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## **Episcopal networks and authority in late antique Egypt : bishops of the Theban region at work**

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## Chapter 4: The social network of the Theban region

### INTRODUCTION

Now that the main Theodosian actors in the social network of the Theban region have been introduced and embedded in a common chronological framework, we will examine the nature of that network and the position of Abraham, Pesynthius and their colleagues therein.

This chapter comprises five sections. It starts with a brief description of the documents that were selected for Datasets 1-2, while paying particular attention to the writing material, the provenance, the dating, the general nature of the texts, and the network population.

In the second section quantitative network analysis is applied to Dataset 1, in order to examine the Theban network. The analysis of this network in three layers will enable us to check whether related but differently sized networks display much variation in their cohesion, core membership, and the relative importance of central actors:<sup>633</sup>

1. The **Theodosian network** forms the core of the Theban network and includes the bishops, priests and monastic leaders who were introduced in §3.1-2 and “the patriarch of Alexandria”, who is treated as a single actor, since his identity is often unspecified. Even if an absolute or tentative dating of a document points to Damian (578-607), Anastasius I (607-619), Andronicus (619-626), or Benjamin (626-665), the patriarch is treated as a single actor, since there was only one incumbent at the time. In addition, his marginal role should not distract us from the actual central actors (Pl. 2.1).
2. The **extended network** comprises thirty-nine social actors, namely the members of the Theodosian network plus ten individuals associated with two or more members of that network, including at least one bishop, at different occasions. This criterion applies to Peter, the *lashane* of Jeme, who was in office during the solar eclipse of 601;<sup>634</sup> Paham, son of Pelish, from Jeme;<sup>635</sup> Amos, son of Hello, from Jeme;<sup>636</sup> the priest Kalapesius, the clergyman Alexander and an archdeacon;<sup>637</sup> Patche, the estate manager;<sup>638</sup> Strategius, the *lashane* of Ne (Thebes/Luxor);<sup>639</sup> a clergyman Elias, who was associated with Bishop Anthony;<sup>640</sup> and Zachariah, a *lashane* of Jeme (Pl. 2.2).<sup>641</sup>

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<sup>633</sup> CD:\Dataset 1\Network analysis.docx, “Network analysis 1A”, based on Dataset 1.xlsx, spreadsheets “Theodosian network”-“Theban network”.

<sup>634</sup> O.Berlin P 8700 (Abraham); *SBKopt.* II 1238 (Mark); cf. §3.1.1.

<sup>635</sup> *O.Brit.Mus.Copt.* II 2 (Abraham); *P.Mon.Epiph.* 163 (Epiphanius); cf. §3.1.1.

<sup>636</sup> *SBKopt.* I 295 (Pesynthius); *P.Mon.Epiph.* 163 (Epiphanius); cf. §7.5.2.

<sup>637</sup> *O.Mon.Epiph.* 150 (Pisrael); *P.Pisentius* 19 (Pesynthius); cf. §7.4.3.

<sup>638</sup> *P.Pisentius* 2 (Pesynthius); O.Bâle Lg Ae BfJ 31d (Mark); cf. §7.3.4.

<sup>639</sup> *P.Pisentius* 1 (Pesynthius), *P.CrumST* 178 (Pesynthius, “Papas” or Bishop Anthony); cf. §7.5.2.

<sup>640</sup> *O.Crum* 344 (Anthony), *O.Mon.Epiph.* 277 (Psan, priest Mark); cf. §3.1.9.

3. The complete **Theban network** consists of 189 nodes, which represent all the social actors or groups identified in the documents selected for Dataset 1. People are considered as a group, when their exact number is unknown, or when actions cannot be attributed to particular actors. This way of counting implies that the actual number of people involved was considerably higher than can be established (Pl. 3.3).

The third section concentrates on the development of the Theban network. Therefore, the network is subdivided into three subnetworks that represent the periods 600-609, 610-619 and 620-630 (graphs 5-7 on Pls 4-5).<sup>642</sup> Documents dated before 600 are excluded, since they feature one member of the Theodosian network (Bishop Abraham) only. Two texts postdating 630 are omitted as well: the testament of Jacob and Elias I of the *Topos* of Epiphanius does not include bishops (*P.KRU* 75; §3.2.1), whereas the *Moir Bryce diptych* does not record a personal tie between the bishops Abraham and Moses of Hermonthis, which is the very reason why Moses is excluded from the Theodosian network (cf. §3.1.1, 3.1.11).<sup>643</sup>

The fourth section focusses on the structural position of Abraham, Pesynthius and their colleagues in the social network of the Theban region.

The final section analyzes Dataset 2, in order to establish the topographical extension of the Theodosian network. By examining the spatial extension of the relations of Abraham, Pesynthius, their colleagues and other prominent members of this network (Epiphanius, Psan, the priests Mark and Moses), we can check whether Theodosian activity was limited to the countryside, or extended to the district capitals as well.

#### §4.1 THE DOCUMENTS SELECTED FOR DATASETS 1-2

##### §4.1.1 *Dataset 1: The Theban network in 600-630*

Dataset 1 consists of seventy-six documents. One of them, Abraham's testament (*P.Lond.* I 77), is written in Greek, the rest in Coptic. The dossier includes thirty-five inscribed limestone flakes, twenty-one inscribed pieces of pottery and twenty papyri (46.1%, 27.6% and 26.3%, respectively). Most papyri relate to Bishop Pesynthius or Epiphanius.<sup>644</sup>

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<sup>641</sup> *SBKopt.* II 906 (Bishop Abraham, priest Victor), *O.Crum* 139 and 308 (priest and abbot Victor); cf. §3.1.1.

<sup>642</sup> CD:\Dataset 1\Network analysis.docx, "Network analysis 1B", based on Dataset 1.xlsx, spreadsheets "600-609"- "620-630".

<sup>643</sup> *P.Lond.Copt.* I 468 (verso) and *P.CrumST* 192 (= *P.Lond.Copt.* I 467) are excluded, since they both feature just one member of the Theodosian network, namely the bishops John and Horame respectively.

<sup>644</sup> List 1; Dataset 1.xlsx, spreadsheet "Selected documents". The percentages are not representative for Theban documents, for the proportion of ostraca in relation to papyri may vary, depending on the corpus and the period that are being examined. As for the documentary and non-documentary material from the *Topos* of Epiphanius, over 70% was written on pottery, ca. 12% on limestone, ca. 17% on papyrus; cf. Winlock and Crum 1926, 186. Zael and Moses of the hermitage at TT 29 mainly wrote on limestone flakes, but Frange's correspondence,

Fifty-six out of seventy-six documents have a recorded provenance (73.7%). They all originate from Western Thebes, and more particularly from the *Topos* of Epiphanius (23.7%), the hermitage at TT 29 (22.4%), the Monastery of St Phoibammon (13.2%),<sup>645</sup> the hermitage of TT 1152 (10.5%), the *Topos* of St Mark (2.6%), and TT 310 (1.3%).

For each document I propose a date based on the chronological framework presented in §3.3 and Tables 3-4. Twelve documents are assigned to the period 600-609,<sup>646</sup> eighteen to the period 610-619,<sup>647</sup> and forty-six to the period 620-630 (15.8%, 23.9% and 60.5%).<sup>648</sup>

Dataset 1 includes thirteen documents that relate to Bishop Abraham (17.1%), and sixteen texts that certainly or probably involve Bishop Pesynthius (21.1%). In general, it comprises requests and petitions, promises, declarations, announcements of a council or the coming of an important person, documents authorizing the priest Victor to cultivate a field, the record of the solar eclipse of 601, and Bishop Abraham's testament.

#### §4.1.2 *Dataset 2: Localities associated with the Theodosian network*

Dataset 2 includes 134 documents, which are written in Coptic, except for Bishop Abraham's Greek testament.<sup>649</sup> The selected documents record direct links between members of the Theodosian network and localities, whether toponyms or archaeological sites, in ca. 600-630. Six more texts were taken into consideration, but eventually excluded from the analysis:

- *P.KRU* 105, which mentions the town of Jeme and the Monastery of St Phoibammon, predates the period under consideration (§3.1.1).
- *O.Crum Ad.* 59 predates 600 as well. It supposedly refers to the transfer of Bishop Abraham's residence from the *Laura* of St Phoibammon to the monastery, but the *Laura* is not mentioned explicitly (§3.1.1).
- *O.Brit.Mus.Copt.* II 3, a declaration drawn up for Bishop Abraham, mentions the toponym “**ⲧⲃⲏ[...]**” and “**ⲡⲣⲙⲡ[.....]Ⲉ**”, which the editor proposed to reconstruct as “**ⲧⲃⲏ[ⲄⲈ (?)]**”, “**ⲧbebe (?)**”, and “**ⲡⲣⲙⲡ[ⲁⲧⲈⲣⲙⲔⲮⲧ]Ⲉ**”, “**der Mann vom (Kloster des**

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which dates to the first half of the eighth century, mainly consists of pottery: only 84 out of 627 (13.4%) letters were written on limestone; see *O.Frangé*, pp. 15, n. 44 and 22.

