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Antioch and the earthquake (114/115 AD).

Panel JS7 "Historiography and Comparative Perspectives on Natural Disasters"
(Joint session)
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Seismography – as is well known – is a relatively recent science. It suffices to remember that still in 1902, when Giuseppe Mercalli drafted his scale constructed around ten degrees of intensity (and which was then brought to twelve degrees), the assessment of a seismic event was fundamentally based on the observation of the damages. The need to assess an earthquake scientifically would become an absolute need only a few years later: Kiyoo Wadati built a qualitative scale in 1931, but the studies carried out more or less at the same time by Charles Richter were to meet with greater success, as he in turn presented a system whereby the intensity (which depended on a subjective observation) was substituted by the concept of magnitude or the calculation of the mechanical force (expressed in joules) released by an earthquake in its epicentre[1].

The absence of an eminently scientific approach to the natural phenomenon and therefore of a method based on instruments aimed at the measurement of the natural event makes archaeoseismology and historical seismology quite a complex area of study, above all when one considers the irreparable lack of documents characterising the analysis of the ancient world. Even though Aristotle, Seneca, Pliny and others recorded the observations of earthquakes in their works, it must be remembered that for the Greek and Roman world there is no existence of a specific literature dedicated to natural disasters or to the scientific analysis of the same. Or rather: the absence of systems of measurement and the limited knowledge of natural laws at the basis of seismic phenomena did not give the ancient world the opportunity to develop a concept of scientific investigation that could go beyond the observation (in the fortunate cases), the empirical description of this typology of events and the theorization of their causes.

Furthermore, today in the western world to such scarcity is added the wide interest in seismic activities and the correlated eruptions of Vesuvius which concern the area of Campania: in fact, still today after about two centuries, Pompei, Stabia, Herculaneum and Oplontis continue to offer material for study and to preserve a moment of ancient day to day life in the 'freezing' of 79 AD, the least altered picture of the Roman world known today[2].

1. *Historical sources, superstitions and ancient theories.*

On the other hand, other episodes are less investigated. Different sources can nonetheless help to define the entity of ancient seismic activity. First of all, some data are offered by archaeology; for example, it is known that the rotation of the drums of the Antonine Column in Rome was due to an earthquake[3]; the arrangement and fall of the columns of the Temple of Zeus at Olympia refer

[1] Amiran, Arieh, Turcotte 1994, pp. 261-264; Zeilinga de Boer, Sanders 2005, pp. 9-14.
[2] Guidoboni 1990-1991, p. 273.
[3] Sinopoli 1989, pp. 256-259.

specifically to an earthquake, perhaps the one that took place in 521/522 AD[4]; moreover, the modalities of the discovery of the funeral monuments at Sarsina in Italy can undoubtedly be traced to collapses following an earthquake[5].

In other cases historians can find brief information in epigraphs. Among various documents one can think of, for example, an inscription coming from Samos referring to the reconstruction of the temple of Liber Pater which collapsed due to "vetustate et terrae motu"[6], or an epigraph from Lycia in which reference is made to a number of *donativa* offered by private citizens for the reconstruction of the walls of Kytionion, demolished by the earthquake that devastated the region of Lycia in 225 BC[7]. Nevertheless, as Emanuela Guidoboni stated, "epigraphic language took little interest in earthquakes: what concerned the ancient civilisations was above all the entity of the damage and the cost of the reconstruction"[8].

Along with brief epigraphs, numismatics can also in its own way supply references: for example one can bear in mind that during the reign of the Emperor Tiberius the mint of Rome issued a sestertius with Tiberius sitting in a curule saddle and the inscription CIVITATIBVS ASIAE RESTITVTIS on the reverse and SC on the obverse (inscription: TI CAESAR DIVI AVG F AVGVSTVS PM TR POT XXIIII), minted in 22-23 AD and referring to the support sent by the emperor to the towns of Asia destroyed by the earthquake of 17 AD[9]. In this case too however, the minting of the coin was not with the aim of remembering the earthquake but in the memory of and as propaganda for the emperor's charitable nature.

