I make specific reference to an appendix number, so they might be easily viewable concurrent with the discussion. In order to distinguish phases of chronological development, a precedent which follows from the work of Aston and Bond, I chose the intervals [1098 – 1128], [1128 – 1158], [1158 – 1218], [1218 – 1278] and [1278 – 1398], so that the bins might correspond to changes in the growth rate and spatial distribution. To facilitate comparison on the basis of a common denominator of 30 years, I chose intervals of 30, 30, 60, 60 and 120 years to divide three centuries.

[28] My methodology might best be described by the variety of computer tools I used. Each of the abbeys was entered into a spreadsheet assigning the attributes: name, date, location, filiation, parent and so on. See the appendix for the printed data table where I have highlighted foundations with missing or uncertain attributes so not to perpetuate mistakes. I then modified the spreadsheet for use in a statistical program. After analyzing the data for its mean, mode and standard deviation, I used a vector illustration program in concert with a map publishing utility to draw the foundation data in layers, such that I might elect to view at any given time interval one or more geographical regions. I then produced a set of maps and statistical tables derived from the visible patterns on the maps, and used satellite imagery to analyze topographical features from a random sample of ten percent of the abbeys. Those five programs are Microsoft Excel, SPSS, Adobe Illustrator, MaPublisher and Google Earth.

Growth during these periods is not even, nor should it be, but these divisions provide a balance between even divisions that assist the mathematics of comparison and bins based on growth alone that would make the expansion curve appear artificially smooth. It must be acknowledged however that more than half of growth occurred in the first sixty years and so this study focuses especially on the years up until 1158. Even during this period, a steep growth curve makes mapping problematic because the interval is too large for patterns to emerge. The thirty years [1128 – 1158] were further divided into five year bins.[29]

Pond Model

Why are models useful to describe historical phenomenon? Without growth models there would be no basis to say where the monks might have gone and explain upon a rational basis where they did go, predicated of course upon a lack of textual evidence describing why the monks settled where they did. There is however no need to make "predictions" with historical data. Rather this current study depends upon models as a conceptual framework for discussion. If a model can describe growth in a uniform plane, one might ask, why *didn't* growth occur here when the model predicts it should? These models seem to be relevant for distribution studies and will be used to uncover characteristic features. Historical data will be used to explain these features further.

To use an analogy, consider a rock thrown into the center of a pond. The ripples on the pond will propagate outward from the center in concentric circles

[29] The interval [1142 to 1152] could have been even further divided into one year periods, but such a division isn't strictly warranted because my intention is to show aggregate patterns over time. These anomalies, when the growth rate peaks or falls quickly, are best described by stating explicitly the cause, such as the addition of 29 abbeys of Savigny in 1147.

according to Figure 4. The rock represents a change or innovation in a given system.[30] Provided that the attributes of the system are uniform, propagation will proceed outward in circles away from the epicenter. Concentric circles or the *Pond Model*[31] is useful to describe growth in the Cistercian monastic reform, where the surrounding countryside may be seen to represent the surface of the pond, and propagating waves represent successive detachments of monks departing for neighboring lands.

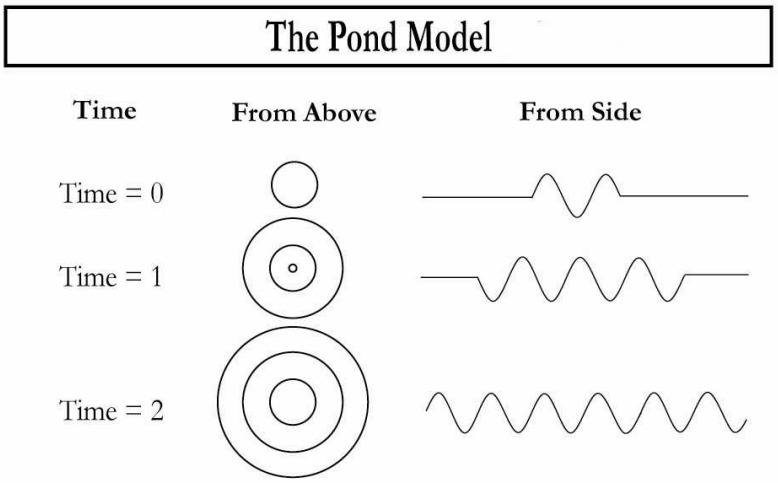


Figure 4. A rock enters a pond at time zero and waves begin to disperse. Provided there is no obstruction waves propagate outward, but as the waves get further away from the center they get weaker. This model will be used to describe the Cistercian expansion as the dispersion of an innovation through a uniform plane.

Of course there are non-uniformities in twelfth century Europe. The proximity of the Swiss Alps, the presence of the Arabs in the Iberian Peninsula, or competition from the Premonstratensians, all of these complicate the simple model, but the pond model still useful as a starting point. Just as the ripples on a pond oscillate between peaks and troughs, it took some time to gather sufficient resources for the exodus of

[30] The Pond Model derives from the mechanics of waves when a disturbance is introduced in a continuous plane. See for example, Art Hobson, *Physics: Concepts and Connections*, (Englewood Cliffs, NJ: Prentice-Hall, 1995): 195-201. In principle, a wave is a disturbance that travels through a medium and transfers energy. Here I describe an innovation moving through time-space as a matter of energy, or in this case, a non-material construct capable of changing the state of a system.

[31] Definitions for terms that appear in *italics* can be found in the glossary.

yet another detachment monks. The expansion can then be seen to proceed in a wavelike fashion.[32]

S-Curve

Across time, the diffusion of an innovation can be described by a characteristic curve known as the logistics function or *S-Curve*.[33] The S-Curve is shaped like an elongated "S" and describes the growth of an innovation in a given population. It is often used to describe a trend in fashion and technology, or any growth in population with finite resources that begins slowly and accelerates as the innovation enjoys wider acceptance.

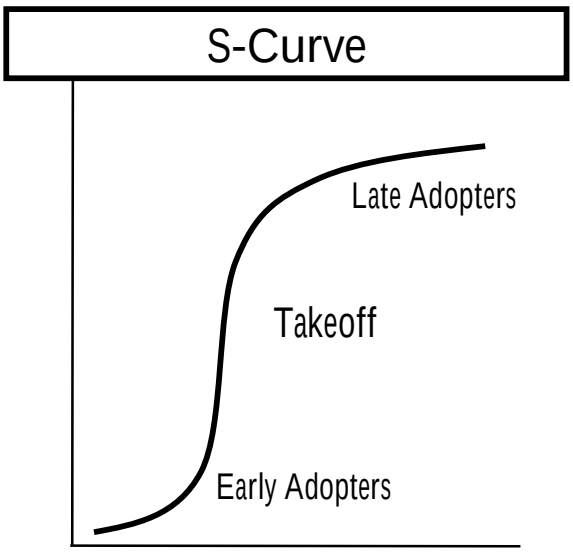


Figure 5 The *S-Curve* describes the diffusion of an innovation. It begins with a period of slow growth, followed by an upsurge known as the *takeoff*, and concluding with a plateau of slow growth along a horizontal asymptote. The curve's shape derives from the aggregate effects of adoption—*early adopters* assume the most risk while the *late adopters* are risk averse.

[32] If the model was elaborated, it would include a few smaller rocks scattered in the pond to represent other sporadic changes in the system, such as the arrival of the reform in major population centers, or an influential bishop who begins to promote the reform. This however overcomplicates a simple model.

[33] See Everett M. Rogers, Diffusion of Innovations, 5th ed., (New York: Free Press, 2003), 5-35, for an introduction to the concept and a bibliography of some 5,000 published studies. Roger's monograph is a handbook for diffusion studies which he defines as "the process in which an innovation is communicated through certain channels over time among the members of a social system."

Normally the S-Curve is associated with a promoter or campaign and that's why it was chosen for this current study, because of the influence of Bernard in propagating the reform. The model is descriptive and contains three key regions: the start of growth attributed to early adopters, a period of *takeoff* characterized by widespread adoption and a period of plateau (the horizontal asymptote) attributed to later adopters. Beyond its peak the system is growing but at a diminishing rate. The S-Curve in this current study is useful to describe the first sixty years. Both the *Pond Model* and the *S-Curve* in concert suggest growth, the former in a geospatial sense and the latter in a temporal one.

Network Model

The Pond Model and the S-Curve describe aggregate growth, but a *network model* is well suited for elucidating connections between foundations on a landscape map of Europe. The network model will provide a conceptual framework for a discussion of the affiliation system. The properties of the Cistercian network will be elaborated in the chapters that follow; however, suffice it to say that a network model rests upon the twin pillars of the *Carta Caritatis*—visits by a parent abbey to its daughters and regular attendance at the General Chapter. Because of these twin requirements, each abbey was embedded in communication loops that extend both horizontally and vertically through the network. An abbey was connected vertically by way of parental visitation and horizontally by way of the General Chapter. Abbeys adjacent physically in the landscape were not always affiliated in the same genealogical line and that's why the network model will be used to describe an abbey's connectivity. Consider each abbey then to be a *node* in the network. The *clustering coefficient* measures the fraction of the surrounding nodes joined by way of affiliation. The *degree of connectivity* describes the number of links between nodes,

and the *length* of these connections describes the average distance between foundations. The network model suggests that when an abbey becomes more connected it enjoys a more influential role in the network. The *Influence Index* described earlier in this chapter follows directly from a treatment of the Cistercian reform as a network. Furthermore, the assumptions for this current study are taken from *Central Place Theory*.[34] The theory elaborated in the 1960s and 1970s is not directly relevant to growth that propagates outward from a single core, though Central Place Theory may be helpful to describe the effects of colonization after the Cistercians were present throughout Europe, when growth became limited by a certain saturation density.

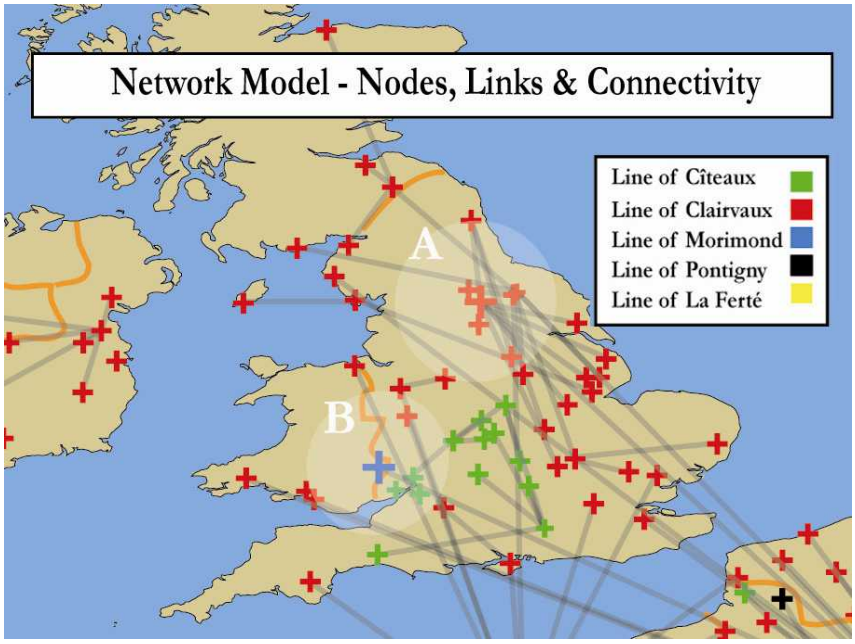


Figure 6 English foundations connected in a network model. Each foundation (node) is connected by a filia (link). The coefficient of connectivity describes how well a given node is connected to adjacent nodes. The Clairvaux node in (A) is well connected to those around it but in (B) the Morimond node is not connected to any of those around it.

[34] The theory was put forward by Walter Christaller, *Die zentralen Orte in Süddeutschland*, 1933. For a developed variant of this model see Carol Smith, Regional Analysis, Volume 1 Economic Systems, (New York: Academic Press, 1976), and for the assumptions which are used here see Walter Christaller, *Central Places in Southern Germany*, (Englewood Cliffs, NJ: Prentice-Hall, 1966). The assumptions: isotropic landscape, uniformly distributed population, evenly distributed resources and equal benefit to the "seller" which in this case means that all options are equal as a convert to monasticism looks about to join the closest monastery.

Thesis Summary

Exogenous factors may be described by textual sources but factors internal to the organization for which we have comparably fewer sources can be analyzed with the aid of maps. In this regard, the study proceeds as follows: chapter two analyzes foundation patterns in the landscape while chapter three builds upon these patterns by connecting each foundation in a network. Chapter four explores the social context in which the expansion took place based upon a simple question: what caused long-distance connections in one place and short, close ones in another? In this chapter I present two case studies from the finding that Clairvaux was unwieldy in the development of the Order and that much was done to constrain the influence of this abbey. Specifically, these case studies analyze the influence of Bernard in Italy and the role of royalty in Hungary. Chapter five concludes with a discussion of how GIS and topographical analysis might answer the question: was there a master plan? Or was the formation *ad hoc*, a disparate group of monasteries coalesced into common membership by a leadership whose tactics and preferences were changing with time?

CHAPTER 2

Patterns

> "Leave your body at the door; here is the kingdom of souls. The flesh has nothing more to do with it."[35]
> - Bernard of Clairvaux

At the close of the eleventh century, in a remote region of medieval France, twenty-one men under the leadership of Robert of Molesme, embarked upon a reform of Benedictine monasticism. Given a tract of land in the Dicoese of Châlons, by Raynald, a Viscount of Beaune, they founded Cîteaux (Cistercium) to return the character of the ascetic life closer to the spirit of Benedict of Nursia's *Rule*.[36]

The conditions at the start were ripe for the new reform. The twelfth century, even in the Middle Ages, stands out as an age of mass piety where men and women of all social classes joined monastic cloisters. A contemporary English chronicler Ordericus Vitalis wrote of monasticism: "Though evil abounds in the world the devotion of the faithful in cloisters grows more abundant and bears fruit a hundred fold in the Lord's fields. Monasteries are founded everywhere in mountains, valleys, and plains, observing new rites and wearing different habits; the swarm of cowed monks spreads over the world."[37] Even so, the Cistercian way was particularly austere. In contrast to the lavish lives of Cluniacs, even compared to other reforms of the twelfth century,[38] the daily life was rigorous, the diet meager and the duration for

[35] *Vita Prima* I, lib 1, cap IV, no 20.
[36] Cistercian history was recorded as early as the 12th century. For the story of the monks' departure from Molesme see the *Exordium Cistercii* printed in its English translation in Louis J. Lekai, "Early Cistercian Documents in Translation," *The Cistercians: Ideals and Reality* (Ohio: Kent State University Press, 1977), 442-450.
[37] Lekai, 33.
[38] See Michael Aston, *Monasteries*, (London: Batsford, 1993). The were others but the most successful were begun at Camaldoli (1115), Vallombrosa (1039), La Grande Chartreuse (1084), Grandmont (1124), Fontevrault (1100), Tiron (1109), Savigny (1112), Prémontré (1120), Aubazine (1130), Sempringham (1131) and Vallis Caulium (1193).

one's lifetime.[39] Even given the popular piety for religion and mass enthusiasm for monasticism, the Cistercians could only have appealed to those of deep faith or extreme zeal.[40] Despite the rigor and demand of the reform the number of foundations increased. Following spatial and temporal lines of development, this chapter analyzes their landscape arrangement. All the while it must be considered that these patterns are idealized as if they occur at a fixed time. While the location may be ascertained from the archaeological record, the time period is rather nebulous as monastic foundations took years to complete. Consider it an assumption that each Cistercian foundation had a location both specific in the landscape and at a given time and distance from another.[41] The analysis of the patterns that follows is on the basis of 698 Cistercian abbeys that can be positioned in the landscape at the close of the fourteenth century. As early as 1120, the Cistercians had begun their expansionary program and defined the notion of affiliation, as each of the first four foundations had a daughter abbey of its own.[42]

[1098 – 1128] - A Slow Start

The first colony of monks who departed for Cîteaux experienced a slow start. But with the entrance of Bernard, who arrived along with thirty of his friends and family, the fledgling reform entered its first period of growth. Within a span of three

[39] For a normative source on the monks' daily life see Waddell, Chrysognus, *Cistercian Lay Brothers Twelfth Century Usages*, (Citeaux: Commentarii Cistercienses Studia et Documenta, 2000), 53-200.
[40] For a discussion on the importance of stability in Benedict's Rule see the introduction in *The Rule of St. Benedict*, Timothy Fry, ed., (New York: Vintage Spiritual Classics, 1998).
[41] This was not always the case, as monasteries sometimes relocated because the site selection was poor. Furthermore, a monastery was not exactly "founded" so much as it "came into being" over a period of time. For a discussion of a Cistercian foundation see the Ph.D. dissertation by Grzegorz Żabiński, *Mogiła and Henryków: A Comparative Economic History of Cistercian Monasteries Within Their Social Context*, (Budapest: Central European University, 2005), 15-26.
[42] It may not have been so clear from the beginning which belonged to which parent, as the organizational structure was still in formation; however, what's certain was that the first four foundations proceeded from the mother house.

years four abbeys were founded within a radius of 120 km: La Ferte (1113), Pontigny (1114), Morimond (1115), and Clairvaux (1115).[43]

After a lull of two years that followed the foundation of Clairvaux (1115), at least one new foundation was made each year.[44] From the year 1113 onward, expansion would occupy a considerable amount of time and resources. Since the organization required regular attendance at the motherhouse and each new member admitted in a given year would need to be introduced to the rights and responsibilities of membership, expansion must have been a focal point of the General Chapter, if not outright in terms of growth objectives for the coming year, then indirectly by way of introducing new members. Furthermore, resources required for expansion—at least the human ones—would have been derived from current membership and a discussion of which monks would be become occupants of new foundations would likely have taken place.

The first four foundations line up in the shape of a cross: Clairvaux to the north, Pontigny to the west, Morimond to the east, and La Ferté to the south. What's interesting is that the position of these abbeys with respect to the Cîteaux approximates their future region of geographical influence. Clairvaux would go on to dominate the north, Pontigny the west, Morimond the east and La Ferté, though not considerable, would be influential to the south. In the first thirty years, the pattern suggests that Cîteaux wished to remain influential throughout the entire region and confine the influence of the other "genealogical branches" to a regional territory.

I would like to argue that the expansion plan was there from the beginning, that it involved voluntary coordination among monasteries. It may have been that Bernard, having arrived with considerable enthusiasm and missionary zeal, got to

[43] Abbeys are named in the local vernacular, ie. Savnik in Slovakian instead of Szepes in Hungarian.
[44] 1122 and 1196 were exceptions according to Pacaut, *Les Moines Blancs,* appendix.

work constructing a plan for expansion. The evidence is in the landscape: four foundations immediately after his arrival and a lapse of several years which would have been enough time to build up the requisite resources. Then an explosion of growth occurs from 1118 – 1121, in which for the first time the expansion takes the form of a developing network. Thus the foundations of Cîteaux—Preuilly (1118), Bonnevaux (1119), Cour Dieu (1119), Aumône (1121), Loroux (1121) were scattered in the west with Bonnevaux to the south. Those of Clairvaux—Trois-Fontaines (1118), Fontenay (1119) and Foigny (1121) were planted to the north. Those of Pontigny—Bourras (1119), Caudouin (1119), and Gondon (1123) were planted to the south-west. The foundations of Morimond were located to the north-east—Bellevaux (1120), Creste (1121), and Kamp (1123), while those of La Ferté, Tiglieto (1120) and Locedio (1124) were planted across the Alps in northern Italy. Each genealogical line shows evidence of distinct regional priorities, the evidence for which is contained in the landscape. In the period [1098 – 1128] no fewer than 31 abbeys were founded. The monks arrived as far east as central Germany in Ebrach (1127), as far north as Kamp (1123), as far south as Tiglieto (1120), and as far west as Loroux (1121) in northern France.

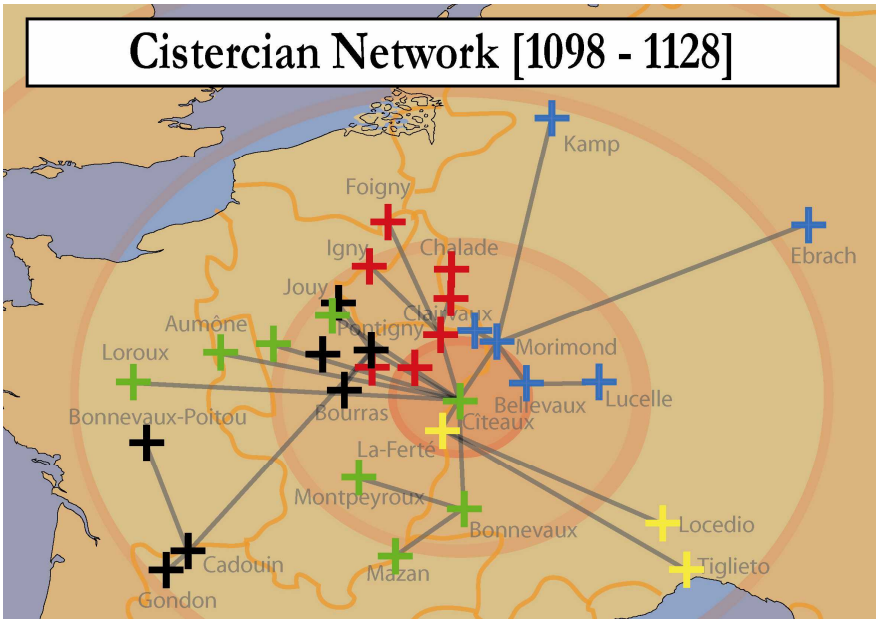


Figure 7 The zones of influence are well defined in the first 30 years. (A) Clairvaux is prominent to the north. (B) Morimond to the east. (C) La Ferté to the southeast. (D) Pontigny and Cîteaux to the west. Each line would go on to found daughters in the same region. As early as the 1130s, these zones of influence would begin to overlap, although their primary axes would remain articulated throughout the expansion.

It appears that these "zones of influence" were part of a strategy. According to network theory, an organization builds its membership by attracting new members to popular nodes, a principle known as *popular is attractive*, which suggests that once established in the landscape, new abbeys attach to those with the most foundations already attached. The most popular abbeys or those with the largest *degree of connectivity* become even more popular, a principle of network theory that causes certain nodes on a network map to become more important than others. If this was the case, the Cistercians created a program whereby they divided the map of Europe into zones of influence and each branch had jurisdiction over the abbeys within their zone of influence. This strategy would have maximized the organization's resources, as each branch of the network would have retained regional expertise and local knowledge.

[1128 – 1158] - Explosive Growth

The period [1128 – 1158] encompassed three decades of explosive growth when approximately half of the 698 foundations were made. The Cistercians arrived at the geographical extent of their influence in the Middle Ages, as far west as the Kingdom of Portugal and as far east as the foundation of Belmont (1157) in Syria as a result of a crusade. The monks went north to settle in southern Scandinavia and south to settle in the Italian peninsula. Ostensibly it was a time of growth driven by widespread popularity for the cloister, a popularity spurred on by their promoter Bernard of Clairvaux, a period in which he traveled at the behest of the papacy and spoke on behalf of his brothers. During these thirty years growth was concentrated in the core area, but there were dense areas in the British Isles and in northern and southwestern France. Scattered though not disparate growth occurred in Bohemia, Poland, Germany, Leon and Castille.[45]

[45] See James Bond, *Monastic Landscapes*, (Stroud: Tempus, 2004), for the vast panorama of effects monastic culture had on the landscape; in this volume he discusses manors and granges, deer parks and rabbit warrens, fisheries and fishponds, churches and chapels, orchards and vineyards.

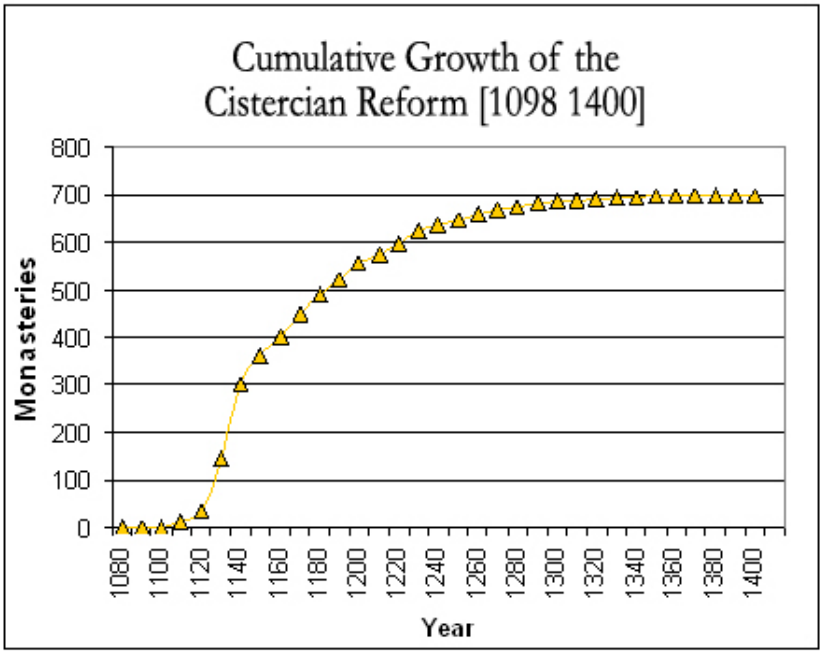


Figure 8 The slow start is followed by a surge of foundations. The curve takes a characteristic shape: that of an S-Curve, associated with the diffusion of an innovation. The period [1120 - 1050] frames the *takeoff* and coincides with the activities of Bernard.

The aggregate growth in this period is given in the figure. As discussed in Chapter one, the diffusion of an innovation can be modeled by the *S-Curve*. Growth in this period corresponds with the curve according to the best fit line shown. Growth started slow and steady in the 1120s but a period of rapid expansion followed.[46] Because the S-Curve is associated with a promoter, in Chapter four I examine the influence of Bernard and compare growth in this time period to a chronology of his travels.

For the statistical analysis that follows see the appendix for tables A.30 and A.31. If growth during these thirty years can be divided into concentric circles as explained in Chapter one, arbitrary divisions of 100, 250, 500, 750, 1000, 1250, 1500 and 1750 km would divide the map of Europe into eight concentric regions. In contrast to the period [1098 – 1128] when 60% of growth occurred within the ring at

[46] See Bond, "Monastic Landscapes," 25-42 for a discussion of economic base that enabled the expansion which proceeded by means of colonization, adoption, and relocation.

(0 – 250) km, only 20% of growth occurs in this same ring from [1128 – 1158]. During this latter period, a much greater number of foundations lie in concentric ring (250 – 500) km, containing the regions of northern, western and southern France and the western part of the Holy Roman Empire. Thus growth has extended beyond the core area already in the period [1128 – 1158] and the largest percentage of abbeys added during this time period was in regions outside of the epicenter.

The period [1128 – 1158] defined the unique character of the Cistercian expansion. Beginning with the entrance of twenty nine monasteries organized under Savigny in 1147, the Cistercians had to recognize for the first time a variety of monastic practices within the network. Likely this would have led to an adjustment of the strategy that was defined when genealogical lines were confined to a specific region and assumed zones of influence. (See the discussion in the previous section). Already in the interval [1128-1158] visible in Figure 9, genealogical lines have crossed in neighboring regions. Furthermore, there are areas, such as northern France, southwestern France and northern Italy, where foundations from a number of different genealogical lines are present. At first, the General Chapter might have wanted the newly acquired monasteries to conform to the rule, which would have required them to unload their possessions, but in practice it proved to be difficult and as foundations continued, the Cistercian network experienced its first bout of growing pains. The consequences were quite severe, embodied in the growing division between Clairvaux and Cîteaux, when the General Chapter put forth a decree to halt growth: “In the year of the Lord 1152, by the statute of the abbot’s General Chapter, shall not another monastery be constructed nor shall another religious foundation be made subject to

the authority of our order."[47] This was done ostensibly to constrain the influence of Clairvaux but it was an act not heeded.

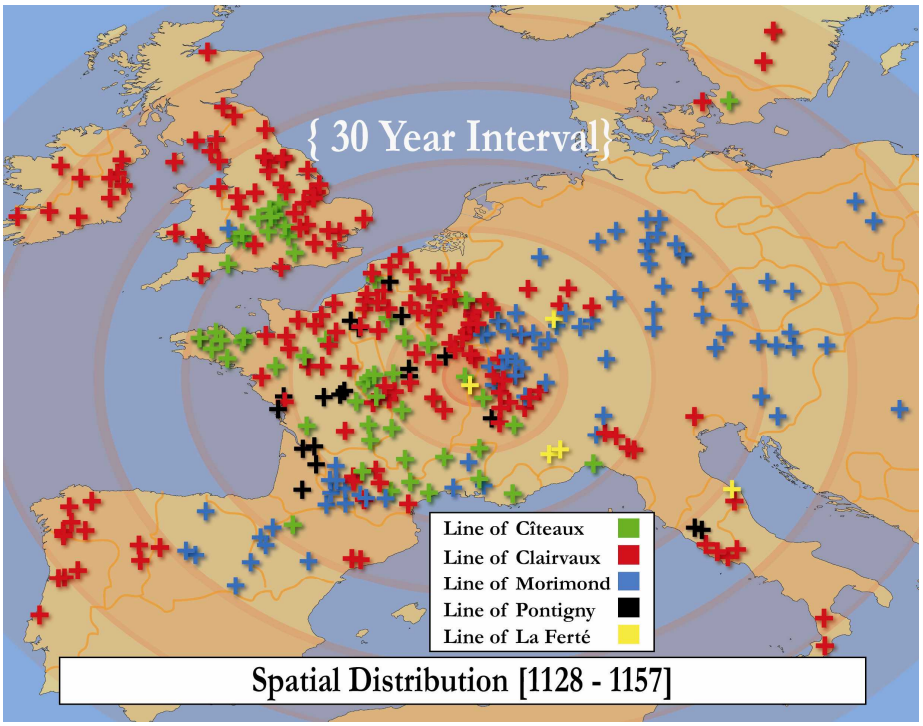


Figure 9 About 330 foundations were added. Notice that affiliation lines continue to stay confined to the geographical regions of influence established in the first 30 years. Clairvaux and Morimond however expand to new regions. The core area receives many foundations, while the outer perimeter receives comparably fewer. The next figure shows this same distribution over {5 year intervals} to analyze temporal patterns.

Consider a smaller time interval to elucidate events of the time period further. If five-year time intervals or bins are chosen, the spatial context can be made more precise. Generally over five-year intervals [1128 – 1132], [1133 – 1137], [1138 – 1142], [1143 – 1147], [1148 – 1152] and [1153-1157] the density shifts outward from the epicenter as seen the full page Figure 10. In the first five year period [1128 – 1132], growth is concentrated in the epicenter in northern France in the first two rings from (0 to 500 km). Foundations in this time period are close to the core area, though

[47] Josephus D. Canivez, *Statuta Capitulorum Generalium Ordinis Cisterciensis, Ab Anno 1116 ad Annum 1786*, (Louvain: Bureaux de la Revue, 1933), 45. *Anno ab Incarnatione Domini MCLII°, statutum est in Capitulo generali abbatum, ne ulterius alicubi construatur nova abbatia nostri ordinis, neque aliquis locus alterius religionis per subiectionem nostro ordini societur.*

a few foundations proceed in England and one in Austria. During the next five-year period, from [1132 – 1137], growth remains concentrated in the core area, but further growth follows in the Holy Roman Empire, southern and northern France, England, northern Italy and across the Pyrenees in Castille and Leon. Furthermore, in each of the new regions, growth continues to fill up in the blank spaces on the map. This last pattern is not revealed by maps which show only added growth, but it must be recognized that growth continues by colonization as earlier arrivals expand their presence. To see the effects of colonisation over time, see Figure 11 (on the next page) and the time interval [1158 - 1218]. By the end of this interval, shortly after the death of Bernard, the Cistercians had arrived in the west Iberian Peninsula, Ireland, southern Italy, and the Kingdom of Hungary, as growth continues to propagate outward and the first wave of the Pond Model arrives in these distant regions.

During the five-year intervals [1132 – 1137], [1138 – 1142], [1143 – 1147] and [1148 – 1152] the growth rates are 12, 12, 19 and 13 abbeys/year. The five year time period [1143 – 1147] stands out as an exception, when the growth rate jumped considerably. If we consider that twenty nine abbeys were added in a single act of monastic consolidation when the monastery of Savigny and its dependents were added, the adjusted growth rate to ignore this single addition would be 13 abbeys/year. During the critical time period of [1143 – 1147], only four abbeys were added within in the (0 – 250) km core area, whereas 40% of the abbeys were added from (250 – 500) km, the majority in northern and western France and in south England. Slow growth continued in central Italy, Castille and Leon, while the first arrivals appeared in Scandinavia. The data suggests that growth in England and France can mostly be attributed to the adoption of Savigny.

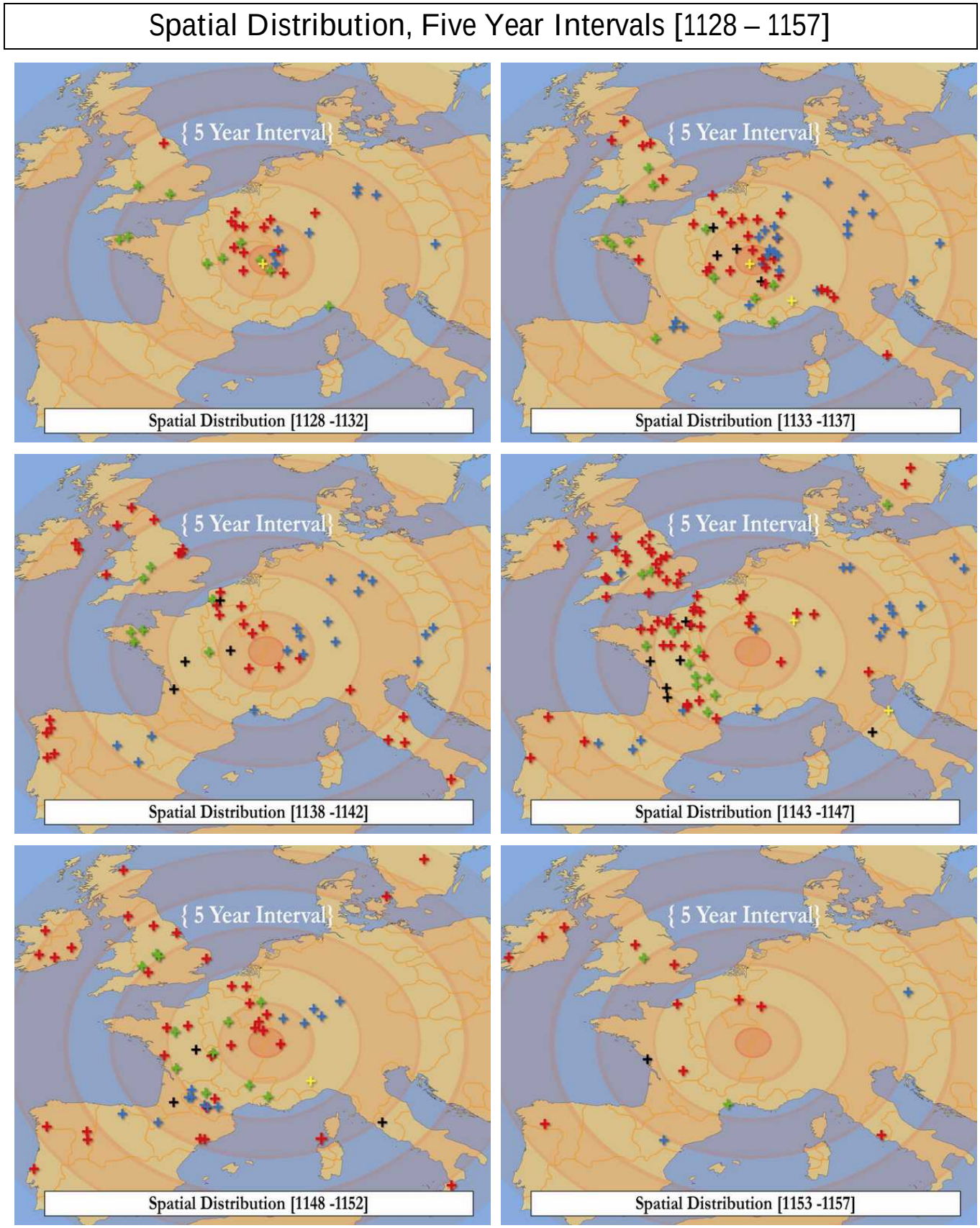


Figure 10 Left to right, top to bottom, see the distribution in five-year intervals move away from the core area. Compare [1133 - 1137] with the interval one decade later [1143 - 1147] for a noticeable shift outward. This is the period of *takeoff* as the Cistercians are welcomed by a wider population. See [1153 - 1157] for evidence that growth slowed after death of Bernard (ob. 1153) and the 1152 proclamation to halt growth.

Despite the spike that gives the impression of skyrocketing growth for a five year period, it is rather more accurate to say that a constant growth rate was maintained for nearly two decades. A constant growth rate suggests a system functioning at equilibrium, or producing at a rate it was designed to produce. This means that the system itself, though it was growing, was not necessarily contracting or expanding its *capacity* to add more monasteries. During these two decades twelve abbeys per year were added; this means that the Cistercians could generate a self-functioning monastery at the rate of one per month. Bear in mind that Cistercians did hot have any specific missionary priority, at least not in a way that later monastic reforms would come to emphasize the monk's evangelical role. The Cistercians were contemplative and not involved with the laity directly, which makes it all the more surprising that such high growth could be sustained, unless our assumptions about the character of the Cistercians are misguided. Assuming Cîteaux was playing a role in decision-making, I argue that at a growth rate of one per month, the organization had an intense mission priority—that once new foundations were settled, they were responsible for relaying information through the network so decisions about further foundations could be made in Burgundy. It seems that Cîteaux, not so much the "desert-like" ideal suitable for contemplation described in early Cistercian documents, was rather like a factory for producing contemplatives further a field. Not only Cîteaux but others connected to it; to supply the burgeoning network with monks, a great recruitment and training effort would have commenced. Furthermore, to support the growing number of monks and their estates, a population of lay brothers had to be added in the regions where the monks arrived. Local knowledge of customs and language would have been indispensable to the growing network, which would have reinforced the role that each of the genealogical branches played as repositories of region-specific information.

