

THE FRONTIERS OF THE ROMAN EMPIRE

A THEMATIC STUDY AND PROPOSED WORLD HERITAGE NOMINATION STRATEGY

RENÉ PLOYER, MARINUS POLAK
& RICARDA SCHMIDT



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ADVISED BY ICOMOS-INTERNATIONAL
AND COMMISSIONED BY THE INTERGOVERNMENTAL COMMITTEE
OF THE 'FRONTIERS OF THE ROMAN EMPIRE' WORLD HERITAGE SITE (UK, DE)
AND THE BRATISLAVA GROUP

RENÉ PLOYER, MARINUS POLAK AND RICARDA SCHMIDT

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Lay-out: Marinus Polak

Cover: Remains of the partly buried north-eastern gate of the Roman fort at Gheriat al-Ghariba (Libya) (photo David Mattingly)

René Ployer
Bundesdenkmalamt
Abteilung für Archäologie
Archäologiezentrum Mauerbach
3001 Mauerbach, Kartäuserplatz 2
Österreich

Marinus Polak
Radboud Universiteit
Provinciaal-Romeinse Archeologie
Erasmusplein 1
6525 HT Nijmegen
Nederland

Ricarda Schmidt
Bayerisches Landesamt für Denkmalpflege
Hofgraben 4
80539 München
Deutschland

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STATES PARTIES COVERED BY THIS STUDY

States Parties actively involved in the preparation of this Thematic Study and the detailed Nomination Strategy for the Frontiers of the Roman Empire in Europe:

Austria, Bulgaria, Croatia, Germany, Hungary, the Netherlands, Romania, Serbia, Slovakia, the United Kingdom.

This study also refers to the territories of the following States Parties, who may wish in due course to augment this Thematic Study and develop further a Nomination Strategy for the Frontiers of the Roman Empire in the Near East and North Africa:

Algeria, Egypt, Jordan, Libya, Morocco, Syria, Tunisia, Turkey.

The Danube between Weltenburg and Kehlheim (Bavaria, Germany), with the fortlet of Kehlheim-Am Galget in the foreground.



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René Ployer, Rien Polak and Ricarda Schmidt

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The military post of *Falacro* in the Eastern Desert, Egypt, on the route from the Nile to *Berenice* on the Red Sea coast.



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SUMMARY

This Thematic Study of the whole Roman frontiers has been written at the suggestion of ICOMOS, in the context of the preparation of extensions to the transnational, serial World Heritage property 'Frontiers of the Roman Empire' and in order to provide the necessary documentation to allow the development of a World Heritage Nomination Strategy for the Roman frontiers as a whole and in detail for Europe.

Background

The inscription of Hadrian's Wall in the United Kingdom (1987) provided the basis for this property, which was extended with the Upper German-Raetian Limes in Germany (2005) and the Antonine Wall in the United Kingdom (2008).

Some time before the nomination of the Upper German-Raetian Limes, the idea had been advanced to create a single World Heritage Site encompassing all the frontiers of the Roman Empire in Europe, the Near East and North Africa. Several States Parties were already preparing nominations of the frontier installations within their territories, aiming at a step-by-step extension of the existing property. With a view to the expressed ambition to include all Roman frontiers, this property had been renamed 'Frontiers of the Roman Empire' in 2005.

In the next few years, general concerns about the manageability of complex transnational, serial properties and the assessment of their Outstanding Universal Value raised the question whether a phased extension of the Frontiers of the Roman Empire World Heritage Site was the best way to proceed. Alternative strategies were brought to the fore, including nominating a single property and nominating a series of single properties under a common framework (not constituting a single property). A Thematic Study of the Roman frontiers was suggested as an effective means to clarify how sections of the Roman frontiers might be nominated.

Outline of Thematic Study

This Thematic Study provides an overview of what remains of the frontiers of the Roman Empire, extending over the continents of Africa, Asia and Europe. It summarises the chronological and geographical scope of the frontiers and their functional, chronological, social and cultural links and complexity. The Thematic Study focuses on the frontiers in the 2nd century AD, when the Roman Empire reached its largest extent. This chronological focus was adopted in 2004 as a practical basis for the Roman frontiers as World Heritage.

An overview of the military installations and their spatial distribution serves as a starting-point for an internal comparison of the frontiers. It is argued that five groups

can be distinguished within the whole of the frontiers of the Roman Empire as they existed in the 2nd century AD (cf. map on pp. 4-5):

- the desert frontiers of the Roman provinces of *Africa*, *Egypt*, *Arabia* and southern *Syria*;
- the frontiers of northern *Syria* and *Cappadocia* (Turkey), constituting the frontier with the powerful Parthian Empire in the East;
- the frontiers along the European rivers Rhine and Danube;
- the artificial linear barriers of Hadrian's Wall, the Antonine Wall and the Upper German-Raetian Limes (the existing World Heritage Site);
- the mixed frontiers of the Roman province of *Dacia* (Romania).

The above frontier sections display clear differences in densities, disposition, type and size of military installations, which reflect variations in climatic and geographical conditions, habitation and land use, external threats and political interests.

In a more detailed analysis of the frontiers along the Rhine and Danube it is noticed that the basins of these rivers are segmented by mountain ranges, and that in most cases these natural barriers coincide with borders between Roman provinces – with the boundary between the provinces of *Pannonia* (largely situated in Austria, Slovakia, Hungary and Croatia) and *Moesia* (largely in Serbia, Bulgaria and Romania) as an exception. It is reasoned that differences between (groups of) Roman provinces along Rhine and Danube support a division of the European river frontiers into four groups:

- the frontier of *Germania Inferior* along the lower course of the Rhine (the Netherlands and the German Rhineland);
- the frontiers of eastern *Raetia* and *Noricum* (German Bavaria and Austria);
- the frontiers of *Pannonia* (Austria, Slovakia, Hungary, Croatia and Serbia);
- the frontiers of *Moesia* (Serbia, Bulgaria and Romania).

It is noticed that the frontier sections of *Raetia/Noricum* and *Pannonia* are the most similar of these groups.

Outline of Nomination Strategy

The outcomes of the internal comparisons of the Roman frontiers served as the basis for the development of a proposed Nomination Strategy aimed at providing the World Heritage Committee with insight into the intended nominations, the justification of the properties, the selection of sites, and the approach to management and future development.

As the current political situation in the Near East and North Africa does not allow to develop a view for these areas the Nomination Strategy is currently confined to the Roman frontiers of Europe.

What the Nomination Strategy thus provides is a practical and sustainable way forward for substantial and distinctive sections of the Roman frontiers to be nominated individually, initially in Europe and later in the East and North Africa, under an overall framework of the Frontiers of the Roman Empire that will actively encourage dialogue and shared practices.

The ambition to protect the whole of the Roman frontiers as World Heritage is maintained. Its value as a reflection of the universal culture of the Roman Empire, spanning three continents, is undisputed. The frontiers are unified by their purpose of demarcating, controlling and securing the Empire. At the same time they demonstrate an ingenious variety of military responses to local natural and political conditions. Future nominations of sections of the Roman frontiers as World Heritage must contribute to the understanding of these fundamental aspects of unity and versatility.

The Nomination Strategy proposes that the European frontiers, not covered by the current property, should be nominated as three sections:

- the Lower German (i.e. Lower Rhine) frontier;
- the Danube frontier;
- the frontier of the Roman province of *Dacia*.

These sections would constitute three separate World Heritage properties, beside the existing serial World Heritage property. The four single properties would be joined under a common framework 'Frontiers of the Roman Empire', which could later be extended to properties in the Near East and North Africa.

It is argued that the three envisaged additional properties each have the potential to justify Outstanding Universal Value as clearly defined sections of the overall frontiers. Key values would be the innovative responses to the challenges of a highly dynamic river delta (Lower Germany), the evolution of military strategies to counter the threats emanating from sustained large-scale migration (Danube), and the unparalleled mixture of military solutions developed to cope with varying landscapes and threats (*Dacia*). It is considered that all three properties have the potential to meet criteria (ii), (iii) and (iv) for World Heritage inscription.

Selection of component sites

Almost 1,000 sites remain of the Roman frontiers in Europe. Currently it is suggested that of these up to 61 would be part of the Rhine frontier, 250 of the Danube frontier and 186 of the frontier of *Dacia*. This amounts to one site per 7 km of frontier for the Rhine and *Dacia*, and one per 10 km for the Danube. Substantial representations are indispensable to demonstrate the linearity and coherence of the frontiers, to exemplify the character of the separate sections and the links and contrasts between them, and to support in a substantial way the proposed OUV.

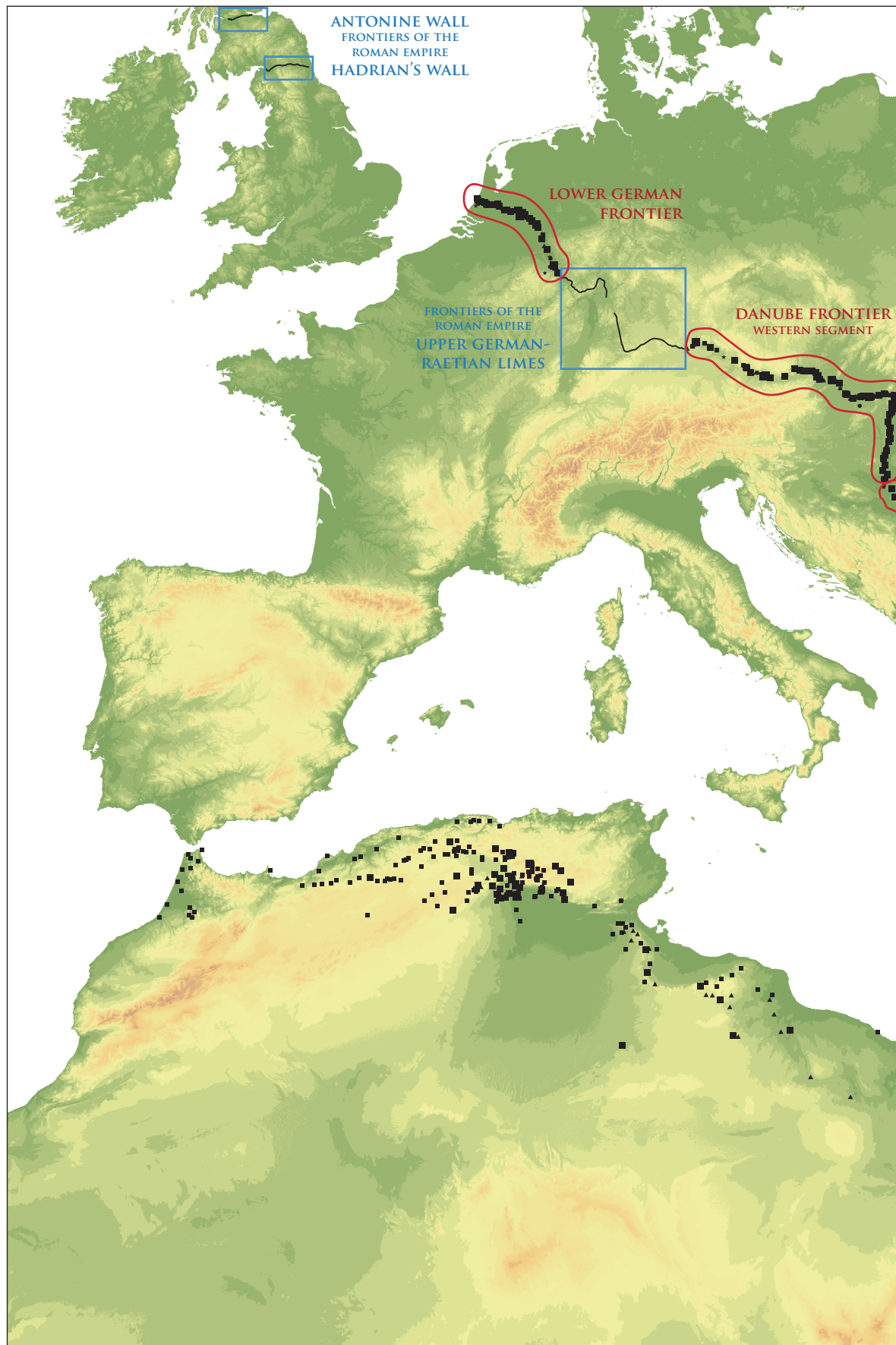
Delivering the Nomination Strategy for Europe

To support the proposed nominations of European sections, it is proposed to create an overarching framework to promote and support international collaboration in all fields relevant to the management and development of the European frontiers as World Heritage. It is the ambition to realise this framework, which is provisionally labelled 'Frontiers of the Roman Empire World Heritage Cluster' building on structures developed for the management of the existing property, before the end of 2017.