Coins, inscriptions and archaeological finds, insofar as they can refer to earthquakes and in some cases describe the modalities of a seismic event, lack the "narration" of the event which is necessary for history. To enrich an earthquake with details the information comes into play contained in the literary sources which – as Bernard Bousquet and Pierre-Yves Péchoux remarked − "à l'occasion du récit d'une manifestation divine ou d'une catastrophe qui frappe une cité ou qui atteint une armée en marche" refer to earthquakes, offering quite useful outlines and details[10]. Various examples of these could be mentioned, among which a passage by Herodotus narrating that in the winter of 480/479 BC the Persian army of Artabazus was hit by a tsunami caused by an undersea earthquake that was not otherwise perceived or (at least) not otherwise witnessed[11]:

> But when Artabazus had besieged Potidaea for three months, there was a great ebb-tide in the sea, lasting for a long while, and when the foreigners saw that the sea was turned to a marsh they made to pass over it into Pallene. But when they had made their way over two fifths of it and three yet remained to cross ere they could be in Pallene, there came a great flood-tide, higher, as the people of the place say, than any one of the many that had been before; and some of them that knew not how to swim were drowned, and those that knew were slain by the Potidaeans, who came among them in boats. The Potidaeans say that the cause of the high sea and flood and the Persian disaster lay herein, that those same Persians who now perished in the sea had profaned the temple and the image of Poseidon that was in the suburb of the city; and I think that in saying that this was the cause they say rightly[12].

[4] Guidoboni 1989, p. 690 (n. 168) = Guidoboni, Comastri, Traina 1994, pp. 313-314 (n. 201). See also Stiros 1996, pp. 129152.
[5] Ortalli 1989, pp. 474-482.
[6] "Année Epigraphique" 1912, 216 and Guidoboni 1989, p. 160 n. 3.
[7] Bousquet, Péchoux 1981, pp. 46; Guidoboni 1989, pp. 648-650 (n. 55) = Guidoboni, Comastri, Traina 1994, pp. 140-142 (n. 36).
[8] Traina 1985, pp. 873; Guidoboni 1989, pp. 135-168; Guidoboni 1990-1991, p. 274; Williams 2006, pp. 124-146.
[9] *RIC* I (Tiberius) 48. Guidoboni 1989, pp. 657-659 (n. 78) = Guidoboni, Comastri, Traina 1994, pp. 180-185 (n. 79).
[10] Lancel 2005, p. 1282: "Des milliers des séismes qui, sur plus d'un millénaire, ont secoué le bassin de la Méditerranée, une faible partie a été connue des contemporaines".
[11] Guidoboni 1989, pp. 635 (n. 26) = Guidoboni, Comastri, Traina 1994, pp. 112-113 (n. 7).
[12] Erodoto VIII, 129, 1-3 (transl. by A.D. Godley, Loeb Classical Library, 1924).

And there is also the earthquake and the following tsunami which in the winter of 373 BC destroyed Bura and Helice on the Greek coast of the Achaia and of which the historian Diodorus Siculus gave a vivid description in his *History*[13]:

> [... A] great earthquakes occurred in the Peloponnese accompanied by tidal waves which engulfed the open country and cities in a manner past belief [...]. The extent of the destruction was increased by the time of its occurrence; for the earthquake did not come in the daytime when it would have been possible for the sufferers to help themselves, but the blow came at night, so that when the houses crashed and crumbled under the force of the shock, the population, owing to the darkness and to the surprise and bewilderment occasioned by the event, had no power to struggle for life. The majority were caught in the falling houses and annihilated, but as day returned some survivors dashed from the ruins and, when they thought they had escaped the danger, met with a greater and still more incredible disaster. For the sea rose to a vast height, and a wave towering even higher washed away and drowned all the inhabitants and their native lands as well[14].

In his description Diodorus also narrates that the earthquake gave rise to lively debate among the "natural scientists" and "those who are disposed to venerate the divine power". It was Pausanias, in the II century AD, that gave an interesting elucidation of this, recalling that the blame for the destruction of the two cities was owing to the violation of the sanctuary of Poseidon at Helice by the Achaeans themselves[15]. A reflection by Aelianus refers to the same origin of divine punishment:

> When a house is on the verge of ruin the mice in it, and the martens also, forestall its collapse and emigrate. This, you know, is what they say happened at Helice, for when the people of Helice treated so impiously the Ionians who had come to them, and murdered them at their altar, then it was (in the words of Homer) that 'the gods showed forth wonders among them'. For five days before Helice disappeared all the mice and martens and snakes and centipedes and beetle and every other creature of that kind in the town left in a body by the road that leads to Cerynea. And the people of Helice seeing this happening were filled with amazement, but were unable to guess the reason. But after the aforesaid creatures had departed, an earthquake occurred in the night[16].

