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BERYTUS AND THE AFTERMATH OF THE 551 EARTHQUAKE

1. INTRODUCTION

LATE ANTIQUE SYRIA, one of the most urbanised provinces of the Eastern Roman Empire, remains a point of contention among scholars. Despite numerous studies, the interpretation of its transitional phase between the sixth and seventh centuries remains debated. The sixth century in particular coincided with a period of increased environmental stress. Earthquakes, epidemics, and climate change are all mentioned in the sixth-century sources. Historians have been quick to employ them as causes to describe the unexpected fall of Syria in the seventh century – to Persian raids, the Persian conquest, and later the Arab conquest. Since any general discussion of a complex area such as Syria would necessarily miss much of the nuanced evidence, this paper singles out a city – Berytus (modern Beirut) and investigates how it coped with both environmental and social stressors.¹

At first glance, Berytus appears to have experienced the most rapid and unexpected collapse of the flourishing late antique cities in the region.

¹ I would like to thank Merle Eisenberg for reviewing an early version of this paper, and Georges Abou Diwan for sharing his article about Berytus' late antique coinage before its publication.

Scholarship often refers to the major earthquake of 551 which ‘entirely obliterated’ the city’s classical street plan and buildings as the cause for this swift decline.² According to some, the earthquake, combined with a tsunami and a subsequent fire, reduced the city to the position of a peripheral settlement. The earthquake-wrought destruction is then used to explain the city’s unimportance into the nineteenth century.³

This paper rejects the simple collapse model. Instead, it examines Berytus before and after the earthquake and argues that the main effect of the 551 earthquake was a reconfiguration of existing practices in the city. The earthquake likely caused a short-term drop in the city’s population but Berytus appears to have recovered relatively quickly. Vulnerable institutions and practices, some of which were declining or had been destabilised before the earthquake through social and economic processes, appear to have collapsed. These include the city’s famous law school and silk industry. Yet other practices survived and economic life in the city continued. Moreover, at least in some cases the earthquake triggered experimentation, for instance by exporting new products or developing novel forms of glass vessels. The resilience of Berytus demonstrates that late antique cities could mitigate even strong and unexpected environmental stress.

2. BERYTUS – GEOGRAPHICAL AND HISTORICAL CONTEXT

Berytus is situated in the middle of the eastern coast of the Mediterranean and has been continuously inhabited since prehistory. The city competed with its powerful neighbours, in particular Sidon and Tyre to the south and Byblos and Tripoli to the north. All these coastal cities became influential trade centres during the Phoenician period, a position they attempted to maintain during the Hellenistic and Roman periods by linking the inland

² Quote from H. KENNEDY, ‘From *polis* to *madina*: urban change in late antique and early Islamic Syria’, *P&P* 106 (1985), pp. 3–27, at p. 18.

³ Several scholars argue for the city’s later importance, for example A. FUESS, ‘Beirut in Mamluk times (1291–1516)’, *ARAM* 9–10 (1997–1998), pp. 85–101; P. MOUKARZEL, ‘The harbour of Beirut during the Mamluk era (1291–1516): a major Mediterranean trade center’, *ARAM* 27 (2015), pp. 163–176.

cities of Syria and more broadly West Asia to the Mediterranean trade. Notably, phases of dominance or hegemony any of these cities held over the others were temporary and dependent on regional geopolitics and trade patterns. Changes could be swift: Beirut was a small fishing village in the nineteenth century, but became the capital of modern Lebanon with a population of over two million a century later.

Berytus was founded on a small coastal plain on a triangle-shaped protrusion into the Mediterranean. Two sides of the triangle are surrounded by the sea, while the east and south of the plain touch upon the Mount Lebanon range which reaches heights of up to 2,500 meters in the area. A nearby river flows down the mountain range. Before the 551 earthquake, the city was relatively large, with a size of at least 1.2 by 0.8 kilometres.⁴ Although the entire coastal plain is densely populated today, it would have functioned as the ancient city's fertile hinterland in antiquity. Berytus lay on the north-south coastal road connecting the settlements on the eastern coast of the Mediterranean. Unlike its immediate neighbours, the city was also connected inland through an east-west road. This location made it the best route to access the Bekaa valley and the inland cities of southern Syria from the Mediterranean.

Berytus retained its significance after Augustus refounded it as a Roman colony and settled veterans there. The city was Romanised and became a main centre of Latin in the eastern Mediterranean, although the importance and prevalence of Latin in the city declined during late antiquity. Berytus produced several senators and equestrian officers, evidence for its integration within the empire's fabric.⁵ A law school was later established, drawing famous teachers and students. The city had an early Christian community and it has been argued that the Gospel of Mark, or one of its early versions, should be associated with it.⁶ Berytus eventually acquired the title

⁴ R. MIKATI & D. PERRING, 'Metropolis to ribat: some recent work on Beirut at the end of antiquity', *Archaeology and History in Lebanon* 23 (2006), pp. 42–55, at p. 45.

⁵ B. ISAAC, *Empire and Ideology in the Graeco-Roman World: Selected Papers*, Cambridge 2017, pp. 268–270.

⁶ H. I. MACADAM, 'Studia et circenses: Beirut's Roman law school in its colonial, cultural context', *ARAM* 13–14 (2001–2002), pp. 193–226, at pp. 225–226; *idem*, 'Berytus and Byzantine Christianity: Codex Bezae and the Gospel of Mark', [in:] E. DĄBROWA (ed.), *Studies on the Late Roman History (Electrum)* 12, Cracow 2007, pp. 63–72.

metropolis in the mid-fifth century and retained it thereafter despite competition with Tyre, the other *metropolis* of Phoenicia.⁷

As befitting an important provincial city, Berytus had multiple public monuments. Archaeological excavations at the site (see below) found evidence for at least three baths, fora, a hippodrome, and a series of porticoed streets. At least five churches and the city's walls are known from the written sources but were not found during the excavations.⁸ One of these churches was probably uncovered during civic works at the beginning of the twentieth century, but its materials were used to build the city's sea wall and it was not documented.⁹

3. BERYTUS IN HISTORIOGRAPHY

Berytus has not enjoyed the same kind of attention from scholars of pre-modernity that other eastern Mediterranean cities received. The rapid expansion of the modern city in the nineteenth and twentieth centuries prevented archaeological work, while an unstable political environment kept most scholars away. The paucity of written sources for the city's history left Berytus relatively untouched with the exception of its important law school.¹⁰

Things changed during the 1990s. The end of the long Lebanese Civil War (1975–1990) and the resulting destruction of much of the city centre triggered

⁷ CJ 11.21.1; L. J. HALL, *Roman Berytus: Beirut in Late Antiquity*, London – New York 2004, pp. 107–108.

⁸ MIKATI & PERRING, 'Metropolis to ribat' (cit. n. 4), p. 46; H. H. CURVERS & B. STUART, 'The BCD Archaeology Project 2000–2006', *BAAL* 9 (2007), pp. 189–221, at pp. 208–209. Hall refers to 'at least six churches' but does not name them; see L. J. HALL, 'Berytus', [in:] R. S. BAGNALL *et al.* (eds.), *The Encyclopedia of Ancient History*, Malden MA 2013, pp. 1100–1102. Recent work may have found evidence for a monumental gate, which would be evidence for the city's walls. See H. BATAH, 'Possible Roman gate and road found in Beirut dig', 17 May 2013 (<http://www.beirutreport.com/2013/05/possible-roman-gate-and-road-found-in.html>, accessed 05 December 2019). I was not able to find a scholarly publication for these findings.

⁹ N. JIDEJIAN, *Beirut through the Ages*, Beirut 1997, pp. 146–147, also 152; N. JIDEJIAN & M. B. SEHNAOUI, *Berytus: the School of Law*, Beirut 2011, pp. 58–59.

¹⁰ P. COLLINET, *Histoire de l'École de droit de Beyrouth*, Paris 1925.

a series of rescue excavations and broader scholarly interest. Most work has concentrated on archaeological surveys, either examining one area of the decentralised excavations or focusing on a type of finds (e.g. coins).

In light of the increasing interest in late antiquity both historical syntheses of the material from the city examine this period. Linda Hall published a book on late antique Berytus, examining the city's social history between the third century and the 551 earthquake.¹¹ Most of Hall's evidence is literary and she is interested in the identity of the city's inhabitants. Rana Mikati first approached the city from an archaeological perspective with an eye towards late antiquity.¹² She then shifted her interests towards the early Islamic period, writing her yet-unpublished dissertation about the city between the mid-seventh and the ninth centuries.¹³ Mikati preferred to draw upon evidence from the Islamic sources, relegated the archaeological evidence to an appendix and dedicated only a few pages to the pre-Islamic period.¹⁴

Both Hall and Mikati use the period between the 551 earthquake and the Islamic conquest in the 630s to support their differing interpretations of the city's history without investigating the earthquake in itself. For Hall, who has a Classics background, Berytus remained a splendid city even after the earthquake. For Mikati, an Islamicist, the Byzantine city never recovered, a fact that facilitated the Arab conquest. The point of contention between both narratives is therefore the effect of the 551 earthquake on the city.¹⁵

¹¹ L. J. HALL, *Roman Berytus: Beirut in Late Antiquity*, London – New York 2004. The book is based on her dissertation, see L. J. HALL, *Berytus, 'Mother of Laws': Studies in the Social History of Beirut from the Third to the Sixth Centuries AD*, The Ohio State University, Ohio 1996.

¹² E.g. MIKATI & PERRING, 'Metropolis to ribat' (cit. n. 4), pp. 42–55. Mikati was involved in the excavations since the 1990s. See team international, *Beirut Urban Transport Project – Preparatory Study, Archaeological Assessment (appendix 2)*, 2000, p. 1.

¹³ R. MIKATI, *The Creation of Early Islamic Beirut: The Sea, Scholars, Jihad and the Sacred*, PhD diss., University of Chicago, Chicago 2013.

¹⁴ MIKATI, *The Creation* (cit. n. 13), pp. 13–18.

¹⁵ Other scholars also use the earthquake as an ending point for their studies. See, for example, W. HELD & Z. KOTITSA, 'The Marburg BERYTOS Project: a new approach to the study of ancient Beirut's archaeology', *Berytus* 55.2 (2016), pp. 137–148, at p. 142. Others, such as Mills, hold that the city did not recover after the 551 earthquake. See P. J. E. MILLS, *The Ancient Mediterranean Trade in Ceramic Building Material: A Case Study in Carthage and Beirut*

4. THE 551 EARTHQUAKE

Berytus is situated in a seismically active area on the northwest-south Roun Fault and is about two dozen kilometres from the northeast-south Yamouneh Fault.¹⁶ The sixth century coincided with a phase of high seismic activity in the Levant, increasing the frequency of strong earthquakes in the region fourfold, and earlier earthquakes would have made contemporaries well aware of this trend.¹⁷ In the late fifth century a night earthquake unsettled the locals but appears to have caused no damage.¹⁸ Berytus suffered some damage from the earthquake that hit Ptolemais (modern Acre) in 502, although the reporting source, Ps.-Joshua the Stylite, asserts that only the Jewish synagogue collapsed.¹⁹ The city is not mentioned in the context of the reports of other powerful earthquakes in the region (e.g. Antioch in 526 and 528, Laodikea in 529), but its inhabitants must have heard about and possibly also felt these events.²⁰

The earthquake of 551, ‘the most violent recorded earthquake in the history of Phoenicia’, was one of the most powerful seismic events in the sixth century, and was apparently felt as far as Alexandria, more than six hundred kilometres away.²¹ The few historical sources claim that aside from Berytus and Phoenicia, it damaged other cities (Tyre, Sidon, Tripolis, Byb-

[= *Roman and Late Antique Mediterranean Pottery 2*], Oxford 2005, p. 46. A third group asserts that the city lost its monumental grandeur during the earthquake even if local life continued, see G. FARALDO VICTORICA & H. H. CURVERS, ‘Les quartiers de Berytus. Les vestiges romano-byzantins dans le N-E (BEY 028, 031, 046 et 115)’, *BAAL* 6 (2002), pp. 259–282, at p. 259, but also 277.

¹⁶ R. DARAWCHEH *et al.*, ‘The 9 July 551 AD Beirut earthquake, eastern Mediterranean region’, *Journal of Earthquake Engineering* 4 (2000), pp. 403–414, at pp. 405–406.

¹⁷ K. KHAIR, G. F. KARAKAISIS & E. E. PAPADIMITRIOU, ‘Seismic zonation of the Dead Sea transform fault area’, *Annals of Geophysics* 43.1 (2000), pp. 61–79.

¹⁸ *Life of Severus* 72; this may have been the earthquake of 494, but see COLLINET, *Histoire* (cit. n. 10), p. 55.

¹⁹ Ps.-Joshua the Stylite 47 (see F. R. TROMBLEY & J. W. WATT [eds.], *The Chronicle of Pseudo-Joshua the Stylite* [= *TTH* 32], Liverpool 2000).