The five year intervals [1148 – 1152] and [1153 – 1157] show markedly curbed growth, owing no doubt to the unwieldy organizational challenges that came with managing a burgeoning bureaucracy. It would seem that the new challenges created—regions, languages, monastic practices—gave rise to the network's first period of introspection and self-definition. It's no wonder that Cistercians scholars attribute the organization's charter to this time period; there is definitive evidence that a large number of abbeys were added without the administrative structures that would have been necessary to manage them all.[48] The period [1153 – 1157] stands out in the development of the Cistercians because it includes the death of Bernard (ob. 1153), following on the heels of the proclamation that all growth should be halted. It continued at a rate of one foundation every three months or four abbeys/year, which could have attributed either to disobedience to the precepts issued by Cîteaux or outstanding obligations that remained to the patrons who had earlier pledged land. In Chapter three, the expansion will be delineated along lines of genealogy to look further from the core area and find those abbeys which were influential, at time at which the center was for the first time trying to constraining influence of their distant brethren.

[1158 – 1218] - Steady Growth

Compared to the previous thirty years, the period [1158 – 1218] is marked by slow steady growth, averaging about 4 abbeys/year. During this period there is conspicuous declining growth in the core area in the bin (0 - 250) km. Five percent of new foundations are in the core area compared to 61% and 19% and in the two previous thirty year intervals. Fifty one percent of new growth occurs in the two

[48] On estate management and on the structure and function of the demesne see René Locatelli, "Rappel des principes fondateurs de l'ordre cistercien, Aux origins du modèle domanial" [Remembering the Founding Principles of the Cistercian Order and the Origins of the Demesne Model], *L'espace cistercien,* ed. Léon Pressouyre, (Paris: Comité des travaux historiques et scientifiques, 1994), 13-26.

combined intervals (750 – 1000) km and (1000 – 1250) km. As can be expected from the Pond Model, growth declines in the core area with the passing of time and proceeds from the core area in Burgundy to more distant lands, just as the concentric circles on the surface of the pond propagate outward from the spot where the rock breaks the surface.

Another pattern is the diffuse aspect of new growth from [1158 – 1218] visible in Figure 11. Foundations are planted in a wide and disparate distribution across continental Europe, Scandinavia, the British Isles and the southern Mediterranean. Regions generally receive new foundations in proportion to their square area. I tested the data with a hypothesis: if contemporary state boundaries are chosen as the limiting areas, and the data is restricted on the basis of the growth rate to facilitate comparison, then regions acquire new foundations in proportion to their square area.[49]

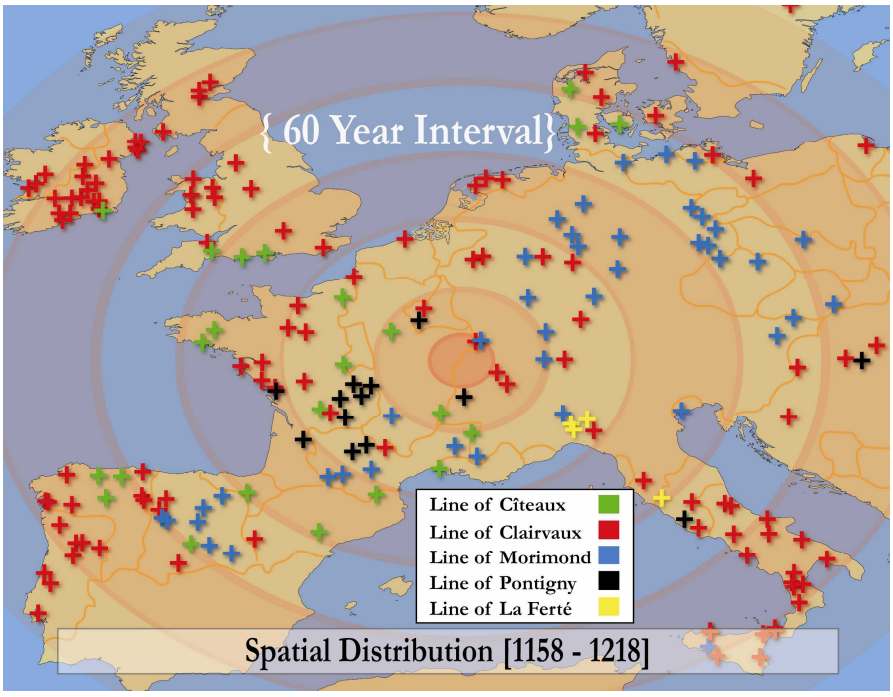


Figure 11 Foundations during the time period [1158-1218] generally fill into the blank spaces upon the map. According to the assumptions of a uniform and constant distribution of resources in Central Place Theory, monasteries will locate to blank spaces.

[49] I chose contemporary state boundaries for this part of the analysis because for these we have data on square area, but the result is the same: foundations tend to fill in the map in proportion to the area available.

This finding follows from Central Place Theory: if the demand for the reform is constant, then new foundations will form in proportion to available resources. Thus new foundations fill in the blank spaces on the map just as regional trading places converge for agents to exchange goods. It is not so simple of course because the map is not entirely absent of impediments to diffusion. In locations where there are fewer foundations there may be alternative monastic practices.[50] This period follows explosive growth not only of the Cistercians but the Premonstratensians as well. Regions where other reform movements were strong may not have accommodated Cistercian foundations so readily. A pattern emerges if we compare the location of foundations from [1128 – 1158] with those from [1158 – 1218]. In those spaces where foundations had been made in a concentrated fashion, in the later interval there are few new foundations. It appears that those regions had exhausted their capacity to take on new foundations.

Wide, disparate foundations are not exclusive to the landscape. There are still regions where dense foundation patterns prevail—Ireland received 27 new foundations and growth in France remained strong with 42 new foundations. West, Central and Southwest France show evidence of sustained growth. The Italian peninsula demonstrates strong growth, especially northern Italy, western Italy and the southern coast. Notably, there are seven foundations on the island of Sicily. Northern Castille, Portugal and Denmark showed strong growth as well. In these regions however, few dense concentrations of abbeys are present of the type almost exclusive to the landscape in the previous period.

[50] See Bond, *The Premonstratensian Order,* and Aston, *The Carthusian Order,* for maps that depict the core areas of these reforms. The Carthusians have two principal ones, the western part of the Swiss Alps and in Belgium; the Premonstratensians are principally located in the northern lands of the Holy Roman Empire. The most populous circaries of the Order are Floreffe, Lorraine, France and Westphalia.

[1218 – 1398] - Scattered Growth

Growth during the period was scattered to the west and moderate along the Italian peninsula and in Central Europe. About 128 abbeys were added in 180 years for a growth rate of 0.7 abbeys/year. The rate is down from a high of 11 abbeys/year during the expansion boom of the mid twelfth century, and represents approximately ten percent of the maximum growth rate achieved. Furthermore, the growth rate is decreasing throughout the period, meaning that each decade the network is adding fewer and fewer abbeys. By the end of the fourteenth century, as the expansion nears three centuries of growth, the addition of abbeys is on the order of one abbey every ten years. For the map of this time period see A.17: *Cistercian Foundations from 1218 – 1398* in the appendix.

Temporally, the time period is marked by conspicuously declining growth. The number of abbeys added must be greater than the number of abbeys closed for growth to be positive, so without looking concurrently at closures, it's difficult to say on the whole if the network was contracting. If it was growing, it was growing slowly. The fourteenth century was though most of Europe a century marked by war and famine, so it's perhaps not surprising that growth slowed in regions where human populations decreased.[51] Upon inspection of the map, almost all new growth in this period was in Central Europe. The Cistercians were by then connected to international trade networks and would by then have been accommodated in those places where an urban middle class was growing concurrent with industry and trade; it seems plausible that growth would continue in Central Europe at a time when it was declining in the plague-stricken and war-ravished west.

[51] The plague however cannot be a strict cause for the decline in growth because as demonstrated by Mick Aston's study of the Carthusians, some orders enjoyed a period of resurgence, ostensibly owing to the greater need for prayer in times of crisis.

Spatially, the period [1218 – 1400] provides further evidence for propagation away from a core area as given in the Pond Model. During the first sixty year period [1218 – 1278] growth is considerable, and one-third occurs to the west of the core area and two-thirds to the east in the kingdoms of Bohemia, Poland and Germany. An examination of the map of Europe reveals that on the whole there is a great deal of land area to the East and much less of the West, so as the expansion continues to propagate outward, it is perhaps not surprising that it occurs in the East. The concentric circle (500 - 750) km represents the most active region. The next 120 years from [1278 - 1398] reveal the most active area in the next circle outward (750 - 1000) km. Throughout the continent foundations occur further away from the core area.

The only regions in the period of late expansion from [1278 - 1398] that show additional Cistercian abbeys are England, Italy, Poland and the Holy Roman Empire. Perhaps as a point of interest, most growth occurs along a longitudinal axis running between 12 and 15 degrees, from the eastern border of modern-day Germany south through the Czech Republic and Austria. The core area during this time period receives almost no new growth, though just across the Alps foundations are still added throughout Italy.

Pattern summary

When the detachment of monks departed for Cîteaux in 1098, there was no objective to expand beyond Burgundy, not until Bernard of Clairvaux entered and four abbeys were founded in the shape of a cross in respective cardinal directions from Cîteaux. These abbeys were early signposts for the rapid expansion to come as each of those four daughter houses—La Ferté, Morimond, Pontigny and Clairvaux—would maintain discrete geographical priorities.[52] Within the lifetime of Bernard, the

[52] This finding does not appear even in a monograph about the respective role of the four daughter abbeys, Archdale A King, *Cîteaux and Her Elder Daughters*, (London: Burns & Oates, 1954).

Cistercians would reach the approximate limits of their geographical influence in the Middle Ages, while the regions of greatest density were in England, France and Italy. In any given period there is evidence for constant growth, a pattern which suggests that the system the monks had built was operating for the express purpose of adding abbeys.

Spatially, the Pond Model predicts that growth begins strong in the core area but as early as 1120 the distribution reveals a priority to expand beyond Burgundy. The period [1128 – 1158] takes the reform to all parts of Europe and even as far east as the Holy Land. The spatial density maximum moves to the right, from (0 – 250), (250 – 500), (500 – 750), (750 – 1000) km as shown in the statistical A.31: *Spatial Analysis from 1098 – 1398* in the appendix, although the period [1158 – 1218] stands as an exception to the general pattern. During this period England, Italy and the medieval kingdoms in Spain show marked growth in the region (1000 – 1250) km.

One of the more interesting results, obvious at a first glance, is that each of the genealogical lines maintains a distinct geographical priority. Previous scholars have documented the importance of genealogy but haven't written much about regional affinities. The sole study looking at the Cistercians along lines of affiliation, Van de Meer's *Atlas*, makes this distinction difficult to identify. The maps are hard to read because the type face is small and the colors are not quite distinct from one another. Furthermore, because his purpose was not to present a dynamic analysis of the expansion, but rather to draw static maps showing every one of the foundations ever made, the importance of the regional priorities has not been investigated. As it were, the first four daughters precipitated lines of organization similar to the *circaries* of the Premonstratensians, which may have been a cause of the impending internal conflict. As very soon after the start of the expansion, boundary lines began to cross.

CHAPTER 3

Network Analysis

> "The General Chapter made the Cistercians an international order with a cosmopolitan and partly representative legislature, the only known international assemblies to Europe."[53]
> - Hugh Lawrence

The Cistercian Network

Organizations don't grow by accident but they don't always grow with a plan. Can designs in the landscape be thought of as complex and emerging patterns that result from discrete decisions by affiliation branches with a certain degree of autonomy? At first glance Cistercian foundations appear to be uniform and evenly distributed circa 1400 in the appendix: A.4: *Distribution of Entire Network Under Cîteaux*, but inspection along genealogical lines reveals varied modes of internal organization.

A network model is apropos to a discussion of a monastic society if one considers the way in which resources transferred along genealogical lines. The thirteenth century abbot Stephen of Lexington studied at the Oxford schools before joining the Cistercians. He professed his vows at Quarr (1221) on the southern coast of England and two years later was made the abbot of Stanley a nearby daughter abbey of Quarr (1223). After six years he assumed the headship of Savigny (1229), and fourteen years later was elected abbot of Clairvaux (1243). Each translation of Stephen along the filial lines is evidence that the network was the way a promising young monk was promoted. A century after these lines were established, affiliation lines had become the organization's internal map for the promotion of talent. Furthermore, the number of years Stephen of Lexington was at Quarr (2), Stanley (6),

[53] Lawrence, *Medieval Monasticism*, 191.

Savigny (14) and Clairvaux (15) closely parallels the number to daughter abbeys each had affiliated at the time of his election. The duration a talented abbot would remain was then something of a predictor of the influence each could exert to keep him there.

The Cistercian network then did more than just enforce quality standards. It became the route by which resources were shared, as the talented monk of Quarr was "promoted" all the way to the abbey of Clairvaux along filial lines. What's important to note is that Stephen of Lexington was never promoted to the next highest level—abbot of Cîteaux. Though at least three Clairvaux abbots became abbots of Citeaux, these were all in the lifetime of Bernard or shortly thereafter.[54] As this chapter will reveal, the Clairvaux line acted in ways independent of Cîteaux, and it is quite likely that less sharing occurred across filial lines than it did internal to them. Influence is defined as the ability to subordinate resources and for the purpose of this current study it is calculated as the product of the number of daughter abbeys and the position in the vertical hierarchy.[55] This is in part to simplify the discussion and in part because my research has revealed to me that the number of daughter abbeys can be predictors of influence as it was in the example of Stephen of Lexington.

[54] The abbots were Rainald de Bar (1134); Fastred (1162); Alexander (1166).

[55] See discussion in chapter one on how the *Influence Index* was calculated. Influence could consider other attributes, for instance, geographical distance between nodes would take into account that the closer a parent was to its daughters the more influence it could exert. A definition of influence could consider the social origins of the abbots. A distribution of these origins would reveal a great deal. Foundation date of a given monastery had a bearing on influence. Earlier foundations are more influential than later ones, as the *Carta Caritatis* makes clear that senior abbots had privileges over abbots of more recent foundations. See, Lekai, *Ideals and Realities*, Chapter III of the Summa Cartae Caritatis, printed in its English translation on p 445.

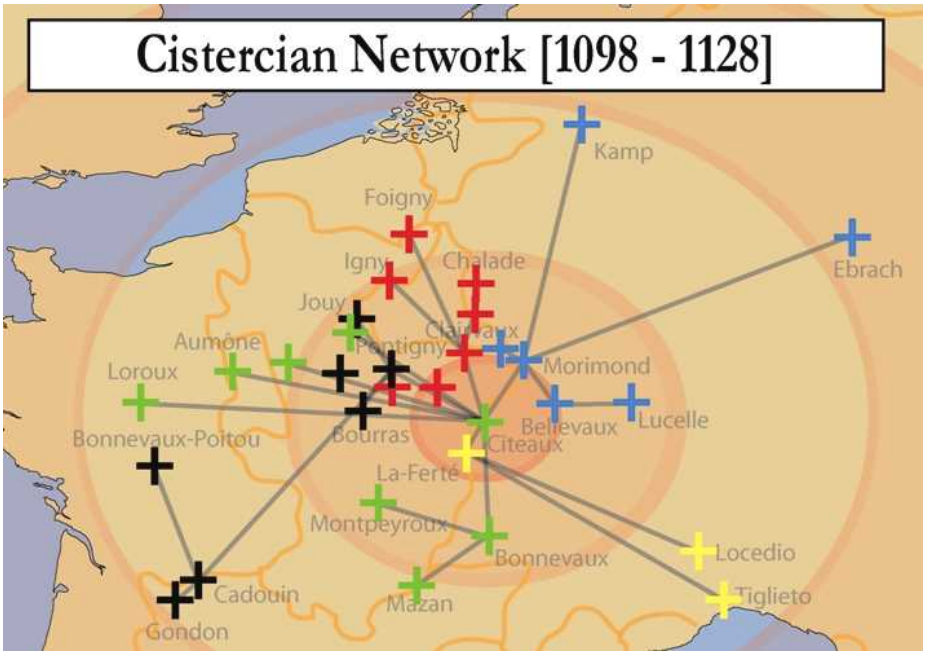


Figure 12 Each foundation was connected to its filia in a web of relationships. The first two Italian foundations, Locedio and Tiglieto, were filia of La Ferté. Network connections would become paths for the transfer of resources. Monasteries in the core area have a lower *clustering coefficient* than those further away, though the size of a cluster is smaller as foundations are close together.

If influence necessarily depends upon connections between monasteries of the same genealogical line, then an analysis of the distribution and connectivity of nodes is certainly warranted. A few incipient questions will serve as guides for the network discussion in this chapter. The first question concerns the clustering attributes of nodes. Are monasteries surrounded by monasteries of the same genealogical line?

Generally, further from the core area the greater the *clustering coefficient*,[56] or the more likely a monastery is to be surrounded by others of its same line. An examination of the network in Figure 13 shows that more distant concentric rings are more likely to be clustered with monasteries of the same line. Closer to the core area, filia of Cîteaux, La Ferté, Pontigny, Clairvaux and Morimond are mixed up with one another. Although they are clustered more densely in the core area, monasteries adjacent one another have a lower clustering coefficient because of the variety of genealogical lines.

[56] The clustering coefficient is the probability that a given node is connected to those around it. For a summary of its significance see S.N. Dorogovtsev and J. F. F. Mendes, *Evolution of Networks, From Biological Nets to the Internet and WWW*, (Oxford: Oxford University Press, 2003).

The second question concerns the frequency of direct foundations from Burgundy. Is a monastery likely to be connected to the top of the hierarchy by way of a direct foundation? If so, where are direct foundations made? At first it appears logical that a monastery at a great distance would be affiliated to a parent nearby rather than to an abbey at the top of the hierarchy in the core area, but upon visual inspection, the result has little to do with distance from the epicenter. Several of the most distant foundations in Scandinavia and Portugal are direct affiliations of Clairvaux. Many of Clairvaux's direct foundations are made at a long distance from the mother house, making impracticable and unwieldy their supervision. This preliminary discussion about the network is a building block for the one that ensues.

Why was a vertical hierarchy in the interest of Cîteaux? Because the very notion of reform upholds an ideal as a model for others; those who wish to live up to the ideal must conform to a standard practice. Subordinate-superior relations between monasteries are help each to conform to the ideal. This is the hallmark of success: everyone is doing the same thing. The strict vertical hierarchy placed Cîteaux at the top and her four eldest daughters beneath her who in turn birthed their own filia. Because of the twin pillars of the *Carta Caritatis*—the General Chapter and parental visitation—monasteries could directly influence the actions of their subordinate daughters though visitation and meet laterally with other members at the annual chapter meeting.[57] A network formed as a cause of these checks and balances. Regular communication helped the network control for quality and consistency while promoting a modicum of independence to abbots to conduct their own affairs. Only

[57] See Chapter V of the *Carta Caritatis Prior* as given in the appendix in Lekai, *Ideals and Reality*. Parental visitation was established with this decree: "Let the abbot of the senior church visit once a year all the monasteries he has founded; and should he visit more often, let them for that reason rejoice all the more." See Chapter VII for the establishment of the General Chapter: "Let all the abbots of these churches come to the New Monastery once a year on the day they decide among themselves, and there let them treat of the salvation of their own souls; if something is to be emended or added to in the observance of the Holy Rule or of the Order, let them so ordain it, and let them reestablish among themselves the good of peace and charity."

when an abbot became errant in his practice or needed replaced did the network become a direct conduit for interaction, otherwise its substantial effect was psychological as it emboldened fidelity to the reform.[58]

Besides the transfer of resources among its members, the network gave each of its members an opportunity to participate in a representative legislative body. Each year in Burgundy the abbots gathered in a week long General Chapter to introduce new members and correct errant abbots, who were required by the *Carta Caritatis* to submit their faults. Returning to their monasteries in Scandinavia, Poland and Iberia, abbots would bring news from all the other parts of Europe. This annual gathering is cited in the secondary literature as being unique for its time and this large meeting must have had the character of an international summit. The influence of abbots as opinion setters, and the convenience of distributing a message so easily, led Emperor Frederick Barbarosa in 1177 to send the chapter a letter to inform the abbots that he had accepted the supreme pontiff Alexander III, "sensing that in doing so was to notify the church at large."[59] A half century later in 1212, Arnaud Amaury, former abbot of Cîteaux and Archbishop of Narbonne, signaled victory over the Spanish Muslims at Las Navas de Tolosa, knowing that returning abbots were likely to pass along the announcement.[60] By way of the General Chapter, when news arrived in Burgundy it was sure to arrive to the rest of Europe.

The Cistercian network had two pragmatic consequences: it enforced standards when supplicants stood before the Chapter to acknowledge their faults and it transferred resources when abbots were moved from one monastery to another. This web of connected monasteries was in a modern sense an international organization. The development of the Cistercian network was concurrent with others, such as the

[58] This strict vertical hierarchy is in contrast to a network with closed loops, where members interact with one another, and thereby share ideas and exchange resources. For a discussion on the difference between network structures see S.N. Dorogovtsev, *Evolution of Networks*, 1-15.
[59] Lawrence 1989, 192.
[60] Lawrence 1989, 192.

universities, decretal collections and Lateran councils, and must be understood in the context of the so-called twelfth century renaissance, in which a rebirth of culture and institutions was seen across Europe.[61]

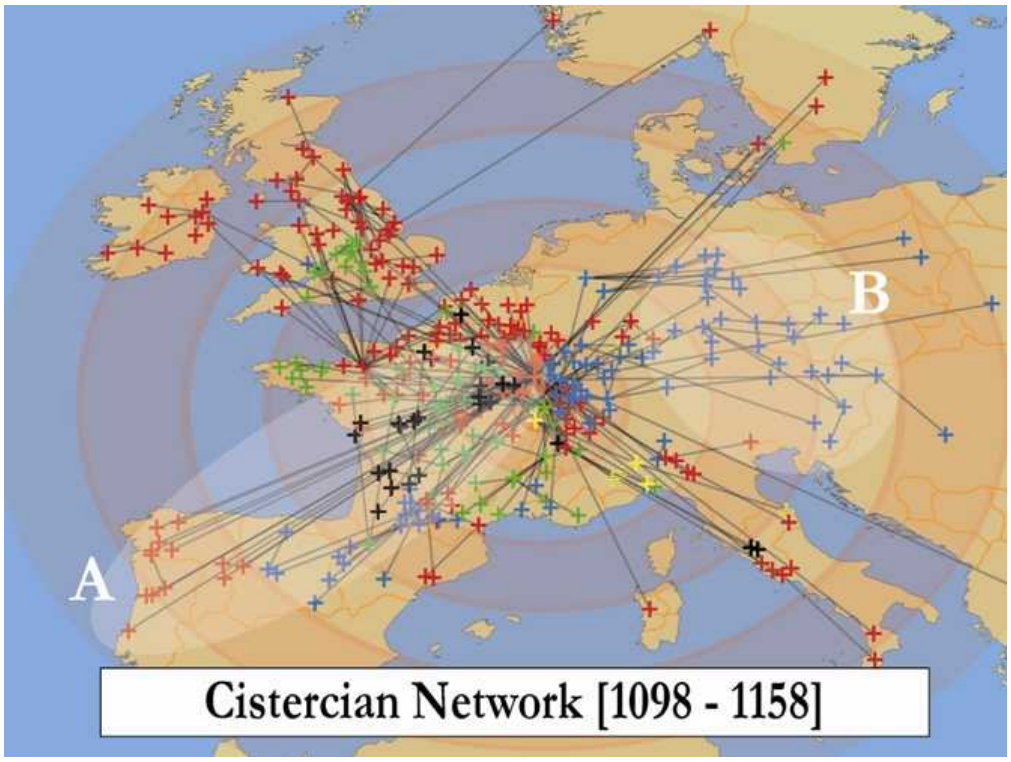


Figure 13 The "Road Map" –Complicated at first glance but upon closer inspection patterns are visible in the 360 connected monasteries. Notice different modes of organization: (A) The Clairvaux line is dominated by *radial-aligned* long distance foundations and (B) the Morimond line by short *non-aligned* connections. These patterns are discussed in the section *Network Geography* about Clairvaux and Morimond.

Network Geography

Distribution

After only sixty years the network is well defined and distributed along filial lines. The line of Clairvaux extends broadly in all directions but predominantly on a main diagonal (top-left to bottom-right) from the British Isles to the tip of the Italian peninsula. See Figure 13 for evidence that Clairvaux foundations line up upon that

[61] For a discussion on the twelfth century renaissance see Charles H. Haskins, *The Renaissance of the Twelfth Century*, (New York: Meridian Books, 1955), or more recently, Giles Constable, *The Reformation of the Twelfth Century*, (New York: Cambridge, 1996). A study of the relationships between information networks would be an interesting research topic. For instance, what was the relationship between the Cistercian General Chapter and the diffusion of papal decrees? A close read of the General Chapter resolutions from [1116 - 1285] may provide examples of this type of information dissemination.

diagonal, with the exception of foundations in Portugal that do not follow the general pattern as in Figure 13 (A). The line of Cîteaux and her eldest daughters (less Clairvaux) likewise extends broadly but follows a dominant axis running along an anti diagonal, (top-right to bottom-left) or from north-central Europe to the west Iberian Peninsula. These include a number of non-aligned (random and non-parallel) links in the line of Morimond as in Figure 13 (B).

The size and direction of a link provides a wealth of information: short or long, regular or random, radial or parallel? The orientation of network links in Figure 13 follows a bipartite division: foundations in the genealogical line of Cîteaux (105) and Morimond (189) tend to be affiliated at varying *non-aligned* directions to nearby monasteries, suggesting growth by means of colonization and occurring regularly throughout time. These links are not directed toward the core area. The link characteristics of the line of Clairvaux follow a different pattern. They are likely to be affiliated direct to their mother house Clairvaux whether close to the core area or distant from it, while the orientation of the links is *radial-aligned* just as the spokes on a bicycle wheel. The map reveals two networks that are distinct from one another but overlapping—that of Clairvaux and of Cîteaux and her eldest daughters. The latter show less of a centralized tendency and foster to a larger degree connections between members.[62]

[62] Within a given line, this simplification is not so easily sustained. It is Cîteaux who has the greatest percentage of its daughters subordinated directly to the mother house if we are to exclude the lines of its four eldest daughters.

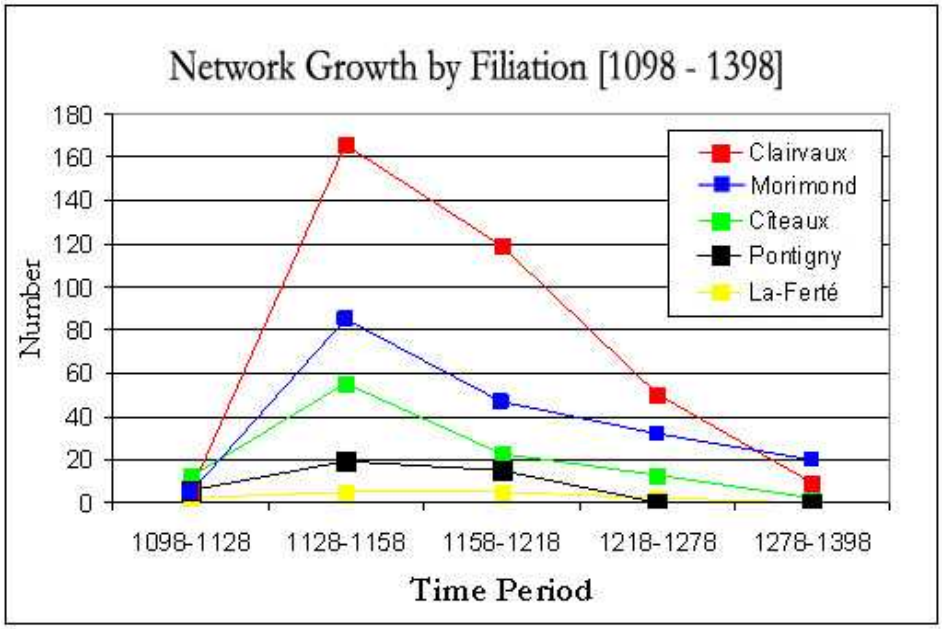


Figure 14 Each branch is roughly twice the size of the one below it. Notice that after 1278, growth is declining quicker for Clairvaux than for the others.

Size

The vertical hierarchy varied in the size of its branches as in Figure 14. The genealogical line of Clairvaux was responsible for the development of half the network. The remaining branches were responsible for the other half—Morimond (27%), Cîteaux (15%), Pontigny (6%) and La Ferté (2%) This means that Clairvaux is twice as large as Morimond which is twice as large as Cîteaux which is twice as large as Pontigny which is twice as large as La Ferté. Each of the three largest genealogical lines grew continuously through three centuries, albeit at different rates. From [1128-1278] Clairvaux adds monasteries at approximately twice the rate of Morimond who adds them at twice the rate of Cîteaux. One might speculate that Clairvaux's direct foundations gave it large and widespread influence and for this reason it was forbidden to hold its own General Chapter.[63] The growth curves of the three side by side suggest that Morimond and Cîteaux locked in step whereas Clairvaux's growth follows its own pattern. It may have been more difficult for Clairvaux to sustain

[63] See Bredero, *Between Cult and History*, 254-57 for a discussion of the nature of Cistercian policy—precepts and resolutions which may have originated in Clairvaux and those which originated elsewhere. He argues that Clairvaux might have wanted autonomy so that it could retain the ability to separate.

growth at such a high rate when its network structure had spread so widely and at such a distance. Thus when the growth rate declines for the three branches after 1158 it falls off most rapidly for Clairvaux. Each of the five lines grows at different rates however, and since Clairvaux, Morimond and Cîteaux constitute the great bulk of the network, the discussion follows these three lines.

Clairvaux [1098 – 1158]

The influence of this genealogical line is nothing short of outstanding. Half of Cistercian growth is found here, as well as the most influential network member after the first five foundations—Savigny—which when assumed into the network greatly modified the economic basis for the self-sufficiency of each monastery. In its first fifteen years [1115-1128], this line grew modestly and at pace with the others and its regional influence was confined to an area 250 km north of Cîteaux. As early as the five year period [1133-1137] the Clairvaux growth rate surpasses Morimond and is twice that of Cîteaux; it will remain greater than the others until the beginning of the fourteenth century.

The period of thirty years [1128-1158] was monumental for growth of the Clairvaux line. In the appendix, table A.30: *Temporal Analysis from 1098 – 1398* describes network growth by affiliation and shows just how quickly new foundations were added in the period [1128-1158]. Growth peaked in the five year interval [1143-1147] when 56 monasteries were added at a rate of nearly one a month. Likely the resources for such a rapid expansion were not obtained in Burgundy alone; the large number of distant and direct foundations suggests that patronage was critical when at a distance from the core area. Furthermore, the genealogical line of Clairvaux presents a challenge to the Cistercian model of parent abbeys' visitation of each of its daughters. When the number grew large—79 daughters by 1398—it would have

meant a delegation of representatives who, if at all, would depart for distant sites on behalf of the abbacy of Clairvaux in an attempt to visit all of them annually.

Stats Box: Clairvaux as Dominant Network Player

Genealogical Line	Foundations	Perctenage of Total	Average Depth	No. with No Daughters	Percentage with No Daughters	No. Direct	Perc Direct
Clairvaux	350	50%	1.39	250	71%	81	23%
Morimond	189	27%	1.54	120	63%	27	14%
Citeaux	105	15%	2.14	76	72%	28	27%

Figure 15.A Clairvaux is indeed dominant: 50% of the network is managed by this one abbey—an amazing 81 direct foundations. These have their own daughters which mean Clairvaux maintains *de facto* control over a great many more.

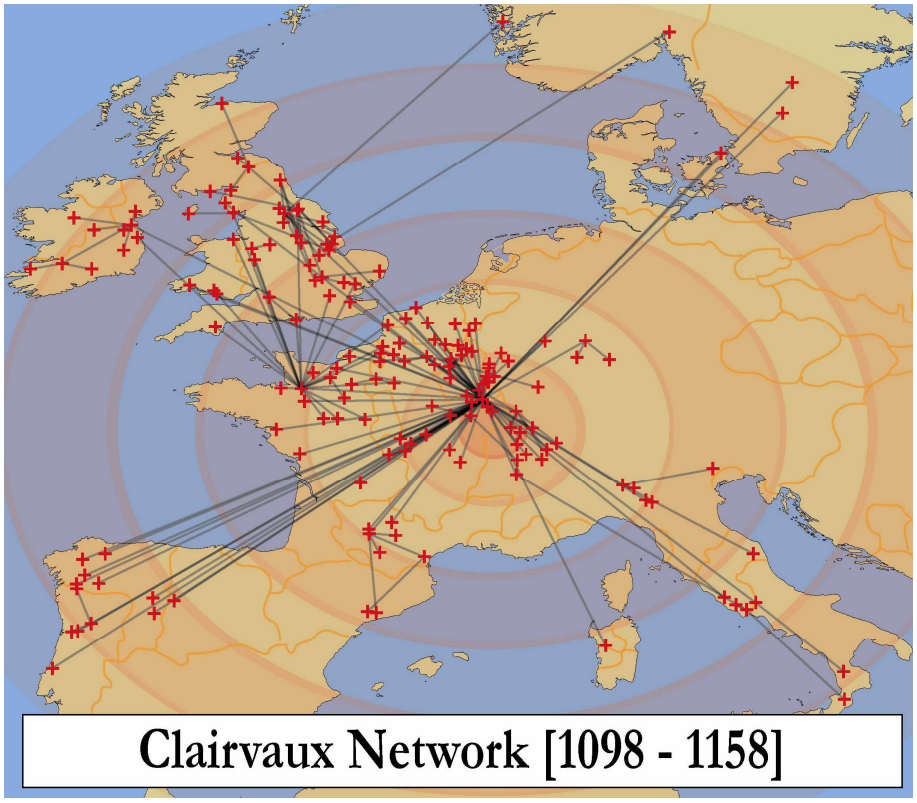


Figure 15.B Many monasteries are subordinate to Clairvaux through long distance foundations in Scandinavia, Portugal, Italy and Ireland; although most foundations are positioned on an axis running diagonal top-left to bottom-right, the predominant network pattern is radial outward.

Recall the genealogy of Bellevaux given in Figure 2 and consider the depth of a given line as the average hierarchy position of each of its monasteries. In the Clairvaux line the hierarchy depth averages (1.4) levels compared to that of Morimond (1.5) and Cîteaux (2.1), the latter of which had the deepest by virtue of its

position at the top. A shallow hierarchy suggests greater top-level control. The mother house had more direct foundations (79) compared to that of Morimond (27). It also had a high percentage of daughter abbeys who had no foundations of their own (71%) compared to those of Morimond (63%). A large number of direct foundations and a high percentage of foundations with no daughters of their own suggest that the majority of abbeys were subordinate to a minority of top-level ones. In network terms, control resided in the upper echelon of the hierarchy, a structure which may have had adverse consequence in the long run. Such a shallow vertical hierarchy meant that Clairvaux was responsible for a large number of monasteries and it was unlikely that these monasteries had much supervision. They were freer than those in deeper hierarchies because there was no abbot above to police them, especially after the death of Bernard which doubtless disparaged the psychological power of his abbacy. This might have contributed to the genealogical line's relative decline. As long as the abbey of Clairvaux was strong the entire line was strong but when its influence waned, the line as a whole declined because of its shallow vertical hierarchy.

Consider the following scenario. Many of the daughter houses founded directly from Clairvaux in 3rd tier foundations had daughters of their own. The monasteries that have Clairvaux as their parent have 153 of their own daughters, meaning that Clairvaux has indirect influence vis-à-vis control of the parent of some 232 abbeys or approximately 66% of its genealogical line. Even if Clairvaux was willing to let its foundations acquire their own daughters, it still maintained de facto influence, by keeping the great bulk of its genealogical line at the top of a shallow vertical hierarchy. This feature will be compared to that of Morimond and Cîteaux in the following section. The foundations of Ferrara (1171), Fossanova (1135), Sambucina (1140) and San Galgano (1201) are part of the Clairvaux hierarchy removed from the top-level influence of Clairvaux. By virtue of geographical distance

and depth in the hierarchy, these and their daughters represent 18 foundations in the medieval kingdoms of Naples and Sicily.

Morimond [1098 – 1158]

The line of Morimond reveals a number of foundations by colonisation. The network connections are non-radial, aligned in a number of directions but predominantly east-west away from the core area. They proceed in a more regular sequential step-like fashion than that of Clairvaux. The majority of Morimond foundations east of the core area are made within the fragmented kingdoms of the Holy Roman Empire, with others in Bohemia, Poland and Hungary. The spatial distribution of Morimond foundations are more evenly dispersed than the Clairvaux line in France, England and Italy, the latter dominated by clusters. Upon a visual inspection of the Morimond line, the foundations are generally spaced over 100 km apart. Within 200 km of the Morimond monastery, there are a great number of foundations, suggesting popular support for the monks in the immediate vicinity. Morimond has two principal regions of activity: the broad swath of the Holy Roman Empire tenuated by diffuse foundations further east and an area adjacent the Pyrenees in southern France and along the Iberian peninsula, in the medieval kingdoms of Toulouse, Guyenne, Navarre and Aragon. Notably the foundations are clustered in this region compared to the more diffuse distribution in the east as seen in Figure 17. The pattern in the southwest suggests the support of a wealthy and connected benefactor through the first sixty years.[64]

[64] This pattern is an opportunity to pose questions for future research: What causes the Morimond line to so distinctly split is geographical influence in two regions? What brought the monks first to the Pyrynees and what was the basis of the connections between the foundations north of the Pyrenees including Escale-Dieu (1137) with (9) daughter abbeys, and Berdoues (1137) with (3) daughter abbeys. What influence besides royalty could have connected the monasteries on either side of the Pyrenees?

Stats Box: Morimond, Team Player

Genealogical Line	Foundations	Perctenage of Total	Average Depth	No. with No Daughters	Percentage with No Daughters	No. Direct	Perc Direct
Clairvaux	350	50%	1.39	250	71%	81	23%
Morimond	189	27%	1.54	120	63%	27	14%
Citeaux	105	15%	2.14	76	72%	28	27%

Figure 16.A Morimond is considered a team player because it has the least number of its foundations direct (only 14% compared to 23% and 27% for Clairvaux and Cîteaux respectively), meaning that it grows by allowing its members to prosper their own foundations.