In the above mentioned sources, written in different periods, continuous reference is made to divine wrath and, in the particular case, to that of Poseidon, who centuries earlier had for this very reason been defined as *ennosigaios* and *enosichton* (or shaker of the earth)[17]. According to such a long lasting perspective it appears quite clear that earthquakes represented for ancient man "le signal, addressée à une société inattentive, d'un dérangement du monde ou comme la sanction d'un dérangement dont la responsabilité incombe aux hommes"[18].

In the words of Diodorus, as has been highlighted, a second element however emerges: in relation to precisely the earthquake of Helice and Bura, different approaches and new forms of thought are supposed to have opposed popular superstition. In underlining the words of Diodorus it is not out of place to remember that in his *Meterologica* also Aristotle refers to the disastrous earthquake of 373 BC.[19]: in particular, the Stagirite dwelt on the combination between earthquake

[13] Guidoboni 1989, pp. 642-644 (n. 42) = Guidoboni, Comastri, Traina 1994, pp. 128-132 (n. 24).
[14] Diodoro XV, 48, 1-3 (transl. by Ch.L. Sherman, Loeb Classical Library, 1952).
[15] Pausania VII, 24, 5-13 (transl. by W.H.S. Jones, Loeb Classical Library, 1933).
[16] Eliano, NA, XI, 19 (transl. by A.F. Scholfield, Loeb Classical Library, 1959). See also Bedon 2005, pp. 355-360.
[17] Helly 1989, pp. 75-91; Duggan 2004, pp. 123-170.
[18] Bousquet, Péchoux 1981, p. 45.
[19] Aristotele, *Metereologicon*, II, 7-8 (365A-368B) and Cambiano 2002, pp. 694-714.

and tsunami and, after having attributed the origin of earthquakes to the clash between dry and humid moving air (*pneuma*), he recognised the origin of the tsunami in the moving air of the earthquake pushed towards the sea. Such interpretation could seem naïve: but it is in the lack in this passage by Aristotle of any reference to divinity and the recognition of a natural cause that the emergence must be seen of an eminently scientific approach to the problem[20]. Aristotle was certainly not the first (nor the last) Greek to pose the problem of earthquakes following a course far from superstition[21]; nevertheless, insofar as explanations of various kinds existed to interpret earthquakes "the religious-superstitious aspect [remained] always present, in so much that it corresponded to the beliefs of different tiers of society"[22]: therefore, insofar that in the IV century BC the earthquake of Helice had found an explanation without any references to the god, in the II century AD however Pausanias could have returned *mutatis mutandis* to Poseidon and the human violation of divine rules.

2. *Geomorphological structure of southern Turkey and Syria*

Both the knowledge of the repetition of catastrophic events, recorded according to scientific parameters and in a systematic way only during the last century, and the entity of geomorphological analyses today make a more definite dimension of earthquakes and areas subject to the risk of earthquakes possible, and thanks to which it has been possible to focus on the dynamics of the movement of the earth's plates and the scale of fault fractures.