<sup>645</sup> The documents that originate from the Monastery of St Phoibammon are listed in Godlewski 1986, 153-60. On Bishop Abraham's testament, which was found here before the official excavations, see Godlewski 1986, 54.

<sup>646</sup> *BKU* I 70; *O.Crum* 49-50, 90, 310, 379; *O.Mon.Epiph.* 105, 107, 124, 185, 245; *SBKopt.* II 1238.

<sup>647</sup> *O.Brit.Mus.Copt.* II 16; *O.Crum* 311; *O.Frangé* 760, 777-79, 782, 784, 786, 792-94, 797; *P.Lond.* I 77; *P.Mon.Epiph.* 131, 133; *P.Saint-Marc* 426; New York, O.Col. inv. 1903.

<sup>648</sup> *O.Brit.Mus.Copt.* II 2; *O.Crum* 139, 308, 343-44; *P.CrumST* 178-79, 255; *O.CrumVC* 76; *O.Frangé* 761, 771, 774, 780-81, 785; O.MMA1152. inv. 79, 90, 136, 155, 170-71, 174, 180; *O.Mon.Epiph.* 150, 172, 277, 281; *P.Mon.Epiph.* 153, 163, 165, 198, 327, 466, 482; *P.Pisentius* 2, 7, 10 recto, 11, 19, 22, 29; *O.Pisentius* 76; *SBKopt.* I 295; *SBKopt.* II 906; *P.Saint-Marc* 41; O.Bâle Lg Ae BfJ 31d.

<sup>649</sup> List 2; CD:\Dataset 2\List of localities.docx and Dataset 2.xlsx, spreadsheet “Selected documents”.

Apa P[aternut]e (?)”. Both reconstructions are hypothetical. As for “**πρμπ[.....]ε**”, I rather expect the name of a town or village after **πρμ** than that of a monastery.<sup>650</sup>

- *O.Theb. Copt. 27* mentions Bishop Pesynthius and the priest Andrew in Pasaft, but does not record a direct relationship between the bishop and the place Pasaft.
- In P.Dezaunay (private collection, location unknown) Bishop Pesynthius is informed that a certain Pheu has left for Buet, perhaps for personal business, which does not necessarily imply that the bishop had direct links with that locality.
- *P.KRU 75*, the testament of Jacob and Elias I, postdates 630 (§3.2.1).

Fifty-nine documents are written on limestone flakes, twenty-two on pottery, and fifty-three on papyri (44%, 16.4% and 39.6% respectively). The fairly high percentage of papyri is particularly due to the inclusion of texts relating to Bishop Pesynthius, Epiphanius, and Psan.

The ninety-two documents that have a recorded provenance (68.7%) mostly originate from monastic sites in Western Thebes. They came from the *Topos* of Epiphanius (23.1%), the Monastery of St Phoibammon at Dayr al-Bahri (20.1%), the hermitages at TT 29 (11.2%), TT 1152 (5.2%), “Baugruppe B” north of the German House (3.7%),<sup>651</sup> the *Topos* of St Mark (3%), and TT 310 (0.7%). One piece came from Medinet Habu, and another one was “stated to have come from Edfu”.<sup>652</sup>

Forty-seven documents are associated with Bishop Abraham (35.1%), whereas at least twenty-eight, and probably forty-four texts, relate to Bishop Pesynthius (20.9%-32.8%).<sup>653</sup> Dataset 2 includes various kinds of documents, such as Bishop Abraham’s testament, episcopal orders, appointments of clergymen, notifications, announcements, requests, petitions, promises, guarantees, declarations, reports, letters of defense and complaints.

The analysis of Dataset 2 takes into account sixty-nine localities in total, including the eight archaeological sites in Western Thebes where documents were found *in situ*. Five sites are also mentioned, or referred to, in the selected documents, namely Medinet Habu (Jeme),

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<sup>650</sup> *O.Brit.Mus.Copt.* II, pp. 89-90, 92. Perhaps “**πρμπ[ατοϋβαστ]ε**”; cf. Timm 1984-1992, vol. 4, 1856-58.

<sup>651</sup> O.Berlin P. 12486, 12488-89, 12491, 12493, 12495, 12501, 12507: Beltz 1980, 143, 160-61 (“Grabung Möller 1912”). According to Anthes (1943, 5, fig. 1), Möller did not excavate in 1912, but in 1911 (north of the German House) and 1913 (Dayr al-Medina, north and east of the German House). The only recorded location where he found multiple Coptic ostraca is “Baugruppe B”; idem, 22; Müller (forthcoming), 311, n. 106. O.Berlin P. 12497-97 and 12500 were acquired during Möller’s “Grabungsreise” in 1912 (Beltz 1980, 143, 160), and may have been purchased instead of excavated. Krause (1958, 9) assumed that Möller found all the listed ostraca at Dayr al-Medina.

<sup>652</sup> *O.Medin.HabuCopt.* 145 and *P.Lond.Copt.* I 468 (cf. Crum 1905, 223, n. 1 and 224).

<sup>653</sup> Dataset 2.xlsx, spreadsheet “Selected documents”, in the column “Main social actor(s)”. If a document probably relates to Bishop Pesynthius, his name is rendered in blue.

the hermitage at TT 1152 (the “place of Apa Ezekiel”), the *Topos* of Epiphanius (“place of Epiphanius”),<sup>654</sup> *Topos* of St Mark (“the Evangelist”), and the Monastery of St Phoibammon.

The localities extend from Alexandria in the north to Edfu in the south. Forty-six of them were situated in the district of Hermonthis (66.7%), and seventeen in the district of Koptos. (24.6%). The cities of Antinoopolis and Asyut are included in the dataset, on account of their association with the bishops Shenoute and Constantine (§3.1.3, 3.1.7). The city of Esna is also attested. The selected localities in the Theban region represent the dioceses of Koptos (21.7%), Qus (2.9%), Ape (5.8%) and Hermonthis (60.9%).<sup>655</sup>

Occasionally, it was difficult to establish whether toponyms with similar names refer to the same locality or not, and whether implicit references refer to a known locality. When selecting the toponyms, I took the following decisions:

- In *O.Crum* 61 and *O.Crum Ad.* 40, which both relate to Bishop Abraham, “the city” is identified as the city of Hermonthis.<sup>656</sup>
- In *O.Crum* 46, from Bishop Abraham’s dossier, “the village” is listed as separate locality, although it could refer to Jeme, since both this village and Jeme had multiple churches that fell under Abraham’s jurisdiction. The connection between “the village” and the priest Patermoute, active near Jeme, may confirm this hypothesis (§5.3.6).
- The Church of Apa Mark is identified with the *Topos* of St Mark at Qurnet Muraï, since the document in which it is mentioned (O.Berlin P.12507) was found at a tomb north of the German House, near Qurnet Muraï.
- It is plausible that the *Topos* of Apa John (*O.Crum* 310, 485), the *Topos* of Apa John in the desert (*O.Mon.Epiph.* 84), and the *Topos* in the desert (*P.Saint-Marc* 41) were one or two localities, but since their identification is uncertain, they are treated as distinct sites.
- Churches are only listed as separate localities, if their location is unknown, but those associated with a city, town or village are included in the counting for that locality.

Although it is possible to establish in which district and diocese most of the localities were situated, Dataset 2 does not include enough data to use non-metric multi-dimensional scaling for the reconstruction of a more detailed topography of the Theban region. This approach requires more (preferably hundreds of) documents and more identified localities.<sup>657</sup>

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<sup>654</sup> In *O.Crum* 310 Isaac I and John are identified as monks “of the mountain of Jeme”, Western Thebes (§3.2.1).

<sup>655</sup> Dataset 2.xlsx, spreadsheet “Localities”.

<sup>656</sup> Following Winlock and Crum 1926, 105.

