

Antioch the Great

Population and economy of second-century Antioch

Master thesis
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Introduction

It is one of the many paradoxes common to Roman history, that for one of the largest cities of the Empire, the gaps in our knowledge appear even greater. It is certainly not for a lack of literary evidence, as a wide variety of writers tell us parts of its history. Even more so, one fourth century writer, Libanius, gives in his letters and orations a vivid description of the city of his time, granting a wealth of information on life in the city that remains lacking for so many other places. Of course, his praise is subjective and overly optimistic, but he draws a beautiful picture of an industrious city that never sleeps, offering all that one could want or imagine; entertainment, education, baths, and goods from all over the Empire, but most of all, people everywhere:

It is so large and the whole of it covers so much territory that in each section it is equally thickly settled, whether you count over the regions outside the gates, or those just inside them, or the ones next to these, or whether you go to the center of the city and pass into the side streets and carry the search around into the farthest quarters, all of them are teeming with the same dense population; and the people who are going about in the midst of the city have all left the same number at home.¹

This was the city of Antioch, the capital of Roman Syria, the queen of the East. In its time, it witnessed many of the great events that shaped the Roman Empire, and became one of its grandest cities. It is however exactly on this point where our knowledge starts to meet its limits. The city has been assigned population figures from broad statements like “plusieurs centaines de milliers d’habitants”² to more specific figures, ranging from 150.000 – followed by the statement “toutes les autres estimations sont excessives et sans fondement”³ – to an equally confident “three hundred thousand citizens and freedmen, and this does not include slaves and children.”⁴ Very often, these figures are not accompanied by a date, or are at best supposed to describe the city ‘at its greatest.’

This paper aims to answer three interrelated questions regarding the population of Antioch. Firstly, what was the size of the population? Secondly, could this population have been fed by its territory? And thirdly, what possible explanations can be given for the size of the population? During the chosen period, the second century up to the plague of 165 A.D., the Empire saw its greatest expansion to the east, with the incorporation of parts of Mesopotamia and Arabia. Additionally, the repression of the Bar Kokhba revolt and the destruction of Jerusalem may have shifted political weight towards the north, with the merge of Syria and Judaea into the province of Syria Palaestina, granting Antioch additional importance. It may very well be possible that the city grew to a larger extent in later times, but it seems likely that the outbreak in 165 A.D.

¹ Lib. *Or.* 11.170, trans. G. Downey (1959).

² Georges Tchalenko, *Villages antiques de la Syrie du Nord : le massif du Bélus à l’époque romaine*, vol. 1 (Paris 1953) 423.

³ Jean Durliat, *De la ville antique à la ville byzantine : le problème des subsistances* (Rome 1990) 354, note 97.

⁴ Christine Kondoleon, ed., *Antioch : the lost ancient city* (Worcester (Mass.) 2000) 10.

marked a clear shift in urban population trends throughout the Empire, and as such, a good limit for the studied period.

To answer the questions, chapter one will study the archaeological remains of the city, chapter two will focus on the territory of Antioch, and chapter three will look at the applicability of various models explaining urban concentration. First however, the following section will give a brief overview of the history of Antioch.

Historical background

The history of Antioch was studied thoroughly by many a scholar, not the least of which was the nineteenth century Karl Otfried Müller, whose *Antiquitates Antiochenae* were published in 1839. A more recent major work however has been *A history of Antioch in Syria from Seleucus to the Arab conquest*, written by Glanville Downey in 1961, and which may well have taken the place of Müllers study as ‘the principal treatise on the subject for many years.’⁵ While this comes very close to simply accepting Downey’s words as gospel, he did provide a very comprehensive monograph on Antioch’s history. Even so, while Downey did pay careful attention to the findings of the archaeological expeditions from the 1930s – more on which in the following chapter – he found few opportunities to use these. Or perhaps in the more pessimistic view of Bowersock, the book could have been written before the expeditions had ever taken place, although that critique is aimed more at the limited results of the excavations.⁶ Thus, staying close to the literary sources, a history was created that tells us much about kings, emperors, armies and martyrs, but little of the people and economy of the city. Even so, to gain an understanding of the latter, which this paper will hopefully provide to some extent, the context of the former is invaluable. I will try to summarize some of the events that could have had a bearing on the matters discussed in the following chapters.

First and foremost, Antioch was founded in 300 B.C. by Seleucus I. Perhaps he did so to replace Antigoneia, the capital of the defeated Antigonus, which had been founded some fifteen years earlier. It should be noted that the main source on these events is Malalas, writing eight centuries after the events, but that much of it is also reflected in earlier sources, such as the following by Strabo, predating him by five centuries:⁷

Antioch also is a Tetrapolis, consisting (as the name implies) of four portions, each of which has its own, and all of them a common wall.

[Seleucus] Nicator founded the first of these portions, transferring thither settlers from Antigonia, which a short time before Antigonus, son of Philip, had built near it. The second

⁵ Glanville Downey, *A history of Antioch in Syria from Seleucus to the Arab conquest* (Princeton 1961) 4.

⁶ Glen Warren Bowersock, *Studies on the Eastern Roman Empire: Social, Economic and Administrative History, Religion, Historiography* (1994) 411–427.

⁷ Downey, *A history of Antioch in Syria from Seleucus to the Arab conquest*, 61–63, 67, 77–78, 81–82.

was built by the general body of settlers; the third by Seleucus, the son of Callinicus; the fourth by Antiochus, the son of Epiphanes.⁸

Whatever Seleucus' true motivations, it seems clear that Antigoneia was destroyed or at least depopulated to a certain level, as the inhabitants of Antigoneia were transplanted to Antioch and Seleucia Pieria, another city founded by Seleucus I. Malalas mentions a figure of 5,300 initial inhabitants, combining both people from Antigoneia, as well as Macedonian settlers. Both in his monograph, as well as in another article that focuses on the size of the city, Downey discusses the possible interpretation that this only encompassed adult male citizens. This could make the initial population four or five times as large, but there is no way of verifying this.⁹

In the following centuries the Seleucids faced rebellions, secessions and wars throughout their territory, with Antioch of strategic importance for those campaigns focused on Asia Minor. While regularly the residence of the Seleucid kings, the city was not a capital, with royal presence mostly focused wherever the wars were directed.¹⁰ One of the major events in the third century that saw Antioch itself as its backdrop, was the brief occupation of the city by troops of Ptolemy III during a Seleucid succession crisis, where Ptolemy supported the pretender. Seleucus II managed to recapture the city in 244 B.C. (and much of the rest of Syria, which had also been occupied by Ptolemy), while Seleucia Pieria, on the coast, remained in Ptolemean hands for 25 more years.¹¹ Additionally, several years later Antioch rebelled in the name of Antiochus Hierax, which forced Seleucus II to abandon his campaign to recapture Parthia, which had broken away from the Seleucid Empire earlier.¹²

In the second century B.C., after the defeat against the Romans and the loss of Asia Minor following the treaty of Apamea, Antiochus III appears to have settled veterans and Greek exiles in the newly constructed and walled quarter on the island in the Orontes river. In a similar fashion, Antiochus IV had a quarter called Epiphaneia built in the mountains.¹³ In the century that followed, Antioch witnessed increased troubles, with the decline of the Seleucid Empire. Succession issues and unpopularity caused a revolt in 145 B.C. that ended in the capture, burning and plundering of the city by a Jewish mercenary force. It may indeed be an exaggeration that 100,000 out of a 120,000 inhabitants (or able bodied men?) of Antioch were truly killed,¹⁴ but this does provide the only other figure for the population of Seleucid Antioch. Additional troubles were

⁸ Strabo 16.2.4, trans. George Bell (1903).

⁹ Downey, *A history of Antioch in Syria from Seleucus to the Arab conquest*, 81–82; Glanville Downey, 'The Size of the Population of Antioch', *Transactions and Proceedings of the American Philological Association* 89 (January 1, 1958) 84–91: 84–85.

¹⁰ L. Martinez-Sève, 'Peuple d'Antioche et dynastie seleucide', *Antioche de Syrie. Histoire, images et traces de la ville antique*, Topoi. Supplément 5 (2004) 21–41: 22–32.

¹¹ Downey, *A history of Antioch in Syria from Seleucus to the Arab conquest*, 89–90.

¹² *Ibidem*, 91.

¹³ *Ibidem*, 92–94.

¹⁴ 1 Maccabees 11.45-47.

one or two earthquakes, the complete defeat of an army recruited in the Antiochene during a campaign to the east, and more sieges and captures of the city during later succession crises.¹⁵

From the early first century B.C., Syria, and with it the city of Antioch, changed hands several times. First, either by invitation or by conquest, Tigranes of Armenia ruled for fourteen years, during which yet another heavy earthquake took place. Hostilities with Rome over Mithridates, who had taken refuge in Armenia, forced Tigranes to withdraw from Syria. The following few years again saw several Seleucid rulers, now with Roman support, one of which, Philip II as a Roman client king. Under his rule, Q. Marcius Rex, the Cilician proconsul, funded the building of a palace and circus in Antioch while visiting.¹⁶

From 64 B.C., the city became more intimately linked with the history of Rome, when Pompey moved south after his successes in the Mithridatic Wars. In Antioch, he deposed the last Seleucid ruler, and made Antioch the capital of the now Roman province of Syria. Even so, Roman control did not initially mean an end to the troubles. Crassus' failed campaign against the Parthians resulted in a Parthian counter-invasion, up to a failed siege of Antioch, and once again the destruction of Antigoneia (which had apparently been resettled or never completely destroyed in the three preceding centuries). After Pompey's defeat against Caesar, the city sided with Caesar. As a result, Caesar did much to enhance Roman prestige in the city through his building programs, among which at least an aqueduct and public bath, a basilica and an amphitheatre. But even so, in the following years the city changed hands several times again, including once again a Parthian invasion and a recapture by Antony. Clearly, the city did have much to gain from the Pax Augusta.¹⁷

For this period, the only indication concerning the size of the city comes from Strabo, who writes "Antioch is the metropolis of Syria. A palace was constructed there for the princes of the country. It is not much inferior in riches and magnitude to Seleuceia on the Tigris and Alexandria in Egypt."¹⁸

Not only reduced political turmoil, but also grand acts of imperial euergetism benefited the city from Augustus onwards. To name but a few of the earlier examples, during Augustus' reign Agrippa had an additional quarter added to the city, Herod started improvements to the main road, and Tiberius either repaired, improved, or expanded the city walls, besides building protective measures against landslides from the mountains during periods of heavy rain. Virtually under every emperor similar works, such as the building of baths or improvements to the waterworks were undertaken.¹⁹ During these first two centuries of the Roman Empire, the city did still see some additional troubles that might have negatively impacted the population. A circus riot took place in 40 A.D., and perhaps related to it an anti-jewish disorder caused

¹⁵ Downey, *A history of Antioch in Syria from Seleucus to the Arab conquest*, 123–126.

¹⁶ *Ibidem*, 136–142.

¹⁷ *Ibidem*, 142–162.

¹⁸ Strabo, 16.2.4.

¹⁹ Downey, *A history of Antioch in Syria from Seleucus to the Arab conquest*, 163–235.

damage to the city. A series of bad harvests in the following decade also caused a famine, And more anti-Jewish riots took place in relation to the uprising in Judaea. Two or three major earthquakes took place (it depends a bit on a vague account by Malalas), one or two during Gaius' and (or only during) Claudius' reigns, and one in the winter of 115 A.D. During this last earthquake emperor Trajan – as well as Hadrian, at that time governor of Syria – was in the city to rest and prepare for a following phase of his campaign against the Parthians, after hostilities had broken out again in 113.²⁰ The destructive force of the latter event may be well illustrated by the destruction caused elsewhere, including a tsunami that ravaged Caesarea Maritima, but clearly the earthquake under Claudius also caused widespread damage over a larger region.²¹ Even so, the following fifty years, for which this paper seeks to estimate the population of the city, seem to have been free of such events, and the two large earthquakes that did occur were located further east and south, and did not affect Antioch.²²

Under Lucius Verus, the co-emperor of Marcus Aurelius, another campaign against the Parthians was fought. One of the major results was the disease brought back by Roman troops after they had captured Seleucia on the Tigris. As Downey writes, “the city was the first large center of population which the infected army reached, and the loss of life among the civil population may well have been considerable.”²³

From that point on, the city increasingly saw itself as the stage for political troubles. While outside the scope of this paper, some events merit attention. Within 10 years Avidius Cassius, the governor of Syria attempted to proclaim himself emperor, and Antioch supported this rebellion, resulting in penalties to the city upon the repression of the usurper. Similar situations would crop up in the years to come. An additional threat came from the east, where the Sassanid Empire was on the rise, and in fact resulted in the brief capture of Antioch in 256 and 260 A.D., and a brief period under the control of Palmyra.²⁴ Concerning disasters, yet another plague went through the empire in 251 and famines occurred again at the end of the fourth century. The quiet period after the 115 earthquake was disrupted violently by a series of seismic events roughly every twenty years in the third century. The fourth and fifth centuries each saw only two, but heavy quakes. One of the fifth century quakes, described by Malalas, may well have been the heaviest that ever hit the city.²⁵ The sixth century saw yet another series of catastrophes, starting in the last years of the reign of Justin and continuing under Justinian. It seems that a fire, two earthquakes, a Persian sack and systematic burning of the city and its

²⁰ Ibidem, 194–197, 213–215.

²¹ E. G. Reinhardt et al., ‘The tsunami of 13 December AD 115 and the destruction of Herod the Great’s harbor at Caesarea Maritima, Israel’, *Geology* 34 (2006) 1061–1064; M. R. Sbeinati, R. Darawcheh, and M. Mouty, ‘The historical earthquakes of Syria: an analysis of large and moderate earthquakes from 1365 BC to 1900 AD’, *Annals of Geophysics* (2005): 383–384.

²² Downey, *A history of Antioch in Syria from Seleucus to the Arab conquest*, 215–229; Sbeinati, Darawcheh, and Mouty, ‘The historical earthquakes of Syria: an analysis of large and moderate earthquakes from 1365 BC to 1900 AD’, 384.

²³ Downey, *A history of Antioch in Syria from Seleucus to the Arab conquest*, 227.

²⁴ Ibidem, 227–255.

²⁵ Ibidem, 419–421, 476–478.

suburbs, and a subsequent plague, were enough reason for Justinian – upon recapturing the city – to reorganize the city’s defences on a reduced scale.²⁶

When it comes to population figures for Antioch as it was in the second century, the only source that directly mentions it is actually from two centuries later. Chrysostom writes about the city during the life of Ignatius of Antioch: “[...] so great a city, and a population [δῆμος] extending to two hundred thousand”.²⁷ Once again, there is the question if this covered the entire population, or only free adults. And does this truly reflect Antioch in the second century, or rather that of Chrysostom’s own period, for which his contemporary Libanius gives a figure of “150,000 anthrôpoi”?²⁸ Clearly, the time between the writing of these sources and the studied period had seen enough events that might have seriously impacted the size or growth of its population. On the other hand, the city may also have flourished under the attention it received by Diocletian, and Theodosius II expanded the walls on the southwestern side of the city in the first half of the fifth century.²⁹ The statements on population levels appear to be inconclusive. It is therefore both justified and necessary that the following chapters will follow a different approach to determine possible population levels of second century Antioch.

²⁶ Ibidem, 519–557.

²⁷ Chrysostom, *S. Ignat.* 4, trans. W.R.W. Stephens (1872).

²⁸ Libanius, Epist. 1137, as cited in Downey, ‘The Size of the Population of Antioch’, 87.

²⁹ Downey, *A history of Antioch in Syria from Seleucus to the Arab conquest*, 452.

Chapter 1: City and suburbs

Introduction

Situated at a river prone to flooding, in a region known for earthquakes, and covered by a modern city that is rapidly expanding, it hardly seems surprising that the archaeological remains of Antioch have suffered for it. It is however, hardly as 'lost' as the title of Kondoleon's *Antioch: the lost ancient city* would suggest.³⁰ The ancient city of Antioch was to be found in the same location as modern day Antakya, in the Turkish province of Hatay. The location of its colonnaded main street, running from the south-west to the northeast, is still recognizable in the layout of modern day Antakya. While this hardly remains visible, in some cases parts of the grid of equally sized city blocks that stood perpendicular on the main street – typical for many Hellenistic foundations – are still mirrored by the modern street pattern. On the east the city is demarcated by the Silpius and Staurin mountains, on which sizable parts of the ancient city walls are still standing. To the west lies the Orontes river, which to some extent still follows the same course, but once branched off to form an island on the north side of the city. To the south-west, the Phyrminios or Akakir, a mountain torrent which ran down mount Silpius to the Orontes – still visible on old aerial photographs from the 1920s and '30s – marked the southern border of the city. To the northeast the border of the city is somewhat harder to discern, but at least the location of the 'Justinian' walls can be securely traced from the same sources.³¹

Compared to some cities, the amount of excavations in the city has nonetheless been limited. Between 1932 and 1939 a committee of various institutions, chief amongst which the Princeton university, undertook a series of excavations led by field director William A. Campbell. At the time, the region was a League of Nations mandate under French control, except for the last year, when it was transferred to Turkish control. While the initial aim was to uncover the layout of the city and find some of the greater monuments the city offered in the past, lack of results towards that end, and limited funding threatened the expeditions. This might have caused the termination of the expedition if not for the famous mosaics that were found. Subsequently, a greater focus came to lie on the search for additional mosaics, and in the end the expeditions added rather limited knowledge to what was known from literary sources.³² In later years little research took place, except for a somewhat belated publication of the fifth part of the reports in 1972 on the colonnaded

³⁰ Kondoleon, *Antioch*.

³¹ Grégoire Poccardi and Jacques Leblanc, 'Etude de la permanence des tracés urbains et ruraux antiques à Antioche-sur-l'Oronte', *Syria* 76 (1999) 91–126.

³² W. A. Campbell and R. Stillwell, eds., *Antioch-On-the-Orontes*, vol. 3 (1938) 3–6; Kondoleon, *Antioch*, 5–8; Bowersock, *Studies on the Eastern Roman Empire*, 423, 424.

street, by Jean Lassus, one of the members of the 1932-1939 excavations.³³ Only from 2004 did a new series of projects start in Antioch, a major feature of which has been the study of the walls.³⁴

Walls

One of the most important features of any ancient city in determining its population size are the walls of the city. While it is true that in many cases, the built up area of ancient cities either did not reach the full area enclosed by city walls, or in other cases surpassed it, it does give an idea of its order of magnitude.