²⁰ N. AMBRASEYS, *Earthquakes in the Mediterranean and Middle East: A Multidisciplinary Study of Seismicity up to 1900*, Cambridge 2009, pp. 184–193.

²¹ For the quote see JIDEJIAN, *Beirut* (cit. n. 9), p. 149.

los, Botrys) and regions (Palestine, Arabia, Mesopotamia). An anonymous chronicle adds that one hundred and one unnamed towns were destroyed.²² With the exception of Botrys, however, there are almost no concrete details about the earthquake's damage outside Berytus.²³ Although these and other claims led past scholars to attribute the destruction of even distant cities to this earthquake, more recent critical scholarship rejects such claims since much closer areas were not badly damaged.²⁴ Any study of the earthquake must therefore take into consideration the changing approaches in the modern historiography of the earthquake.²⁵

The 551 earthquake appears in all the catalogues that cover the period and region.²⁶ A detailed study of the event's physical characteristics concluded that its epicentre was probably a few kilometres off the shore near Berytus. The earthquake's felt intensity in the city was probably 9–10 of a maximum of 12.²⁷ More recently, Elias and colleagues accepted estimates of a local magnitude of 7.3–7.8, which was congruent with their observations of geological change and with their model. The teams of both Chris-

²² See Malalas, *Chronographia* 485; De *Fragmentis Historicis Tusculanis*, 4.1821–1824.

²³ According to Malalas (*Chronographia* 485), part of a mountain above Botrys broke off and fell into the sea, creating a sheltered harbour for the city. A discussion of the sources and the damage can be found in AMBRASEYS, *Earthquakes* (cit. n. 20), pp. 199–203.

²⁴ Respectively K. W. RUSSELL, 'The earthquake chronology of Palestine and northwest Arabia from the second through the mid-eighth century AD', *BASOR* 260 (1985), pp. 37–59, at pp. 44–46; AMBRASEYS, *Earthquakes* (cit. n. 20), pp. 201–202.

²⁵ For examples of the errors to which scholars are prone when discussing ancient earthquakes; see N. AMBRASEYS, 'Historical earthquakes in Jerusalem – A methodological discussion', *Journal of Seismology* 9 (2005), pp. 329–340; also helpful are the discussions in AMBRASEYS, *Earthquakes* (cit. n. 20), pp. 1–59.

²⁶ AMBRASEYS, *Earthquakes* (cit. n. 20), p. 199–203; M. R. SBEINATI, R. DARAWCHEH & M. MOUTY, 'The historical earthquakes of Syria: An analysis of large and moderate earthquakes from 1365 BC to 1900 AD', *Annals of Geophysics* 48.3 (2005), pp. 347–435, at pp. 357–359; E. GUIDOBONI, *Catalogue of Ancient Earthquakes in the Mediterranean Area up to the Tenth Century*, Rome 1994; D. H. K. AMIRAN, E. ARIEH & T. TURCOTTE, 'Earthquakes in Israel and adjacent areas: Macroseismic observations since 100 BCE', *IEJ* 44.3/4 (1994), pp. 260–305, at p. 266; M. ZOHAR, A. SALAMON & R. RUBIN, 'Reappraised list of historical earthquakes that affected Israel and its close surroundings', *Journal of Seismology* 20 (2016), pp. 971–985, at p. 978. These often contain references to additional earthquake catalogues.

²⁷ Map and details in DARAWCHEH *et al.*, 'Beirut earthquake' (cit. n. 16), p. 410.

tophe Morhange and Ata Elias found evidence for uplifts of the coast north of Berytus, estimating its extent at 80 ± 40 and 80 ± 30 centimetres respectively.²⁸ The latter study explicitly connected the uplift of the coastline to the 551 earthquake rather than earlier late antique seismic activity. The sudden uplift would have accelerated the silting of Berytus' harbour and may have rendered part of it useless.²⁹

The sources, which agree about most of the details, assert that Berytus was the city that suffered most in the earthquake.³⁰ The event began with a retreat of the sea for up to two miles, probably because of a foreshock. As frequently happened in these cases, people rushed onto the exposed seabed to explore and loot the treasures in the uncovered local shipwrecks. The sea soon returned, however, in the form of a tidal wave that drowned many.³¹ The main quake followed. Agathias, who experienced the shaking in Alexandria, claims that

... the lovely city of Berytus, the jewel of Phoenicia, was completely ruined and its world-famous architectural treasures were reduced to a heap of rubble, practically nothing but the bare pavements of the buildings being left. Many of the local inhabitants were crushed to death under the weight of the wreckage, as were many cultivated young men of distinguished parentage who had come there to study the Law.³²

John of Ephesus adds that the earthquake caused a fire that burned for two months and was put out only by a long rain that lasted three days. Although

²⁸ See respectively C. MORHANGE *et al.*, 'Late Holocene relative sea-level changes in Lebanon, eastern Mediterranean', *Marine Geology* 230 (2006), pp. 99–114, at p. 112; A. ELIAS *et al.*, 'Active thrusting offshore Mount Lebanon: Source of the tsunamigenic AD 551 Beirut – Tripoli earthquake', *Geology* 35 (2007), pp. 755–758, at p. 757. Note that Morhange *et al.* are not sure if a single earthquake or an earthquake concentration caused the uplift.

²⁹ E.g. N. MARRINER, C. MORHANGE & J.-P. GOIRAN, 'Coastal and ancient harbour geoarchaeology', *Geology Today* 26.1 (2010), pp. 21–27, at p. 24.

³⁰ For excerpts of the sources see HALL, *Roman Berytus* (cit. n. 11), pp. 70–75; AMBRASEYS, *Earthquakes* (cit. n. 20), pp. 202–203.

³¹ Ps.-Dionysius of Tel-Mahre, *Chronicle* 134–135 (see W. WITAKOWSKI [ed. & tr.], *Pseudo-Dionysius of Tel-Mahre: Chronicle: Part III* [= TTH 22], Liverpool 1996).

³² Agathias, *Histories* 2.15.2–3 (see J. D. C. FRENDO [ed. & tr.], *Agathias. Histories* [= *Corpus Fontium Historiae Byzantinae – Series Berolinensis* 2A], Berlin – New York 1975).

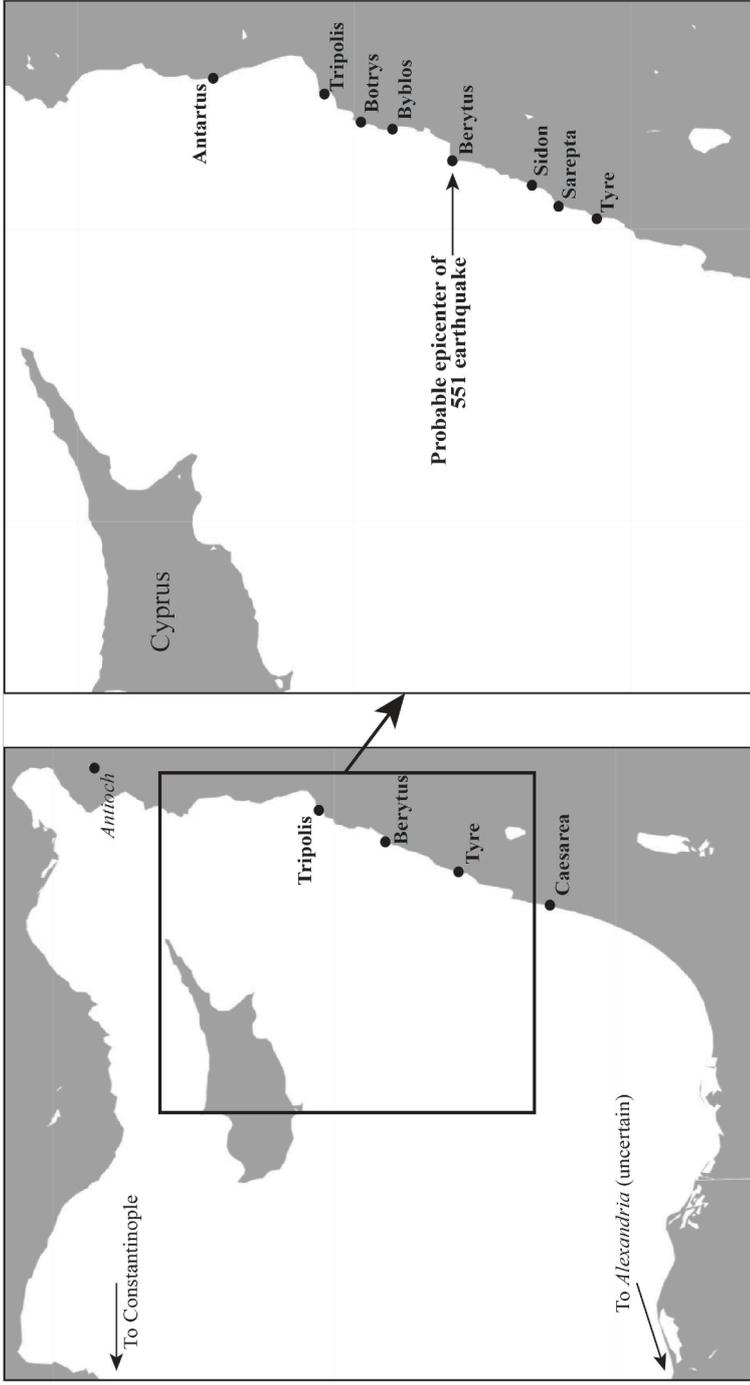


Fig. 1. The Eastern Mediterranean (left) and the Phoenician Coast (right). Cities in bold suffered damage according to the primary sources (several scholars associate Caesarea with the earthquake). Cities in which the earthquake was felt are in italics. The literary sources claim that the earthquake also affected the provinces of Arabia, Palestine, and Mesopotamia but do not provide details.

these are exaggerations, he notes that the fire destroyed the aqueduct, exacerbating the crisis and hindering local relief efforts.³³ About twenty years later, the city's bishop claimed that thirty thousand of the city's inhabitants perished in the disaster.³⁴

Independent evidence corroborates these narratives and attests to the destruction the earthquake wrought in the region. In their work on Caesarea Maritima, one hundred-sixty kilometres south of Berytus, Hendrik Dey and Beverly Goodman-Tchernov found geoarchaeological evidence for the 551 tsunami in the form of a wide layer of debris buried underwater.³⁵ They dated the layer using the ceramic evidence from the debris, alongside C14 and OSL. A team of scholars who worked on the north harbour of Tyre (seventy kilometres south) and performed extensive coring in the area found a major change from the sixth century onward, partially coinciding with the seismic activity in 551 alongside subsequent political and social disruptions.³⁶ The size of the harbour was eventually reduced by half as maintenance stopped and it became silted for centuries.

5. FROM CATASTROPHISM TO RESILIENCE: ANCIENT ANALYSIS IN LIGHT OF CONTEMPORARY RESEARCH

The literary descriptions of the earthquake and the scientific findings thus agree that the earthquake was a major event in both human and geological history. The destruction and resulting disruption of social life remain an easy cause to explain larger processes such as the decline of the Roman East and the subsequent quick Persian and Arab conquests. This explanation assumes a catastrophist stance that removes agency from contemporaries.

³³ Ps. Dionysius of Tel-Mahre, *Chronicle* 135–136 (cit. n. 31).

³⁴ Piacenza Pilgrim 159.

³⁵ H. DEY & B. GOODMAN-TCHERNOV, 'Tsunamis and the port of Caesarea Maritima over the *longue durée*: a geoarchaeological perspective', *JRA* 23 (2010), pp. 265–284, at pp. 271–274.

³⁶ N. MARRINER *et al.*, 'Geoarchaeology of Tyre's ancient northern harbour, Phoenicia', *JAS* 32 (2005), pp. 1302–1327.

Recent developments in disaster studies, however, argue against drawing a direct correlation between the magnitude of a natural event and its social effect. The natural aspects of an event do not determine its social effects, as modern case studies demonstrate. Similar environmental stressors can result in very different outcomes for similar societies. For example, the earthquakes in Northridge (Los Angeles, 1994) and Kobe (Japan, 1995) were similar in their natural characteristics and affected areas with similar populations in developed countries. The former caused thirty-three deaths and left thousands homeless. The impact of the latter was higher by more than two orders of magnitude, killing more than five thousand and leaving almost half a million homeless.³⁷

Such grossly different outcomes of similar events demonstrate that human societies are not passive victims of nature.³⁸ Rather, societies continuously transform, interact with, and are influenced by their environment. This long-term relationship determines the social effects of disaster.³⁹ Variables such as population density and building styles determine the immediate outcome of an earthquake. Solidarity and local institutions shape the crucial early response of a society, while centralised rebuilding efforts and even local identity would influence a disaster's long-term effects.

Moreover, research has increasingly pointed towards the inherent resilience and adaptability of human societies in face of environmental stress. Rather than collapse in response to events ranging from natural disasters to climate change, human societies are capable of absorbing major shocks. Late antique Antioch, for instance, absorbed over three dozen

³⁷ K. TIERNEY, *The Social Roots of Risk: Producing Disasters, Promoting Resilience*, Stanford 2014, pp. 13–14.

