Introduction

> The feudal model is also by necessity for Egypt an "Oxyrhynchus model." This is because the mass of evidence for large Egyptian estates and great landowners in the sixth century has Oxyrhynchus as its provenance; and much of that concerns one family, the high-ranking family of the Apiones . . . Nevertheless, for the past fifteen years or so, despite obstacles, there has been a turning toward the evidence of Aphrodito, giving it equal time with that of Oxyrhynchus. Much there runs counter to the Oxyrhynchus model. In its place, or, better, side-by-side with it, the Aphrodito papyri present a picture of a vibrant agricultural community of small landholders, farmers, craftsmen, priests, monks and shepherds . . . where big landowners may be present but do not rule.
>
> James Keenan, 1993[1]

Byzantine Egypt produced social networks of differing shape and size. This book explores two of those networks. The first network in this study is nome-wide, that of the Oxyrhynchite nome's elite office-holders and families. This study examines the process by which one of those elite families grew its estates and influence to considerable proportions. The evidence available to us reveals this network's tendency towards hierarchy and social centralization. The second network in this study is that of a single village. This study looks at Aphrodito's self-styled "small landowners," farmers, shepherds, craftsmen and others. It then measures the levels of interconnectivity among and social distance between these groups. This picture shows a remarkable degree of social parity and decentralization.

These two pictures are not mutually exclusive. A recent monograph on Aphrodito has described a village fast on its way to becoming more like Oxyrhynchos.[2] Constantin Zuckerman's model is one in which "the Aphroditan evidence . . . would seem to join the Oxyrhynchite in support-ing, not contradicting, the traditional 'large estate model' of Byzantine

[1] Keenan 1993, 142–3.   [2] Zuckerman 2004a.

1

Egypt."[3] In this vision, Aphrodito's fiscal independence ultimately collapsed in the face of external aristocratic pressure similar to that presumably felt by individual villages throughout the Oxyrhynchite nome far to the north. All this may be true. Oxyrhynchos and Aphrodito may be credible components in a grand unified theory of Byzantine Egypt, but we will never prove it by trying to dissolve the differences between the two models. The nature of the evidence – nome-wide in one case, village-level in another – does not permit us to propose a seamless whole with any certainty. Instead, we are left with something less satisfying in simplicity but more rich in texture. Byzantine Egypt is in this study a world of both centralizing elites and decentralizing villages, a world in which two types of social structure exist, not side by side but at different levels of scale.

The models I build rest on dual foundations. The first foundation, employed in Chapters 1 and 3, is traditional prosopography, not yet fully employed on the thousands of available papyri. The second foundation is social network analysis, a theoretical tool with great potential for analysis of the ancient world. In Chapters 2 and 4, I first argue that social network analysis, a method imported to the ancient world from anthropology and sociology, provides rigorous quantitative tools for verifying or challenging the results of traditional prosopography. I further argue that the results we derive from social network analysis heighten the impression of profound differences between the social structures of the Oxyrhynchite, a nome, on the one hand, and Aphrodito, a village, on the other.

These results, at first glance unsurprising, have profound implications for the study of Byzantine Egypt. Evidence of regional variations in Egyptian society traditionally elicits one of two answers. Scholars can either abandon the search for an overall model of Byzantine Egypt, and by extension abandon hope that Byzantine Egypt can guide generalizations about the rest of the eastern Mediterranean, or they can create a homogenizing model that somehow subsumes apparent regional variations. A regionalist response to these results would accept them as part of a growing body of evidence for social and economic differentiation from region to region within Egypt. A homogenizing response would suggest that any apparent differences represent stages of development or lacunose evidence, in which the evidence from one region simply does not (yet) manifest the characteristics plainly apparent elsewhere.

---

[3] Keenan 2005b, 296. Sarris 2006 does not address Zuckerman's model, but seems to share a similar vision, in which Aphrodito's peasant autonomy is exaggerated and its surrounding great estates more pervasive than often thought.

This book's final purpose is to propose a third way, an alternative to both the regionalist and homogenizing approaches. As just suggested, evidence from a nome and evidence from a village represent the proverbial apple and orange. They neither compete for Egypt as a whole nor are complete within spheres of their own. They represent two different levels of scale. Social network analysis provides quantitative tools to explain these differences of scale, and also shows how these differences can co-exist within the same larger model.