Concerning the walls of Antioch, in fact significant parts still remain, especially in the east over the crest of mount Silpius. Much of the visible remains are essentially to be dated to the Justinian walls of the sixth century – Justinian, as mentioned in the introduction, reduced the size of the city walls to match the much smaller Antioch of his time – and several parts of what may be Hellenistic walls are visible as well. As Gunnar Brands wrote in 2004, the walls show clear variety in building styles at various points, betraying several building- and repair phases, which unfortunately had not been thoroughly studied and identified. He mentioned remains south of the top of the Silpius with well jointed *opus quadratum* brickwork using mixed stretchers and headers, but also stretches with brickwork of lesser finesse. For the towers and large stretches of wall north of the summit he described pseudo-isodomic brickwork with an *opus caementicium* core. And of course, he also refers to the drawings by Cassas and Bartlett, showing yet another style for the demolished southern wall with double layer bonding courses and round arches over window slits. It is however not entirely clear which styles correspond to specific building phases.³⁵

From 2004 onwards, there have been several preliminary publications on work done in Antioch by Brands and Hatice Pamir. One major aim of the projects has been to research and map the layout of both the city and its defences. A part of the map is shown in Weferling et al., but unfortunately it has not been published in its entirety yet.³⁶ It is nonetheless very informative, as it both gives a very detailed height map for Silpius and Staurin (one of the aims of the project), and additionally it shows exceptional detail for the walls on Staurin.

Hoepfner had suggested for this section that it might have been the location of Epiphaneia, and thought that the outer wall could possibly have encircled a larger part than indicated by Wilber. In fact, as Pamir and Brands show the idea has merit: he was able to trace the wall over the Parmenios gorge, in the direction of the Byzantine citadel. Although the exact way it was connected to the Silpius stretch remains unclear, there

³³ Jean Lassus, George Wicker Elderkin, and Richard Stillwell, eds., *Antioch-on-the-Orontes*, vol. 5 (Princeton 1972).

³⁴ Hatice Pamir and Gunnar Brands, 'The Asi Delta and the Asi Valley Archaeological Project in 2004: Samandağ and Antakya Surveys', *ANMED* 3 (2005) 103–108.

³⁵ Gunnar Brands, 'Orientis apex pulcher-Die Krone des Orients: Antiochia und seine Mauern in Kaiserzeit und Spätantike', *Antike Welt* 35 (2004) 11–16: 16; Downey, *A history of Antioch in Syria from Seleucus to the Arab conquest*, images 20 and 21.

³⁶ U. Weferling et al., 'Antiochia am Orontes – Geodäsie un Photogrammetrie als unverzichtbarer Beitrag in bauhistorischen und archäologischen Projekten' (2007) 295–302: 295–298 images 3 and 4.

are indications for a five-sided tower where the walls would have met.³⁷ The outer wall also showed several building phases. The enclosed area, around 30 ha, was surveyed twice. The first geomagnetic survey covered 2.25 ha in the south-eastern part of the area, but yielded no results.³⁸ A 2.8 ha survey in the subsequent year – 200 meters north of the road present there – showed an area with a regular street pattern with a north-south orientation, and indicating at least eight insulae. The central three of these roughly showed dimensions of 65m by 30m. At least in the central insula, a building of 25 by 20 m was located on its northern side. A decrease in detected anomalies towards the south, together with the lack of findings of the previous survey, can possibly indicate that the built-up area did not extend much further in that direction.³⁹ Nonetheless, although this is merely a guess, this could still mean an area of about 15 ha of habitation on the mountain.

After the geomagnetic survey, the area was also surveyed for surface pottery finds. This yielded indications for habitation from the Hellenistic period onwards, more strongly concentrated towards the western side.⁴⁰ Concerning the walls, while clearly from an early period, the various building styles have as of yet not been securely matched to specific building phases, and Brands is somewhat reticent about identifying the area as Epiphaneia: he suggests it could also reflect the outer wall mentioned in Strabo, or the early imperial walls described by Malalas.⁴¹ Also worth noting is that contrary to Hoepfner, further towards the city, this outer wall seems to run far closer to the Justinian wall, in other words, far more like Wilber's map. This also appears to correspond to the Cassas engraving showing the remains of an additional gate northern gate close in front of a larger one.⁴²

For the walls on Silpius, it seems very likely that there was no 'outer' wall here. Some stretches of the wall were found to match the design of the demolished southern wall shown in Cassas, lending further credibility to his drawing. This outer 'Theodosian' wall would have been built to enclose more of the city in this direction.⁴³ Its location can be pinpointed without much doubt, as the Phyrminios, the torrent along which it lay is still very visible from in older photographs, and the ravine through which it ran is rather obvious. Essentially, from the last point where the walls are still discernible, it ran northwest up to the Orontes.

³⁷ Hatice Pamir, Gunnar Brands, and Shinichi Nishiyama, 'Hatay Yüzey Araştırmaları 2007: Antakya, Samandağ, Yayladağı ve Altınözü', *Araştırma Sonuçları Toplantıları* 26 (2008) 1–12: 8.

³⁸ Gunnar Brands and Cornelius Meyer, 'Antioch-On-The-Orontes and Seleucia Pieria 2004: Preliminary Results of the Geophysical Survey', *Arkeometri Sonuçları Toplantısı* 21 149–154: 150.

³⁹ Hatice Pamir and Gunnar Brands, 'Asi Deltası ve Asi Vadisi Arkeolojisi Projesi: Antakya ve Samandağ Yüzey Araştırmaları 2005', *Araştırma Sonuçları Toplantıları* 24 (2006) 397–418: 410–411.

⁴⁰ Ibidem.

⁴¹ Hatice Pamir, Gunnar Brands, and Çevirici Figen, 'Hatay İli, Antakya, Samandağ ve Yayladağı: Yüzey Araştırması 2006', *Araştırma Sonuçları Toplantıları* 25 (2007) 393–410: 403; But note as well this student report at the Technical University of Berlin after work done in the area, mentioning that there may be grounds to believe that this was in fact Iopolis, and Epiphaneia should be sought against the slopes of Mount Silpius, as also described by Downey <http://baugeschichte.a.tu-berlin.de/hbf-msd/MSD-ab_2006-08/antiochia_web.pdf> accessed 11-07-2013.

⁴² Downey, *A history of Antioch in Syria from Seleucus to the Arab conquest*, Images 11 and 20.

⁴³ Pamir, Brands, and Figen, 'Hatay İli, Antakya, Samandağ ve Yayladağı: Yüzey Araştırması 2006', 402; Downey, *A history of Antioch in Syria from Seleucus to the Arab conquest*, 612.

Concerning the inner ‘Tiberian’ wall nothing new can however be said with certainty, while exactly this stretch would have been of considerable interest for the city size in the second century. It apparently incorporated the Cherubim Gate, but its distance towards the Daphne gate is anyone’s guess, except that, if the old wall were to include the Bridge (or Philonauta) Gate, the Cherubim Gate probably was not located much more than 400 m to the northeast of the Daphne gate. The first two main street digs of the 1930’s expedition were located more or less at that distance, but did not have the fortune of finding it.⁴⁴

One additional point of interest is that some of the walls may have had a non-military function. The Iron Gate, located in the Parmenios gorge between Mount Staurin and Silpius, may have functioned in limiting the violence of the stream into the city. This is also described by Procopius according to whom it was built by Justinian:

And by constructing sluice-gates in this wall he contrived that the torrent, flowing through these, should lose its force gradually, checked by this artificial barrier, and no longer violently assault the circuit-wall with its full stream, and so overflow it and damage the city, but should gently and evenly glide on in the manner I have described and, with this means of outflow, should proceed through the channel wherever the inhabitants of former times would have wished to conduct it if it had been so manageable.⁴⁵

Nonetheless, parts of the Iron Gate have been identified by Brands as clearly predating Justinian, the earliest form probably being an aqueduct bridge which was later closed off, while the last building phase may in fact have been during the crusades.⁴⁶ While the Iron Gate also had a defensive function, several sections of wall on Staurin, on the side of the city did not connect to the rest of the fortifications, and may have functioned to provide protection against mudslides.⁴⁷

When it comes to the area enclosed by the walls, apart from the clear addition of the area on mount Staurin, the findings by Brands and Pamir have not resulted in major changes to the current state of the discussion. The north-south extent of the city remains more or less the same, with the same level of doubt. The river and the mountain are in this case far stronger limiting factors in determining the possible intra-mural built up area, as other than the perhaps 15 ha of the quarter on Staurin, most of the mountain slopes were not inhabitable.

⁴⁴ Downey, *A history of Antioch in Syria from Seleucus to the Arab conquest*, 206, 620; Lassus, Elderkin, and Stillwell, *Antioch-on-the-Orontes*, 5:31, 72.

⁴⁵ Proc. *De Aed.* 2.10.17-18.

⁴⁶ Pamir, Brands, and Figen, ‘Hatay İli, Antakya, Samandağ ve Yayladağı: Yüzey Araştırması 2006’, 404–405; Pamir, Brands, and Nishiyama, ‘Hatay Yüzey Araştırmaları 2007: Antakya, Samandağ, Yayladağı ve Altınözü’, 10.

⁴⁷ Pamir, Brands, and Nishiyama, ‘Hatay Yüzey Araştırmaları 2007: Antakya, Samandağ, Yayladağı ve Altınözü’, 9.

The river and the island

At least to the north, the river ran a somewhat different course than nowadays. As our sources indicated, the Orontes split and formed an island, which was the location of various monumental buildings, including the palace and circus built by Q. Marcius Rex, and was later restructured to contain the probably larger palace built by Diocletian, which according to Libanius, covered a quarter of the island.⁴⁸ For the Princeton expedition, this was an important focus for their research, as they hoped to unearth some of the most famous structures of the city.

Of the island's monuments, the expedition only found the city's large circus, possibly constructed in the first century B.C. (and therefore presumably that of Marcius Rex), and a smaller byzantine stadium. Beyond that they did find several baths, mostly of later periods than the one we are concerned with, but one was built in the early second century, over the remains of earlier, first century "small and unimportant houses," but this bath was destroyed before the end of the second century. Apparently, also materials of an earlier, Hellenistic monument were used in this construction. A villa was located that was in use during the first two centuries A.D.⁴⁹ While this was not really doubted, the island was clearly in use before the second century, and besides the large projects, included housing.

In a series of articles, Grégoire Poccardi discussed the topic more specifically. He makes several very interesting remarks on the shape, size and street pattern of the island. In the first place, in his study of aerial photographs he was able to convincingly trace the Justinian walls in the north of the city, and with it the course of the Orontes⁵⁰. More importantly though – for the Princeton expedition also managed to locate these walls accurately in the end⁵¹ – Poccardi showed that the reconstructed map of the city as it was drawn by Wilber (See figure 1) shows an island smaller than it could possibly have been, as the circus appears to be drawn out of proportion and out of place. In fact, the entire map appears to be out of proportion, which is both odd, as the expedition did produce far more accurate maps to show their findings in the reports, and also unfortunate, as the Wilber map has been reproduced both in Downey and Kondoleon.⁵² Essentially, the island should have been drawn further extended to the north. Beyond that however, Poccardi's reconstruction of the right fork of the river is no less hypothetical than that of Wilber, nor does he give any clear arguments for why he draws it where he does.⁵³ It is impossible to discern any course from current land

⁴⁸ Lib. Or. 11.206.

⁴⁹ G. W. Elderkin and R. Stillwell, eds., *Antioch-on-the-Orontes*, vol. 1 (1934) 18, 31.

⁵⁰ Poccardi and Leblanc, 'Etude de la permanence des tracés urbains et ruraux antiques à Antioche-sur-l'Oronte'.

⁵¹ Charles R. Morey, 'The Excavation of Antioch-on-the-Orontes', *Proceedings of the American Philosophical Society* 76 (January 1, 1936) 637–651: 639.

⁵² Downey, *A history of Antioch in Syria from Seleucus to the Arab conquest*; Kondoleon, *Antioch*, xv. In Kondoleon's case this is rather astounding, as in the legend, the author who recreated the map clearly refers to the same article by Poccardi that shows how Wilber's map is out of proportion.

⁵³ Grégoire Poccardi, 'Antioche de Syrie : pour un nouveau plan urbain de l'île de l'Oronte (Ville Neuve) du IIIe au Ve siècle', *Mélanges de l'École Française de Rome. Antiquité* 106 (1994) 993–1023: 1014–1016, 1022–1023.

use as obvious as it is for the left fork, which besides the 1930's aerial photographs shown by Poccardi, is still very clearly visible on Corona satellite images from 1969, and even on current day satellite images.⁵⁴ (Figure 3)

Similarly, the exact course of the river remained an uncertainty to Campbell's team as well. During a heavy flood in 1938 the expedition hoped to gain some additional insight in the lay of the old channels by photographing the area from the mountains, but as they stated, there was such a vast amount of flooding that little could be gleaned.⁵⁵ There is one other suggestion seen in Hoepfner's reconstruction, taking the current riverbed as the northern shape of the island. It seems as likely as any of the other options, and allows for a far larger area to locate the palace east of the circus, rather than west.⁵⁶ However, considering the layout of the outer wall as discerned by Brands, and if accepting the suggestion created by Hoepfner that the wall could lie more or less in line with the north side of the island, Poccardi's reconstruction still remains the most likely. See figure 2 for an admittedly rough mockup of the city using the basic map from Athanassiou, with the walls as shown in Weferling, and the island according to Poccardi.⁵⁷ Also visible, although more important for our understanding of the city in late antiquity, is Poccardi's proposed location for the canal that was dug along the Justinian wall mentioned by Procopius, straightening the Orontes.⁵⁸

The locations of the torrents that marked the layout of the city, the Phyrminos, or Akakir, in the south-west and the Parmenios, or Hacı Kürüş Creek, in the centre of town are relatively clear, although their exact course towards the Orontes may have varied at times. Especially for the latter, Lassus states it may have had two branches or changed its course, marking the two lines where the orientation of the streets started to differ in the centre of town.⁵⁹

A reasonable idea for the buildable surface area of the walled part of the city can be arrived at from the above.⁶⁰ Starting in the north the wall can be traced as it appears on older photographs (and as indicated by the Princeton expedition) from the mountain along the old course of the Orontes. Upon arriving at the likely

⁵⁴ Poccardi and Leblanc, 'Etude de la permanence des tracés urbains et ruraux antiques à Antioche-sur-l'Oronte', Especially 102–103 fig. 5, 106–107 fig. 6, 108–109 fig. 7 and 116–117 fig 11; 'Corona Atlas of the Middle East', June 5, 2013, <http://corona.cast.uark.edu/>. See chapter three for the use of Corona images by the AVRPP project in locating sites in Antioch's territory.

⁵⁵ Campbell and Stillwell, *Antioch-On-the-Orontes*, 3:6.

⁵⁶ Wolfram Hoepfner, 'Antiochia die Grosse : Geschichte einer antiken Stadt', *Antike Welt* 35 (2004) 3–9.

⁵⁷ W. A. Campbell and R. Stillwell, eds., *Antioch-On-the-Orontes*, vol. 2 (1938) 215; Grégoire Poccardi and Jacques Leblanc, 'L'eau domestiquée et l'eau sauvage à Antioche-sur-l'Oronte', *Antioche de Syrie. Histoire, images et traces de la ville antique*, Topoi. Supplément 5 (2004) 239–256.

⁵⁸ Downey, *A history of Antioch in Syria from Seleucus to the Arab conquest*, 548.

⁵⁹ Lassus, Elderkin, and Stillwell, *Antioch-on-the-Orontes*, 5:141.

⁶⁰ For the calculations of the enclosed areas I used a polyline area calculator in combination with google maps satellite images. Will and Poccardi arrived at their estimates either by counting grid squares on a map, or simply considering the city as a rectangular area with the main street as one side, and the average between the highest and lowest distance from the mountains to the river as the other side. While this still arrives at areas of a similar order of magnitude, it seems unnecessarily inaccurate. Ernest Will, 'Antioche sur l'Oronte, métropole de l'Asie', *Syria* 74 (1997) 99–113: 107–108; Poccardi and Leblanc, 'Etude de la permanence des tracés urbains et ruraux antiques à Antioche-sur-l'Oronte', 124.

location where the Parmenios joined the Orontes (Around the crossing between Şehit Osman Durmaz Caddesi and 119. Caddesi, but it could admittedly also be somewhat to the north) we would follow it towards the current riverbed for the older city, but for the Justinian wall we go straight from here to about 200 meters from the Bridge Gate. From here on once again along the Orontes to the location of the Phyrminios and then towards the mountains. Then, back to the northeast hugging the mountains, results in a shape of about 2.85 km² for the Justinian walls. In these measurements, the distance along the colonnaded street comes to 3200 m from the Phyrminios to the Justinian walls.

Poccardi's rather lower 2.06 km² depends for a large part on his suggested distance of 750 m between river and mountains, rather than the wider 1000 m of Will which also matches my measurements, "car elle prend en compte une partie des pentes de la montagne qui sont inhabitables."⁶¹ While it is true that the additional 250 meters results in a roughly 0.5 km² area on the lower slopes of the Silpius,⁶² judging by the current day situation, this area is clearly inhabitable. The isle, following the indications by Poccardi, gives another 1.3 km², with a roughly 25 hectare uncertainty. In other words, a total of 4.15±0.25 km² within the Justinian walls and the isle.

The additional area covered by the outer wall includes at least the triangle cut off from in the centre, which amounts to an additional 35 ha.⁶³ Then there is the area in the mountains, for this calculation kept at 15 ha. For the additional area to the north, without knowing the exact layout the safest guess is to draw the northern outer wall from its utmost clear location towards the island, adding anywhere around 10 ha, but it might just as well be twice that. At this point, this arrives at 3.45 km² However, as mentioned before, to the south the walls in the second century may have reached less far. If following the conventional layout, with the old walls going just beyond the Bridge Gate, this subtracts somewhere around 40 hectares, resulting in 3.05 km² without the island, and an uncertainty of about 30 hectares. With the island this would be 4.35 km², and a higher 55 hectares of uncertainty.⁶⁴

Suburbium

Where for some cities this is not equally clear, in the case of Antioch there is no real doubt that the city had significant suburbs. In the first place, there is the well known town of Daphne, which gave Antioch the name used by several authors: Antioch-at-Daphne (Strabo 15.1.73; Pliny *Nat. hist.* 5.18), more on which later. For Antioch itself, there are various indications of urban sprawl beyond north-eastern and south-western walls.

⁶¹ Will, 'Antioche sur l'Oronte, métropole de l'Asie', 107–108; Poccardi and Leblanc, 'Etude de la permanence des tracés urbains et ruraux antiques à Antioche-sur-l'Oronte', 124 note 48.