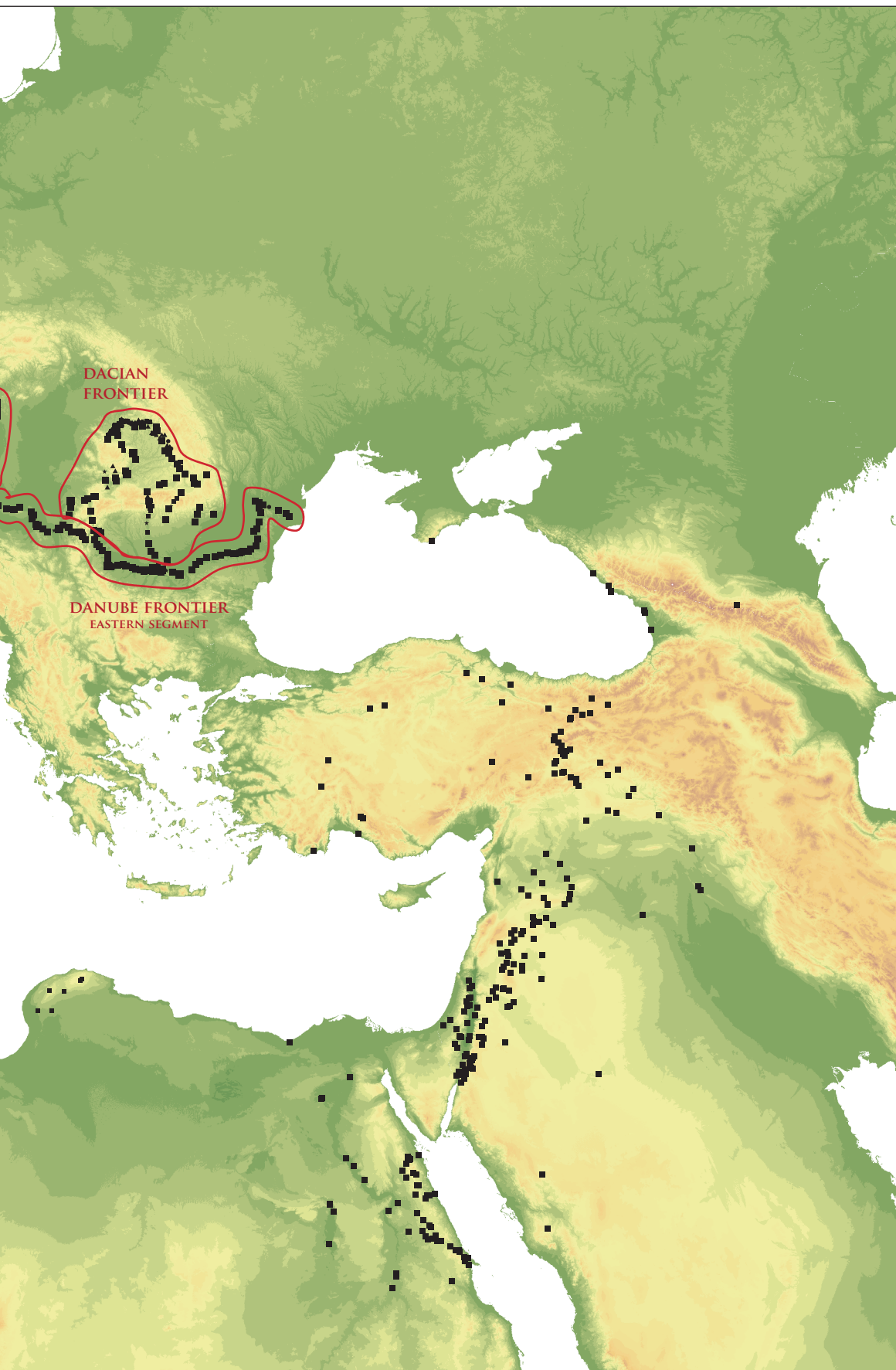
For the largest of the three envisaged properties, the Danube frontier, a nomination in two steps is proposed, for reasons of timetable management. The first step would concern the western segment consisting of the sites within the territories of Germany, Austria, Slovakia and Hungary, and the second step the eastern segment comprising the sites in Croatia, Serbia, Bulgaria and Romania; the current selections of component sites amount to about 130 for the western and 120 for the eastern segment. The Thematic Study provides a clear picture of the different but linked characteristics of these segments. It is suggested that the western segment could justify Outstanding Universal Value as a first nomination, while the eastern segment could be added as a major extension in a second step. The countries involved in the nomination of the Danube frontier have successfully cooperated in previous projects, which add to the confidence that the Danube frontier, once both parts have been inscribed, will be a feasible and manageable property.

With the foreseen submission in 2017 of an entry for the Tentative List of Romania all European frontier sections will be part of national Tentative Lists, and little harmonisation will be necessary. For the remainder of the nomination process the following timetable is foreseen:

end of 2017	creation of an overarching collaborative framework
January 2018	submission of the nomination dossier for the Danube frontier, western segment



- January 2020 submission of the nomination dossier for the Lower German frontier
- January 2021 submission of the nomination dossier for a major extension to add the eastern segment to the Danube frontier property
- January 2021 submission of the nomination dossier for the Dacian frontier



The existing property 'Frontiers of the Roman Empire' (blue) and the three envisaged additional properties for the European frontiers (red).

The proposed Nomination Strategy is supported by all European States Parties involved, as a means to arrive at successful nominations of sections of the European frontiers in an environment stimulating collaboration, exchange of experiences, coordination and joint development.



PURPOSE AND SCOPE

1

This Thematic Study has been produced in the context of the preparation of a number of nominations related to the transnational, serial World Heritage property 'Frontiers of the Roman Empire' (FRE WHS) in various countries.

Currently, this property encompasses three component parts, located in Germany (DE) and the United Kingdom (UK):

- Hadrian's Wall (UK), inscribed on the World Heritage List in 1987;¹
- the Upper German-Raetian Limes (DE), inscribed on the World Heritage List in 2005 as an extension of Hadrian's Wall, leading to the creation of the 'Frontiers of the Roman Empire' World Heritage Site,² and
- the Antonine Wall (UK), inscribed on the World Heritage List in 2008 as an extension of the transnational, serial World Heritage Site 'Frontiers of the Roman Empire'.³

Hadrian's Wall to the west of the fort at Housesteads (United Kingdom).

In view of the intention of many countries to nominate further stretches of this once vast frontier system for World Heritage (cf. chapter 2, table 2.1 for an overview), it is foreseeable that, in the near future, the property might become very complex, inter alia with regard to the number of participating countries, to the number of component parts and to its manageability.

Therefore, ICOMOS and the World Heritage Centre have raised the question as to whether the concept of a single WHS, extended – as the States Parties have planned – over several cycles, is feasible for the FRE, or whether the Roman frontier should rather be split into separate sections and be nominated as separate properties linked by a thematic framework 'Frontiers of the Roman Empire'.

Against this background, ICOMOS International has proposed the present Thematic Study in December 2015, asking specifically for:

- a justification of how the Roman frontiers might be split up in individual sections (component parts) which on the one hand have the capacity to demonstrate Outstanding Universal Value (OUV) and on the other hand are manageable in a sustainable way;

1 11 COM VIII.A.

2 29 COM 8B.46: The World Heritage Committee approves the extension of Hadrian's Wall (United Kingdom) to include the Frontiers of the Roman Empire - Upper German-Raetian Limes (Germany) on the World Heritage List on the basis of the cultural criteria (ii), (iii), and (iv).

3 32 COM 8B.40: The World Heritage Committee approves the extension of the Frontiers of the Roman Empire, United Kingdom and Germany, to include the Antonine Wall on the World Heritage List on the basis of criteria (ii), (iii) and (iv).

- a description of how these component parts are functionally, socially and culturally linked;
- a detailed documentation and mapping of known sites (component sites) with their scope and extent, combined with an assessment of their authenticity and integrity;
- the selection criteria of the component sites intended for World Heritage nomination.

As an element of the Thematic Study, a Nomination Strategy for the FRE has been developed, comprising an overall vision for the FRE, outlining how future nominations may be presented to the World Heritage Committee, and how they might demonstrate OUV.

The Thematic Study for the FRE thus helps to:

- ensure the preparation of better quality Tentative Lists;
- optimize success of World Heritage nominations related to the FRE;
- achieve sustainable World Heritage properties in the sense of on-going protection, conservation and management;
- agree on common management principles in order to harmonise approaches for the protection, conservation, management, interpretation and promotion of the overall FRE and of its individual component sites.

The Thematic Study focuses mostly, but not exclusively, on the Roman frontier lines of the 2nd century AD, following the Koblenz Declaration of 2004: “The Frontiers of the Roman Empire World Heritage Site (FRE WHS) should consist of the line(s) of the frontier of the height of the empire from Trajan to Septimius Severus (about 100-200 AD), and military installations of different periods which are on that line”.⁴ Earlier and later military installations on the frontier lines of the 2nd century are therefore not less important.

4 Quoted from the Koblenz declaration included in Nomination file 430ter, p. 427 (<http://whc.unesco.org/uploads/nominations/430ter.pdf>).



The fortlet of Deir el-Atrash in the Eastern Desert, Egypt, on the route from the Nile to *Mons Porphyrites*.



BACKGROUND - THE 'FRONTIERS OF THE ROMAN EMPIRE' WORLD HERITAGE SITE

2

Since the early 2000s, in connection with the nomination of the Upper German-Raetian Limes for World Heritage, it has been the aim of the States Parties to inscribe the Roman frontier in its entirety on the World Heritage List, as reflected in the Summary Nomination Statement (2004):

“The aim of participating States Parties is, by stages through international cooperation, to create a World Heritage Site encompassing all the Frontiers of the Roman Empire, based on its proper identification, recording, protection, conservation, management, presentation and understanding as evidence of the remains of one of the world’s greatest civilizations and as a symbol of a common heritage”.⁵

Accordingly, the State Parties involved in the further development of this principle had agreed on a phased nomination of stretches of the Roman frontier as it existed in the 2nd century AD, leading to a single World Heritage Site ‘Frontiers of the Roman Empire’. In order to keep the number of nominated sites to a manageable size, the future World Heritage Site would include solely monuments located on the line of the frontiers in their widest extent in the 2nd century AD.⁶

In 2004, the principles agreed upon were adopted by the Bratislava Group – the scientific advisory body in FRE-matters – in the context of the preparation of the nomination dossier of the Upper German-Raetian Limes. They were summarised in the co-called Koblenz Declaration:

“The Frontiers of the Roman Empire World Heritage Site should consist of the line(s) of the frontier of the height of the empire from Trajan to Septimius Severus (about 100-200 AD), and military installations of different periods which are on that line. The installations include fortresses, forts, towers, the Limes road, artificial barriers and immediately associated civil structures.”