<sup>657</sup> In addition to the localities that are actually included in the analysis, the spreadsheet “Localities” in Dataset 2.xlsx presents another twenty-seven localities that were located in the Theban region, but do not appear in direct

The topographical network is different from Burchfield's West Theban network with regard to their scope, the selected documents and the period covered by them. The West Theban network focusses on communities, namely Jeme, the Monasteries of St Phoibammon and Paul, the *Topos* of Epiphanius and Frange's hermitage at TT 29. The documents on which its reconstruction is based were selected from well accessible editions (*O.Medin.HabuCopt.*, *O.Brit.Mus.Copt.* I-II, *O.Crum*, *O.CrumVC*, *P.KRU*, *P.CLT*, *P.Mon.Epiph.* and Heurtel's discussion of Frange's dossier).<sup>658</sup> Their dates range from the late sixth to the eighth century, but a large number of texts are dated to the eighth century (*O.Medin.HabuCopt.*, *P.KRU*, *P.CLT*, Frange's letters). By contrast, the topographical network focusses on the localities linked to bishops who were active in ca. 600-630, and includes documents from other editions (*P.Pisenti*), separate publications and unpublished material as well (O.Berlin P.12488).

#### §4.2 THE THEBAN NETWORK IN CA. 600-630

The data relevant to the Theodosian, extended and Theban networks were imported in *Ucinet 6* from Excel spreadsheets in a DL-type format and saved as *edgelist*s, which create two-mode networks. Afterwards, each two-mode network was converted into two affiliation networks in the actor-to-actor and text-to-text modes. The quantitative tools were applied to the actor-to-actor mode only, since this research concentrates on the interrelations between social actors, and does not need to analyze the relations among the documents.

The use of affiliations networks has consequences for the scope of the reconstructed networks: they are undirected networks that connect all individuals attested in the same text through ties of seemingly equal strength and without distinguishing direct from indirect ties. Affiliations networks have the advantage of revealing which actors co-appear in the same texts and must have been (approximate) contemporaries. If a well-known actor occurs in a dated text, one can tentatively propose the same date for his direct and indirect ties in all texts associated with him, and test whether it is reconcilable with other such hypothetical dates.

In the present section I will first describe the network population, then the properties of the Theodosian, extended and Theban networks, arranged by level of analysis, namely the levels of the network, the components, the nodes, and the ties (§1.2.3).

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relation to a member of the Theodosian network in the selected documents. Temraut appears in *P.Pisenti* 5, a letter that is *not* addressed to Bishop Pesynthius, and is therefore excluded from Dataset 2.

<sup>658</sup> Burchfield, *Networks of the Theban Desert*, 18, 219.

#### §4.2.1 *The network population*

The Theban network comprises the following social groups (Pl. 3.3):<sup>659</sup>

- **Clergymen** (26.2%): fifty-one nodes represent social actors with an ecclesiastic background, ranging from the patriarch of Alexandria to “clergymen” whose function cannot be specified. They include eleven bishops, two archpriests, one archdeacon, and at least twenty-one priests and three deacons. Twelve persons are known to have been associated with a monastic community, but there were probably more.<sup>660</sup>
- **Monks** (32.3%): sixty-one nodes indicate the presence of monastic leaders, hermits and monks, some of who may have been clergymen as well, but are not recognizable as such in the selected documents. Six nodes designate monastic communities.<sup>661</sup>
- **Civil officials** (16.4%): thirty-one nodes represent seven *lashanes*, financial agents (*dioiketes*), two estate managers (*pronoetes*), an *ekdikos* of the city of Hermonthis, a notary, representatives of the town of Jeme, a geometer and an imperial agent.
- **Military officials** (0.5%): a single node represents a group of soldiers.
- **Women** (2.6%): at least five social actors were female, including somebody’s wife, a mother, two young women and a widow, but there must have been more women among the citizens of Hermonthis and the villagers of Pshenhor.
- **Other people worth mentioning**: the other social actors involved are a husbandman, two camel herds, a money-lender, four messengers, people imprisoned at Jeme, Toout and Tabennese, the Persians, and two deceased men (the monk Hello, Pesente).

Little is known about the age structure, for the age of social actors is never specified. It appears that no children are involved, that some young men and women had the right age to marry (1.6%), that some people had adult children (2.1%), and that a young lad would visit monks to fetch a book for other monks.

#### §4.2.2 *The network level*

The Theodosian network has a density score of 0.227, which implies that 22.7% of all possible ties are recorded, whereas the scores for the extended and Theban networks decrease to 16% and 4.7% respectively, as usually happens with larger networks (§1.2.3.B).<sup>662</sup> By contrast, the average number of ties per actor is considerably higher in the Theban network

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<sup>659</sup> CD:\Dataset 1\List of social actors.docx and Network analysis.docx, “Network analysis 1A”.

<sup>660</sup> The bishops Abraham, Pesynthius, Pisrael Serenianus, the priests Victor, Mark, Moses, Cyriacus, abbot John, the monk Elisaius (ID no. 42), who is excluded from the clergy, and two clergymen (ID nos 63-64).

<sup>661</sup> ID nos 109-114, including the monks of the Monastery of St Phoibammon.

<sup>662</sup> “Network analysis 1A”, B, based on “Theodosian network Cohesion.txt”-“Theban network Cohesion.txt”.

(9.1 edges) than in the Theodosian or extended networks (6.3 and 6.1 edges respectively). This is partly due to the inclusion of four texts that feature more than the average number of nodes: *P.Mon.Epiph.* 163 (18 nodes), *P.Pisentius* 19 and 22 (11 and 12 nodes), and *SBKopt.* II 906 (12 nodes). Without these texts the *average degree* is 7 and the density 4.6%: the average number of ties per node is close to the scores for the Theodosian and extended networks, but at the same time, the number of realized ties in the corrected network is slightly smaller.<sup>663</sup>

The average distances of the Theodosian, extended and Theban networks remain between two and three degrees of separation (2.1, 2.3 and 2.8 steps), which indicates that the three networks are relatively small and well connected (§1.2.3.B). The diameter increases from four steps in the Theodosian network to five steps in the extended and Theban networks. This is a small difference, considering the fact that the Theban network is 6.7 times as large as the Theodosian network, and 5 times as large as the extended network. If the diameter does not increase considerably, it implies that the Theban network is well connected, and that the Theodosian network is a fairly representative cross-section of that network. This observation that is confirmed by the relative stability of the network core and the identity of the social actors with the best centrality scores (§4.2.3, 4.2.4).

#### §4.2.3 *The component level*

When the *Girvan-Newman* algorithm is applied to the Theban network, it distinguishes two clusters. The smaller section, which comprises 63 nodes, is represented by Bishop Abraham, the priest Victor, David, the monks of the Monastery of St Phoibammon, Ezekiel and Djor, and the larger section of 132 nodes includes Bishop Pesynthius, Bishop Pisrael, Epiphanius, Psan, the priest Mark, the priest Moses, and Psate.<sup>664</sup> The division between the clusters points to a close association between the inhabitants of the Monastery of St Phoibammon and the hermitage at TT 1152 (north of the hill of Shaykh Abd al-Qurna), and between the leaders of the *Topos* of Epiphanius, the *Topos* of St Mark and the hermitage at TT 29 (on or directly south of the hill of Shaykh Abd al-Qurna). In this case, the social network largely corresponds to a topographical reality, although one could observe that the *Topos* of Epiphanius is closer to the communities in the smaller cluster, and yet belongs to the larger one.

The repetitive use of the algorithm for identifying cutpoints in the Theban network reveals that the network is well-connected. Only after removing eighteen nodes in three steps,

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<sup>663</sup> “Network analysis 1A”, B. The corrected scores are based on Dataset 1.xlsx, spreadsheet “Check for §4.2.2” and “Check for §4.2.2 Cohesion.txt”.

<sup>664</sup> “Network analysis 1A”, C; “Theban Network - Girvan-Newman.jpg”.

it disintegrates into fifteen components: 1) Epiphanius; 2) the bishops Pesynthius and Abraham, the priests Mark and Moses; 3) the bishops Pisrael, Ezekiel, Anthony, the priests Victor, Cyriacus, Psan, Psate, Terane, Zael, the archimandrite, Amos, Paham and Patche.<sup>665</sup>

A more economical way to dissolve the Theban network in two sections that largely correspond with the clusters is to remove Bishop Ezekiel, Epiphanius, the priests Mark and Moses, and Paham from Dataset 1 in *NetDraw*.<sup>666</sup> These five men apparently form bridges over structural holes and are indispensable for the cohesion of the network. Bishop Ezekiel's role as a bridge is surprising, for unlike Epiphanius, Mark, Moses and Paham he does not appear among the social actors with the best centrality scores.