The two case studies presented in this work, sixth-century Oxyrhynchos and Aphrodito, suggest that where the Oxyrhynchite evidence indicates the presence of a highly centralized aristocratic elite whose economic power grew in relative isolation from social ties, the Aphrodito evidence indicates something quite different. There, the evidence reveals a village society built on strong multiplex ties, a society in which economic action took place on social lines, a decentralized society in which literacy and mobility could give social prominence to men and women of relatively low social standing. Specifically, this study provides the first full-length treatment of sixth-century Egypt with an eye to its social networks and social connectivity. Abundant surviving evidence from Oxyrhynchos and Aphrodito permits a much closer analysis of social relations at and across all levels of society than is possible for other parts of the Roman world. Network analysis gives us the tools to measure the extent of a society's centralization, to identify topographical patterns in the formation of its large estates, and to locate the most central – and yet frequently unstudied – figures in its social networks. The result is a cross-disciplinary approach, with anthropological and sociological theory being employed in tandem with quantitative approaches to the papyrological evidence.[4]

In addition to these introductory remarks, a guide to network analysis, and a concluding essay, this study includes four main chapters, two each for Oxyrhynchos and Aphrodito. In both cases, the first chapter is largely synthetic, the second chapter largely based on network analysis. The synthetic chapters aim to provide a prosopographical and social survey of Oxyrhynchos and Aphrodito. In each case I pay particular attention to previously understudied connections between various actors in each region, and demonstrate how those connections reflect certain structural features of their social networks. The network analysis chapters will be more

---

[4] Awareness of the necessity of such a cross-disciplinarity is growing among papyrologists and those who use the evidence of the papyri. For an entertaining discussion of the relationship between history and quantitative sociology from a decidedly different perspective, see Franzosi 1996.

quantitative, and will differ from each other somewhat in approach. The Oxyrhynchos chapter will focus on the Apionic estates, using various estimates from Apionic data to create a hypothetical population pyramid of the Oxyrhynchite nome. That second chapter will use computer analysis solely in respect to the connections between settlements under Apionic jurisdiction. The second Aphrodito chapter, however, will rely almost entirely on computer analysis to determine the Aphrodito network's rates of centralization, its most central figures, and other structural features. (Technical terms used in these chapters are defined below, pages 28–39.)

A set of positive conclusions emerges from each chapter, outlined here in brief. In Chapter 1, I focus on a prosopographical synthesis of the Oxyrhynchite elite. The leading figures in Oxyrhynchite society often appear in disparate contexts, with no apparent connections to other members of the elite. Yet this may be only the result of the nature of the papyrological evidence. The number of people at the top of the nome's social pyramid was certainly rather small, and each of these people ought to have been connected to one another in some way. The synthesis presented in this first chapter attempts to connect most of the important figures in the Oxyrhynchite papyrological record. The result is a picture of the Oxyrhynchite elite in our period as a highly centralized group, tying their far-flung holdings together through vertical, hierarchical administrative structures centered around the city of Oxyrhynchos itself.

Chapter 2 presents a more quantitative approach, focused on the rise of the house of Apion. The first part of this approach is demographic: I attempt a census of the portions of the Oxyrhynchite nome under Apionic fiscal responsibility, and through those figures, derive an abstract model of connectivity throughout the nome's social hierarchy. The second part of this approach is network analytical. Network analysis of the Apionic topographical material contributes to our understanding of large estate formation, and the distribution pattern of agrarian holdings in Egypt more generally. Using a computer technique I have developed elsewhere, I use network analysis to map the connections between the Apionic toponyms and other sites in the Oxyrhynchite nome.[5] This technique helps to determine whether Apionic jurisdiction spread organically from an original rural site, or grew in a more haphazard fashion, directed by landowners and bureaucrats absent in the nome capital. The conclusion I propose therein, that Apionic land acquisition took place at a distance, and that

---

[5] See Ruffini 2007, with additional analyses at Chapter 2 below, pp. 96, 127–44.

the Apionic estates across the Oxyrhynchite nome were physically isolated from one another, suggests that the growth of the Oxyrhynchite great estates did not proceed through rurally based social ties.