Accordingly, the overall aim of this approach to the FRE and WH is to:

- make the Roman frontier again visible and understandable in its enormous vastness and complexity, forming the single largest monument to the Roman civilization and defining the maximum extent and nature of the Roman Empire, one of the greatest states the world has seen;

The *clausura* or linear barrier in the Djebel Tebaga region (Tunisia), blocking a land corridor between two mountain ranges over a distance of approx. 17 km.

5 Cf. Summary Nomination Statement (2004), section 4.7.1. (<http://whc.unesco.org/uploads/nominations/430ter.pdf> p. 410).

6 The Roman frontiers have never been a systematically planned network over their entire length. Due to regional conflicts and shifting political power, they have never been static and therefore today form an extensive relict landscape, consisting of thousands of archaeological and architectural monuments. Today, they form part of the heritage of altogether 19 countries and are subject to a large variety of different legal and management systems.

- show that the single monuments of the frontier belong closely together thus forming an organic entity, and, last but not least,
- to extend and deepen the existing relationships among archaeologists and cultural heritage experts involved in the daily protection and management of the Roman frontier.⁷

This idea and general concept have been supported by ICOMOS International in their evaluation of the nomination of the Upper German-Raetian Limes for World Heritage of 2005:

“ICOMOS supports the wider proposal to encourage further nominations to reflect the scope and extent of the Roman Frontier, the largest single monument to Roman civilisation, initially in Europe but in due course perhaps also in Africa and Asia, and the approaches set out in the Summary Nomination Statement”.

Well preserved section of the Antonine Wall near Watling Lodge (United Kingdom).



In its Decision 29 COM 8B.46 taken at its 29th Session at Durban (South Africa) in 2005, the World Heritage Committee consequently “recommends that the nomination (i.e. of the Upper German-Raetian Limes) be seen as the second phase of a possible wider, phased, serial transboundary nomination to encompass remains of the Roman frontiers around the Mediterranean Region”.

On the basis of this, the phased approach towards the nomination of further stretches of the FRE was pursued by the States Parties in the following years. This is reflected by the inscription of the Antonine Wall in 2008 as an extension to the existing FRE WHS – and thus increasing the number of component parts of this World Heritage Site to three – and by the Tentative List entries submitted by ten countries (table 2.1).

The States Parties had intended to nominate separate stretches of the FRE as phased extensions of the inscribed property as soon as they had finished the preparation of their dossiers, and on the basis of the ‘first come, first served’ principle. Evidently and without further harmonisation, this procedure could have led to the submission of two or more nomination dossiers related to the FRE in the same year.

The approach of extending the existing World Heritage property in phases resulting in one common World Heritage Site ‘Frontiers of the Roman Empire’ was first and

7 Breeze/ Jilek 2008.

State Party	on the Tentative List since
Austria (transnational with Germany)	2011/2015
Bulgaria	2016
Croatia	2005
Germany (transnational with the Netherlands)	proposed 2015
Germany (transnational with Austria)	2015
Hungary	2009
The Netherlands (transnational with Germany)	2011
Romania	expected 2017
Serbia	2015
Slovakia	2002
Tunisia	2012

Table 2.1
Overview of Tentative
List entries related to
the FRE WHS (as of
January 2017)

foremost based on the assumption that the integrity of the FRE WHS as a whole would have been continuously enhanced.⁸ However, the contribution of every single stretch to the overall OUV of the property would have been, to a large extent, confined to its enhancement of the overall integrity. This could have resulted in a nomination of a 'catalogue' of component sites, without properly defining the contribution of the single component sites to the OUV of the FRE as a whole.⁹ The need for nominating the frontier system over several cycles would have almost exclusively been based on reasons of manageability.

Obviously, this way of proceeding might also have brought about various challenges with regard to danger-listing, as according to the results of the meeting at Ittingen, serial nominations are treated as single properties: in case one part of a serial property is threatened and put on the List of World Heritage in Danger, the entire property is inscribed on the List in Danger.

Against this background, the idea of splitting the Roman frontier up was brought forward for the first time by the World Heritage Centre in 2012. In December 2015, a Thematic Study 'Frontiers of the Roman Empire' was proposed by ICOMOS International, on the basis of which a Nomination Strategy could be developed.

FRE WHS Management System

Paragraph 114 of the Operational Guidelines states that in the case of serial properties, a management system or mechanisms for ensuring the coordinated management of the separate components are essential.

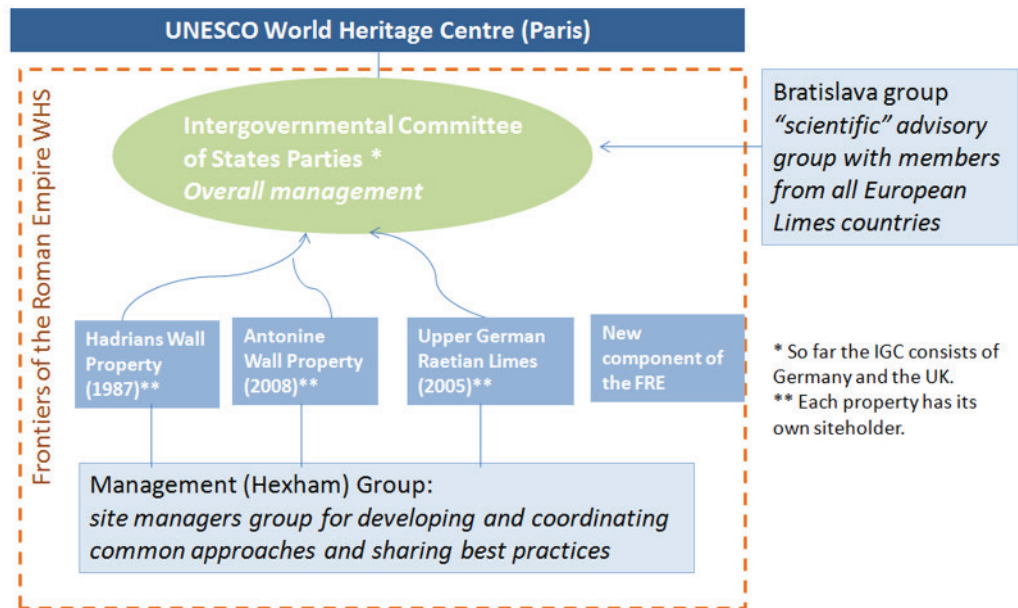
Accordingly, a management system for a serial property should at least ensure:

- the harmonization of management of all the component parts to meet a set of shared objectives of preserving OUV;
- the identification of and response to threats to the property;
- the coordination of monitoring, including periodic reporting;

8 Cf. also observations of the international World Heritage experts participating in the workshops at Vilm (Germany) in 2008 and 2009 concluding that "each component part should be a significant contribution to OUV by a) adding distinct features for fulfilling the criteria and b) enhancing integrity. (...) The number of component parts should be the minimum number that are adequate to establish OUV and ensure integrity" and that "extensions to serial properties should enhance the total values of the property or improve integrity." The enhancement of integrity has again been brought up at Ittingen in 2010 with a discussion about how States Parties should aim to add value and enhance the integrity of an existing nomination and should avoid the nomination of 'catalogues' in order to ensure the credibility of the World Heritage List and prevent its inflation.

9 This is clearly reflected in the Concept Statement (Annex A) which has been drafted as a retrospective Statement of OUV, before the idea of splitting the Roman frontier into individual World Heritage Sites was taken into consideration. It now serves as an overarching concept for a series of serial nominations that reflect the scope and extent of the framework 'Frontiers of the Roman Empire'.

Organisational structure of the 'Frontiers of the Roman Empire' World Heritage Site.



- management at the component part level and the coordination between the component parts.

As for the WHS FRE, since 2003 an efficient, robust and over many years thoroughly tested international management system is in place (table 2.2). It consists of three closely cooperating and interacting bodies, the Intergovernmental Committee (IGC), the Bratislava Group and the Management (or Hexham) Group. Together, these groups encourage collaboration and sharing of information, expertise and good practice.

Responsibility for the management of individual parts of the FRE WHS rests with the individual States Parties and is carried out by each in accordance with their legislative and management systems.

The Roman fort at Böhming (Bavaria, Germany), part of the Upper German-Raetian Limes. The defenses are still visible, surrounding the church.



name	tasks
Intergovernmental Committee (IGC)	The Intergovernmental Committee (IGC) is the governing body that deals formally with UNESCO and ensures that monitoring and reporting requirements are carried out on behalf of the Site as a whole. This body also reviews any further nominations for extending the FRE WHS.
Bratislava Group	The Bratislava Group is a body of international experts that advises on technical and research issues and assesses proposed new additions to the FRE WHS
Management (Hexham) Group	The Management (Hexham) Group is a networking group of those responsible for the management and conservation of inscribed sections, at both national and local levels.

Table 2.2
Organisational structure of the 'Frontiers of the Roman Empire' World Heritage Site, with indication of main tasks.



This chapter provides some information on terms used in this study and on the sources used for the maps in chapter 6.

3.1 VOCABULARY

In the preceding chapters various terms have been used without explaining their meaning or relation to others: frontier, frontiers, site, sites, component parts, etc. In the remaining chapters of this study more terms will be introduced. It is the aim of this paragraph to define those terms which are most likely to be unfamiliar to the non-expert reader, or to give rise to confusion.

Site(s)

In the context of protection under the World Heritage Convention the term 'site' is used nowadays mainly as a component element of a World Heritage property, which indicates a territorial entity inscribed on the World Heritage List. A property may be built up from several component sites, in which case it is known as a serial property.

In archaeology use of the term 'site' is very widespread, as a general and unspecified indication of a location where cultural remains from the past have been discovered. A site in this sense may have several constituent parts, for example a fort and its cemetery. It is virtually impossible to write a study on the Frontiers of the Roman Empire without using 'site' in this archaeological sense, and the authors have refrained from attempting.

Frontier(s), frontier sections

This study deals with the frontier of the Roman Empire. In a general way, the Roman Empire had a – single – frontier. However, this frontier was not a static boundary, which had been created at some point of time and had never changed since then. On the contrary, it was a very dynamic boundary, which developed over time and shifted forward and backward, breathing along with political ambitions, victories and defeats. From this point of view, there is every reason to use the plural 'frontiers' in many cases.

In studies on the Roman frontier, terms such as 'artificial frontier', 'desert frontier' and 'river frontier' frequently occur, both in singular and in plural. This is an expression of an awareness that the appearance of the Roman frontier varied along the landscape in which it was located; 'mountain frontier' is also sometimes used. From this perspective, the use of the 'plural' frontiers is therefore also defensible.

Standing remains of the legionary fortress at Udhruh, to the east of Petra (Jordan).

Further, frontier is often accompanied by a geographical name, e.g. the Rhine frontier or the African frontier. This is a different expression of the phenomenon addressed in the previous lines, that there are regional differences in the appearance of the Roman frontier. Closely related are terms such as the Lower German or Numidian frontier, referring to provinces of the Roman Empire. The Roman army was divided along provincial lines, and there are many indications in historical sources and inscriptions that this was more than a mere practical administrative convenience. The provincial *esprit de corps* echoed by these sources may well be a reflection of territorial characteristics.

All this may explain why 'frontier' and 'frontiers' will be used side by side in this study, and without a clear contextual separation. Parts of the Roman frontier may also be called frontier sections, usually in a general sense. In chapter 7, however, 'section' will be used in a very specific way, in relation to the logical division of the Roman frontier into properties that might be seen to justify OUV.