#### §4.2.4 *The node level*

In §3.1-2 I identified twenty-nine social actors as members of the Theodosian network, which is the core of the Theban network. When the *Core/periphery* algorithm in *Ucinet 6* is applied to the Theodosian, extended and Theban networks, it turns out that the two larger networks do not feature other individuals that should have been included in the Theodosian network. At the same time, the cores of the three networks as established by the algorithm are much smaller than the group composed by myself. The actual core of the Theodosian network consists of eight persons, who represent 27.6% of all social actors, including the bishops Pesynthius and Pisrael, the priests Mark, Moses and Victor, Epiphanius, Psan and Ezekiel. The extended network has a core of nine individuals, namely the members of the Theodosian network plus David (23.1%). Bishop Abraham only appears in the core of the Theban network, together with the brethren of the Monastery of St Phoibammon, Psate and Djor (6.7%), and in the corrected network, which includes all the listed actors except Psate (7.7%).<sup>667</sup> In short, the eight core members of the Theodosian network form a stable group that reappears in the cores of the other network, which indicates that the Theodosian network is a fairly representative cross-section of the Theban network. The results also demonstrate that in general, Bishop Abraham was better connected with individuals in the periphery than with his colleagues, Epiphanius or the priest Mark.

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<sup>665</sup> "Network analysis 1A", C; "Blocks & Cutpoints1.jpg-Blocks & Cutpoints4.jpg".

<sup>666</sup> "Theban network-Bridges.jpg".

<sup>667</sup> "Network analysis 1A", D, based on "Theodosian network Core-periphery.txt"- "Theban network Core-periphery.txt," and "Check for §4.2.2 Core-periphery.txt".

The social actors who appear most frequently in the overviews of the centrality scores are the bishops Pesynthius, Pisrael and Abraham, the priests Mark and Moses, and Epiphanius and Psan, whereas the patriarch of Alexandria follows at a distance.<sup>668</sup>

Epiphanius and Bishop Pesynthius have the highest scores for degree centrality in the Theodosian, extended and the Theban networks. In the Theodosian network Epiphanius has most ties, in the extended network the two men share the first position, and in the Theban network Pesynthius has the best score. In the Theodosian and extended networks they are followed by the priest Mark, Bishop Pisrael, Psan, and by the patriarch and the priest Moses, who share the fifth position. In the Theban network Pesynthius and Epiphanius are followed by Bishop Abraham, the priest Mark and Psan.

Since the differences between the raw scores for degree centrality in the Theodosian network are limited (ranging from 18 to 10 ties), the inclusion of new relevant documents in Dataset 1 may result in a different order of the central actors. Changes in their relative importance are also possible in the Theban network, if the new material links a central actor, e.g. the priest Mark, with a large number of ties, but in general, the impact would be limited, since the differences between the raw scores are more pronounced (71, 63, 48, 43, 39).

Epiphanius has the highest score for closeness centrality in the Theodosian, extended and Theban network, which implies that he is closest to all the actors in each of the three networks. The priest Mark, Bishop Pesynthius and the priest Moses also appear thrice, but their relative order varies. Bishop Pisrael (Theodosian and extended networks) and Psan (Theban network) are included in the overview as well.

The actors with a high betweenness centrality are Epiphanius, the bishops Pesynthius and Abraham, and the priests Mark and Moses. Epiphanius always occupies the first position, but Pesynthius and Abraham, fourth and fifth in the Theodosian network, move to the second and fourth positions respectively in both the extended and Theban networks. As a result, Mark and Moses, originally second and third, are pushed to the third and fifth position respectively.

At first glance, the eigenvector centrality scores show the greatest variation. The three networks have Epiphanius and Bishop Pesynthius in common, and the Theodosian and extended networks both include the priest Mark and Bishop Pisrael, but there are also social actors who appear in one network only: the patriarch (Theodosian network), Psan (extended network), and the village officials who signed a petition to Epiphanius (*P.Mon.Epiph.* 163;

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<sup>668</sup> “Network analysis 1A”, E, based on “Theodosian network Centrality raw.txt”, “Theodosian network Centrality normalized.txt”, “Extended network Centrality raw.txt”, “Extended network Centrality normalized.txt”, “Theban network Centrality raw.txt”, “Theban network Centrality normalized.txt” and “Check for §4.2.3 Centrality normalized.txt”.

Theban network). These officials, who are not part of the network core, suddenly appear as central actors for two reasons. Firstly, they form a large clique of seventeen nodes that is interconnected by all possible ties, and each node is in contact with Epiphanius, the most central actor. Secondly, two of the officials, Amos and Paham, are associated with Bishop Pesynthius, who has a high eigenvector score himself, and Bishop Abraham respectively.<sup>669</sup>

Without the distorting effect of the petition the results of the corrected network are almost identical to those of the extended network: the five central actors with the best scores are Bishop Pesynthius, Epiphanius, Bishop Pisrael, the priest Mark and Psan respectively. The only difference with the extended network is that Bishop Pisrael appears in the fifth position.

#### §4.2.5 *The tie level*

The analysis of tie strength was limited to the Theban network, since the strongest ties are recorded between members of the Theodosian network. The ties are already included in the Theodosian and extended networks, and the analysis of these networks would lead to the same results. Strong ties are two or more instances of direct contact between specific individuals.<sup>670</sup>

Single instances of contact are omitted, for they obscure the structure of the network. In the resulting graph variations in tie strength are indicated by the thickness of the edges and by color. Purple edges represent eight instances of contact, red edges only two. (Pls 1, 3.3).

Unsurprisingly, the strongest ties appear between members of the same community: Moses and Psate of the hermitage at TT 29 (8 edges), Ezekiel and Djor of the hermitage at TT 1152 (8 edges), Bishop Abraham and Victor of the Monastery of St Phoibammon (7 edges), and Victor and David (6 edges). Epiphanius and Psan form an exception with only 4 edges. The ties between Psan and Bishop Pesynthius (6 edges), and Epiphanius and the priest Mark (5 edges) between were stronger. Mark's other strong ties were with Psan and Moses (5 edges), whereas David was in contact with both Ezekiel and Djor (5 edges).

Victor, who is not among the five best connected actors in the network, unexpectedly turns out to have the largest number of ties stronger than 1: his ties have a total strength of 32 edges. Next in line are Mark, Bishop Pesynthius, Epiphanius and Psan, whose ties have total values of 28, 26, 24 and 20 edges respectively.<sup>671</sup>

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<sup>669</sup> In the corrected version of the Theban network, as described in §4.2.2, the persons with the best eigenvector centrality scores are Bishop Pesynthius (52.6%), Epiphanius (50.6%), the priest Mark (37%), Psan (36.7%), and Bishop Pisrael (34.8%); cf. "Check for §4.2.2 Centrality normalized.txt".

<sup>670</sup> "Network analysis 1A", F.1.

<sup>671</sup> "Network analysis 1A", F.2.

The network created on the basis of tie strength can be divided into various cliques, or set of nodes that are all interconnected, ranging in size from three to five nodes and possibly consisting of ties of different strengths. The two five-node cliques largely correspond with the two clusters identified in §4.2.2: one of them includes the bishops Pesynthius and Pisrael, the priest Mark, Epiphanius and Psan (but not Moses and Psate), and a second one Victor, David, the monks of the Monastery of St Phoibammon, Ezekiel and Djor (but not Bishop Abraham). Smaller cliques are formed by Bishop Abraham, Victor, the monks of the Monastery of St Phoibammon and abbot John; Bishop Abraham, Pesente and Zael; Isaac I, John and Joseph; John, Enoch and Joseph; John, Enoch and Epiphanius; Mark, Moses and Psate; the priest Kalapesius, the clergyman Alexander and an archdeacon; and Victor, the *lashane* Zachariah and the geometer Pisrael (ID no. 132).

An attempt to study multiplex ties focuses on the bishops and priests in the Theban network who were monks or abbots, including the bishops Abraham, Pesynthius, Pisrael and Serenianus; the priests Victor, Mark, Moses, Cyriacus, and the abbot John; two clergymen (ID nos 63-64) and the monk Elisaius, although he is excluded from the clergy (ID no. 42). Through their double identities as clergymen and monks they connect the ecclesiastical and monastic spheres, but even if they are removed from Dataset 1, the spheres remain mixed.<sup>672</sup>

Interestingly, not a bishop but Epiphanius has most recorded ties with clergymen with a monastic background: his *ego network* reveals (indirect) contact with the bishops Pesynthius, Pisrael and Serenianus, and with the priests Mark, Moses and Cyriacus.<sup>673</sup> By comparison, the *ego network* of Psan includes four monk-bishops or monk-priests (Pesynthius, Pisrael, Mark and Cyriacus), and those of Pesynthius, Abraham and Victor three, apart from themselves.<sup>674</sup> The actual number of ties between the bishops and clergymen at monastic communities must have been much higher than can be established on the basis of the selected documents. At the same time, it can be argued that Epiphanius' high score is logical, in view of the fact that two monk-bishops, Pesynthius and Pisrael, stayed in his community, and that the monk-priests Mark and Moses lived nearby. In addition, he was indirectly linked to the priest and abbot Cyriacus, on account of whom a council was held that involved Pesynthius and Psan, "the disciple of Epiphanius" (§3.2.1, 3.2.8).