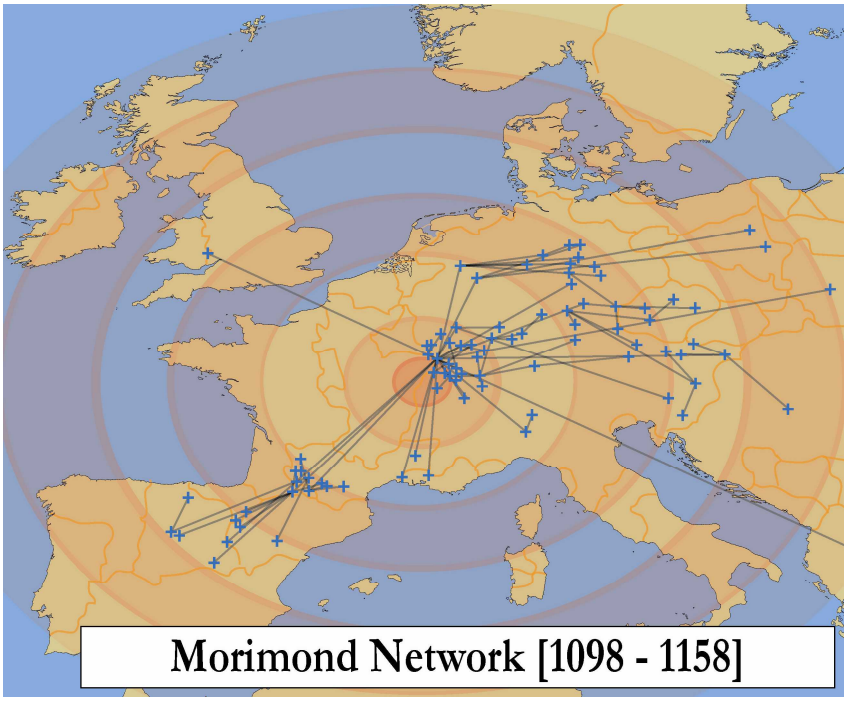


Figure 17.B Morimond's links are randomly oriented in the east and radial-aligned to the southwest, while the prevailing pattern is that of colonization. Notice the regional character of the line—the bulk is in the Holy Roman Empire—while the foundation not shown is Belmont (1157) in the Holy Land.

As for the temporal growth of the line, Morimond and Cîteaux are similar. Growth increases in the Morimond line from 0.2 abbeys/year from [1098-1128] to 2.8 abbeys/year from [1128-1158] and Cîteaux experiences a similar rise. As the growth rate decreases to 0.8 abbeys/year from [1158-1218] it does by a proportional amount for Cîteaux. The same can be said in comparison with the Clairvaux line through 1158, but thereafter growth is decreasing a much greater rate. The growth rate for Morimond peaks a decade before the growth peak of Clairvaux in 1147, suggesting

Morimond's popularity had risen to the same level as Clairvaux while the latter continued to increase.

As for the depth of the hierarchy, Morimond (1.5) is about the same as Clairvaux (1.4), though slightly deeper, due to the line's preference for colonisation, a growth strategy which produces levels of subordination as one monastery gives birth to another. Consider the following explanation of the birth by colonisation stratagem: the foundation of Przemet (*also* Wileń) came 50 years after Paradyz (1236) at a distance of about 100 km. Paradyz was itself subordinate to Lehnin (1183), which was founded some 50 years earlier at a distance of 250 km west among the Polish kingdoms north of Bohemia. This foundation was subordinate to Sittichenbach (1141), founded four years previous at a distance of about 200 km. A decade earlier Walkenreid (1130) had been founded about 100 km to the west, one of the eight daughter foundations of Kamp (1123) 300 km to the west. These seven foundations follow in a fashion characteristic of the genealogical line—from west to east, in a deep hierarchy, made at such a distance to permit parental visitation on an annual basis. See Figure 3 for a typical Morimond foundation sequence. This foundation strategy is quite different from that of Clairvaux whose foundations are made in rapid succession, often at distances less than 250 km or more than 1000 km, subordinate to Clairvaux or one level removed. In contrast, Morimond was more willing to allow its hierarchy responsibility for growth.

Consider the following statistical comparison between the two. Morimond had 26 direct foundations through the first three centuries in contrast to Clairvaux who had 79 direct foundations. Furthermore, the monasteries subordinate directly to Morimond had 56 of their own daughters; thus 43% of the hierarchy was directly or indirectly connected to the mother house. If one recalls from the earlier discussion, Clairvaux had 66% of foundations subordinate directly or indirectly, the statistics

suggest that Morimond was a line more willing to pass along responsibility to its members and this may be seen as an internal stratagem. This characteristic feature of the genealogical line may have kept it growing through the end of the thirteenth century, at a time when Clairvaux's growth was in greater decline. For the abbot of Morimond, the requirement to visit the 26 abbeys would have at least been manageable, though these foundations were scattered across the continent too.

Cîteaux [1098 – 1158]

The discussion of Cîteaux that follows excludes the branches of Clairvaux and Morimond. It is perhaps most challenging to characterize the network features of the line of Cîteaux, foremost because it is not a genealogical line but the head of all. It enjoyed the benefit of playing host to the General Chapter, where all the monasteries in the network would come together. Cîteaux closes the network loop, giving each monastery a feedback mechanism and the capacity for horizontal exchange.

Because of the General Chapter, the Cistercian network model encouraged its membership to interact, though in practice, it is difficult to hypothesize the number of abbots who would attend the Chapter and benefit from this interaction. Cîteaux's top-level position is made exclusive by the *Carta Caritatis* forbidding a monastery to hold its own General Chapter, likely a measure constraining Clairvaux from gathering its sheep into its fold. An abbot would command from the top down but the network provides a feedback mechanism that diffuses tension resulting from one abbot reigning over his subordinates. The Carta Caritatis had a provision for the abbot of a lesser house to correct the behavior of his superior.[65]

[65] See the *Summa Cartae Caritatis*, Chap V, "On the Fault of Abbots," in Lekai, *Ideals and Reality*, 446. "Should an abbot be found to scorn the Rule or the Order, or to be careless and negligent to the care entrusted to him, straightaway he shall be warned up to four times… The abbot of Cîteaux, since he is the head of all and has no abbot over himself, shall see to it that those measures shall be applied to himself as well. By common agreement this charge has been trusted to the abbots of La Ferté, Pontigny and Clairvaux, acting in the name of all and in behalf of all."

To speak specifically about a line of Cîteaux, it must be argued that Morimond and Clairvaux were sufficiently autonomous. There is evidence to suggest it were true, such as the lapse of some 53 years following the resolution of 1152, where did not make a foundation a time at which the other lines continued a pace. On the matter of halting foundations, La Ferté passed a 75 year gap without a foundation [1135-1210], whereas Pontigny continued to make foundations after the 1152 resolution until the year 1177 when it quit altogether.

Stats Box: Citeaux, Depth & Proximity

Genealogical Line	Foundations	Perctenage of Total	Average Depth	No. with No Daughters	Percentage with No Daughters	No. Direct	Perc Direct
Clairvaux	350	50%	1.39	250	71%	81	23%
Morimond	189	27%	1.54	120	63%	27	14%
Citeaux	105	15%	2.14	76	72%	28	27%

Figure 18.A Discussion about the line of Cîteaux presumes La Ferté and Pontigny small enough to be included. As such, Cîteaux represents 23% or approximately one quarter of the network hierarchy, a line of 24 direct foundations in two periods [1098-1147] and [1200-1240]. In the first sixty years its influence remains mostly confined to medieval France and England; its network is in close proximity.

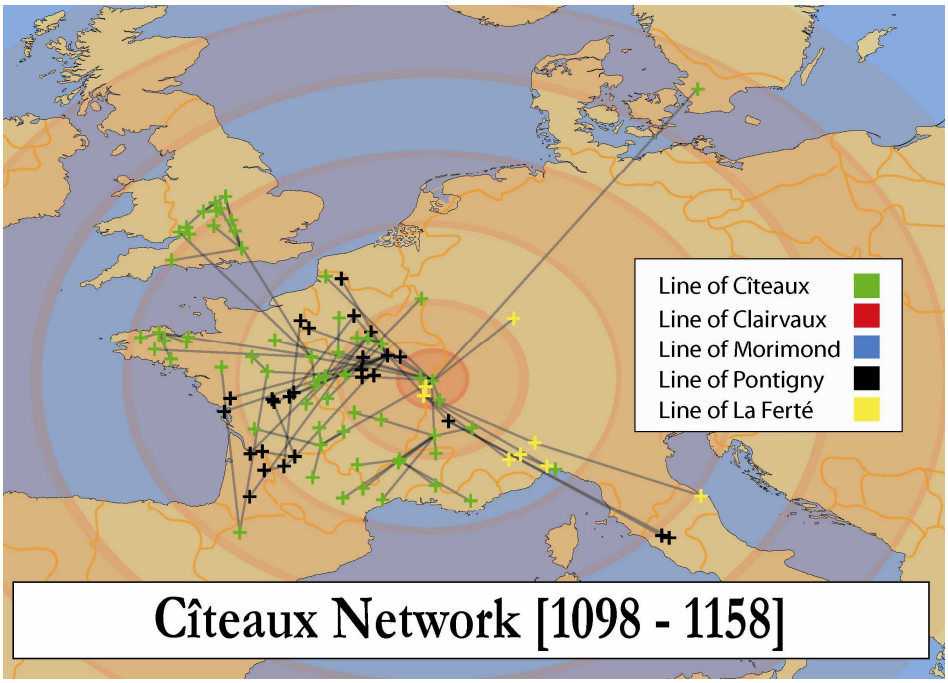


Figure 19.B Discussion about the line of Cîteaux presumes La Ferté and Pontigny small enough to be included. As such, Cîteaux represents 23% or approximately one quarter of the network hierarchy, a line of 24 direct foundations in two distinct periods [1098-1147] and [1200-1240]. In the first sixty years its influence remains confined to the medieval France and England.

Temporally, its growth follows a similar pattern to Morimond. See Figure 14 for a comparison of the growth curves of the genealogical lines. An inspection of the years [1128-1158], [1158-1218], [1218-1278] and [1278-1398] reveals that the curves follow one another with great similarity, suggesting coordination among Cîteaux and Morimond. Spatially, the foundations made direct from Cîteaux before the year 1147 are all found within 500 km, mostly to the west of the core area, with the exception of Herrevad (1144) in Denmark when the bishop of Eskill was obliged to turn to Cîteaux for a foundation.[66] Certainly visitation between mother and daughter would have been feasible. It may have been that Cîteaux, rather than being a strict authority, was acting as a brotherly example for the others to follow. The abbot of Cîteaux seems to be the only one to take heed to the 1152 statute that tried to halt growth.

It may have been such that Cîteaux was the center of the administration, building a strategy for recruitment and training of its membership, and then passing off its trained recruits to other branches. Since it had a central role, and was able to take inventory each year of new growth, if not from the witness of those in attendance, than in the hearsay of the others. We know from the attendance of the pope at the 1147 General Chapter that the papacy was influential in the workings of this house.[67] I believe it assumed the role of proud parent, directing inquiring patrons to the resources of its daughters, as the central hub for the flow of information between its members.

The role of Cîteaux in the development of the Order must remain an inquiry to future research. I posit here a few questions: How do the statutes reflect Cîteaux's role from early grower to late administrator, a role changing through the twelfth century? What do the General Chapter statutes say about information exchange between abbots

[66] James France, *The Cistercians in Scandinavia*, (Kalamazoo: Cistercian Publications, 1992), 43. This particular example, of Bishop Eskill, is that of a well-connected ecclesiastical official who wanted to court a popular monastic reform; he would pass his final days at Clairvaux after being influential in the spread of Christianity to the north.

[67] King, *Cîteaux and Her Elder Daughters*, 1-16.

that is not strictly controlled discussed by the *Carta Caritatis*? The Carta Caritatis encourages abbots to interact to reform or remove a wayward superior abbot but how was this executed in practice? According to the theory of networks discussed in *The Evolution of Networks*, nodes tend to attract links in proportion to the number they already have—the most popular tend to greater popularity. According to Dorogovtsev, "While a network grows, its edges [links] become preferentially attached to vertices [nodes] with a high number of connections.[68] This principle is called *Popular is Attractive*. An inspection of the Cistercian network for the most popular nodes reveals the tendency described in network theory. See Figure 20 for a map of the most influential abbeys in the network. The popular abbeys are the ones that were founded earliest and closest to the epicenter with some notable exceptions.

[68] Dorogovtsev, *Evolution of Networks*, 4.

Influential Abbeys

Influence does not reside in genealogical lines alone but with individual abbeys who enjoy a greater degree of connectivity to those around. The top 20 abbeys were analyzed according to a measure of influence that considers both the hierarchy position of the abbey (1-8) and the number of daughter abbeys it has (0-79). The assumptions are as follows: 1. The closer its contact to Cîteaux at the top of the hierarchy the greater its influence and 2. The more numerous the abbeys subordinate the more influential. The top five are: Clairvaux, Cîteaux, Morimond, Savigny and Pontigny—all but Savigny are the earliest foundations.

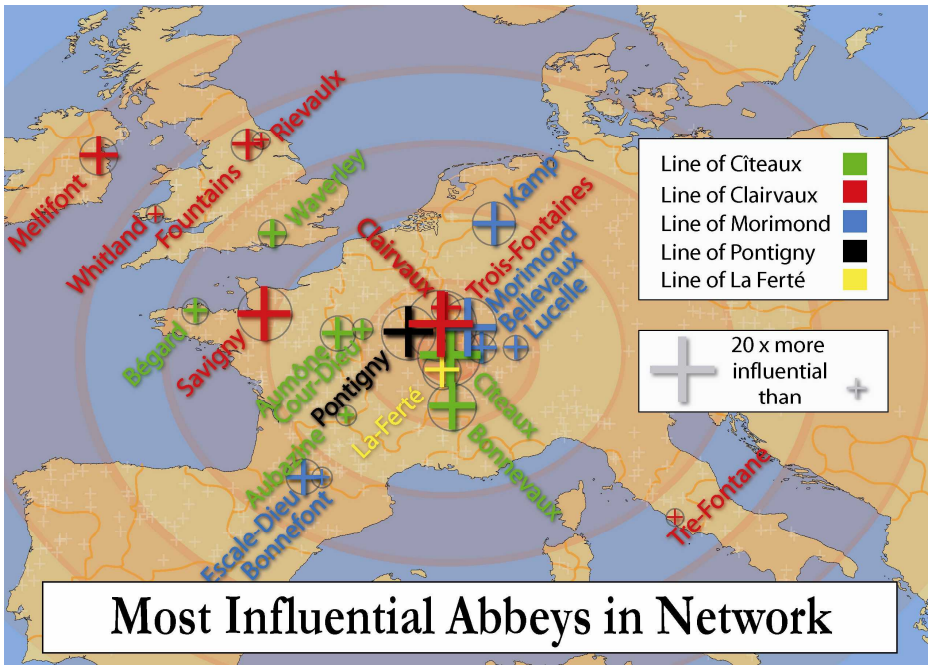


Figure 20.A Spatial distribution of the influential abbeys in the network based on *Influence Index* given in the appendix and described in chapter one. The majority of influence is concentrated in the Burgundy core area, while Kamp, Tre-Fontane, Escale-Dieu and Mellifont are regional hubs prospering foundations further a field.

Other influential abbeys are Kamp (1123), Bonnevaux (1119), Mellifont (1142), Escale Dieu (1137), La Ferté (1113), Fountains (1135) and Tre Fontane (1140). These foundations are distributed among the genealogical lines in this manner: Citeaux has (7), Clairvaux (9), Morimond (6). Where are these influential abbeys located? They are distributed through the landscape, in and around the core

area, with none very far to the east. Clairvaux has three in the core area and six outside. Citeaux has three inside and four outside. Morimond has three inside and three outside. Furthermore, each region along the cardinal and ordinal directions of the compass contains an abbey of considerable influence. To the north is Kamp, to the east Bellevaux and Lucelle, to the southeast Tre Fontane, to the southwest Escale Dieu, to the west is Savigny, and to the northwest is Mellifont and Fountains.

The Top 50 Abbeys by Influence Index

Prog	Name	Date	Region	Gen Line	Influence Index
1	Clairvaux	1115	France	Cîteaux	67.5
2	Cîteaux	1098	France	-	28.0
3	Morimond	1115	France	Cîteaux	23.1
4	Savigny	1147	France	Clairvaux	14.4
5	Pontigny	1114	France	Cîteaux	12.0
6	Bonnevaux	1119	France	Cîteaux	8.3
7	Kamp	1123	Germany	Morimond	5.7
8	Mellifont	1142	Ireland	Clairvaux	5.3
9	Escale-Dieu	1137	France	Morimond	4.5
10	La-Ferté	1113	France	Cîteaux	4.5
11	Trois-Fontaines	1118	France	Clairvaux	4.0
12	Fountains	1135	Great-Britain	Clairvaux	4.0
13	Aumône	1121	France	Cîteaux	4.0
14	Waverley	1129	Great-Britain	Cîteaux	3.6
15	Lucelle	1124	France	Morimond	3.5
16	Bégard	1130	France	Cîteaux	3.5
17	Cour-Dieu	1119	France	Cîteaux	3.3
18	Bellevaux	1120	France	Morimond	3.3
19	Bonnefont	1137	France	Morimond	3.0
20	Whitland	1140	Great-Britain	Clairvaux	3.0
21	Tre-Fontane	1140	Italy	Clairvaux	3.0
22	Aubazine	1147	France	Cîteaux	3.0
23	Cherlieu	1131	France	Clairvaux	3.0
24	Rievaulx	1132	Great-Britain	Clairvaux	3.0
25	Creste	1121	France	Morimond	2.9

Figure 21.B The *Influence Index* is greatest for the abbey of Clairvaux. Despite fewer foundations, Cîteaux has a greater index than Morimond because of its higher position in the hierarchy. See the appendix A.33: *Abbeys with the Greatest Influence Index* for numbers 25 - 50.

In Central Place Theory, a descriptive model for the formation of networks, one can find a cause for a regular distribution of influential abbeys. A principle of this theory is that links tend to converge at a regional hub, which serves as a gateway to the addition of future nodes and results in the buildup of a local cluster. See Figure 22 for a conceptual rendering of the Cistercian network. In network terms, the main organ of growth is called the *Giant Percolating Cluster* (GPC) and is situated just north in the core area. The GPC increases in size from the start but depends upon the

development of regional hubs that incubate early foundations and spur later growth. Kamp was influential in the expansion of Morimond foundations through the Holy Roman Empire, while Escale Dieu managed a hub of regional activity to the southwest near the Pyrenees, while Savigny was host to over a century of monastic development in Normandy, Brittany and across the English Channel in the Isles. These were the Cistercian regional hubs that articulated the axes of growth which are present in the network map of [1098-1158] as in Figure 13.

Network Summary

This chapter analyzed a formidable group of some 350 foundations acquired or planted in a span of sixty years. Conceptualized as a network with an incipient desire to grow, patterns arise that are predicted by growth models, such as the formation of a Kamp, a regional hub in the Holy Roman Empire from an early foundation, and a colonisation pattern that moves from west to east. Overall, growth appears to be not with respect to an overarching plan, but the byproduct of discrete decisions by different branches with respect to a particular set of local circumstances, such as the invitation of a benefactor or the desire of monks to expand their influence in a particular region.

These local circumstances give rise to complex patterns and differences between genealogical lines. Overall, there appears to be an intention to grow expressed by the sheer volume of foundations, though these intentions may have not been shared between the top and the bottom of the hierarchy nor by respective genealogical lines. The patterns in the figures in this chapter are not forgone conclusions and their explanation depends upon knowledge of the social context in which they developed. For example, the Clairvaux line has irregularities such as the sheer number of distant foundations unpredicted by the Pond Model.

Building upon the results of previous chapters, I have chosen two case studies, both of which are outside the core area where foundation patterns are easier to study. Bernard was influential through Italy and the first case study examines his political and ecclesiastical involvement. The second concerns medieval Hungary which I chose because of the comparably fewer studies on the Cistercians in this region. Since it was a relatively small network, I could examine the circumstances of these foundations in their economic, social and political context.

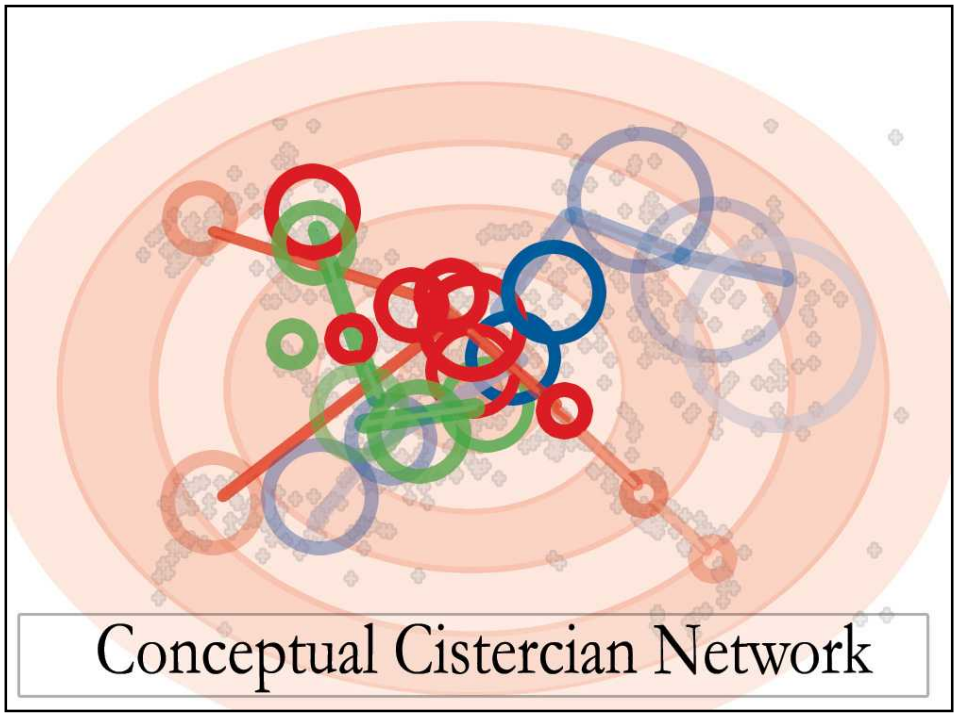


Figure 22 A conceptual model of the Giant Percolating Cluster (GPC) located just north of the epicenter. The opacity and size of the circles corresponds loosely to the distribution and quantity of foundations; where lines connect to circles are approximate locations of regional hubs.

"No one intentionally creates the architecture; these structures are the direct result of self organization," Dorogovtsev argues in his book about networks.[69] This is true of the influential abbeys that became regional hubs. None of these derived from the earliest foundations. Kamp came after a decade of expansion. Escale Dieu and Fountains some fifteen years later, while Savigny and its affiliations were not adopted until the mid twelfth century. Their influence in the network emerged when the need

[69] Dorogovtsev, *Evolution of Networks*, 4.

arose for a place to connect foundations in the region. Though Savigny was already a developed network of its own when it was adopted, its importance grew when its filia grew to be hubs for regional growth.[70] Indeed, the role of Fountains (1135) seems all the more unlikely given origin as a place occupied by dissidents from York. This rebel group, reminiscent of the detachment from Molesme, were host to Clairvaux's first foundation across the sea. Its importance in the network could have never been envisaged but came about as a consequence of being a valuable resource for the order's expansion in the region.

[70] Aston and Bond pay close attention to the method of acquisition—distinguishing between outright foundations and adoptions or takeovers. This should likewise be considered as a point of future study, which of the Cistercian monasteries were existing and which were adopted.

CHAPTER 4

Part 1 – Bernard's Travels in Italy

> "8 miles southeast of Aube and 35 miles east-southeast of Troyes, here in the valley of wormwood, the haunt of robbers where the river meandered, was founded Clairvaux."[71]
> – Archdale King

When Bernard and his entourage arrived at Cîteaux in 1113 he may have had something larger in mind than the reform of his immediate family. The idea incipient in the young man may have been a reform of the church at large, "no less a task than the regeneration of the whole ecclesiastical body."[72] Liturgical scholar Archdale King puts forward this argument on the basis that the recruits for Clairvaux came from "aristocratic and intellectual classes," and thus were likely to take on positions of leadership in the ecclesiastical hierarchy. [73] Bernard's preaching tours offered a way of salvation to churchmen themselves who might abandon time-consuming parochial responsibilities to take up the cowl at Clairvaux.[74]

By traveling he could elaborate his network of connections with church leaders and then utilize these connections to encourage reform. Enter into this equation Bernard's growing involvement in politics. These were travels that won him followers outside of Burgundy when he traveled at the behest of the papacy.[75] Unfortunately, the exact circumstances of these travels are not often recorded, neither the places he visited nor the outcomes of his trips. A. Bredero in *Between Cult and History* describes the circumstances surrounding the foundation of monasteries. "We do not know the precise details as to how Bernard utilized the opportunities for the

[71] Archdale A King, *Cîteaux and Her Elder Daughters*, (London: Burns & Oates, 1954).
[72] King, p. 218 on the works of St. Bernard.
[73] King, p. 219, excerpted from Book II on the life of St. Bernard: Bernard Vita, Lib II, praef.
[74] In 1145, Henry, brother of King Louis VII of France, abandoned the archdeaconries of Tours and Orelans, as well as the royal churches of Etampes, Corbeil, Melun and Pontoise, in order to wash dishes in the kitchen of Clairvaux; A King, p. 219.
[75] See King, 222; Clairvaux gave to the church a pope (B. Eugenius III, 1145-1153), five cardinals, eleven bishops, and more than seventy abbots, three of whom were elected to the mother-house of Cîteaux: Rainald de Bar (1134); Fastred (1162); Alexander (1166).

founding of monasteries that he encountered during his travels. Usually his involvement was largely dictated by the circumstances."[76] This chapter deals with his travels through Italy in conjunction with a network analysis of Clairvaux foundations made in his lifetime or shortly thereafter. The first half of this chapter will analyze whether foundations continued after his trips to Italy and therefore his influence there can be regarded as critical to the Cistercian expansion.

For the most part, previous to 1130, Bernard's travels were limited to the region where he had been born, in Chatillon-sur-Siene where he had studied, and in Burgundy where he entered Cîteaux as a novice.[77] These travels were largely preaching tours addressed to clerical circles, such as his address to the students at the Cathedral School in Paris, where he could expound upon the Song of Songs and entice followers to serve the bride—the church herself—as a vowed monastic.[78] These trips were limited to a few weeks and his absence as abbot of Clairvaux was not prolonged. Then a series of political disturbances shook the European continent, such as in 1125 when Emperor Henry V died without an heir and the empire was divided between two contesting families: the Guelphs and Ghibellines. Further troubles followed upon the death of Honorius III in 1130, when the convening council elected two popes—Anacletus II and Innocent II—in a conflict over papal succession. It was a time in desperate need of leaders and Bernard was often chosen to mediate in ecclesiastical disputes and to settle political contests. He was called on for about thirty years to give advice, and if necessary, to travel himself and mediate in person.[79]

[76] Bredero, 285.
[77] Frère Marcel Lebeau, *Chronologie de l'Histoire de Cîteaux,* (Dijon: Centre Régional de Documentation Pédadgogique de Bourgogne: 1997), 14.
[78] The image of bride and bridegroom is analogous to the love of Christ and Mary. In Bernard's sermon on the Song of Songs, he extended the image of the bride and bridegroom to mean that of the Church and its members. In a preaching tour aimed at either clerics or postulants to the monastic life, the latter of the two analogies would have prevailed. See Bernard of Clairvaux, *On the song of Songs, 1-IV*, (Kalamazoo: Cistercian Publications, 1971).
[79] Lekai, 33-51.

It is generally regarded that Bernard had an engaging personality and a gift with language, which he put to use expounding on a number of issues of importance to the contemporary church.[80] Two examples of his traveling oratory are the *De laude novae militiae ad milites templi* written sometime after expounding in praise of the new military orders at the Council of Troyes (1128) and the *De conversione ad clericos* addressed to young ecclesiastics in Paris in 1140, a preaching tour that resulted in at least twenty-one postulants.[81] It was during these appointments that Bernard could win converts to the Cistercian flock. According to Prior John of Clairvaux, even Judas could have been saved had he become a Cistercian.[82] Furthermore, while abroad, he could arrange the support of a benefactor's patronage and leverage his ecclesiastical reputation and political contacts to convince extant monasteries to filiate anew with the Cistercians. Two examples of his harvest on behalf of the Cistercians include SS. Vincenzo ed. Anastasio near Rome (later named Tre Fontane) from which abbot Bernardo Pagnelli of Pisa would become Pope Eugenius III (1145-1153) and Sambucina in Calabria which Roger of Sicily transferred to the abbot of Clairvaux in 1140.[83]

Before examining his role in the expansion throughout Italy, it may be helpful to explore the nature of Bernard's diplomacy and the character of his friendships. It is possible to detect an expansion agenda in Bernard's letters to Roger of Sicily, a king

[80] See Lekai, 229-233 on Bernard's literary achievements, including more than 330 extant sermons, 500 letters and 13 treatises or see G. R. Evans "Bernard of Clairvaux," in his volume titled *Great Medieval Thinkers*.

[81] A Bredero, 285.

[82] B. McGuire, *Bernard, The Difficult Saint*, 165.

[83] For monastic foundations in Italy, see the *Monasticon Italiae* in four volumes. On the history of Benedictine abbeys that later became Cistercian see: *Monasticon Italiae, I, Roma e Lazio*, a curi di F. Caraffa, Cesena, 1981. For the regions of Abruzzo and Molise see Vol. 2; on Apulia and Basalicata see Vol 3; on Calabrai and Campania see Vol. 4. Two more *Monasticon Italiae* volumes are planned for Peidmont, Val d'Aosta, Lombardy and Liguria (Vol. 5) and Veneto and Istria (Vol. 6). For the abbeys founded by Saint Bernard in Italy see A.M. Romanini, "*Le abbazie fondate da san Bernardo in Italia e l'architettura cistercense 'primitive,'* in *Studi su san Bernardo di Chiaravalle in occasione dell'ottavo centenario della canonizzazione*, [The Abbeys Founded by Saint Bernard in Italy and Early Cistercian Architecture on the 800th Year Anniversary of his Canonization], (Florence: Convegno Internazionale, 1974), or the article by A. Dimier, "Les fondations de St. Bernard en Italie," [The Foundations of St. Bernard in Italy], *Analecta S.O. Cist.*, XIII, (1957): 17-32.

with whom he had diplomatic relations and who donated a monastery to Clairvaux. Three of his letters to Roger survive and are edited in a volume by Bruno Scott James.[84] Bernard begins a letter with praise but moves quickly to moralize upon the King's actions, to admonish, encourage and instruct him as a spiritual counselor:

> Your renown has spread far and wide over the earth. Is there a corner of the world to which the glory of your names has not penetrated? But harken to the advice of one who loves you. If you do not wish to ruin your glory or to be ruined by it, endeavor, so far as you can, to refer it all to him from whom it comes… for 'if you suffer with them you shall also reign with them.'[85]

His letters are earnest but I detect restrained irony—whatever praise he would direct to a king would be only to further the kingdom of God. For instance, after begging Roger to accept a disciple of his own whom Bernard has sent with a detachment of monks, he writes, "My purse is not at all adequate, so I have with reason made it my business to direct him towards yours which is obviously better filled then mine," and warns him that it is not good that they should be called so far from home to "wander on a useless pilgrimage." Bernard is concerned for the well being of his brothers who will populate the monastery but his tone suggests an ulterior purpose related to the success of the foundation. Here, two aspects of his person play at one another to convince a patron to support his plan—obsequious flattery and spiritual counsel.

Bernard's trips through Italy and the time he spent in correspondence with foreign officials had a primary purpose only incidental to recruitment and acquisition, but in these reasons Bernard could find justification for his long absences from the cloister. After all, he was a contemplative with a vow of *stabilitas loci* whose heart at home was with his brothers.[86] In the end, after the dispute between pope and antipope ended with the death of Anacleteus in 1138, it was his work outside the cloister that

[84] For these letters see Bruno Scott James, *The Letters of St. Bernard of Clairvaux*, (Chicago: Henry Regnery Company, 1953). I quote from letters 276, 277 and 278.
[85] James, 348-49.
[86] See B. McGuire, *Difficult Saint Bernard of Clairvaux & His Tradition*, for a discourse on Bernard's attitudes toward trips that took him away from Clairvaux and how he conveyed his heart-ache in the letters he wrote back home.

brought long-lasting benefits to the Cistercians. The role Bernard played as the organization's ambassador was largely in recruitment. There were many who wished to become Cistercians after hearing him preach. At least one abbey was established in Italy to house the postulants that sought membership after he had spoken. But were these temporary effects? Or did Bernard inspire the peninsula even after his death and thereby further the expansion of the order?[87] Of course, I am not the first to ask this question; it's generally agreed that Bernard's prolonged sojourns through Italy had an impact on the development of the Cistercian network, so I looked for evidence on the Cistercian foundation map of Italy to buttress the claim that the abbot of Clairvaux was "compassing sea and land in order to entice 'proselytes' from other orders."[88] If true, then such heavy recruitment would likely be visible.

[87] Knowledge of the travels of Bernard is limited to specific events. The dates of his travels derived from Adriann Bredero, *Bernard of Clairvaux, Between Cult and History*, (Grand Rapids: William B. Eerdmans Publishing Company, 1993). In this volume there is a timeline of events found in the appendix. From this source, corroborated with regional studies listed in the bibliography, I derived a time-table of his travels through France, Germany and Italy, as we have no certain knowledge that he was ever in England. According to A. Bredero, 1133 was the date of his first journey to Italy in the company of Innocent II. Then in 1135 he traveled to a synod at Pisa before returning to Clairvaux in December. In 1137, Bernard remained a year in Italy. In 1138, the papal succession conflict ended and Bernard returned to Clairvaux in the same year that the future Cistercian pope, Bernard Paganelli, entered as a postulant at Clairvaux. A plausible alternative to locate the places where Bernard traveled would be to refer to the references in the letters he wrote. Presumably, some of these were written while abroad and contain such references. For these letters see Bruno Scott James, *The Letters of St. Bernard of Clairvaux*, (Chicago: Henry Regnery Company, 1953).

[88] See King, 216. Bernard is referred to on two occasions as the *Fisher of God*. For the quotation from the source, see the Vita Prima, lib. 1, cap XIII, n. 61-62 and Pat. Lat. CLXXXV, col. 260 & 261.

Chronological Summary of Bernard's Travels		
(A. Bredero, *Bernard of Clairvaux – Between Cult and History*, 1993)		
Date	Event	Place
1091	Birth	Fontaine-les-Dijon
1098-1099	School	Chatillon-sur-Seine
1113	Bernard enters Citeaux	Burgundy
1115	Bernard made abbot of Clairvaux	Ville-sous-la-Ferté
1119	Bernard receives permission to leave Clairvaux for one year	Aube
1124/25	Bernard at Morimond to intervene in crisis	Champagne
1128	Council of Troyes about Templars	Troyes
1130	Bernard defends Innocent II, synod	Etampes
1130-38	Bernard travels in the defense of Innocent II	[France, Germany Italy]
1131	Recruitment of thirty monks	NW France
1132	Bernard combats supporters of Anacletus	Aquitaine, W France
1133	Bernard travels to Italy with Innocent II	Italy
1135	Bernard attends diet	Bamberg, Germany
1135	Travels to Pisa to meet Peter the Venerable at Synod	Pisa, Italy
1135	Travels to Rome before returning home	Rome, Italy
1137	Bernard through Italy	Campania, Italy
1138	Bernard through Italy	Campania, Italy
1145	Bernard preaches against heresy	Languedoc, S France
1146	Bernard preaches second crusade	Vezelay, Burgundy
1153	Bernard travels to Metz to intercede in a conflict	Metz, NE France

Figure 23 A chronology of the travels of St. Bernard from A. Bredero's *Between Cult and History*. In many circumstances, it was likely that on his way to Rome, for example, Bernard made repeated trips to locations he had already visited. There were certainly unaccounted trips made in the regions mentioned. See footnote 87 for further discussion.

For instance, during one of his journeys to northern France, thirty young men of prestigious families in the Saint Quentin and Cambrai districts followed St. Bernard to Clairvaux. In another instance, "on the occasion of the visit of the abbot of Clairvaux to Milan in 1135, so great was the number of those who wished to take the white habit that it was found necessary to establish a house some miles from the city."[89] This foundation, Chiaravalle-Milan, would go on to filiate five houses; its line would become responsible for other foundations in northern Italy. "The 'preaching tours' of the Saint provided a fruitful service of vocations, when mothers hid their sons, and wives their husbands, lest the *sequere me* should prove irresistible."[90] Since the secondary literature was so full of examples of the influence of his preaching, I analyzed the Cistercian network in Italy from the date of the first foundation (1120)

[89] A. King, 217-218.
[90] Vita Prima, I, cap. 11, n. 15 or Pat. Lat CLXXXV, col. 235.

for a time span of about half a century, so that the entire adult life of Bernard and the latent effects of his preaching might be accounted for. The network map can be seen in Figure 24 and a discussion of its prevailing features follows.

Figure 24 The Cistercian network map of Italy through 1180 shows the dominance of Clairvaux foundations in the lifetime of Bernard and shortly thereafter. The name "Chiaravalle" means *clear valley* (Clairvaux); these northern foundations were named after the mother house in Burgundy. Sambucina, given to Clairvaux by Roger of Sicily, was responsible for further growth to the south. Note that all genealogical lines are present in Italy.

See the network map of the Italian peninsula in conjunction with the figure that lists the places to which he traveled. The map puts forward evidence that foundations were made after his visits to Cambria, Pisa, Milan and Rome. Overall, a positive correlation exists between the travels of Bernard and the houses established during his lifetime. Only a general agreement can be concluded between his travels and Italian foundations. A protracted and stronger argument could be made by a close study of the foundation history of each monastery in conjunction with a network analysis. What is important here is not the specific details of his involvement but that his influence extended beyond his lifetime and that the pattern is visible on a landscape map of Italy.