Limes and Ripa

The Romans themselves had various words for frontiers and their components. In both literature and epigraphy *limes* (plural: *limites*) is used to designate a land boundary of the empire, with *ripa* designating a river boundary. Usage changed over the centuries. Limes, originally a road, had come to be used to describe the boundary of the empire by the beginning of the 2nd century AD, and later a frontier district, such as the *Limes Tripolitanus* (the Tripolitanian frontier).

Place names

Roman military sites and other places are often indicated by their Latin names. For instance, the Roman legionary fortress at Windisch (Brugg, CH) is much better known as *Vindonissa*. In many cases, the identification is confirmed by inscriptions found on site, but in other cases the Latin names are unproven assumptions. The authors have not tried to be consistent in the use or avoidance of such names, or of Latin provincial names; for instance, Lower Germany may occur alongside *Germania Inferior*. The English notation has been consistently used for the rivers Rhine and Danube, and less so for other geographical entities.

Roman military jargon

Similar remarks can be made for Roman military jargon. It is not uncommon to use Latin terms as *castra* for legionary fortress, or *castellum* for a smaller fort. However, not all of such terms are as well rooted in classical Latin as they appear. They are sometimes used in a much stricter sense in modern archaeology than they were at the time, and sometimes there is even little evidence for their original use. Although military jargon in Latin is generally avoided in this study, the authors have only aimed at partial consistency.

The most frequently used terms for military installations and associated structures may be found in section 3.3, with some explanation.

3.2 MAPS AND SITES

The chronological and spatial coverage of most existing maps of the Roman frontier is restricted, and topographical accuracy often leaves much to be desired. The absence of a decent digital map of the military infrastructure of the Roman Empire has been a near impossible task to create, but future international collaboration might make such



Remains of the legionary fortress of *Satala/Sadak* (Turkey), in the Roman province of *Cappadocia*.

an endeavour a realistic possibility, given a flexible approach and the ability to adapt and modify it as knowledge develops.

For this study we were nevertheless obliged to make an effort to create an empire-wide digital map, if only out of a need to plot the sites considered for selection by the States Parties involved in the preparation of the nomination of the remaining European frontier sections.

The maps displayed in chapter 6 were generated from this digital map set, which included two base layers created by external parties:

1. The GTOPO30 global elevation model created by the U.S. Geological Survey's Center for Earth Resources Observation and Science (EROS). The use of these maps is allowed under a Creative Commons Attribution-NonCommercial 3.0 License. The default colour scheme of these elevation maps has been adapted for this study.
2. The World Reference Overlay provided by Esri (sources: Esri, DeLorme, USGS, NPS), used in conformity with the Esri Master License Agreement.

The boundaries of Roman frontier provinces have been adapted from a series of maps created in the context of the Frontiers of the Roman Empire Culture 2000 project (2005–2008).¹⁰

The sites displayed in the maps have been derived from three different sources:

1. For the frontier in Africa a digital dataset created for the preparation of the maps in the FRE booklet on the African frontier was kindly provided by Dr Martin Sterry (Leicester University, UK).¹¹
2. For Egypt and the Ancient Near East data were used from Pleiades, a joint project of the Ancient World Mapping Center, the Stoa Consortium, and the Institute for the Study of the Ancient World.¹² The 'places' dataset available for download

10 http://www.limes-oesterreich.at/html/maps_download.php [accessed September 15, 2016]. The map set was last updated in September 2011. The use of these maps is allowed under a Creative Commons Attribution-NonCommercial 3.0 Unported License.

11 Mattingly et al. 2013.

12 R. Bagnall, et al. (eds), *Pleiades: A Gazetteer of Past Places*, 2016, <https://pleiades.stoa.org/places> [accessed October 7, 2016]. Use of Pleiades content is allowed under a Creative Commons Attribution 3.0 License.

builds on the 'Barrington Atlas of the Greek and Roman World'.¹³ From this dataset those records have been selected which have 'fort' or 'earthwork' in the 'featureTypes' field, and 'roman' or 'late-antique' in the 'timePeriodsKeys' field.

3. For the European provinces (except for the three sections already listed as parts of the FRE WHS) detailed site lists were provided by the States Parties involved.

3.3 SITE TYPOLOGY

In order to obtain insight into the occurrence and spatial distribution of the various types of military installations and associated structures a basic classification was made. It provides definitions for the terms used in this study to indicate the various types of military installations and related structures. Further, it is a precondition for any effort to produce an overview of their frequency. This paragraph merely deals with the typology; the quantitative analysis is part of chapter 6.

The classification draws heavily on the European frontiers, since the relevant information on the Eastern and African frontiers is much less accessible, detailed and secure.

Military installations

The term 'military installation' is used as a general term for any kind of structure built for defensive or offensive purposes. The term 'fortification' is another broad term, but in a slightly more restricted sense, for constructions of timber or stone, excluding linear earthworks.

In this study nine categories of military installations have been distinguished. They are listed in alphabetical order.

bridgehead	Any fortification which was built across the Rhine or Danube, facing a military installation on the 'Roman' river bank. The term does not imply the (former) existence of a bridge, merely a staging point looking across a river.
earthwork	A linear defensive structure consisting of piled-up earth. ¹⁴
fleet base	A fortification serving as the operational base for a provincial fleet.
fort	Any fortification which is smaller than a legionary fortress and larger than a fortlet, and which served as an accommodation for several hundreds of soldiers. Typical sizes are in the range of 1-4 ha.
fortlet	A small fortification, generally measuring well below 1 ha in surface, which served as an accommodation for a few to several dozens of soldiers without a headquarters building.
hill fort	A fortification, often of irregular plan, situated on an isolated hill or a promontory.
legionary fortress	A large fortification, generally measuring well above 15 ha in surface, which served as an accommodation for several thousands of (largely) legionary soldiers.
temporary camp	A short-lived fortification without inner buildings, usually a construction camp, marching camp or practice camp.

13 For our maps the CSV 'places' dataset was used: <http://atlantides.org/downloads/pleiades/dumps/pleiades-places-20161007.csv.gz> [accessed October 7, 2016]. For sites with multiple pairs of geographical coordinates the first pair was used, extracted from the 'bbox' field.

14 As linear barriers earthworks are equivalent to the stone walls and palisades serving as artificial barriers on Hadrian's Wall, the Antonine Wall and the Upper German-Raetian Limes. The latter categories of linear barriers are not included in this list, because these three existing component parts of the FRE WHS are not included in the quantitative analysis of chapter 6.

watchtower An isolated fortified tower, which served as an accommodation for a dozen or less soldiers.

Obviously, the Roman military architects did not care for classification in the 21st century, so inevitably there will be some overlap between categories, and the attribution of individual sites to a category may be subject to academic discussion.

Associated structures

The frontier zone consisted of more than just military installations. Their functioning depended on a logistical network including harbours, roads and industrial sites. In areas without an urban tradition, the fortifications were often surrounded by civil settlements, labelled *canabae legionis* in the case of legionary fortresses and '(military) vicus' (pl. *vici*) in case of smaller forts. In some cases, the military was involved in the development of civil towns.

For this study, the large variety of structures somehow associated with the military have been grouped into no more than five categories.

civil settlement	All civil agglomerations, regardless of size and character, have been brought under this single heading. The main categories are <i>canabae legionis</i> , military <i>vici</i> , civil towns with a legal status (<i>municipium</i> or <i>colonia</i>) and without, and rural settlements.
industrial site	A detached site with industrial activities serving the military. Industrial activities have been attested in and close to many fortifications. Occasionally, however, these were carried out at more distant locations. The range of industrial sites includes stone quarries, lime kilns, potteries and tileries.
road	Military installations and associated structures were usually connected by land roads. In some cases the roads predate the military occupation, in other cases they were built for military purposes. The road connecting the military installations in the frontier zone is often labelled 'Limes road'.
road station	A building (complex) located on a land road, offering a bed, a meal and various services for man and animal. Road stations might be protected by a small military detachment, particularly on desert frontiers.
other	Some types of structure have not been allocated to a separate group, either because they are rare or because they usually occur in combination with a different kind of structure. They include amongst others (military) bathhouses, (military) sanctuaries, harbours and canals.



TIME AND SPACE

This chapter provides a brief overview of the history and geography of the frontiers of the Roman Empire, subdivided according to continents.¹⁵ The most important military events are summarized in section 4.1. The overview starts with the establishment of the provinces and the associated frontier system, looks to the 2nd century, the largest extent of the Roman Empire, and deals with the decline or the continuation of the borders in Late Antiquity. In section 4.2 the topography of the Roman frontiers is summarily discussed.

4.1 CHRONOLOGICAL SCOPE

The Roman Empire as established from the Roman Republican state through the reforms of Augustus (31 BC – AD 14) flourished for about 500 years in its western and almost 1500 years in its eastern part. The thoroughly equalized reforms of Augustus provided a safe foundation for the state for 300 years, extended by those of Diocletian and Constantine. It was the state of Roman citizens, but under given conditions (wealth, military service and loyalty to the Emperor) all free people could become a Roman citizen, and from Caracalla citizenship was given to all free people of the empire. The Roman Empire had hundreds of peoples with different culture, traditions and language, where Latin and the Greek (in the Eastern provinces) was the *lingua franca*.

The sophisticated state organization was aristocratic and democratic at the same time. Although the highest posts in the state administration and in the army were reserved for the senatorial and equestrian orders, also wealthy provincials could enter and join the highest society. The Republican order of *annuitas* (time-limited posts) was preserved and upheld. The governors and generals accordingly served for only a few years in one or other post in different parts of the Empire during their strictly determined carrier. This measurement prevented them from disobedience and usurpation. The commanders of the legions belonged to the senatorial order, those of the auxiliary troops to the equestrian one. The military provinces belonged to the Emperor, so he had the right to appoint governors (*legati*, procurators) to them. The rank of the person depended on the military strength of the province (more legions – one legion – auxiliary troops only). The demilitarised provinces lay under the Senate, but also here the Emperor had the authority in appointing the leaders.

Remains of the Raetian Limes near Pfahldorf (Bavaria, Germany), visible as a straight line through the landscape.

15 For this overview extensive use was made of the following publications: Bechert 1999; Breeze 2011a; Freeman 2006; Jilek 2009; Klose/Nünnerich-Asmus 2006; Klee 2006; Mattingly et al. 2013; Vagalinski et al. 2012; Visy 2003.

The cohesion and inner peace of the Empire could be achieved through the main principle (also republican): hard in war, mild in peace: *parcere subiectis et debellare superbos* (Virgil, Aeneas). A Roman citizen or people of the Empire had two main obligations: loyalty to the Emperor (sacrifices to Jupiter Optimus Maximus for the salvation of the Emperor) and taxpaying. The Roman system allowed a wide autonomy of the society on the basis of subsidiarity. Thus the civil society in its towns, *civitates*, *pagi and vici* had an almost total autonomy. In other words the Roman Empire can be described as a complexity of self-governing towns and communities. Of course in the army there was no self-governing, but the mercenary army with a service of 20 to 25 years could be recruited and completed without any problem in the first three centuries, because the soldiers got a relatively high pay, and after retirement different kinds of perks (money, estate, Roman citizenship). As in the second half of the 4th century the conditions changed with more and more foreign groups allowed to enter the Empire under the condition of undertaking military service.