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<sup>672</sup> "Theban network - Without clergymen at monasteries.jpg".

<sup>673</sup> The *ego networks* were isolated in the *Ego network viewer* (§1.2.3, n. 44). In "Theban network-Ego network Epiphanius multiplexity.jpg" the purple nodes have a double monastic/ecclesiastical background.

<sup>674</sup> Bishop Pesynthius: Bishop Pisrael, the priests Mark and Cyriacus; Bishop Abraham: the priests Victor and Moses, abbot John; Victor: Bishop Abraham, abbot John, the priest Moses.

Now that we have discussed the Theban network, which encompasses thirty years, we should examine how it developed by looking at the recorded ties by decade.

#### §4.3 THE DEVELOPMENT OF THE THEBAN NETWORK

##### §4.3.1 *The network in 600-609*

The network for this decade, based on twelve documents, includes twenty-one nodes, which is 10.8% of all nodes in the Theban network (§4.1.1; Pl. 4.5).<sup>675</sup> The nodes represent Bishop Abraham, the priests Victor and Mark, abbot John, the deacon Peter, the monks of the Monastery of St Phoibammon, the monks associated with abbot John, Isaac I, John, Enoch, Epiphanius, Joseph, six more individuals with a monastic background, two *lashanes*, and a certain Theodore. The attribution of more documents to this period would increase the number of nodes and ties, and is likely to influence the centrality scores of the central actors significantly. Therefore, the network results are general indications, not final results.

The network for 600-609 has a density of 24%, an average distance of 2.1 steps and a diameter of 4 steps. Bishop Abraham is the central actor of the network and forms a bridge between three components, to which the other actors belong. The largest component is formed by the early inhabitants of the (future) *Topos* of Epiphanius and other monks associated with them (ten nodes). Another component comprises the priest Victor, Abbot John, monks and an anonymous *lashane* (six nodes), and the third one the *lashane* Peter, the deacon Peter, Mark and Theodore (four nodes).

The *Core/periphery* algorithm identifies Bishop Abraham, Victor, the brethren of the Monastery of St Phoibammon and the abbot John as the core members of the network. Mark, who is included in this network on account of his identification as the scribe of the record on the solar eclipse of 601, appears in the periphery, since he and Bishop Abraham are indirectly connected through the association of each of them with the *lashane* Peter (cf. §3.2.3).

Bishop Abraham and John occupy the first and second positions in all four overviews of best centrality scores. Thrice Isaac I occupies the third position, except for the *betweenness centrality*, when the *lashane* Peter has a better score on account of his position as a bridge between Bishop Abraham and Mark. Victor and abbot John have the same scores for *degree centrality* (no. 3), *closeness* and *eigenvector centrality* (no. 5).

The strongest ties are recorded between John and Enoch (4 edges), between John and Joseph (3 edges), and among Bishop Abraham, Victor and abbot John (3 edges). The actor

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<sup>675</sup> §4.4.1; “Network analysis 1B”, B-F, based on “600-609 Cohesion.txt,” “600-609 Core-periphery.txt”, “600-609 Centrality raw.txt” and “600-609 Centrality normalized.txt”.

with most strong ties is not Bishop Abraham, as one would expect, but John, who has a total score of 11 edges, on account of his frequent contact with members of his community, namely Isaac I, Enoch and Epiphanius, and with Joseph. Bishop Abraham, Victor, abbot John and Enoch share the second position, having a total tie strength of 8 edges. They are followed by Joseph (7 edges) and the monks of the Monastery of St Phoibammon (6 edges).

The monastic and civil communities represented in the analysis are the Monastery of St Phoibammon, a monastery that was headed by abbot John, the future *Topos* of Epiphanius, the *Topos* of Apa John, a monastic community to which Joseph belonged, and the town of Jeme (Table 5). It is tempting to identify the *Topos* of Apa John with the monastery headed by abbot John, but in the time of *O.Crum* 310, which mentions the *Topos* of Apa John, there was no abbot called John (anymore). Otherwise, he would have witnessed the declaration made by a monk, instead of Isaac I and John, who belonged to a different monastic community. It is also plausible that Joseph, who corresponded with Isaac I, John, Enoch and Epiphanius, was in fact the Joseph mentioned in *O.Crum* 310 as a monk associated with the *Topos* of Apa John. However, the name John is very common and Joseph's identity cannot be established.

If the two men called Joseph are equated, the network changes just a little: it would shrink from 21 to 20 nodes (ID nos 85 = 86), the average distance decreases from 2.1 to 2, the density increases from 24% to 25.8%, the average degree from 4.86 to 4.9, and the diameter remains 4. The core of the network would now include John and Joseph, but not the monks of the Monastery of St Phoibammon. If Bishop Abraham is removed from this hypothetical network, the three components mentioned above have the same shape, but Joseph's ties with Isaac I and John become stronger (from 2 to 3, and from 3 to 4 respectively). The only real difference is Joseph's increased centrality: he suddenly appears in the overviews for *degree*, *closeness* and *eigenvector centrality* after Bishop Abraham and John, and in the overview for *betweenness centrality* after Bishop Abraham, John and the *lashane* Peter.<sup>676</sup>

#### §4.3.2 *The network in 610-619*

This subnetwork is based on eighteen documents and comprises thirty-nine nodes (20% of all nodes in the Theban network), which represent the patriarch, six bishops, ten clergymen, including an archpriest, fifteen monks, four officials, and three laymen (Pl. 4.6).<sup>677</sup>

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<sup>676</sup> “Check for §4.3.1 Cohesion-Joseph.txt”, “Check for §4.3.1 Core-periphery.txt”, “Check for §4.3.1 Centrality - Joseph.txt (normalized scores)”, “Check §4.3.1.jpg”.

<sup>677</sup> §4.4.1; “Network analysis 1B”, B-F, based on “610-619 Cohesion.txt”, “610-619 Core-periphery.txt”, “610-619 Centrality raw.txt” and “610-619 Centrality normalized.txt”.

With a density of 15.2%, an average distance of 2.5 steps and a diameter of 4 steps, this network is less well connected and less compact than the previous one. The network would fall apart into three components, if the priest Moses is removed. The largest component consists of twenty nodes, representing Bishop Abraham, the priest Victor, the clergymen and officials at Hermonthis, Zael and Psate, and consists of four components that are held together by Bishop Abraham and the priest Victor. The second component has fourteen nodes and includes the patriarch, the bishops, the priest Mark, Ezekiel, among others, who are arranged in four components, and Epiphanius, who forms the bridge between these components. The last component features Psate and the other individuals mentioned in *O.Frangé* 760.

The *Core/periphery* algorithm reveals that the core members are Bishop Abraham, the priests Victor and Moses, Psate, Epiphanius, Flavius Abraham, Flavius Pantonymus, Flavius Theophilus and the notary Peter. Bishop Pesynthius and the priest Mark are in the periphery.

The actors that appear in all four overviews of centrality scores are Bishop Abraham, the priests Moses and Victor, and Epiphanius appears thrice. Bishop Abraham has the best score for *degree* and *eigenvector centrality*, whereas Moses has the highest *closeness* and *betweenness centrality*. He is indeed closest to both Bishop Abraham and Epiphanius, who would be disconnected, without his presence. Although they are in a similar position, being bridges between three components, Abraham is closer to the other nodes than Epiphanius, but Epiphanius appears more often between nodes. Victor occupies the third position for degree and closeness centrality, and the second position for *eigenvector centrality*. The clergymen and officials at Hermonthis, who signed Bishop Abraham's testament, have a high *eigenvector centrality*, on account of their ties with the central actors Bishop Abraham and Victor, with whom they form a cluster of nine nodes.

It may come as a surprise that the priest Moses was a central actor, for he is less well known than Bishop Abraham, Epiphanius or Mark. Most documents relating to him originate from the hermitage at TT 29 and were published in 2007. If the edition (*O.Frangé*) by Anne Boud'hors and Chantal Heurtel had not appeared, we could not have included Moses' letters in the analysis and would not have guessed that Moses was a hub in the period 610-619.

The strongest recorded ties were between Moses and Psate (4 edges), between Moses and Mark (3 edges), and between Bishop Abraham and Victor (3 edges). Epiphanius' ties with the patriarch and Moses, and Abraham's ties with Moses, Pesente and Zael, and the contact between Pesente and Zael were less strong (2 edges). The actors with most strong ties are Moses, Bishop Abraham, Epiphanius, the duo Pesente and Zael, and Mark (11, 9, 6, 4 and 3 edges respectively).