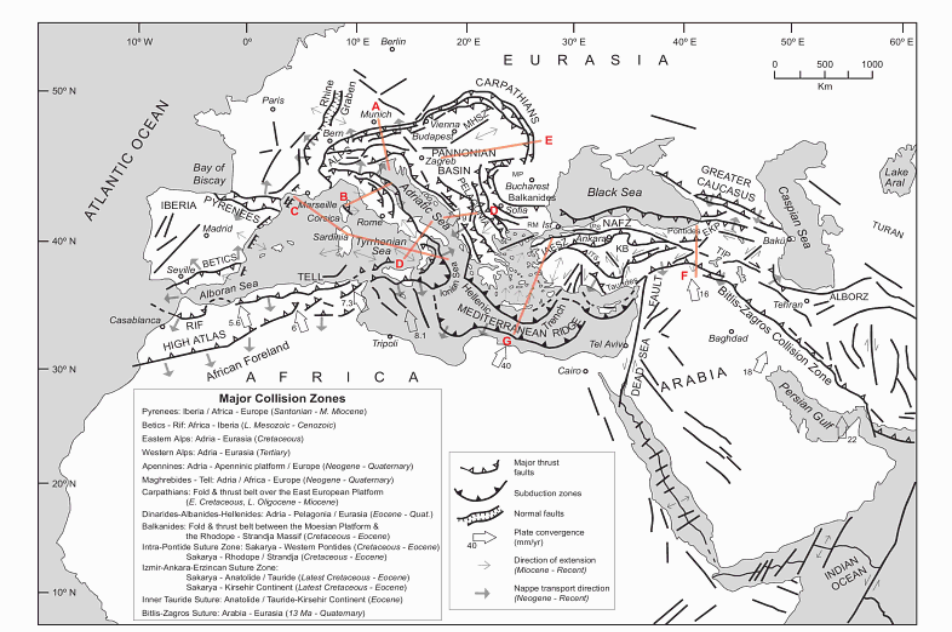

Fig. 1 (Dilek 2006, p. 3).

In particular, coming to the northern area of Syria where at the end of the IV century BC the city of Antioch on the Orontes was founded, studies on the seismic topography of the area have highlighted quite a distinct longstanding geodynamic evolution. As was briefly described by Yldirim Dilek "the Anatolian Peninsula in the eastern Mediterranean region is a collage of continental blocks separated by ophiolites and suture zone, and these continental fragments, mostly

[20] Bousquet 2006, pp. 34-39.
[21] Seneca in *Naturales Quastiones* VI, 21, 2 (Theiler 12a = Vimercati A151).
[22] Gabba 2002, pp. 687-688 and Traina 1985, pp. 874-876.

derived from Gondwana to the south, were amalgamated through a series of collisional events starting in the Cretaceous".

Among the collision areas affecting the Anatolian Peninsula, the Bitlis-Zagros Suture Zone is of particular significance, as it defines the area of collision between the Arabian and the Eurasian plates. The initial collision between these two areas has been established as being about 13 million years ago; still today the Arabian Plate is moving in the north-west direction towards the Eurasiatic plate at a speed of between 20±3 mm/yr and 24±2 mm/yr.[23] Moreover an anti-clockwise movement of the whole Anatolian block corresponds to the movement of the Arabian plate, which "escapes the convergence between Eurasia and Arabia by moving southwestwards towards the Hellenic and Cyprian Arcs"[24]. The very correspondence of these two fractures, the Bitlis-Zagros Zone and the Cyprian Arc, has resulted in repeated intense seismicity in the territories of the provinces of the Mediterranean area of Turkey and northern Syria.

Insofar as the recordings carried out over the last century have shown considerably moderate seismicity in the area, on the other hand the comparative analysis of the historical sources has made it possible to identify a certain number of catastrophic events of different entity in these areas. In particular, Mohamed Reda Sbeinati, Ryad Darawcheh and Mikhail Mouty managed to catalogue 181 earthquakes of vast intensity (at least greater than III on the Mercalli scale) differently concentrated in these areas for a time span between the XIV century BC and 29 June 1896: among these fifty concerned Antioch more or less directly[25].

For the ancient world there are various seismic events hitting the towns that were described in ancient sources. Even though the damage was probably only slight, Posidonius wrote that between 199/198 BC most of Syria was hit by an earthquake[26]. The the Byzantine chronographer Johannes Malalas (V-VI c. AD) writes in his *Chronographia* that the first big quake that would destroy the city took place in 148 BC (or in 130 BC) and that, following the destruction, the urban centre was completely rebuilt and restored[27]. Furthermore, according to Justin's epitome there was another catastrophic event in 65 BC, causing the death of 170,000 people[28]. On 23 March 37 AD, the first year of Caligula's reign, another earthquake − recorded by Malalas as the second catastrophic event of the city − destroyed Antioch but above all nearby Daphne[29]. A few years later in 47 AD, Malalas once again writes that, following a third earthquake of considerable size, "gashes in the temples of Artemis, Ares and Heracles were to be seen, while famous buildings collapsed"[30]. Together with the reports referring again to 53 AD and 82-94 AD[31], after 115 AD too other earthquakes followed with a certain frequency: it suffices to remember the events of 341-342 AD[32] or those of 458 AD (which led Evagrius to notice a cyclical nature in the events)[33] or those of 526 and 528 AD just preceding the attack of Cosroe and the mass deportation of the population of Antioch[34].

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[23] Brew, Barazangi, Khaled Al-Maleh, Sawaf 2001, pp. 573-616; Reda Sbeinati, Darawcheh, Mouty 2005, pp. 347-435; Dilek 2006, pp. 5-10; Toksöz *et alii* 2007, pp. 292-301.