⁶² More or less from the crossing between Kibris Şehitleri Caddesi and Izmir Caddesi, towards the crossing between the latter and the main street.

⁶³ I am however unsure if in the Justinian situation, when following Poccardi, this was then connected to the isle, or remained separate.

⁶⁴ To put this into perspective, the size of Pompeii was 66 hectares.

Towards the north, several interesting remarks were made by Jesse Casana and Tony Wilkinson in light of the Amuq Valley Regional Projects (more on which in the next chapter), although unfortunately, this is all they reported on it:

Results of survey in this area suggest that contrary to earlier, historically-based reconstructions of the growth of the city, the densely settled, urbanised area of Antioch extended as far as the Byzantine city walls as early as the third century B.C. [...] By the first century A.D., the suburbs of the city extended at least 2 km to the north of the city walls, as is suggested by ceramics from the Roman occupational horizon in this area.⁶⁵

This is about the full extent of what they reported on the matter. In another article Casana only writes that several fifth and sixth century houses were uncovered about a kilometer north-east of the walls, which judging by the presence of skeletal remains, were presumably destroyed in a landslide.⁶⁶

Some additional insight is provided by the discussed length of the main street by Callu, and more recently Cabouret. Like several other cities of the period in the Roman Near East, Antioch's cityscape was defined by its long, monumental colonnaded main street. The street received significant attention by Jean Lassus, one of the members of the 1930's expedition, but he did not publish his part on the colonnaded street until 1972. Initially, at the city's original foundation, the road appears to have lain outside Seleukos' new city, possibly for a long time without having buildings on both sides of the street. It was however already paved for some distance. By the second century B.C., the road did see habitation on both sides – even more so, street dig no. 5 turned up part of a tower on the east side of the road, suggesting additional complexity in the earlier stages of fortification of the city – its width was increased, and was accompanied by sidewalks and boutiques, already giving it “un caractère monumental.”⁶⁷ In concordance with the sources, it appears that from the late first century B.C. or early century A.D. the street was improved and flanked by colonnades. Whether it was done in part by Herod and expanded by Tiberius, or if Herod only repaved the streets, while Tiberius built the colonnades, clearly it had achieved a new character.⁶⁸ This was restated even more so when the street was rebuilt by Trajan after the quake of 115, with the street and porticoes widened even further to a total of 41 meters.⁶⁹

A crucial matter is the length the street has been assigned by both classical and modern authors. Based on their idea of the limits of the city walls, the figures usually associated with the Princeton expedition are around 3200 m from the Wilber map for the Theodosian walls, or more exactly as Callu derives from it: 2804 m

⁶⁵ Jesse J. Casana and Tony J. Wilkinson, 'Settlement and Landscapes in the Amuq Region', in: K. Aslıhan Yener, Stephen Batiuk, and Robert Kriech Ritner eds., *The Amuq Valley Regional Projects*, vol. 1 (Chicago 2005) 25–66: 42.

⁶⁶ Jesse J. Casana, 'The archaeological landscape of late Roman Antioch', *Culture and society in later Roman Antioch* (2004) 103–125: 118–120.

⁶⁷ Lassus, Elderkin, and Stillwell, *Antioch-on-the-Orontes*, 5:31, 73, 141–142.

⁶⁸ Grégoire Cabouret, 'Sous les Portiques d'Antioche', *Syria* 76 (1999) 127–150: 135–136.

⁶⁹ Lassus, Elderkin, and Stillwell, *Antioch-on-the-Orontes*, 5:32.

under Tiberius, 3152 m under Theodosius II and 2978 m under Justinian.⁷⁰ The only figure actually mentioned in the series is 3400 m, coming from Lasso, which roughly matches the distance from the outer south-western wall to the presumed location of the outer north-eastern wall.⁷¹ However, as Callu pointed out, there are some difficulties rhyming this with ancient sources, who arrive at rather higher figures, such as 20 stadia or 3700 m in Flavius Josephus, Malalas' 4 roman miles (μιλίων δ') for the Tiberian street, essentially 5916 m, or Dio Chrysostom's even higher 36 stadia.⁷² His hypothesis is that the colonnades may have exceeded the area enclosed by the walls. Whether the distances are exaggerated or not – Downey for instance halves the distance mentioned by Malalas, suggesting he meant two miles of colonnades on either side of the street – the idea of a section of the colonnaded street extending beyond the walls would fit well with the remarks by Casana and Wilkinson.

Of course, without further digs, there is no knowing exactly where the colonnades ended or began. The city could equally well have spread towards the south, and according to Malalas, the city did so for a mile beyond the walls. It is hard to say whether this was only true for the fifth century, and not earlier, but at least it did at that time prompt an extension of the walls under Theodosius II.⁷³ Callu points out that wherever we locate the Cherubim Gate in the Tiberian wall, it must have been far less than 1479 meters from the Daphne Gate in the Theodosian wall, thus suggesting that even then the Daphne Gate did not indicate the limit of the city.⁷⁴

Returning once again to Leblanc and Pocard and their photographs, they showed towards the south that the city's street pattern appears to continue beyond the Phyrminios. In line with what Weulersse already discerned in the 1930s, they indicated three distinct grids in the city that could still be discerned in the layout of several streets and fields in the studied 1930s photographs. To a somewhat lesser extent this still holds true in the current situation, especially north of the Parmenios. The first two grids are those found between the river and the mountains, oriented towards the main road, with insulae of 116 x 58 m, and which in all likelihood built forth on the original grid laid out in the third century B.C. The difference between them being a slight difference in orientation north of the Parmenios, as the main street indicates a small change in direction from that point onwards, probably to do with the orientation of the mountains, and perhaps somewhat with the variable courses of the Parmenios. The third grid is that of the island, with insulae of 107 x 71 m, with a northwards orientation and perhaps to be dated to a later period, as Leblanc and Pocard

⁷⁰ Jean-Pierre Callu, 'Antioche la Grande : la cohérence des chiffres', *Mélanges de l'École Française de Rome. Antiquité* 109 (1997) 127–169: 149.

⁷¹ Lasso, Elderkin, and Stillwell, *Antioch-on-the-Orontes*, 5:146.

⁷² Callu, 'Antioche la Grande', 140–143.

⁷³ Malalas 346.8 ff, referred to in Downey, *A history of Antioch in Syria from Seleucus to the Arab conquest*, 612.

⁷⁴ Callu, 'Antioche la Grande', 150–152, especially notes 132, 137 and 140.

believe to discern traces of grid II on the island as well.⁷⁵ Note from earlier, that for the area in mountains, a fourth grid has been discerned that matches the island's orientation, but with insulae in a 2:1 size ratio like those in the first two grids, and of roughly half their size.

A very useful finding is that grid one appears to continue to the south-west, well beyond the Phyrminios. In fact, it more or less continues for 2 km and perhaps further (according to my own measures, this is not stated by the authors, who consider the evidence too weak to give an estimation towards this end), and on both sides of the river. To the north-east, there are similar, but far less clear traces for at least about 700 m for grid two. This of course does not answer the very important questions of when the grids expanded in these directions, nor how the land was used.⁷⁶ It is very possible that this simply dictated the layout of the agricultural landscape. At least towards the south-west, much to this end is also suggested by the 2004 report of Pamir's Asi Delta and Asi Valley Archaeological Project: the east bank of the Orontes along the 8 km between Daphne (Harbiye) and Antioch was surveyed, indicating an agrarian character for the region, with small villages or farms from the Hellenistic period at the earliest, and two noria type waterwheels. (The distance between the Antakya and Harbiye is in fact at most 6.2 km, but from a map showing find locations in another publication, it becomes clear that a larger area around Harbiye was studied).⁷⁷ A lower density of habitation beyond the walls would match Libanius' oration as well, when he writes "As soon as you pass through the gates, on the left are varied gardens and charming inns and an abundance of springs and houses hidden in trees and chambers which rise above the groves and luxurious baths," followed by more houses, gardens and vineyards.⁷⁸

There are some indications as well for some extension of the city at the other side of the Orontes. Of main interest here is the inscription published by Feissel in 1985, which mentions the digging of a 2.5 km long canal to supply the fullers' quarter in 73/74 A.D, by inhabitants of various different quarters in the city.⁷⁹ Lacking exact knowledge of where the canal was dug, little more can be said about it, but it does bring forth the idea that this area might have seen more activity of a similar industrial nature. It also calls a large series of unanswerable questions to mind, such as whether and where river harbours could be found and where granaries might be located. It could be imaginable that workshops related to metalworking would be located on the west bank, as there are clear signs of mining activities 8 km from the city in that direction, around

⁷⁵ Poccardi and Leblanc, 'Etude de la permanence des tracés urbains et ruraux antiques à Antioche-sur-l'Oronte', 91–93, 123–126.

⁷⁶ Ibidem, 111–113, 126.

⁷⁷ Pamir and Brands, 'The Asi Delta and the Asi Valley Archaeological Project in 2004: Samandağ and Antakya Surveys', 106; Hatice Pamir and Gunnar Brands, 'Asi Deltası ve Asi Vadisi Arkeoloji Projesi: Antiocheia, Seleuceia Pieria ve Sabuniye Yüzey Araştırmaları 2004 Yılı Çalışmaları', *Araştırma Sonuçları Toplantıları* 23 (2005) 89–102: 99.

⁷⁸ Libanius, *Or.* 11.234.

⁷⁹ Denis Feissel, 'Deux listes de quartiers d'Antioche astreints au creusement d'un canal (73-74 après J.-C.)', *Syria* 62 (1985) 77–103; Getzel M. Cohen, *The Hellenistic Settlements in Syria, the Red Sea Basin, and North Africa*, 1st ed. (Berkeley 2006) 84, 93 note 27.

Kisecik in the Amanus mountains.⁸⁰ This is of course in no way necessary, and there is no evidence that other industries besides that of the fullers were located outside the city proper. There is at most the statement by Libanius, that when looking out from the Diocletian palace, “there is a view worthy of the emperor, with the river flowing below and the suburbs feasting the eyes on all sides.”⁸¹

There is another factor in defining the extent of urban living space used in some other cities, the location of its cemeteries. Some of these, located beyond the walls or across the Orontes (Figure 2) possibly competed with residential space in the suburbs. Pamir on the other hand has studied a large number of rock-cut tombs on the slopes of the Staurin and Silpius mountains, both in- and outside the walls, essentially making use of large amounts of otherwise hard to use terrain. The same use of rock-cut graves has also been found at Daphne and Seleukia.⁸² This does however mean that this approach is less useful in marking the end of urban space, as it only defines the limits of areas that were not suitable for residential areas in the first place.

While in its entirety, the topic of the suburbs remains very tentative, it should at least be possible to make somewhat of an estimate, fully acknowledging that future surveys could change these figures entirely. For the north-east, the two kilometres extent mentioned by Casana adds a clearly defined area of 180 hectares (minus whichever figure we would assign to the area enclosed in this direction by the older outer wall, in this paper set at 10 hectares). While a small artery of the river showing a large number of bends is still very visible, and perhaps even faint traces of yet another course, the exceptionally straight section of the river has been positively identified as a canal dug under Vespasian, as mentioned by De Giorgi, who refers to a “milestone that commemorates the completion of the work near the village of Küçük Dalyan Köyü.”⁸³ Indeed, initially published by Van Berchem in 1983, the milestone is very informative, describing it was dug under emperor Vespasian, during the legateship of Trajan, and includes the legions involved in the works. The ‘dipotamia(e) flumen’ is explained by Van Berchem as the coming together of two rivers, and matches the location indicated.⁸⁴ Note as well that Pausanias suggests the digging of canals further downstream the Orontes:

⁸⁰ Fokke Gerritsen et al., ‘Settlement and Landscape Transformations in the Amuq Valley, Hatay’, *Anatolica* 34 (May 31, 2008) 241–314: 262.

⁸¹ Libanius, *Or.* 11.239.

⁸² Pamir and Brands, ‘The Asi Delta and the Asi Valley Archaeological Project in 2004: Samandağ and Antakya Surveys’; See also Hatice Pamir and İnanç Yamaç, ‘Hatay Yüzey Araştırmaları 2010: Antakya, Samandağ, Yayladığı ve Altınözü’, *Araştırma Sonuçları Toplantıları* 29 (2011) 361–389. Unfortunately, lacking proficiency in Turkish, I am unable to understand their findings, other than that the topic is still being researched.

⁸³ In fact, before reading this I searched in vain for when this straight section was dug, believing it to be relatively recent, and as such was even less certain about the dimensions of this area. Andrea De Giorgi, ‘Town and Country in Roman Antioch’, in: Richard Alston and Onno M. Van Nijf, *Feeding the ancient Greek city* (Leuven 2008) 63–83: 69–70.

⁸⁴ Denis Van Berchem, ‘Une inscription flavienne du Musée d’Antioche’, *MH* 40 (1983) 185–196: 196 (postscriptum).

The Roman emperor wished ships to sail up the river from the sea to Antioch. So with much labour and expense he dug a channel suitable for ships to sail up, and turned the course of the river into this.⁸⁵

This 170 hectare stretch is a very large area. The lack of details to the exact nature of the survey-results leaves the question open if habitation was only clustered around the road or reached all the way up to the canal. In the first situation, the built-up area may have been half the figure given, or less. Furthermore, without an indication at which rate sherd densities or whichever other finds they made decreased, it is harder to gain an idea at what point the suburbs became less like the city and more like the countryside. A range between 85 and 170 hectares should cover this uncertainty.

Towards the south, taking Malalas' roman mile from the city's edge to the Cherubim Gate as a maximum, and retaining the suggested 400 meters from the Phyrminios to this gate, this leaves a bit over a kilometre of suburbs in this direction beyond the Phyrminios. Only considering the left bank of the Orontes, this would amount (on top of the 40 hectares between the walls and the Phyrminios) to 50 hectares, and including the far side of the Orontes it could easily be twice that. That said, it seems somewhat more likely that the area on the far side should be considered as rural, with actual suburbs on that bank located closer to the bridges. It is also important to note that there is no certainty that in the second century even the area between the Cherubim Gate and the Phyrminios was fully covered by suburbs, let alone the area beyond it. It is possible that the city only expanded in that direction in later times. A minimum of 20 hectares and 140 as the maximum indicates the far greater uncertainty in this direction. This brings us to the fullers' quarter, of which truly nothing can be said. With 85 to 170 hectares to the north, and 20 to 140 hectares to the south, the best bet would be to assign a similar range to this area, say 10 to 150 hectares, thus giving a total of 115 to 460 hectares.

Daphne is similarly shrouded in uncertainty, despite having several of its villas and a theatre excavated in the 1930s. Poccardi's sketched map of Daphne gives a decent indication of Taking for the maximum what might be the fifth century stadium as the eastern limit, the two small 'podia' I and II as the western limit, the north indicated by houses 2 and 3, arrives at a roughly 2000 x 1500 m rectangle, or 300 ha. The minimum a circular plane with a 500m radius, with the theatre more or less at its centre, encompassing most of the villas (thus 78.5 ha).⁸⁶ Much might still become known for this town in the future, but depends on the results from

⁸⁵ Pausanias, 8.29.3, trans. Jones and Ormerod (1918).

⁸⁶ Poccardi and Leblanc, 'Etude de la permanence des tracés urbains et ruraux antiques à Antioche-sur-l'Oronte', 122–123.

Pamir, who unfortunately has not published anything on the subject in English yet except for the mention in 2005 of its ‘agrarian character.’⁸⁷

Once again, the best we can tell is that two centuries later Libanius wrote that “Let one count over also what lies outside the gates [...] if one were to bring together into one form what is now divided into three, the part which is now before the city would be sufficient to be a city itself.”⁸⁸ Of course, there is no telling which parts are exaggerated, how accurate this description is, and whether he counted Daphne as well. The line of his discussion still seems to suggest that he only treats the areas directly outside the walls.

Suggestions towards a population figure

Let us only consider, indeed, how the city would have been four times the size it now is, if it had not already been stricken on three occasions. [...] So if some buildings had not been destroyed and others built on them, and if as much as is now used for rebuilding were employed instead for enlargements, many people would now be deprived of much land which is now under cultivation. (Lib. Or. 11.228-229)

To attempt a calculation of a city’s population based on its built up surface area, requires an estimate of how densely this area was populated. When looking at the quote above, there is no telling if Libanius meant that the earlier disasters caused such loss of life that the same area sufficed to house the declined population, or that destroyed spaces were built up more efficiently, allowing more people to live within the same area, or perhaps even both. Writing a century after the Persian capture of the city in 256 and 260, after which the city was burned, much could have happened by way of growth, replenishing whichever portion of the population was killed in the sack and burning of the city, or deported afterwards.⁸⁹ For our period, there is no telling either how large the impact might have been of the first century earthquakes under Gaius and Claudius, or during the quake of 115. For the latter, the description by Cassius Dio suggests severe destruction and high mortality by the first quake, aftershocks in the following days and landslides, but given the high variability in earthquake casualties, there is no knowing how many lives were lost.⁹⁰

What is clear for the second century, is that it is possible that the rebuilding of the city may have been done in a higher density or with taller buildings than before, but it is equally possible that the events had reduced the population level to such a degree that this was not necessary or wanted. Similarly, Antioch may have been more populated in the second century than at the time of Libanius’ writing, depending on the level of destruction wrought by the Persians in the third. When determining the population of Antioch based on the extent of its built up area, this leaves us with a full range of possibilities.

⁸⁷ Pamir and Brands, ‘The Asi Delta and the Asi Valley Archaeological Project in 2004: Samandağ and Antakya Surveys’, 104.

⁸⁸ Libanius, *Or.* 11.231

⁸⁹ Downey, *A history of Antioch in Syria from Seleucus to the Arab conquest*, 256–259.

⁹⁰ Cassius Dio, 68.24-25.