³⁸ For additional examples one might consider the earthquakes in Port-au-Prince (Haiti) and Christchurch (New Zealand) in 2010, which respectively killed one and up to three hundred thousand people. The similar cyclones Odisha and Phailin hit the same area on the east coast of India in 1999 and 2013. The former killed more than ten thousand people, while the latter caused less than fifty deaths. See respectively S. MATTHEWMAN, *Disasters, Risks and Revelation: Making Sense of Our Times*, Houndmills, 2015, pp. 27–28; UNEP Global Environmental Alert Service, 'Cyclone Phailin in India: Early warning and timely actions saved lives' (available at <https://wedocs.unep.org/>, accessed on 05 December 2019).

³⁹ TIERNEY, *The Social Roots of Risk* (cit. n. 37).

shocks – including several major earthquakes – over the sixth century and remained a large regional urban centre.⁴⁰ Societies face increased danger when environmental shocks coincide with existing social vulnerabilities. Thus in the case of the 551 earthquake, any claims for societal collapse should be backed up by a discussion of social vulnerabilities, to the extent that these existed in Berytus.

6. THE ARCHAEOLOGICAL EVIDENCE

The significant damage Beirut sustained in the Lebanese Civil War offered multiple archaeological opportunities to examine the city's history as it was rebuilt. The extensive rescue excavations covered about nine hectares of the city's ancient centre, approximately ten per cent of its size, and have been described as 'the largest urban dig ever known'.⁴¹ There are over two hundred excavated sites in Beirut's centre, which are referred to by the name BEY with a three-digit number (e.g. BEY 001, see fig. 2).⁴² A cursory investigation of the literature reveals that the excavations in a handful of sites are the basis of almost all publications while excavations in many other sites resulted in few publications and little if any public and scholarly aware-

⁴⁰ L. MORDECHAI, 'Antioch in the sixth century: resilience or vulnerability?' [in:], A. IZDEBSKI & M. MULRYAN (eds.), *Environment and Society in the Long Late Antiquity* [= LAA 12], Leiden 2018, pp. 25–41.

⁴¹ D. PERRING, 'Excavations in the souks of Beirut: An introduction to the work of the British-Lebanese team and summary report', *Berytus* 53 (1997–1998), pp. 9–34, at p. 15. The quote is from H. EL BANNA-CHIDIAC, 'Beirut: Uncovering the past / Beyrouth: le temps retrouvé', *National Museum News* 4 (1996), p. 11, but was rejected by R. THORPE, 'BEY 045 – preliminary report on the excavations', *BAAL* 3 (1998–1999), pp. 57–83, at p. 79. Regardless, one expert pointed out that just the amount of pottery sherds resulting from the Beirut excavations would range between thirty and forty million potsherds for every meter's depth dug, see J. W. HAYES, 'From Rome to Beirut and beyond: Asia Minor and Eastern Mediterranean trade connections', *RCRF* 36 (2000), pp. 285–297, at p. 285.

⁴² For surveys of the sites, see H. H. CURVERS & B. STUART, 'The BCD infrastructure archaeology project, 1995', *BAAL* 2 (1997), pp. 167–205 (BEY 008 to 059, non-consecutive); H. H. CURVERS & B. STUART, 'The BCD archaeology project 1996–1999', *BAAL* 3 (1998), pp. 13–30 (BEY 060 to 132, non-consecutive); CURVERS & STUART, 'BCD 2000–2006' (cit. n. 8), pp. 189–221 (BEY 134 to 167, non-consecutive).

ness.⁴³ Moreover, there have been no attempts so far to synthesise the archaeological evidence from the many subsites.⁴⁴

The excavations were uneven in their coverage in multiple ways, for instance by being heavily biased towards the Phoenician and Graeco-Roman periods. Moreover, a single excavation site could be split between multiple sub-areas, each of which focused on different periods.⁴⁵ Even when digging down from a level, certain excavations appear to have dug down in the form of an inverted pyramid, further skewing the amount of evidence that could be retrieved from each layer.⁴⁶ Notably, the 551 earthquake marked ‘the endpoint of scholarly interest in Beirut’s past’.⁴⁷

Multi-party disputes have plagued the archaeological work in the city since its onset.⁴⁸ The reports from most sites remain unpublished and inac-

⁴³ Certain sites (e.g. BEY 006) were investigated more closely than others. Most of the publications involve a few areas, e.g. BEY 001, 006, 007, 011, 045. See D. PERRING, R. THORPE & T. WILLIAMS, ‘The Beirut Souks excavations’, *Berytus* 48–49 (2004–2005), pp. 8–26, at p. 8. Somewhat unusually, the excavations did not focus on the ancient city’s monumental centre, see MIKATI, *The Creation* (cit. n. 13), p. 277.

⁴⁴ Little has changed in this regard in the two decades since pointed out by THORPE, ‘BEY 045’ (cit. n. 41), p. 79.

⁴⁵ BEY 006, for example, was split into five working areas that differed greatly in size and themselves contained multiple types of excavations. BEY 006/1 covered the medieval Islamic period and Hellenistic/Roman remains. BEY 006/2 was machine -down to the layer destroyed by the 551 earthquake and excavated from there. BEY 006/3 was excavated down to the third- and fourth-century level. BEY 006/4 was a small evaluation trench. BEY 006/5, the largest area, was machine-stripped down to the fourth- and fifth-century levels; the results were understudied and not synthesised. For the division of BEY 006, see D. PERRING, ‘The Beirut excavations background’ *Berytus* 45–46 (2003), pp. 11–19, pp. 13–17; PERRING, ‘Excavations in the Souks’ (cit. n. 41), pp. 15–24.

⁴⁶ M. SAGHIEH, ‘BEY 001 & 004 preliminary report’, *BAAL* 1 (1996), pp. 23–36, at p. 25.

⁴⁷ Accordingly, over two decades of archaeological excavations, only one of fifteen teams was interested in the city’s long Islamic heritage. MIKATI, *The Creation* (cit. n. 13), pp. 6–10, 275; CURVERS & STUART, ‘The BCD Archaeology Project’ (cit. n. 8), p. 189; C. ASMAR, ‘Les fouilles du centre-ville de Beyrouth’, *BAAL* 1 (1996), pp. 7–13, at p. 9, refers to fifteen archaeological teams.

⁴⁸ C. G. CUMBERPATCH, ‘Approaches to the archaeology of Beirut’, *National Museum News* 7 (1998), pp. 18–21; PERRING, THORPE & WILLIAMS, ‘The Beirut Souks excavations’ (cit. n. 43), pp. 8–15. The excavations appear to have been accompanied by disagreements since their onset, e.g. C. G. CUMBERPATCH, ‘Archaeology in the Beirut central district: some notes and observations’, *Berytus* 42 (1995), pp. 157–172.

cessible.⁴⁹ As one observer put it, the political and social issues surrounding the excavations and conservation of the city involve the Lebanese government and Solidere, the country's largest firm, and are 'extremely complicated, very sensitive and ... in a perpetual state of flux'.⁵⁰ These modern circumstances severely diminished the impact of the Beirut excavations, which have not received the attention they might have otherwise.⁵¹

The published archaeological reports agree about the pre-earthquake condition of Berytus but disagree about the extent of the destruction of the 551 earthquake. During the fourth and fifth centuries the city had flourished, complete with 'an unparalleled level of extravagant building' and luxurious houses.⁵² There was no evidence for a pre-earthquake decline in urban infrastructure.⁵³ A late antique layer of destruction, followed by fire in some cases, was found in several excavation sites in the city and was attributed to

⁴⁹ Some scholars have placed gray literature (unpublished and uncatalogued internal reports) online in effort to make more material available. For examples, see H. H. CURVERS, 'BCC Archeology Project – gray reports (131219). Termination of work report (Minet el-Hosn lots 834 and 1410). BEY 155: Roman theater and circus of Berytus. 2009–2011' (2011); H. H. CURVERS, 'BCC Archeology Project – gray reports (131220). BEY 155. Theater and circus files. 2012–2013' (2012); H. H. CURVERS, 'BCC Archeology Project – gray reports (150930). Excavations and archeological observations during the dismantling of archeological features of the Roman circus/hippodrome and Roman theaters (August 2014 – January 2015)' (2015). For the disregard of the authorities and the continued modern development on ancient sites, see H. BATTAH, 'How did ancient Beirut get tossed in a pile?', *Beirut Report 2017* (available at <http://www.beirutreport.com/2017/05/how-did-ancient-beirut-get-tossed-in-a-pile.html>; accessed 06/12/2019).

⁵⁰ C. A. SANDES, *Archaeology, Conservation and the City: Post-Conflict Redevelopment in London, Berlin and Beirut*, Oxford 2010, p. 104; H. H. CURVERS & B. STUART, 'Beirut archeological heritage management (1993–2015): A metaphor of text and theater', *Berytus* 55 (2016), pp. 263–291.

⁵¹ See, for example, the paucity of new literature and inscriptions in Benjamin Issac's survey (originally from 2009), ISAAC, *Empire and Ideology* (cit. n. 5), pp. 268–270.

⁵² PERRING, 'Excavations in the Souks' (cit. n. 41), p. 30; D. PERRING, 'Beirut in antiquity: some research directions suggested by recent excavations in the Souks', *ARAM* 13–14 (2001–2002), pp. 129–40, at p. 138.

⁵³ D. PERRING, P. REYNOLDS & R. THORPE, 'The archaeology of Beirut: a report on work in the insula of the House of the Fountains', *AJ* 83 (2003), pp. 195–229, at p. 220. This casts doubt on Kennedy's model of gradual urban change in the period, see KENNEDY, 'From *polis* to *madina*' (cit. n. 2), pp. 3–27.



Fig. 3. A mosaic-paved portico uncovered in the Souks excavation which was probably destroyed during the 551 earthquake (after http://ddc.aub.edu.lb/projects/archaeology/101/beirut/deliverables/portico__shops.htm)

the 551 earthquake based on several pieces of evidence.⁵⁴ One archaeologist described how a diagnostic sounding revealed the earthquake's 'horrors in an archaeological inferno over the whole [single] excavated area' through a layer of destruction between 0.75m and 1.00m thick.⁵⁵ This layer, however,

⁵⁴ The excavations revealed objects that were buried in the debris such as a wrapped coin-roll (see below), a hanging bronze polykandelon and human and animal remains near a collapsed wall, and another group of coins. For the objects, see respectively MIKATI & PERRING, 'Metropolis to ribat' (cit. n. 4), pp. 47–49; PERRING, 'Excavations in the Souks' (cit. n. 41), pp. 21–23; M. STEINER, 'The Hellenistic to Byzantine souk: results of the excavations at BEY 011', *ARAM* 13–14 (2001–2002), pp. 113–127. Other teams were uncertain whether the destruction layer was to be dated to the sixth or seventh century. See P. ARNAUD, E. LLOPIS & M. BONIFAY, 'Bey 027 Rapport préliminaire', *BAAL* 1 (1996), pp. 98–134, at p. 109.

⁵⁵ SAGHIEH, 'Bey 001 & 004' (cit. n. 46), p. 40. M. SAGHIEH-BEYDOUN, 'Evidence for earthquakes in the current excavations of Beirut city centre', [in:] C. DOUMET-SERHAL (ed.),

was uneven and much thinner in other areas. Other teams asserted that the buildings in their site did not collapse immediately – as evident from the absence of smashed collections of pottery and household goods.⁵⁶

Although some areas were abandoned, others continued to function with little evidence of disruption.⁵⁷ In BEY 045, for example, a monumental bath survived the earthquake and continued operating into the Islamic period and beyond. The aqueduct supplying it with water was probably one of the buildings the authorities restored.⁵⁸ Moreover, some structural damage was mistakenly attributed to the earthquake.⁵⁹

The results from the archaeological excavations were thus inconclusive.⁶⁰ Combined with the laconic claims for rebuilding in the primary sources, this led scholars to disagree on the extent of the destruction in Berytus and the city's subsequent fate. Linda Hall accepted the Piacenza Pil-

Decade: A Decade of Archaeology and History in the Lebanon, Beirut 2004, pp. 280–285, at p. 284 later reported finding soil liquefaction, an earthquake-related phenomenon, but did not attribute it to a dated seismic event.

⁵⁶ For layer of destruction, see for example panel in L. BADRE, 'The Greek Orthodox cathedral of Saint George in Beirut, Lebanon: The archaeological excavations and crypt museum', *JEMAHS* 4 (2016), pp. 72–97, at p. 78. For buildings not collapsing, see D. PERRING et al., 'Bey 006, 1994–1995: The souks area interim report of the AUB Project', *BAAL* 1 (1996), pp. 176–206, at pp. 196–198; K. BUTCHER & R. THORPE, 'A note on excavations in central Beirut 1994–1996', *JRA* 10 (1997), pp. 291–306, at p. 299, assert that 'evidence for earthquake damage on the Souks site is virtually absent...'. M. HEINZ & K. BARTL, 'Bey 024 "Place Debbas" preliminary report', *BAAL* 2 (1997), pp. 236–257, at p. 256, similarly assert that 'traces of violent destruction (earthquake) were not visible'.