[24] Wdowinski, Ben-Avraham, Arvidsson, Ekström 2006, p. 176.

[25] Reda Sbeinati, Darawcheh, Mouty 2005, pp. 347-435.

[26] Guidoboni 1989, pp. 651-652 (n. 60) = Guidoboni, Comastri, Traina 1994, p. 145 (n. 39); Reda Sbeinati, Darawcheh, Mouty 2005, p. 382 n. 5.

[27] Malalas (ed. Thurn), 157, 31. Guidoboni 1989, pp. 653 (n. 65) = Guidoboni, Comastri, Traina 1994, p. 152 (n. 46).

[28] Downey 1961, p. 146; Guidoboni 1989, p. 654 (n. 69); Guidoboni, Comastri, Traina 1994, pp. 164-168 (n. 61); Reda Sbeinati, Darawcheh, Mouty 2005, pp. 382-383 n. 8.

[29] Malalas (ed. Thurn), 184, 23. Downey 1961, p. 190; Guidoboni 1989, p. 661 (n. 88); Guidoboni, Comastri, Traina 1994, p. 187 (n. 84); Reda Sbeinati, Darawcheh, Mouty 2005, p. 383 n. 9.

[30] Malalas (ed. Thurn), 186, 86. Downey 1961, p. 196; Guidoboni 1989, p. 662 (n. 90); Guidoboni, Comastri, Traina 1994, p. 188 (n. 85); ; Reda Sbeinati, Darawcheh, Mouty 2005, p. 383 n. 12.

[31] Reda Sbeinati, Darawcheh, Mouty 2005, p. 383 n. 13 e 14.

[32] Downey 1961, p. 359; Guidoboni 1989, p. 674 (n. 126); Guidoboni, Comastri, Traina 1994, pp. 248-249 (n. 138); Reda Sbeinati, Darawcheh, Mouty 2005, p. 385 n. 23.

[33] Downey 1961, pp. 476-480; Guidoboni 1989, p. 686 (n. 158); Guidoboni, Comastri, Traina 1994, pp. 296-300 (n. 183); Reda Sbeinati, Darawcheh, Mouty 2005, pp. 386-387 n. 28.

[34] Lassus 1978, pp. 61 e 77-79; Reda Sbeinati, Darawcheh, Mouty 2005, pp. 355-357 nn. 34-35.

3. *The earthquake of the winter of 114/115 AD*

There are two main ancient sources that mention the big earthquake that hit Antioch during the reign of Trajan. On the one hand, the historian of the III century AD Cassius Dio (epitomised by Xiphilinus) writes that, during the Parthian expedition, following the storming of Batnae and Nisibis, Trajan stayed in the town which was hit by the earthquake that winter: even though precise time references are lacking, the chronological contextualisation – and in particular the details of the storming of the two Parthian towns and the emperor's acclamations – place the event in the winter of 114/115 AD. The second source of the VI century AD instead records the earthquake as being on 13 December 115 AD: Malalas, perhaps starting from direct knowledge of the annals of the town, dates the earthquake as being just before the martyrdom of Saint Ignatius[35].

In the winter of 114 or (with less probability) 115 AD, a vast earthquake was said to have hit Antioch and this event would have been famously remarked for the very fact that the emperor himself, spending the winter in the town, would have run the risk of losing his life. In particular, Xiphilinus, epitomising the LXVIII book of the *Roman history* by Cassius Dio, chose to write about it in full:

> While the emperor was tarrying in Antioch a terrible earthquake occured; many cities suffered injury, but Antioch was the most unfortunate of all. Since Trajan was passing the winter there and many soldiers and many civilians had flocked thither from all side in connexion with law-suits, embassies, business or sightseeing, there was no nation or people that went unscathed; and thus in Antioch the whole world under Roman sway suffered disaster. There had been many thunderstorms and portentous winds, but no one would ever have expected so many evils to result from them. First there came, on a sudden, a great bellowing roar, and this was followed by a tremendous quaking. The whole earth was upheaved, and buildings leaped into the air; some were carried aloft only to collapse and be broken in pieces, while others were tossed this way and that as if by the surge of the sea, and overturned, and the wreckage spread out over a great extent even of the open country. The crash of grinding and breaking timbers together with tiles and stones was most frightful; and an inconceivable amount of dust arose, so that it was impossible for one to see anything or to speak or hear a word. As for the people, many even who were outside the houses were hurt, being snatched up and tossed violently about and then dashed to the earth as if falling from a cliff; some were maimed and others were killed. Even trees in some cases leaped into the air, roots and all. The number of those who were trapped in the houses and perished was past finding out; for multitudes were killed by the very force of the falling debris, and great numbers were suffocated in the ruins. Those who lay with a part of their body buried under the stones or timbers suffered terribly, being able neither to live any longer nor to find an immediate death. Nevertheless, many even of these were saved, as was to be expected in such a countless multitude; yet not all such escaped unscathed. Many lost legs or arms, some had their heads broken, and still others vomited blood; Pedo the consul was one of these, and he died at once.