For such densities, Andrew Wilson gave an indicative overview of plausible ranges throughout the empire. He considers 100 to 400/ha as normal outer limits, with 150-250/ha to cover more likely values. Higher concentrations are known in Rome and Ostia, but in a similar fashion he writes that in Alexandria, if it really had a population of 500.000, the density would amount to 517/ha. He claims this to be “high, but quite conceivable, given the likelihood of multi-storey apartment blocks in the capital [of Egypt]”⁹¹ His figures only focus on the intra-mural parts of the city, but take uninhabitable terrain (simply not counted) and monumental areas (lower average density) into account.⁹² As he pays little attention to Syria, to gain a more specific idea about Antioch the best approach is to look at his figures for other provinces. For Africa as a whole he simply applies a figure of 200/ha and for Asia Minor 150/ha, but for Egypt he actually arrives at densities between 156 and 185/ha, except for Memphis between 185 and 258/ha, Hermopolis Magna at 232-247/ha, and of course Alexandria.⁹³

This 100 to 400 range appears reasonable enough. The figure for Alexandria seems excessive, even when considering that apartments with multiple upper floors did exist in Antioch: “[The wind] does not stream only into the mansions of the rich and into houses of three stories, and remain suspended above lower houses and those which belong to the poor”⁹⁴ If houses with two upper floors were considered to be the taller houses in the city, at least for the inner city a density coming closer to that of Hermopolis Magna seems more likely, as the houses in that city had 2.5 floors on average.⁹⁵

Still, knowing some of the characteristics of various parts of Antioch, it seems inconceivable that a single figure would be applicable to its entirety. For the island a high level of monumental buildings or public space are to be expected, even if less so than when the Diocletian palace was built. Additionally, if the excavated villa was the norm for housing on the island, this would similarly suggest a lower building density. For the lower slopes of the mountains and the quarter in the mountains, similarly a lower density would be expected, if only because of the following: “those who live on the slope of the mountain boast of the finer breezes and the peacefulness and the view over the whole city.”⁹⁶ The suburbs pose an additional problem, in that densities may have declined over distance from the city, and there is the unanswerable question to what level agricultural production and cemeteries competed with residential space.

⁹¹ Andrew Wilson, ‘City sizes and urbanization in the Roman Empire’, in: Alan Bowman and Andrew Wilson eds., *Settlement, Urbanization, and Population* (2011): 176–177, 185 but note that the basis for the population of Alexandria is no stronger than that of Antioch. The figure might be significantly lower.

⁹² *Ibidem*, 170–171.

⁹³ *Ibidem*, 183–187.

⁹⁴ *Lib. Or.* 11.225.

⁹⁵ L. de Ligt, *Peasants, citizens and soldiers : studies in the demographic history of Roman Italy 225 BC-AD 100* (Cambridge 2012) 219–220.

⁹⁶ *Lib. Or.* 11.249.

Table 1 shows a series of possible density values for the various zones indicated within the city, the resultant population figures and the averages. The range of the results is admittedly rather large. The high density areas consist of the ‘old city’, essentially the left bank area enclosed by the walls. The low density areas are the sum of the island, the quarter on Mount Staurin and the lower slopes of the Silpius. In the first set of densities a minimum situation is sketched. For the high density areas 250 residents/ha was chosen in line with the higher end of the ‘normal range’ given by Wilson, approximating the density in Hermopolis Magna as well. The low density, 185, is the ‘standard figure’ once again taken Wilson’s Egypt series, and the 100/ha for the suburbs and Daphne match the low end spectrum for urban densities. Range 2 was chosen to be a relatively moderate estimate. Range 3 represents the highest likely density figures, with 400/ha matching Wilson’s normal upper limit, and any higher would start approaching the exceptional density given to Alexandria, or even that of Ostia. Putting the low density areas at 250/ha describes these areas as being built up like a relatively densely populated city. For the suburbs, the 200/ha figure already comes across as being somewhat too high, as it implies that the suburbs were more densely populated than the average of cities in Egypt and Asia Minor.

Table 1: Population of Antioch

	High density		Low density		Suburbs		Daphne		total		Average
	min	max	min	max	min	max	min	max	min	Max	
Area (ha)	210	270	170	220	115	460	78.5	300	573.5	1250	911.75
Density 1	250		185		100		100		180.1	147.4	163.7
Population	52500	57500	31450	40700	11500	46000	7850	30000	103300	184200	143750
Density 2	300		200		150		150		219.7	191.2	205.5
Population	63000	81000	34000	44000	17250	69000	11775	45000	126025	239000	182513
Density 3	400		250		200		200		273.2	243.2	258.2
Population	84000	108000	42500	55000	23000	92000	15700	60000	165200	315000	240100
Density 4	400		400		265		265		354.5	317.9	336.2
Population	84000	108000	68000	88000	30475	121900	20802.5	79500	203277.5	397400	300339

Only with the maximum area size of the city and using the high end figures would the population reach the often mentioned 300.000 inhabitants. What also becomes clear, is that with each increasing density range the uncertainty increases, from ± 40450 in range 1 to ± 56487 in range 3, as a larger portion of the population would have to live in the suburbs for which the figures are less secure.

Density range 4 shows that to reach that figure without extending the city area to its outer limits, in other words, reaching an average of 300,000, requires the entire intra-mural area to have a density of 400 inhabitants per hectare, and the suburbs to have an implausibly high 265 persons per hectare. The resulting spread, $\pm 97,061.25$, is obviously very high. The end result suggests that a population between more or less 100,00 and 300,000, with the most likely range between 140,000 and 180,000, which would fall between the

average values for the low and medium density estimates, but would also still be partly covered in the lower city size estimates for the high density range.

Chapter 2: The territory of Antioch

Introduction

The city of Antioch itself was essentially locked in between the Orontes and the mountains, limiting land useable for agriculture in the direct surroundings of the city. To the south it seems relatively safe to assume that its region did not extend much further than the surroundings of Daphne, allowing Seleukia Pieria at least some territory, but perhaps Hatice Pamir's project will eventually shed more light on this. Towards the north however, Antioch was located at the edge of the Amuq valley, also known as the plains of Antioch. This region is demarcated by the Jebel Al-Aqra to the south, the Amanus mountains to the west and the Kurt Dağ hills to the east.⁹⁷ The plain is watered by three rivers, the Orontes, the Afrin and the Kara Su (see Figure 5). Instability and changing courses of all three rivers played a large role in the shaping of the flood plains. The lake of Antioch at the centre of the plains, which was drained in the 1960's, probably started forming around the first millennium B.C. in the context of the flooding of the Orontes, and saw its main expansion in around the first century A.D.⁹⁸

The region has been the focus of various studies. Initial surveys in the 1920s formed the impetus for further research in the 1930s, when the University of Chicago's Oriental Institute sent its "Syro-Hittite Expedition" to the Amuq valley, headed by Robert Braidwood. The project lasted until 1938, when the region, which had been a French-governed League of Nations mandate, was reunited with Turkey. The project recorded and mapped 178 sites, of which eight larger sites saw excavations, such as Tell al-Judaiah, Tell Ta'yinat and Chatal Höyük. In the same period, and several years after the Second World War as well, Sir Leonard Woolley was also active in the area and excavated Tell Atchana, and outside the valley the port of al-Mina in the Orontes delta. The area to the north of the Amuq valley, further up the Kara Su river, was studied by Uluğ Bahadır Alkım in the 1960s, revealing another 63 sites.

From 1995 until 2005 the Oriental Institute resumed research in the area, now called the Amuq Valley Regional Projects (AVRP). The initial goals of the AVRP were focused on detailed measurement of the sites catalogued by Braidwood in the 1930s, and the excavation of Tell Kurdu.⁹⁹ The goals were expanded to include further off-site surveys – which revealed numerous Roman and Byzantine sites – the study of surrounding hills and uplands, and an increased number of excavations. From 2001 the AVRP also made use of the by then declassified high quality Corona satellite images to find additional sites. By the suspension of

⁹⁷ Andrea De Giorgi, 'The formation of a Roman landscape : the case of Antioch', *Journal of Roman archaeology* 20 (2007) 283–298: 284.

⁹⁸ *Ibidem*, 284–285.

⁹⁹ K. Aslıhan Yener et al., 'The Amuq Valley Regional Project, 1995-1998', *American Journal of Archaeology* 104 (April 1, 2000) 163–220: 167.

the project in 2005, a total of 287 sites were eventually surveyed (355 including Braidwood's 1930s surveys, but not all sites could be revisited) and fieldwalking had covered 80 km² of countryside.¹⁰⁰

Lowlands: the Amuq Valley and Antioch's surroundings

A large part of the AVRPP focused on the region's pre-classical history, showing several millennia of settlement. Much was however also revealed about Hellenistic and later periods. One major feature was the shift from tell-based nucleated settlements to a dispersed settlement-pattern, a change in other parts of the Near East already seen taking place in the late Bronze or early Iron Age. But, as Wilkinson and Casana put it, this area showed more mixed forms during the Iron Age, with dispersion only really becoming clear in the Seleucid and Roman periods.¹⁰¹ This partly contradicts Graingers' statements of a region exploited and depopulated in Assyrian times which would have left an almost empty countryside by the time Antioch was founded.¹⁰² Of course, it remained "a region with a history of backwater kingdoms",¹⁰³ and while several tell-based settlements were still relatively large (such as Tell Habes), many others were by that time reduced to a size of one hectare or less. Grainger was then correct insofar that the region was not heavily urbanized.

Hellenistic settlements in the valley appear to have been small in size, with an average below 1 hectare, located mostly in the most fertile area, the centre of the plain, close to the rivers. AS 247, most likely identified as Pagrae, may be one of the few Hellenistic towns breaking the pattern, as illustrated by Strabo: "It is a strong fortress situated on the pass over the Amanus, which leads from the gates of the Amanus into Syria."¹⁰⁴

By the Roman period, the number of sites increased significantly, while the Hellenistic settlements mostly remained inhabited. Casana and Wilkinson emphasize the dispersion of these settlements: "the later periods were dominated instead by hundreds of small, low mounds or flat sites", mentioning about a hundred such sites detected by Corona images. Or more specifically, "Of a total of 287 sites that were studied, 205 were inhabited in the Early Roman period; 35 % of these were pre-Roman foundations."¹⁰⁵ Additionally, on most tells some indication of Roman habitation was present as well, but generally only on a very small scale (such as single farmsteads or isolated buildings).¹⁰⁶

¹⁰⁰ Casana and Wilkinson, 'Settlement and Landscapes in the Amuq Region', 26–28; De Giorgi, 'The formation of a Roman landscape', 286; Gerritsen et al., 'Settlement and Landscape Transformations in the Amuq Valley, Hatay', 241.

¹⁰¹ Tony J. Wilkinson, Jason Ur, and Jesse J. Casana, '14. From Nucleation to Dispersal: Trends in Settlement Pattern in the Northern Fertile Crescent', *Side-by-side survey: Comparative regional studies in the Mediterranean World*, 2004 189: 192.

¹⁰² John D. Grainger, *The Cities of Seleucid Syria* (1990) 22–25.

¹⁰³ K. Aslihan Yener, 'The Amuq Valley Regional Projects', in: K. Aslihan Yener, Stephen Batiuk, and Robert Kriech Ritner eds., *The Amuq Valley Regional Projects*, vol. 1 (Chicago 2005) 1–24: 4.

¹⁰⁴ Strabo, 16.2.8.

¹⁰⁵ Gerritsen et al., 'Settlement and Landscape Transformations in the Amuq Valley, Hatay', 251.

¹⁰⁶ Casana and Wilkinson, 'Settlement and Landscapes in the Amuq Region', 40.

Besides a large amount of small settlements or single farms, several larger sites were located in the region as well. Other than abovementioned Pagrae, Imma (AS 345) and Gephyra (AS 297) have been relatively securely identified. Some of the surveyed sites are harder to identify, such as the quite sizeable AS 254 east of the lake, AS 32 north of it, AS 108 to the southeast, and maybe a large site near the Kara Su (AS 192 and 194).¹⁰⁷ The identification of 287 (at Ceylanlı) as Meleagrum, as De Giorgi proposes, was not yet considered by Casana and Wilkinson in 2005, who do describe it as “one of the best-preserved urban landscapes of the Amuq Valley.”¹⁰⁸ Near Meleagrum, AS 273 flourished until the early first century, but declined when Meleagrum grew larger.¹⁰⁹ Nonetheless, even the larger of these sites, (Imma, Pagrae and Meleagrum), were only between 1 and 4 hectares in size.

Additionally, the Amuq valley had the benefit of a relatively strong infrastructure, also explaining the locations of many of the larger settlements. The road from Antioch to Beroea and Chalcis (and further east) must have played a role in stimulating settlement along it, with Imma on the crossroads north to Gindarus and Cyrrhus. A roman bridge built by Gephyra improved the connection south to Apamea. On the road north lay Meleagrum and Pagrae, which also connected to the pass to Alexandretta. It also seems very likely that the rivers flowing through the valley played a role in further integrating the various rural areas with Antioch. At least the Orontes must have been available for river transport.¹¹⁰

There are also signs of clear improvements to the water-infrastructure in the area. Besides the Vespasian canal and the fullers’ canal mentioned in chapter two, there are clear indications of three noria-type water wheels near Imma connected by a canal, from the first century A.D. onwards. Furthermore, a small 50 cm wide channel, suggests that Antioch also received some of its water supply from the east, either in the direction of Imma, or from one of the valleys in the Jebel al Aqra, even though this was only a relatively minor source.¹¹¹ Furthermore, series of canals and waterwheels have also been found at Narlıca (near Tell Habes), Pagrae, and Meleagrum. As De Giorgi writes, these “not only illustrate isolated attempts to maximize financial returns but also suggest the presence of economic designs that exceeded the characteristics of small village agricultural regimes.”¹¹² Essentially, considering these activities in water-infrastructure, there is a strong suggestion towards irrigation-fed rather than only rain-fed agriculture.

Towards the south from Antioch, there is also the area around Daphne, as mentioned in the previous chapter. While not very much can be said, the region appears to have seen a similar level of intense

¹⁰⁷ Gerritsen et al., ‘Settlement and Landscape Transformations in the Amuq Valley, Hatay’, 251.

¹⁰⁸ De Giorgi, ‘The formation of a Roman landscape’, 293; Casana and Wilkinson, ‘Settlement and Landscapes in the Amuq Region’, 42.

¹⁰⁹ Gerritsen et al., ‘Settlement and Landscape Transformations in the Amuq Valley, Hatay’, 251.

¹¹⁰ De Giorgi, ‘Town and Country in Roman Antioch’, 80.

¹¹¹ Casana and Wilkinson, ‘Settlement and Landscapes in the Amuq Region’, 43.

¹¹² De Giorgi, ‘Town and Country in Roman Antioch’, 75.

agriculture, judging from two more norias. The exact extent of the area is not exactly clear, but an outlier of the Amanus range, roughly along the line from Atakoy to Baliklidere may be the mountain up to which Seleucia's territory extended. This also matches the sites indicated with HB (Harbiye) codes on Pamir's map.¹¹³

Highlands

Very noteworthy is the presence of a high density of settlements in the foothills and lower elevations of the Jebel al-Aqra (also often marked as Quseir or Kousseir on maps), a section of which was also surveyed by the AVRPP, and that the limestone massifs to the east, which were studied by Tchalenko, and more recently Tate.

The Jebel-al Aqra It covers more or less 800 km² between the Amuq plain and the Ghab valley to the south. The AVRPP surveyed a limited section to the north side, which consisted of three small drainage basins: the Avsuyu, Zengin and Ilica valleys.¹¹⁴ It is a region of rough terrain, with highly erodible and thin soils of limited fertility. The rainfall here is more abundant than among its eastern cousins, with 500-1500 mm per year, rather than the 300 to 600 mm of the other jebels, as illustrated very clearly in Tchalenko. It is however, still concentrated around the winter months, with barely any precipitation between May and September.¹¹⁵

Compared to the Amuq plains, the farming conditions here appear to be far less than optimal. Unsurprisingly, Hellenistic settlement in the studied valleys was limited to ten isolated farmsteads around the valley floors. However, in the first and second centuries A.D. habitation greatly intensified, to the point that in this period period, in all likelihood most, if not all, of the Jebel al-Aqra was cultivated intensively.¹¹⁶ For the Jebel al-Aqra, settlement rates appear to have reached their peak at the end of the second or third century, slowing somewhat in later periods. Like the Jebels to the east, the highest level of habitation was not reached until the fifth century, when the latest new settlements came into existence.¹¹⁷ Tate additionally mentioned that settlement in the eastern jebels occurred in two phases, one between the first and third centuries, the second

¹¹³ Pamir, Brands, and Figen, 'Hatay İli, Antakya, Samandağ ve Yayladağı: Yüzey Araştırması 2006', 99, image 1.

¹¹⁴ Jesse J. Casana, 'Mediterranean valleys revisited: Linking soil erosion, land use and climate variability in the Northern Levant', *Geomorphology* 101 (October 15, 2008) 429–442: 431–432.

¹¹⁵ De Giorgi, 'Town and Country in Roman Antioch', 76–77; Casana, 'Geoarchaeology and Geomorphology: Soils, Sediments, and Societies', 430–431; Tchalenko, *Villages antiques de la Syrie du Nord*, 1:65; For a clear graphical representation, see especially Georges Tchalenko, *Villages antiques de la Syrie du Nord: le massif du Bélus à l'époque romaine*, vol. 2 (Paris 1953) plan XXIX.

¹¹⁶ De Giorgi, 'Town and Country in Roman Antioch', 77; Casana, 'Geoarchaeology and Geomorphology: Soils, Sediments, and Societies', 435.

¹¹⁷ Tchalenko, *Villages antiques de la Syrie du Nord*, 1:422–425; Georges Tate, 'The Syrian countryside during the Roman era', Susan E. Alcock ed., *The Early Roman Empire in the East*, Oxbow Monograph 95 (1997) 55–71: 58–59; Gerritsen et al., 'Settlement and Landscape Transformations in the Amuq Valley, Hatay', 262–263.

between 330 and 550, the latter of which saw the highest settlement rate.¹¹⁸ Whether initial settlement was linked to large numbers of discharged veterans from the legions, a scenario which is convincingly sketched by De Giorgi based on parallels with the other Jebels, at least the period matches the growing intensity of land use on the plains. It can however hardly be proven that the shift towards the highlands was caused by the plain being settled to its full extent. The exact motivations thus remain elusive.¹¹⁹

Roman settlement in the Jebel al-Aqra was of a similar nature to that in the other jebels. Unlike Tchalenko, who believed the ruins to be that of sizable villas and estates, the habitation appears to be organized in small villages or single farms. For the east, where Tate researched this in detail, most farms appeared to have had two floors, with the lower reserved for functional purposes, such as stabling livestock, while the upper floor was used for the residents.¹²⁰ Nonetheless, the finds in the Jebel al-Aqra do indicate that these farmers were still quite well-to-do: more than half of the sites included mosaic floors, showing this was not limited to the famous villas from Daphne, and in later periods most of the sites were marked by a high level of fineware ceramics.¹²¹

Additional parallels between the Jebel al-Aqra and those to the east lie in their land use. In the first place, like the the Jebel Zahwiye, the land was divided into a large number of small plots, probably defined by soil conditions. With a large prevalence of remains from olive presses and crushers, and most sites found below the 600 m level – the maximum altitude for the cultivation of olive trees in that region – it seems likely that much of this was reserved for oleiculture. I have however no idea if De Giorgi's estimate of 350 presses in the entire region, producing 1.75 million litres of olive oil yearly is reasonable or not. He does mention that cereals could be cultivated on the valley floors, and on small terraces, and suggests that wine production must have been present. According to Tchalenko, who considered the area to have shown a monoculture of olive trees, the settlement of the jebels was stimulated by Antioch's growth and demand for olive oil, with Apamea as another major market, but he considers the production in the area to have been so high that these cities together could not have consumed all produce, and that a significant part must have been exported from there.¹²²

Casana on the other hand appears to imply – by mentioning similarities with Qarawat Bene Hassan and other areas – figures towards a 52% of the land used for cereals, 25% for orchards and 22% for wine.¹²³ For the

¹¹⁸ Georges Tate, *Les campagnes de la Syrie du Nord du IIe au VIIe siècle : un exemple d'expansion démographique et économique à la fin de l'antiquité* (Paris 1992) 187.