To analyze foundations that occurred after his death, the network map should be divided north, central and south. Foundations are present in all genealogical lines through the first seventy-five years—Cîteaux, La Ferté, Pontigny, Clairvaux and Morimond—but the most active is indisputably Clairvaux. Clairvaux foundations occur in close proximity to one another, suggesting growth by colonisation, and providing evidence in the landscape that the number of postulants grew in the decades following Bernard's death.[91] As mentioned, after one of his speaking tours, Chiaravalle-Milan (1135) was founded and went on to filiate five daughters, in a region of Italy that was then under the influence of the Holy Roman Empire. In the decade following the peak of his activity in Italy foundations continued, such as Fiastra (1141), Fontevivo (1142) and Sanavalle (1146). In the center of the peninsula among the Papal States were founded Fossanova (1135), Casamari (1140), and SS. Vincenzo ed. Anastasio (1140) later named Tre-Fontane. Fossanova founded five daughters of its own. Casamari founded four daughters and Tre-Fontane founded six

[91] Colonies of monks could have been provided from France, where connections remained strong with the monks in Burgundy. See discussion about Godefroid, secretary of Bernard, and his appointment as abbot of Fossanova.

daughters. These four influential monasteries were all in the genealogical line of Clairvaux, and each of these foundations was related to Bernard's activity, either given to Clairvaux as a reward for his involvement or founded as an indirect result of recruitment from his preaching. For instance, Fossanova was given to Bernard by Innocent in October 1135 and was affiliated to Hautecombe in Savoy; likely the monastery was first populated with the Benedictine monks but soon received its first colony of monks from France.[92] By maintaining direct connections to Burgundy and by currying favor with the papacy, foundations in Italy had access to the best in human resources. For example, Godefroid, one of Bernard's favorite disciples who served as his personal secretary, became abbot of Fossanova after being abbot of Clairvaux from (1161-1165). The direct connection between Burgundy and Italy must be seen in its context as an example of an emergent network. First Clairvaux was invited to make its foundations. The network emerged on the peninsula as a result. Thereafter foundations followed that were responsible for the diffusion of ideals.

It has been argued that the Cistercians were partly responsible for the arrival of the northern Gothic style to the southern Mediterranean. [93] Filial connections between monasteries would have been a likely conduit for a discussion about unity in architecture. After a lengthy study of Cistercian monasteries in Italy A.L. Frothingham writes: "[The Cistercians] were not a congeries of independent institutions, but a band of closely knit and independent monasteries, thus leading to

[92] Frothingham, I, 15.

[93] On the diffusion of gothic through Italy, a recent study was published by [get source reference from Joska]. It is not my purpose here to deal with the topic, beyond suggesting that the monasteries founded in the wake of Bernard's preaching tours were connected to Burgundy and a likely source for the diffusion of the art style. For examples of this line of reasoning, see A.L. Frothingham, "Introduction of Gothic Architecture into Italy by the French Cistercian Monks. I. Monastery of Fossanova." *The American Journal of Archaeology and of the History of the Fine Arts* (1890): 10-46. His study continues with an essay about San Martino al Cimino published as a four part series. For a detailed study of Casamari, with photographs of elements in the Gothic style, see Frederico Farina and Benedetto Fornari. *L'architettura Cistercense e l'abbazia di Casamari,* [Cistercian Architecture and the Abby of Casamari], (Florence: Edizioni Casamari, 1978). The abbeys of Casamari and Fossanova were known to be exemplars of Cistercian Gothic.

unity in architecture as in life."[94] Frothingham cites the journeys of Bernard in 1137 and 1138 as a "powerful stimulus" in the growth of the institution. The arrival of monks from France he argues led to the transfer of Gothic architecture into the Italian peninsula, citing the lay brothers wing in the monastery of Clairvaux as the first example of Cistercian gothic (ca. 1150).[95] The diffusion of Gothic through Italy is a study in its own right and one that could benefit from a network analysis that includes other religious orders; however it is my purpose here only to suggest that the network elaborated in the wake of Bernard's travels may have been the means by which information about architecture was transferred.

[94] Frothingham, I, 13.

[95] For an introduction to Gothic and architecture of a Cistercian monastery see Ewa Łużyniecka, *Architektura Klasztorów Cysterskich*, [The Architecture of Cistercian Monasteries], (Wroclaw: Oficyna Wyd. Politechniki Wrocławskiej, 2002), where she argues that the use of the corbel to carry the rib vault load was one of the unique contributions of the Cistercians, partly to free up floor space that would have been taken up by columns.

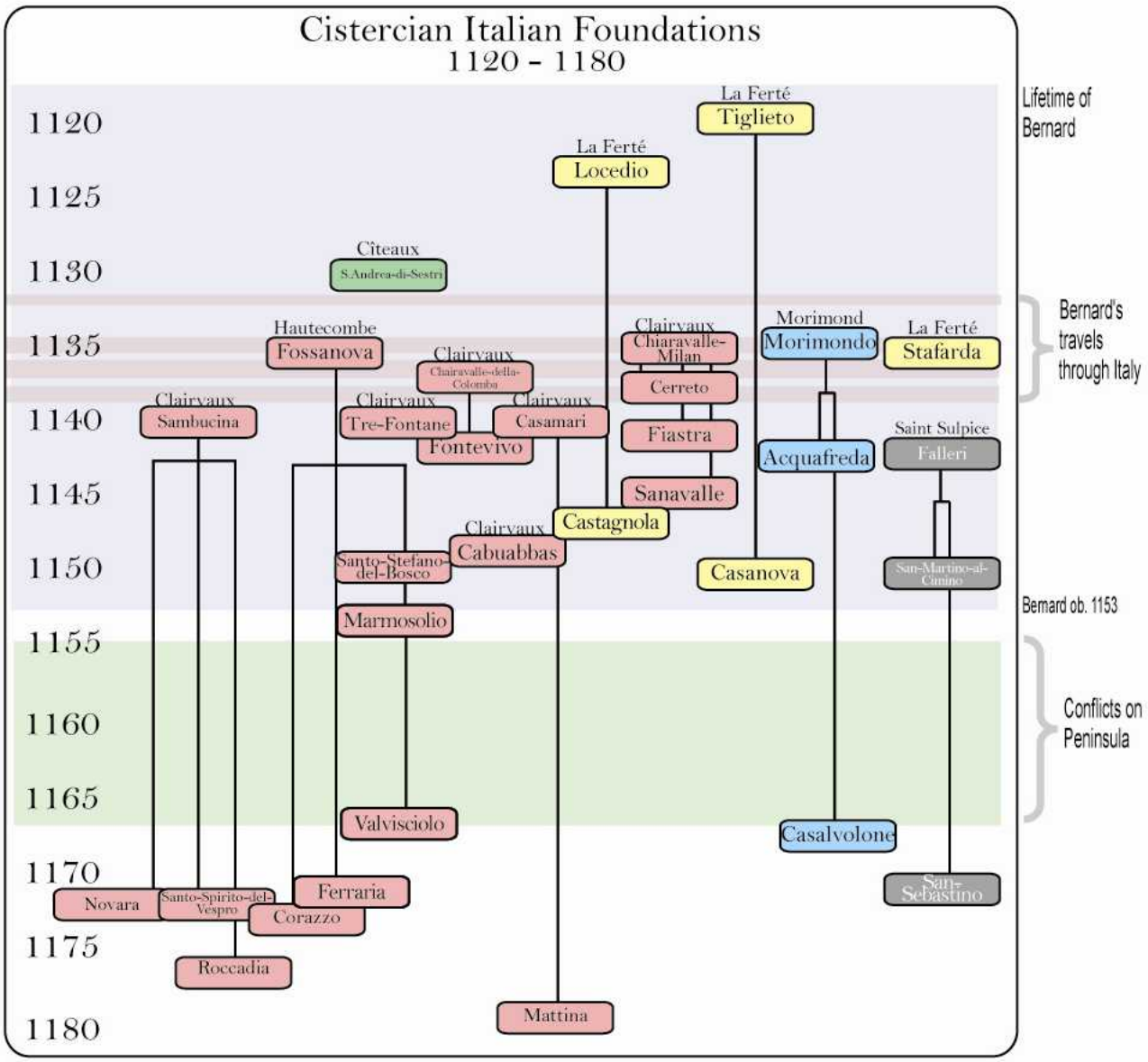


Figure 25 Italian foundation chart constructed on the basis of date and affiliation. Three temporal periods can be roughly defined. The first is incipient with the foundation of Tiglieto and Locedio. The second is one of considerable growth dominated by Clairvaux which can be correlated with the dates of Bernard's travels through the peninsula. A period of renewed growth follows after a decade of conflict.

Typical patterns were discussed in Chapter two, when it was noted that early in the reform a consistent affiliation pattern prevailed in the landscape—Clairvaux to the north and La Ferté to the south. Italy appears to have been an early exception to this general pattern. In the decades that followed the first foundations south of the Alps—Tigilieto (1120) and Locedio (1124)—Bernard was called into action on behalf of the church and foundations followed in his footsteps. These were not organized

under La Ferté which would have been reasonable but under the line of Clairvaux.[96] Patronage relationships may have been a factor. When the monastery of Fossanova in the center of the peninsula joined the Cistercians in the line of Clairvaux, it was not affiliated directly to Clairvaux but to Hautecombe in Savoy, a monastery itself that had just been established. This leads me to believe that there was a connection between Hautecombe and Saint-Sulpice, as both monasteries were parents of Italian foundations and both were founded in close proximity to one another in southern France. I would like to argue, on the basis of textual evidence supported by the foundation map of Italy, the Clairvaux network in Italy emerged when monasteries wished to join the Cistercians as a result of Bernard's preaching tours. This emergent network was a likely cause for the diffusion of the reform.

In the discussion on networks in Chapter three, it was suggested that Bernard was in large part responsible for the *takeoff*—the period of time when the diffusion moves forward from *early adopters* to a wider subset of the population known as *late adopters*. Successful diffusion requires an innovation to be communicated across time through a social system. As Rogers argues in his monograph, "It does not matter so much whether an innovation has a great deal of objective advantage, but what does matter is whether an individual perceives the innovation as advantageous."[97]

In the growth of the Cistercians in Italy from 1120 – 1145, there are several individuals who during this period of *takeoff* were convinced that the relative advantages of Cistercian membership were great, such as Roger of Sicily, who after Pope Innocent II began a crusade against him transferred Sambucina abbey to Clairvaux. The steepness of the S-Curve as seen in Figure 8 suggests that more

[96] There were also foundations under the line of Cîteaux, S. Andrea di Sestri (1131), and under Morimond, Morimondo (1134), making the Italian peninsula a location of mixed network connections or a small clustering coefficient. Recall that a small clustering coefficient means that a monastery is not likely to be surrounded by another of the same filiation. See the discussion on clustering coefficients in Chapter 3. As for the foundations in the line of Pontigny, those in Italy were not filiated directly to Pontigny but attached to the monastery of Saint-Sulpice in Savoy.

[97] Rogers, 15.

adopters were accepting the Cistercian reform over the alternatives of the time period. What is not visible however is the variety of motivations of the founders. Roger of Sicily could just as well have had a political agenda and wished to use Sambucina to mediate in a local conflict. Joining the reform at a time when it was popular would have sent a message to his opponents that he had the support of influential monastics. Everett's diffusion model requires later adopters to join for different reasons than early adopters (The greater variety of motivations is in fact what speeds up adoption). This is certainly the case for the Cistercians. As the number of foundations increases so do the motives of the founders.

Part 2 – The Kingdom of Hungary

This study is set in the medieval Kingdom of Hungary because this region presents a compelling example of how the Cistercians were welcomed for a number of interrelated reasons.[98] The Cistercians were invited for over a century by a number of benefactors and were integrated into existing ecclesiastical and economic networks. Their strong connections with Burgundy improved what connections Hungary had been developing since the mid twelfth century; clerics had been going to Paris to study since about the time of the arrival of the first Cistercian foundation in 1139.

Hungarian foundations were made during the mid twelfth, late twelfth and early thirteenth centuries, during a time when Cistercians found favor with Hungarian kings, bishops and noble families. The network map that forms the basis for the discussion in this chapter illustrates these connections among the lines of Pontigny, Clairvaux and Morimond. The Cistercians in Hungary have been studied by a number of scholars,[99] who have divided the patronage on the basis of king, bishop and clan/family. The number of foundations roughly descends in number among these three groups. In Hungary, it depended on the time period; in the late twelfth century the king's patronage was strong and in the early thirteenth century clan support

[98] The region of medieval Hungary includes Transylvania, all of present day Slovakia and the region adjacent the Baltic Sea that includes present day Croatia.

[99] For a Hungarian catalogue of medieval monastic foundations see Beatrix Romhányi, *Kolostorok és társaskáptalanok a középkori Magyarországon*, (Budapest: Pytheas, 2000); For a summary in English of the Cistercian foundations in Hungary see Romhányi's article "The Role of the Cistercians in Medieval Hungary: Political Activity or Internal Colonization?" *Annual of Medieval Studies at the CEU* (1993-1994): 180–204. For a catalogue in Latin of Hungarian foundations see F.L. Hervay, *Reportorium historicum ordinis cisterciensis in Hungaria* (Rome, 1984); see also Marie-Madeleine de Cevins, "Les Implantations Cisterciennes en Hongrie Médiévale: Un Réseau?" *Unanimité et diversité cisterciennes. Filiations, résaux, relectures du XII*e *au XVII*e *siècle*, Actes du 4e Colloque International du C.E.R.C.O.R. (Dijon-Cîteaux, 23-25 September 1998), Saint-Étienne: Publications de l'Université de Saint-Étienne, 2000: 453-484; for an analysis of the first Hungarian foundation Cikádor see László Koszta's article, "A cisterci rend története Magyarországon a kolostoraik alapítása idején 1142 - 1270 [The History of the Cistercian Order in Hungary During the Period of their Establishment 1142 - 1270], *Magyar egyháztörténet vázlatok* 1993/1-2, 115-128. For Cikádor see Ilona Valter, "The Excavations of the Former Abbey of Cikádor," *Analecta Cisterciensia,* 52 (1996): 251-264.

prevailed. The abbey of Cikádor was established in Hungary in (1142) in the lifetime of Bernard from the abbey of Heiligenkreuz (1139) in the line of Morimond, a foundation made upon the invitation of King Géza II (1141-1162). Scholars have noted that reverse patronage, Hungarian bishops in support of Heiligenkreuz, continued for some time and that at one time Heiligenkreuz considered relocating to Hungary. Yet no subsequent foundations were made in Hungary for decades.

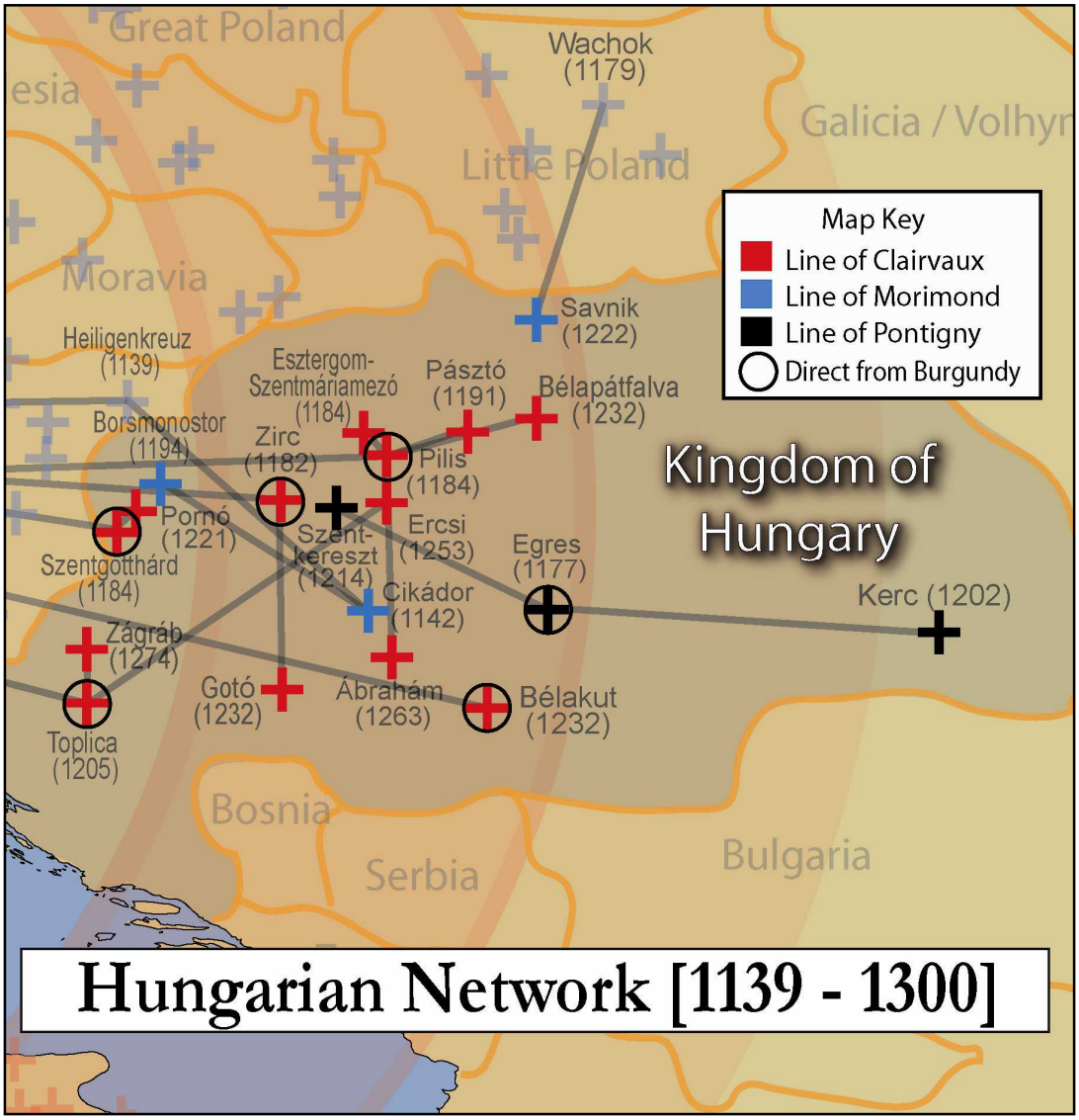


Figure 26 The map shows the network connections between Cistercian foundations in Hungary. Half of the Clairvaux foundations have direct connections to the west in Burgundy, whereas the Morimond foundations exhibit patterns typical of central-eastern Europe, where monasteries are affiliated to nearby neighbors, such as Savnik in the north, which is believed to have been involved in the north-south trade with Poland.

Foundations were resumed when King Béla III (1172-1196) ascended the throne. Béla III would finance five foundations during his reign, three of which were direct in the line of Clairvaux. It is my intention to elaborate the social context in which the Cistercians were invited to plant foundations in Hungary in the second half of the twelfth century.

Though Hungary was far from the royal court in Paris, King Béla III had been improving his contacts with western powers at a time when Hungarian clerics had been going west for ecclesiastical training since the mid twelfth century. Lukács is the first Hungarian who can be identified in Paris in the school of Gerard La Pucelle sometime before 1156 and who would later become head of the church as Archbishop of Esztergom.[100] Other clerics would follow him, such as Job who studied at Sainte Genvieve from 1177-1181; Jakab, Adorján and Bethlehem were other Hungarian clerics who studied in the schools in Paris.[101] Those who trained in the west would bring back modern ideas about ecclesiastical management along with their connections to Burgundy that would become important for Cistercian foundations. Though the relationship of Archbishop Lukács was at best ambivalent to King Béla III, similar to the relationship between Thomas Beckett and Henry II, Lukács was responsible for strengthening relations between the Hungarian church and Parisian intellectual circles. It's likely that when Cistercian monks were studying in Paris they encountered Hungarian clerics who were doing the same. These encounters would later forge relationships between Hungarian clerics and Cistercian abbots. The foreign relations of King Béla III improved upon the death of his wife Anna Chatillon (1184) when a second marriage allowed him to align himself with the west. After trying unsuccessfully to arrange marriage in the Byzantine court where he had been raised as

[100] József Laszlovszky, "Nicholaus Clericus: a Hungarian Student at Oxford University in the Twelfth Century," *Journal of Medieval History*, (1988): 222.
[101] Adorján became bishop of Transylvania while Jakab became bishop of Vác; Laszlovszky, 222.

a child, he looked for marriage prospects elsewhere, trying first to marry Matilda granddaughter of Henry II and then settling upon an arrangement with Margaret of France, sister of Philip Augustus. Margaret had been married to Henry the Young, King of England, but because of political hostility between England and France, there was a fight over her dowry which is said to have been of considerable size. Laszlovszky suggests that "the proposed marriage was a very good offer for the French and English kings and offered a good solution for their long lasting quarrel over Margaret's dowry."[102] These were the conditions that may have precipitated a renewed invitation to the Cistercians to settle in the east.

The period of rebirth of Cistercian foundations under Béla III, roughly the last quarter of the twelfth century, began with the foundation of Egres (1177) sometime before Béla's marriage to Margaret. It was the possible influence of Hungarian clerics trained in the French court that may have influenced his decision to ally himself west. Laszlovszky argues that "Béla III and his wife had a very close relationship with the Cistercians" and that they used Cistercian monks as their confessors.[103] It has been mentioned that Bernard was active in the conflict of papal succession in his support of Innocent II over Anacletus II. The period of renewal of Cistercian foundations in Hungary comes at the time of the establishment of the cult of Thomas Beckett, who was murdered in the Cathedral of Canterbury in 1171 and who was made a saint in 1173, a year before Bernard of Clairvaux himself was raised to the same status. It is known that Margaret of France was close to Thomas Beckett, having been accompanied by him on her journey to England. If during this period, King Béla III strengthen his contacts with the west by his marriage to the daughter of Louis VII, then his support of the Cistercians would have perpetuated the cults of two key personalities from the west—Thomas Beckett and Bernard of Clairvaux. Propagating

[102] Laszlovszky, 222-224.
[103] Laszlovszky, 224.

the cults would have sent a signal west that the King of Hungary supported the papacy in its struggle with Emperor Frederick Barbarossa. Just as Roger of Sicily had used Clairvaux earlier in the century to garner support in his political struggles, so might Béla III have used the Cistercians to improve his standing with foreign powers. Thus, Hungarian clerics in French schools and Béla III and his relations west are two of the evolving social networks that grew concurrently with the Cistercians in Hungary.

In the time of Béla III there was also a developing economic network and possible motives for the introduction of the Cistercians to strengthen the regional economy. Several of the Hungarian foundations were made direct from monasteries in Burgundy that were of considerable size and influence. The monastery of Clairvaux was responsible for Zirc (1982), while Acey was the mother of Pilis (1184) and Trois-Fontaines the mother of Szentgotthárd (1184). On the basis of these network connections, there was a transfer west to east of modes of production as well as agricultural and industrial technologies.[104] Romhányi describes how "all monasteries but three were situated on main commercial routes such as the most important waterways or the road used since ancient times."[105] Proximity to trade networks would have encouraged the Cistercians to manufacture finished goods. Archaeological investigations uncovered a water system at Pilis that is similar in its design to that of Fontenay.[106] Water power could have been used, as it was in elsewhere, to power billows in blast furnace applications. Egres was connected with the salt trade. Zirc and Cikádor received incomes from tolls.[107] Pásztó was in a market town and the patron St. Nicholas of the parish church was known to be connected to long distance trade. The economic network into which the monasteries were

[104] For a study of the economic basis for Cistercian foundations in Hungary see Beatrix Romhányi, "The Role of the Cistercians in Medieval Hungary: Political Activity or Internal Colonization?" (Budapest: *CEU Annual* 1993-1994), 181-199.
[105] Romhányi, 184.
[106] Romhányi, 188.
[107] Romhányi, 185.

established hints at relations with suppliers, financiers and traders for raw materials and finished goods. The Cistercians, by the time of their arrival in Hungary, had become financiers and could have been valuable agents in a burgeoning economy. If the Cistercians were not used as colonizing assets as they were elsewhere to introduce agriculture in unpopulated regions they could have been used by the Hungarian kings as a stimulus to the regional economy. King Béla III would then have taken advantage of the extant network to which they belonged to strengthen the economy of his kingdom. After having outlined the growing social networks related to the invitation of the Cistercians, I will now describe the Hungarian network with an emphasis on the filial connections between abbeys.

During the reign of King Emerich (1196-1205) and King Andrew II (1205-1235), seven foundations were made: Bélakut (1232), Bél (1234), Esztergom (1200), Kerc (1202), Porno (1221), Savnik (1216) and Ercsi (1253).[108] Of these foundations which spanned a period of four decades preceding the Mongolian invasion, Bélakut and Savnik were founded by sons of King Andrew, Kerc was supported financially by the King but was a daughter abbey of Egres, while the remaining four abbeys can be considered clan or family foundations.[109] Among these only Savnik, suggests evidence of colonization. This abbey was subordinated to Wachok (1179) in the line of Morimond and may have been connected with the north-south mining trade. Kerc was founded furthest from the others in present day Romania, a daughter of Egres.

[108] See Hervay or Romhányi for details of the circumstances of these foundations. My purpose here is to deal strictly with the connections to broader social and economic networks; to deal with each foundation individually lies outside of the scope of this study.
[109] Romhányi, 182.

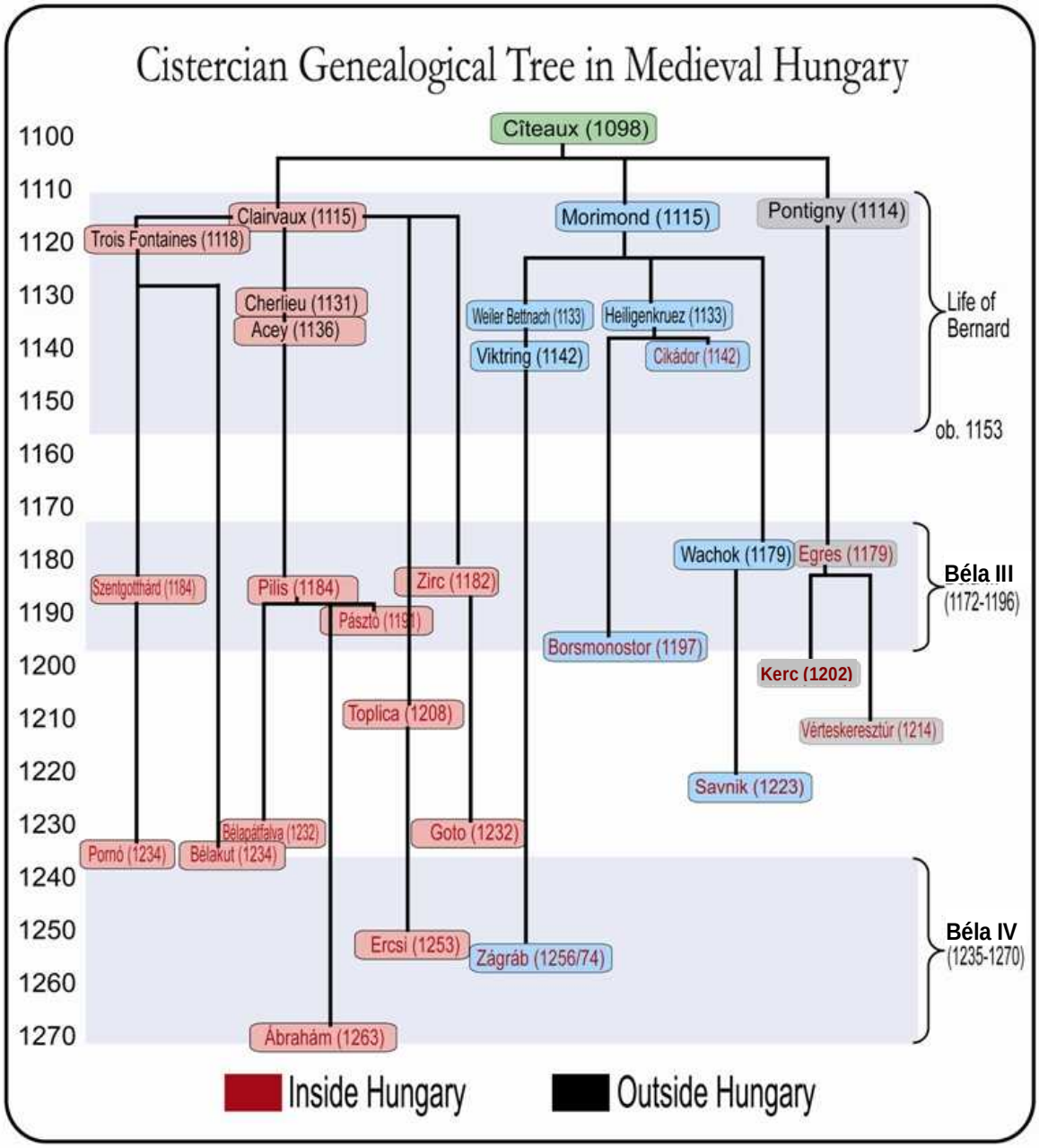


Figure 27 This temporal distribution shows relations between Hungarian Cistercian monasteries. Resources were exchanged along these network lines, such as the translation of John of Limoges, who was abbot of Zirc (1208 – 1218) before becoming prior of Clairvaux. Drawn with time increasing vertically; monasteries aligned horizontally were founded at approximately the same time.

Our interest lies in Kerc, which had a unique position among the others, in that it was the only latter day foundation supported financially by the king. This foundation would have increased the trade network which earlier Béla III had expanded by relying on the Cistercian network. It has been noted by scholars that Kerc lay adjacent a trade route connecting Transylvania with the Balkans and leading

to Constantinople. This abbey, though sited in a heavily forested area, was eager to take part in long distance trade.[110] It may have traded with Nagyszeben, a town in close proximity at a distance of 35 km and one of the major towns of the Saxons. After the abbey's dissolution the town was given all of its estates and belongings. Kerc can be considered an asset in the Béla IV's economic plan, though a general expansion plan seems to be missing from the latter day Hungarian foundations which occur under varied circumstances. One note might be added: the Hungarian kings relied upon the abbots as foreign diplomats, particularly the abbot of Pilis, who often functioned as the envoy of the king abroad.[111]

Romhányi attributes the influence of the Cistercians in Hungary to their "internal structure," arguing that the abbots were probably the best informed people of the time period. Furthermore, the privileges granted to the monks could ensure their support in the king's international policy. But to conclude that the Cistercians were useful for their international connections alone would be misguided; less expensive diplomatic alternatives must have been available to the king then to fund a Cistercian monastery in perpetuity. The monks were the guarantors of salvation and their primary responsibility was the *opus dei*, chanting prayers for the souls of their benefactors.[112] Only one could travel abroad and advocate for the king; a whole monastery could remain behind to offer prayers for the well-being of the kingdom. On the other hand, those Cistercian monasteries that were not royal foundations were the patrimony of clans and families. Prominent members of the family would be buried there and the continuity of the monastery could ensure their life-after-death support in prayer. It can be argued then that when Hungarian royal support was significant the king had found favor with the Cistercians; these foundations were not used in

[110] Romhányi, 183.
[111] Romhányi, 193.
[112] This notion is illustrated by the lack of a specific year in the Cistercian necrologies; only the month and date were recorded so that prayers for the deceased might be offered on an annual basis.

colonisation but were endowed with income from tolls. If not supported with financial privileges then the rational basis for the monastery was provided via a strategic location, either at the perimeter of the kingdom or situated along a prominent trading route. Those foundations that were not royal were the heritage of a particular clan that wished to buy the spiritual support of the monks.

It must be added to this general picture mention of a key individual, John of Limoges, who was transferred upon affiliation lines from Clairvaux and made abbot of Zirc (1208 to 1218). John of Limoges was arguably one of the most influential personalities in Hungary at the beginning of the thirteenth century, suggested perhaps by his appointment as prior of Clairvaux when he left Hungary.[113] This was an important position in the Cistercian network because the abbot of such an influential house would likely have been often called away for business and the prior would remain behind with de facto control over such a numerous population of monks. Though Romhányi argues that Hungarian abbeys "needed supplies even decades after [their foundation]," implying an overgrown child's dependency upon its mother, I would rather describe John of Limoges appointment at Zirc as a strategic movement endemic to a well-functioning network where resources move both laterally and vertically. At the height of his influence John of Limoges had been asked to be abbot of a lesser house, just as Stephen of Lexington spent some time at Stanley, a lesser filia of Quarr, before his appointment as the abbot of Clairvaux. Movement both up and down the network structure was not uncommon and a sign of a well-functioning network. Intelligent, pious abbots could reform a lax monastery.

[113] For the works of John of Limoges, *Morale somnium pharaonis*, *De silentione religionis*, *Expositio super Ps 118, and Religionis elucidarium* see Johannes Lemovicensis, *Johannis Lemovicensis opera omnia*, ed. Konstantin Horváth, (Veszprém: Egyházmegyei Könyvnyomda, 1932); the introduction is in French, German and Hungarian.

CHAPTER 5

Conclusions

> "I am surprised you should write. You surely have at Prémontré men to advise you who are wise and faithful." [114]
>
> - Bernard of Clairvaux, letter to Abbot of Cuissy

> "The Carthusians have been troubled."[115]
>
> - Bernard of Clairvaux, letter to Pope Eugene

In the introduction, I discussed the work of Bond (*The Premonstratensian Order*, 1993) and Aston (*The Carthusian Order*, 1993). Figure (25.A) on the following page compares the expansion for all three orders through the year 1400. The curves show growth only and do not include closures or dissolutions. The Premonstratensian and Cistercian curves are similar while the Carthusian growth is protracted. Its peak is shallower and shifted to the fourteenth century. The Premonstratensians and the Cistercians both enjoy a defined peak in the mid twelfth century. Furthermore the graph in (25.B) controls for the differences in size and compares only growth as a function of total size. Seen this way, the similarity between Premonstratensians and Cistercians is striking.

In Chapter two, I proposed that while the Cistercians didn't grow beyond a single monastery for fifteen years, when they did begin to grow, there was a visible pattern to the arrangement. Clairvaux was sited to the north at a few days journey from Cîteaux. La Ferté was placed to the south, Pontigny to the west and Morimond to the east. Each of these foundations would maintain a steadfast regional priority for the remainder of the reform although they would soon begin to overlap. After twenty years of slow growth, a noticeable takeoff occurred during a period of rapid escalation, whose growth curve resembled the curve given by Roger's theory on the *Diffusion of Innovation.*

[114] Bruno Scott James, 119.
[115] James, 418.

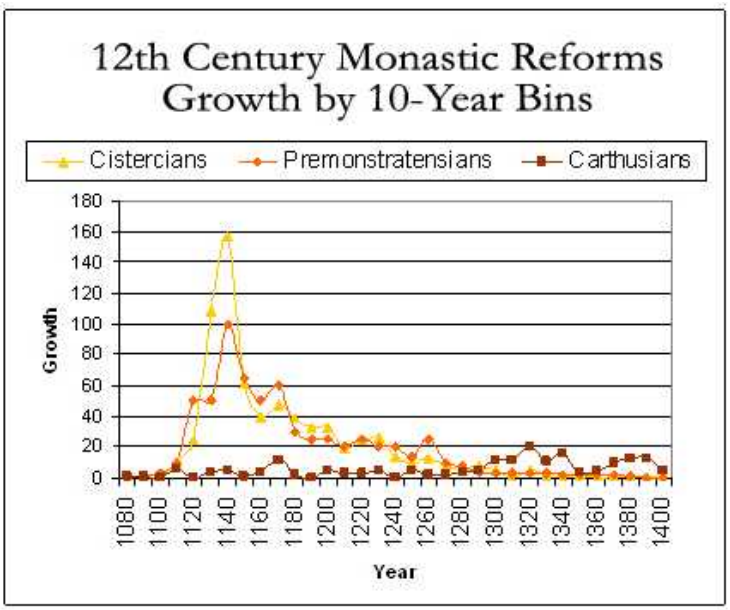


Figure (28.A) Comparison of Cistercian growth by ten year intervals with two notable monastic reforms of the twelfth century. The Cistercians and the Premonstratensians show growth similar curves, although the Cistercian peak is greater, while the Carthusians are noticeably smaller. (Source: Bond and Aston, *In Search of Cult*, 1993)

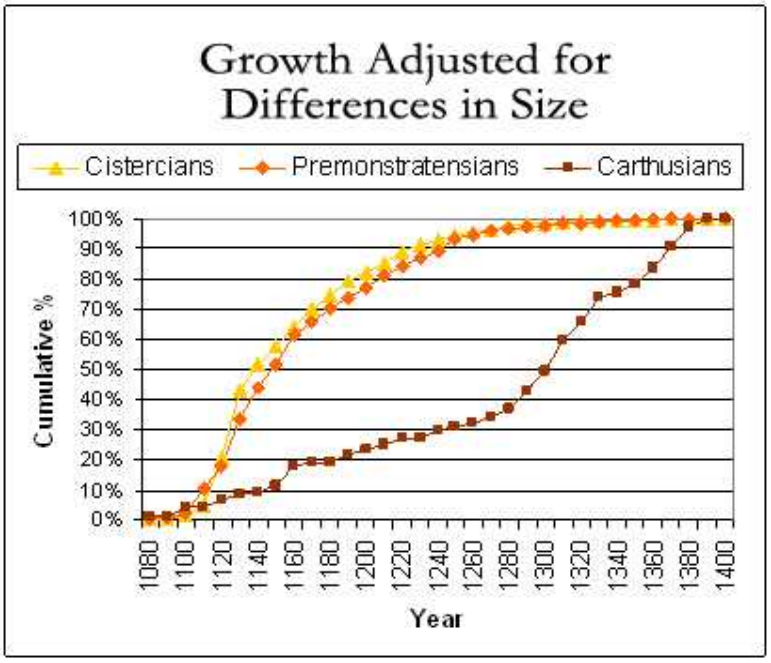


Figure (25.B) The curves are adjusted to factor out differences in size. The Cistercians and Premonstratensians grow earlier and share similar growth curves, while the Carthusian growth is protracted over some three centuries. These estimates do not include closures or dissolutions.