The narration of Xiphilinus-Cassius Dio does not end with these particulars but continues with the terrible human suffering of the survivors in such detail that is hardly ever to be found in other parts of the work.

Malalas' *Chronographia* adds little to the information given by Cassius Dio, but it seems to be more concerned with the narration of the post-seismic reconstruction than with the event itself.

[35] Jeffreys 1990, pp. 55-56; Moffatt 1990, pp. 87-109; Croke 1990, pp. 201-205. About the chronology see: Longden 1931, pp. 2-4; Migliorati 2003, pp. 152-155.

Nonetheless Malalas includes some information that is missing in Cassius Dio and which would seem isolated in the context of the description: having defined the date of the earthquake as that of December 115, in fact, the chronographer related that the Island of Rhodes had suffered the same fate as Antioch[36].

Lastly, the third piece of information that has been linked to the same earthquake would appear to come from the interpretation of an equivocal passage of the Talmud (Baba Mezi'a 59b): in 1956, in fact, Shalem read and interpreted the Talmudic reference as evidence to define the entity of a possible tsunami, which hit the harbour of Caesarea and also damaged the towns of Yavne in the territories of the State of Israel more than seven hundred km from Antioch[37]. The successive investigations carried out by a team led by Reinhardt then attempted to prove Shalem's interpretation singling out the presence of definite marine sediments (in particular *Glycomeris shells*) in the area around the harbour of Caesarea[38].

Three different moments therefore referring to the same earthquake. While the historians have for the most part neglected the record given by Malalas with regard to the quake in Rhodes (considered irreconcilable with the one in Antioch), the literature of recent years has instead linked the earthquake in Antioch and the tsunami of Caesarea and Yavne considering them part of the same event: an earthquake, probably of the VII grade on the Richter scale (IX-XI Mercalli), therefore hit the northern area of Syria and this was followed by a tsunami of huge proportions which destroyed the coasts of Israel.

Perhaps more caution should be used in proceeding. The almost obsessive counting up of references to tsunami disasters in literature, following the exceptional event of 2004, seems to have had a considerable effect also on the interpretation of the data emerging from the excavations in the areas of the ancient harbour of Caesarea: in fact, as has been recorded, "coarse sediment deposits that were previously considered to be ballast or storm deposits inside harbour basins are now reinterpreted systematically as tsunami deposits"[39]. Moreover, there are records of a possible earthquake almost at the same time (but previous) also in the areas of Jordan and Israel: in Petra a commemorative arch was erected and dedicated to the emperor at the end of 114 AD, while a similar civic inscription to Trajan "saviour and founder" was found in Jerash: in both cases "these civic dedications to Trajan may well reflect the imperial aid he supplied for reconstruction after a disastrous earthquake in 113 or 114"[40]. This was therefore probably a different earthquake from the one that hit Antioch in the winter of 114/115 AD.

4. *Evidence and consequences of an earthquake.*

We do not know from our sources what the immediate post-earthquake measures were[41]: the only elements that can be drawn from Cassius Dio refer to the first aid given by private citizens and the use of the hippodrome as a shelter for the survivors. Cassius Dio, in particular, after having described the case of a woman taken out alive from the rubble of a building together with her child, then dwells on the personal story of the Emperor Trajan:

> So great were the calamities that had overwhelmed Antioch at this time. Trajan made his way out through a window of the room in which he was staying. Some being, of greater than

[36] Malalas (ed. Thurn), 208, 28-30.
[37] Shalem 1956, p. 168; Amiran, Arieh, Turcotte 1994, pp. 265 e 294.
[38] Reinhardt *et alii* 2006, pp. 1061-1064.
[39] Morhange *et alii* 2014, pp. 31-51.
[40] Russel 1985, p. 41.
[41] Bedon 2005, pp. 361-367; Conti 2008, pp. 374-386.

human stature, had come to him and led him forth, so that he escaped with only a few slight injuries; and as the shocks extended over several days, he lived out of door in the hippodrome.