¹¹⁹ De Giorgi, 'Town and Country in Roman Antioch', 75.

¹²⁰ Tate, *Les campagnes de la Syrie du Nord du IIe au VIIe siècle*, 203.

¹²¹ Gerritsen et al., 'Settlement and Landscape Transformations in the Amuq Valley, Hatay', 258.

¹²² Tchalenko, *Villages antiques de la Syrie du Nord*, 1:422–423.

¹²³ De Giorgi, 'Town and Country in Roman Antioch', 75–77; Casana, 'Geoarchaeology and Geomorphology: Soils, Sediments, and Societies', 436, 438.

Jebels, Tate clearly showed that land use in the eastern jebels was not only of a mixed nature, but also differed per region, and clearly included a significant place for animal husbandry.¹²⁴

It might be worth mentioning that decline from late antiquity onwards may have been the result of severe upland erosion. It appears that Roman farming practices increased soil erosion in the highlands. Very limited use of terracing or other attempts at soil conservation, and heavy ploughing of the therefore steeper slopes made erosion in heavy concentrated rainfall more likely. A possible period of increased storminess in late antiquity may have had an additional exacerbating influence.¹²⁵

Considering the amount of cultivation in these highlands, those settlements mentioned earlier, whether lying at the foot of the eastern jebels, or en route between the Jebel al-Aqra and Antioch are likely to have played a commercial role in that direction. In a similar vein Tchalenko wrote: “Bâties au pied des montagnes qui entourent la plaine d’Antioche, à moins d’une journée de marche de la capital antique du pays, elles étaient sans doute dans sa dépendance économique immédiate: elles étaient les entrepôts ou s’accumulaient pour elle les denrées agricoles, et les intermédiaires de son commerce avec les régions voisines.”¹²⁶

From across the Orontes, directly opposing Antioch, up to and beyond the north of the Amuq valley lies the Amanus range. Steep and densely wooded, only several semi-intensive pedestrian transects were carried out. Nonetheless, various locations for extractive industries were found, with evidence of copper and gold mining near Kisecik, 8 km from Antioch. Further to the north, around the Beylan pass, quarries were found, as well as indications of farming on higher elevations. It is quite possible that the area between the mountains and the Orontes may also have been farmed, but this area does not appear to have been surveyed.¹²⁷ Also of interest, is the brief mention Casana makes of deforestation in both the highlands and the Amanus fringes, due to farmland clearance and timbering. This would match Libanius’ suggestion of the even the least fertile mountain districts could provide wood for construction.¹²⁸

Territory size

A major point of interest in relation to Antioch is the possible size of its territory. For the size of the most important element of this territory, the Amuq valley, Yener et al. initially mention an approximate 535 km², but later describe it as a ‘roughly 30 x 30 km plain’, the same dimensions as De Giorgi mentions, but

¹²⁴ Tate, *Les campagnes de la Syrie du Nord du IIe au VIIe siècle*, 254–255.

¹²⁵ Casana, ‘Geoarchaeology and Geomorphology: Soils, Sediments, and Societies’, 437–438.

¹²⁶ Tchalenko, *Villages antiques de la Syrie du Nord*, 1:93–95.

¹²⁷ Gerritsen et al., ‘Settlement and Landscape Transformations in the Amuq Valley, Hatay’, 256–257, 262–263.

¹²⁸ Casana, ‘The archaeological landscape of late Roman Antioch’, 112; Lib. Or. 11.25.

describing it as the central plain 30 x 30 plain in a valley of 1400 km² overall.¹²⁹ Personally, looking at the maps provided by Yener et al., and measuring from those sites accepted as part of the valley I came to a trapezoidal area of about 700 km² for the central plain, even leaving a reasonable outside margin of 3 to 5 km on all sides, thus taking AS 227 (Tell Habes) rather than AS 289 as southwest corner, AS 287 (Ceylanlı) as northwest corner, AS 211 (Göktepe) as northeast corner, and AS 202 (Khirbet al-Tahoun) as southeast corner, therefor leaving the large AS 345 (Identified as Imma) entirely out of the picture.¹³⁰ Without the margin (thus measuring from the outer lowland sites in the catalogue), I come very close to the 900 km² figure.

However, there are different views on what else is included, and to what measure these are incorporated. De Giorgi mentions a small shrine nearby Meleagrum that may have marked the northern border of the Antiochene. In his view, the Orontes formed the border between Antioch's and Apamea's territory for the highlands to the south-east. The hills and the upper course of the Afrin would then indicate borders with the territory of Cyrrhus and Beroia.¹³¹ This idea has some merit, but what becomes problematic is De Giorgi's following statement, that this amounts to a polygon of 250km², especially as he also appears to include the northern part of the Jebel Al-Aqra and some of the lower slopes of the Amanus range as parts of this territory. Even a very modest approach, not including the highlands, drawing the border in the extension of the Orontes north-west line up until reaching the Kara Su at the height of Meleagrum, and subtracting the lake, amounts to 375 km². This essentially covers only the western half of the plains, and would already be significantly more if only the surveyed parts of the Jebel al-Aqra and lower slopes of the Amanus were included.

The probable explanation for De Giorgi's lower figure is better represented in another article, where he describes rural settlement around Antioch in two rings: a high density inner ring within 5-10 km of the city with farmsteads and small villages at 1-2 km distances, and an outer, 20-25 km ring, beyond the Orontes "still gravitating on the urban market."¹³² It may be that he only considers only the area directly oriented towards the city as actual territory, and the rest of the valley and highlands to be economically integrated, but more independent from the city.

Whichever way, this area is considerably smaller than that mentioned by Liebeschuetz, who after Seyrig, includes a very large stretch towards the north- and southeast, and large parts of the limestone massifs east of

¹²⁹ Yener, 'The Amuq Valley Regional Projects', 2; Casana and Wilkinson, 'Settlement and Landscapes in the Amuq Region', 29; De Giorgi, 'The formation of a Roman landscape', 284.

¹³⁰ K. Aslihan Yener, Stephen Batiuk, and Robert Kriech Ritner, eds., *The Amuq Valley Regional Projects*, vol. 1 (2005) 259–267 figs. A.1-A.9.

¹³¹ De Giorgi, 'The formation of a Roman landscape', 285.

¹³² De Giorgi, 'Town and Country in Roman Antioch', 74 To arriving at more or less 250 km² on this basis requires the inclusion of those parts of the amuq valley within a 25 km radius and subtracting the lake.

the Orontes, arriving at the immensely higher figure of 6500 km².¹³³ For the area towards the northeast, Liebeschuetz' inclusion of Gindarus to the Antiochene already raises an interesting point. Only following Strabo, Gindarus should still be considered as part of the Cyrrestice.¹³⁴ However, Cohen mentions an inscription from 106 A.D., found in Jenderes, which uses an Antiochene era for its date. Additionally, he refers to Theodoret, who describes it several centuries later as a village controlled by Antioch, which does still lend more support to the idea that the second century inscription indicates Gindarus as falling under the Antiochene.¹³⁵ On those grounds it also seems acceptable to understand Antioch's territory as the entire region which it controls and depends on, rather than just the cultivable lands in its direct surroundings.

The jebels may be somewhat more difficult to assign, which are clearly also included in Liebeschuetz' larger area. This is better explained in Tchalenko and Seyrig, who give the basis for this map. Towards the south, they describe the southern part of Jebel Zahwiye as Apamean territory, but show that inscriptions from the northern half of that Jebel (from Ruweiha and Rayan) use an Antiochene era for their dating like the one mentioned above. The same counts for for inscriptions from several locations in the northern jebels. From this they argue for the influence of Antioch, as the other cities kept using a Seleucid era.¹³⁶ Furthermore, a second century an inscription from a fortlet at Deir Sēta shows that this did not just count for late antiquity.¹³⁷

De Giorgi nonetheless argues that “the boundaries are less clear to the south/southeast, where at least three other cities [...] had an interest in the mountainous district”, and he considers the area east of the Orontes to be Apamean because of inscriptions in several villages on the east bank.¹³⁸ While the former argument has merit, as the jebels lie halfway between Antioch and the other large cities to the east and southeast, the latter argument does in fact less so. As far as I can tell looking at the inscriptions he refers to, studied by J. and J. Ch. Balty, the villages identified there actually seem to correspond perfectly to the border given by Tchalenko and Seyrig. None appear to lie north of Al-Bara, although admittedly I have been unable to locate several of the villages in question myself. This view is however reinforced by Balty and Balty themselves, who also conclude on their findings that the Antiochene era is a good indicator for Antioch's territory (and presumably

¹³³ J. H. W. G. Liebeschuetz, *Antioch : city and imperial administration in the later Roman Empire* (Oxford 1972) 40–41.

¹³⁴ Strabo, 16.2.8.

¹³⁵ Cohen, *The Hellenistic Settlements in Syria, the Red Sea Basin, and North Africa*, 170–171, referring to Theodoret, Philotheos hist. 2.9.

¹³⁶ Tchalenko, *Villages antiques de la Syrie du Nord*, 1:422–423 note 3; Georges Tchalenko, *Villages antiques de la Syrie du Nord : le massif du Bélus à l'époque romaine*, vol. 3 (Paris 1953) 11–14: inscription 10a; 57 fig. 7.

¹³⁷ Tchalenko, *Villages antiques de la Syrie du Nord*, 3:22 no. 21; Tchalenko, *Villages antiques de la Syrie du Nord*, 2:plan LXXX.

¹³⁸ De Giorgi, 'The formation of a Roman landscape', 285.

do know the locations of the villages they name).¹³⁹ It appears then that the Antiochene dating system is the best indication available for the Antiochene territory. Even if we maintain some reserve and suggest that the jebels may present somewhat of a grey area on the basis that distance-wise, the other cities could also have played a role here, the use of the Antiochene era does strongly suggest interaction with that territory, and validates the idea that this region may have been oriented towards the Antioch no matter their official territorial affiliation.

Towards the west is where Liebeschuetz truly appears overly enthusiastic. A large part of what he adds to arrive at his figure would either encroach upon (or completely cover) the territory of Seleukia, or cover the higher ranges of the Musa Daği and Kel Daği mountains. Without this western section, roughly 1200 km², the remainder would still amount to 5300 km². Reducing the areas that spill into the plains of Chalcis and extend into the Cyrrestice, gives about 450,000 ha and covers what I consider the maximum of what could be seen as the Antiochene. This includes the 80,000 ha of the Jebel al-Aqra, 200,000 ha in the eastern jebels, 120,000 ha worth of lowlands and 50,000 ha from the lower slopes of the Amanus and the the Kurt Dağ hills. The absolute minimum would be 91,500 ha, summing up the 10,000 ha across the Orontes, the 5,000 ha around Daphne, a low end 70,000 ha figure for the Amuq plain, and the 6,500 ha of the three surveyed valleys in the northern Jebel al-Aqra.

Carrying capacity

Urbanisation

To attempt an estimate of the capacity of Antioch's territory in feeding the city is no less a methodological challenge than the estimations of the city's population in the previous chapter. A large number of unknowns, a plethora of different approaches and a vast range of opposing opinions and results plague the discussions on agricultural productivity in antiquity.

The main factors that come into play are the ratio of urban to rural population (or urbanisation rates), rural population density, consumption levels, the amount cultivable land, fertility, land use, crop types, seed yields, sowing rates, labour productivity, organisation, innovation and additional production factors (technology, animal labour, etc). Most of these are interrelated, quite a few are hard to quantify, and for practically all, the evidence is very limited. Because of that, the discussion is often simplified to only contain one or several of these variables, or to cover all of them in a single, all-encompassing figure.

¹³⁹ J. Balty and J. Ch. Balty, 'L'Apamène Antique et les limites de la Syria Secunda', *La géographie administrative et politique d'Alexandre à Mahomet: actes du colloque de Strasbourg 14 - 16 juin 1979* (1979) 41–: 57–59, 72 note 147, 73: I was unable to locate 'Zabboude', 'Kerratin', 'Rbe'a', 'Meyzin' and 'Bsilla'.

One such a simplification is to maintain that for each inhabitant of a city, four farmers were necessary to produce enough food. This view is quite likely overly deterministic, but it could serve as a reasonable starting point, although it has clearly been pointed out that higher urbanisation rates might very well be possible, but in practice uncommon.¹⁴⁰ Taking the 100,000 to 200,000 range suggested in the previous chapter as the population of second century Antioch, this would mean that 400,000 to 800,000 people would need to live within its territory. In its largest suggested size of 450,000 ha, this would arrive at a rural population density of 0.89 to 1.78 persons/ha. In the minimum situation given above, this would give a range between 4.37 and 8.74 persons/ha.

To put this into context are the following ideas on rural population densities in ancient world. One of those, offered by Monson for Roman Egypt, amounts to 2 to 3 people/ha of cultivable land, or 2.30 to 3.30/ha of cultivated land.¹⁴¹ But compare De Ligt, referring to Beloch for densities of 0.35 to 0.55 persons/ha for central and southern Republican Italy, but also mentions densities of 1.12/ha for the Ager Campanus (even if not necessarily accepting it).¹⁴² Liebeschuetz, in his study of Antioch around 400 A.D., mentions a figure of 0.61 persons per ha (159/sq. mi), after the population density of Latakia in 1938, the most densely populated province of Syria at that time. He says this ‘may seem excessively high’ but suggests that the situation was better in the fifth century than in 1938, when ‘only half the cultivable land was cultivated.’¹⁴³ Yet other figures for this area are provided by Peña for Jebel Barisha (21,000 inhabitants over 61 villages, amounting to 1/ha) and Jebel A’la (8500 people, with 0.53 per ha) in the fifth and sixth centuries.¹⁴⁴ If the figures by Peña are anywhere near representative for the highlands, and we assume that the higher densities of sites found in the Jebel al-Aqra are due to better conservation of archaeological remains rather than actual higher densities of settlement, then the figures would be relatively acceptable for a low-end estimation of the city size, combined with a larger territory. The densities would still be high, but within the bounds of believability. Even at a population estimated at 100,000 Antioch would be an exceedingly large urban centre, making it less unlikely that the surrounding territory would also show high population densities. On the other hand, no matter which way it is approached, a territory towards the lower end, let’s say anything below 300,000 hectares, seems very unlikely.

Approaching the same issue from that perspective – that a densely populated city would imply a densely populated hinterland – taking 200,000 as the city’s population, the required additional rural population at 800,000, and accepting Egyptian density levels of 2,50/ha as the highest achievable rate, this would require

¹⁴⁰ Paul Erdkamp, *The grain market in the Roman Empire* (Cambridge 2005) 13–14 referring to Schneider (2000) and Davies (1984).

¹⁴¹ Andrew P. Monson, *Agrarian Institutions in Transition: Privatization from Ptolemaic to Roman Egypt* (2008) 32–34.

¹⁴² Ligt, *Peasants, citizens and soldiers*, 108, note 54.

¹⁴³ Liebeschuetz, *Antioch*, 41 note 2.

¹⁴⁴ Ignacio Peña, *The Christian Art of Byzantine Syria* (1997) 40.

320,000 ha of territory, well within the upper limit I suggested above, but the population density would also be well above that suggested for the highlands. Furthermore, without going to the extremes of the model, it leaves rather limited room for the possibility that Antioch grew in the following centuries. Additionally, the model does not show how production was influenced by any other factor than manpower. Consider how the figure of necessary farmers could be altered by improving productivity through animal labour, different organisation of farms, employing a larger portion of the urban population for agrarian purposes, etc.

Soil productivity

A different method that is used to determine carrying capacity does look at a larger selection of the variables mentioned above, by studying those written sources available that mention agricultural yields, usually in terms of yield:seed ratios. Erdkamp gives an overview of the three main sources to that effect; Columella, giving a 4:1 ratio, Cicero, describing 8:1 as normal and 10:1 as a good year, and Varro, who considers 15:1 as exceptionally high, and Erdkamp argues that he must have considered the 10:1 he subsequently mentions as a more regular yield. Where others consider Columella's 4:1 being the norm, Erdkamp believes this to be entirely unreliable and too low. Nonetheless, it merits attention that these authors discussed the better conditions in Italy.¹⁴⁵ On the other hand, the same ratio of 8:1 returns in a non-Italian, late antique setting: Sallares refers to a 8:1 yield in Byzantine Nessana at the Negev on the basis of runoff agriculture (using collected and stored rainwater from a larger area).¹⁴⁶

The problem with yield:seed ratios is that they only show half the picture. This is best explained by Sallares, who argues that while high ratios are quite possible, these are often coupled with very low sowing rates. As plants compete for available nutrients, when plant densities increase, they produce less seed bearing tillers. He states that it is far more useful to speak in terms of soil productivity, or kg/ha. Of course, a problem with this, as pointed out by Erdkamp, is that ancient sources only use yield-seed ratios, like above. They do however provide sowing rates as well, for instance in Varro and Cicero, the latter giving 1 medimnus, or 6 modii per iugerum (207.61 l/ha), the former giving 4 modii/iugerum for beans, 5 for wheat, 6 for barley and 10 for spelt (respectively 138.41, 173.01, 207.61 and 346.02 l/ha).¹⁴⁷ With sowing rates and yield-seed ratios, it should then be possible to calculate soil productivity. The conversion from volume to weight does depend on grain type, weight and size, which in the case of various ancient wheat types were demonstrably smaller.¹⁴⁸ For the purpose of this paper the standard volume to weight factor should suffice¹⁴⁹, although this does

¹⁴⁵ Erdkamp, *The grain market in the Roman Empire*, 36–37.