Early adopters drove the start of the diffusion, while the takeoff depended upon general acceptance among a majority of members of the social system through which the reform diffused. Late adopters caused the curve to grow at a decreasing

rate. From a bird's eye view, foundations tend to cluster outside the core area, on either side of the Pyrenees, on island of Sicily, along the western Iberian Peninsula and the eastern coast of Ireland.[116] These areas are far removed from resource rich Burgundy but are quite prosperous.

On a whole, the landscape distribution of monasteries is rather disparate compared to the Carthusian and Premonstratensians, whose foundations show a higher propensity to cluster around core areas. This finding suggests the Cistercians were rather more widespread and their influence was sustained long enough for colonisation to fill in the blank spaces on the map. From Central Place Theory, given a uniform distribution of resources, markets will consolidate activity at the vertices of a regular polygonal distribution. Or put another way, the distribution will be regular and uniform. An interesting finding from a statistical analysis of the first sixty years has to do with the perception that the Cistercians were growing their capacity, or that for a number of years each subsequent year brought the addition of more monasteries. If Savigny is regarded as an exception, than for a quarter century, the Cistercians achieved a high rate of consistent growth from 1128 to 1153. When a system is functioning at equilibrium, the structures that are in place to make foundations—recruitment, training and patronage—are causing the network to expand consistently like a well oiled machine.

Chapter three conceptualized the connections between foundations as a network, often mentioned in the scholarly literature but seldom analyzed for want of a methodology.[117] From even a cursory glance at the network map in Figure 13, each

[116] Leinster, Meath, Oriel and Uliad.

[117] In contrast to foundations, evidence which can be corroborated in the archaeological record, there is no physical evidence of network relations, other than narrative sources which might suggest from where the original population of monks derived or to whom a new monastery was attached. Therefore, specific connections between abbeys are to be held circumspect unless textual evidence supports them. Only the most general patterns should be recognized in network maps. Furthermore, a network connection doesn't imply interaction. Cistercian monasteries could be autonomous; it simply

line has its own characteristics—Clairvaux is dominant with long distance foundations and a great deal of centralized control. Cîteaux is connected in a web of localized smaller network loops that may well have been preexisting before joining. Morimond continues in an outward propagating series of successive foundations, arguably the most integrated of the networks, with a strong vertical hierarchy and regional sub centers such as Kamp and Heligenkreuz. This suggests that either the strategy was not uniformly shared by everyone or that it was individualized to maximize growth.

The size of respective internal networks (filial lines) varied among the eldest five monasteries. Pontigny and La Ferté did not grow much but Morimond and Clairvaux did. The size of each doubles in the following order from smallest to largest: La Ferté, Pontigny, Cîteaux, Morimond and Clairvaux. The line of Clairvaux was largest, although subordinate to the mother house, and according to the *Carta Caritatis*, unable to hold its own chapter with its daughters. Despite its subordinate position in the hierarchy, it held de facto control over a great number of monasteries. Some 161 of 698 foundations or 30% of the network was subject to the authority of the Clairvaux abbot via direct or indirect control—the latter a cause of parental visitation—and there is reason to believe that Clairvaux could have broken with a great number of dependent monasteries.

Constance Hoffman Berman minimized the role of network in her monograph *The Cistercian Evolution* (2000), arguing that the reform, even by the 1160s, was still a collection of haphazard associations barely uniform in practice. But the landscape presents evidence of at least a cursory growth strategy. Diffusing an ideal is connected to and dependent upon the very notion of reform; the more who join the closer the

implies the potential to interact upon network lines. Stephen of Lexington and John of Limoges were two examples of abbots who were transferred along these lines vis-à-vis a shift of resources within the organization.

ideal becomes a reality. Regardless of whether the expansion was made explicit in a plan to grow at Cîteaux, there was a surge nonetheless in monastic foundations, the sheer volume of which suggests an intention. I agree with Berman that the administrative structures might not have been in place, or could have been added by later monks retrospectively, but as early as the 1130s, the landscape suggests a functional and integrated network.

Chapter four focused on two parts of the network, Italy and medieval Hungary, to examine the social context that assisted its development. In Italy, the travels of Saint Bernard resulted in several direct foundations from Burgundy as a result of his preaching—Chiaravalle-Milan and possibly Chiaravalle della Colomba—while others such as Sambucina were made as gifts to the abbot for his involvement in foreign affairs. Foundations continued from monasteries founded in the line of Clairvaux several decades after his death about the time he was formally canonized in 1174. With this in mind, his influence can be regarded as long-lasting on the peninsula. It was hypothesized, though not dealt with, that the diffusion of Cistercian gothic could be read along lines of affiliation. I suggest to a scholar to investigate the diffusion of the typical Cistercian plan upon these lines. It was likely the network that allowed for the diffusion of an ideal plan, as connections between monasteries were a likely conduit for discussions about uniformity in design. A broad, connected information network could readily diffuse such an ideal. In this way, the *Carta Caritatis* might have encouraged architectural consistency and the network made such a practice possible.[118]

[118] There are several complications in this argument. Extant monasteries filiated to the Cistercians were not likely to change their building program unless calamity struck and they were required to rebuild. When they did rebuild, this may not suggest a local preference but rather a style preferred by the designers and builders who may have come from a distant region. The argument that the network assisted uniformity in art and architecture is difficult to make because of the challenge in defining explicitly the time when the style gained acceptance. Furthermore, the filial connections between monasteries may not have had such a strong influence on building styles, as it is generally accepted

The Hungarian network was brought together by king, bishop and clan. Despite its distance from Burgundy, it was well connected to Parisian intellectual circles. There is abundant evidence that Hungarian clerics had been going west since the mid twelfth century and would have studied with Cistercians. It is likely that the royal foundations were integrated into economic networks by direct participation in trade or via income from tolls. It may have been Béla III's intention to fortify his kingdom's economy with the help of the Cistercians who could provide access to sources of financing and trade markets.

Topographical Analysis

This study used GIS to assign four attributes: *date, location, position* and *daughters.* Admittedly, much has changed since the Middle Ages, although the general contours of the landscape and the proximity to water is likely the same. Reasoning so, I used satellite based imagery to create a topographical profile from a random sample of ten percent of Cistercian foundations. Since the General Chapter was involved in site selection and appointed local abbots to inspect the places themselves, these features may reveal the General Chapter's intentions. I gathered data regarding type of water source (river, stream, lake, pond or ocean), proximity to the water source (in kilometers) and the features of the surrounding terrain (valley, mountain, plane). The figure A.34 *Topographical Analysis Table* in the appendix summarizes my results. Testing more could increase the utility of such an exercise by constructing a profile for the entire network.

that so-called "professional" stonecutters, masons and architects were likely to have been employed, and these certainly would have taken their cues from Burgundy. If the diffusion of the Gothic style was dependent upon the Cistercian network, this area of my research presents a great possibility to adapt a network study to focus on the diffusion of architectural styles along filiation lines. Even Frothingham acknowledges the difficulty of defining the time period when the style took hold when he discusses the 1150s and 1160s. "During the disastrous conflicts of the years 1157 and 1164 – 1165, the region was thoroughly devastated and Fossanova may have been partly destroyed."

Figure 26 An image taken from *Google Earth* of the site chosen for the abbey of Hauterive. Though much has been changed since the Middle Ages, the general contours of the land and the watercourses are likely the same. If this information could be correlated to foundation data, a GIS study could be done to examine proximity to water, general site features and so on.

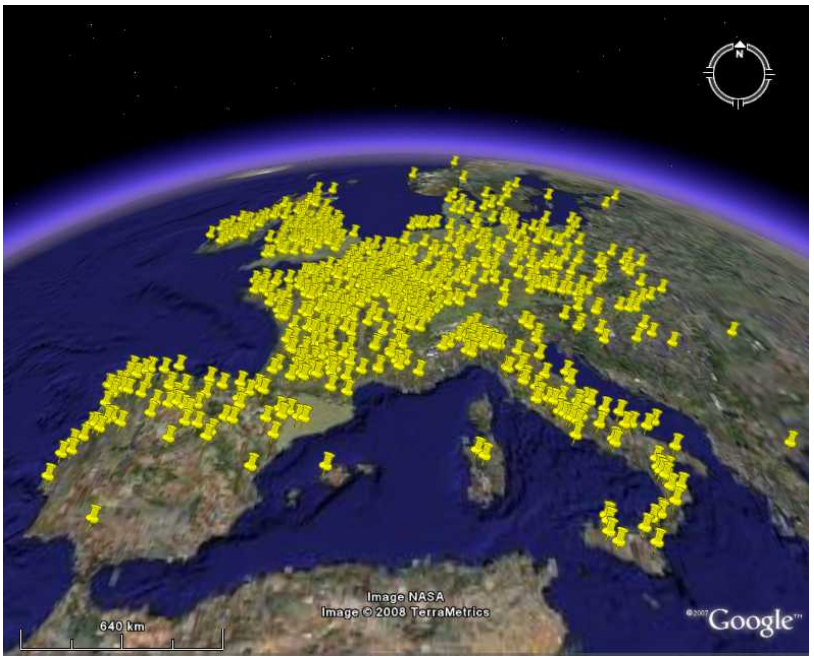


Figure 27 An image from Google Earth provides a means of visualizing the spatial context of the expansion. Each of the pins represents a foundation in Europe, Asia Minor and the Holy Land. Potentially, attribute data could be analyzed for topographical information.

Historical GIS

Narrative remains the form of historical inquiry, while books and articles are the containers for transmission. But since the adoption of the personal computer the cost of capable technologies has fallen. Now scholars have access to technologies that a decade ago would have been beyond the budget of most research institutions. Mapping geo-spatial data is not only possible but relatively accessible.

Richard White, in the 2008 volume *Placing History* discusses the respective weaknesses of the narrative and map as form: "The map not very good at tracing relationships through time, [while] the narrative is not very good at expressing spatial relationships." Anne Kelly Knowles, historian and proponent of GIS, expounds upon the acceptance of a technology that could add value to a spatial history.

> Historical GIS is still something of a maverick method in the study of history, as yet unheard of in some quarters. While only a small proportion of historical scholars are using GIS for mapmaking or as core database architecture for large projects, the number of scholars applying GIS to historical questions seems to be growing exponentially... [yet] some question whether the results of geospatial historical analysis are entirely new or warrant the tremendous labor the method can require.

It would seem then that a mix of the two would complement one another, especially a study about monastic history, so intimately tied to and dependent upon notions of space. In its origins, monasticism was a retreat from society, a movement in space from one point to another.[119]

Summary

When Bernard died, the Cistercians had grown by some 350 monasteries. Even if half of growth—perhaps an ambitious estimate—came from existing monasteries adopted into the network, many new foundations need to be accounted

[119] Scholars have challenged this desert ideal with reference to archaeological ruins that resembled small villages in the Egyptian desert, but what remains essential to monasticism is a movement in space, away from one thing and towards another in both moral and physical terms.

for in strategic terms. A tree grows by itself but an organization needs a lot of work. Furthermore, growth came at a cost, since foundations were made far from Burgundy and the abbot of Cîteaux had to be involved in the process. Both the General Chapter and the local bishop had to give their acceptance before the actual foundation got underway.[120] After 1190, the process became centralized to a greater degree and the process required two successive appeals. Consider the implications: each foundation added an abbot to the annual meeting. Because of the great strain on resources, I don't suspect the organization would have grown unless a great many of its members wanted it. The proclamation to halt growth in 1152 could have been a minority voice concerned with the influence of Clairvaux.

Furthermore, I don't find the formation of the organization *ad hoc*. It may be fairer to say its ambition to grow exceeded its capacity to control for quality. Sources that could enlighten us to the motivations of the first generations of monks do not survive to posterity but their absence doesn't preclude the possibility that the Cistercian expansion was anything less than intentional, strategic and overtly ambitious—it certainly appears so on the landscape. The questions I propose for further research are ultimately questions of space. Did the Cistercian network assist in the diffusion of Gothic in Italy? What were the interactions between Carthusians, Premonstratensians, and Cistercians, considering the relative proximity of their core areas? Either of these questions pursued in further studies could benefit from a mapping project in its own right.

[118] Żabiński, *A Comparative Economic History of Cistercian Monasteries,* 12.

GLOSSARY

Aligned – the quality of links being oriented in a parallel or radial manner; radial-aligned network lines indicate a popular node to which many abbeys are affiliated. Non-aligned links are oriented randomly.

Capacity – the general capability to add monasteries. If a greater number of monasteries then the previous year are added the system is increasing its capacity.

Carta Caritatis – used generically to represent the early Cistercian documents including the *Cartae Caritatis Prior* and its earliest version, the *Summa Carta Caritatis*; these documents put forward precepts for the functioning of the community, including parental visitation and the General Chapter; these are the basis for modeling the Cistercian expansion as a network.

Central Place Theory – in a plane, markets will form at the vertices of a regular polygon if resources are uniformly distributed and a range of conditions are met; here used to suggest monasteries will fill the blank spaces on a map before they will cluster.

Circaries – divisions used by the Premonstratensians to place the membership in administrative regions; the Cistercians may have had circaries but they were not more important than filial lines.

Clustering Coefficient – an index from 0 to 1 that describes the degree of connectivity of one node to those around it; the larger the coefficient the greater the attachment to others nearby; thus an abbey might be clustered but not be attached to those adjacent.

Diffusion – the process whereby an innovation is communicated through certain channels over time among the members of a social system. (Rogers, *Diffusion of Innovations*, 2003)

Degree of Connectivity – the quantity of connections; a popular node is attached to many others.

Early Adopters – the subset of the population who will adopt a new ideal at the outset of its diffusion.

Exogenous – lying outside the system in focus; related to the notion that external factors may have precipitated growth, such as Bernard being asked to preach the crusades and foundations following. Endogenous factors are internal ones such as the organization's training and recruitment.

Giant Percolating Cluster, GPC – the massive part of a connected network related to its distribution and size.

Historical GIS – A branch of historiography that uses time, space and attribute data to analyze relationships; related to Historical Geography but necessarily dependent upon computer methods. *GIS* stands for geographical information systems.

Influence Index – a measure of the relative importance of an abbey within the network by way of its ability to subordinate resources; here referring to the product of the number of daughter abbeys and the position in the hierarchy. Influential abbeys are high ranking and connected.

Late Adopters – the risk averse subset of the population who will wait to adopt the diffusion only after the great majority; represented by the flat sloping diffusion curve.

Length – the distance between connected nodes.

Link – the representative line connecting two nodes in the network based on a filial connection.

Network – monasteries joined by filial connections that may be symbolically represented in the landscape by nodes and links.

Node – synonymous for the foundation of an abbey.

Non-aligned – *see aligned*

Pond Model – a descriptive model suggesting a disturbance in a uniform plane will propagate concentric circles outward; used to suggest that successive attachments of monks will depart for regions further from the core area to establish foundations.

Popular is Attractive – a principle suggesting the nodes with links will attract more links.

S-Curve – the aggregate path of socially connected individuals accepting an innovation over time.

Takeoff – the region of the diffusion curve when the innovation begins to have widespread acceptance; moving from early adopters to the great majority.

Zones of influence – A description of the preference for filial lines to remain confined to regions; pointedly marked in the first 30 years of the expansion, later diminishing but always remaining visible on the landscape map.

BIBLIOGRAPHY

PRIMARY SOURCES

Benard of Clairvaux. *On the Song of Songs I*. Ed. Basil Pennington. Kalamazoo: Cistercian Publications, 1970.

Canivez, D. Josephus. *Statuta Capitulorum Generalium Ordinis Cisterciensis, Ab Anno 1116 ad Annum 1786*. Louvain: Bureaux de la Revue, 1933.

Cistercians O. Cist. / O.C.S.O., "Monasteries in Alphabetical, Chronologial and Geographical Order." http://cistercensi.info/abbazie/monasteri.asp?lin=en. (Last accessed 9 May 2008).

Fry, Timothy, ed. *The Rule of St. Benedict.* New York: Vintage Spiritual Classics, 1998.

Leclercq, Jean, ed. *Cistercians and Cluniacs, St. Bernard's Apologia to Abbot William*. Tr. Michael Casey. Kalamazoo: Cistercian Publications, 1970.

James, Bruno Scott. *The Letters of St. Bernard of Clairvaux*. Chicago: Henry Regnery Company, 1953.

Janauschek, Leopold. *Originum Cisterciensium Liber Primus*. Vienna: Vindobonae, 1877.

SECONDARY SOURCES

Aldenderfer, Mark and Roger K. Blashfield. *Cluster Analysis, Quantitative Applications in the Social Sciences*. Vol 44. Newbury Park, CA: Sage University Paper, 1984.

Aston, Mick. "The Development of the Carthusian Order in Europe and Britain: A Preliminary Survey." In *In Search of Cult*, ed. Martin Carver, 139-150. Woodbridge: Boydell Press, 1993.

_____. *Monasteries*. London: Batsford, 1993.

Baker, Alan. *Geography and History, Bridging the Divide*. Cambridge: CUP: 2003.

Bolton, Brenda. "Cistercian Order." *The Dictionary of Art.* Vol 7. Ed. James Turner. New York: Grove, 1996.

_____ . "Cluniac Order." *The Dictionary of Art*. Vol 7. Ed. James Turner, 310-312. New York: Grove, 1996.

Bond, James. *Monastic Landscapes*. Stroud: Tempus, 2004.

_____. "The Premonstratensian Order. A Preliminary Survey of the Growth and Distribution in Medieval Europe." In *In Search of Cult*, ed. Martin Carver, 153-182. Woodbridge: Boydell Press, 1993.

Berman, Constance H. *The Cistercian Evolution: The Invention of a Religious Order in Twelfth-Century Europe.* Philadelphia: University of Pennsylvania Press, 2000.

_____. *Medieval Agriculture, the Southern-French Countryside, and the Early Cistercians: A Study of Forty-Three Monasteries.* Philadelphia: American Philosophical Society, 1986.

Bredero, Adriaan H. *Bernard of Clairvaux – Between Cult and History.* Grand Rapids,MI: William B. Eerdmans Publishing Company, 1993.

Brewer, Cynthia A. *Designed Maps, A Sourcebook for GIS Users*. Redlands, CA: ESRI Press, 2008.

Caraffa F., *Monasticon Italiae*, I, Rome: Cesena, 1981.

de Cevins, Marie-Madeleine. "Les Implantations Cisterciennes en Hongrie Médiévale: Un Réseau?" *Unanimité et diversité cisterciennes. Affiliations, résaux, relectures du XII*e *au XVII*e *siècle*, Actes du 4e Colloque International du C.E.R.C.O.R. (Dijon-Cîteaux, 23-25 September 1998). Saint-Étienne: Publications de l'Université de Saint-Étienne, 2000: 453-484.

Clanchy, Michael T. *From Memory to Written Record: England, 1066-1307*. 2nd ed. Oxford: Blackwell, 1993.

Constable, Giles. *The Reformation of the Twelfth Century*. New York: Cambridge University Press, 1996.

Dimier, A., "Les fondations de St. Bernard en Italie." *Analecta S.O. Cist.*, 13 (1957): 17-32.

Dorogovtsev, S. N., and J. F. F. Mendes. *Evolution of Networks, From Biological Nets to the Internet and WWW*. Oxford: Oxford University Press, 2003.

Donkin, R. A. "The Cistercian Order in Medieval England: Some Conclusions," *Transactions and Papers (Institute of British Geographers)* (1963): 181-198.

_____. "Settlement and Depopulation on Cistercian estates During the 12th and 13th centuries." *Bulletin of the Institute of Historical Research* 33 (1960): 141-165.

_____. "The Cistercian Grange in England in the Twelfth and Thirteenth Centuries, with Special Reference to Yorkshire." *Studia Monastica* 6 (1964): 95-144.

Duby, George. *Rural Economy and Country Life in the Medieval West*. Tr. Cynthia Postan. Columbia: University of South Carolina Press, 1990.

Engel, Josef, ed. *Großer Historischer Weltatlas, Zweiter Teil Mittelalter*. Munich: Bayerischer Schulbuch-Verlag, 1979.

Everett, Brian. *Cluster Analysis, Second Edition*. New York: John Wiley & Sons, 1980.

Farina, Frederico, and Benedetto Fornari. *L'architettura Cistercense e l'abbazia di Casamari*. Florence: Edizioni Casamari, 1978.

France, James. *The Cistercians in Scandinavia*. Kalamazoo: Cistercian Pub., 1992.

Frothingham, A. L. "Introduction of Gothic Architecture into Italy by the French Cistercian Monks. Vol. I. Monastery of Fossanova." *The American Journal of Archaeology and of the History of the Fine Arts* (1890): 10-46.

_____. "Introduction of Gothic Architecture into Italy by the French Cistercian Monks. Vol. II, The Monastery of San Martino al Cimino near Viterbol" *The American Journal of Archaeology and of the History of the Fine Arts* (1890): 299-306.

Gerevich, László. *A pilisi ciszterci apátság*, [Pilis Cistercian Monstery]. Szentendre: Széchenyi Nyomda, 1984.

Gergelyffy, András. *Bélapátfalva*. Budapest: Képzőművészeti Alap Kiadóvállata, 1960.

Gies, Frances, and Joseph Gies. *Cathedral, Forge and Waterwheel, Technology and Invention in the Middle Ages*. New York: Harper Collins Publishers, 1995.

Green, J. Patrick. *Medieval Monasteries*. London: Leicester University Press, 1992.

Haskins, Charles H. *The Renaissance of the Twelfth Century*. New York: Meridian Books, 1955.

Henry, Gary T. *Techniques for Display and Analysis, Applied Social Research Methods Series Vol. 36.* Thousand Oaks, CA: Sage Publications, 1995.

Hervay, Ferenc. L. *Repertorium historicum Ordinis Cisterciensis in Hungaria*. Rome: Editiones Cistercienses, 1984.

He Qin. *A Review of Clustering Algorithms as Applied in IR*. Urbana-Champaign: University of Illinois Press: 1999.

Heppenstall, Ralph, and Le Corbusier. *Architecture of Truth*. London: Thames and Hudson: 1957.

Hobson, Art. *Physics: Concepts and Connections*. Englewood Cliffs, NJ: Prentice-Hall, 1995, 195-201.

Janauschek, Leopoldus. *Bibliographia Bernadina qua Sancti Bernardi*. Vienna, Vindobonae, 1891.

Keeny, Anthony. *Medieval Philosophy, A New History of Western Philosophy*. New York: Oxford University Press, 2005.

Kinder, Terryl N. "Cîteaux Abbey." *The Dictionary of A*rt. Vol 7. Ed. James Turner, 355-56. New York: Grove, 1996.

King, Archdale A. *Cîteaux and Her Elder Daughters*. London: Burns & Oates, 1954.

Klaniczay, Gábor, *Holy Rulers and Blessed Princesses -- Dynastic Cults in Medieval Europe*. Cambridge: Cambridge University Press, 2000.

Knowles, Anne Kelly. *Placing History, How Maps, Spatial Data and GIS are Changing Historical Scholarship*. Redlands, CA: ESRI Press, 2008.

Laszlovszky, József. "Nicholaus Clericus: a Hungarian Student at Oxford University in the Twelfth Century." *Journal of Medieval History*, 14 (1988): 217-231.

Lawrence, Hugh. *Medieval Monasticism, Forms of Religious Life in Western Europe in the Middle Ages*, 2d ed. London: Longman, 1989.

Le Goeff, Jacques. *Your Money or Your Life*. Tr. Patricia Ranum. Boston: Massachusets Institute of Technology Press, 1990.

Lebeau, Frère Marcel. *Chronologie de l'Histoire de Cîteaux*. Dijon: Centre Régional de Documentation Pédadgogique de Bourgogne, 1997.

Leclercq, Jean. "Bernard of Clairvaux and the Cistercian Spirit." *Cistercian Studies*, 16. Kalamazoo: Cistercian Publications, 1976.

Lekai, L. J. *The Cistercians: Ideals and Reality*. Ohio: Kent State University Press, 1977.

Locatelli, René. "Rappel des principes fondateurs de l'ordre cistercien, Aux origins du modèle domanial."In *L'espace cistercien*, ed. Léon Pressouyre, 13-26. Paris: Comité des travaux historiques et scientifiques, 1994.

Lopez, Robert. *The Commercial Revolution of the Middle Ages, 950-1350*. Cambridge: Cambridge University Press, 1976.

Łużyniecka, Ewa. *Architektura Klasztorów Cysterskich*, [The Architecture of Cistercian Monasteries]. Tr. Marzena Łuczkiewicz. Wrocław: Oficyna Wyd. Politechniki Wrocławskiej, 2002.

Matarraso, Pauline, and Thomas Wyatt. *The Cistercian World: Monastic Writings of the Twelfth-Century*. London: Penguin Books, 1993.

Mendes, Jeff, and S. N. Dorogovtsev. *Evolution of Networks – From Biological Nets to the Internet and WWW*. Oxford: Oxford University Press, 2003.

Mikes, Kiadó. *Ciszterci Apátság Pilisszentkereszten*. Budapest: Co-Print Kft., 2007.

McGuire P, Brian. *The Difficult Saint Bernard of Clairvaux & His Tradition*, Kalamazoo, MI: Cistercian Publications, 1991.

Pacaut, Marcel. *Les Moines Blancs Histoire de l'ordre de Cîteaux*. Paris: Fayard, 1993.

Pass, Cristopher, Bryan Lowes, and Leslie Davies. *Dictionary of Economics*. London: Collins Publishers, 1989.

Rogers, Everett M. *Diffusion of Innovations.* 5th ed. New York: Free Press, 2003.

Romanini, A. M. *Le abbazie fondate da san Bernardo in Italia e l'architettura cistercense "primitíva,"* in *Studi su san Bernardo di Chiaravalle in occasione dell'ottavo centenario della canonizzazione. Convegno Internazionale, Certosa di Firenze, 6-9 Novembre 1974,*. Rome: Bibliotheca Cistercensis, 1975, 281-303.

Romhányi, Beatrix. *Kolostorok és társaskáptalanok a középkori Magyarországon*. Budapest: Pytheas, 2000.

_____. *Kolostorok és társaskáptalanok a középkori Magyarországon.* Budapest: Arcanum, 2007. CD-ROM.

_____. *Settling Features of the Orders in Medieval Hungary: Two Case Studies*. MA Thesis, Central European University: Budapest, 1994.

_____. "The Role of the Cistercians in Medieval Hungary: Political Activity or Internal Colonization?" *Annual of Medieval Studies at the CEU (1993-1994*): 180-204.

Smith, Carol, ed. *Regional Analysis*. Vol. 1. *Economic Systems*. London: Academic Press Inc., 1976.

Sommerfeldt, John R., Review of "Cistercian Evolution," *Church History*, 70: 2001, 786-788.

Spatz, Spatz and James Johnson. *Basic Statistics: Tales of Distributions*. Monterrey: Brooks-Cole, 1990.

Thompson, James. "The Cistercian Order and Colonization in Mediaeval Germany." *The American Journal of Theology*, 24 (1920): 181-198.

Tufte, Edward R. *The Visual Display of Quantitative Information*. 2nd Ed. Cheshire: Graphics Press, 2001.

Waddell, Chrysogonus. “The Cistercian Institutions and their Early Evolution. Granges, Economy, Lay Brothers.” In *L’espace cistercien*, ed. Léon Pressouyre, 27-38. Paris: Comité des travaux historiques et scientifiques, 1994.

_____. *Cistercian Lay Brothers Twelfth Century Usages*, (Citeaux: Commentarii Cistercienses Studia et Documenta, 2000): 53-200.

_____. “The myth of Cistercian Origins: C.H. Berman and the Manuscript Sources,” *Citeaux* 51 (2000): 299-386.

Walickiego, Michała, ed. *Sztuka Polska, przedromańska i romańska do schyłku XII wieku*, [Pre-Romanesque and Romanesque Architecture to the end of the Twelfth Century]. Warsaw: Państwowe Wydawnictwo Naukowe, 1968.

Williams, David H. “The Mapping of Cistercian Lands with Especial Reference to Wales.” In *L’espace cistercien*, ed. Léon Pressouyre, [pages]. Paris: Comité des travaux historiques et scientifiques, 1994.

Williams, Frederick. *Reasoning With Statistics*. 2nd ed. New York: Holt, Rinehart and Winston, 1979.

Williams, Watkin, *Saint Bernard of Clairvaux*. Manchester: Manchester University Press, 1935.

Van der Meer, Frédéric. *Atlas de l'ordre cistercien*. Paris: Edition Sequioa, 1965.

Valter, Ilona. “The Excavations of the Former Abbey of Cikádor,” *Analecta Cisterciensia*, 52 (1996): 251-264.

Żabiński, Grzegorz. “Mogiła and Henryków: A Comparative Economic History of Cistercian Monasteries within Their Social Context.” Ph.D. dissertation. Central European University. Budapest: 2005.

Appendix
Mapping the Cistercian Expansion

Territorial Boundaries Defining Expansion (A.1 – A.3)

A.1 Map: Europe Circa 1100
A.2 Map: Europe Circa 1200
A.3 Map: Europe Circa 1400

Spatial Distribution of Cistercian Monasteries [1098 – 1398] (A.4 – A.13)

A.4 Map: Distribution of Entire Network under Cîteaux
A.5 Map: Distribution of Clairvaux Genealogical Line
A.6 Map: Distribution of Morimond Genealogical Line
A.7 Map: Distribution of only Cîteaux, La Ferté and Pontigny
A.8 Map: Burgundy Core Area Distribution
A.9 Map: West Iberian Peninsula Distribution
A.10 Map: North-Central Distribution
A.11 Map: Central-Eastern Europe Distribution
A.12 Map: South Italian Peninsula Distribution
A.13 Map: North Isles & Ireland Distribution

Temporal Growth of Cistercian Monasteries [1098 – 1398] (A.14 – A.18)

A.14 Map: Cistercian Foundations from 1098 – 1128 [30 Year Interval]
A.15 Map: Cistercian Foundations from 1128 – 1158 [30 Year Interval]
A.16 Map: Cistercian Foundations from 1158 – 1218 [60 Year Interval]
A.17 Map: Cistercian Foundations from 1218 – 1398 [120 Year Interval]
A.18 Map: Period of Takeoff from 1128 – 1158 [5 Year Intervals]

Network Patterns of Cistercian Monasteries (A.19 – A.29)

A.19 Map: Entire Network from 1098 – 1158 [60 Year Interval]
A.20 Map: Clairvaux from 1098 – 1158 [60 Year Interval]
A.21 Map: Morimond from 1098 – 1158 [60 Year Interval]
A.22 Map: Cîteaux, La Ferté & Pontigny 1098 – 1158 [60 Year Interval]
A.23 Map: Top 25 Most Influential Abbeys by Influence Index
A.24 Map: Influential Abbeys with 5 or More Daughters
A.25 Map: Some Influence Abbeys with 1 to 4 Daughters
A.26 Map: No Influence Abbeys with Zero Daughters
A.27 Map: Foundations at Second Level of Hierarchy
A.28 Map: Foundations at Third Level of Hierarchy
A.29 Map: Foundations at Fifth Level and Below of Hierarchy

Statistical Tables (A.30 – A.34)

A.30 Table: Temporal Analysis from 1098 – 1398
A.31 Table: Spatial Analysis from 1098 – 1398
A.32 Table: Abbeys with the Most Daughters
A.33 Table: Abbeys with the Greatest Influence Index
A.34 Table: Topographical Analysis

Data Only (A.35 – A.36)

A.35 Data: Cistercian Monastic Foundations Chronologically
A.36 Data: Cistercian Monastic Foundations Alphabetically

Territorial Boundaries Defining Expansion (A.1 – A.3)

A.1. The kingdom divisions shown are approximations that derive from two principal sources: raster based images of world maps online *at http://www.thomaslessman.com/History/Maps.html*, compared to source maps given in Josef Engel, *Großer Historischer Weltatlas, Zweiter Teil Mittelalter*, 1979. This map was chosen as the base layer for the expansion maps.

A.1 Europe Circa 1100

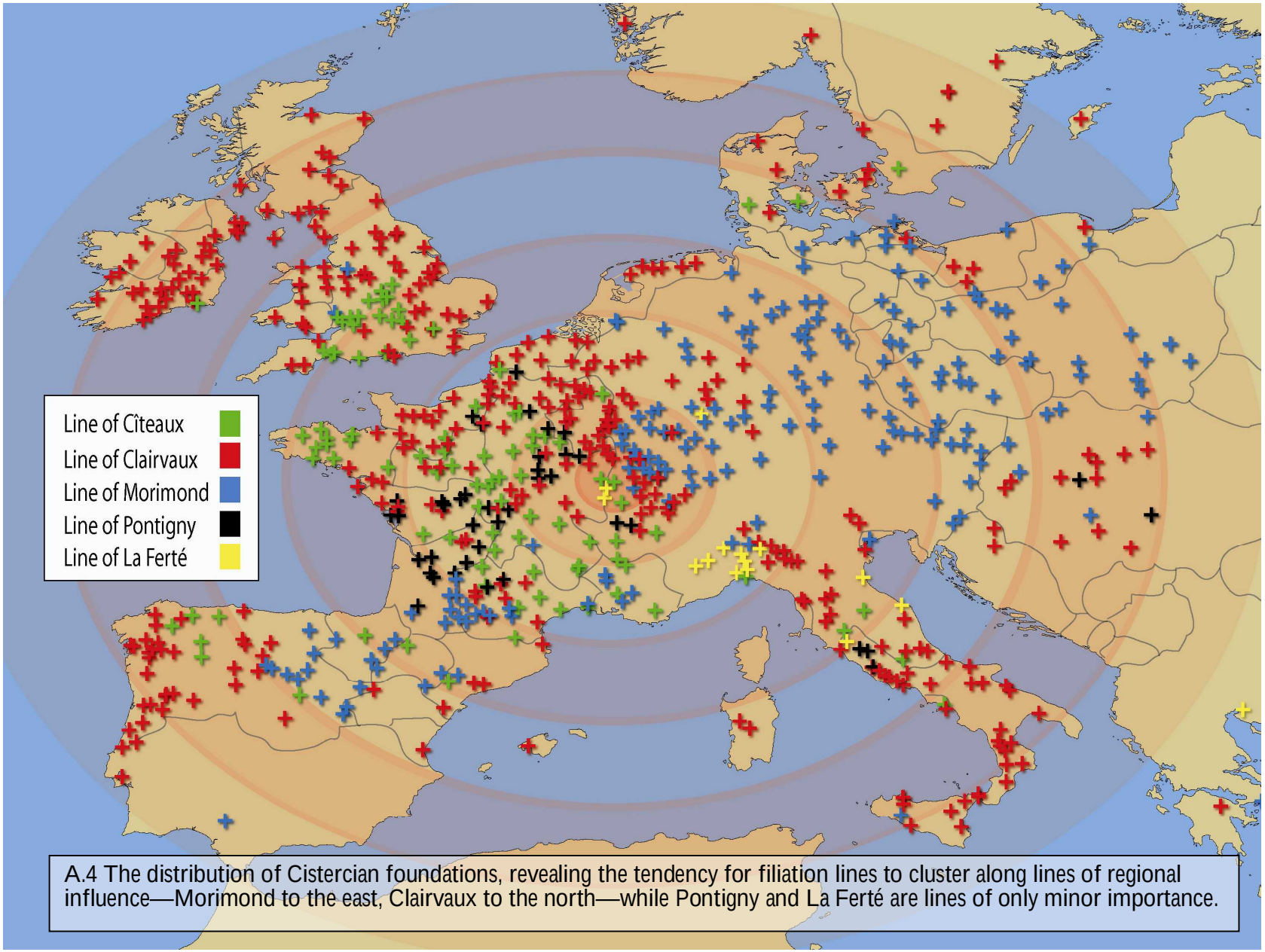
A.2. The kingdom divisions shown are changing with time which makes mapping over three centuries problematic. See for example, England's territorial claims have spread into the continent and the Kingdom of Hungary has expanded to include the area of present day Croatia and Slovakia.

A.2 Europe Circa 1200

A.3. Castille and Leon have dissolved in the wake of the *reconquista* of the southern Iberian Peninsula. The Union of Kalmar and the Teutonic States can be found in north-central Europe, while the territory of the Hungarian kingdom has receded. This is the map of Europe that comes at the conclusion of the Cistercian expansion, circa 1400.