⁵⁷ For destruction, see e.g. STEINER, 'The Hellenistic to Byzantine souk' (cit. n. 53), pp. 113–127; PERRING, REYNOLDS, & THORPE, 'The Archaeology of Beirut' (cit. n. 53), pp. 195–229; H. SAYEGH, 'Bey 010 les Souks, secteur nord/est', *BAAL* 1 (1996), pp. 235–269, at p. 265; FARALDO VICTORICA & CURVERS, 'Les quartiers' (cit. n. 15), p. 277. Some areas, e.g. BEY 027 and 069, show continuous occupation before and after the earthquake. See ARNAUD, LLOPIS & BONIFAY, 'Bey 027' (cit. n. 54), pp. 109, 133; J. BOUZEK, 'Bey 069 Sondage A', *BAAL* 1 (1996), pp. 135–147, at p. 139, 146.

⁵⁸ PERRING, 'Excavations in the Souks' (cit. n. 41), pp. 26–27, in light of Ps.-Dionysius' report of the destruction of the aqueduct; see below and Ps.-Dionysius of Tel-Mahre, 136 (WITAKOWSKI, *Pseudo-Dionysius* [cit. n. 31]).

⁵⁹ For example, some deposits associated with the destruction were dated to after 551. See CURVERS & STUART, 'The BCD Archaeology Project' (cit. n. 8), p. 214.

⁶⁰ Cf. MIKATI, *The Creation* (cit. n. 13), pp. 1–2.

grim's brief description of the city as evidence for a major reconstruction.⁶¹ She went as far as to compare the case of the rebuilding of Berytus to that of Antioch, and concludes that the result was 'relatively successful'.⁶² Other scholars seem to agree but their evidence is inconclusive at best.⁶³

More sceptical archaeologists claimed that 'the Beirut restored after the earthquake was a pale shadow of the former city', and that any reconstruction was partial.⁶⁴ One team found widespread destruction and almost no evidence for continued post-earthquake occupation in the insula of the House of the Fountains. The earthquake, in their interpretation, 'was undeniably the cause of a massive decline in Beirut's urban population'.⁶⁵ Other scholars, however, are less decisive and argue that there is not enough evidence for population estimates.⁶⁶

More recently, scientific teams drilled twenty-five cores to investigate the city's old harbour which had silted and been built upon.⁶⁷ The findings further corroborated both the fourth-century CE expansion of the harbour and its subsequent deterioration in the sixth and seventh centuries because of silting and seismic activity that would have destroyed the port's infrastructure. Findings of 'tree branches and considerable amounts of unabraded

⁶¹ HALL, *Roman Berytus* (cit. n. 11), pp. 70–76, at p. 74.

⁶² HALL, *Roman Berytus* (cit. n. 11), pp. 74–76. There is no evidence to suggest the comparison to Antioch, which is described in Procopius, *Buildings* 2.10. The rebuilding of Antioch, the most important city in Syria, would have been the exception rather than the rule in the case of imperially-sponsored restoration projects.

⁶³ Muntaha Saghie-Beydoun argued, apparently based on evidence for local pottery production, that the city 'recovered quickly'. Philippe Marquis asserted that the post-earthquake city shrunk in size and increased in density, but provided neither a specific chronology nor evidence. See SAGHIEH-BEYDOUN, 'Evidence for earthquakes' (cit. n. 55), pp. 280–285; P. MARQUIS, 'Les fouilles du centre-ville de Beyrouth. Dix ans après', [in:] DOUMET-SERHAL, *Decade* (cit. n. 55), pp. 266–279.

⁶⁴ MIKATI & PERRING, 'Metropolis to ribat' (cit. n. 4), pp. 49–52 (quote on p. 52); MIKATI, *The Creation* (cit. n. 13), pp. 15–18.

⁶⁵ PERRING, REYNOLDS & THORPE, 'The archaeology of Beirut' (cit. n. 53), pp. 213–221.

⁶⁶ MIKATI, *The Creation* (cit. n. 13), p. 13.

⁶⁷ N. CARAYON, N. MARRINER & C. MORHANGE, 'Geoarchaeology of Byblos, Tyre, Sidon and Beirut', *RSFen* 39 (2011), pp. 55–66, at p. 61; MARRINER, MORHANGE & SAGHIEH-BEYDOUN, 'Geoarchaeology' (cit. n. 36), pp. 2495–2516.

Roman pottery and rubble' in layers from the sixth and seventh centuries in the city's harbour further suggest a destructive event.⁶⁸

Yet the evidence for continued post-earthquake trade (below) suggests that the destruction of the harbour was partial as well. While the dredging clearly stopped around the sixth or seventh century, there is no way to determine whether the reason was the 551 earthquake or other contemporary events such as the Persian or Arab conquests. The lead researcher of the harbour at Berytus argued against attributing its decline to a single historical or natural catastrophe, concluding that historical, economical and climatic factors were probably more important in changing the nature of the city's old harbour.⁶⁹

7. REBUILDING AND RESTORATION EFFORTS

Late antique sources traditionally refer to imperially-funded rebuilding activities in the context of post-earthquake relief efforts and Berytus is no exception. The three main literary sources all mention reconstruction. Agathias points out that 'the restored city was very different from what it had been in the past, though it was not changed beyond recognition, since it still preserved a few traces of its former self'.⁷⁰ John of Ephesus asserts that Justinian 'sent gold and selected men from among his (servants) and they dug out and extracted the corpses of innumerable people. Also they rebuilt the city a little'.⁷¹ Malalas remains content with a generalised statement about the emperor who 'sent money to all the provinces and restored parts of these cities [that were damaged]'.⁷²

⁶⁸ MARRINER, MORHANGE & SAGHIEH-BEYDOUN, 'Geoarchaeology' (cit. n. 36), pp. 2510–2513, but note also that the authors pointed out that there were no sedimentary traces of tsunami impacts; N. MARRINER, *Geoarchaeology of Lebanon's Ancient Harbours*, Oxford 2009, pp. 211–212.

⁶⁹ MARRINER, *Geoarchaeology* (cit. n. 68), p. 228.

⁷⁰ Agathias, *Histories* 2.15.4 (see FRENDO, *Agathias* [cit. n. 32]).

⁷¹ Ps. Dionysius of Tel-Mahre, *Chronicle* 136 (see WITAKOWSKI, *Pseudo-Dionysius* [cit. n. 31]).

⁷² Malalas *Chronographia* 485 (see E. JEFFREYS, M. JEFFREYS & R. SCOTT [eds.], *Chronographia* (Published as *The Chronicle of John Malalas*) [= *Byzantina Australiensia* 4], Melbourne 1986).

Independent evidence corroborates the government's investment in the city. Marthanos the *stratelates*, an official Justinian sent to the area to oversee the restoration, is attested to in at least two inscriptions from the city.⁷³ One of these, now lost, is associated with the rebuilding of the baths. Additional inscriptions that refer to Marthanos remain unpublished.⁷⁴ These finds appear to suggest that the imperial government remained committed to the city's reconstruction for some time. Archaeological reports reveal that monumental buildings were restored using materials from earlier buildings.⁷⁵

Comparative evidence for the imperial government's reconstruction funding support after similar disasters suggests that its efforts were narrow in scope and focused on monumental buildings and key infrastructure. Funding would have been even more limited after the 551 earthquake, when multiple cities suffered substantial damage and the government would have been forced to decide how to allocate its reconstruction funds.

Despite the near absence of evidence because of the nature of the sources, it seems that local elites bore the brunt of any reconstruction efforts.⁷⁶ A city's post-earthquake fate depended on its local elites. Cities with a strong and committed local elite community would be more resilient and rebuild more quickly than cities without such a community, which might decline. Unfortunately, in the case of Berytus we know nothing about the city's local elite with the partial exception of its law school, whose professors appear to have left the city (see below).

⁷³ For Marthanos, see also J. R. MARTINDALE, *The Prosopography of the Later Roman Empire*, III: AD 527–641, vol. 3B, Cambridge 1992, pp. 835–837.

⁷⁴ The two known inscriptions are P. R. MOUTERDE, 'Inscriptions grecques et latines de Syrie', *MUSJ* 8 (1922), pp. 73–113, at p. 97 = *SEG* I 548; C. GHADBAN, 'Trois nouvelles inscriptions latines de Beyrouth', *BAAL* 2 (1997), pp. 206–235, at p. 210, no. 3 = *SEG* XXX 1666. For a correction of the reading of the second inscription, see P. GAUTHIER *et al.*, 'Bulletin épigraphique', *REG* 100 (1987), pp. 268–448, at p. 376, no. 512. Both Chaker Ghadban and the more recent Frédéric Alpi refer to 'plusieurs' unedited inscriptions, see F. ALPI, 'Un regard sur Beyrouth Byzantine (IV^e–VII^e s.)', *ARAM* 13–14 (2001–2002), pp. 313–321, at p. 321, no. 48.

⁷⁵ See, for example, FARALDO VICTORICA & CURVERS, 'Les quartiers' (cit. n. 15), p. 271.

⁷⁶ For post-earthquake reconstruction in general, see the discussion in L. MORDECHAI & J. PICKETT, 'Earthquakes as the quintessential short-term cataclysmic event: methodology and societal resilience', *Human Ecology* 46 (2018), pp. 335–348.

The last dateable reference to Byzantine Berytus around 570 does not resolve the ambiguity surrounding its reconstruction. The author, the Piacenza Pilgrim, covers the city in two sentences. He first describes the city as ‘most splendid’ (*splendissima*) and refers to the now-absent law school. Berytus and Tyre were the only cities in the area whose appearance he described positively. The pilgrim commented on most other cities he passed, repeating that they were destroyed in the 551 earthquake, a generation earlier. The rebuilding of Berytus therefore appears to have been successful but partial.⁷⁷

As he traversed the coast, the pilgrim briefly noted that the earthquake killed the inhabitants of most of the cities he passed through. In the case of Berytus, however, he claims that the local bishop told him that thirty thousand locals known by name, in addition to foreigners, died in the earthquake. Although ancient numbers are notoriously exaggerated, the source of this one was a key official in the city at the time. Together with the assertion that the dead were identified by name, this suggests that this number is perhaps closer to reality than most other ancient numbers. On the other hand, the bishop may have inflated the number when speaking to a visitor to depict his city as persevering despite major difficulties, an approach that would fit well with the physical reconstruction of the city. Although both options are ultimately conjectures, the presence of a bishop at the city and the pilgrim’s ‘splendid’ description attests that Berytus recovered, at least to an extent.

The city is next mentioned in the context of the Muslim conquest more than half a century later when al-Balādhurī briefly notes that a general named Yazid and his brother split from the main Arab force and took the coastal cities of Sidon, Irkah (Byzantine Arca), Jubail (Byzantine Byblos), and Beirut.⁷⁸ The conquest was easy, and al-Balādhurī notes that the Arabs expelled many of the inhabitants of these cities. The mention of Beirut fur-

⁷⁷ Tripolis, Byblos and Trieres to the north, and Sidon to the south. Piacenza Pilgrim 159–160.

⁷⁸ al-Balādhurī, *Futūḥ al-Buldān* 133 (Ph. K. Hitti [ed.], *The Origins of the Islamic State: Being a Translation from the Arabic Accompanied With Annotations, Geographic and Historic Notes of the Kitāb Futuh Al-Buldan*, New York 1916, p. 126). Note that the order in which the cities are reported suggests some corruption of the original account. The order of these cities from north to south is Arca, Byblos, Berytus and Sidon.

ther suggests a recovery, but the brevity and the fact that al-Balādhuri's account was written much later make any conclusion based on this little more than a conjecture.

The schizophrenic nature of the Berytus excavations resulted in ambiguous evidence for post-earthquake reconstruction. The earthquake destroyed certain areas which were not rebuilt, but others were left habitable with relatively little damage.⁷⁹ Modern scholarship emphasises that instead of being cataclysms, the changes that resulted from such destructive events were radical yet low-cost forms for re-organizing local settlement patterns. In other words, the destruction allowed contemporaries to modify and reorganise their city based on their current needs by repurposing some buildings and re-allocating newly-freed space.⁸⁰ Unpublished reports from Berytus emphasise that the remains of the hippodrome and theatre were used to supply building materials for the city, which in turn also hints at a substantial post-earthquake settlement.⁸¹ It is unknown whether these monuments were salvaged immediately for spolia, or whether they lay abandoned for some time after the earthquake.