The communities included in this network are the Monastery of St Phoibammon (with Bishop Abraham and Victor), the hermitage at TT 29 (with Pesente, Zael, Moses and Psate), the *Topos* of Epiphanius, the *Topos* of St Mark, and the clergymen and officials associated with the Holy Church of Hermonthis (Table 5).

#### §4.3.3 *The network in 620-630*

Forty-six documents form the basis of this sub-network, comprising 148 nodes (76% of all nodes in the Theban network), which represent the patriarch, eight bishops, an archpriest, twenty-eight other clergymen, thirty-six monks or monastic leaders, six *lashanes*, nineteen other officials, soldiers (ID no. 173), and forty-eight laymen.<sup>678</sup> This network, which is five times larger than the Theodosian network, and four times larger than the extended network, determines the structure and appearance of the Theban network to a large degree (Pl. 5.7).

When compared to the uncorrected Theban network, the network for 620-630 is denser (6.7%), the average degree increases slightly (9.8), and the average distance between nodes is a bit shorter (2.7 steps), whereas the diameter remains 5 steps. In general, the social actors in the present network are relatively well connected.

According to the *Core/periphery* algorithm, the core member in this network are the bishops Pesynthius and Pisrael, the priests Victor and Mark, Epiphanius, Psan, Ezekiel, Djor, David and the monks of the Monastery of St Phoibammon. Bishop Abraham and the priest Moses, so prominent in 610-619, move to the periphery. The network is marked by multiple centers and horizontal (egalitarian) ties, rather than vertical (hierarchical) ones, as the mixed ecclesiastic and monastic backgrounds of the central actors demonstrate (see below).

Like the Theban network, the network of 620-630 does not easily fall apart: if we omit all core members, it falls apart in seventeen components, ranging in size from 1 to 37 nodes.<sup>679</sup> The Girvan-Newman distinguishes two clusters: the larger one includes the patriarch, the bishops, the priests Mark and Moses, Epiphanius, Psan, Psate and Terane, among others (122 nodes), whereas the smaller one is represented by Bishop Abraham, the priest Victor, David, Ezekiel and Djor (26 nodes).<sup>680</sup> The clusters are arranged around a large structural hole that separates Bishop Abraham from the actors in the larger component, although the actual distance between the Monastery of St Phoibammon and the *Topos* of Epiphanius was only a few hundred meters. If the recorded ties in the network were complete

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<sup>678</sup> §4.4.1; “Network analysis 1B”, B-F, based on “620-630 Cohesion.txt”, “620-630 Core-periphery.txt”, “620-630 Centrality raw.txt” and “620-630 Centrality normalized.txt”.

<sup>679</sup> “620-630 Core members removed.jpg”. The largest component includes Bishop Abraham.

<sup>680</sup> “Network analysis 1B”, D; “620-630 Girvan-Newman.jpg”.

and all active, he was only indirectly connected to Epiphanius through Paham, son of Pelish, and to Bishop Pesynthius through Paham and Epiphanius (or Amos).<sup>681</sup> Bishop Abraham's indirect ties are explained by the observation that he became less active in ca. 620, shortly before his death, and had to be assisted by Victor (§3.1.1).

The social actors with the best centrality scores are Bishop Pesynthius, Epiphanius, the priest Mark and Psan, generally in that order. Bishop Pesynthius has most recorded ties and appears most often between other actors, whereas Epiphanius has the best scores for *closeness* and *eigenvector centrality*. The priest Mark occupies the third position in the overviews for *degree*, *closeness* and *betweenness centrality*, and Psan follows him directly (*degree*, *closeness* and *betweenness centrality*). The other central actors are Bishop Pisrael and the priest Moses. Bishop Pisrael has high scores for *degree* and *closeness centrality*, because he has direct ties with Epiphanius, Bishop Pesynthius, Mark and Psan.

Epiphanius and Bishop Pesynthius both have a high *eigenvector centrality*, but the second, third and fourth positions are taken by Amos, Paham and the other officials who sent Epiphanius a joint petition (*P.Mon.Epiph.* 163). As they did in the Theban network, they form a large clique that distorts the results of the analysis on the network and node levels. When all actors who are known from the petition only – everyone except Epiphanius, Amos and Paham – are omitted from the analysis, the network becomes slightly less dense (6.5%), but the average distance (2.7 edges) and the diameter (5 edges) are the same. Epiphanius' centrality scores drop: he has the third position for *closeness* and *betweenness centrality*, the fourth best score for *degree centrality*, and is fifth in the overview for *eigenvector centrality*. The persons with the highest results for *eigenvector centrality* are now Bishop Pesynthius, the priest Mark, Psan, Epiphanius and Bishop Pisrael.<sup>682</sup>

The strongest ties are recorded between Ezekiel and Djor (8 edges), Bishop Pesynthius and Psan (6 edges), Victor and David (6 edges), Mark and Psan (5 edges), David and the duo Ezekiel and Djor (5 edges; Pl. 5.8).<sup>683</sup> David's prominent position in the reconstructed network is mostly the result of letters addressed to Ezekiel and Djor from the hermitage at TT 1152, which Esther Garel attributes to David on the basis of the script (§3.2.5). Without these recently edited texts, David, Ezekiel and Djor would not appear to be important.

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<sup>681</sup> “620-630 Bishop Abraham - Bishop Pesynthius.jpg”.

<sup>682</sup> “Network analysis 1B”, B-C and E.5, based on “Check for §4.3.3 Network cohesion.txt”, “Check for §4.3.3 Core-periphery”, “Check for §4.3.3 Centrality normalized”.

<sup>683</sup> “Network analysis 1B”, F.1.

Several actors have multiple strong ties.<sup>684</sup> Bishop Pesynthius and Mark each have the highest total value of strong ties (21 edges), and are followed by Victor and Psan (20 edges), David, Ezekiel and Djor (each 19 edges), Epiphanius (13 edges) and Bishop Pisrael (11 edges). In fact, the scores of these individuals do not vary considerably. If more relevant documents were included in Dataset 1, the relative positions would easily change.

The civil and monastic communities that appear in the dataset for 620-630 include the town of Jeme (represented by the *lashanes* and the other great men who signed *P.Mon.Epiph.* 163), the Monastery of St Phoibammon (with Bishop Abraham, Victor, David and the rest of the monks), the *Topos* of Epiphanius (Epiphanius, Psan, the bishops Pesynthius and Pisrael), the *Topos* of St Mark (the priest Mark), the hermitages at TT 29 and TT 1152 (the priest Moses, Psate, Ezekiel and Djore), and the hermitage of Apa Terane (Terane himself; Table 5).

Now that we have examined the Theban network in general as well as by decade, we will evaluate the structural position of Abraham, Pesynthius and their colleagues in that social network in the course of time.

#### §4.4 THE POSITION OF THE THEODOSIAN BISHOPS IN THE THEBAN NETWORK

##### §4.4.1 *Abraham of Hermonthis*

Bishop Abraham is the first and only Theodosian bishop attested in documents that we can safely assign to the period 600-609. Since the sources for that period are scarce, our picture of his social relations is far from complete, but the recorded ties reveal that his contacts included clergymen, monks from at least four monasteries and hermitages, and two *lashanes* of Jeme.

In the next decade, new spiritual leaders appear, particularly the priest Moses and Epiphanius, and together with Bishop Abraham they form a predominantly monastic network that heavily centers on Western Thebes. In terms of centrality, at least according to the recorded sources, Abraham appears in the first, second or third position. He has the most recorded ties and is closest to all other central actors.

During the last years of his life, in the early years of the Persian occupation of Egypt, the bishop moves to the periphery of the network, whereas Victor and David become central actors in the network. They increasingly assisted him in his activities, and after Victor had become abbot of the Monastery of St Phoibammon, both he and David were in contact with the authorities of Jeme and the anchorites Ezekiel and Djor several times (cf. §3.1.1, 3.2.4).

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<sup>684</sup> “Network analysis 1B”, F.2.

There is no written evidence for direct contact between Abraham and other Theodosian bishops, and the recorded ties in the network suggests that any correspondence between them went through the priests Mark, Moses and Victor. However, since Pesynthius, and Pisrael stayed at the *Topos* of Epiphanius, within his diocese and at a few hundred meters from his residence, it is most likely that they met in person.

#### §4.4.2 *Pesynthius of Koptos*

Pesynthius first appears in the period 610-619, before the Persian occupation of Egypt, when he still lived in his own diocese (§3.1.2). He has a peripheral position in the Theban network during that period, and his contacts with colleagues, the bishops Constantine and two bishops called John, and with Epiphanius are recorded by a single document only (*P.Mon.Epiph.* 133).