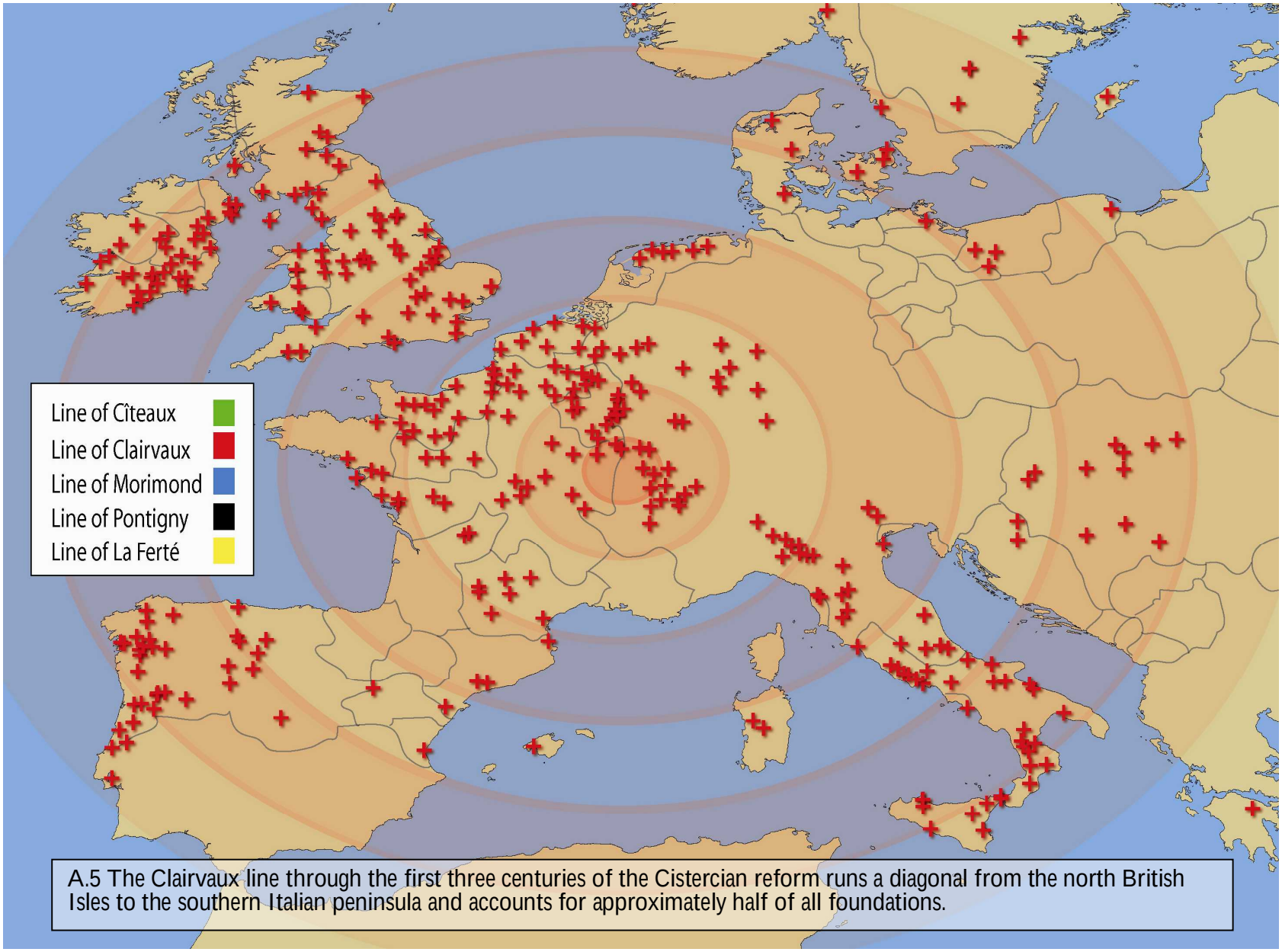
A.3 Europe Circa 1400

Spatial Distribution of Cistercian Monasteries from 1098 – 1398 (A.4 – A.13)



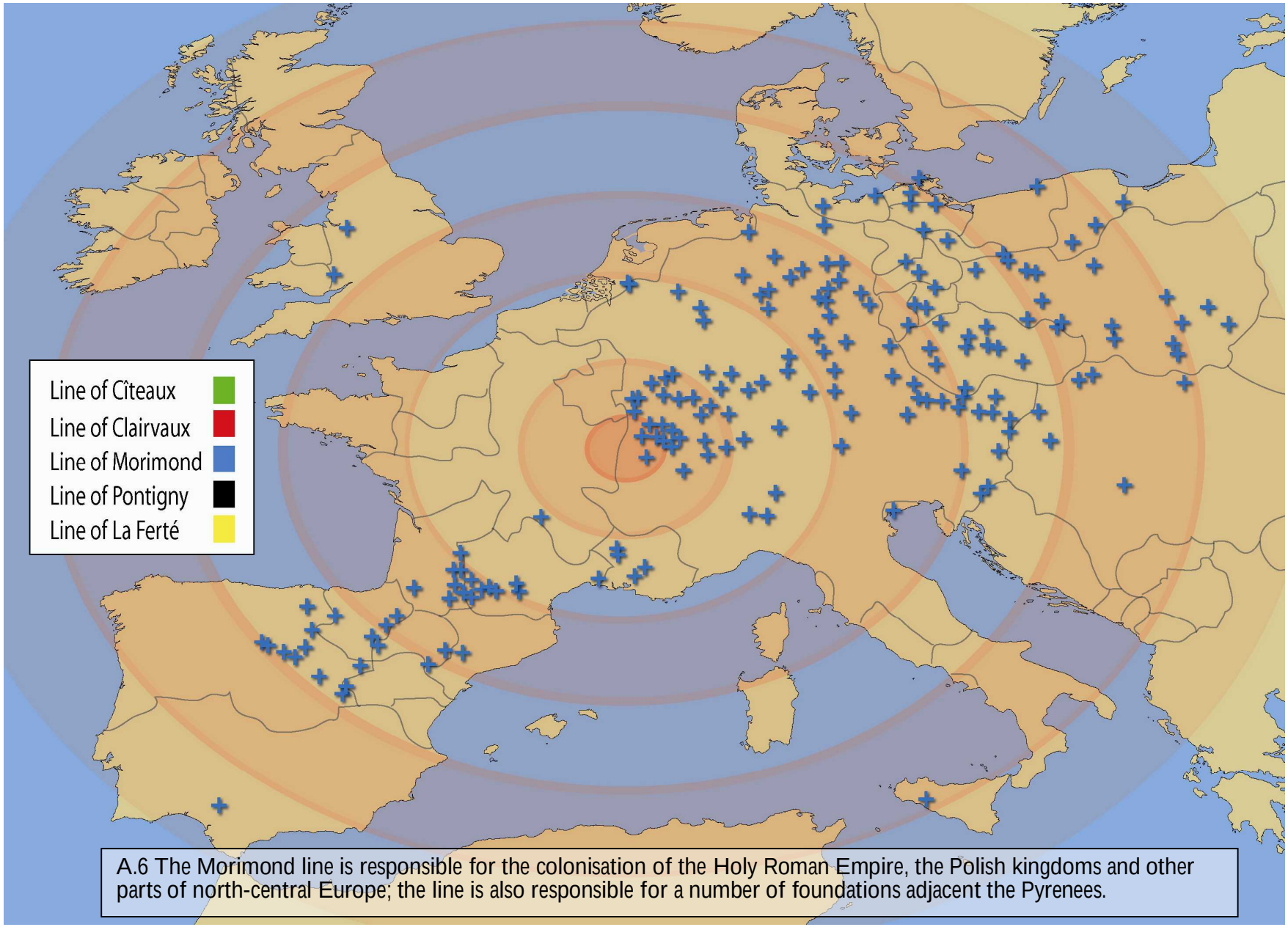
A.4 The distribution of Cistercian foundations, revealing the tendency for filiation lines to cluster along lines of regional influence—Morimond to the east, Clairvaux to the north—while Pontigny and La Ferté are lines of only minor importance.

A.4 Distribution of Entire Network Under Cîteaux [1098-1398]



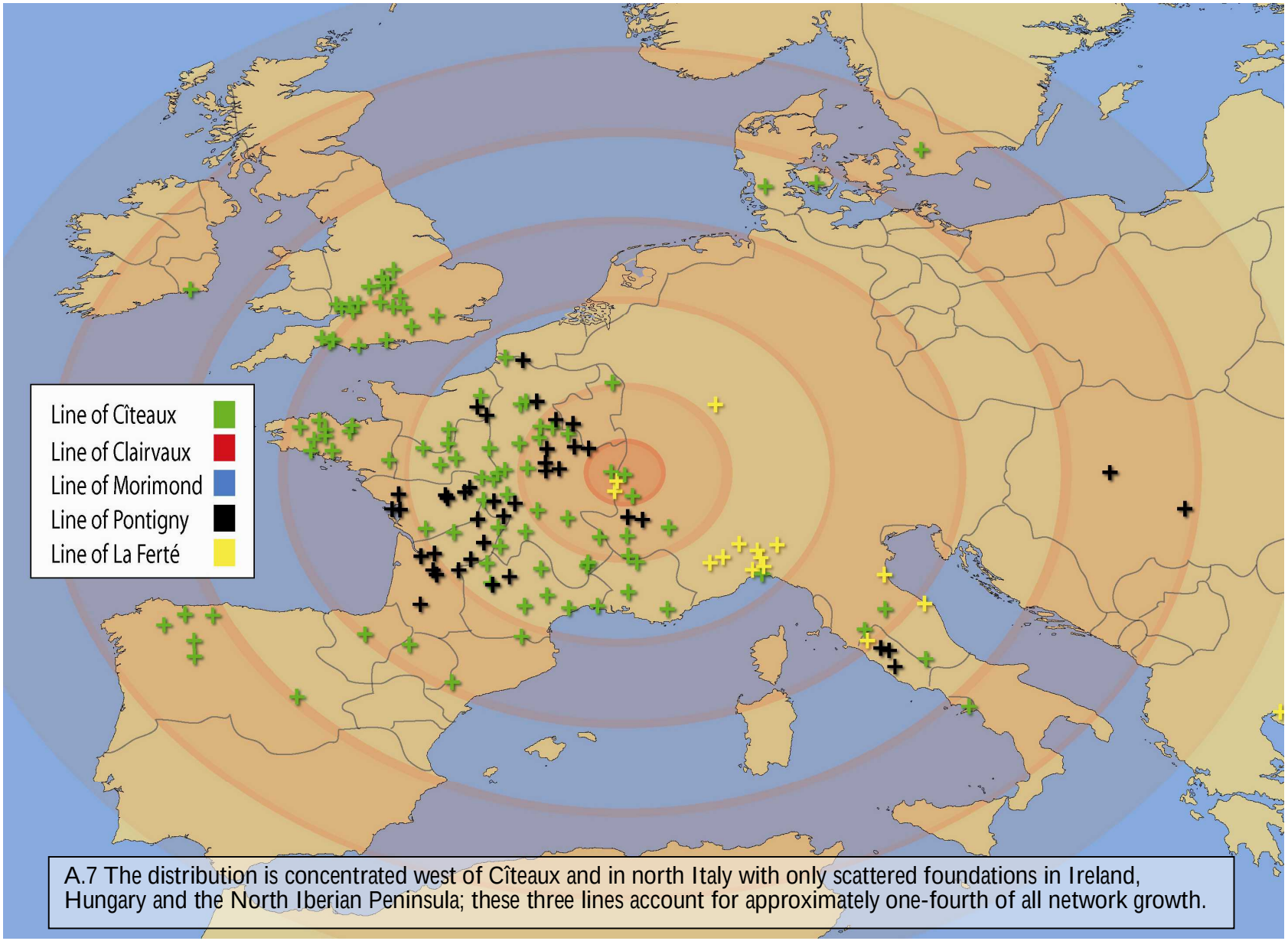
A.5 The Clairvaux line through the first three centuries of the Cistercian reform runs a diagonal from the north British Isles to the southern Italian peninsula and accounts for approximately half of all foundations.

A.5 Distribution of Clairvaux Genealogical Line [1098-1398]



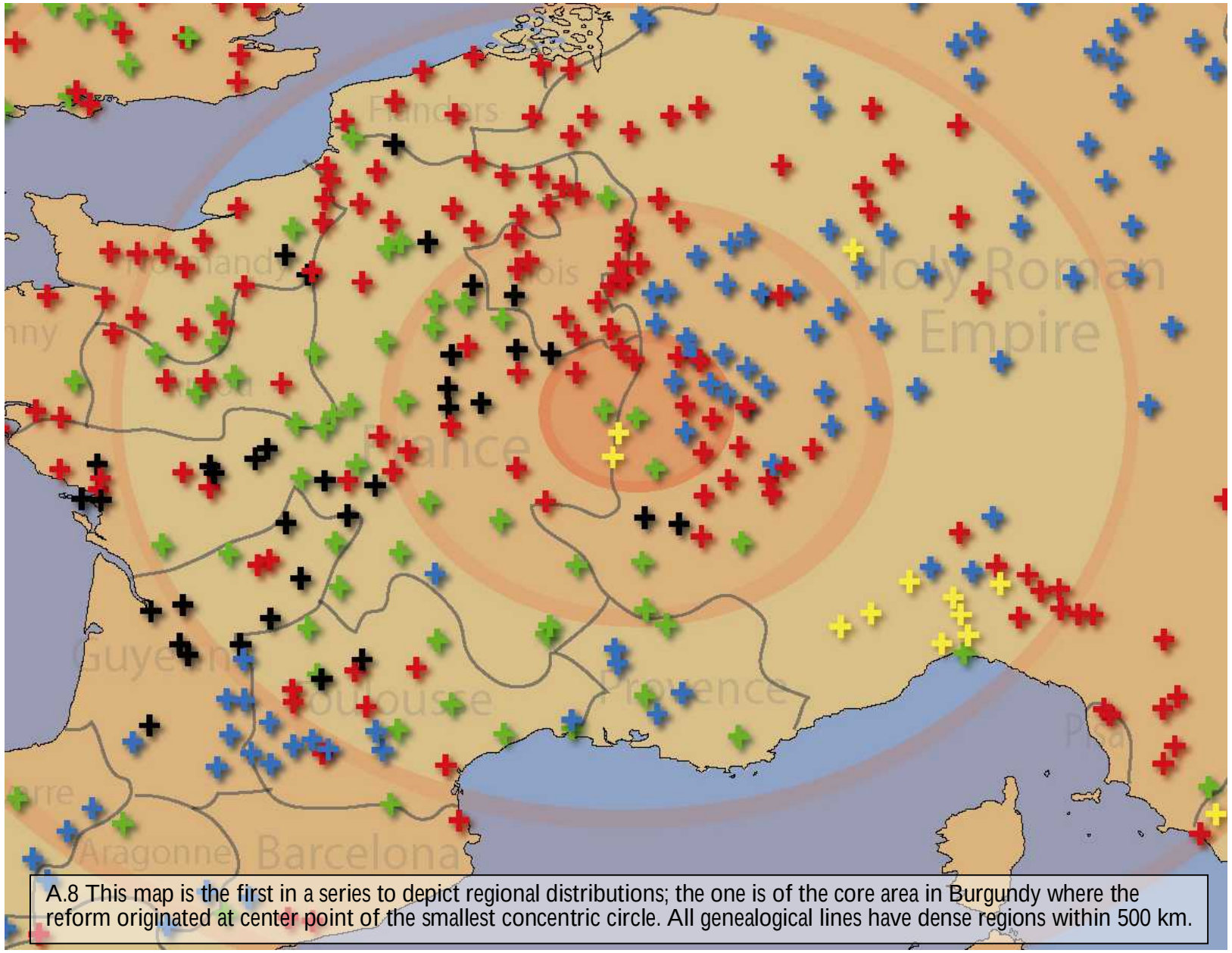
A.6 The Morimond line is responsible for the colonisation of the Holy Roman Empire, the Polish kingdoms and other parts of north-central Europe; the line is also responsible for a number of foundations adjacent the Pyrenees.

A.6 Distribution of Morimond Genealogical Line [1098-1398]



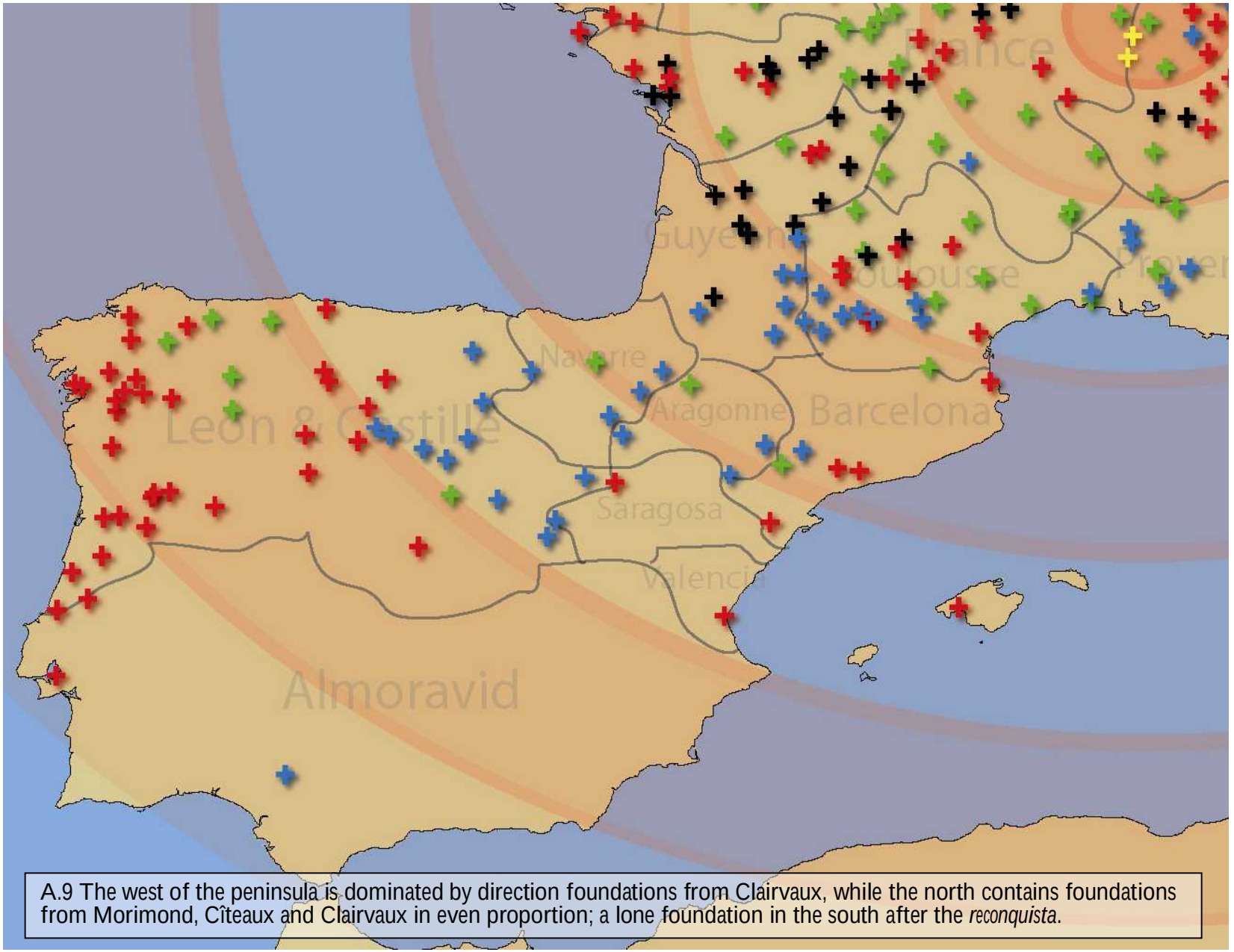
A.7 The distribution is concentrated west of Cîteaux and in north Italy with only scattered foundations in Ireland, Hungary and the North Iberian Peninsula; these three lines account for approximately one-fourth of all network growth.

A.7 Distribution of only Cîteaux, La Ferté and Pontigny [1098-1398]



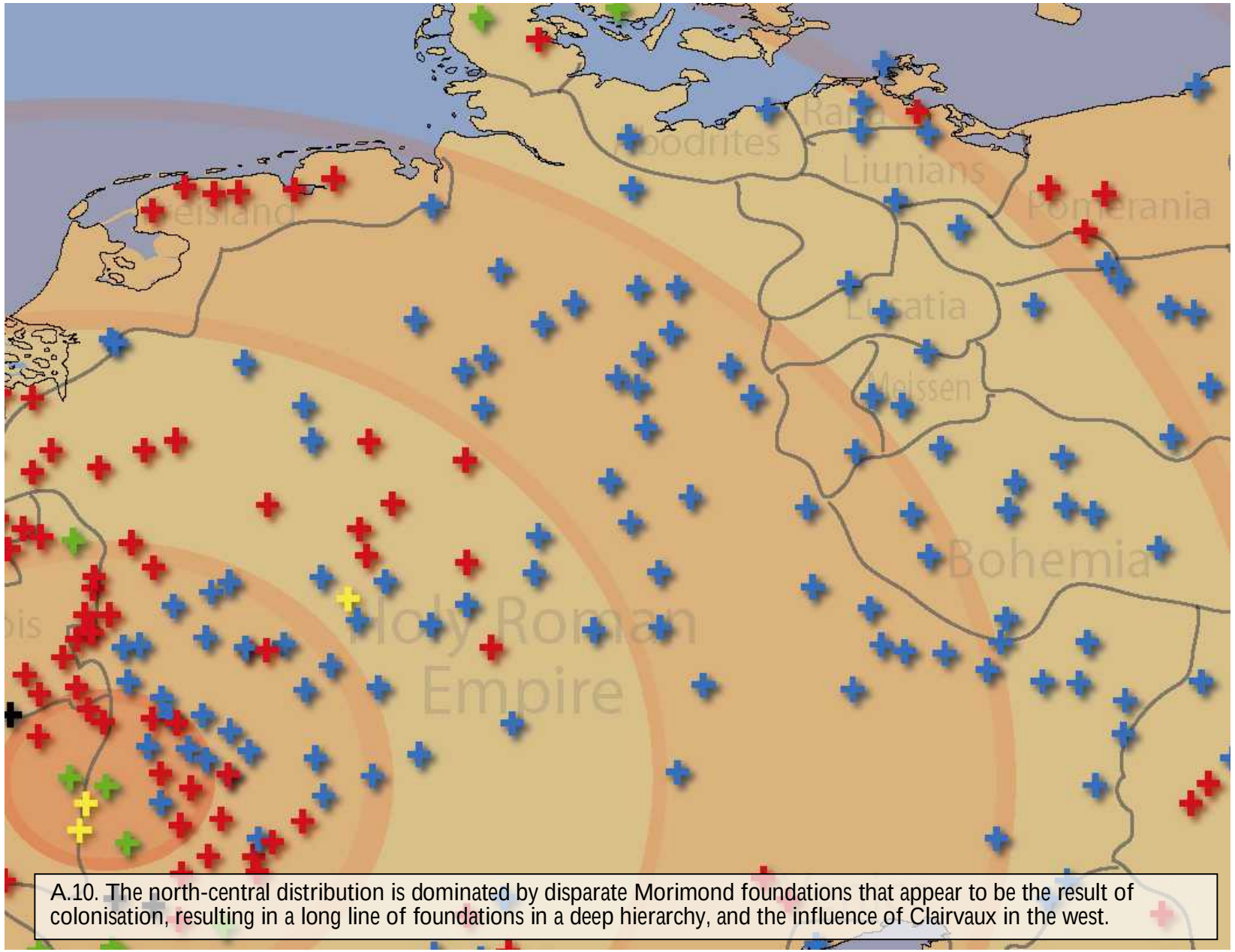
A.8 This map is the first in a series to depict regional distributions; the one is of the core area in Burgundy where the reform originated at center point of the smallest concentric circle. All genealogical lines have dense regions within 500 km.

A.8 Burgundy Core Area Distribution [1098-1398]



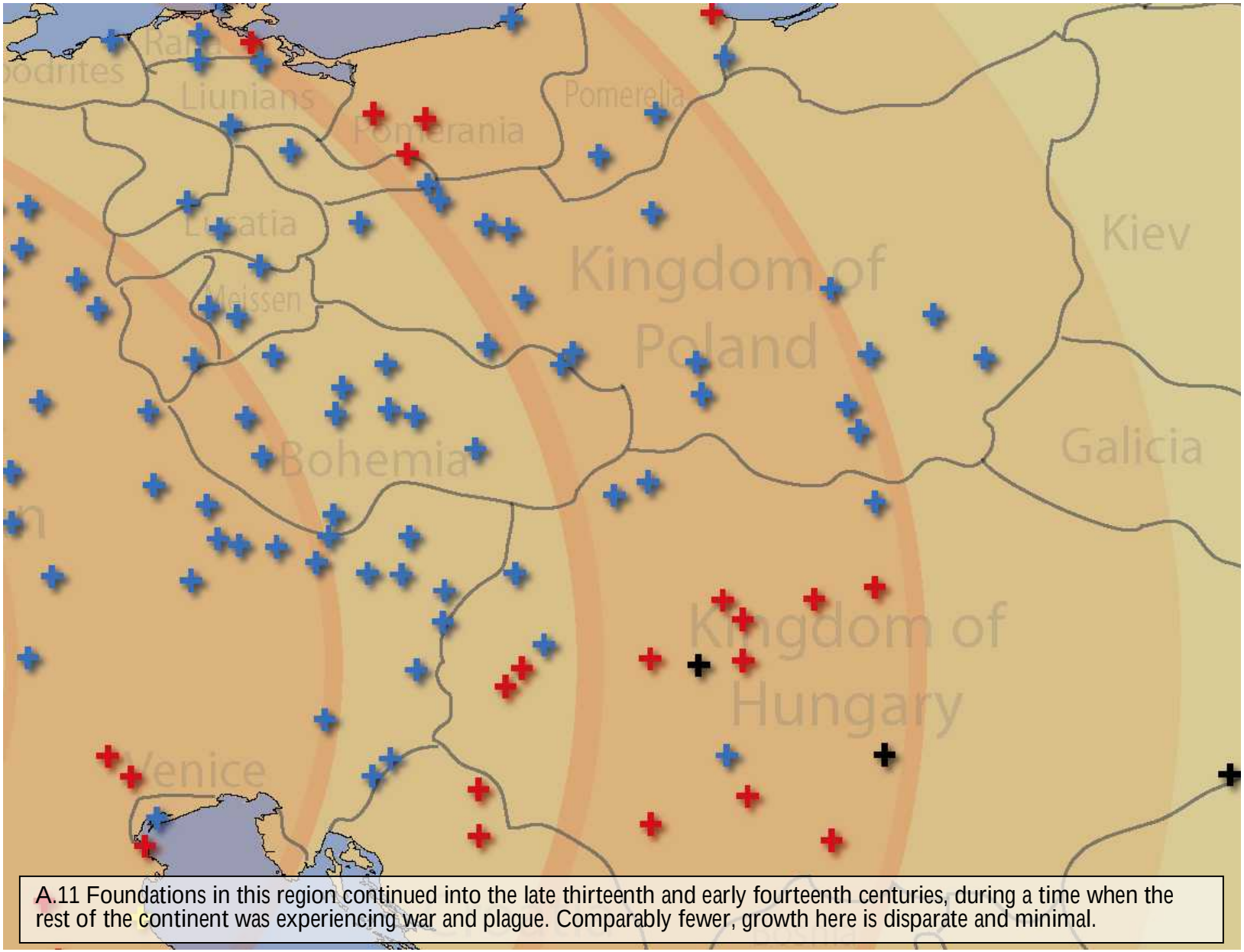
A.9 The west of the peninsula is dominated by direction foundations from Clairvaux, while the north contains foundations from Morimond, Cîteaux and Clairvaux in even proportion; a lone foundation in the south after the *reconquista*.

A.9 West Iberian Peninsula Distribution [1098-1398]



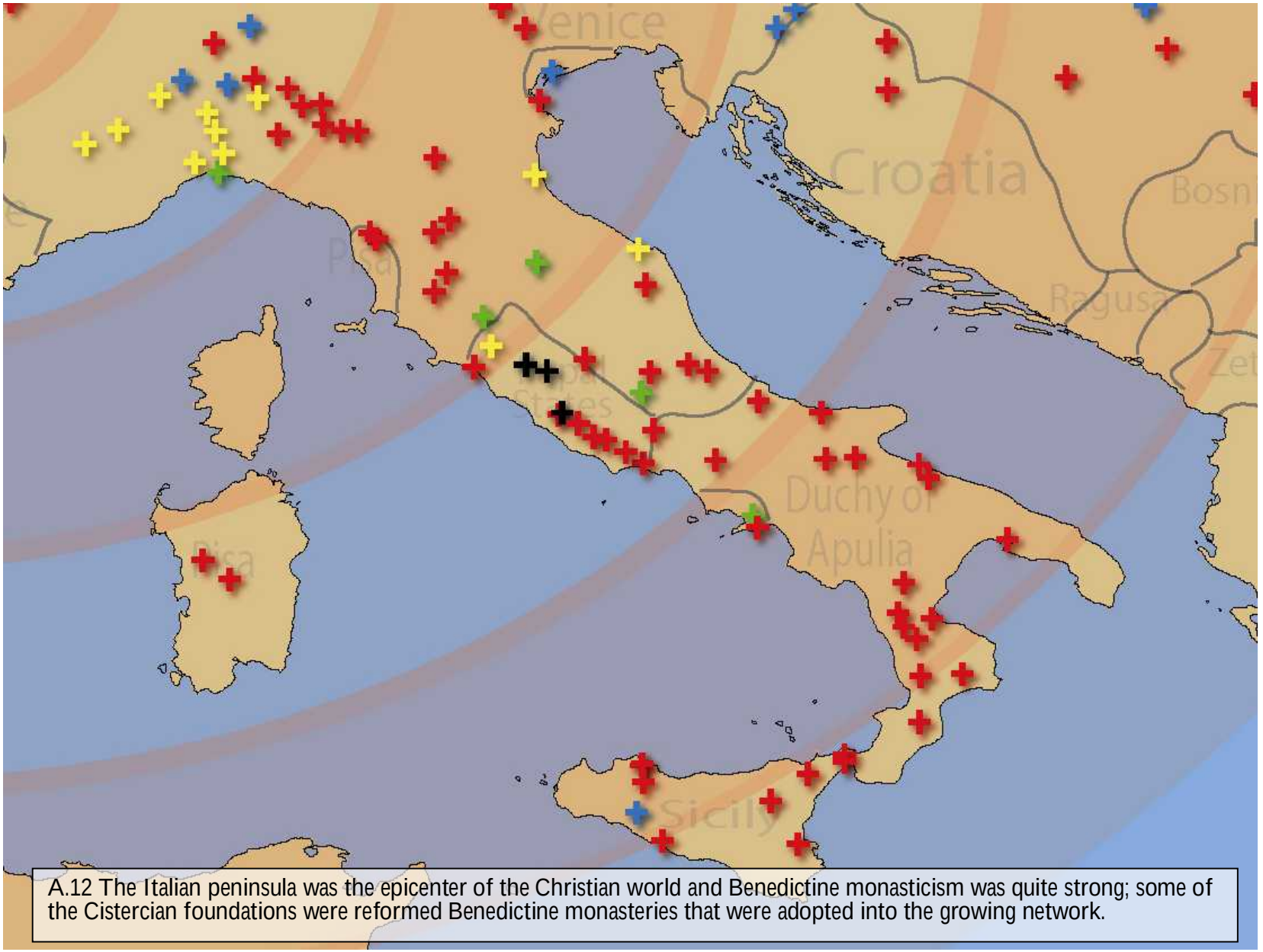
A.10. The north-central distribution is dominated by disparate Morimond foundations that appear to be the result of colonisation, resulting in a long line of foundations in a deep hierarchy, and the influence of Clairvaux in the west.

A.10 North-Central Distribution [1098-1398]



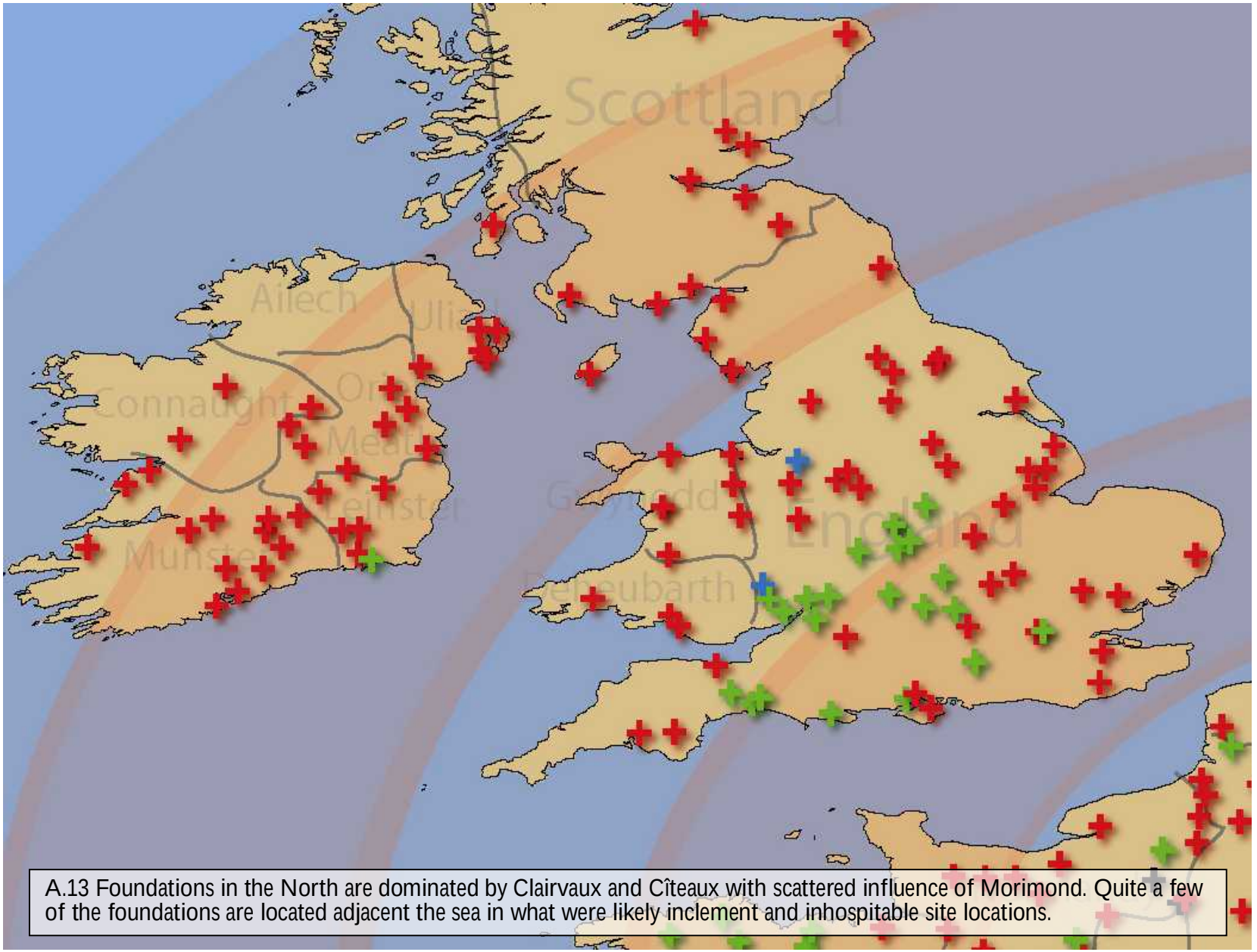
A.11 Foundations in this region continued into the late thirteenth and early fourteenth centuries, during a time when the rest of the continent was experiencing war and plague. Comparably fewer, growth here is disparate and minimal.

A.11 Central-Eastern Europe Distribution [1098-1398]



A.12 The Italian peninsula was the epicenter of the Christian world and Benedictine monasticism was quite strong; some of the Cistercian foundations were reformed Benedictine monasteries that were adopted into the growing network.

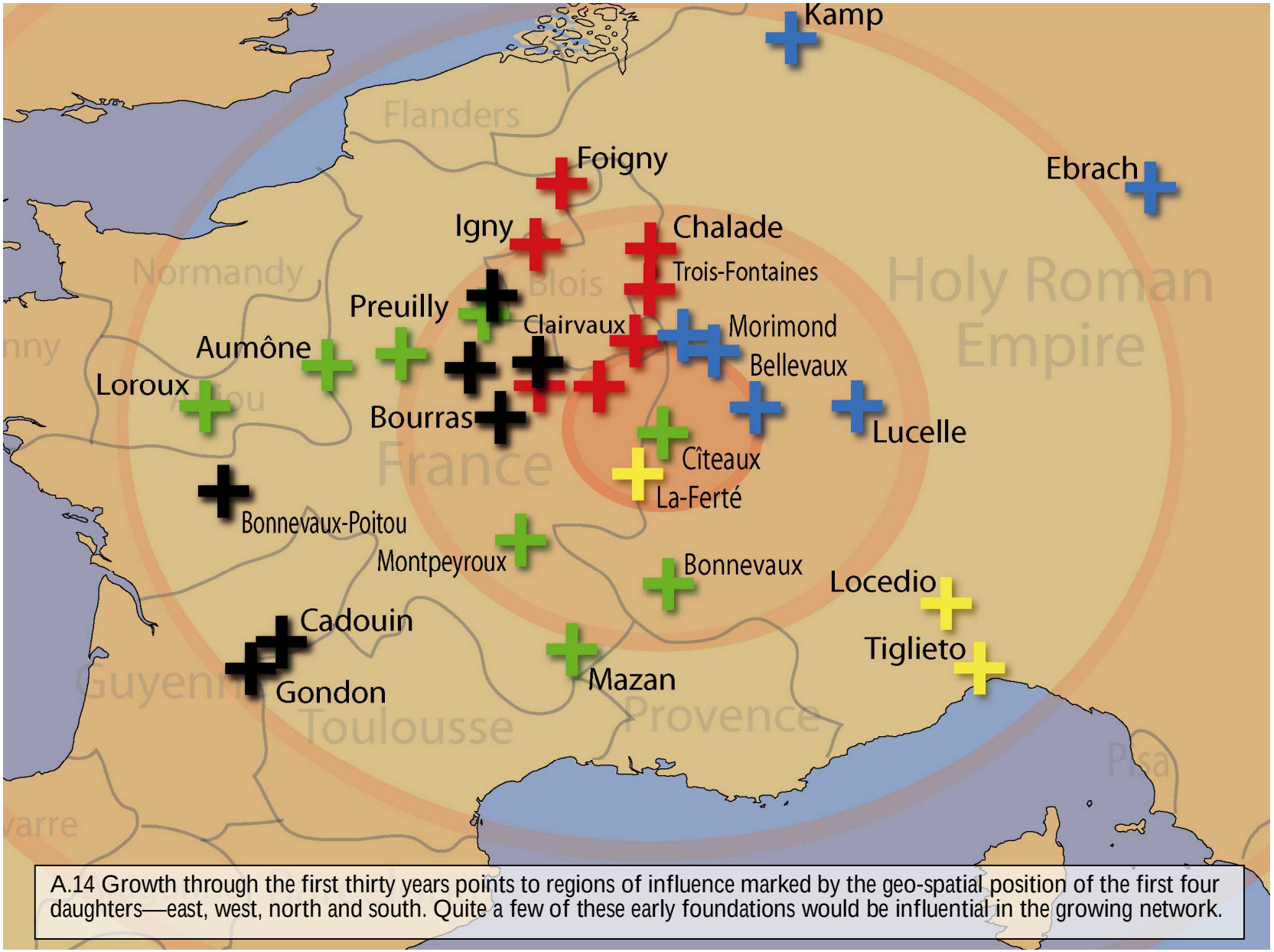
A.12 South Italian Peninsula Distribution [1098-1398]



A.13 Foundations in the North are dominated by Clairvaux and Cîteaux with scattered influence of Morimond. Quite a few of the foundations are located adjacent the sea in what were likely inclement and inhospitable site locations.