Whatever the extent of the post-earthquake reconstruction, scholars have noticed that the city retained the Roman grid patterns of its Roman streets until modern times, albeit in deteriorated form. This has been interpreted as evidence for long-term continuity in the layout of Berytus, and may also suggest the long-term continuity of local civic socio-political structures which limited the encroachment of the city's inhabitants on the main streets over two millennia.⁸²

⁷⁹ BEY 006 appears to have been partially abandoned, but a nearby bath that sustained little damage was repaired, see respectively MIKATI & PERRING, '*Metropolis to ribat*' (cit. n. 4), pp. 42–55, at pp. 49–51; PERRING, 'Excavations in the Souks' (cit. n. 41), pp. 26–27. BEY 027 remained continuously inhabited, while BEY 069 continued a process of slow decline; see respectively ARNAUD, LLOPIS & BONIFAY, 'Bey 027' (cit. n. 54), p. 109; BOUZEK, 'Bey 069' (cit. n. 57), pp. 139, 146.

⁸⁰ MORDECHAI & PICKETT, 'Earthquakes' (cit. n. 76).

⁸¹ CURVERS, 'Gray reports (131219)' (cit. n. 49), pp. 19, 42; CURVERS, 'Gray reports (131220)' (cit. n. 49), pp. 4–5, 56; HELD & KOTITSA, 'The Marburg BERYTOS Project' (cit. n. 15), p. 145.

⁸² M. F. DAVIE, 'Maps and the historical topography of Beirut', *Berytus* 35 (1987), pp. 141–164, at pp. 143, 150.

Altogether then, most of the surviving textual and archaeological evidence suggests that Berytus was seriously damaged but recovered from the earthquake in both its physical form and its population. The imperial government was at least partially involved in this process. At the same time, it is clear that the recovery was not complete and that the city changed substantially.

8. THE LOCAL CULTURE OF BERYTUS AND ITS INSTITUTIONS

Much has been written about the culture and identity of the inhabitants of Berytus, often on the basis of the inscriptions found there. Perhaps in response to modern Lebanese politics, the general impression in the literature is of a 'melting pot' in which multiple communities interacted. It has been claimed that Berytus produced more Latin epigraphy than any other city in the Greek Eastern Mediterranean.⁸³ All its coins, until minting stopped in the mid-third century, had inscriptions in Latin.⁸⁴ The language's hold on the city weakened during late antiquity: the latest Latin inscriptions and the earliest Greek inscriptions were from the fourth century.⁸⁵ Nonetheless, the law school ensured that at least part of the city's population spoke Latin. Besides the Christian community that likely dated back to the first century, evidence attests to pagans in the city and its area into the sixth century. Some of these pagans held high positions that included serving as professors in the law school. They appear to have had significant influence in the city into the sixth century.⁸⁶ A Jewish community existed but is unknown aside from a brief reference and a few inscriptions.⁸⁷

⁸³ L. J. HALL, 'Berytus through the classical texts: from *colonia* to *civitas*', *ARAM* 13–14 (2001–2002), pp. 141–619, at p. 149.

⁸⁴ F. MILLAR, *The Roman Near East: 31 BC – AD 337*, Cambridge, MA 1993, p. 279.

⁸⁵ B. ISAAC, *The Limits of Empire: The Roman Army in the East*, Oxford 2000, p. 319, no. 41.

⁸⁶ HALL, 'Berytus' (cit. n. 83), pp. 161–164. HALL, 'Berytus' (cit. n. 8), pp. 1100–1102 refers to part of this persistent phenomenon as 'philosophical paganism'. Any Phoenician self-identification, if at all extant in Roman times, was probably long gone by the sixth century. See the brief references in MILLAR, *Near East* (cit. n. 84), pp. 284–285; HALL, *Roman Berytus* (cit. n. 11), pp. 133–136, 151.

⁸⁷ See Ps.-Joshua the Stylite 47 (TROMBLEY & WATT, *The Chronicle* [cit. n. 19]); HALL, *Roman Berytus* (cit. n. 11), pp. 185–187.

Two of the most famous symbols of Berytus in late antiquity were its law school and silk industry. The evidence for both points to increasing vulnerabilities in both institutions during the first half of the sixth century. Neither the law school nor the local silk industry are mentioned in the context of Berytus after the 551 earthquake. The preceding changes in both are therefore important for understanding the effects of the earthquake.

8.1. The law school

Berytus was famous for its law school, which may have opened c.200 CE under Septimius Severus.⁸⁸ It is best known during the late fifth and early sixth centuries, when the *Life of Severus* focuses on the protagonist's (mis-) adventures as a law student in the city. Archaeological evidence for the law school has been sought since 1977 and several candidate areas have been proposed but no conclusive evidence has been found.⁸⁹

The law school was a major cultural institution. Most of its known students came from the eastern provinces of the empire, although some hailed from the central Mediterranean. They ranged in wealth and social status and their backgrounds ranged from senatorial families to local middle-class artisans.⁹⁰ Notably, some came from cities that had their own legal schools – Constantinople and Rome.⁹¹

⁸⁸ MACADAM, '*Studia et circenses*' (cit. n. 6), p. 198; also JIDEJIAN, *Beirut* (cit. n. 9), pp. 131–132. About the law school more generally, see COLLINET, *Histoire* (cit. n. 10); JIDEJIAN & SEHNAOUI, *Berytus* (cit. n. 9).

⁸⁹ Hans Curvers and Barbara Stuart suggest a monumental building that contained a corridor with a series of rooms but the evidence is ultimately thin. Leila Badre has argued that the modern Greek Orthodox Cathedral of St. George lies atop the ancient Anastasis church, which is said to have contained the law school, but the arguments about the mosaics belonging to the Anastasis church rather than another church are unconvincing. See CURVERS & STUART, 'BCD 2000–2006' (cit. n. 8), pp. 210–212; BADRE, 'The Greek Orthodox Cathedral' (cit. n. 56), p. 76.

⁹⁰ Libanius, *Oratio* 62.21; for students, see MACADAM, '*Studia et circenses*' (cit. n. 6), pp. 209–211; JIDEJIAN, *Beirut* (cit. n. 9), pp. 137–140.

⁹¹ JIDEJIAN, *Beirut* (cit. n. 9), p. 137; MACADAM, '*Studia et circenses*' (cit. n. 6), p. 209.

Most of the school's students until the earthquake were probably foreigners. As a lawyer in late sixth century Constantinople, Agathias likely knew some of the former professors and students of the law school. As above, he noted that the earthquake killed many foreign students 'of distinguished parentage' but did not mention any professors who died.⁹² According to his account, after the earthquake the law school was supposed to move to Sidon temporarily until Berytus was rebuilt, presumably using the same faculty. Scholars reasonably conclude that the school closed in 551 since there is no further evidence for its continued operation in either city.⁹³

Why the school did not reopen remains a mystery. Suggestions include budgetary cuts during a period of increasing financial difficulties, and shifting priorities that rejected intellectual pursuits in favour of Justinian's grandiose building program and a series of costly wars.⁹⁴ Neither is entirely convincing. The operating costs of the law school were almost certainly very low. Moreover, while one could argue for an anti-intellectual trend during Justinian's reign, it seems unlikely that the same emperor who invested so many resources in reforming Roman law under one of his flagship initiatives would just abandon the school teaching it.

A potentially more promising answer would be to see the closure of the Berytus school in the context of Justinian's trends towards centralisation. Concentrating law studies in the capital would strengthen the capital's intellectual activity and economy, cut overall costs, and realign the periphery towards the centre. The surviving law professors, especially those who had earlier participated in the compilation of Justinian's law code, might be enticed to permanently move to Constantinople. Many of them must have had networks of connections in the capital based on their former students and earlier temporary residence.⁹⁵ Remaining in Berytus, whose future was probably perceived as uncertain at first, would be less attractive. Moving to Sidon, a nearby city, was probably not considered a good option. Not only

⁹² Agathias, *Histories* 2.15.3.

⁹³ MACADAM, 'Studia et circenses' (cit. n. 6), p. 220.

⁹⁴ MACADAM, 'Studia et circenses' (cit. n. 6), p. 220.

⁹⁵ Justinian's legislation honoured professors in Constantinople with titles and honours (*CJ* 12.15), and any incoming professors from Berytus might have received similar benefits.

was the city a traditional rival of Berytus, but it was also damaged during the 551 earthquake and likely had no suitable infrastructure for housing the moved school. The city also had a negative reputation among contemporaries. The Piacenza Pilgrim, who passed through the city, pithily asserted that ‘its people are the worst’.⁹⁶ Given the options available to them, it appears that a critical mass of law professors soon moved to Constantinople.

The little evidence we have supports this conclusion. The Greek Anthology preserves the poems of two men who appear to have migrated to Constantinople at the time. The evidence is stronger in the case of Julianus, a prominent jurist known in both Berytus and Constantinople. Julianus was the author of a Latin epitome of Justinian’s Novels, dated to 555, and of three brief poems in the *Anthology*. He is also mentioned by another author of the poems of Agathias’ Cycle. Combining the evidence, scholars agree that he was one of the professors in Berytus until 551, after which he received a position at Constantinople.⁹⁷ Another poet, Ioannes Barbucallus, is known only from his three surviving poems in the *Greek Anthology*. All three lament the destroyed Berytus after the earthquake, but before its rebuilding.⁹⁸ The last poem urges sailors on a boat near Berytus to go to ‘some other place that knows not mourning’ (ἕτερον δ’ ἐς ἀπενθέα χῶρον), and may allude to the poet leaving on the ship, presumably to the capital. Whether this is correct or not, Agathias had access to the poems of Ioannes in Constantinople in the 560s, when he added them to his Cycle.⁹⁹ This further suggests that local elites from Berytus moved to the capital, a process that would ultimately weaken Berytus. According to the Piacenza Pilgrim’s account, the dissolution of the law school in the city was complete c.570.

⁹⁶ Contemporary stereotypes and jokes persistently described the inhabitants of Sidon as boorish and stupid, see R. D. DAWE, *Philogelos*, Munich – Leipzig 2000, pp. 128–139; B. BALDWIN, *The Philogelos or Laughter-Lover*, Amsterdam 1983, pp. 84–89. Piacenza Pilgrim 159.

⁹⁷ Averil CAMERON & Alan CAMERON, ‘The Cycle of Agathias’, *JHS* 86 (1966), pp. 6–26, p. 14; also W. R. PATON, *The Greek Anthology*, III, London – New York 1917, xi.367–369; xvi.32a. For scholarly agreement, see also COLLINET, *Histoire* (cit. n. 10), pp. 190–191; J. R. MARTINDALE, *The Prosopography of the Later Roman Empire*, III: AD 527–641, Cambridge 1971, p. 733 (vol. III A).

⁹⁸ PATON, *Anthology* (cit. n. 97), ix.425–427. For Ioannes as a lawyer, see CAMERON & CAMERON, ‘The Cycle’ (cit. n. 97), pp. 11–12.

⁹⁹ CAMERON & CAMERON, ‘The Cycle’ (cit. n. 97), pp. 6–7.

8.2. Silk

Berytus had a famous silk industry which processed raw and woven material coming from the East. During the fifth century, the relatively peaceful relations between Rome and Persia facilitated the development of this industry in the city. Some inscription evidence attests to the local silk industry, although the exact meaning of the professional terminology is less clear.¹⁰⁰

The war between Rome and Persia in the early sixth century, however, disrupted the trade routes and caused shortages in raw material in Berytus. Procopius claims that the increased state involvement in the silk industry curtailed trade and eventually caused many workers in the silk industry to move to Persia in search of a better fortune.¹⁰¹ Whether this story is true or not, the lack of raw material was an imperial concern. Justinian himself supposedly convinced Persian monks who came from China to smuggle silkworms from China back to the empire, which they did by hiding the eggs in a hollow cane.¹⁰² Although this colourful story seems more propaganda than truth, it is easier to argue that the Byzantine Empire needed a reliable source of silk, and probably began to seek an alternative after 540.¹⁰³

Contemporary legislation attempted to limit the trade and manufacturing of silk to the emperor. As the silk industry became centralised in Constantinople, its counterpart in Berytus grew more difficult to sustain.¹⁰⁴ The earthquake may have thus shattered the remnants of the vulnerable silk industry in Berytus, which would have become even less economical over the 540s. Evidence for a flourishing silk industry in Tyre to the south a generation later,¹⁰⁵ alongside the absence of evidence for post-551 silk production or trade

¹⁰⁰ HALL, *Roman Berytus* (cit. n. 11), pp. 224–226.

¹⁰¹ Procopius, *Secret History* 25.13–26.

¹⁰² Procopius, *Wars* 8.17.1–8.

¹⁰³ Silkworms are known to have been within the empire already in the fifth century. See A. MUTHESIUS, 'Essential processes, looms, and technical aspects of the production of silk textiles', [in:] A. E. LAIOU (ed.), *The Economic History of Byzantium: From the Seventh through the Fifteenth Century*, I, Washington D.C. 2002, pp. 147–168, p. 150.

¹⁰⁴ Procopius, *Secret History* 25.13–26. See also the discussions in HALL, *Roman Berytus*, (cit. n. 11), pp. 24–28, 224–226.