¹⁴⁶ Robert Sallares, *The Ecology of the Ancient Greek World* (1991) 378.

¹⁴⁷ Ibidem, 375–389; Erdkamp, *The grain market in the Roman Empire*, 34–35.

¹⁴⁸ J. L. Araus et al., 'The historical perspective of dryland agriculture: lessons learned from 10 000 years of wheat cultivation', *Journal of Experimental Botany* 58 (January 1, 2007) 131–145: 137.

¹⁴⁹ With wheat at 0.769 kg/l and barley at 0.6526 kg/l densities.

admittedly add another factor of uncertainty, considering that in reality both average kernel weight and size may have been significantly lower.¹⁵⁰ For wheat, in the cases above, this would amount to sowing rates between 133.04 and 159.65 kg/ha and soil productivity (at 1:8 seed yield) between 1064.35 and 1277.22 kg/ha.

Erdkamp's statement that these sowing rates appear to be fairly normal rings true, insofar that higher rates would probably be excessive.¹⁵¹ This links back directly to Sallares statement of diminishing returns, which are more clearly illustrated by Powell who shows that the highest percentage increases in soil productivity occur between 25 kg/ha and 50 kg/ha, with a still reasonable increase in productivity when doubling this to 100 kg/ha, but rapidly diminishing beyond that.¹⁵²

However, looking at the soil productivity, far lower figures are given by Kehoe when summarising ideas about soil productivity in the Roman Empire. He considers 500 kg/ha as typical for Mediterranean rain-fed farming practices, and 1000 kg/ha for the fertile and intensive agricultural system around the Nile.¹⁵³ For Sallares as well 650 kg/ha is likely only to have been achieved in exceptional circumstances. But compare Araus et al., who did recently show for ancient cereals in the Near East that potential yields in kg/ha were significantly higher than the 500-1000 kg/ha range given above, and at least indicate that a in rain-fed conditions on alluvial soils 1000 kg/ha was feasible. Furthermore, higher figures would be attainable under irrigated conditions, with potential yields doubling. To give a sensible upper margin (if thinking in the order of magnitude given by Araus et al. rather than that of Kehoe and Sallares) consider the following figures given by Ze'ev Safrai for Palestine. He indicates 180-360 kg/dunam (1800-3600 kg/ha) as a high yield, 90-180 kg/dunam (900-1800 kg/ha) for a lesser year, and 150 hg/dunam as a decent working average, stating "this figure may seem to be somewhat high, but reflects the high level of agriculture in Palestine at this time. Crop yields from other provinces in the Empire are not specific enough since they are based on untrustworthy literary references on one hand, or on later sources on the other."¹⁵⁴ Or perhaps we should nonetheless seek it somewhat lower, taking the figures referred to by Araus et al. for Egypt, generally considered the most fertile part of the Empire, within a range of 1200 to 2000 kg/ha.¹⁵⁵

¹⁵⁰ Araus et al., 'The historical perspective of dryland agriculture', 136–137.

¹⁵¹ Erdkamp, *The grain market in the Roman Empire*, 35.

¹⁵² Marvin A. Powell, 'Salt, seed, and yields in Sumerian agriculture. A critique of the theory of progressive salinization', *Zeitschrift für Assyriologie und Vorderasiatische Archäologie* 75 (1985) 7–38: 34–36.

¹⁵³ Dennis P. Kehoe, 'The Early Roman Empire: Production', in: Walter Scheidel et al. eds., *The Cambridge Economic History of the Greco-Roman World* (Cambridge) 541–569: 551.

¹⁵⁴ Zeev Safrai, *The economy of Roman Palestine* (1994) 110.

¹⁵⁵ Araus et al., 'The historical perspective of dryland agriculture', 141–143. They also mention a 4000 kg/ha for Palestine in irrigated conditions (from Amir and Sinclair 1994, non vidi), which does fall well within the potential yields of the various landraces studied by Araus et al., but this still comes across as extremely optimistic.

An example of how such figures are used by Jongman, who attempted calculations for the Italian countryside under the Republic, brings us to another important issue. His numbers gave a 200 kg wheat diet per person, 400 kg yield per hectare (on the basis of a 4:1 yield-seed ratio, thus again somewhat lower than we would expect with a lower yield ratio and comparable seeding rates to those mentioned above), but most importantly, he put this in the context of a two-field system. In other words, he also looks at the level of land left fallow, in its most basic – and most likely – form, amounting to half the cultivable land. With his figures, this would allow 1 person/ha of cultivable land, in the case of my estimates for the Antiochene, between 91,500 to 450,000 people, if the entire territory, including the hills would have been fully planted with grain.¹⁵⁶

Bert van der Spek came with entirely different figures for Neo-Babylonian and Achaemenid Seleucia on the Tigris. His approach looks at seeding rates, yield ratio's and consumption rates in the Diyala region. He describes high yields despite poor soil because of good irrigation and the use of seeder ploughs. In part, he follows Powell, mentioning seeding rates of 133.33 litres barley per ha (82.7 kg/ha), and based on rent contracts from the area assumes a fifteenfold yield, resulting in 2000 litres or 1240 kg/ha.¹⁵⁷ As a comparison, he gives data from the 1950s and '60s, which vary between 1000-1400 kg/ha, to which he adds that the modern farming is less sophisticated and less efficient than that on the large Babylonian estates. Added to that, he considers the local diet to have required around 250 kg per person per year.¹⁵⁸ In other words, a capacity of 4.96 persons/ha.

There are of course significant problems in directly implementing Van der Speks figures in Antioch's case. Firstly, Van der Spek makes no mention of the amount of land left fallow, which suggests that it may well be possible that the figures should be halved. Furthermore, his sowing rate is just over half that of those given by our sources. Then there is the question in how far these farming practices matched those around Antioch. As pointed out by Sallares in response to Powell, the common practice in the Mediterranean would have been dry-farming, sowing most likely in the form of broadcast sowing (in other words, by hand), and there is the question what the staple crop was in this region (with barley clearly giving higher yields, but of a lower calorific value).¹⁵⁹ At least the organisation of the land was likely to have been different: with only 9 villa sites recovered in the Antiochene, the amount of large estates may very well have been rather limited, suggesting less efficiency, if only in labour input.

¹⁵⁶ Willem M. Jongman, 'Slavery and the growth of Rome. The transformation of Italy in the second and first centuries BCE', *Rome the cosmopolis* (2003) 100–22: 114–115.

¹⁵⁷ Clearly on the basis of a somewhat lower density for barley than given above, at 0.62 kg/l. Cf. Powell, 'Salt, seed, and yields in Sumerian agriculture. A critique of the theory of progressive salinization', 33, note 99.

¹⁵⁸ R. J. Van der Spek, 'Feeding Hellenistic Seleucia', in: Richard Alston and Onno M. Van Nijf, *Feeding the ancient Greek city* (Leuven 2008) 33–45: 40–41.

¹⁵⁹ Sallares, *The Ecology of the Ancient Greek World*, 379.

Feeding the Antiochene

According to Hopkins, the great four cities of the Empire; Rome, Alexandria, Carthage and Antioch, all required part of their food to be acquired outside their own territory.¹⁶⁰ But for Antioch, the best indications are that the import of foodstuffs was unusual. For instance, in 362 A.D. after a failed harvest, emperor Julian imported grain from Chalcis and Hierapolis, both relatively nearby, even bordering territories, suggesting that this practice was an emergency measure, not a structural phenomenon.

And since the citizens had everything else in great abundance, wine, for instance, and olive oil and all the rest, but were short of corn, because there had been a terrible failure of the crops owing to the previous droughts, I decided to send to Chalcis and Hierapolis and the cities round about, and from them I imported for you four hundred thousand measures of corn.¹⁶¹

Similarly, Libanius suggested that grain came in at the north-east side of town, much of which via the river. Imports from overseas, via Seleucia Pieria, seem less likely as well. If anything, Antioch was mainly supplied by its own hinterland, or at most from the regions further along the Orontes.¹⁶² There is therefore merit in studying the capacity of Antioch's own territory to feed the city and the rural populace.

Within both models mentioned above, the one only showing the urbanisation grade, the other a selection of inputs for soil productivity, a larger array of influencing factors are hidden, some of which have been briefly mentioned. Nonetheless, between the two at least a basic idea can be formed of the possibilities in the Antiochene, and in doing so, highlights some additional issues specific to the area.

In the first place, there is the question of land available for farming. Saying that the full extent of the territory was brought under cultivation immediately begs the question how realistic this is for the highlands. Considering that on the one hand, habitation in the highlands would not reach its apex until late antiquity, and on the other hand that of the land cultivated, presumably at most half was used for cereals, the answer leans towards a lower figure. Additionally, there are the different conditions between the lowlands and highlands in terms of soil productivity. While for the lowlands the presence of irrigation-fed agriculture can be defended, for the highlands this seems extremely unlikely, thus clearly limiting its productivity.

Nonetheless, the highlands do merit attention. In the first place, they cover nearly 75% of the Antiochene territory. At least a part of this grew cereals, and additional products, such as oil, wine, dairy products and meat were indispensable for the sustenance of a city, even when only of a secondary concern in purely

¹⁶⁰ Keith Hopkins, *Models, ships and staples*, vol. 8 (1983) 89–93.

¹⁶¹ *Misopogon* 369.

¹⁶² Lib. *Or.*11.250, 260.

calorific terms.¹⁶³ It has actually been argued by Jongman, and shown to be likely that these products also provided a far larger portion of the calorific requirements in Mediterranean diets than usually acknowledged, perhaps even covering half the requirements for subsistence – although Jongman does at this point admit that his figure for olive oil consumption is very insecure.¹⁶⁴ Say that there were only half the amount of presses estimated by Decker, with only half the output given by De Giorgi, the jebels would have provided enough in oil and wine to cover the requirements of over half a million people.¹⁶⁵ Rather than simply adopting Jongman's 50%, for the following estimates I remain on the safe side between 10% and 25% for non-cereal calorie sources.

It is also unclear how much attempts were made to limit fallow land. It is possible that some improvements to the restoration of soil nutrient levels were achieved by forms of crop rotation and better integration of husbandry, but there are considerable doubts on the subject.¹⁶⁶ Sallares mentions a practice in the Near East of planting on the same ground every year, but in yearly alternating furrows, thus significantly reducing fallow.¹⁶⁷ While Sallares does not go into detail, it seems logical that this would be at the cost of lowering soil productivity. The halving of the seeding rates would probably still be offset by a higher yield:seed ratio, but it seems unlikely that nitrogen levels would restore as much as they would with soil the lying fallow (but the result would probably still be a net gain).

Perhaps also of interest here is a study based on 10- and 14 year series of trials in northern Syria with barley rotation and continuous cropping of barley, also showing the influence of fallow on unfertilized, rain-fed barley. Jones and Singh showed that within the scope of the trials, while continuous cropping of barley without fallow resulted in a cumulative decrease in soil productivity, the mean improvement of productivity after a year of fallow was somewhat less than what would have been produced if the land had been planted. This becomes even clearer when fertilizers are used. While this does not seem sensible in the long term, it does explain current Syrian farming practices, where fallow only occurs in years of drought.¹⁶⁸ Such short-term gains might have been achieved by occasionally skipping fallow, but I would not assign anything beyond

¹⁶³ Furthermore, fish appears to have been part of the Antiochene diet, besides from the sea, possibly caught in the lake of Antioch and the river as well. See Libanius, *Or.*11.259-260.

¹⁶⁴ Willem M. Jongman, 'The Early Roman Empire: Consumption', in: Walter Scheidel et al. eds., *The Cambridge Economic History of the Greco-Roman World* (Cambridge) 592–618: 603–604.

¹⁶⁵ Sean A. Kingsley and Michael J. Decker, *Economy and Exchange in the East Mediterranean during Late Antiquity: Proceedings of a Conference at Somerville College, Oxford, 29th May, 1999* (2001) 81–82.

¹⁶⁶ Kenneth D. White, 'Fallowing, Crop Rotation, and Crop Yields in Roman Times', *Agricultural History* 44 (July 1, 1970) 281–290; Kehoe, 'The Early Roman Empire', 551–552; J. Geoffrey Kron, 'The much maligned peasant. Comparative perspectives on the productivity of the small farmer in Classical Antiquity', in: L. De Ligt and S. Northwood eds., *People, land, and politics demographic developments and the transformation of Roman Italy 300 BC-AD 14* (Leiden 2008).

¹⁶⁷ Sallares, *The Ecology of the Ancient Greek World*, 377.

¹⁶⁸ M. J. Jones and M. Singh, 'Long-term yield patterns in barley-based cropping systems in northern Syria. 3. Barley monocropping', *The Journal of Agricultural Science* 135 (2000) 251–259: 254–255.

an admittedly very impressionistic 10% gain in fallow reduction, thus from 50% to 45% of total land left to rest.

Table 2 sketches six scenarios to illustrate some of the possibilities in feeding the population of Antioch and its territory. Area size has been kept constant on the upper range given in this chapter. On the right side I have given the maximum population figure that could be supported within the limits I would consider as given above, and also the results of using minimum inputs for the variables. For the highlands' rain-fed agriculture, a 500 to 1000 kg/ha range might have been achievable, but I consider only the lower half of that range likely, thus putting its maximum at 750 kg/ha.

Table 2: population scenarios

	<i>Low #1</i>	<i>Low #2</i>	<i>Med #1</i>	<i>Med #2</i>	<i>Med #3</i>	<i>High</i>	<i>Min</i>	<i>Max</i>
<i>P_{urb}</i>	100,000	100,000	150,000	150,000	150,000	200,000	100,000	300,000
<i>u</i>	0.2	0.25	0,25	0,28	0,29	0.33	0.49	0.34
<i>P_{rur}</i>	400,000	300,000	450,000	386,800	366,000	409,600	102,500	591,000
<i>P_{rur}/A</i>	0.89	0.67	1.00	0.86	0.81	0.91	0.23	1.31
<i>P_{tot}</i>	500,000	400,000	600,000	536,800	516,000	609,600	202,500	891,000
<i>Q_l</i>	1000	1000	1200	1100	1200	1300	500	1500
<i>Q_h</i>	500	500	550	525	600	550	500	750
<i>gr</i>	38%	30%	40%	40%	25%	40%	25%	50%
<i>fa</i>	45%	50%	48%	50%	50%	50%	50%	45%
<i>c</i>	80%	84%	75%	75%	75%	75%	100%	75%
<i>P_{max}</i>	502,425	403,571	600,704	536,800	516,000	609,600	202,500	891,000
<i>A</i>	450,000	<p><i>P_{urb}</i> = Urban population, <i>P_{tot}</i> = Total population, <i>P_{rur}</i> = Rural population, <i>u</i> = urbanisation factor, <i>P_{max}</i> = maximum population, <i>A</i> = territory (ha) , <i>Q_l</i> = productivity lowlands (kg/ha), <i>Q_h</i> = productivity highlands (kg/ha,) <i>gr</i> = percentage highlands used for cereal cultivation, <i>fa</i> = percentage of fallow, <i>C</i> = total consumption¹⁶⁹ (kg), <i>c</i> = percentage of non-cereal consumption, <i>A_h</i> = area highlands, <i>A_l</i> = area lowlands</p> $P_{tot} \leq P_{max} = A_l \times \frac{Q_l \times fa}{c \times c} + A_h \times \frac{Q_h \times fa \times gr}{c \times c}$						
<i>A_l</i>	120,000							
<i>A_h</i>	330,000							
<i>C</i>	250							

Looking at the maximum and minimum considerations, a 300,000 population for the city would fit in this model only just raising the urbanisation rate above 33%, but the rural population density would still become

¹⁶⁹ Jongman, 'The Early Roman Empire: Consumption', 599.

rather high. I believe that if this level of population was ever achieved, it would have required a structural supply of food from other locations, or an exceptionally (but still not impossibly) high soil productivity. On the other hand, a pessimistic view of soil productivity and diet, while maintaining that the population of Antioch was at least 100,000 people strong, results in an impossible scenario. The urbanisation factor would be too high, as the territory would then not be able to feed much more than 200,000 people. It would be senseless to suggest doubling the number of people living in the countryside, as this would either require the entire city to be fed on imported foodstuffs, or even less likely, part of the rural population. Suggesting a lower urban population figure, at most 67,500 would work, but is at odds with the findings of the previous chapter. Increasing productivity from this scenario, but reducing the total area gives similar problematic results, even when this is slightly offset by the lower percentage of highlands cultivated with grain, where the first reductions in territory should be considered. Additionally, if these areas belonged to Antioch's neighbouring cities rather than Antioch, necessitating imports to feed the city, the relatively short distance would still mark these areas as prime candidates to provide these imported foodstuffs. In that case the same area would still be worth considering in calculating carrying capacity.

Without raising the urbanisation factor from 0.2 for a higher urban population than 100,000, the total population figure comes too close to the upper limit, but even a low end estimate for Antioch with a low urbanisation rate (scenario low #1) gives a relatively high total population. In comparison, the higher urbanisation rate in scenario low #2 allows to decrease pressure on other variables, most notably the amount of fallow. The higher urbanisation rates of course also beg the question to what level the city's workforce was employed in rural activities.

Comparing scenarios medium #1 and high shows the significant influence of decreasing fallow more clearly (a 2% decrease requires a 5.2% increase in lowland soil productivity to maintain the same population figure). While tempting to suggest advances in this field, it seems nonetheless more likely that soil productivity was only increased by whichever other means, than that fallow was successfully decreased. For the medium ranges, #3 shows that it is still possible to limit the amount of highlands used for cereal cultivation to a more reasonable 25%, but at the cost of increasing soil productivity. Towards the high end of the suggested population size for Antioch, nearly all variables start approaching their limits.

Clearly, it is possible that a population within the size range given in the previous chapter was provided with food from the territory. It does however require higher soil productivity than generally considered for any province other than Egypt. Still, given that such yields are well within the potential of the crops grown, it should not be dismissed right away. Attempts may have been made to improve productivity by other means, not the least of which being irrigation, or perhaps for the highlands by planting barley, being more suited for conditions of high variability and lower levels of rainfall. The net limits of this model may have even pushed

somewhat further, for instance by 'eliminating' fallow through planting in alternate furrows. It seems in every case likely that agriculture was intensified to match the needs of a burgeoning population, and similar pressure would explain the large extent to which even the more marginal parts of the highlands were cultivated.