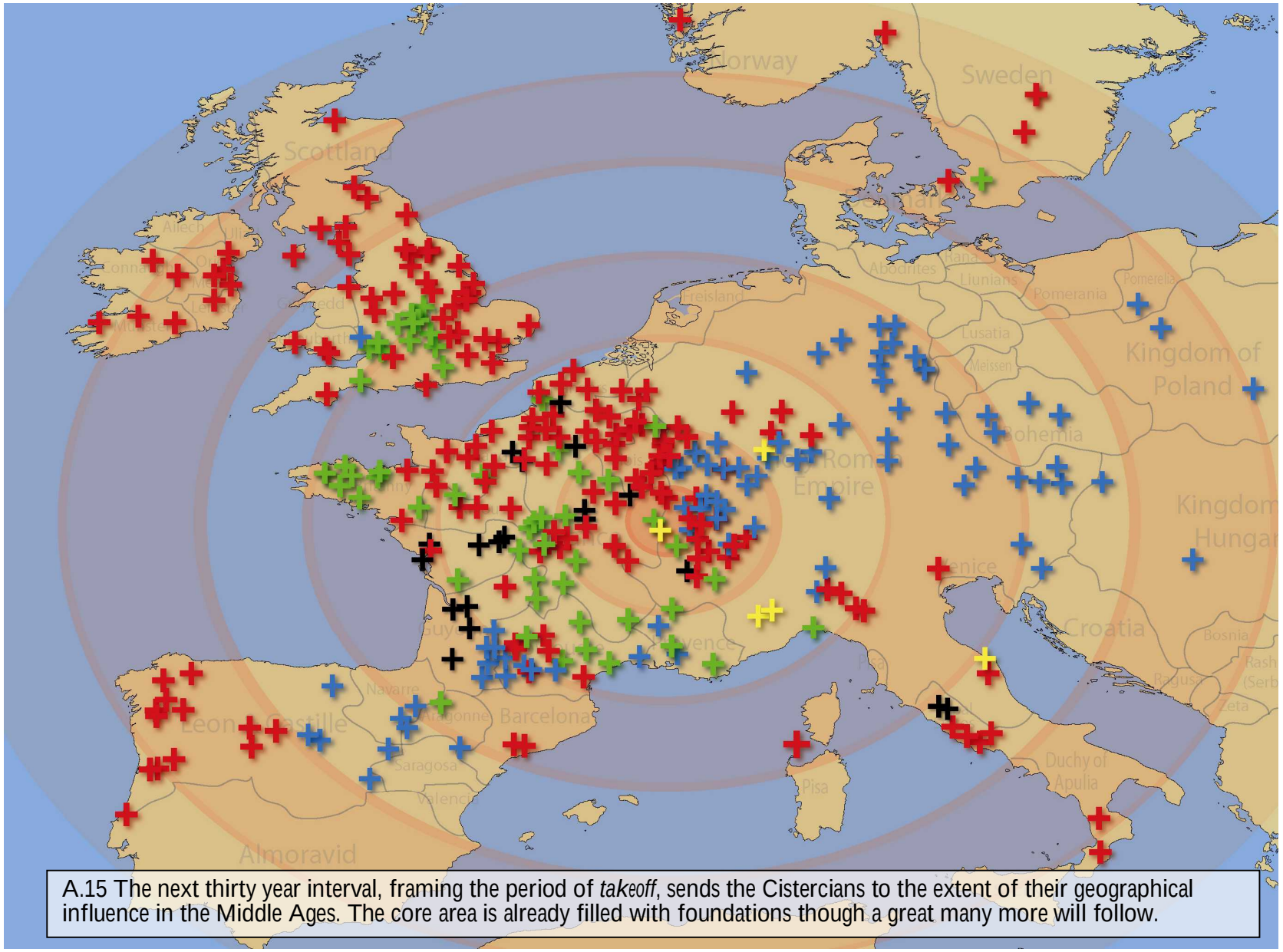
A.13 North Isles & Ireland Distribution [1098-1398]

Temporal Growth of Cistercian Monasteries from 1098 – 1398 (A.14 – A.18)



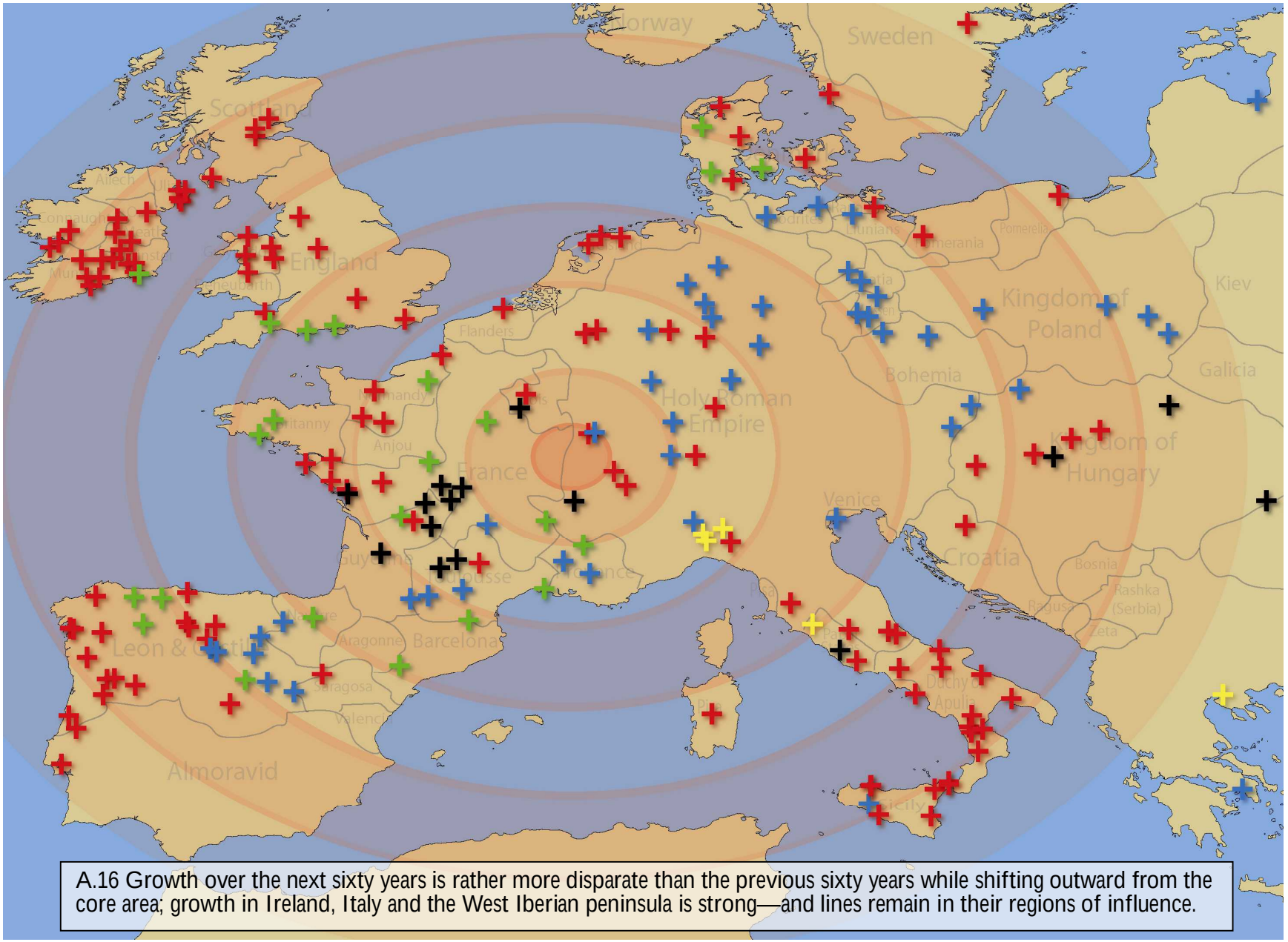
A.14 Growth through the first thirty years points to regions of influence marked by the geo-spatial position of the first four daughters—east, west, north and south. Quite a few of these early foundations would be influential in the growing network.

A.14 Cistercian Foundations from 1098 – 1128 [30 Year Interval]



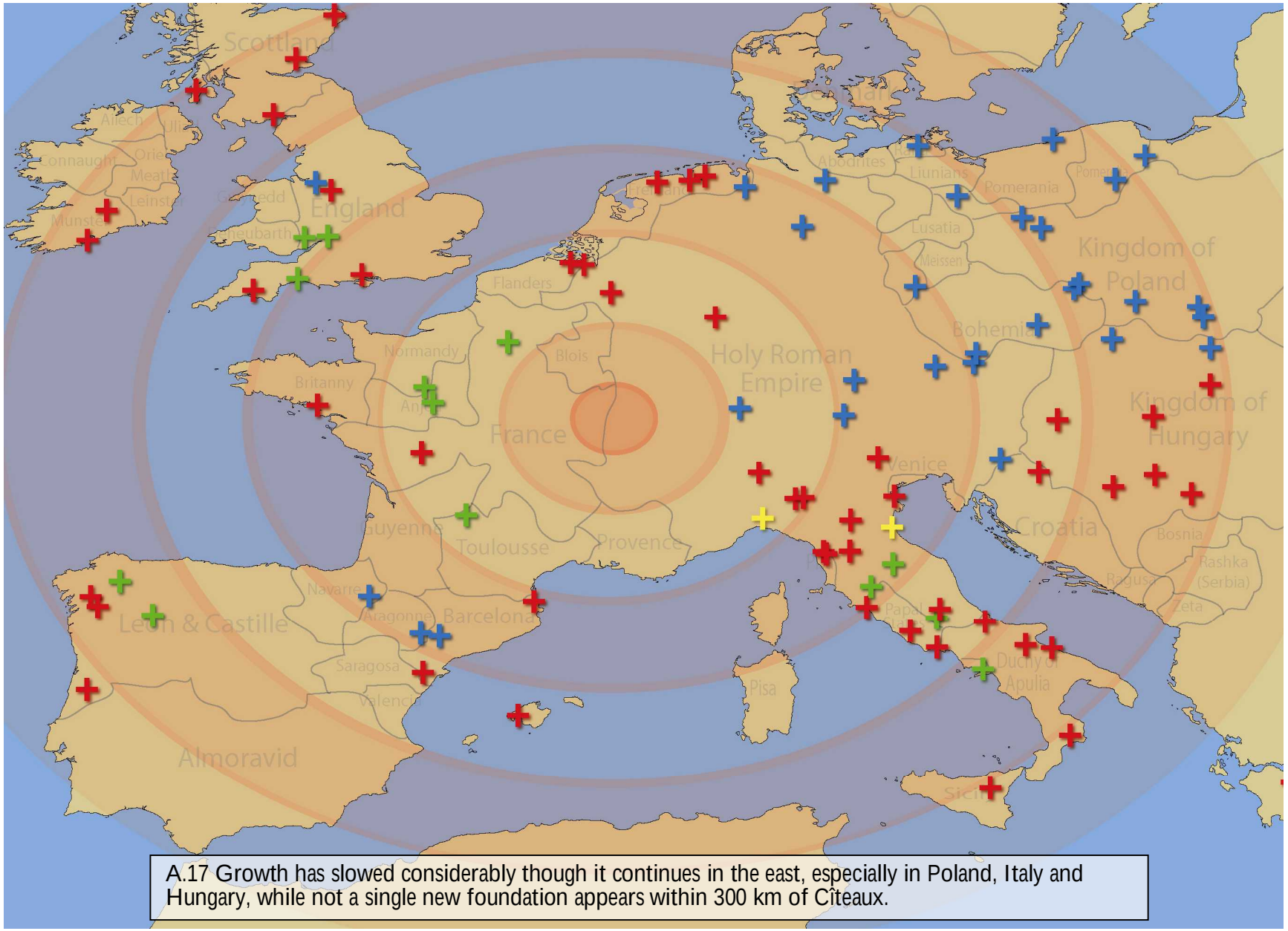
A.15 The next thirty year interval, framing the period of *takeoff*, sends the Cistercians to the extent of their geographical influence in the Middle Ages. The core area is already filled with foundations though a great many more will follow.

A.15 Cistercian Foundations from 1128 – 1158 [30 Year Interval]



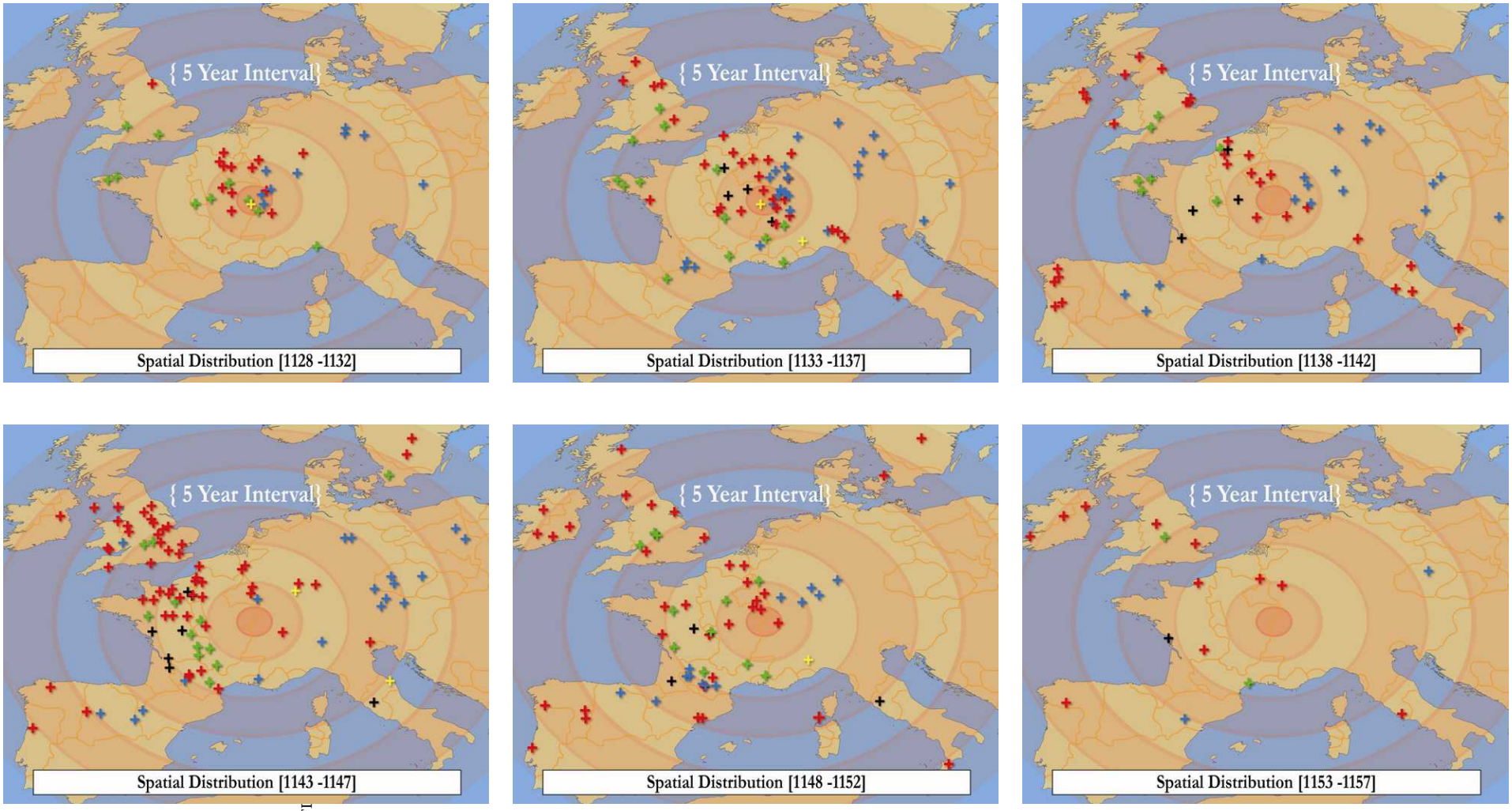
A.16 Growth over the next sixty years is rather more disparate than the previous sixty years while shifting outward from the core area; growth in Ireland, Italy and the West Iberian peninsula is strong—and lines remain in their regions of influence.

A.16 Cistercian Foundations from 1158 – 1218 [60 Year Interval]



A.17 Growth has slowed considerably though it continues in the east, especially in Poland, Italy and Hungary, while not a single new foundation appears within 300 km of Cîteaux.

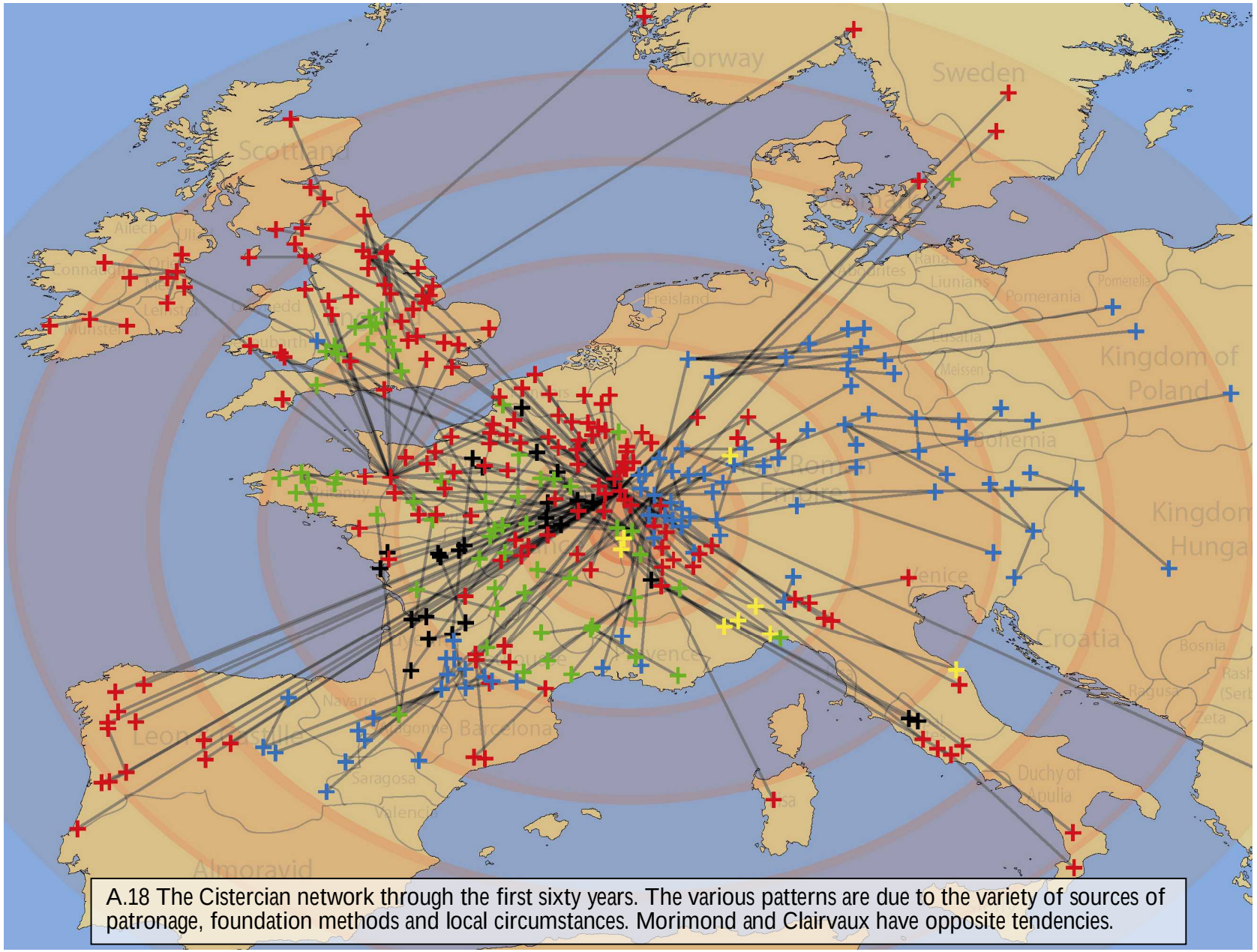
A.17 Cistercian Foundations from 1218 – 1398 [120 Year Interval]



A.18 From left to right, top to bottom, the expansion moves from the core area to the outer perimeter. The peak of expansion occurs from 1143 – 1147 with the adoption of Savigny into the network.

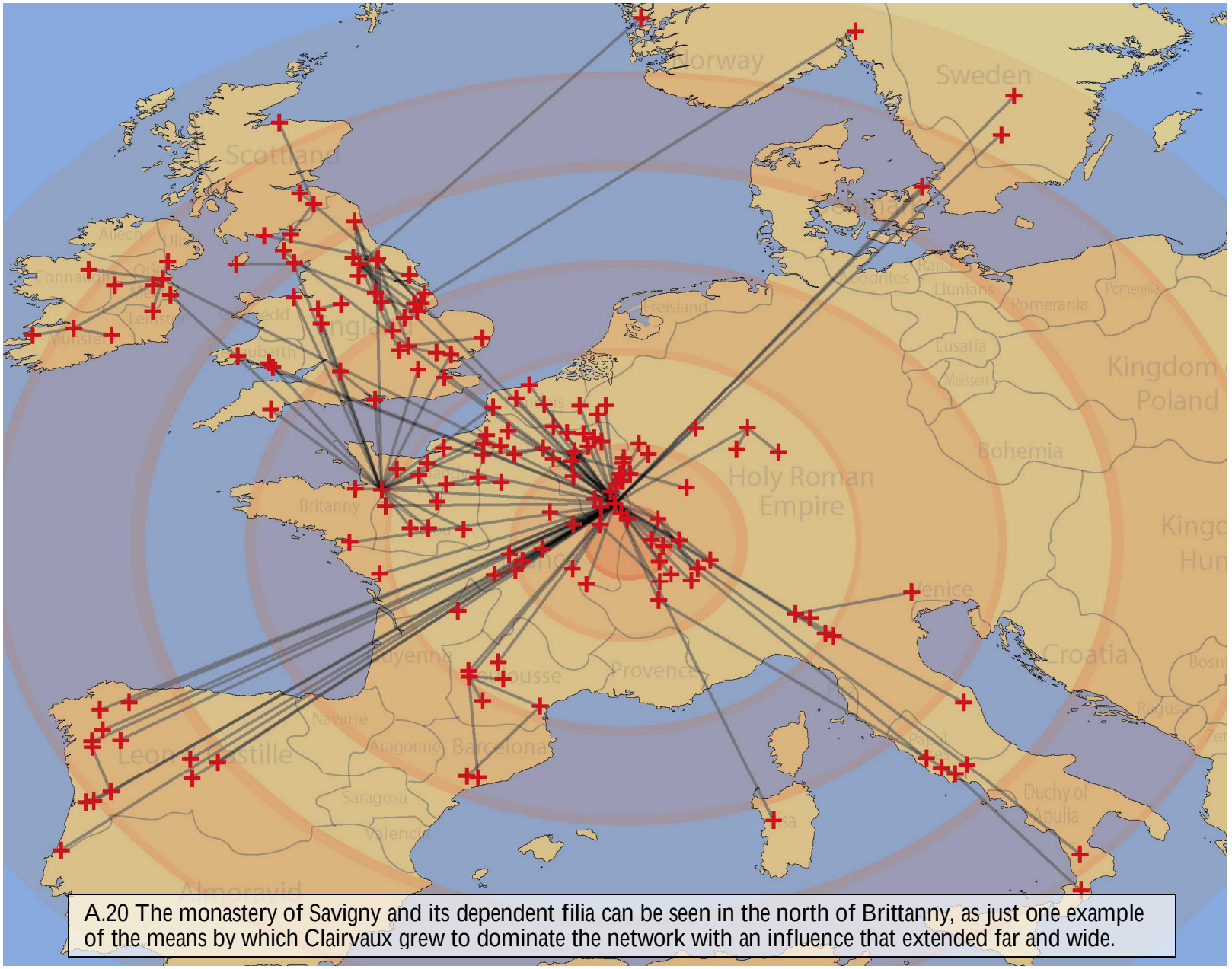
A.18 Period of *Takeoff* in Five Year Bins [1128 – 1158]

Network Patterns of Cistercian Monasteries (A.19 – A.29)



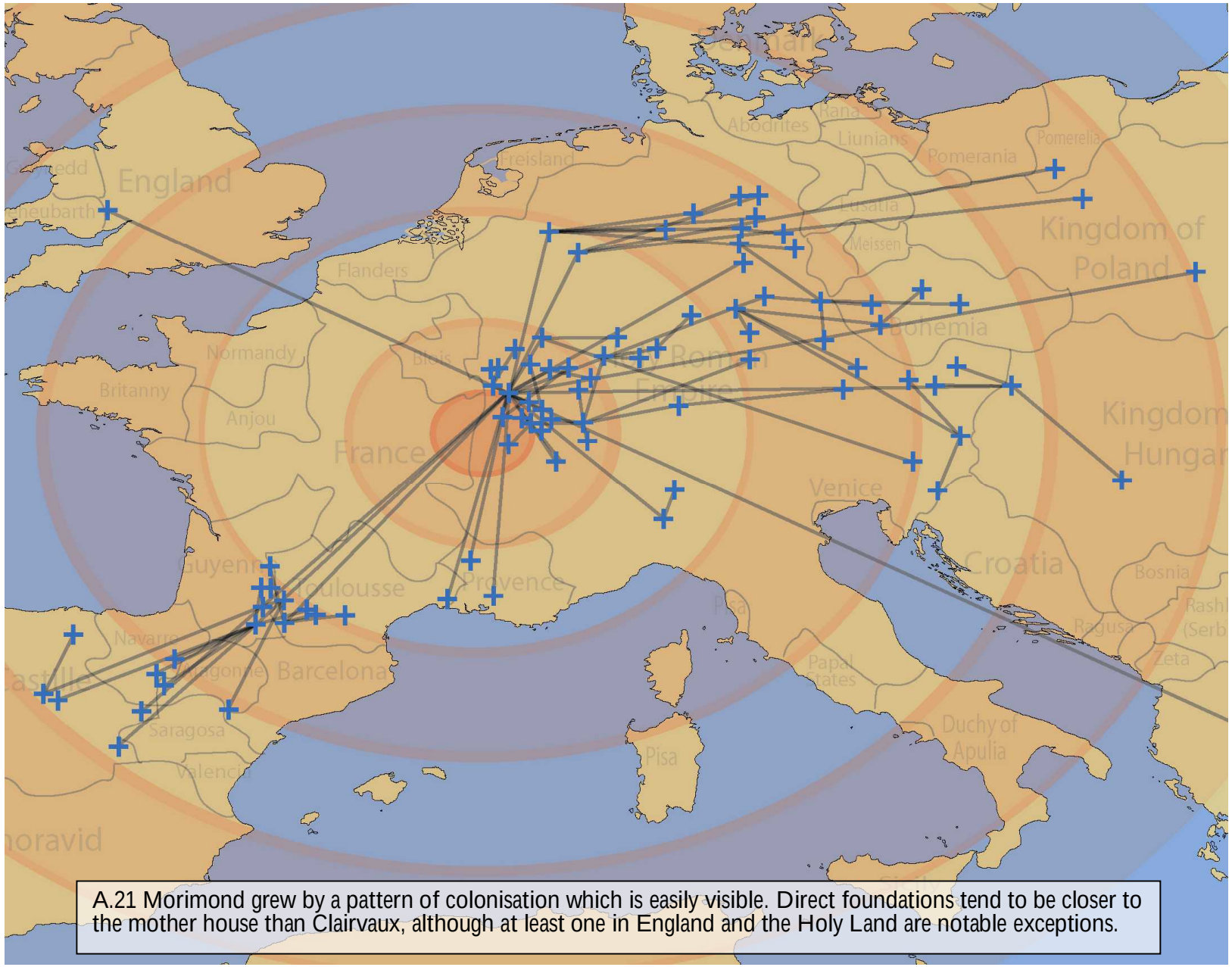
A.18 The Cistercian network through the first sixty years. The various patterns are due to the variety of sources of patronage, foundation methods and local circumstances. Morimond and Clairvaux have opposite tendencies.

A.19 Entire Network from 1098 – 1158 [60 Year Interval]



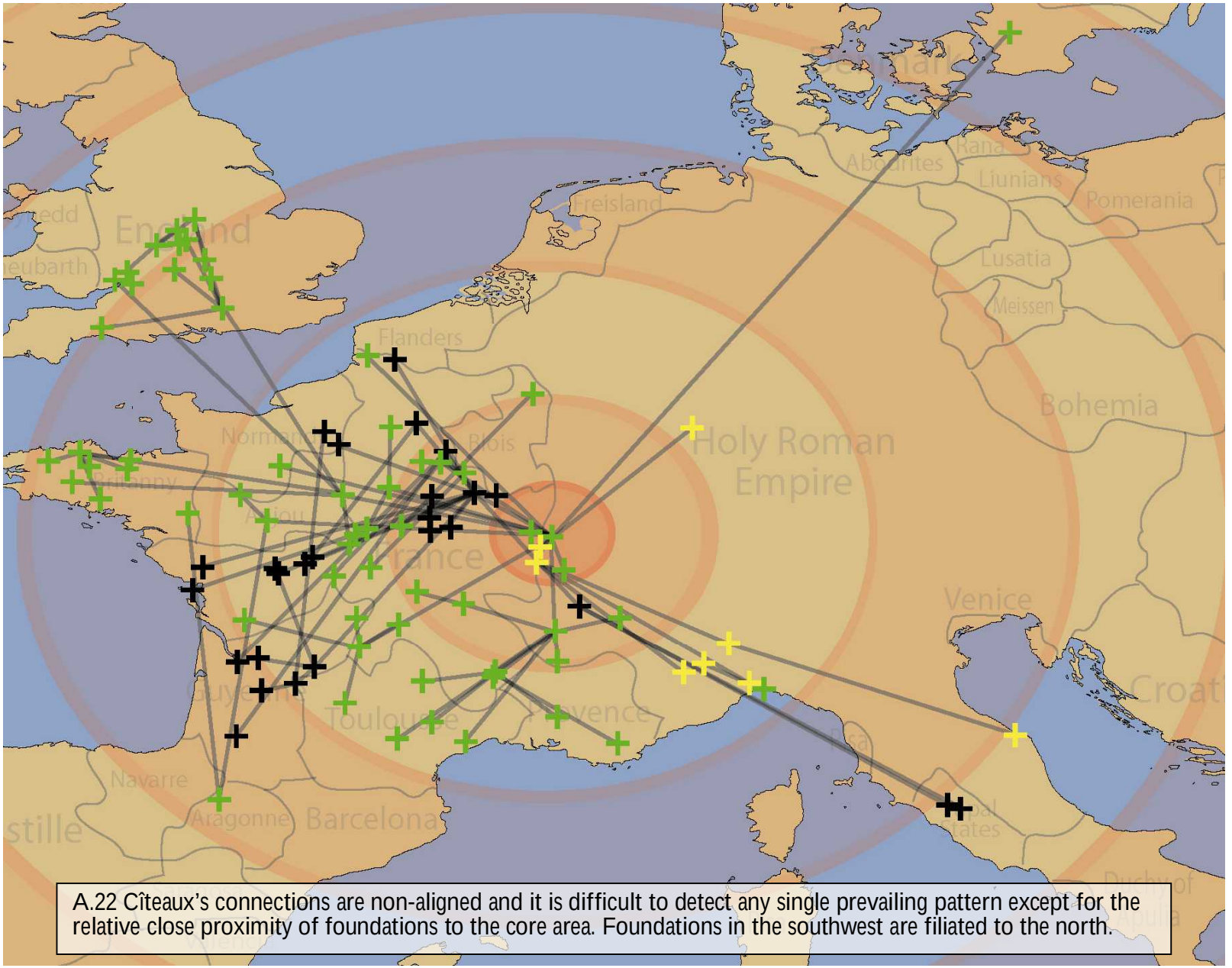
A.20 The monastery of Savigny and its dependent filia can be seen in the north of Brittanny, as just one example of the means by which Clairvaux grew to dominate the network with an influence that extended far and wide.

A.20 Clairvaux Network from 1098 – 1158 [60 Year Interval]



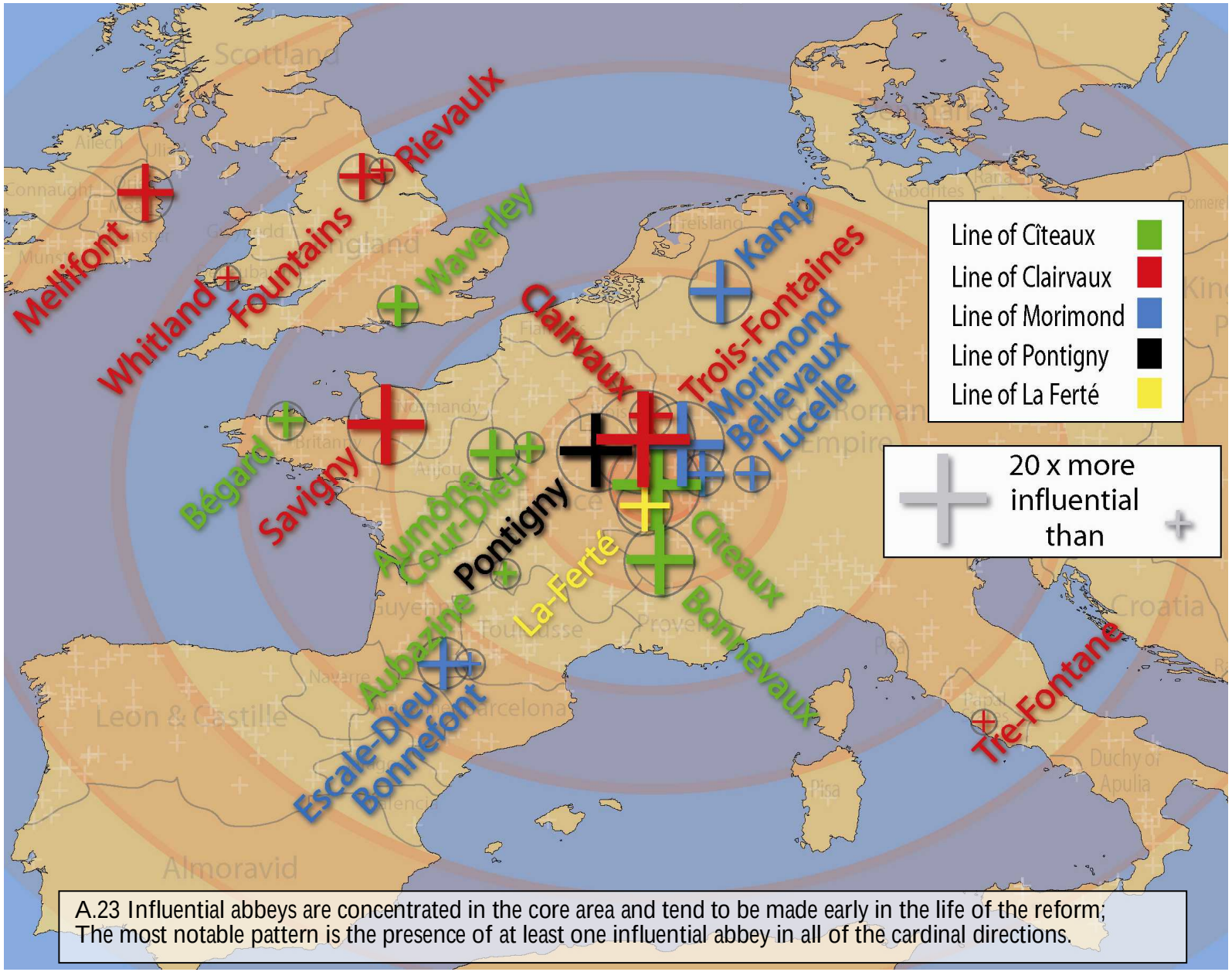
A.21 Morimond grew by a pattern of colonisation which is easily visible. Direct foundations tend to be closer to the mother house than Clairvaux, although at least one in England and the Holy Land are notable exceptions.

A.21 Morimond Network from 1098 – 1158 [60 Year Interval]

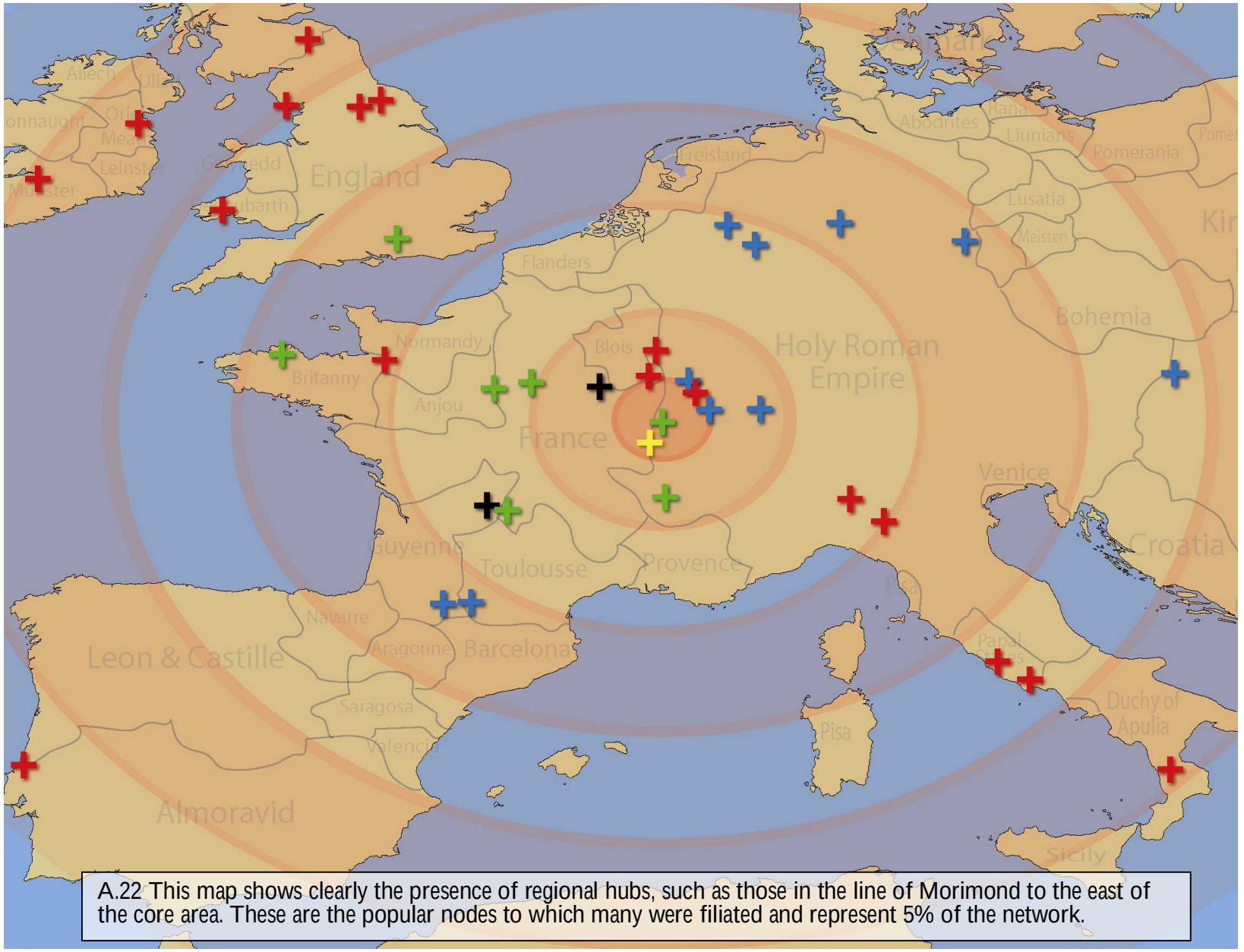


A.22 Cîteaux's connections are non-aligned and it is difficult to detect any single prevailing pattern except for the relative close proximity of foundations to the core area. Foundations in the southwest are filiated to the north.