¹⁰⁵ Piacenza Pilgrim 160; HALL, *Roman Berytus*, (cit. n. 11), pp. 225–226.

in Berytus, suggests that the latter's silk industry did not survive the earthquake and that its community moved to Tyre, Constantinople or elsewhere.

A survey of both of the main cultural symbols of Berytus suggests that they underwent significant changes in the couple of decades before the earthquake. The empire's centralised legislative reforms must have opened up enticing opportunities in Constantinople, as some of Berytus' law professors experienced even before the earthquake. The attempts at centralising and regulating the silk trade and production likely hindered the local industry in Berytus. While both these changes were not necessarily terminal, it seems probable that the earthquake struck at a moment when they were both vulnerable, disrupting them to the extent that neither appears to have been restored later.

9. MATERIAL CULTURE

Since Berytus was part of the dense Mediterranean trade network, examining how local material culture changed before and after the earthquake could provide insights about the city's post-551 fate. The following analysis investigates three types of material culture: coins, pottery, and glass. All three survive in the material from Berytus and have distinct spatial and chronological signatures, allowing us to differentiate between pre- and post- earthquake periods.

9.1. Coin evidence

Coins are a key source for late antique Syria, a wealthy and relatively urbanised region. The presence of coins does not necessarily mean much, as the often-assumed connection between coins and prosperity 'remains unproven' since coins and trade can be completely independent of each other.¹⁰⁶ Although inconclusive, analysing the patterns of coin survival could hint at changes in regional economic networks over time.

¹⁰⁶ M. PHILLIPS, 'Currency in seventh-century Syria as a historical source', *BMGS* 28 (2004), pp. 13–31, at p. 25–27.

The current understanding of coinage in late antique Berytus is partial.¹⁰⁷ The main publication, a catalogue of about 3,500 coins from the BEY 006 excavation (see above), only includes the coins up to Heraclius.¹⁰⁸ The coin finds from only a few other sites have been published in catalogues.¹⁰⁹ The recent publication of Georges Abou Diwan analyses coins from forty-one excavations, most of which are unpublished, but does not focus on the earthquake.¹¹⁰ Since both datasets overlap only partially, the analyses below investigate them in parallel, considering the different find locations and whether the context was a single find or a hoard when relevant.

It seems clear that the pattern of sixth century coins in Berytus differs from that of other cities. Most coins from the ‘long sixth century’ (491–641) found in the excavations from Berytus were minted before the reform of

¹⁰⁷ The vast majority of coins remain unpublished. For example, C. AUBERT, ‘Bey 002: Rapport préliminaire’, *BAAL* 1 (1996), pp. 60–84, at pp. 81–82, refers to about two thousand coins found in BEY 002; R. THORPE *et al.*, ‘BEY 007, The Souks area: Preliminary report of the AUB/ACRE project’, *BAAL* 3 (1998), pp. 41–55, at p. 53 refers to coins in BEY 007; HEINZ & BARTL, ‘Bey 024’ (cit. n. 56), pp. 249–250 refer to fifty-one coins found in BEY 024; ARNAUD, LLOPIS, & BONIFAY, ‘Bey 027’ (cit. n. 54), pp. 111, 125 refer to thirty-five medieval bronze coins in BEY 027, some of which were Byzantine, and an unclear amount of Umayyad and Abbasid coins; also SAYEGH, ‘Bey 010’ (cit. n. 57), p. 264.

¹⁰⁸ Many of the published coins from the site are mostly illegible, and more than three thousand coins were completely illegible and remain unpublished, see K. BUTCHER, *Small Change in Ancient Beirut: The Coin Finds from BEY 006 and BEY 045: Persian, Hellenistic, Roman, and Byzantine Periods* [= *Berytus* 45–46 (2001–2002)], pp. 7, 32.

¹⁰⁹ For a preliminary report on BEY 020, see U. FINKBEINER & H. SADER, ‘BEY 020: Preliminary report of the excavations 1995’, *BAAL* 2 (1997), pp. 114–166, at pp. 150–156; On coins from ‘the general vicinity of the Roman theater’, see J. NURPETLIAN, ‘The coin finds from the Roman theater of Beirut’, *Berytus* 55 (2016), pp. 213–228. The theatre is referred to as part of BEY 155, see CURVERS, ‘Gray reports (131220)’ (cit. n. 49); CURVERS, ‘Gray reports (150930)’ (cit. n. 49). The coins from the hippodrome (BEY 170) were published in J. NURPETLIAN, ‘The coins’, [in:] R. AMEDICK, H. FRONING & W. HELD (eds.), *Marburger Winckelmann-Programm 2015–2016*, Marburg 2016, pp. 189–195. Additional hoards were published as P. BELIËN, ‘A hoard of Byzantine folles from Beirut’, *NumChron* 165 (2005), pp. 314–322 (BEY 011); G. ABOU DIWAN, ‘Un trésor monétaire de Beyrouth: À propos de la circulation des monnaies d’Anastase au VI^e siècle’, *NC* 168 (2008), pp. 303–320 (BEY 004).

¹¹⁰ G. ABOU DIWAN, ‘Base-metal coinage circulation in Byzantine Beirut 491–641 CE’, *AJN* 30 (2018), pp. 163–218. I am indebted to the generosity of Georges Abou Diwan for sharing his article before its publication.

Location	Anastasius (491–518)	post-Anastasius (518–641)
BEY 004 hoard	77	2
BEY 006 (without hoards)	185	73
BEY 006 hoard 5	1	0
BEY 006 hoard 6	63	0
BEY 006 hoard 7	2	0
BEY 011 hoard	22	11
BEY 020 excavation	8	9
BEY 045 (without hoards)	2	10
Hippodrome excavation	5	7
Theatre excavation	2	1
Unpublished hoard from earthquake context	60+	0

Fig. 4. Distribution of published coins over the ‘long sixth century’ between Anastasius and all other emperors

Anastasius in 512.¹¹¹ Three hoards of pre-512 Anastasian folles were found in the city, all of which are associated with destruction wrought by the 551 earthquake.¹¹² This suggests that coins from the reign of Anastasius remained

¹¹¹ These coins replaced earlier small denominations. K. BUTCHER, ‘The coin assemblages from BEY 006 and BEY 045’, *ARAM* 13–14 (2001–2002), pp. 227–236, at pp. 231–232 points out that the majority of coins from the late fourth and fifth centuries are tiny bronze pieces, weighing a fraction of a gram. They were badly made and with rough designs (if they had one at all).

¹¹² The three hoards are a published thirty-four-coin hoard (BEY 011) and an unpublished hoard of over sixty coins in BELIËN, ‘A hoard’ (cit. n. 109), p. 315; a sixty-three-coin hoard in BEY 006 (hoard 6) published in BUTCHER, *Small Change* (cit. n. 108), pp. 283–286. A hoard from BEY 004 in which almost all coins are from Anastasius’ reign is reported in ABOU DIWAN, ‘Un trésor’ (cit. n. 109), pp. 303–320. The count does not include hoards 5 and 7 from BEY 006 which contain few coins from this period. There are known unpublished hoards in BEY 002 and BEY 006, see ABOU DIWAN, ‘Base-metal coinage’ (cit. n. 110), p. 166.

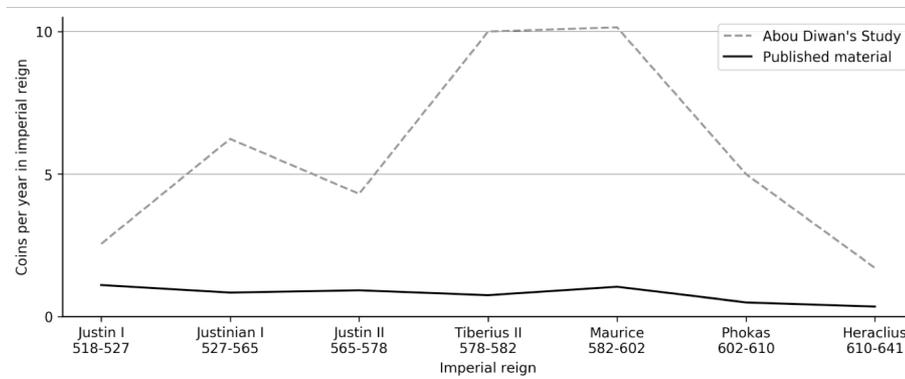


Fig. 5. Coins found per emperor in excavations, adjusted by the length of his reign. Anastasius is not included for readability reasons¹¹³

in use at least until the earthquake.¹¹⁴ Kevin Butcher noted that these coins often show considerable wear, further suggesting that they circulated for a long time.¹¹⁵ Fig. 4 shows that of eleven published excavation locations and hoards that contain coins from the 'long sixth century', four have no coins from after Anastasius' reign (518–641).¹¹⁶ Only three (BEY 020 and 045, and the hippodrome) have more post-Anastasius coins than coins from his reign. This bias towards Anastasius skews the rest of the numismatic data.

Fig. 5 focuses on the seven emperors after Anastasius (Justin I to Heraclius). The lower line corresponds to the analysis of only published material while the upper line reflects the analysis that includes unpublished material reported by Georges Abou Diwan. The coins from each reign are summed up, then divided by the length of that reign in years. The results demonstrate that there is no discernible decrease in the amount of coins per regnal year found before and after the earthquake over the decadal scale.

¹¹³ Anastasius, who reigned for twenty-seven years, has 202 coins in published material (7.48 coins/year) and 655 coins in Abou Diwan's data (19.26 coins/year).

¹¹⁴ BELIËN, 'A hoard' (cit. n. 109), pp. 317–318.

¹¹⁵ K. BUTCHER, 'Coinage in sixth-century Beirut: Preliminary observations', *Berytus* 43 (1997–1998), pp. 173–180, at p. 178.

¹¹⁶ The subject of this paper determined this division. The presence of coins from the reign of Anastasius in the 551 destruction layer makes it a good starting point for this survey. Pub-

A closer look at Justinian's coins reveals that any pre-/post-earthquake effect among the coins minted under him is weak, if at all extant. Abou Diwan reported seventeen coins of Justinian over the twelve regnal years (1.42 coins/year) between 538/9, Justinian's post-reform coinage, and 549/550, compared to eighteen coins of Justinian over the thirteen regnal years between 552/3 and 564/5 (1.38 coins/year).¹¹⁷ A small difference appears if we compare all published excavation finds from Justinian's reign before 551 and after 551.¹¹⁸

Although the numismatic evidence is not conclusive, it fits the post-earthquake recovery model proposed above. In particular, it supports the hypothesis that the earthquake caused a brief decrease in economic activity over the short term. Furthermore, Abou Diwan pointed out that no coins from the years between 553/4 to 555/6 were found although this might be a coincidence resulting from the overall low number of securely dateable coins from Justinian's reign.¹¹⁹ Whatever the case, the city's coin circulation was restored in a matter of years to a few decades and appears to have increased significantly in the last quarter of the sixth century. The instability associated with the subsequent Persian and Arab conquests disrupted the economic practices in the city in the early seventh century.

The mints represented in the coin finds from the 'long sixth century' skew heavily towards Constantinople, about 1,500 km away by sea, rather than the much closer regional metropolis Antioch, only 250 km away, or even Alexandria, about 750 km away but the source of the grain shipments to the capital that would pass annually through the Phoenician coast. Of the 504 published coins in all contexts and locations that can be dated to a reign, more than two

lications tend to cover the coins up to the reign of Heraclius (610–641) in detail but reports about later ones are rare.

¹¹⁷ See ABOU DIWAN, 'Base-metal coinage' (cit. n. 110), p. 182. Three additional coins date to 550/1 (one) and 551/2 (two) but were not included since it is unclear whether they were minted before or after the 551 earthquake. Coins before 538 are not included since Abou Diwan does not include a similar detailed analysis for them. Although his fig. 18 (p. 180) lists twelve such coins, not all of them can be dated to a single regnal year (his fig. 18 lists fifty post-reform coins but only thirty-eight of them are precisely dated in fig. 21).

¹¹⁸ A total of nineteen coins for the first twenty-four years (527–551, 0.79 coins/year) compared to six coins for the last fourteen years (551–565, 0.43 coins/year). This analysis does not include coins from hoards.

¹¹⁹ ABOU DIWAN, 'Base-metal coinage' (cit. n. 110), p. 189.