During the Persian period, Pesynthius stayed in Western Thebes and became the best connected actor in the network. He has the highest centrality scores, except for *betweenness centrality*, when he is second best, and the *eigenvector centrality* in the uncorrected Theban network, in which *P.Mon.Epiph.* 163 has distorted the picture. After the correction of the dataset, he is indeed the most central actor. Judging from the reconstructed network for 620-630, Pesynthius' ties with Psan and Bishop Pisrael (6 and 5 edges) were stronger than with the priest Mark or Epiphanius (4 and 3 recorded edges respectively). There are no indications of written contact between Pesynthius and the priests Moses or Victor, or Ezekiel and Djor.

In the complete Theban network, which covers thirty years, Pesynthius appears as one of the main actors together with Epiphanius, the priests Mark and Moses and Bishop Abraham. Epiphanius has better scores for the *closeness*, *betweenness* and *eigenvector centrality* (the uncorrected score, which also considers the ties in *P.Mon.Epiph.* 163), but Pesynthius has the highest number of ties (and the best *eigenvector centrality* score, after correction).

#### §4.4.3 *The other bishops*

Among the other Theodosian bishops, Pisrael is the only one who has a relatively high centrality. Judging from the analysis of the subnetwork for the period 620-630, he is a core member and occupies the fifth and fourth positions in the overviews for the *degree* and *closeness centrality*. His strongest ties are with Bishop Pesynthius and Psan (5 and 3 edges).

In the discussion of the Theban network on the component level (§4.2.3) it turned out that Bishop Ezekiel acted as a bridge, and that the network would fall apart in two groups after removing him, Epiphanius, Mark, Moses and Paham from the dataset.

## §4.5 THE TOPOGRAPHICAL EXTENSION OF THE THEODOSIAN NETWORK

### §4.5.1 *The network in general*

The topographical network of the Theban region is analyzed as a two-mode network, showing the connections between actors and localities (Pl. 6.9).<sup>685</sup> *Ucinet 6* is used to analyze their cohesion, core/periphery, components and centrality. For the actual aim of this section, to establish the extension of the ties of the Theodosian bishops, *NetDraw* is used to examine their topographical sub-networks, using the *Ego network viewer*.

The topographical network includes twenty-nine individuals and sixty-nine localities. Only 9.1% of all possible connections are realized, the average distance is more than 3 steps of separation (3.1 edges), and the diameter is 6, which indicates that the network has many loose ends: many localities are associated with Bishop Abraham or Bishop Pesynthius only.<sup>686</sup>

The two-mode network has two cores. Among the individuals the core members are Abraham, Pesynthius, the priests Mark and Moses, and Epiphanius (19.2% of the individuals). No less than forty-two localities are assigned to the other core, including Antinoopolis, Asyut, Tabennese, Koptos, Qus, Ape, Jeme, Hermonthis, Edfu, the *Topoi* of Epiphanius and St Mark, the hermitages at TT 29 and 1152, and the Monastery of St Phoibammon (42%).<sup>687</sup>

The *Girvan-Newman* algorithm distinguishes two sections, the smaller one of which includes Bishop Abraham, the Hermonthite localities that are exclusively linked to him and Tabennese (27.6%). The other social actors and localities form one large unit (72.4%).<sup>688</sup>

The main actors in this network are Bishop Abraham, Bishop Pesynthius, Epiphanius, Mark and Moses. They always appear in this order, except in the case of the *closeness centrality*, when Pesynthius and Epiphanius share the second position, and various individuals occupy the fifth position: the patriarch, the bishops Ezekiel and Pisrael, Isaac I and John.<sup>689</sup>

The localities that occur most frequently in the overviews are the *Topos* of Epiphanius, Koptos, Jeme, the hermitage at TT 29, the *Topos* of St Mark and the Monastery of St Phoibammon. The *Topos* of Epiphanius has the best scores for all centrality measures, which is not surprising at all, since 23.1% of the documents in Dataset 2 were found there (§4.2.1). Koptos has the second best scores for *degree* and *eigenvector centrality*, and Jeme for

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<sup>685</sup> “Network analysis 2”, A, based on Dataset 2.xlsx, spreadsheet “Actor-locality edgelist”. For specific information about the spatial connections, see spreadsheet “Actors, localities, frequency”.

<sup>686</sup> “Network analysis 2”, under B; “Topographical network Cohesion.txt”.

<sup>687</sup> “Network analysis 2”, C; “Topographical network Core-periphery.txt”.

<sup>688</sup> “Network analysis 2”, D; “Topographical network - Girvan-Newman.jpg”. Tabennese is also linked to Epiphanius.

<sup>689</sup> “Network analysis 2”, E; “Topographical network Centrality.txt”.

*closeness* and *betweenness centrality*. Hermonthis only appears in the overview for *closeness centrality*, in the fifth position.

Although this section is particularly concerned with the spatial extension of the social ties of the Theodosian bishops, the topographical networks of Epiphanius, Psan and the priests Mark and Moses are visualized and discussed as well.

#### §4.5.2 *Abraham of Hermonthis*

Thirty-six localities are associated with Bishop Abraham, either on account of his social ties or the provenance of his documents, including thirty-four locations in his own diocese (Pl. 6.10). The other localities are Timamen in the diocese of Ape and Esna: the villagers of Timamen rejected Abraham's authority (O.Berlin P.12491; §2.3.1, 6.4.B); and Abraham asked someone to contact the deacon Ruben from Esna (*O.Crum* 126).

Three documents link Bishop Abraham to the city of Hermonthis. He was in contact with the archpriest Dioscorus, the priest Joseph and the deacon Paul of the Holy Church of Hermonthis and three urban officials, Flavius Abraham, Flavius Pantonymus and Flavius Theophilus, who signed Abraham's testament (*P.Lond.* I 77).<sup>690</sup> In two other documents Hermonthis is referred to as "the city": if the *lashane* Pesente does not apologize to a man who was treated unjustly, Abraham will report his misconduct in "the city" (*O.Crum* 61), and if the priest Patermoute does not come and pay a fine, his degradation will be arranged in "the city" (*O.Crum Ad.* 40). These documents demonstrate that Abraham's ties were not limited to villages in his diocese, but also extended to the city of Hermonthis.

#### §4.5.3 *Pesynthius of Koptos*

The twenty-two localities that appear in relation with Pesynthius are scattered over eight different dioceses: twelve localities in the diocese of Koptos, including the city of Koptos; the *Topos* of Epiphanius, Jeme and the city of Hermonthis in the diocese of Hermonthis; Ape and Petemout in the diocese of Ape; the city of Qus; Alexandria, Antinoopolis, Esna, and Edfu (Pl. 6.10). He is most often associated with the *Topos* of Epiphanius (16 times), Koptos (4 times), Pshenhor (4 times) and Qus (4 times).<sup>691</sup> Pesynthius had direct written contact with the patriarch in Alexandria (implied by *P.Mon.Epiph.* 133), but his ties with the bishops of Antinoopolis and Edfu (*P.Pisentius* 22) and with Lord Christote of Esna (*P.Pisentius* 4,

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<sup>690</sup> The archpriest Dioscorus is discussed in §5.3.9.

<sup>691</sup> Dataset 2.xlsx, spreadsheet "Actors, localities and frequency", in the column "Frequency".

through the *lashane* Abraham of Pshenhor) were indirect. The statement in the *Encomium*, that Pesynthius' charity reached Aswan, is not confirmed by his documents (§3.1.2, 8.5.2).

The recorded contact between Pesynthius and the city of Koptos went through civil officials like Stephen, who was probably a *lashane*, and Callinicus (both attested in *P.CrumST* 174).<sup>692</sup> The senders of *P.Mon.Epiph.* 152 were probably *lashanes* as well. The bishop must have had contact with clergymen in the city of Koptos, as the *Encomium* states, but they are difficult to recognize in his documents (p. 85, §7.4.2). Two more documents mention “him (the bishop) of Koptos” and “the district of Koptos” (*O.CrumVC* 76, *P.Mon.Epiph.* 484).

Remarkably, Pesynthius' relations with the diocese of Qus are better documented. He had written and personal contact with Bishop Pisrael (*P.Pisentius* 7, 11), was informed by the clergymen of Qus about local scandals (*P.Pisentius* 18-18bis, 19), and ordered the priest Paul to excommunicate certain men and to come (*P.Pisentius* 18bis). In other words, Pesynthius imposed ecclesiastical sanctions on individuals in the diocese of Qus, probably because he was the administrator of “the eparchy of Qus”, when the diocese was still vacant (§2.2.3).