Chapter 3: Explaining Antioch

Antioch as a 'third world metropolis'

Grainger describes the Hellenistic foundations in Syria as an artificially created system of cities, in locations that were not optimal from an economic point of view. He draws a compelling picture that only after the foundation of Seleucid cities, “geographical, economic and historical processes” influenced them, slowly resulting in a more ‘natural’ hierarchy, in line with Christaller’s central place theory.¹⁷⁰ Even though he remains vague as to the mechanisms by which this would have taken place, he describes how Seleucia Pieria would have been a better candidate to become the capital in the following century, had it not been captured by Ptolemy III in 246 B.C.. He does admit that before the loss of Asia Minor the Seleucids did not have a fixed seat for their dynasty, with royal presence moving between variety of locations. Seleucia Pieria in Ptolemaic hands would have put Antioch on the frontline against the Ptolemies, suggesting the need for an increased garrison in Antioch. This, and the presence of a palace from Seleucus II onwards would, according to Grainger, have stimulated growth in Antioch. The eventual loss of Asia Minor then consolidated Antioch’s position as a base of operations and as a royal seat.¹⁷¹ Laurianne Martinez-Sève rightly points out that Seleucia on the Tigris would in all likelihood have held its primacy for a longer period, even though the acquisition of Asia Minor did give the cities of the Syrian Tetrapolis a more central location. The remainder of her argument matches that of Grainger: there was no true Seleucid capital, but Antioch gained its importance first as a base of operations, which consolidated with the loss of the non-Syrian territories, up to and including Mesopotamia to the Parthians.¹⁷²

While Grainger and Martinez-Sève clearly mapped out the historical events that would result in the hierarchy of cities as it turned out at the end of the Seleucid period, the mechanism behind the actual growth or decline in size of the cities remains a vague and implicit result of the order of the cities in terms of military and administrative importance. Furthermore, no explanation is given for Antioch’s eventual extraordinary size, although this of course falls outside the timeframe of Grainger’s study. However, with the mention of urban geography and Christaller’s central place theory, Grainger does point at a source of potential theoretical frameworks from which to draw some ideas. The basic explanations for the formation of a megalopolis are essentially the same as those of urbanisation in general, with the main ‘pull’ factor the wage differential between city and countryside, and a high rural population density one of the major ‘push’ factors, as it results in limited possibilities to find work and declining living conditions.¹⁷³ The latter factor, high rural population densities, seems to come forward from the densities proposed in the previous chapter. And Cumont similarly

¹⁷⁰ Grainger, *The Cities of Seleucid Syria*, 120–123.

¹⁷¹ *Ibidem*, 120–125.

¹⁷² Martinez-Sève, ‘Peuple d’Antioche et dynastie seleucide’, 22–32.

¹⁷³ Rasha Gustavsson, ‘Explaining the phenomenon of third world urban giants: The effects of trade costs’, *Journal of Economic Integration* 14 (1999) 625–650: 626.

argued that among Syrian inscriptions in the rest of the empire, a large portion originated from the jebels.¹⁷⁴ A variety of explanations has been offered for the specific conditions that would then go beyond the regular formation of cities, instead preferring the rise of a single primary centre of very large proportions. A major contribution here has been that of Krugman, in his paper *Trade policy and the third world metropolis*. Krugman argues that policies limiting foreign trade stimulate agglomeration in a single centre. Agglomeration is basically described as firms being drawn to a single region to benefit from external economies (forward linkages), thereby increasing the market and allowing firms to pay higher wages (backward linkages), drawing in additional workers. The more closed a region would be to international trade, the stronger the dependency of firms on inputs from within the region, thus increasing the achievable external economies by locating close to each other. Conversely, the presence of stronger international trade would reduce agglomeration.¹⁷⁵

It is hard to determine to what level the Syrian economy was closed vis-à-vis either the rest of the Empire, or towards the east. For Antioch itself, the coinage found in the Princeton excavations did show interaction between Antioch and a broad range of other cities, mainly in the eastern half of the Empire: Asia Minor, Syria, some coins from Egypt, and a single one from Seleucia on the Tigris, but predominantly from the mint of Antioch itself.¹⁷⁶ Additionally, it is hard to translate a series coin finds into patterns of economic exchange. Similarly, pottery finds in Antioch were predominantly of local make, with a very limited number of ceramics from kilns in Italy and Gaul (although more of those were found from the first century).¹⁷⁷ Even so, Decker argued that on the export side, the region of Antioch did indeed export large quantities of wine and olive oil.¹⁷⁸ On the import side, a series of Syrian trader communities have been attested throughout the west, such as the Tyrian community in Puteoli, and imports from all over the west were found in Syria, ranging from ceramics and foodstuffs to different types of marble and even sarcophagi. When it comes to customs duties or tariffs, there is no reason either that this was any different from elsewhere in the empire. So, whether or not Syria “represented one of the most active centers of commerce in the Roman Empire”, it does not generate a picture of being more closed off than regions that did not see such exceptionally large cities as Antioch.¹⁷⁹

Gustavsson studied the same topic, but came to quite different results than what would be expected in Krugman’s model. High trade costs, considered as tariff and non-tariff barriers, either had no significance or

¹⁷⁴ Franz Cumont, ‘The Population of Syria’, *The Journal of Roman Studies* 24 (January 1, 1934) 187–190: 189.

¹⁷⁵ Paul Krugman and Raul Livas Elizondo, ‘Trade policy and the third world metropolis’, *Journal of development economics* 49 (1996) 137–150: 139–140, 149.

¹⁷⁶ F. O. Waagé, H Comfort, and D. B. Waagé, eds., *Antioch-on-the-Orontes*, vol. 4.2 (1948) 80–98.

¹⁷⁷ F. O. Waagé, H Comfort, and D. B. Waagé, eds., *Antioch-on-the-Orontes*, vol. 4.1 (1948) 62–63.

¹⁷⁸ Kingsley and Decker, *Economy and Exchange in the East Mediterranean during Late Antiquity: Proceedings of a Conference at Somerville College, Oxford, 29th May, 1999*, 76–81.

¹⁷⁹ Maurice Sartre, *The Middle East under Rome*, Catherine Porter, Elizabeth Trapnell Rawlings, and Jeannine Routier-Pucci trans. (Cambridge (Mass.) 2005) 260–273.

resulted in decreased concentration. An explanation offered by Gustavsson is that for Krugman's model to function, forward linkages, in terms of dependence on intermediate production, needs to exist, where the producers of intermediate goods and those of finished goods cluster together. Gustavsson then suggests that in the less industrialized countries he studied "economies rely more on production of homogenous goods, which in turn does not involve heavy reliance on intermediate inputs."¹⁸⁰ A similar assumption could be made for the case of Antioch, that if industry was present, it would probably not depend on intermediate production, or at least, that intermediate products were not subject to transport in bulk. Although even this assumption may be problematic, considering that one of the few attested industries in Antioch, fulling, is essentially an intermediate process. Which begs the question to what level textiles were traded over longer distances, where they were processed, etc. And there even are indications, be it from the fourth century, that cheap, unbleached Antiochene linen was exported to Rome.¹⁸¹

Perhaps the largest problem with implementing this theory is that it attempts to define a metropolis in the context of a modern, industrial society, even if it looks at 'developing' countries. Assumptions of mobility of persons and industry may have a somewhat weaker basis, but perhaps more importantly, the economic basis for urban industries may have been different. In a highly abstract and rather a-historical sketch of 'all' pre-industrial urbanisation, R. J. Johnston does create an alternate framework in which to understand Antioch's primacy. For Johnston, in the first place political power would determine the hierarchies between urban centres in a pre-industrial situation. The rise of a local elite able to extract surpluses from the surrounding area would stimulate further non-agrarian services to meet the elite's need in maintaining or increasing the elites power, in turn requiring a larger supply of agrarian surpluses, creating a self-stimulating process of urbanisation. With finite limits to the productivity of the territory, continued growth would require expansion of said territory, in turn necessitating additional second or third tier political centres to extract surpluses further afield, the size of which would then again be determined by the ability of local elites to extract additional surpluses. An additional factor coming into play would then be increasing independence of subservient elites and producers at greater distances, requiring reallocation of surpluses to pay for their loyalty. In case of increased merchant activity, or the rise of a mercantile class, this hierarchical distribution of control centres of power would transform into a central place distribution, but in all likelihood crystallize the original distribution.¹⁸²

While this largely corresponds to a view of feudal Europe in a rank-redistribution pattern, evolving with the rise of early-modern mercantilism into a central-place pattern, Johnston states that both earlier, and beyond northern Europe, large urban centres formed under similar combinations of rank redistribution and

¹⁸⁰ Gustavsson, 'Explaining the phenomenon of third world urban giants', 641.

¹⁸¹ Kevin Butcher, *Roman Syria and the Near East* (2004) 211–212.

¹⁸² R. J. Johnston, *City and Society: An Outline for Urban Geography* (2013) 51–65.

mercantile activity.¹⁸³ The most important difference with the trade and mobility driven models above, is that political power – allowing redistributions of extracted surpluses within the city – is seen as the main determinant in city size. Which makes the initial unspoken assumption by Grainger explicit. In a similar vein, Ades and Glaeser, attempting to test influences on urban concentration in a series of cases, including pre-industrial ones, were also more convinced that concentration of power was a stronger determining factor than limitations in foreign trade in the formation of a single large urban centre rather than a series of smaller ones.¹⁸⁴ This view is further reinforced by Davis and Henderson, who studied the influence of political form (essentially in a range from ‘dictatorship’ to ‘democracy’) and government policies favouring a single centre. Their influence on the phenomenon of urbanisation itself appeared to be virtually nonexistent – which is at odds with Johnston – but the influence on its concentration in a single primary centre was found to be significant.¹⁸⁵

An additional factor that the various studies found to be of influence on urban primacy is infrastructure. On the one hand, Ades and Glaeser, and in the same line, Davis and Henderson, argue for a negative relation between infrastructure and urban concentration.¹⁸⁶ Or better explained, the stronger the infrastructure, the better the hinterlands are connected to inter-regional trade, the less urbanism would be concentrated in a single centre.¹⁸⁷ This is harder to translate to the case of Antioch, as its growth coincided with clear improvements in infrastructure. Only if primacy is posited in political terms, the improved infrastructure also allows for stronger political (and military) control, which was in actuality the main rationale behind the improved road and river network. But compare also Gustavsson on this topic, who in fact concludes quite the opposite, that lower trade costs within borders (essentially, a better infrastructure) encourage agglomeration. He opts that this should be considered in a case to case basis.¹⁸⁸ Perhaps the better explanation for Antioch lies in the predominantly agrarian character of the Roman economy. This should according to Ades and Glaeser generally discourage agglomeration, because production is necessarily distributed over a large area, transport costs result in dispersal of urban centres.¹⁸⁹ But improving internal infrastructure in an agrarian situation, thus reducing transport costs, would then result in the possibility of increased agglomeration in a single location because movement of products along longer distances becomes

¹⁸³ Ibidem, 85–87.

¹⁸⁴ Alberto F. Ades and Edward L. Glaeser, ‘Trade and Circuses: Explaining Urban Giants’, *The Quarterly Journal of Economics* 110 (January 2, 1995) 195–227.

¹⁸⁵ James C. Davis and J. Vernon Henderson, ‘Evidence on the political economy of the urbanization process’, *Journal of Urban Economics* 53 (January 2003) 98–125: 110–112, 120.

¹⁸⁶ Ades and Glaeser, ‘Trade and Circuses’; Davis and Henderson, ‘Evidence on the political economy of the urbanization process’, 112, 120.

¹⁸⁷ Davis and Henderson, ‘Evidence on the political economy of the urbanization process’.

¹⁸⁸ Gustavsson, ‘Explaining the phenomenon of third world urban giants’, 641–642, 645.

¹⁸⁹ Ades and Glaeser, ‘Trade and Circuses’, 195–196.

viable. Only in a more industrial setting, which considers production to be a mobile factor, would decreasing internal transport costs result in a dispersion of cities.

Antioch as a consumer city and centre of power

A model in which ancient cities are often described is that of Weber's consumer city. In *Beyond the limits of the 'consumer city'*, Erdkamp argues that the consumer city should not be defined by a lack of production, but rather by the one-way character of interaction with the countryside. Redistribution of extracted surpluses could however still provide a basis for a strong urban economy, including high levels of production.¹⁹⁰

Some ideas of how applicable this idea is in the case of Antioch's relation with its territory can be discerned from its layout. John Bintliff discusses various models in regards to regional market structure, settlement hierarchy, also related to the feeding of Athens and other *megalopoleis*.¹⁹¹ On the one hand, the presence of Antioch appears to have stimulated a series nuclei in the region that match the expected locations for intermediary markets or 'service-centres', all covering a part of the surrounding countryside that would limit travel time for peasants, to and from the centre, to less than a day.¹⁹² Nearly all of these were new formations from the late Hellenistic and early Roman periods, mostly well connected to Antioch, and the presence of *norias* further suggests they provided functional services to the surrounding area. Interestingly, most of their locations seem very much to have been determined by the main trade arteries, the roads and rivers. This would most strongly match Christaller's transportation principle spatial system, for which "we might envisage an early state system where political or military control dominate the location of all significant settlements, or where regional surplus production was so commercialised that settlement location was predicated to long-distance transport links"¹⁹³ Even so, at least in the lowlands the locations of more or less all of the larger nuclei in the area appear quite evenly spread out, 10 to 20 km apart, at least two of which falling outside the main infrastructure lines. This does suggest that between them they could well have played a function as service centres or local markets in the area, focussed on the countryside within 5 to 10km radii. See figure 6 for an idea of how their service areas might have been distributed. Further towards the south, along the road to Apamea and bordering the jebels, Tchalenko indicated an additional number of villages that could have had a similar function.¹⁹⁴ From that point of view, Christaller's 'nourishment' based network does make sense, and gives merit to Bintliff's statement that "once such giant agglomerations come into existence in

¹⁹⁰ Paul P. M. Erdkamp, 'Beyond the Limits of the 'Consumer City'. A Model of the Urban and Rural Economy in the Roman World', *Historia: Zeitschrift für Alte Geschichte* 50 (2001) 332–356.

¹⁹¹ John Bintliff, 'Going to market in antiquity', in: Eckart Olshausen and Holger Sonnabend, *Stuttgarter Kolloquium zur Historischen Geographie des Altertums 7 1999: Zu Wasser und zu Land. Verkehrswege in der antiken Welt* (Stuttgart 2002) 209–250.

¹⁹² *Ibidem*, 240.

¹⁹³ *Ibidem*, 215.

¹⁹⁴ Tchalenko, *Villages antiques de la Syrie du Nord*, 1:92–96.

advanced largescale societies, they can stimulate market forces through the logistics of their supply network.”¹⁹⁵

Both De Giorgi and Bintliff suggest Von Thünen’s isolated state model to describe a megalopolis and its territory, which would reflect this commercialization of the countryside. Indeed, the high density of sites within the closest distance to Antioch, with 1.5 km average distance between them, corresponds to the idea of an inner zone focused on market-gardening, with lower densities further in the region.¹⁹⁶ Additionally, irrespective of how this would fit in Von Thünen’s model, the high density of sites in the jebels, with their focus on oil, wine and husbandry (perhaps indeed because of relative ease of transport of these goods?) may further suggest that the demand in Antioch had grown sufficiently to stimulate agriculture in this more challenging and less well connected region.

Still, as mentioned in the previous chapter, despite their urban functions in relation to surrounding countryside, only in the following centuries did most of the more central locations grow in size to acquire a more urban character, at which point they also appeared to have become more independent from Antioch.¹⁹⁷ So while functioning as a ‘nested urban supply network’¹⁹⁸, the levels of urbanisation in these centres was very low, suggesting that Antioch remained the main focus of the territory.

All indications towards the organisation of Antioch’s rural production point towards a certain level of diversity. Once again, the best evidence is from later antiquity. Liebeschuetz indicates the coexistence of tenancy, possibly including requirements for the tenant to provide labour, seasonal labourers, sharecropping, but also independent peasants.¹⁹⁹ But even the latter were presumably taxed, as indicated in a passage by Libanius who described how villages paid soldiers to drive off tax collectors.²⁰⁰ Putting this in Erdkamp’s terms, for Antioch, the relationship between city and countryside comes across as non-reciprocal extraction rather than exchange. Of course, considering the large extent of the territory, there is the suggestion that the more distant and marginal areas in the eastern jebels were more independent from the city.²⁰¹ There is for the other side of the equation, urban production geared towards the countryside, little solid evidence whether

¹⁹⁵ Bintliff, ‘Going to market in antiquity’, 244.

¹⁹⁶ De Giorgi, ‘Town and Country in Roman Antioch’, 74; Bintliff, ‘Going to market in antiquity’, 244–245 Both referring to Von Thünen’s model.

¹⁹⁷ Gerritsen et al., ‘Settlement and Landscape Transformations in the Amuq Valley, Hatay’, 263–266.

¹⁹⁸ John Bintliff, ‘Considerations on Agricultural Scale-Economies in the Greco-Roman World’, in: Richard Alston and Onno M. Van Nijf, *Feeding the ancient Greek city* (Leuven 2008) 17–31: 26.

¹⁹⁹ Liebeschuetz, *Antioch*, 62–73.

²⁰⁰ Libanius, Or. 47.7-10, as referred to by Nigel D. Pollard, *Soldiers, cities, and civilians in Roman Syria* (Ann Arbor (Mich.) 2000) 90.

²⁰¹ L. de Ligt, *Fairs and markets in the Roman Empire: Economic and social aspects of periodic trade in a pre-industrial society* (1993) 236–237.

Antioch profited greatly from industries whose produce was intended for the rural market.²⁰² It is very hard to define much of urban Antioch's production. We know of the presence of fullers, bakers, and possibly metalworkers, but beyond that little can be said. Even so, the general picture that emerges is that the network in Antioch's territory was mainly focused on supplying the city, rather than a reciprocal exchange of goods with the city.

Both in that context, as well as that sketched above, the preconditions for a consumer city to grow to the size that Antioch presented would depend on the concentration of actors able to direct large amounts of surplus to the city. On the one hand, the city would have needed to attract the Syrian elites and landowners. With the highest representatives of imperial power located here, the location would be attractive at least in terms of attempting to acquire what essentially boils down to *Königsnähe*, although cities may have preferred petitioning the more distant emperor than involving local Roman officials.²⁰³ Still, clustering around authority could of course be a simple continuation from the later Hellenistic period, when actual royal authority focused in Antioch.²⁰⁴ If anything, the luxurious villas, baths, and other amenities will have made for a welcoming habitat, and suggest that the city was indeed a focus of Syrian wealth.