A.22 Cîteaux, La Ferté and Pontigny Network from 1098 – 1158 [60 Year Interval]

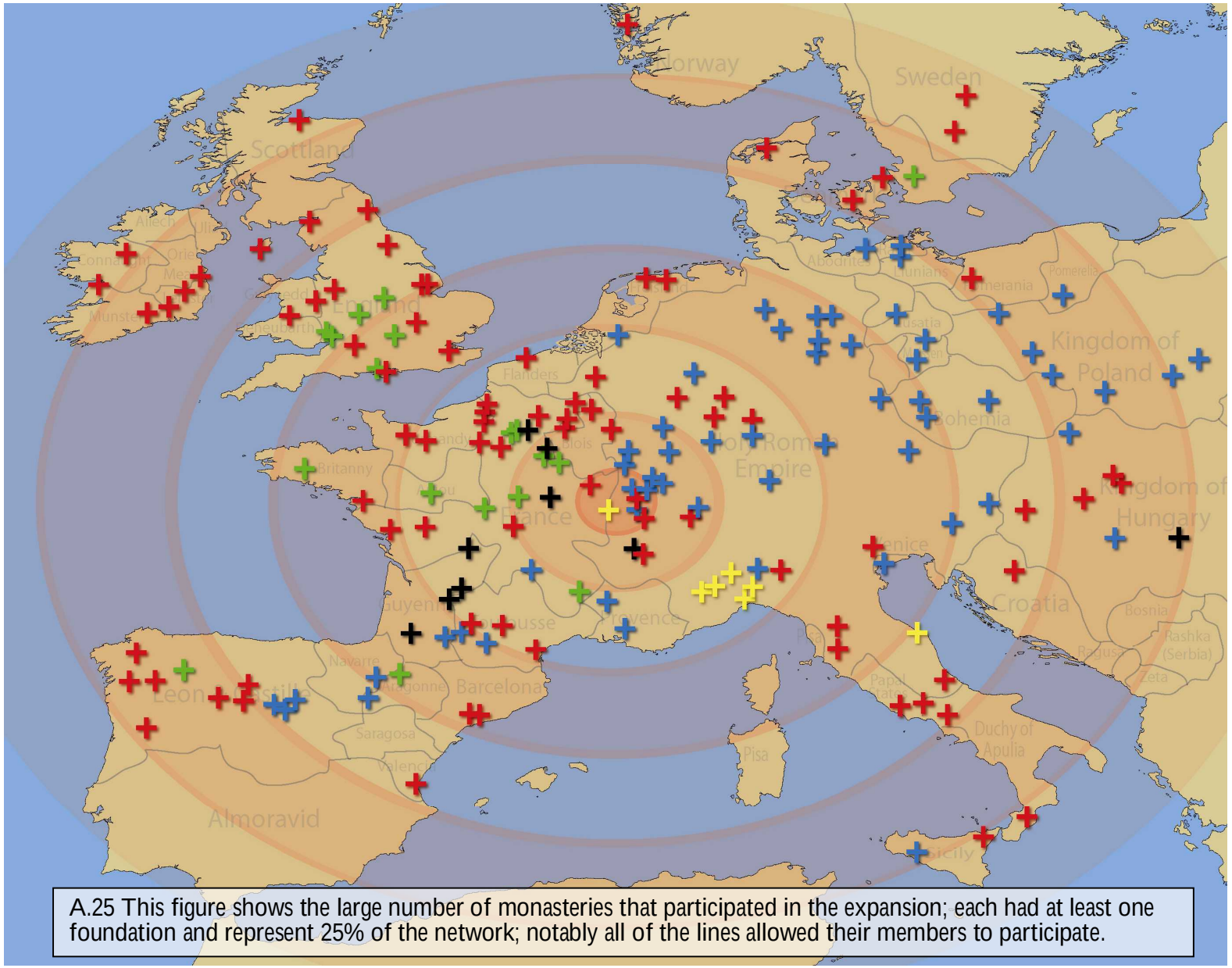


A.23 Top 25 Most Influential Abbeys by Influence Index



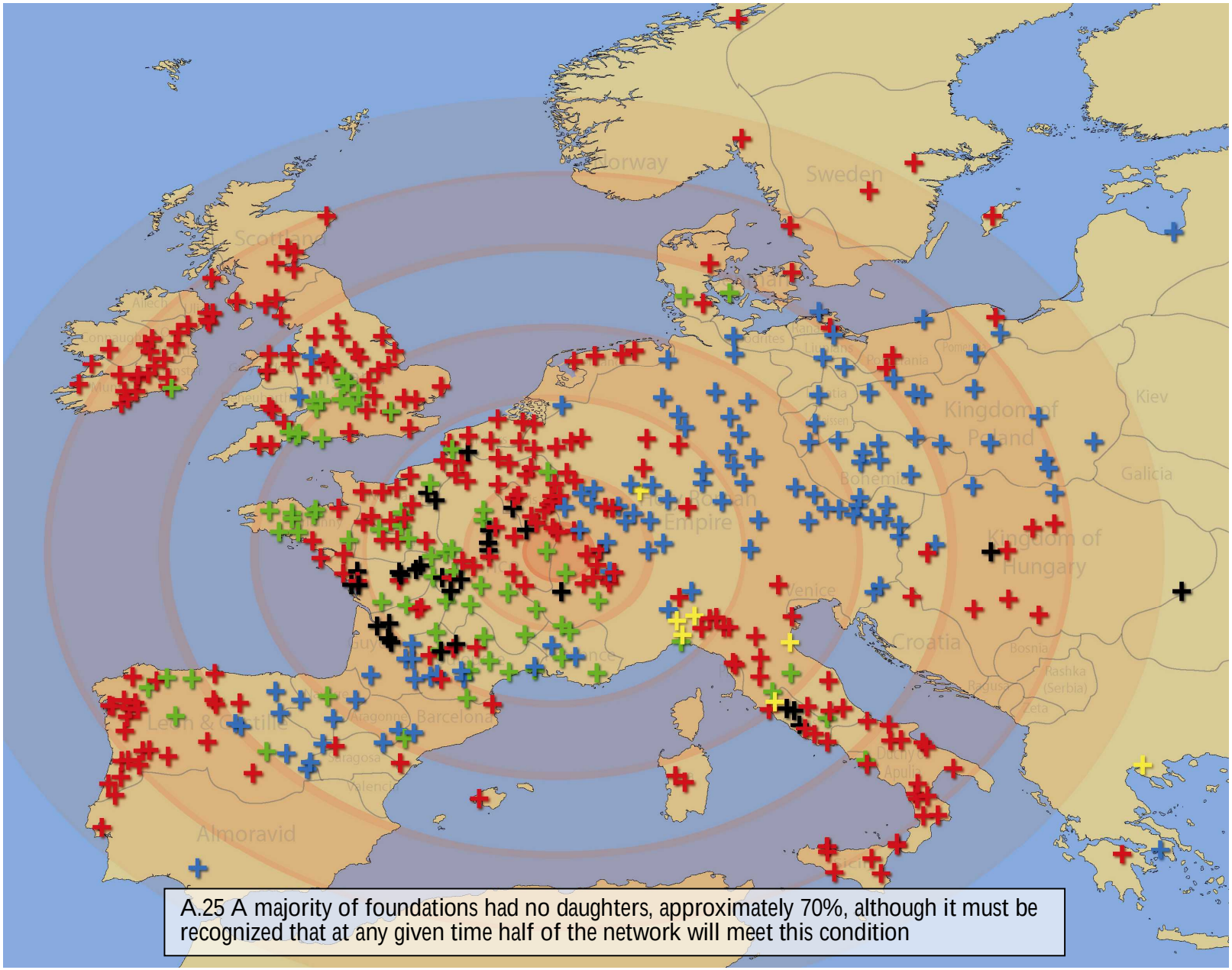
A.22 This map shows clearly the presence of regional hubs, such as those in the line of Morimond to the east of the core area. These are the popular nodes to which many were filiated and represent 5% of the network.

A.24 Influential Abbeys with 5 or More Daughters



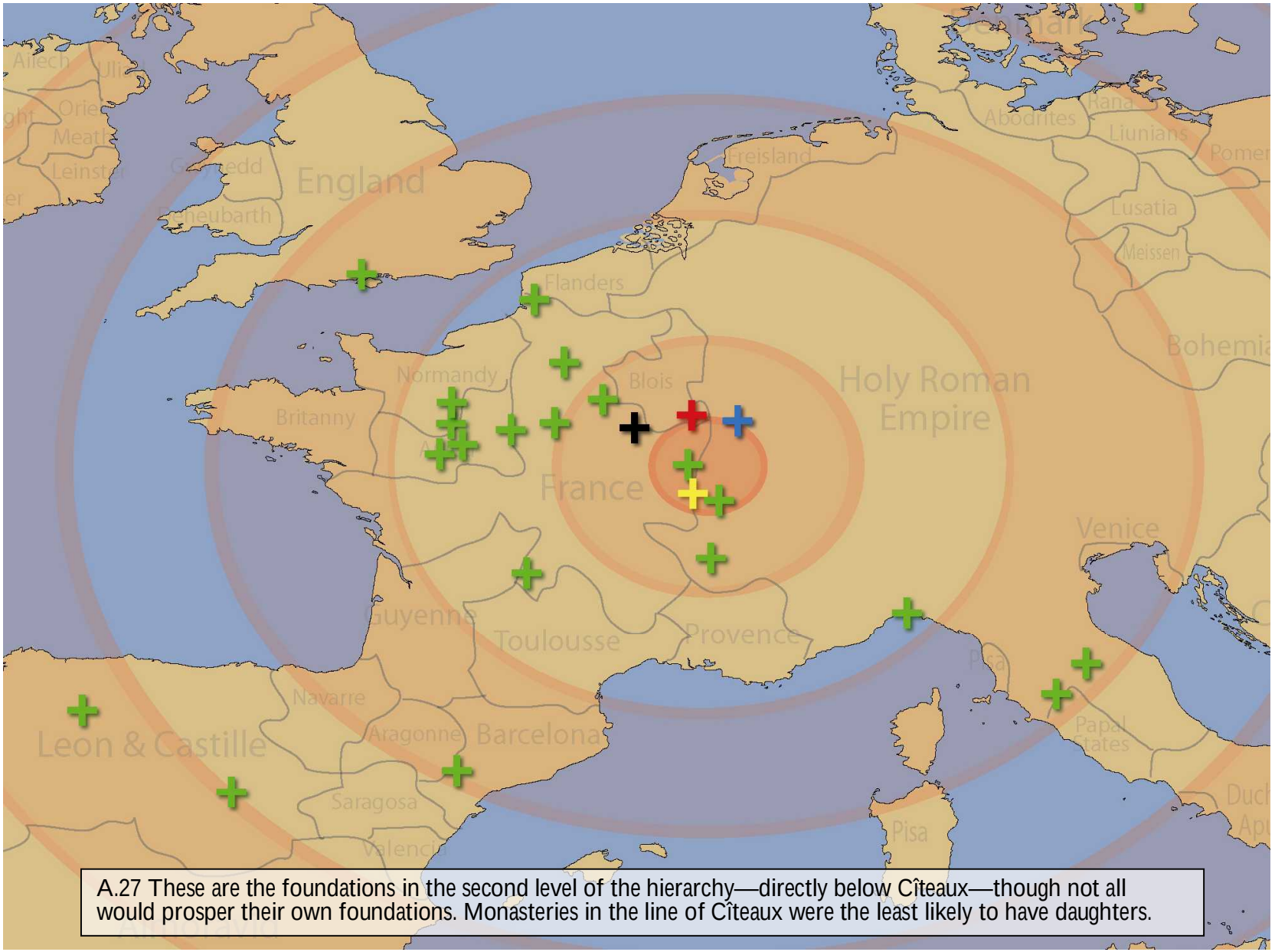
A.25 This figure shows the large number of monasteries that participated in the expansion; each had at least one foundation and represent 25% of the network; notably all of the lines allowed their members to participate.

A.25 Some Influence Abbeys with 1 to 4 Daughters



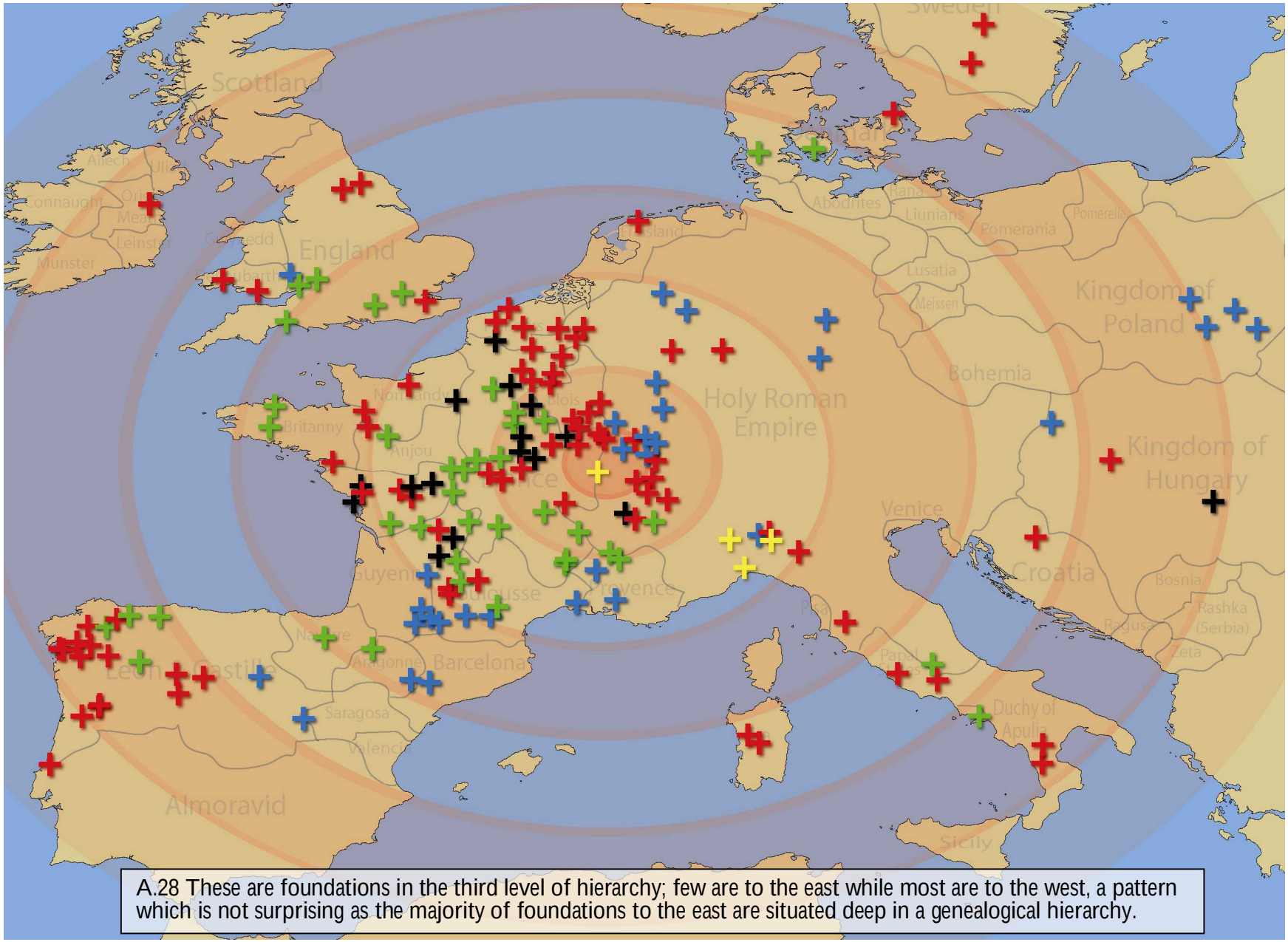
A.25 A majority of foundations had no daughters, approximately 70%, although it must be recognized that at any given time half of the network will meet this condition

A.26 No Influence Abbeys with Zero Daughters



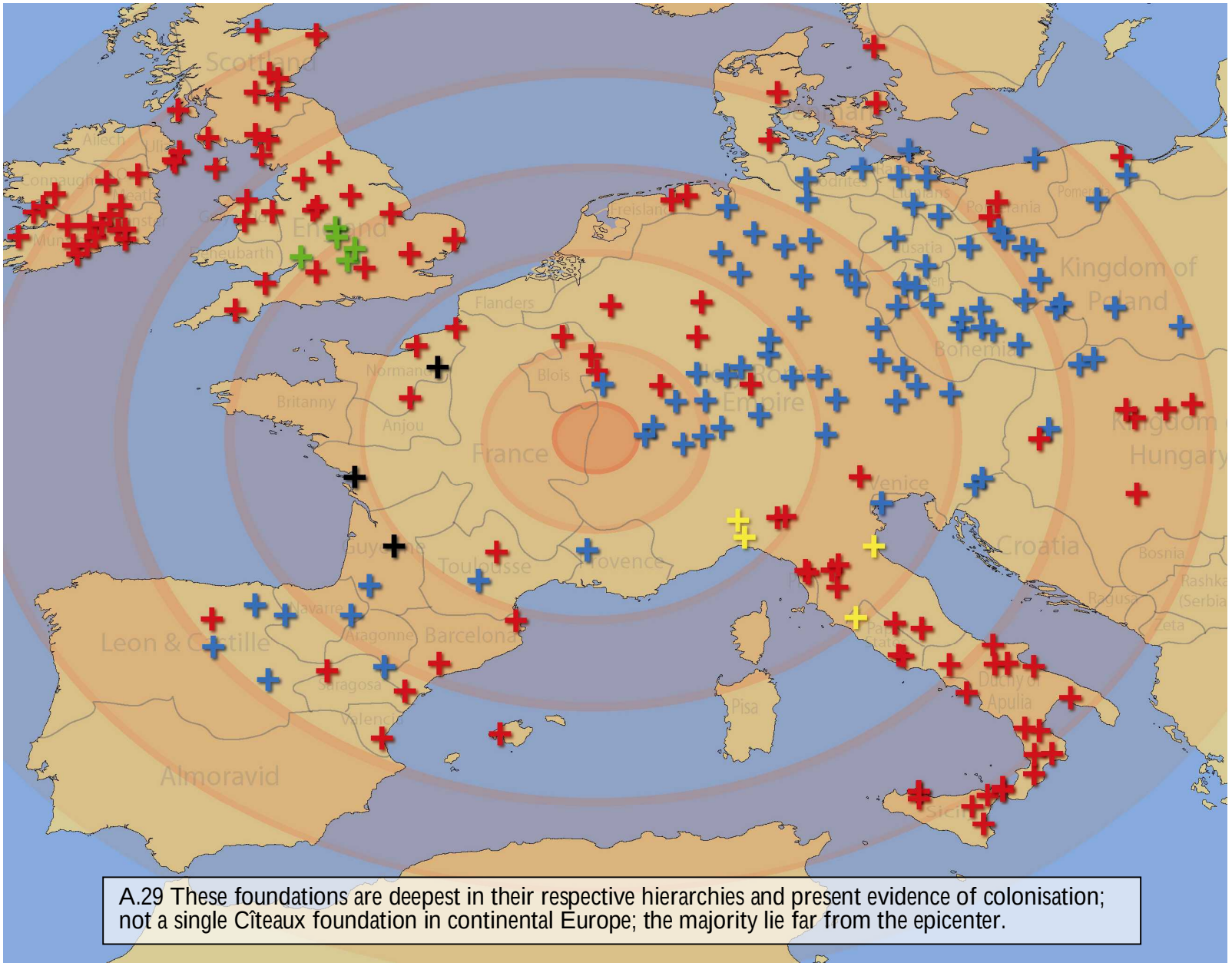
A.27 These are the foundations in the second level of the hierarchy—directly below Cîteaux—though not all would prosper their own foundations. Monasteries in the line of Cîteaux were the least likely to have daughters.

A.27 Foundations at Second Level of Hierarchy



A.28 These are foundations in the third level of hierarchy; few are to the east while most are to the west, a pattern which is not surprising as the majority of foundations to the east are situated deep in a genealogical hierarchy.

A.28 Foundations at Third Level of Hierarchy



A.29 Foundations Fifth Level and Below of Hierarchy

Statistical Tables (A.30 – A.34)

300 Years: Cistercian Foundations [1098-1398]						
	Clairvaux	La-Ferté	Pontigny	Cîteaux	Morimond	**Totals**
1098-1128	6	2	6	12	5	**31**
1128-1158	166	5	19	55	85	**330**
1158-1218	119	5	15	23	47	**209**
1218-1278	50	2	0	13	32	**97**
1278-1398	9	0	0	2	20	**31**
Number	**350**	**14**	**40**	**105**	**189**	**698**
Percentage	50%	2%	6%	15%	27%	100%

30 Years: Cistercian Foundations [1128-1158]						
	Cîteaux	La-Ferté	Pontigny	Clairvaux	Morimond	**Totals**
1128-1132	10	1	0	10	9	**30**
1133-1137	12	1	4	24	20	**61**
1138-1142	7	0	4	29	18	**58**
1143-1147	12	2	7	56	19	**96**
1148-1152	12	1	3	35	14	**65**
1153-1157	2	0	1	12	5	**20**
Number	**55**	**5**	**19**	**166**	**85**	**330**
Percentage	17%	2%	6%	50%	26%	100%

Growth Rates (abbeys/year) [1098-1398]						
	Cîteaux	La-Ferté	Pontigny	Clairvaux	Morimond	**Time**
1098-1128	0.4	0.1	0.2	0.2	0.2	**30**
1128-1158	1.8	0.2	0.6	5.5	2.8	**30**
1158-1218	0.4	0.1	0.3	2.0	0.8	**60**
1218-1278	0.2	0.0	0.0	0.8	0.5	**60**
1278-1398	0.0	0.0	0.0	0.1	0.2	**120**
Average	**0.4**	**0.0**	**0.1**	**1.2**	**0.6**	**300**

Growth Rates (abbeys/year) [1128-1158]						
	Cîteaux	La-Ferté	Pontigny	Clairvaux	Morimond	**Time Int**
1128-1132	2.0	0.2	0.0	2.0	1.8	**5**
1133-1137	2.4	0.2	0.8	4.8	4.0	**5**
1138-1142	1.4	0.0	0.8	5.8	3.6	**5**
1143-1147	2.4	0.4	1.4	11.2	3.8	**5**
1148-1152	2.4	0.2	0.6	7.0	2.8	**5**
1153-1157	0.4	0.0	0.2	2.4	1.0	**5**
Average	**1.8**	**0.2**	**0.6**	**5.5**	**2.8**	**30**

A.30 Temporal Distribution Analysis Table

Spatial Distribution of Foundations [1098 - 1398]

Period	(0 - 250) km	(250 - 500) km	(500 - 750) km	(750 - 1000) km	(1000 - 1250) km	(1250 - 1500) km	(1500 - 1750) km	Total
1098-1128	19	11	1	0	0	0	0	31
1128-1158	62	106	65	51	35	10	1	330
1158-1218	11	39	30	51	57	14	7	209
1218-1278	1	15	27	23	24	4	3	97
1278-1398	1	3	9	13	4	1	0	31
Totals	**94**	**174**	**132**	**138**	**120**	**29**	**11**	**698**

Percentage by Time Period

Period	(0 - 250) km	(250 - 500) km	(500 - 750) km	(750 - 1000) km	(1000 - 1250) km	(1250 - 1500) km	(1500 - 1750) km	Total
1098-1128	61%	35%	3%	0	0	0	0	100%
1128-1158	19%	32%	20%	15%	11%	3%	0%	100%
1158-1218	5%	19%	14%	24%	27%	7%	3%	100%
1218-1278	1%	15%	28%	24%	25%	4%	3%	100%
1278-1398	3%	10%	29%	42%	13%	3%	0%	100%
Totals	**13%**	**25%**	**19%**	**20%**	**17%**	**4%**	**2%**	**100%**

Spatial Distribution of Foundations [1128 - 1158]

Period	(0 - 100) km	(100 - 250) km	(250 - 500) km	(500 - 750) km	(750 - 1000) km	(1000 - 1250) km	(1250 - 1500) km	(1500 - 1750) km	Total
1128-1132	6	7	8	6	3	0	0	0	30
1132-1137	5	17	19	12	5	2	0	0	60
1138-1142	1	10	13	11	12	11	1	0	59
1143-1147	0	6	38	23	17	8	3	0	95
1148-1152	2	7	22	11	9	10	4	0	65
1153-1157	0	0	6	2	5	5	0	1	19
Totals	**14**	**47**	**106**	**65**	**51**	**36**	**8**	**1**	**328**

Percentage by Time Period

Period	(0 - 100) km	(100 - 250) km	(250 - 500) km	(500 - 750) km	(750 - 1000) km	(1000 - 1250) km	(1250 - 1500) km	(1500 - 1750) km	Total
1128-1132	20%	23%	27%	20%	10%	0%	0%	0%	100%
1132-1137	8%	28%	32%	20%	8%	3%	0%	0%	100%
1138-1142	2%	17%	22%	19%	20%	19%	2%	0%	100%
1143-1147	0%	6%	40%	24%	18%	8%	3%	0%	100%
1148-1152	3%	11%	34%	17%	14%	15%	6%	0%	100%
1153-1157	0%	0%	32%	11%	26%	26%	0%	5%	100%
Totals	**4%**	**14%**	**32%**	**20%**	**16%**	**11%**	**2%**	**0%**	**100%**

A.31 Spatial Analysis Table (largest value highlighted in each row)

The Top 50 Abbeys by Number of Daughters

Prog	Date	Name	Region	Genealogy	Daughters
1	1115	Clairvaux	France	Cîteaux	81
2	1098	Cîteaux	France	-	28
3	1115	Morimond	France	Cîteaux	27
4	1147	Savigny	France	Clairvaux	24
5	1114	Pontigny	France	Cîteaux	18
6	1119	Bonnevaux	France	Cîteaux	11
7	1137	Escale-Dieu	France	Morimond	9
8	1118	Trois-Fontaines	France	Clairvaux	8
9	1123	Kamp	Germany	Morimond	8
10	1135	Fountains	Great-Britain	Clairvaux	8
11	1142	Mellifont	Ireland	Clairvaux	8
12	1124	Lucelle	France	Morimond	7
13	1130	Bégard	France	Cîteaux	7
14	1113	La-Ferté	France	Cîteaux	6
15	1129	Waverley	Great-Britain	Cîteaux	6
16	1135	Heiligenkreuz	Austria	Morimond	6
17	1137	Bonnefont	France	Morimond	6
18	1140	Whitland	Great-Britain	Clairvaux	6
19	1140	Tre-Fontane	Italy	Clairvaux	6
20	1140	Sambucina	Italy	Clairvaux	6
21	1147	Aubazine	France	Cîteaux	6
22	1148	Alcobaça	Portugal	Clairvaux	6
23	1119	Cour-Dieu	France	Cîteaux	5
24	1120	Bellevaux	France	Morimond	5
25	1121	Aumône	France	Cîteaux	5

Prog	Date	Name	Region	Genealogy	Daughters
26	1131	Cherlieu	France	Clairvaux	5
27	1132	Rievaulx	Great-Britain	Clairvaux	5
28	1132	Pforta	Germany	Morimond	5
29	1133	Altenberg	Germany	Morimond	5
30	1135	Chiaravalle-Milan	Italy	Clairvaux	5
31	1135	Fossanova	Italy	Clairvaux	5
32	1136	Melrose	Great-Britain	Clairvaux	5
33	1137	Chiaravalle-della Colomba	Italy	Clairvaux	5
34	1140	Hardehausen	Germany	Morimond	5
35	1147	Furness	Great-Britain	Clairvaux	5
36	1148	Nenay	Ireland	Clairvaux	5
37	1162	Dalon	France	Pontigny	5
38	1119	Fontenay	France	Clairvaux	4
39	1119	Cadouin	France	Pontigny	4
40	1120	Mazan	France	Cîteaux	4
41	1121	Loroux	France	Cîteaux	4
42	1121	Creste	France	Morimond	4
43	1124	Jouy	France	Pontigny	4
44	1124	Locedio	Italy	La-Ferté	4
45	1131	Eberbach	Germany	Clairvaux	4
46	1131	Volkenrode	Germany	Morimond	4
47	1133	Villers-Bettnach	France	Morimond	4
48	1133	Saint-Sulpice	France	Pontigny	4
49	1135	Buzay	France	Clairvaux	4
50	1138	Bordesley	Great-Britain	Cîteaux	4

A.32 Abbeys with the Most Daughters Table

The Top 50 Abbeys by Influence Index

Prog	Name	Date	Region	Gen Line	Influence Index
1	Clairvaux	1115	France	Cîteaux	67.5
2	Cîteaux	1098	France	-	28.0
3	Morimond	1115	France	Cîteaux	23.1
4	Savigny	1147	France	Clairvaux	14.4
5	Pontigny	1114	France	Cîteaux	12.0
6	Bonnevaux	1119	France	Cîteaux	8.3
7	Kamp	1123	Germany	Morimond	5.7
8	Mellifont	1142	Ireland	Clairvaux	5.3
9	Escale-Dieu	1137	France	Morimond	4.5
10	La-Ferté	1113	France	Cîteaux	4.5
11	Trois-Fontaines	1118	France	Clairvaux	4.0
12	Fountains	1135	Great-Britain	Clairvaux	4.0
13	Aumône	1121	France	Cîteaux	4.0
14	Waverley	1129	Great-Britain	Cîteaux	3.6
15	Lucelle	1124	France	Morimond	3.5
16	Bégard	1130	France	Cîteaux	3.5
17	Cour-Dieu	1119	France	Cîteaux	3.3
18	Bellevaux	1120	France	Morimond	3.3
19	Bonnefont	1137	France	Morimond	3.0
20	Whitland	1140	Great-Britain	Clairvaux	3.0
21	Tre-Fontane	1140	Italy	Clairvaux	3.0
22	Aubazine	1147	France	Cîteaux	3.0
23	Cherlieu	1131	France	Clairvaux	3.0
24	Rievaulx	1132	Great-Britain	Clairvaux	3.0
25	Creste	1121	France	Morimond	2.9

Prog	Name	Date	Region	Gen Line	Influence Index
26	Mazan	1120	France	Cîteaux	2.7
27	Loroux	1121	France	Cîteaux	2.7
28	Altenberg	1133	Germany	Morimond	2.5
29	Chiaravalle-Milan	1135	Italy	Clairvaux	2.5
30	Chiaravalle-della Colomba	1137	Italy	Clairvaux	2.5
31	Nenay	1148	Ireland	Clairvaux	2.5
32	Dalon	1162	France	Pontigny	2.5
33	Sambucina	1140	Italy	Clairvaux	2.4
34	Grandselve	1145	France	Clairvaux	2.4
35	Pforta	1132	Germany	Morimond	2.1
36	Heiligenkreuz	1135	Austria	Morimond	2.0
37	Alcobaça	1148	Portugal	Clairvaux	2.0
38	Fossanova	1135	Italy	Clairvaux	2.0
39	Melrose	1136	Great-Britain	Clairvaux	2.0
40	Furness	1147	Great-Britain	Clairvaux	2.0
41	Cadouin	1119	France	Pontigny	2.0
42	Jouy	1124	France	Pontigny	2.0
43	Locedio	1124	Italy	La-Ferté	2.0
44	Eberbach	1131	Germany	Clairvaux	2.0
45	Volkenrode	1131	Germany	Morimond	2.0
46	Villers-Bettnach	1133	France	Morimond	2.0
47	Esrum	1150	Denmark	Clairvaux	2.0
48	Carracedo	1200	Spain	Cîteaux	2.0
49	San-Galgano	1201	Italy	Clairvaux	2.0
50	Preuilly	1118	France	Cîteaux	2.0

A.33 Abbeys with the Greatest Influence Index Table

Topographical Analysis of Foundations (10% Sample)

Name	Date	Region	General Character	Type of Water Source	Dist to Water (km)
Sept-Fons	1132	France	Flat farming	River/stream	0
Klaarkamp	1163	Netherlands	Flat farming	River/stream	0
Frades	1221	Portugal	Flat farming	River/stream	1.4
Alderspach	1146	Germany	Flat farming	River/stream	1.5
Royaumont	1228	France	Flat farming	River/stream	1.5
Cîteaux	1098	France	Flat farming	River/stream	7.5
Gondon	1123	France	Flat farming	River/stream	9.4
Nenay	1148	Ireland	Flat farming	Lake	0
Rudy	1255	Poland	Flat farming	Lake	0.2
Jervaulx	1150	Great-Britain	Flat farming	Lake	0.3
Breuil-Benoît	1147	France	Flat farming	Lake	0.45
Aduard	1192	Netherlands	Flat farming	Lake	0.5
Hüde	1232	Germany	Flat farming	Lake	1
Rivalta-Scrivia	1181	Italy	Flat farming	Lake	1.2
Capolago	1236	Italy	Flat farming	Lake	1.2
Przemet	1285	Poland	Flat farming	Lake	1.2
Villeneuve	1202	France	Flat farming	Lake	5
Clairlieu	1151	France	Flat farming	Lake	5.7
Bonmont	1131	Switzerland	Flat farming	Lake	7
Igny	1128	France	Flat farming	Lake	12.9
Noë	1145	France	Flat farming	Pond	0
Chassagne	1162	France	Flat farming	Pond	0.3
Viktring	1142	Austria	Flat farming	Pond	3.3
Cadouin	1119	France	Flat farming	Pond	4.6
Chortaëton	1214	Greece	Flat farming	Pond	6
Kappel	1185	Switzerland	Flat farming	Pond	6.3
Sant-Agostino-de-Monte-A	1239	Italy	Flat farming	Ocean	0.5
Dundrennan	1142	Great-Britain	Flat farming	Ocean	2.5
Doberan	1171	Germany	Flat farming	Ocean	5
Santa-Maria-dell'Arco	1212	Italy	Flat farming	Ocean	6
Louth-Park	1139	Great-Britain	Flat farming	Ocean	14
Swineshead	1147	Great-Britain	Flat farming	Ocean	16
Cercamp	1141	France	Flat farming	None/dry	
Escurey	1144	France	Flat farming	None/dry	
Dore	1147	Great-Britain	Flat farming	None/dry	

Name	Date	Region	General Character	Type of Water Source	Dist to Water (km)
Lannoy	1147	France	Flat farming	None/dry	
Longuay	1149	France	Flat farming	None/dry	
San-Creus	1152	Spain	Flat farming	None/dry	
Feuillants	1169	France	Flat farming	None/dry	
Barbery	1176	France	Flat farming	None/dry	
Ceiça	1195	Portugal	Flat farming	None/dry	
Brolium-Groland	1201	France	Shallow Valley	None/dry	
Tintern	1131	Great-Britain	Shallow Valley	River/stream	0
Neuberg-Austria	1327	Austria	Shallow Valley	River/stream	0.01
Hauterive	1138	Switzerland	Shallow Valley	River/stream	0.16
San-Clodio	1225	Spain	Shallow Valley	River/stream	0.5
Vaux-en-Ornois	1133	France	Shallow Valley	Lake	0
Bon-Repos	1172	France	Shallow Valley	Lake	0
Cymmer	1198	Great-Britain	Shallow Valley	Lake	0.17
Mortemer	1137	France	Shallow Valley	Lake	0.3
Amelunxborn	1135	Germany	Shallow Valley	Lake	0.5
Aubazine	1147	France	Shallow Valley	Lake	1.2
Stams	1273	Austria	Shallow Valley	Lake	1.4
Haina	1188	Germany	Shallow Valley	Pond	0.2
Féniers	1173	France	Shallow Valley	Pond	0.5
Auberive	1137	France	Shallow Valley	None/dry	
Baumgarten	1148	France	Shallow Valley	None/dry	
Poblet	1151	Spain	Shallow Valley	None/dry	
Tennenbach	1158	Germany	Shallow Valley	None/dry	
Iranzu	1178	Spain	Shallow Valley	None/dry	
Sala	1189	Italy	Shallow Valley	None/dry	
Belmonte	1206	Spain	Shallow Valley	None/dry	
Himmelpfort	1299	Germany	Water Dominates	Lake	0
Nydala	1143	Sweden	Water Dominates	Lake	1
Bonnefontaine	1154	France	Water Dominates	Pond	0
Hautefontaine	1136	France	Water Dominates	Pond	0.3
Øm	1165	Denmark	Water Dominates	Pond	0.3
Hauteseille	1140	France	Water Dominates	Pond	1
Ponzio	1246	Italy	Water Dominates	Ocean	0
San-Michele-alla-Verruca	1261	Italy	Mountains	Lake	2.4
Heiligenkreuz	1135	Austria	Other	River/stream	0.5

A.34 Topographical Analysis Table

Data Only (A.35 – A.36)

A.35 Cistercian Monastic Foundations
Chronological

A.36 Cistercian Monastic Foundations
Alphabetical