With respect to the poor information on the immediate post-earthquake measures, the archaeological evidence relative to the damage caused to the city is more evident. Even though the interpretation of the archaeological evidence of Antioch is made complex by the recurrence of catastrophic events, by the deposit of the different post-seismic reconstructions and the normal building activity, scholars have however recognised signs of the devastation of the winter of 114/115 AD in various places of the city.

During the excavations carried out in 1932 an area was investigated south of the circus from which the structures of a large Roman villa emerged: some of the building phases of a triclinium were brought to light which, built after a destructive event in 94 AD (perhaps another earthquake not described by the sources), was once again destroyed in 114/115 AD[42]. Similar elements of collapse and parallel construction stages were identified also in the area of the so-called Bath C: also in this case after a first construction after 94, the rooms underwent a restoration phase quite soon afterwards[43].

Together with these finds, in his time Johannes Malalas related that after the earthquake Trajan rebuilt a large number of monuments; among these was also a public baths and above all the imposing aqueduct, which drew water from five sources in Daphne and whose water flow has been assessed at around 1.000/2.400 litres per second according to the season[44]. Other massive interventions also met the city's needs for water with functional and aesthetic purposes: this was true above all for the large main street of the city, built in Hellenistic age and widened under Augustus, which had become a huge building site: after having expropriated the neighbouring land a new 3.5 km long road was built "dont les cotes moyennes étaient de 9 m pour la chaussée, 9 m pour chacun des portiques latéraux, plus la profondeur des boutiques monumentale, 6 m de part e d'autre − soit en tout environ 33 m"[45]. Again following Malalas' brief account, we also learn that Trajan had a theatre and a nymphaeum built (perhaps these were also going to be connected with the reconstruction) and, in the vicinity of the temple of Ares and the Macellum, a monumental arch characterised by the presence of a she-wolf with Romulus and Remus[46].

Information on the extent and intensity of the earthquake also comes from the areas near Antioch. During the excavations of 1935-1936 a villa destroyed by the earthquake and never reconstructed was identified in the area between the Syrian capital and Daphne[47]. Furthermore, in this latter city, Malalas relates that Trajan built a temple to Artemis and that the people of Antioch who survived the disaster erected another temple dedicating it to Zeus Soter; moreover, a few years later the city was further enhanced by the completion of the works for a temple to the nymphs, into which the otherwise dispersed water flowed from a source[48]. Numerous reconstruction works were carried out in the nearby city of Apamea: situated about one hundred kilometres from Antioch, this city too was badly damaged during the earthquake. The excavations have thus brought to light how the reconstruction work – financed for the most part by the local elites – began not long after the earthquake and was focussed on the restoration of the aqueduct, the porticos, the grand colonnaded street and the private residences of the city[49]. And in this case too almost half a century was needed for the extraordinary work to be completed.

[42] Fisher 1934, pp. 8-18.
[43] Fisher 1934, pp. 19-31.
[44] Downey 1951, pp. 173-174; Wilber 1938, pp. 49-56; Chowen 1956, p. 275.
[45] Lassus 1978, pp. 60-61.
[46] Downey 1961, pp. 215-216.
[47] Campbell 1938, pp. 208-209.
[48] Downey 1951, pp. 180-181; Chowen 1956, pp. 275-277.
[49] Balty, Balty 1978, pp. 123-128; Balty 1988, pp. 91-94.

Determining the nature of an ancient earthquake is quite a complex task today: the archaeological data, in as much as possibly preserving an objective picture of an ancient situation, need to be interpreted; the epigraphic and numismatic sources appear to be more interested in showing imperial generosity than in describing the disaster; when they contain information, the literary sources are often distorted by the need to attribute the origin of a natural event to human acts. To these cognitive limitations is also added the risk – which is even greater after the 2004 tsunami – of almost obsessively converging each element in a catastrophe of rather bigger portions than a phenomenon originally presented. As Aristotle would have also acknowledged: "Earthquakes are local and often affect a small district only"[50]. And – I think – the idea of Aristotle seems applicable also to the earthquake in Antioch.

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