During his years in Western Thebes, Pesynthius was also involved with matters associated with Hermonthis and Jeme. Once, a correspondent requested him to send for the lawyer at Hermonthis, in order to arrange a commemorative offering, probably to the benefit of the Church (*P.Mon.Epiph.* 254). It also happened that a certain Luke requested Pesynthius through Psan to contact Apa Elias, in order that the latter would write to the citizens of Hermonthis about an unspecified matter (*O.Mon.Epiph.* 172). In the general introduction we already discussed the petition of the widow, who begged the bishop to bring the *lashane* of Jeme and Amos, and to persuade them to let her stay in her house (p. 1).

Pesynthius was indirectly associated with Ape through his ties with Bishop Anthony (*P.Pisentius* 11 and probably *P.CrumST* 178; §3.1.9), a correspondent who had asked the lieutenant at Ape to send a wagon (*P.Mon.Epiph.* 460), and a man who had survived an assault in the mountain near Ape (*P.CrumST* 178).

#### §4.5.4 *The other bishops*

The available documentation provides little information about the ties of the other bishops in their own dioceses (Pl. 7.11). “Papas” Anthony, or Anthony of Ape, needed to be informed that brigands in the mountain of Ape assault people (*P.CrumST* 178), and Pisrael of Qus apparently ordered financial administrators to dismiss the steward of the *Topos* of St John at

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<sup>692</sup> Stephen reappears in Antwerpen, Katoen Natie 685/01, and Callinicus in *P.Pisentius* 21; cf. §7.5.1.

Phello (*P.Pisentius* 8). Bishop Shenoute (of Antinoopolis) informed the monk Elisaius that Pisrael delivered a letter from the patriarch (of Alexandria), after having visited the patriarchal residence (*P.Pisentius* 10). Pisrael and Anthony attended a council together with Pesynthius of Koptos and Psan of the *Topos* of Epiphanius, in the diocese of Hermonthis (*P.Pisentius* 11).

Bishop Ezekiel is associated with three localities that belonged to the diocese of Hermonthis: the *Topos* of Epiphanius, the hermitage at TT 29 and the dwelling of Apa Terane. The isolated networks of the other bishops does not reveal new information.

#### §4.5.5 Other central actors in the Theodosian network

Although the focus lies on the topographical extension of episcopal networks, it would be a pity not to take the opportunity to visualize and briefly discuss the topographical ties of the other central actors, namely Epiphanius, Psan and the priests Mark and Moses (Pl. 7.12). Epiphanius is associated with fifteen localities in three dioceses. Twelve localities lay in the diocese of Hermonthis, such as Jeme, Toout and the various monastic communities in Western Thebes, and the other ones were Asyut in Middle Egypt, Koptos, and the “Place” of Apa Phoibammon, the location of which is unknown (§3.1.5).

Psan’s network comprises six localities in four dioceses: the *Topos* of Epiphanius, where he lived, and the city of Hermonthis in the diocese of Hermonthis; the city of Koptos and the Monastery of Apa Macarius in the diocese of Koptos; and (the dioceses of) Qus and Ape through his contact with the bishops Pisrael and Anthony.<sup>693</sup>

Mark’s ties extend to thirteen localities, including Antinoopolis, where he acted as a scribe for Bishop Shenoute (§3.2.3); Koptos, Pampane, Trikatan and Tses in the diocese of Koptos; Jeme, the *Topoi* of St Mark, Epiphanius and Apa John in the desert, and the hermitages at TT 29 and 1152 in the diocese of Hermonthis; and Edfu, through his implicit association with Bishop Horame (§3.2.3).<sup>694</sup>

Finally, the eleven localities associated with the priest Moses mostly are monastic sites in Western Thebes (the hermitage at TT 29, *Topoi* of Epiphanius and of St Mark, the dwelling of Apa Terane, the Monastery of St Phoibammon, the Monastery of “my father Pesente”), the Church of the Acacias, Toout, Tabennese and “the mountain” in the diocese of Hermonthis.

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<sup>693</sup> Hermonthis: *P.Mon.Epiph.* 171; Koptos: *O.Mon.Epiph.* 327; the monastery, Qus and Ape: *P.Pisentius* 11.

<sup>694</sup> Antinoupolis: *P.Pisentius* 10; Koptos: *O.Mon.Epiph.* 327, *O.CrumVC* 76; Pampane: *P.Saint-Marc* 21; Trikatan and Edfu: *P.Pisentius* 22, assuming that Mark wrote this letter, which mentions Bishop Horame; Jeme: e.g. *P.Saint-Marc* 18. For the relevant documents concerning the monastic communities in Western Thebes, consult the spreadsheet “Actors, localities, frequency” in Dataset 2.xlsx.

The rest of his ties extended to Tses in the Koptite district and Timamen, which probably belonged to the diocese of Ape (§2.1.1).<sup>695</sup>

## CONCLUSION

In this chapter the social network on the Theban region was examined in three layers (the Theodosian, extended and Theban networks) and during three decades on the basis of undirected one-mode networks. In such a network all social actors mentioned in the same document are linked to each another on account of their co-appearance in that document, even if part of the ties is indirect. This approach facilitated the study of the properties of the network in general and in the course of time. The analysis did reveal, however, that the structure of the Theban network is considerably determined by the network for 620-630, which is much larger than the networks for 600-609 and 610-619. The Theban network is a compact, well connected network that involves 195 individuals or groups. It is reconstructed around the Theodosian network, which includes twenty-nine actors, but its actual core consists of eight actors, who reappear in the extended and Theban networks, as well as Bishop Abraham and the monks of the Monastery of St Phoibammon.

Abraham and Pesynthius are prominent figures in the social network of the Theban region, but so are Epiphanius, the priests Mark and Moses, Psan and Bishop Pisrael. In the multi-centered Theban network the horizontal ties are more numerous than the vertical ones, and priests and monastic leaders are just as important as bishops. If they were excluded from the network, Abraham and Serenianus would be isolated from their colleagues, and our image of the relations among the bishops, local clergymen and hermits would be much less rich.

Abraham is a central actor in the subnetworks for 600-609 and 610-619, but he is not a core member of the subnetwork for 620-630, which is logical, since he died already in 621. By contrast, Pesynthius, who first appears in the periphery of the subnetwork for 610-619, becomes one of the central actors in 620-630. He is followed at a distance by Pisrael, who owes his relatively high centrality to a journey to Alexandria and Antinoopolis, and his attendance of a council together with Pesynthius, Anthony and Psan. Epiphanius is already prominent in 610-619, and Psan becomes almost as important as him in 620-630.

In this chapter I carried out three checks, to correct the impact of documents featuring a large number of nodes (on the Theban network and the network for 620-630), or to test what

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<sup>695</sup> Toout, “the mountain”, the dwelling of Apa Terane, the Monastery of “my father Pesente” and the Church of the Acacias: *O.Frangé* 774; Timamen: *O.Frangé* 786; Tses: *O.Frangé* 779.

would happen if two individuals called Joseph in the network for 600-609 were equated. The networks did not change much on the network level, but the order of the central actors varied.

The topographical analysis reveals that most localities associated with Abraham were located in his own diocese, and that he was also in contact with clergymen and civil officials in the city of Hermonthis. In addition, he was also requested to intervene in a matter involving a man from Tabennese (in the Hermonthite diocese), and inquired after a deacon from Esna. In short, Abraham's ties extended to three dioceses (Hermonthis, Ape, Esna), but mainly to his own, and also included important connections with the city of Hermonthis.

Pesynthius' ties were even more varied, for his correspondents were associated with eighth different dioceses. He often appears in relation to the *Topos* of Epiphanius, but was also in contact with civil officials in the city of Koptos, the clergymen of Qus, a lawyer at Hermonthis, and correspondents in the area of Ape (Pesynthius is not always explicitly mentioned by name and title, but in view of the contents of the letters, his involvement is highly probable). His network extended far beyond the boundaries of his diocese, and was not limited to villages or monastic communities in the countryside, but also included all four cities in the Hermonthite and Koptite district.

In short, the topographical analysis reveals that most localities attested in relation to the Theodosian bishops were located in the countryside, as Wipszycka already observed, but also that Abraham and Pesynthius did have significant ties with urban centers.

Datasets 1-2 are considerably enriched by the Coptic letters from the *Topos* of St Mark (*O.Saint-Marc*) and from the hermitages at TT 29 (*O.Frangé*) and TT 1152 (*O.MMA1152. inv.*), which were recently published. Without these texts, Zael, the priest Moses, Psate, David, Ezekiel and Djor would appear to be no more than marginal figures, and the reconstructed Theban network would have been much less dense and informative.

Now that Abraham's position in the Theban network has been analyzed, it is time to take a close look at his personal social network.