4.1.1 AFRICA

In Africa, the Romans controlled the area north of the Sahara, from the Atlantic Ocean to Egypt, with many sections of frontier (*Limes Tripolitanus*, *Limes Numidiae*, etc.). Rome had acquired its North African Provinces at different times. Proconsular Africa was formed into a province following the final defeat and destruction of Carthage in 146 BC. In this year, Rome established its first African province, *Africa Proconsularis* or *Africa Vetus* (Old Africa), governed by a proconsul, in the most fertile part of what was formerly Carthaginian territory. The province was later extended along the coast to embrace *Tripolitania* (modern western Libya). *Cyrenaica* passed to Roman control in 96 BC with the death of the last recognised client king and, in 27 BC, was administratively attached to Crete. *Numidia* and *Mauretania* became client kingdoms. The former was abolished by Julius Caesar in 46 BC and incorporated into Africa. To the west, Rome recognised a client kingdom of *Mauretania*, until Caligula had its ruler Ptolemy murdered in AD 39. The annexation was strongly resisted and when Roman control was secured under Claudius, the territory was divided into two provinces, *Mauretania Caesarensis* in the east and *Mauretania Tingitana* in the west, with governors appointed directly by the Emperor. However, control of the legionary garrison in Africa was passed from a proconsul to an imperial legate in AD 39 and *Numidia* was recognised as a separate province from the early 3rd century.

The *Limes Tripolitanus* was built after Augustus. It was mainly a reaction to the Garamantes menace. In AD 50 Septimius Flaccus undertook a military expedition that reached the Fezzan and further south. The Romans did not conquer the Garamantes so much as they seduced them with the benefits of trade and discouraged them with the threat of war. The last Garamantes foray to the coast was in AD 69, when they joined with the people of *Oea*/Tripoli in battle against Leptis Magna. The Romans, in order to defend the main Roman cities of Tripolitania (*Oea*, Sabratha and Leptis Magna), intervened and marched south. After that, the Garamantes became a client state of the Roman Empire, but nomads always endangered the fertile area of coastal Tripolitania. Because of this, Romans created the *Limes Tripolitanus*. The first fort on the Limes was built at Thiges in AD 75, to protect from nomad attacks.

Under Trajan, at the greatest extent of the Empire, the southern border lay along the Sahara, which represented a natural barrier against expansion. The Empire controlled the Mediterranean shores and the mountain ranges further inland. In the first half of the 2nd century, by the time of Hadrian, the frontier of *Numidia* had been pushed westwards to embrace the Aurès Mountains that in effect formed the southern boundary of the province. One line of forts ran along the northern fringes of the mountain range and another to the south. To the north-west lay the Hodna



Entrance of the military outpost of *Golaia*/Bu Ngem (Libya).

Mountains. Hadrian's contribution to the frontier works in North Africa is believed to have been the construction of a series of barriers, of different lengths, in a zone to the west and south-west of the Aurès Mountains, extending north-westwards to the Hodna Mountains. Together, they have been called the *Fossatum Africae*.

Therefore, the Roman city of *Gaerisa*/Ghirza, situated away from the coast and south of Leptis Magna, developed quickly in a rich agricultural area. Ghirza became a "boom town" after AD 200, when the Roman Emperor Septimius Severus (born in Leptis Magna) had organized the *Limes Tripolitanus*, in particular under the legate Quintus Anicius Faustus in AD 197-201. Indeed, Anicius Faustus was appointed *legatus* of the *Legio III Augusta* and built several defensive forts of the *Limes Tripolitanus* in *Tripolitania*, including Gheriat el-Garbia and *Golaia*/Bu Ngem, in order to protect the province from the raids of nomadic tribes. He fulfilled his task quickly and successfully. Former soldiers were settled in this area, and the arid land was developed. Dams and cisterns were built in the Wadi Ghirza to regulate the flash floods. These structures are still visible: there is a temple among the ruins of Gaerisa, which may have been dedicated to the Berber semi-god "Gurzil", and the name of the town itself may even be related to his name. The farmers produced cereals, figs, vines, olives, pulses, almonds, dates, and perhaps melons. Ghirza consisted of some forty buildings, including six fortified farms (*Centenaria*). Two of them were really large. It was abandoned in the Middle Ages.

In the south of *Mauretania Tingitana*, the Romans established a frontier in the 3rd century, just north of the area of actual Casablanca near Sala and stretching to Volubilis. In the later Roman period, there was further subdivision of the provinces and reorganisation of military commands. With Diocletian, the Limes was partially abandoned and the *Limitanei*, local soldier-farmers, took over the defence of the area. *Cyrenaica* always remained in the Eastern Diocese, while *Mauretania Tingitana* was attached to *Hispana* across the Straits of Gibraltar. The other African Territories were subsumed in an African Diocese. The Vandal invasion of North Africa in AD 429 led to the creation of a Germanic kingdom there, though with significant depletion of effective frontier control. The power vacuum in the old frontier sectors was filled by

a number of 'berber' kingdoms, in part based on the populations of the old garrison settlements.

In AD 533, the Emperor Justinian, using a Vandal dynastic dispute as pretext, sent an army under the general Belisarius to recover Africa. In a short campaign, Belisarius defeated the Vandals, entered Carthage in triumph and re-established Roman rule over the province. The restored Roman administration was successful in fending off the attacks of the Amazigh desert tribes and, by means of an extensive fortification network, managed to extend its rule once again to the interior. Therefore, the Limes survived as an effective protection until Byzantine times.

Emperor Maurice grouped the North African provinces, together with the Roman possessions in Spain, into the Exarchate of Africa. The exarchate prospered, and from it resulted the overthrow of the Emperor Phocas by Heraclius in AD 610. Heraclius briefly considered moving the imperial capital from Constantinople to Carthage. After AD 640, the exarchate managed to stave off the Muslim Conquest, but in AD 698, a Muslim army from Egypt sacked Carthage and conquered the exarchate, ending Roman and Christian rule in North Africa.

The African frontiers were not entirely peaceful, though there has been considerable disagreement about the source and severity of reported outbreaks of warfare and revolt. The threats seem to have come in equal measure from internal communities as well as external peoples and some sectors such as *Mauretania* seem to have been much more severely affected. Nonetheless, looking at the overall picture, and considering the chronology and geographic scale, it is evident that considerable economies of force were achieved.

4.1.2 NEAR EAST

In the 70s and 60s BC, during the third war against Mithridates of Pontus, Lucullus and Pompey had explored the East, the latter almost reaching the Caspian Sea and establishing the Roman province of *Syria* in 64 BC. From this time, Roman interest concentrated from Pontus to Anatolia in the middle of the 1st century BC, and to Syria and Armenia around the beginning of the Common Era, and finally to the south of Judea in the 1st century AD and to Arabia at the beginning of the 2nd century. Under Augustus, the border was formalized by establishing Roman military bases for security. A network of client kingdoms enabled the relatively small size of the Roman occupation in the east, which consisted of eight legions, with four legions in the north of *Syria*. In the second half of the 1st century AD the client became regularly managed provinces.

The Roman province of Egypt was established in 30 BC after Octavian (the future Emperor Augustus) defeated Cleopatra and Marc Antony and annexed the Ptolemaic Kingdom of Egypt to the Roman Empire. The province encompassed most of modern-day Egypt except for the Sinai Peninsula, which was later conquered by Trajan.

In AD 106, under Trajan, the Nabataean kingdom was formally incorporated into the province of *Arabia*. This was consolidated by the construction of the *Via Nova Traiana* from the Red Sea to the borders of *Syria*.

The Roman frontiers in the Near East changed many times, of which the longest lasting was the Euphrates River, eventually to be left behind as the Romans defeated their rivals, the Parthians, with the march on their capital, *Susa* in AD 115. The Parthians were a group of Iranian peoples that ruled most of Greater Iran that is now in modern-day Iran, western Iraq, Armenia and the Caucasus. In AD 118, Hadrian decided that it was in Rome's interest to re-establish the Euphrates as the limit of its direct control. Hadrian returned to the previous state, and surrendered the territories



Northern defenses of the fortress at Qasr al-Hazraq (Jordan), seen from the interior.

of *Armenia*, *Mesopotamia*, and *Adiabene* to their former rulers and client kings and did not attempt to romanize the Parthian Empire. In AD 161–166 the ‘Parthian War of Lucius Verus’ was fought between the Roman and Parthian Empires over *Armenia* and Upper Mesopotamia. It concluded after the Romans made successful campaigns into lower Mesopotamia and *Media* and sacked *Ctesiphon*, the Parthian capital. A final war against the Parthians was led by Caracalla who died in AD 218. After his assassination, his successor, Macrinus, was defeated by the Parthians near *Nisibis*. In exchange for peace, he was obliged to pay for the damage caused by Caracalla.

During the Severan dynasty (AD 193–235), the Romans strengthened their defences on the Arabian frontier. They constructed several forts at the northwest end of the Wadi Sirhan, and improved the roads. One important fort was Qasr Azraq; another was at *Auara/Humeima*, from the late 2nd century AD, on the *Via Nova* from *Petra* to *Aila*, where up to 500 auxiliary troops could have resided. It was probably abandoned in the 4th century.

Diocletian partitioned the old province of *Arabia* by transferring the southern region to the province of *Palaestina*. Later in the 4th century, *Palaestina* was divided into three provinces, and the southern one was eventually called *Palaestina Tertia*. Each province was administered by a *praeses* with civil authority and a *dux* with military authority. Diocletian engaged in a major military expansion in the region, building a number of *castella*, watchtowers, and fortresses along the fringe of the desert just east of the *Via Nova*. This line of defence extended from south of Damascus to Wadi al-Hasa. The region from Wadi Mujib to Wadi al-Hasa contained four forts and a legionary fortress. The frontier south of Wadi al-Hasa, which extended to the Red Sea at *Aila* (Aqaba), may have been called the *Limes Palaestina*. In this region, ten forts and a legionary fortress have been identified. The term may have referred to a series of fortifications and roads in the northern Negev, running from Rafah on the Mediterranean to the Dead Sea, or to the region under the military control of the *dux Palaestinae*, the military governor of the Palestinian provinces.

Troops were progressively withdrawn from the *Limes Arabicus* in the first half of the 6th century and replaced with native Arab *foederati*, chiefly the Ghassanids. After the

Arab conquest, the *Limes Arabicus* was left to disappear, but some fortifications were used and reinforced in the following centuries.

4.1.3 EUROPE

In continental Europe, the frontiers were generally well defined, usually following the courses of major rivers such as the Rhine and the Danube. Nevertheless, those were not always the final borderlines; the province of *Dacia*, in modern Romania, was completely on the far side of the Danube. In Great Britain, both Hadrian and Antoninus Pius built defences to protect the province of *Britannia* from the peoples of Caledonia. Hadrian's Wall, constructed in AD 122 held a garrison of 10,000 soldiers, while the Antonine Wall, constructed between AD 142 and 144, was abandoned by AD 164.

3D reconstruction of the legionary fortress of *Bonna/Bonn* (Germany) on the Lower Rhine.



A chain of legionary fortresses and auxiliary forts guarded the line of the Rhine. It was laid out partly by Augustus and his stepson and military commander, Drusus, who began to strengthen the natural boundary of the Rhine from the year 12 BC. The decision not to continue the conquest of the regions east of the Rhine in AD 16 resulted in the Rhine becoming the fixed frontier of the Roman Empire in the northwest.

The German provinces were established at the end of the 1st century AD. In Upper Germany, the military frontiers were advanced on the other side of the Rhine and up to the Danube under the Emperors Trajan and Hadrian. The changing political situation can be observed in the displacement of troops in the Lower and Middle Rhine in this period. Under Emperor Trajan, the *Limes* was reinforced in Upper Germany and *Raetia*. The fiercely independent and threatening kingdom of *Dacia* was defeated and conquered at the second attempt by Trajan (between AD 101 and 106), who then created a new province of *Dacia* in Transylvania. His successor, Hadrian, gave up some provinces and occupied territories, but principally continued the policy of border security. By around AD 150, 16 legions were permanently stationed in the provinces of the European continent. The Antonine Wall in the north of Britain

replaced Hadrian's Wall, but soon afterwards was given up again. At about the same time, the Limes in the Odenwald-Neckar region and an older Raetian line of forts were moved about 30 km east- respectively northwards to what is called now Upper German-Raetian Limes.