Chapter 3 is a prosopographical survey of Aphrodito comparable to the survey of Oxyrhynchos in Chapter 1, but with somewhat different results. Because of the apparent archival origin of the Aphrodito papyri, it is no surprise that many of the figures in those papyri were socially connected to each other. It is the nature of that connectivity which interests us. I argue that the evidence from Aphrodito stands in contrast to that of Oxyrhynchos. Aphrodito's social networks were founded on multiplex ties based on relationships between family members, neighbors, guild members, and others. Social ties between neighbors are to be expected, although the consistency with which these ties appear in Aphrodito despite differences in social status is intriguing and can help explain a number of otherwise opaque documents. The communal organizations found in Aphrodito have already been discussed in recent academic literature.[6] My review of that material stresses the degree to which this sort of social connectivity challenges traditional notions of late antique status consciousness and hierarchy. It further provides a direct contrast between landowners in Oxyrhynchos and Aphrodito by showing the extent to which land acquisition in the latter case proceeded directly along social lines, unlike the Apionic expansion surveyed in Chapter 2.

Chapter 4 is based strictly on network analysis of the prosopography of the Aphrodito papyri published by V. A. Girgis in 1938. Analysis of this network reveals the importance of otherwise overlooked figures. Hundreds of sixth-century texts survive from Aphrodito, attesting to the existence of social connections between several thousand residents of Aphrodito and its environs. Because central portions of the papyrological record from Aphrodito belonged to Dioskoros, the well-known notary/poet, most scholarly attention has centered on him and his family. But analysis of this network with a computer program called UCINET has produced interesting results. We find surprising figures emerging from various connectivity tests: shepherds such as Victor son of Psaios, and relative unknowns such as Ieremias the priest. Much of Chapter 4 focuses on attempts to explain the structural centrality of these figures, concluding that landowning, literacy and corporate identities played a considerable role in increasing social connectivity, and that even figures of lower social status could benefit from

---

[6] See Chapter 3 below, *passim*.

these facts. One crucial discovery is that the network analyses presented in this chapter describe network characteristics that are constant over time. Dramatic transformations in Aphrodito's fiscal status, suggested by at least one modern scholar, appear to have had little effect on Aphrodito's social networks.

In sum, both prosopographical and quantitative analyses of the papyrological record reveal considerable variance in the shape of social networks from one level of scale in Roman Egypt to the next. The evidence from Aphrodito, a mid-sized village in Upper Egypt with one or two lesser satellite settlements, maps a well-integrated social network bound together by myriad lease agreements between small landholders, legal contracts between the community and local guilds, and so forth. The evidence from Oxyrhynchos, a large city dominating a nome of several hundred settlements across a good portion of Middle Egypt, maps a different sort of social network entirely. Oxyrhynchos, a region of large estates, produced an aristocratic network of large central hubs, in the form of wealthy landholders and powerful church institutions, linking a more diffuse and scattered array of less prominent clusters.

With these arguments in mind, one final methodological issue will receive extensive treatment throughout this book and its conclusion: whether the archival nature of the evidence from Oxyrhynchos and Aphrodito distorts our conclusions. Might the differences between the finds of Oxyrhynchos and Aphrodito themselves account for the differences I find throughout these chapters? Are my conclusions inevitable, given a nome capital on the one hand, and a lesser village on the other? Would a village archive from (say) the village of Spania in the Oxyrhynchite make the social structures of that nome look more like those of Aphrodito? Would the archive of the former *eparch* Ioulianos, who Constantin Zuckerman has recently argued must have dominated the landholding regime in Aphrodito, make the village look more like the world of the Apions of Oxyrhynchos?

At various points throughout the following chapters, I propose counterfactuals to refute these possibilities. A summary of these points is in order here. The Oxyrhynchite nome as a whole will not appear any less centralized, no matter how much evidence we might one day find from its outlying villages. The ties binding those villages to the city center are exclusive, and are manifest in our evidence precisely because comparable ties from village to village or within the villages themselves were demonstrably absent. Nor will Aphrodito's social networks one day start to look like the vertical hierarchies of the Oxyrhynchite with the discovery of a hypothetical stash of

papyri from the large landowners of Antaiopolis, Aphrodito's nome capital. The differences of scale I propose between Oxyrhynchos and Aphrodito are real, but more importantly, they are not mutually contradictory; they can co-exist within the same model, without altering or destroying each other.