On the other hand, Pollard writes how Antioch would have been an administrative and logistical centre for the Roman military in Syria, with the governor of Syria, having his seat in Antioch, also being a military commander. The higher echelons of military command in Syria would as such be expected in Antioch. On a local level, this may also have been reflected by the influence of military officials on the government of Antioch, but while documentation on provincial administration in Syria may be limited, it seems that direct intervention in local politics was not very common. In later centuries, as might also be evident from Libanius, this influence did increase. Additionally, the military may have performed a role in tax collection, customs duties, policing and in some cases performed judicial functions.²⁰⁵

Admittedly, these are only tentative explanations, and would gain much from a side by side comparison with cities like Carthage and Alexandria. The nature of Antioch's interaction with other Syrian cities, especially those along the Orontes – being the main artery available for extraction of resources at a greater distance – also deserves additional attention. If Wilson's overview of population figures in the Roman Near East is anywhere near correct, this suggests a far more balanced rank-size hierarchy than that offered within the Antiochene territory itself, even if some of the other cities also appear to be very large.²⁰⁶ Of course, what

²⁰² Erdkamp, 'Beyond the Limits of the 'Consumer City'. A Model of the Urban and Rural Economy in the Roman World', 344.

²⁰³ Pollard, *Soldiers, cities, and civilians in Roman Syria*, 86.

²⁰⁴ Downey, *A history of Antioch in Syria from Seleucus to the Arab conquest*, 112–118.

²⁰⁵ Pollard, *Soldiers, cities, and civilians in Roman Syria*, 85–91, 93–101.

²⁰⁶ Alan Bowman and Andrew Wilson, eds., *Settlement, Urbanization, and Population* (2011) 190–191.

that means is an entirely different question, but may suggest that in respect to these cities, other factors than only political control also played a role in urbanisation and relative urban concentration.

Conclusion

No matter which way it is approached, of the many names it was given, Antioch certainly deserved 'the Great'. During the Roman period, it was one of the largest cities of the Empire, surpassing many others in size, wealth, magnificence and history. As the capital of Roman Syria, it was not only an administrative centre, but also served as the springboard for Rome's wars with the Parthian east. Even so, while still immense, it seems likely that the city itself was less populous than sometimes held by ancient and modern authors alike.

Even while much of the remains of the city are buried deep and remain unknown, quite a reasonable amount can still be said about the physical form and nature of Antioch. The city covered both an area between the left bank of the Orontes river and the Silpius and Staurin Mountains, as well as a large island that was formed by the river. Within its walls, large parts of which are still standing today and many other sections have been securely located, the city had between 380 and 490 hectares of built-up space. In this area lived at least 84,000 inhabitants, and probably more. Beyond the walls, Antioch's suburbs stretched far and wide. Even if it is hard to discern exactly how much so, a tentative range between 200 and 760 hectares can be given, which includes beautiful Daphne. At least for the second century, a low-end figure within this range seems most likely, but this still allows for a likely total population range between 140,000 to 180,000.

Similarly vast was the territory of Antioch. Probably stretching over 4000 km², it incorporated a large, fertile and well irrigated river valley, but also vast stretches of highland areas, that also came to be fully cultivated despite their rougher nature. Chapter three argued that it is possible that enough food was produced within this territory to feed the city, on top of a far larger part of produce that must have been consumed locally by an immense rural population, who may well have numbered three to four times the amount of people living in the city. This does rest on the assumption that agrarian production was of a high level compared to many other parts of the Empire, and certainly higher than some scholars would deem likely. Even so, it has been pointed out that under the right conditions, such levels of production may very well have been achieved. Notwithstanding, this does cause a preference towards the lower end of the population estimate for the city.

How and why a city as large as Antioch could come into existence is harder to answer. The current, but admittedly fragile explanation offered above prefers political over economic factors as the main drivers behind the concentration of population in a single, large centre as Antioch. With most production of an agrarian nature and high trade costs, a more decentralized network of smaller urban centres would make more sense from an economic point of view. The best explanation for Antioch defying this logic should then be sought in what made the city special: its political importance in the Roman Near East, embodied by the presence of powerful elites and military officials.

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Images



Figure 1 Wilber's map of Antioch²⁰⁷

²⁰⁷ Downey, 'The Size of the Population of Antioch', Image 11.

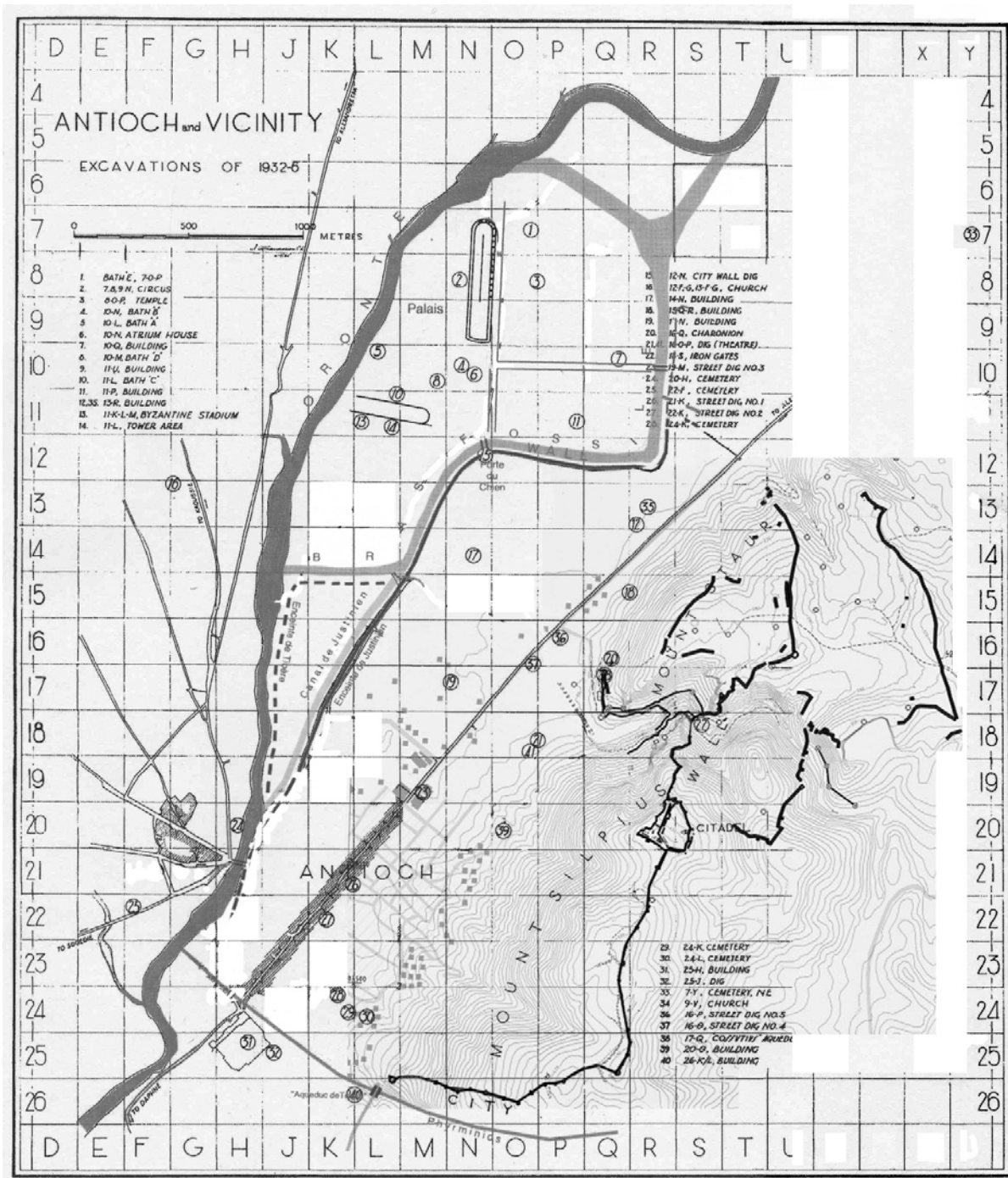


Figure 2 Combined map of Antioch using material from the Princeton excavations, Weferling et al. and Poccardi²⁰⁸

²⁰⁸ Campbell and Stillwell, *Antioch-On-the-Orontes*, 2:215; Weferling et al., 'Antiochia am Orontes – Geodäsie un Photogrammetrie als unverzichtbarer Beitrag in bauhistorischen und archäologischen Projekten', 298; Poccardi and Leblanc, 'L'eau domestiquée et l'eau sauvage à Antioche-sur-l'Oronte', 249.



Figure 3 Corona image of island location <<http://corona.cast.uark.edu/>>

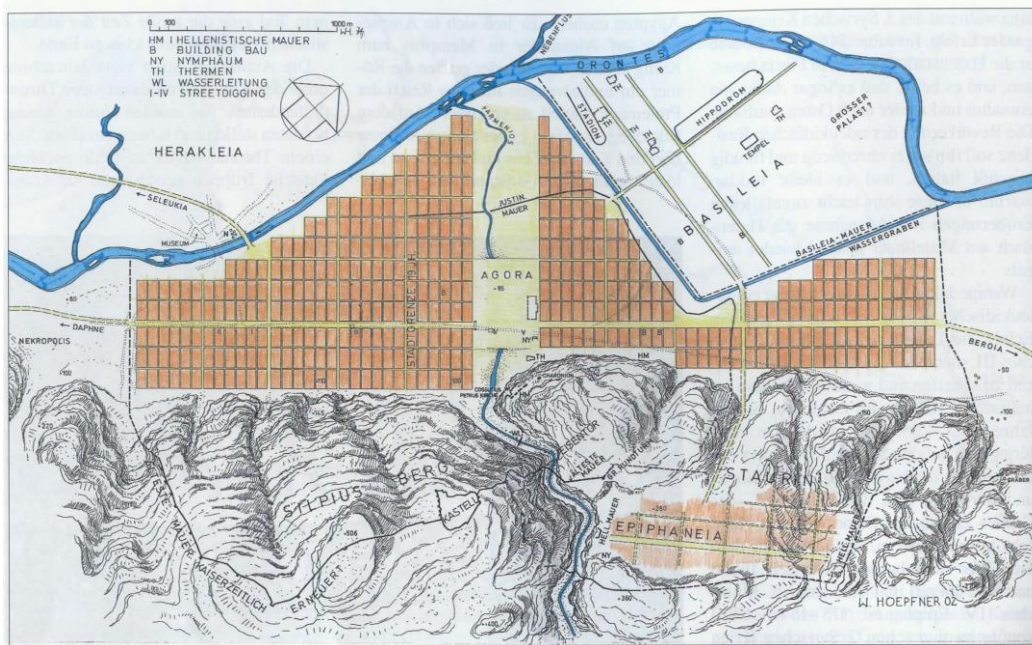


Figure 4 Hoepfner's map²⁰⁹

²⁰⁹ Hoepfner, 'Antiochia die Grosse', 4.

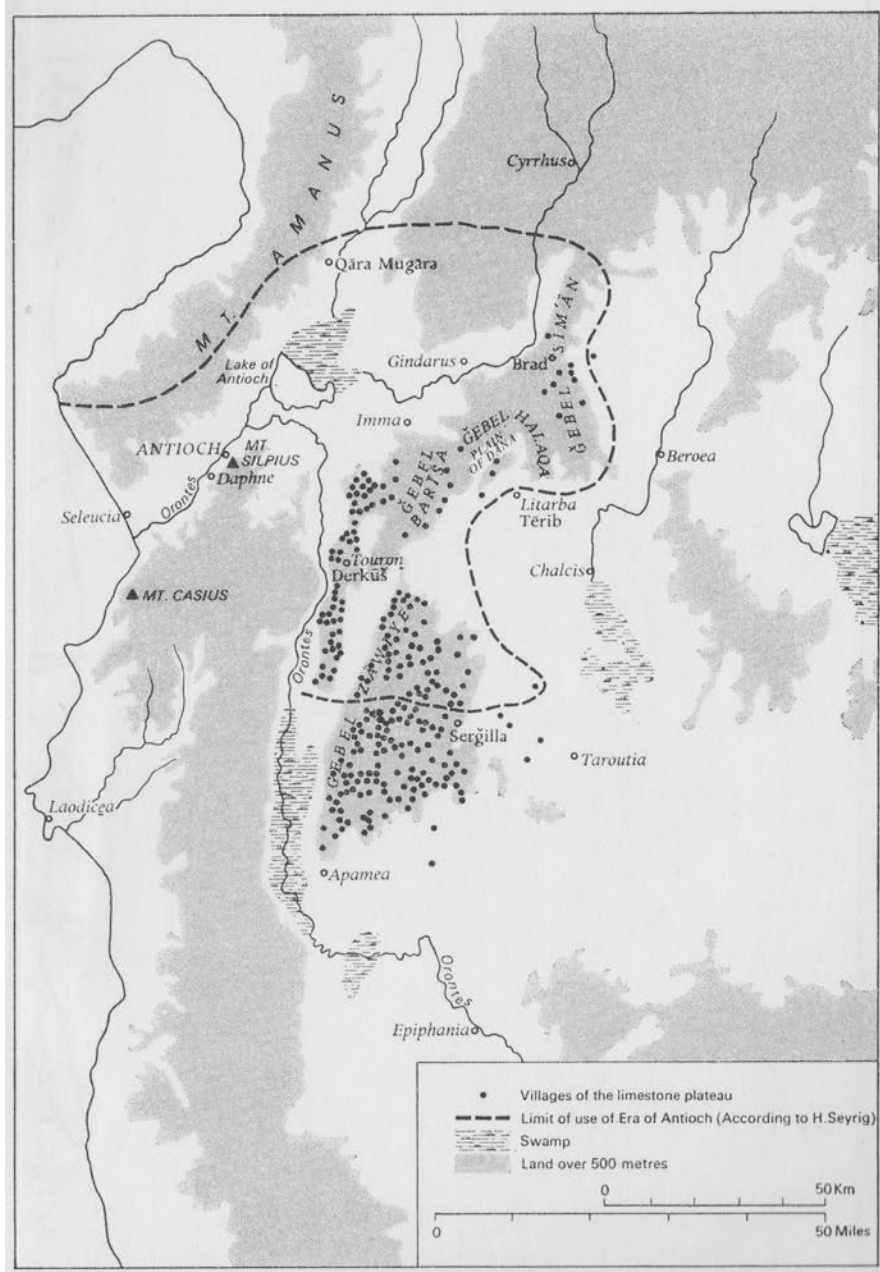


Figure 5 Liebeschuetz' map of the Antiochene²¹⁰

²¹⁰ Liebeschuetz, *Antioch*.

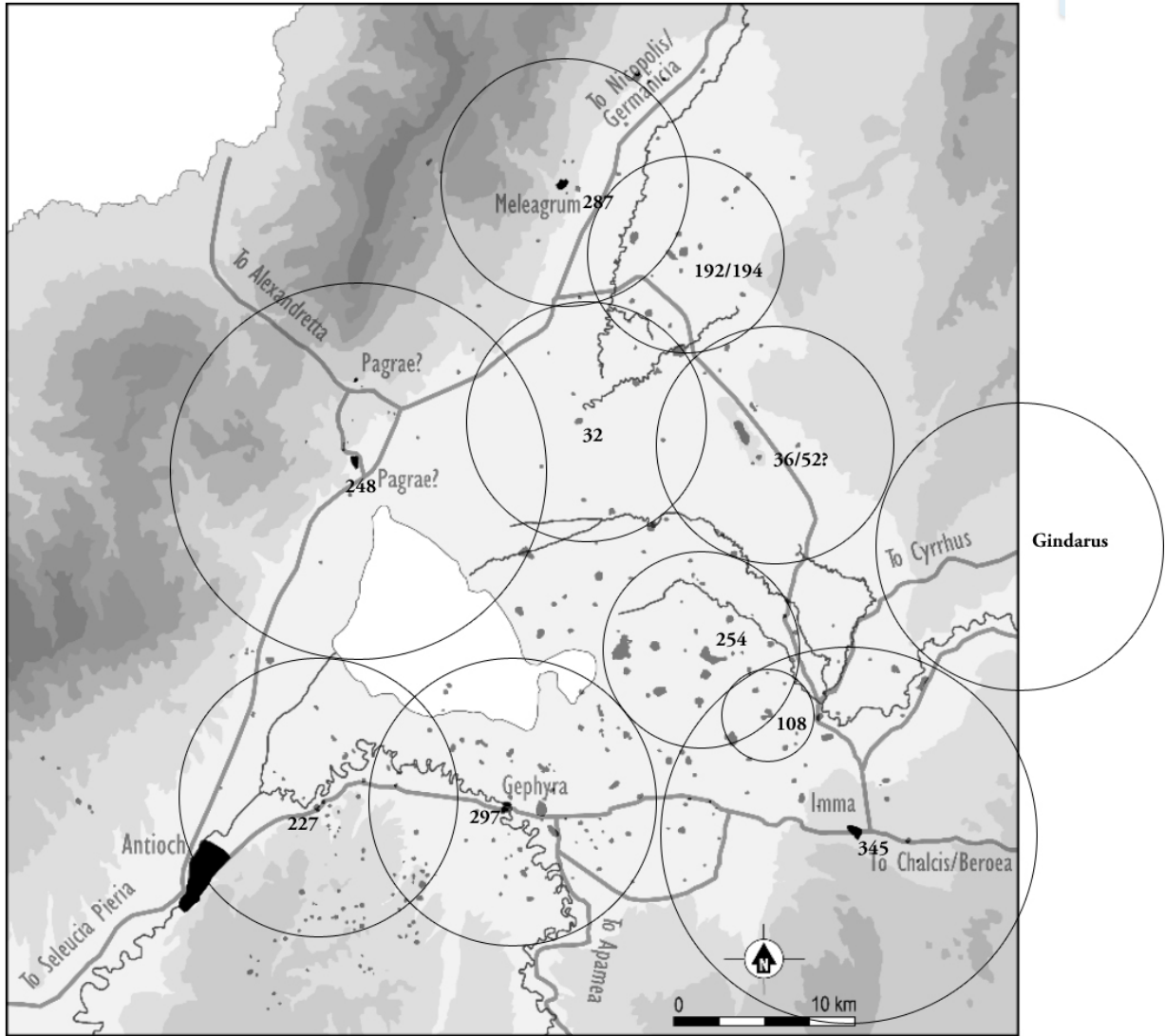


Figure 6 Amuq plain including roads and larger nuclei²¹¹

²¹¹ Using images from Gerritsen et al., 'Settlement and Landscape Transformations in the Amuq Valley, Hatay', 298, 305.