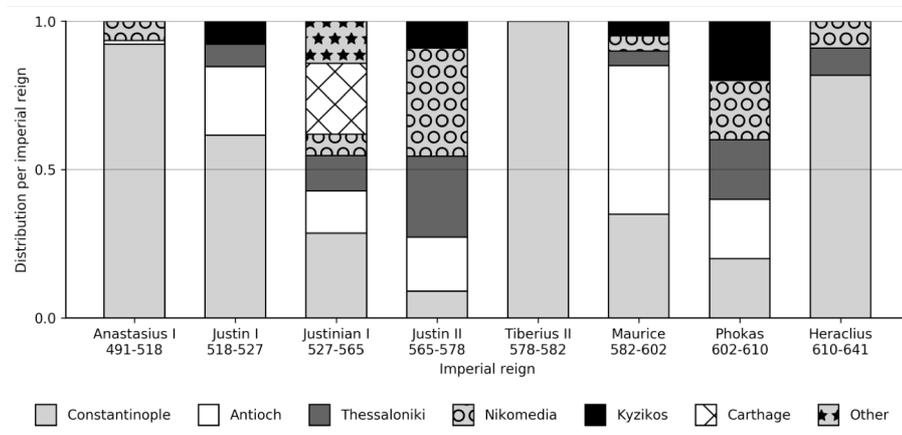


Fig. 6. Distribution of mints on published coins found in Berytus for each imperial reign (percentages), based on all published coins

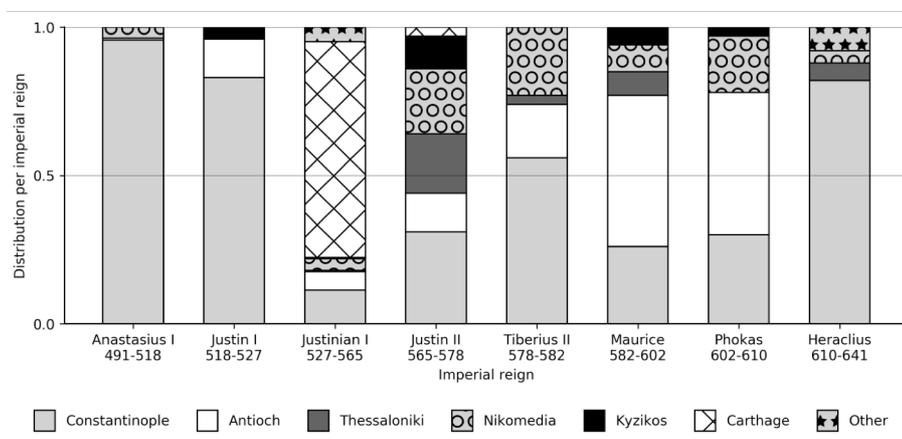


Fig. 7. Distribution of mints on coins found in Berytus for each imperial reign (percentages), based on Abou Diwan's analysis; most of the coins are unpublished

thirds (c.351) were minted in Constantinople, another fifth (c.91) were minted elsewhere, and the mint of the remainder (62) is unclear.¹²⁰ The ratio of coins minted in Constantinople seems lower in Abou Diwan's broader analysis but the capital remains the most common mint overall.¹²¹ A closer examination (figs. 6–7) reveals that most of the published coins from Constantinople were minted during the reign of Anastasius. After his reign, the ratio of coins minted in Constantinople decreased quickly.¹²² Imports of coins, mostly num-mi pieces, from Carthage dominate Justinian's reign in quantity; subsequently and until the reign of Heraclius the mints of Antioch and Nikomedia rise in importance.¹²³

One possible interpretation of this evidence is that post-earthquake Berytus re-oriented itself towards local networks rather than the capital. Here again a critical change happened before the earthquake – Constantinople stopped dominating local coinage during Justinian's reign. Abou Diwan reports fifty coins from Carthage compared to a total of seven from Constantinople (five) and Antioch (two) already at the beginning of Justinian's reign (527–538). Even if the nummi from Carthage are disregarded as an irregularity, the data reveal that the circulation in Berytus during Justinian's reign was changing compared to the previous three decades.¹²⁴ While the process behind the phenomenon is invisible to us, Antioch and Nikomedia, and the trade networks through which their coins circulated, appear to have strengthened their links to Berytus at the expense of Constantinople.

¹²⁰ Twenty-two coins were minted in either Constantinople or Nikomedia; I assigned half of them to Constantinople. Distributing them differently would not change the results.

¹²¹ ABOU DIWAN, 'Base-metal coinage' (cit. n. 110), pp. 163–218 does not provide the numbers of identifiable coins for each combination of reign and mint. The percentages were taken from his figs. 9, 13, 19–20, 24, 28, 31, 35, 39.

¹²² Tiberius II is an outlier among the published coins; the only two coins from his short reign (578–582) were minted in Constantinople. ABOU DIWAN, 'Base-metal coinage' (cit. n. 110), p. 193 had access to a total of forty coins from his reign, which show a more diverse origin.

¹²³ The eastern mints stopped operating during the reign of Heraclius, causing the ratio to increase again in favour of Constantinople.

¹²⁴ ABOU DIWAN, 'Base-metal coinage' (cit. n. 110), p. 182, has 127 coins from Carthage (116) and Rome (11) for Justinian's reign after the reform (538–565) compared to only 44 coins from the Eastern Mediterranean, of which 21 are from Constantinople, 12 from Antioch and 9 from Nikomedia. Two additional coins are from Kyzikos and Thessaloniki.

Analysing the patterns of published coins, it has been reasonably suggested that Berytus did not receive regular coin shipments from a mint after 512, a phenomenon that continued into the seventh century.¹²⁵ At least some evidence supports this hypothesis. The pattern of five-nummi pieces found in the excavations differs from all other denominations. Sixteen of the eighteen published coins of this denomination were minted over 512–518; only a single other coin (a follis) minted in this period was found in the city.¹²⁶ This suggests that a coin shipment with the five-nummi pieces may have reached Berytus between 512–518, but that these infusions of coin were exceptions rather than the rule after 512. The large number of African nummi that briefly appeared during Justinian's reign similarly supports the hypothesis of irregular coin shipments.¹²⁷

To summarise, the numismatic evidence points to three conclusions. First, there does not seem to be a difference between the frequency of coins in the decades before and after the earthquake. This suggests that the earthquake effects were brief and the local economy overcame them after a decade or two.¹²⁸ Second, coin imports to Berytus over the sixth century after 512 appear erratic. This may be considered evidence against the cultural or economic importance of Berytus and does not fit the image from the literary sources. Third, based on coin finds, the connection of Berytus to Constantinople diminished throughout the sixth century. An increase in coins from Antioch is apparent over the late sixth century. This in turn suggests that Berytus may have re-oriented itself towards different, presumably more local, networks after the earthquake. All conclusions, however, should be

¹²⁵ BUTCHER, 'Coinage' (cit. n. 114), pp. 173–180; for the seventh century, see PHILLIPS, 'Currency' (cit. n. 106), p. 21.

¹²⁶ BUTCHER, *Small Change* (cit. n. 108), p. 262; ABOU DIWAN, 'Un trésor' (cit. n. 109), pp. 310–313 showed that pre-512 coins continued to circulate into the early seventh century on multiple occasions.

¹²⁷ For a discussion of the nummi from Africa and Italy during Justinian's reign, see ABOU DIWAN, 'Base-metal coinage' (cit. n. 110), pp. 182–186.

¹²⁸ ABOU DIWAN, 'Base-metal coinage' (cit. n. 110), pp. 188–189. Abou Diwan pointed out that almost a third of the total nummi value of the coins found in Justinian's reign were introduced to circulation about a decade after the earthquake. He understood this as part of the rebuilding process.

moderated by the lack of comparative coin evidence from the hinterland of Berytus and from nearby cities.

9.2. Ceramic evidence

Ceramics are more common and were produced in more areas than coins, providing a broader overview of the Mediterranean trade network. They are, however, less precise for dating purposes. The ceramic evidence from Berytus demonstrates that the city continued to import and produce goods after the earthquake as well. However, the range and character of these goods changed in what might be best thought of as a reconfiguration of local production and trade networks.

That the earthquake did not mark the end of the pottery industry in Berytus is clear from the evidence of local amphorae types, whose production did not stop between the Roman conquest and the time of the Arab conquest.¹²⁹ The excavations have uncovered several post-earthquake kilns which contributed to this local production.¹³⁰ However, the earthquake may have changed local production practices. Some of the local pieces changed their fabric and firing, suggesting that the production centre relocated and began using a different source of clay in the area of the city.¹³¹ Local production of ceramic building material (e.g. tiles), already minor before the earthquake, ceased afterwards. Instead, the locals imported their ceramic building material.¹³²

The earthquake could accelerate existing trends. Local cooking wares, which had dominated the findings in Berytus, began declining in relative numbers compared to cooking ware imports from elsewhere in Palestine

¹²⁹ P. REYNOLDS, 'The Beirut amphora type, first century BC-seventh century AD: An outline of its formal development and some preliminary observations of regional economic trends', *RCRF* 36 (2000), pp. 387–396, at p. 390.

¹³⁰ SAGHIEH, 'Bey 001 & 004' (cit. n. 46), p. 40.

¹³¹ P. REYNOLDS & Y. WAKSMAN, 'Beirut cooking wares, second to seventh centuries: Local forms and north Palestinian imports', *Berytus* 50 (2007), pp. 59–81, at p. 62.

¹³² MILLS, *The Ancient Mediterranean Trade* (cit. n. 15), p. 182.

since the mid – late fifth century (dropping from 80–100% of finds to 60–80%).¹³³ The earthquake expedited this trend, causing the local wares to drop to only 20% of all pottery finds in the late sixth century. Imports from the so-called ‘Workshop X’ became the most common ware in late sixth century Berytus, consisting of about 40% of all pottery finds. Scholars believe that ‘Workshop X’ was located somewhere around Tell Keisan, 8 kilometres southeast of Acre and about 120 kilometres south of Berytus.¹³⁴ Its pottery was probably shipped to Berytus from either Acre or Caesarea. Notably, exports from ‘Workshop X’ to the rest of Syria are infrequent.¹³⁵

Other changes were more pronounced but temporary, for instance as the patterns of fine ware found in the city show. The amount of African Red Slip, common in Berytus before the earthquake, dropped afterwards. It became common again, however, in the late sixth and early seventh centuries, when it remained the only ceramic import from the Western Mediterranean.¹³⁶ The networks of fine ware and amphorae shifted again during the Umayyad period.¹³⁷

¹³³ REYNOLDS & WAKSMAN, ‘Beirut cooking wares’ (cit. n. 131), pp. 59–81, 62.

¹³⁴ REYNOLDS & WAKSMAN, ‘Beirut cooking wares’ (cit. n. 131), p. 61; Y. WAKSMAN *et al.*, ‘A major production of Late Roman “Levantine” and “Cypriot” common wares’, [in:] J. M. GURT I ESPARRAGUERA, J. BUXEDA I GARRIGÓS & M. A. CAU ONTIVEROS (eds.), *LRCW, I: Late Roman Coarse Wares, Cooking Wares and Amphorae in the Mediterranean: Archaeology and Archaeometry* [= *BAR International Series* 1340], Oxford 2005, pp. 311–325.

¹³⁵ A. VOKAER, ‘Byzantine cooking ware imports in Syria: The “Workshop X”’, *Berytus* 53–54 (2010), pp. 213–232, at p. 214.

¹³⁶ P. REYNOLDS, ‘Fine wares from Beirut contexts, c.450 to c.600’, [in:] M. Á. CAU, P. REYNOLDS & M. BONIFAY (eds.), *LRFW, I: Late Roman Fine Wares. Solving Problems of Typology and Chronology: A Review of the Evidence, Debate and New Contexts* [= *Roman and Late Antique Mediterranean Pottery* 1], Oxford 2011, pp. 207–230, at p. 215–219; P. REYNOLDS, ‘Trade networks of the East, third to seventh centuries: the view from Beirut (Lebanon) and Butrint (Albania) (fine wares, amphorae and kitchen wares)’, [in:] S. MENCHELLI *et al.* (eds.), *LRCW, III: Late Roman Coarse Wares, Cooking Wares and Amphorae in the Mediterranean. Archaeology and Archaeometry. Comparison between Western and Eastern Mediterranean* [= *BAR International Series* 2185 (I)], Oxford 2010, pp. 89–114, at p. 98. G. FARALDO VICTORICA, *Étude céramologique sur le matériel de la parcelle BEY 028 du site de Beyrouth-centre-ville*, M.A. Thesis, Université de Paris-Sorbonne, Paris 2000, pp. 96–98, 133 found an increase in amphorae imports from southern Palestine or northeast Egypt, but did not date them more precisely.

¹³⁷ P. REYNOLDS, ‘Pottery and the economy in eighth century Beirut: An Umayyad assemblage from the Roman imperial caths (BEY 045)’, [in:] Ch. Bakirtzis (ed.), *Actes du VII^e Congrès*

As noted above, not all changes were detrimental to the city. Berytus had rarely exported its locally-produced amphorae over more than seven centuries of production. Most of the evidence for such exports dates to the second century, although the Beirut 8.2 type, dating to the late sixth and early seventh century, has the second highest number of exports in a compiled sample. Specimens of this type are found in Salamis, and in wrecks near Bodrum and Knidos.¹³⁸ Despite the small number of examples, the findings suggest that the earthquake transformed existing traditions, revising trade networks in the region. Local amphorae were again shipped away after a long hiatus, while the city's orientation seems to have focused on the northwest. The appearance of new forms of Cypriot fine ware from the late sixth and seventh centuries in the Berytus excavations further suggests increased ties to the island.¹³⁹

These findings nuance the debates about earthquake-related destruction, demonstrating how existing trade networks adjusted to a new reality. Although it is impossible to discuss concrete numbers, the evidence suggests that the pottery industry in Berytus (and its hinterland?) overall declined in the generations after the earthquake, likely with a detrimental effect on the city's economy. However, the evidence also demonstrates how Berytus not only survived the disaster but used its networks within the region and beyond to compensate for the local disruption the earthquake caused. At least some local industries seem to have adapted well enough to develop new trade connections.