IMPLICATIONS FOR THE STUDY OF THE LATER ROMAN EMPIRE

I suggested above that a regionalizing approach to Byzantine Egypt, in which we expect the Oxyrhynchite nome to have a different socio-economic structure from the Fayum or from nomes in the Thebaid, is an approach that undermines Egypt's implications for the larger late Roman world. This is a logical reality more often ignored than addressed, still less supported, by the papyrologists implicitly responsible for it. Certainly, the image of late antiquity as a proto-feudal world of *coloni* bound to their land weakens when some of the best evidence for the phenomenon in Egypt is shown to be atypical even within Egypt. Conversely, the image of Aphrodito as a village of assertive and self-confident middle-class landowners has few implications for a larger stage if Aphrodito is thought to be atypical in a world of ravenous *oikoi* ready to consume the village at the first opportunity. But the homogenizing alternative is typically too pessimistic. Few people would now subscribe to all of the traits Sir Harold Idris Bell assigned to the Byzantine servile state, but recent arguments by Peter Sarris and Constantin Zuckerman amount to much the same thing: if Aphrodito was not yet like Oxyrhynchos, it would be soon enough. The implications for the late Roman world under this alternative are clear: look for independent small-holders around the Mediterranean to lose their lands to the creeping growth of the large estates.

My central claim – that Oxyrhynchos and Aphrodito represent complementary bodies of evidence at different levels of scale – repudiates this pessimistic homogenizing alternative at the same time that it repairs the Egyptian evidence for use on a larger Mediterranean stage. I suggest here that differing forms of social networks resulting from settlements of different scale can be seen throughout the late antique Mediterranean. The papyrological archives at Petra show a city with close ties to the rural world, much like those of Oxyrhynchos. The Petra papyri map a world of wealthy urban landowners. Theodoros, a central figure in the papyri, owned land on his maternal side in the village of Serila, and property on his paternal side in other cities nearby. But we know nothing about Serila and the other

settlements that archaeological remains show to have been nearby. At a different level of scale, Nessana, a Palestinian village of perhaps 1,000 people near a local military camp, provides an intriguing contrast. The Nessana papyri show patterns of landholding and acquisition quite similar to those in Aphrodito. Land divisions and cessions in both places show signs of strong social ties between the relevant parties, who are often family members and colleagues in professional capacities as well. Recent work on the inscriptions of Aphrodisias has detailed the active and prosperous lives of both civic officials and private citizens.[7] Yet one searches the inscriptions in vain for any indication of nearby villages or other rural settlements, still less for a network of settlements tied to the city in the way that Oxyrhynchite settlements were tied to Oxyrhynchos. This sort of silence is suggestive; if Petra and Oxyrhynchos both have their villages, can these models instruct our search for other evidence in Aphrodisias and elsewhere?

Readers of a specialized study of two sites in Byzantine Egypt may justifiably query that study's implications for the larger world of the ancient Mediterranean. My final point here, one I will return to at length in this book's conclusion, is that we should approach Petra, Nessana, Aphrodisias, and other sites in the ancient Mediterranean in much the same way we should approach Oxyrhynchos and Aphrodito. The presence of socio-economic features at Petra and their absence at Aphrodisias, to give a hypothetical example, cannot be used to support universal arguments about socio-economic trends in late antiquity. Further, differences in evidence types and settlement scale prohibit claims of regional differentiation between Palestine on the one hand and Asia Minor on the other. If the third way proposed by this book is correct, that Aphrodito could survive in an Oxyrhynchite environment, a variety of new approaches to other sites around the Mediterranean are possible. It would be wild from this argument to insist that villages like Aphrodito are to be found in the territory of cities like Aphrodisias, but the possibility does exist, and network analysis can provide the quantitative tools to identify such places once we think to look for them.

NETWORK ANALYSIS: A TUTORIAL FOR ANCIENT HISTORIANS

Readers without the need for a historiographical survey of network analysis or a guide to learning how to perform this sort of analysis can skip this

---

[7] See Charlotte Roueché's second edition of *Aphrodisias in Late Antiquity*, online at http://insaph. kcl.ac.uk/ala2004/index.html.