Later, more garrison sites were added to the Danube area. This was a reaction to the insecure situation in the middle Danube region. Because of the Marcomannic wars, additional border reinforcements and troops were needed at this frontier section.

During the time of the Emperors Septimius Severus and Caracalla, the tensions on the Upper German-Raetian frontier as well as in the Carpathian basin increased. In AD 213, Caracalla defeated the Germans beyond the Raetian Limes. Under Severus Alexander, conflicts with the Germans took place on the Lower Rhine, and the Sarmatians frequently crossed the border in the middle Danube region. Although the Alamanni could be pushed back again, the damage in the Limes region was immense.

In the middle of the 3rd century, Valerian withdrew troops from the German provinces for his campaign against the Sassanid in the east of the empire. Because of unrest in *Pannonia*, Gallienus also moved troops from Upper and Lower Germany to the Danube. The Germans used this situation for an attack, which led to the abandonment of nearly all the forts along the Upper German-Raetian Limes. In the fifties and sixties of the 3rd century, the Marcomanni, other Germanic tribes and the Sarmatians overran the Danube and the Balkan provinces. The permanent pressure and invasions of the Vandals, the Goths and the Carpians ended in the abandonment of *Dacia* under Aurelian. He and the successive Illyrian emperors succeeded in calming the situation on the Rhine and the Danube, to reunite the Roman Empire broken in three parts, and to manage temporary uncertainties along the frontier in North Britain. However, the former border security system never regained its strength.

In the extensive administrative and remedial reforms of the Emperors Diocletian (AD 284–305) and Constantine (AD 306–337), new fortifications were built on the Danube and the Rhine, which were later reinforced by the Emperors Julian and Valentinian. Since the political situation had greatly changed, Germans took over the border protection and kept the border on the Rhine and the Danube until the first quarter of the 5th century. In order to ward off Germanic peoples in England, forts were built along the Saxon shore at the Channel and North Sea. The migration of people and the chaotic conditions in an empire, now divided into two halves, caused the frontiers of Rome to be broken. This finally ended in the 5th century with the collapse of the Empire in the west. Only the lower Danube frontier survived until the 7th century AD. The Eastern Roman Empire existed, in one form or another, until the 15th century, when *Constantinopolis* fell to the Ottomans in 1453.

4.2 GEOGRAPHICAL SCOPE

Since the development of the frontiers is strongly related to the development of the Roman provinces, the boundaries will be described divided into the ancient provinces.

4.2.1 AFRICA

The Roman provinces of North Africa: *Cyrenae (later Libya), Africa Proconsularis (later Tripolitania), Numidia and Mauretania*

The North African Limes protected the provinces of the Mediterranean, which extended between 90 and 400 km into the interior of the country. Despite its length of 3,000 km, the Roman Limes in North Africa was always been kept by only a few

troops: while two legions each had to secure the *Limes Arabicus* or the province of *Dacia*, only the *Legio III Augusta* was stationed in North Africa.¹⁶

Despite its similarity with other *limites*, the border system, which also included barriers with ramparts and ditches, was adapted not only to the very different topography, but above all to the special living conditions of the population in the Sahara or Tell Atlas.

In the *Cyrenaica*, which was always Greek oriented, the Libyan Desert plateau, which reached almost to the sea, strongly restricted the possibilities of settlement. Military protection needed only the Hellenistic cities of the Pentapolis, which had city walls since pre-Roman times to be protected from pirates from Syrtis. Several military stations were located beneath Berenice on the west coast at Ghemines, *Corniculanium*/Agedabia and Gasr el Henaia. A line of watchtowers (Zauia et-Tailimun – Esh Sheleidima – Zauiet Msus) secured a caravan road in the interior of the country.¹⁷



Fig. 4.1 Map of the Limes in the provinces of Mauretania and Numidia.

The *Limes Tripolitanus* was a frontier in the Roman province *Africa Proconsularis* and built in the south of what is now Tunisia and the northwest of Libya. It was primarily intended as a protection for the Tripolitanian cities of Leptis Magna, Sabratha and Oea in Roman Libya.

Geographical contrasts determined the *Limes Tripolitanus*, to which the sentries east of Turris Tamalleni to Arae Philenorum on the Great Syrte belonged. The frontier stretched from *Lacus Tritonum*/Chott el-Djerid to Leptis Magna and separated the empire against Garamantes and Gaetulians. Between the sand dunes that reach the

16 Klee 2006, 137-138; Mattingly et al. 2013, 41-43.

17 Mattingly et al. 2013, 81-83.

coast, there are only small settlements and short streams, which never carry much water. While the development of the frontier between Bu Ngem and Turris Tamalleni is well known, it remains quite unclear on the Syrte east of Leptis. Place names such as *Praesidium*, *Praetorium* or *Praesidio* may indicate military stations here already in the pre-Severan period.

In *Numidia*, the east-west running Limes separated the agriculturally used areas from the southern steppes, highlands, and mountains. Although nomads lived in the Sahara and the monitoring of these tribes certainly belonged to the duties of the military, the forts were not located directly in this control zone, but rather behind them in a more watery and habitable area south of the Nementcha- and Tebessa mountains.¹⁸

In the 2nd century, the occupation of Aurès, part of the province of *Numidia*, resulted in the control of the westward Sahara Atlas to the Ouled Nail massif and the Djebel Amour. It also enabled the monitoring of the highland between the Ouled Nail and the Tell. Centrally located, Aurès hosted the greatest concentration of the army in North Africa.

The *Limes Mauretaniae* is part of the north-African borderline between the Atlantic coast and the *Limes Tripolitanus* located in today's Tunisia.

The topography of *Mauretania*, divided into two provinces *Mauretania Caesariensis* and *Mauretania Tingitana*, can be roughly divided into a coastal strip of varying width, followed by partly very fertile mountain regions or river valleys, and subsequently by steppes and deserts as well as mountainous regions. The inhabitants of *Mauretania*, especially in *Tingitana*, were probably semi-nomadic mountain tribes related to the Iberians. The Rif Mountains behind the coast made *Mauretania* difficult to access. Muluccha and Ampsaga limited the province of *Mauretania Caesariensis*. The Limes ran along the southern slope of the Tell Atlas, but did not include the highlands with their drainless salt lakes. In the western province of *Mauretania Tingitana*, the Roman control was restricted to the Atlantic coast reaching southwards to the Bou Regreg near Rabat (Rharb) and the tableland around Volubilis, which was bounded by Anti Atlas and Middle Atlas.¹⁹

The eastern boundary of the province of *Mauretania Caesariensis* (identical with the eastern border of the later province of Sitifensis) ran approximately on a line west of the Cap Bougaroun on the River Ampsaga to the east end of Chott el-Hodna and further west to the steppe landscape. This line separated the sedentary population from the nomads and had previously formed the frontier of the area dominated by Carthage. At the passage of the province of *Numidia* to the province of *Mauretania Caesariensis*, the southern frontier got close to the coast of the northern slope of Tell Atlas. Thus, the Roman-dominated area shrank from about 400 km of geographical depth to only about 95 km. The more northerly oriented frontier in *Mauretania Caesariensis* coincided roughly with the limit of precipitation that was required for rainfed agriculture. There was limited presence here.²⁰

Originally restricted to the coast of *Caesariensis*, the Roman influence was for economic reasons expanded further southwards from the 1st to the 3rd century. In the west, the River *Muluccha*/Mülüyā formed the border with the province of *Mauretania Tingitana*.

A vast and infertile plain divides Algeria from Morocco. In the north, the foothills of the Rif Mountains descend steeply into the sea, thus preventing a direct land connection along the coast. The connection between *Caesarea* and *Tingis* was therefore normally maintained by sea, since there were no economically used areas between the two provinces.

18 Mattingly et al. 2013, 74-77.

19 Klee 2006, 147.

20 Mattingly et al. 2013, 62-71.

The Roman influence and control in the province of *Mauretania Tingitana* reached from the Atlantic coast to the River Bou Regreg/Bū Rağrağ near Rabat and Salé and the tableland around *Volubilis*, a very fertile agricultural area. The northern Rif and the Atlas mountains, however, were obviously never permanently under military occupation.²¹

The Roman road network in North Africa provided good and timesaving logistical connections for the trade and supply of their vastly deployed troops. In *Caesariensis*, there were three roads parallel to the coast. In general, however, there were unpaved tracks and no cobbled streets. Natural routes - such as rivers - were not present in the province of *Caesariensis*. The route along the frontier to the steppe landscape was well developed for military reasons.

Fig. 4.2 Map of the Limes in Pontus and Cappadocia.



4.2.2 NEAR EAST

Cappadocia

The Cappadocian Limes begins in Trapezus on the coast of the Black Sea and continues over the Zigana Pass through the up to 3000 m high Pontic Alps southwards to *Satala*. It is assumed that from there the route runs southwards across Cimen Dağları and Refahiye and reaches the Euphrates near the Decius Bridge opposite Ilic. An alternative course could have led south from *Satala* via the Sipikor

21 Klee 2006, 147; Mattingly et al. 2013, 60-63.

Pass to the plain of Erzincan to the Euphrates and followed at low altitude the right bank to *Zimara*.

From southwest to northeast, the extended mountain ranges of the Antitaurus, with their heights of up to 3000 m, form numerous deeply-cut valleys which did not permit any navigation. From *Zimara* onwards the frontier runs along the Euphrates through the Kurdish Taurus to *Melitene*. South of the fort of *Melitene*, in the Midye region, the border between *Cappadocia* and *Syria* is assumed, where a linguistic boundary is still present.²²

The Cappadocian Limes continued eastward along the Pontine coast. East of *Trapezus* there are only very limited settlement possibilities because of the foothills of the Pontic Mountains. However, fertile lowlands extend beneath the Caucasus with the *Colchis*. At the foot of the Caucasus the northernmost sentry, *Pityus*, was on the Black Sea coast.



View over the Euphrates from *Dura Europos*.

Syria

South of the Taurus, the Limes ran on the western riverbank of the Euphrates from *Samosata* to *Sura*. The river course, which stretched far to the west, offered enemies the tactical advantage of the 'inner line', but also enabled encirclement of the enemy during an attack. In the open area, the river served only as an obstacle against approaching enemies, but not as protection because of numerous transitions. From *Sura* the Limes ran south-westerly through the steppe area via Resafa and *Palmyra* to *Damascus*. From the 60s of the 2nd century AD onwards the Roman Empire extended as far east as the Khabur River and the Singara Mountains. The Limes followed the River Khabur to the River Euphrates near *Dura Europos* and then through the desert to *Palmyra* and *Damascus*. From there, it continues south to *Bosra/Bostra*, where the settled population in the cultivated land was to be protected against nomads.²³

22 Klee 2006, 91-92.

23 Klee 2006, 104.

Fig. 4.3 Map of the Limes in Syria and Arabia.



Arabia

The *Limes Arabicus* begins at *Bosra/Bostra* in the Hauran and ends in *Aila* on the Gulf of Aqaba, one of the two northern arms of the Red Sea in today's Israel. From *Bosra/Bostra*, the border runs south-westerly to *Philadelphial/Amman*. The fertile volcanic soil and the abundant precipitation enabled intensive grain cultivation and thus a relatively dense population.²⁴

To the east of the Dead Sea, the area is cut by the deeply incised, east-westward valleys of Wadi Yarmuk, Wadi Zerqa and Wadi Mujib. The *Via Nova Traiana* is roughly the line of demarcation between the cultivated river valleys in the west and the desert and semi-desert in the east, where oases with water passages indicate the routes. The last section of the *Limes Arabicus* leads from Wadi al-Hasa, which southern end flows into the Dead Sea, to *Aila/Aqaba*. To the east, the vast desert-like Hisma is extended. In this semi-arid area, caravan traffic was the main source of income for the mostly small localities.