9.3. Glass

Glass is a third material that can be used to trace changes the earthquake may have caused even though it is less common and studied to a lesser

International sur la Céramique Médiévale en Méditerranée, Thessaloniki 11–16 Octobre 1999, Athens 2003, pp. 725–734.

¹³⁸ REYNOLDS, 'The Beirut amphora type' (cit. n. 129), p. 391.

¹³⁹ ARNAUD, LLOPIS & BONIFAY, 'Bey 027' (cit. n. 54), p. 125; see also the Cypriot wares in J. HAYES & A. 'Ala' EDDINE, 'BEY 004: A transitional Byzantine-Umayyad pottery group',

extent than pottery. The majority of reported glass finds from Berytus comes from the Souks excavations.¹⁴⁰ The results are mixed, similar to those of pottery discussed above. Some aspects of the glass evidence suggest continuity, while others show increased activity. Glass goblets, for example, remained in widespread use into the seventh century, while the types of the different kinds of glass vessels used by locals did not change.¹⁴¹ The number of lamps, however, ‘increased progressively and dramatically, particularly in the sixth and seventh century’, and new forms of lamps began appearing after the 551 earthquake.¹⁴² This appears to reflect the post-disaster reconfiguration and experimentation.

The evidence suggests that many vessels were produced locally, and it appears that Berytus had a flourishing glass industry before the earthquake: an inscription from the fifth or sixth century mentions a glass artisan who did well enough to buy a large tomb that could accommodate eight people.¹⁴³ At least one glass production workshop was found near BEY 006, while another probably existed near BEY 002. Archaeological evidence from both studies demonstrates that these workshops continued to produce glass after the earthquake. Raw glass may have been brought from nearby Tyre, about seventy kilometres to the south. The size of the Berytus glass industry and its coverage outside the city are unknown, but based on the absence of its produced items in findings from nearby centres it was probably small.¹⁴⁴

BAAL 3 (1998), pp. 127–137. The relative increase in Cypriot wares may have started earlier in the sixth century, see M. BONIFAY, ‘Annexe 1. Bey 002. Les sigillées tardives’, *BAAL* 1 (1996), pp. 85–89, at p. 85–86.

¹⁴⁰ BEY 006, 007, and 045; the areas are in the north of ancient Berytus but are not contiguous.

¹⁴¹ S. JENNINGS, ‘Vessel glass from Beirut: BEY 006, 007 and 045’, *Berytus* 48–49 (2004–2005), respectively 124 and 155.

¹⁴² JENNINGS, ‘Vessel glass’ (cit. n. 141), respectively 134 and 185.

¹⁴³ JIDEJIAN, *Beirut* (cit. n. 9), pp. 155–156; J. P. BROWN, *The Lebanon and Phoenicia: Ancient Texts Illustrating Their Physical Geography and Native Industries*, I, Beirut 1969, p. 111.

¹⁴⁴ Jennings, ‘Vessel glass’ (cit. n. 141), pp. 287–288; contra the earlier S. JENNINGS & J. ABDALLAH, ‘Roman and later blown glass from the AUB excavations in Beirut (sites BEY 006, 007 and 045)’, *ARAM* 13–14 (2001–2002), pp. 237–264, at p. 246; for BEY 002, see D. FOY, ‘Annexe 2. Bey 002. Contexte 24: les verres’, *BAAL* 1 (1996), pp. 90–97, at pp. 90, 95–96.

Notably, the large quantity of glass found in the excavations throughout late antiquity serves as evidence against the recycling of the expensive material, which would be expected during difficult economic times. Moreover, the quality of the glass is consistently very good, suggesting that there was enough raw material and limited need for recycling.¹⁴⁵

The glass evidence therefore serves as more evidence against the simple decline or collapse of Berytus after the earthquake. Some parts of the glass industry continued their pre-earthquake activity, apparently with little change. Other products, such as the lamps above, actually became more common and again demonstrate that at least some contemporaries adapted successfully to their new realities.

Altogether then, the three types of material culture examined above appear to point towards similar conclusions. First, they all agree that Berytus recovered economically from the earthquake in the second half of the sixth century. Coins remained in circulation, and pottery and glass were produced. The more precise dating of the coin evidence hints that this recovery may have taken a decade or two, but the little available data makes this only a conjecture. Second, in all cases the earthquake appears to have caused a change in existing practices. This change was not necessarily negative – pottery exports increased, new glass vessel designs were introduced, and local trade networks were strengthened. Rather, it seems that the earthquake acted as a catalyst and provided contemporaries an opportunity to revise traditional practices.

10. DISCUSSION

As a case study of a late antique city, Berytus has multiple advantages, first and foremost the diversity of independent sources for its past, many of which have come to light only recently. The city appears in both historical and non-historical literary sources. The large-scale archaeological excava-

¹⁴⁵ JENNINGS, 'Vessel glass' (cit. n. 141), pp. 152, 287.

tions carried out in it uncovered impressive amounts of material culture and allow us to reconstruct the ancient settlement. Scientific studies of the earthquake, the coastline around the city, and its former harbour all reveal more information.

Even a superficial survey of the evidence reveals that Berytus neither collapsed nor underwent an easily-observable decline after the earthquake. That a late antique city could recover from what was by any standard a massive earthquake which likely also caused high mortality is insightful by itself. As such, it offers a contrast to the traditional depictions of late antique cities that supposedly collapsed after earthquakes, such as Antioch after the 526 earthquake or Scythopolis after the 746/9 earthquake.

A more difficult question concerns how post-earthquake Berytus compared to the city before the earthquake. A synthesis of the available evidence suggests that the earthquake and its after-effects transformed the city. While the city's population must have dropped immediately after the earthquake, the city and its infrastructure recovered at least to an extent. The reconstruction, funded partially by the imperial government, was likely an engine of recovery as in other cases when rebuilding offered people from the area new opportunities through additional jobs, cheap land and even looting the ruins.¹⁴⁶

With two brief exceptions, Berytus disappears from the literary sources for more than a century after the earthquake. This was probably related above all to the loss of its cultural symbols, namely its law school and, to a lesser extent, its silk industry. Without both these famous markers of the city, and after what seems to be the departure of a substantial number of the city's elite, probably to Constantinople, the city received less attention from contemporary authors. The surviving two references merely mention it as one of the cities on the Phoenician coast en route to elsewhere.

As discussed above, however, the dissolution of both the law school and the silk industry in Berytus were processes that began before the earthquake. The increased ties between the Berytus faculty and Constantinopolitan elite surrounding the compilation of Justinian's legal project were unprecedented. The relocation of several law school faculty members to the

¹⁴⁶ MORDECHAI, 'Antioch' (cit. n. 40), pp. 25–41.

capital for at least several years almost certainly destabilised their institution in Berytus. The local silk industry encountered a similar problem. The centralising tendencies of Justinian's administration with regard to the silk industry increased pressure on local artisans and merchants. More broadly, the increased hostilities with Persia over the first half of the sixth century and especially after 540 disrupted a silk trade that must have been more lucrative during the fifth century.

The 551 earthquake featured an interaction between a strong unexpected environmental stressor and a medium-sized and relatively important late antique city. By and large, Berytus demonstrated its resilience to this stress. The core aspects of its late antique social and cultural life reveal large-scale continuity, as in the case of the city's peculiar monetary economy, or the continued existence and presence of its bishop.

At the same time, the 551 earthquake was also a case in which the natural hazard coincided with existing processes of social change. The destruction, together with the uncertainties of reconstruction and the viability of operating elsewhere, were important factors in pushing certain elites and professionals to migrate away from Berytus. The earthquake thus coincided with the local vulnerabilities, pushing the already vulnerable law school and silk industry sectors to a tipping point and likely causing their collapse within the city. This exacerbated the earthquake's visible long-term effects, especially in the surviving written sources, and led some modern commentators to believe that Berytus collapsed.

The more careful examination above argues against this interpretation. Berytus may have lost its two most significant cultural markers, but the material culture suggests that the locals adapted to their new reality. The recovery process did not attempt to restore the city and its institutions in their exact pre-earthquake form. Certain areas were not rebuilt, and certain industries, in particular those that had encountered difficulties even before the earthquake, appear to have declined and atrophied. More robust practices appear to have recovered after a brief hiatus, for instance in the case of African Red Slip imports. Importantly, contemporaries also experimented with novel practices in multiple spheres that included material culture production, as in the case of glass lamps. Local economic networks were realigned, with changes in production, import and export of goods. At least

some of these, such as exporting Berytus amphorae, were completely new. There must have been many similar experiments that remain invisible in our sources. The repeated conquests of the area in the early seventh century likely disrupted some of these changes and induced others.

Rather than a simple collapse of the city, the main effect of the 551 earthquake appears to have been a reconfiguration of existing practices and institutions. More vulnerable and less sustainable practices and institutions – the outcome of earlier series of individual and governmental decisions – declined or collapsed through creative destruction. More robust practices and institutions, however, soon recovered. At the same time, the earthquake also unleashed a wave of economic and perhaps also cultural experimentation as locals revised previous norms in spheres ranging from their trade networks to their material culture. Very little, if anything, in these changes was predetermined by nature. The neighbouring city of Tyre, for instance, likely suffered only slightly less from the shaking the earthquake induced, but maintained and developed its silk industry, possibly with the help of artisans and merchants from Berytus who migrated to it.

More broadly, the 551 earthquake is a good case study for the interaction between late antique society and its environment. Despite the many lacunae and ambiguities, the amount of existing sources and research for Berytus is unusually high compared to most other natural disasters in the sixth century in both extent and detail. As such, Berytus offers a unique opportunity to examine how a late antique city reacted to environmental stress.

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BERYTUS AND THE AFTERMATH OF THE 551 EARTHQUAKE

Abstract

Late antique Berytus (modern Beirut) experienced a major earthquake in 551 CE. The social and demographic effects of this earthquake, however, remain unclear. This paper first situates Berytus in its late antique environmental, social and cultural context. It then examines the earthquake and its effects using interdisciplinary tools that include texts, archaeological finds and scientific studies. It investigates the city's main cultural symbols – its law school and its silk industry, whose disappearance from the sources roughly coincides with the earthquake. The paper further analyzes changes in material culture in the form of coins, pottery sherds and glass as proxies for economic activity and demography in the city. Using this disparate source base, it concludes that the main effect of the 551 earthquake was a reconfiguration of existing practices and institutions. While more vulnerable ones declined or collapsed, more robust ones recovered quickly. At the same time, the earthquake also triggered a wave of economic and perhaps also cultural experimentation.

Keywords: late antiquity, earthquakes, environmental history, Beirut, Syria; Phoenicia; 551 earthquake; Byzantine History; Eastern Mediterranean

BEJRUT I SKUTKI TRZĘSIENIA ZIEMI W 551 R.

Abstrakt

Berytus (współczesny Bejrut) został dotknięty poważnym trzęsieniem ziemi w 551 r. n.e. Jego społeczne i demograficzne skutki pozostają jednak dla nas niejasne. Niniejszy artykuł umiejscawia Berytus w jego późnoantycznym kontekście środowiskowym, społecznym i kulturowym. Autor następnie bada trzęsienie ziemi i jego skutki, interdyscyplinarnie łącząc lekturę tekstów, analizę znalezisk archeologicznych i studia z dziedziny nauk przyrodniczych. Skupia się także na symbolach kultury antycznego Berytus, szkole prawniczej i przemyśle jedwabnym, których zniknięcie ze źródeł koresponduje chronologicznie z trzęsieniem ziemi. W dalszej części artykułu autor analizuje zmiany w kulturze materialnej zauważalne w materiałach numizmatycznym, ceramicznym i szklanym, w których odzwierciedla się aktywność ekonomiczna i demografia miasta. Korzystając z tej różnorodnej bazy źródłowej autor konkluduje,

że głównym skutkiem trzęsienia ziemi z 551 r. była rekonfiguracja istniejących praktyk i instytucji. Podczas gdy te mniej stabilne podupadły lub znikły, te bardziej dynamiczne podległy szybkiej odbudowie. Trzęsienie ziemi zapoczątkowało również szereg eksperymentów gospodarczych i (prawdopodobnie) kulturowych.

Słowa kluczowe: późna starożytność, trzęsienia ziemi, historia środowiskowa, Bejrut, Syria, Fenicja, trzęsienie ziemi w 551 r., historia Bizancjum, wschodnie Śródziemnomorze