tutorial and head directly to Oxyrhynchos and Aphrodito. Chapters 1 and 3 do not rely on the material that follows, but Chapters 2 and 4 will be difficult to follow without familiarity with social network analysis. Three main strands of academic literature have contributed to the current state of the field: mathematical work on graph theory, anthropological work on decision-making and exchange theory, and sociological work on small world theory.[8] The mathematicians led the way. In the late 1950s, one of the twentieth century's great mathematicians, Paul Erdös, made significant breakthroughs in graph theory, the field of mathematics concerned with links and connectivity.[9] His chief contribution to the field was the realization that it was necessary to bridge only a relatively small percentage of a network's potential links to connect every member in a network. More surprisingly, he discovered that the larger the network, the smaller the necessary percentage actually became. In other words, the larger we estimate the population of an Egyptian village to have been, the lower the social density of that village need have been to connect all of its residents to one another.[10]

The published work of the anthropologists started much earlier than that of the sociologists, but in relative isolation from the parallel currents in mathematics. A number of European anthropologists came first: Barnes, Bott, Boissevain, Mitchell, and Epstein all published articles working out some of the basic ideas of social network analysis in the 1950s and 1960s, without really being aware of the new directions towards which their work pointed.[11] In 1973, Jeremy Boissevain and J. Clyde Mitchell co-edited *Network Analysis: Studies in Human Interaction*. The product of proceedings of a symposium on the subject, the articles therein can still serve as a useful introduction to the field. The symposium participants were aware of the youth of their field, and as a result paid close attention to proposing and tightening formal conceptual definitions. This work also remains useful for its historiographical survey of a number of network theory's more intriguing concepts.

---

[8] General handbooks on social network analysis: Newman *et al*. 2006, de Nooy *et al*. 2005, Degenne and Forsé 1999, Wasserman and Faust 1994, Scott 1991. For a review of Wasserman and Faust, see Erickson 1997. For an earlier generation's introduction to the literature and concepts of network analysis, including reachability, degree and density, see Mitchell 1969.

[9] For the brief summary that follows, see Buchanan 2002, 36–7.

[10] On social density, see below, pp. 33–4.

[11] For the evolution of social network analysis, see Boissevain's preface to Boissevain and Mitchell 1973, and the first four chapters in the same work, exploring various aspects of the field's theory and methodology. Exchange theory played an important part in contributing to network theory's attention to individual autonomy: Boissevain and Mitchell 1973, xii.

The first full-length treatment of social network analysis by a single author came the following year, with Jeremy Boissevain's 1974 *Friends of Friends: Networks, Manipulators and Coalitions*. The book is a landmark in the field, in which Boissevain opposed the standard structural-functionalist approaches to anthropology and sociology. He argued that people ask what they can get away with and what is good for them as much as they ask typical structuralist questions like what their group wants them to do. Accordingly, actors resolve conflicts based not on analysis of right and wrong, but on analysis of contact strength. According to this argument, structuralism understands the patterns, but misses how those patterns change, by not looking at the level "at which real people interact."[12]

Boissevain as an anthropologist thus saw social network analysis in a different light than would Franzosi and Mohr, a generation later.[13] Writing with an eye towards trends in historical scholarship, they placed social network analysis in the context of the victory of structuralism in modern historiography. Boissevain looked from the opposite direction and saw social network analysis as the reintroduction of the individual into structuralist analysis. These contrasting views highlight the extent to which social network analysis serves as a mediating methodology, bridging the gaps between history, sociology, and anthropology. This work on Byzantine Egypt serves a similar goal, providing a quantitative bridge between recent microhistories that focus on individual agency on the one hand, and the vast amounts of evidence detailing aspects of Egyptian society's larger social structures on the other.

By the mid-1970s, sociologists had entered the social network arena in force. Stanley Milgram, himself a social psychologist, highly influential in the late 1960s, conducted a unique experiment into what is now called "small world" theory.[14] Milgram, equally well known for his bizarre experiments in pain infliction, devised a series of letter-sending experiments, in which he asked the participants to forward a letter to anyone they thought would be socially closer to the letter's final intended recipient. These experiments demonstrated the surprising connectivity of the American social landscape, and ultimately gave rise to the popular cliché that "six degrees of separation" are all that stand between any two people.

In 1973, Mark Granovetter thought he had found a way to explain Milgram's findings.[15] The essence of Granovetter's proposal was that "strong ties" – those between close friends and family members – are not the most

---

[12] Boissevain 1974, 4–5.   [13] See Franzosi 1996 and Franzosi and Mohr 1997.   [14] Milgram 1967.
[15] See both Granovetter 1973 and Granovetter 1983.