Fig. 4.4 Map of the Limes in the province of Aegyptus.

Wadi Sirhan, a deep south-eastward incline south of the Hauran, connects Syria with the Gulf of Arabia. To this day, Azraq is the most important oasis at the west end of the valley. Predatory gangs also used the much-used trade route as an incursion route.

The *Limes Arabicus* had several auxiliary forts and watchtowers as well as legionary fortresses (about every 100 km), like at *Adrou/Udhruh* or *Aila/Aqaba*.²⁵ The reason for this defensive frontier line was to protect the Roman province of Arabia from attacks from the “barbarian” tribes of the Arabian Desert. The main purpose of the *Limes Arabicus* is disputed; it may have been used both to defend from Saracen raids as well as to protect the commercial lines from robbers.

Next to the *Limes Arabicus*, Trajan built a major road, the *Via Nova Traiana*, from *Bosra/Bostra* to *Aila*, a distance of 430 km. Built between AD 111 and 114, its primary purpose may have been to provide efficient transportation for troop movements and government officials as well as facilitating and protecting trade caravans emerging from the Arabian Peninsula.²⁶

Aegyptus/Egypt

The province of *Aegyptus* bordered on deserts or seas, with Nubia in the south of the country posing no threat after the northern part of the province was annexed under Augustus.²⁷ The army controlled the economy and trade and secured the transport routes, especially those from the Red Sea to the River Nile. Among the tasks of the

25 Klee 2006, 114-117.

26 Klee 2006, 118-120.

27 Breeze 2011a, 129.

troops, which often had sections of camel- and dromedary-riders, was the sentry duty on the watchtowers along the desert roads. The forts were concentrated on the roads in the Arabian Desert. The two northern routes connected Qena with Abu Sha'ar and led through an area with extensive quarries. Standardized and square in shape, forts were located in a distance of 20 to 30 km along the much shorter route from Quseir el-Qadim via Laqueita to Coptos. Another trade route ran from Coptos to *Berenice*/Ras Banas. Further south, in the area of the Dodeka- and Triakontaschoinos between Aswan, Elephantine and Philae, several military posts lie on the west bank of the Nile. With three stations in this section, the control was very dense. Small stations in the Meroitic area were occupied by auxiliary units.²⁸

4.2.3 EUROPE

Britannia

The first Limes road in Britain, the so-called Gask Ridge, was constructed between AD 70 and 80 close to the Highland Line in Scotland but abandoned by the mid 80s. The Gask Ridge frontier is a term describing a chain of Roman watchtowers, forts and fortlets built to monitor movement between the Highland massif and Fife.²⁹ Although the Gask Ridge was not a wall, it may be Rome's earliest fortified land frontier. The fortifications approximately follow the boundary between Scotland's fertile Lowlands and mountainous Highlands, in Perth and Kinross and Angus. The later Hadrian's Wall and Antonine Wall were further south, and, by taking advantage of the heavily indented coastline of Great Britain, were considerably shorter. Construction on Hadrian's Wall was started 42 years after the Gask Ridge (from AD 122 to 130), and the Antonine Wall was started just 12 years after the likely completion of Hadrian's Wall (from AD 142 to 144).

Hadrian's Wall ran 117 km long from the banks of the River Tyne near the North Sea to the Solway Firth on the Irish Sea. In Britain, where natural boundaries such as rivers are missing, the isthmus formed the most suitable site for an artificial barrier. To the east, the wall extends from Newcastle upon Tyne on the north bank of the Tyne west to Chesters and from there it rises up through the northernmost point at Limestone Corner to the Whin Sills. These cliffs of volcanic rock, with wide views, drop off steeply to the Craggs. At Willowford, the wall reaches the River Irthing and follows the north bank of the river. West of Carlisle it runs into the Solway Marshes between Burgh-by-Sands and Bowness-on-Solway on the best line just above the flood limit. Although the curtain wall ends near Bowness-on-Solway, this does not mark the end of the line of defensive structures. The system of milecastles and turrets is known to have continued along the Cumbria coast as far as Risehow, south of Maryport (so-called Cumberland Coast System).³⁰

Hadrian's Wall frontier system consists of a ditch and wall with 80 small-gated milecastle fortlets, one placed every Roman mile, holding a few dozen troops each, 79 pairs of evenly spaced intermediate turrets used for observation and signalling as well as 17 auxiliary forts.³¹

The Antonine Wall crosses the narrowest part of Britain at the Forth-Clyde isthmus. This wall stretches 63 km from Old Kilpatrick in West Dunbartonshire on the Firth of Clyde to Carriden near Bo'ness on the Firth of Forth. The wall was intended to extend Roman territory and dominance by replacing Hadrian's Wall 160 km to the south, as the frontier of *Britannia*. To the east, the course of the border between Carriden and

28 Klee 2006, 124-129.

29 Klee 2006, 9-10.

30 Klee 2006, 14; Breeze 2011b, 48-69.

31 Klee 2006, 11-13.

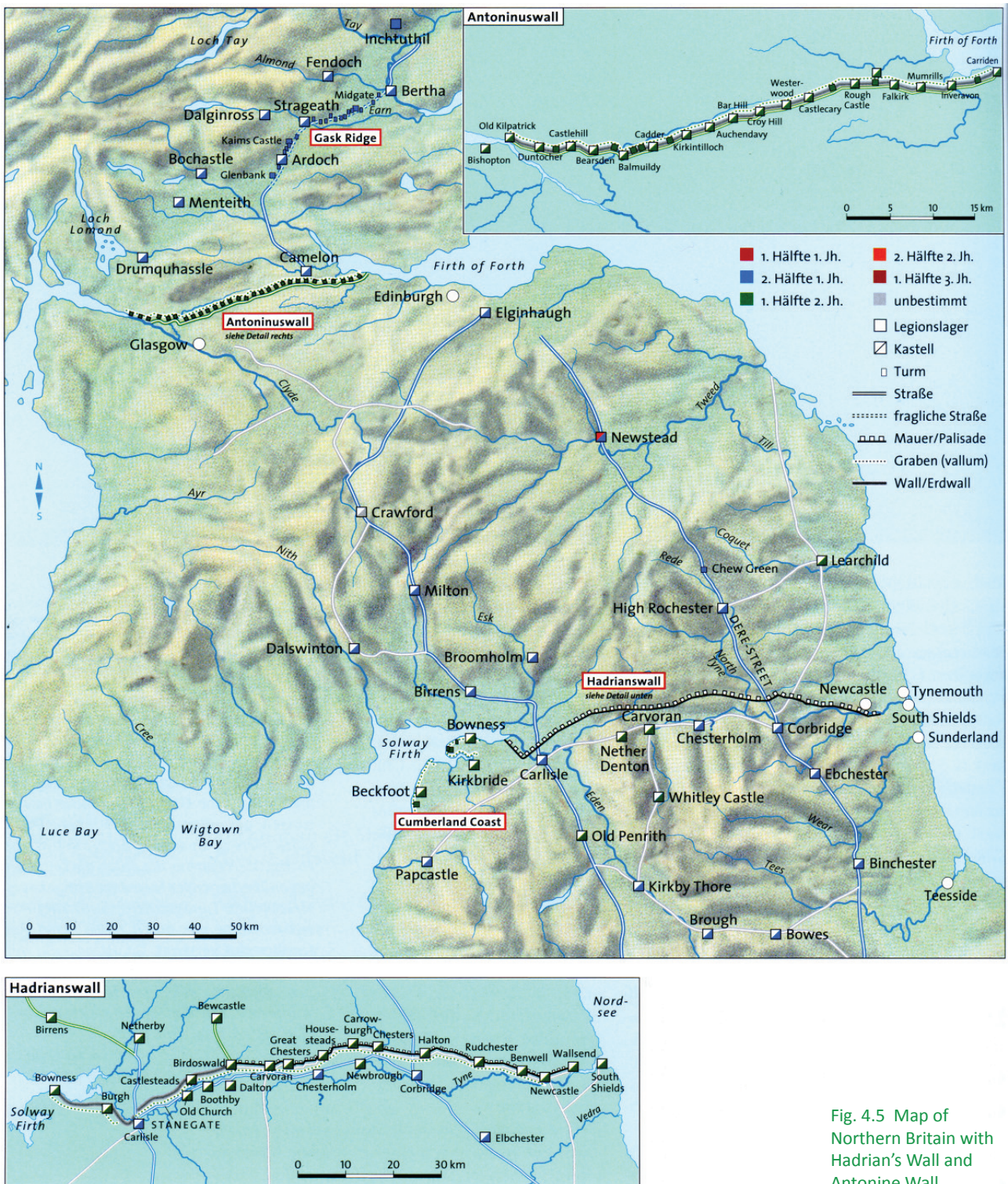


Fig. 4.5 Map of Northern Britain with Hadrian's Wall and Antonine Wall.

Bridgeness remains uncertain. From the elevated south bank of the Carron River, the wall rises up over the basalt formation of Croy Hill and Bar Hill to the Kilsyth Hills and the Campsie Fells. The wall bridges the Rivers Avon and Kelvin at the forts of Inveravon and Balmuildy. To the west, the wall moves from hill to hill. Shortly before Old Kilpatrick, the route is clearly dominated by the Kilpatrick Hills. The sides of the border in the Forth and Clyde bays were protected. A cavalry unit secured the lower river basin at Whitemoss-Bishopton, with small fortlets to the west at Lurg Moor and Outerwards monitoring the Clyde. Up to the Tay, advanced outposts secured the Fife

Fig. 4.6 Map of the Lower German Limes.



peninsula and provided early warning of hostile attacks. In total, the Antonine Wall was protected by 17 forts with nine small fortlets between them.³²

Germania inferior and superior

The Lower German Limes separated that part of the Rhineland left of the River Rhine, which was part of the Roman Empire, from the less tightly controlled regions east of the Rhine. The frontier remained unchanged since the middle of the 1st century AD, started at Katwijk on the North Sea coast, and continued until the River Vinxtbach in Rheinbrohl-Bad Hönningen south of Remagen, the last fort in Lower Germany. At no time, were there approaching barriers such as walls or ditches, because the Rhine protected the border sufficiently. The riverside road enabled the rapid transfer of troops anytime. Side streets branched from the Limes road into the interior of the province.

The Limes started near the estuary of the Oude Rijn on the North Sea. It then followed the course of the Rhine and ended at the River Vinxtbach, the border with the province of *Germania superior*. From that point onwards the Upper German-Raetian Limes started on the opposite, right-hand, side of the Rhine with the fortlet of Rheinbrohl. As it runs along the Rhine, the Lower German Limes passes four landscapes with different topography and natural character. The southernmost and smallest portion, between the Vinxtbach and the area around Bonn belongs to the Rhenish Massif, through which the river passes in a relatively narrow valley between the heights of the Westerwald and the Eifel Mountains. From roughly the area of Bonn, the Rhine valley opens into the Cologne Bay, which is bounded by the Bergisches Land, which borders the river on the right-hand side, and the Eifel and High Fens to the southeast and east. The Cologne Bay has fertile loess soils and is characterized by a very mild climate. It is therefore little wonder that most of the rural *vici* and *villae rusticae* (farm estates) in Lower Germany were established in this area

³² Klee 2006, 24-31; Breeze 2009, 39-49.

in Roman times. In the vicinity of the legionary fortress of *Novaesium*, the Cologne Bay expands further into the Lower Rhine Plain, a river terrace landscape. Only a little east of today's German-Dutch border, between the area of the legionary fortresses of *Vetera* and *Noviomagus*, the Lower Rhine Plain transitions into the delta formed by the Rhine and Meuse and which finally ends at the North Sea.³³

A chain of forts and fortlets for auxiliary troops guarded the Rhine line. As in other provinces, the troops were distributed along this boundary according to the conditions of the foreland. In the southern section between Remagen and Bonn there were only a few auxiliary units because there were few Germanic settlements in the Bergisches Land and the Westerwald north of the Rhine. However, in the central part apart from the two legions at Xanten and Bonn, seven to eight auxiliary units were stationed. In the westernmost section of the Lower German Limes, a marshland area with limited opportunities for settlement, an increasing number of small waterways running into the Rhine facilitated quick raids by hostile tribes. Therefore, the forts between Utrecht and Leiden are very close to the inflows from the northern part of the moors. To the west, north-south running land routes were controlled from Katwijk and Valkenburg over the beach barriers.



Fig. 4.7 Map of the Upper German and Raetian Limes.

The Upper German Limes begins in Rheinbrohl opposite the Vinxtbach and runs from the Westerwald in a southerly direction to the Lahn at Bad Ems. From there it follows a prehistoric trail to Bad Schwalbach. On the hilly central ridge of the Taunus, the frontier runs to the northeast and reaches from the Emsbach valley over a steep climb the highest point on the Feldberg at 800 meters. At Butzbach, the border leaves the Taunus ridge to include the Wetterau in a wide arc over the ridge at the Gießen basin and south of the Hessian basin. This area is criss-crossed by numerous watercourses and is very fertile due to the loess soil and the mild climate. First, the frontier was adapted to this terrain but was later straightened. At the Horloff in the eastern Wetterau, the Limes runs through the valleys of Nidda and Nidder over

Marköbel to the south and meets the River Main at Groß-Krotzenburg. Between Groß-Krotzenburg and Obernburg, the boundary remains as along the Rhine and the Danube on the riverbank facing the Roman Empire. In the middle of the 2nd century, the river frontier was extended through the extensive upland forests of the Main valley from Obernburg to Miltenberg.

South of the River Main the Limes runs from Miltenberg to Walldürn where the 81 km long and straight run section begins, which ends at Haghof near Welzheim. Without consideration of the topography, the frontier goes through the Jagst-, Kocher- and Murr-Valley as well as over the hilltops of the Swabian-Franconian Forest. Northeast of Lorch (at the border to the Roman province of *Raetia*), the Upper German Limes ends north of the River Rems.³⁴

Raetia

The Raetian Limes runs from the fortlet Freimühle in the Rotenbach valley northwest of Schwäbisch Gmünd with mostly straight course above the Rems valley. From Kolbenberg at Aalen it follows in a wide arc to the northeast to Gunzenhausen and includes the Ries and the Hesselberg that widely dominates the landscape. This included both to the Empire, this fertile, intensively farmed area as well as the Franconian Jura where limestone was broken. To the north, the not very profitable Keuper country remained unoccupied. From Gunzenhausen and the Altmühltal onwards the Raetian Limes extends in a southeast direction through the Jura region of the Alb plateau to the Danube, which it reached at Hienheim. Between Eining and Passau, the eastern Raetian Limes represents a typical river frontier (*ripa*) on the south bank of the Danube.³⁵

Noricum

The Norican Limes is on the soil of the present-day Austrian states of Upper and Lower Austria. The frontier runs along the south bank of the Danube and was guarded by a loose chain of auxiliary fortlets and watchtowers. The Danube forms a narrow river valley in the foothills of the Bohemian Massif that widens only locally to small valleys like the Wachau. Nevertheless, this valley with its densely forested escarpments made access to the riverbank more difficult. Connection paths to the south are dictated by the river valleys of the Traun, Enns, Ybbs, Erlauf and Traisen while the Bohemian Forest does not allow extensive settlement in the north. At the Tullnerfeld, the Danube reaches the first lowland basin before it flows into the Vienna Basin at Klosterneuburg on the Vienna gate north of the foothills of the Vienna Woods. A legionary fortress at *Lauriacum*/Enns, more than ten auxiliary forts, and several watchtowers protected the Norican Limes. Nearly every fort had its own river port or landing stage and a storage area because the Danube was not only border zone, but also the most important transport and trade route in the region.³⁶

Pannonia superior and inferior

The Pannonian Limes (*Ripa Pannonica*) is the part of the Roman fortified frontier known as the Danubian Limes that runs for approximately 800 km from the Roman camp of Klosterneuburg in the Vienna Basin in Austria to the mouth of the river Sava in present-day Serbia. The Pannonian Limes runs through two provinces: *Pannonia superior* and *Pannonia inferior*, divided in AD 107 by Trajan.

To the east of *Cannabiaca*/Zeiselmauer, the Danube flows through the Vienna Basin, a fertile lowland basin. It crosses the border of the Alps and the Little Carpathians at

34 Klee 2006, 45.

35 Klee 2006, 55; Jilek 2009, 67-69.

36 Klee 2006, 63; Jilek 2009, 70-75.



Fig. 4.8 Map of the Norican and Pannonian Limes.

the Devín Gate (“Porta Hungarica”) and arrives in the Little Hungarian Plain below Bratislava, where it flows in a southeastern direction across the alluvial fan it has deposited and continues to shape. Together with its Moson Danube branch it encircles the Szigetköz region on its right bank and on its left bank in Slovakia it flanks the Žitný/Csallóköz island region along with the Váh River. The largest tributaries from the south are the Rivers Leitha and Raab. Through the valleys of Morava, Váh, Nitra and Hron, the most important connection routes led to the north. Not far beyond the city of Győr, the Danube turns and flows on in an easterly direction. Then, from Esztergom it cuts an S curve to the east through the narrow valley between the Visegrád and Börzsöny mountains and turns to the south. Leaving the town of Vác the river enters into the Great Hungarian Plain (Alföld) and flows in its western edge in a north-south direction. The fortifications were built on the eastern edge of the loess plateau or near to river crossings. Numerous small river valleys enable easy access to the heights especially in the south. At Vukovar (Croatia), the river changes to the east due the mountain range *Alma Mons*/Fruška Gora north of *Sirmium*/Sremska Mitrovica. In that region the River Tisza, Drava and Sava flow into the Danube.³⁷

The four legionary fortresses and the more than 40 auxiliary forts along the Pannonian Limes were mainly located in the immediate vicinity of the riverbank. A chain of watchtowers or signal towers closed the gaps between the camps, and in some strategically important places fortifications were built also in the left bank of the river. The military installations of the *Ripa Pannonica* were chained by the Limes road, in some places with more than 15 km long straight run sections.³⁸

37 Jilek 2009, 70–87; Visy 2003, passim; Visy 2009a, 55–60; Visy 2011a, 12–21.

38 Klee 2006, 67; Visy 2003; Visy 2009a, 61–93; Visy 2011b, 55–60; Borhy 2014, 45–53. 132–146.



Fig. 4.9 Map of the Moesian and Dacian Limes.

Moesia superior and inferior

At *Singidunum*/Belgrade, the Sava, and near *Margum*/Dubravica, the Great Morava, coming from the Balkan Peninsula, flow into the Danube. Then comes the last and most important, 130 km long mountain breach between the South Carpathians and the Balkans: the “Iron Gate” (Đerdap). The Iron Gate region encompasses the banks of the Danube from *Cuppae*/Golubac to the fortress *Diana*/Karataš. In this region for millions of years, the Danube cut its way through the rocky massif of the Transylvanian Carpathians, forming one of the largest river gorges in Europe. Between the river and the mountains of Homolje, Miroč, and Deli Jovan on its south bank, the space available for human habitation is very limited. In some parts of the Danube gorge, there are many submerged reefs, rapids and cataracts, while in the Great and Small Gorges in the middle of the canyon, the Danube is the deepest river in Europe. In antiquity, the river often froze during severe winters, making crossings very easy during those periods. From the end of the Gorge, at the Roman *castellum Diana*/Karataš, to the mouth of the Timok River, the Danube again becomes a broad and smooth flowing stream with numerous islands and sandbars.³⁹

After the Iron Gate, the Danube reaches the lowlands of Wallachia. Here the riverbed with its vast swampland and river meadows lies in a 10 to 15 km wide valley close to the 100 m high steep edge of the Bulgarian chalk cliffs. The most important tributaries from the Carpathians are Jiu, Olt and Arges, from the Balkans Timok, Isker and Jantra.

39 Klee 2006, 74; Dyczek 2008, 45-51; Jilek 2009, 87-99; Korać et al. 2014, 50-57; Vagalinski et al. 2012, 23-62.

Before the Danube comes to the tableland of Dobrudja it turns north again, but forms a number of arms, between which there are very marshy floodplains. At Galați, the river bends to the east and reaches the mouth delta, a 4300 km² swamp area with reed beds and numerous water veins. The three main estuaries extend several times to lakes, but are heavily muddy and so shallow that shipping is not possible.⁴⁰

Dacia

The province of *Dacia* encompassed the high plain of Transylvania that was surrounded by the Carpathians. Numerous mountain passes and the deeply cut river valleys of the Mureș in the west, the Someș in the north or the Olt in the east, connect the land with the Tisza plain west of the mountains or the flatland of Walachia. The Banat between the Danube, Tisza, Mureș and the South Carpathians was rich in iron and copper deposits but did not belong to *Dacia*. The Dacian Limes was strongly influenced by the topography. At the most important incursions forts secured the central settlements, which were only accessible via passes and valleys. The largely inaccessible mountainous country made a continuous barrier unnecessary. For this reason, watchtowers, ramparts and ditches, called *clausura* (barrier), were installed only along shorter, apparently more vulnerable sections. A continuous wall could be excavated in the east of *Alutanus/Olt*.⁴¹

The so-called *Limes Alutanus* was the eastern border of the Roman province of *Dacia*. Nowadays there is no surface evidence, but is remembered by the *Tabula Peutingeriana*, the *Limes Alutanus* was a fortified line consisting of a vallum, built in the North-South direction, on the western side of the Olt River with seven Roman forts.⁴²

The so-called *Limes Transalutanus* was a fortified frontier system built on the western edge of Teleorman's forests in the Roman province of *Dacia*. The frontier comprised a road following the border, a three-meter vallum 10-12 meters wide, reinforced with timber palisades on stone walls, and a ditch. The *Transalutanus Limes* was 235 km long, parallel to Olt River at a distance varying from 5 to 50 km east of the river. The construction was started in the early 2nd century; its final stage took place under Septimius Severus (AD 193-211). Between AD 244 and 247, under Philip the Arab, after the Carpien and Getae attacks, the Roman Imperial army abandoned the *Limes*.⁴³

40 Klee 2006, 79; Dyczek 2008, 45-51.

41 Gudea/Lobüsch 2006, 3-5. 21-22; Klee 2006, 83-84.

42 Gudea/Lobüsch 2006, 31-36; Klee 2006, 86; Visy 2009b, 587-588.

43 Gudea/Lobüsch 2006, 31-36; Klee 2006, 87; Visy 2009b, 587-598.



A SINGLE AND COMPLEX MONUMENT

5

The Frontiers of the Roman Empire are part of a common heritage of the countries encircling the Mediterranean Sea. Successive generations have built on that heritage and modified, it thus helping to create our modern world.

The Roman state, in one form or another, survived for over 2000 years. Its empire was one of the greatest states that the world has seen, close only to the ancient China in its size and longevity. The Roman world was protected and at the same time defined by frontiers. It was as if these frontiers were, as Aelius Aristides remarked in the 2nd century AD, “enclosing the civilised world in a ring”. The frontiers did define the Roman Empire and were essential for the stability and therefore economic growth of the interior: they allowed the cities of the empire to flourish.

The frontier, over 7,500 km long, defined the Roman Empire and is the single largest monument surviving from the Roman world. The evidence used to understand the frontier includes literary sources and other documents such as the records on papyri and the writing tablets, inscriptions, sculpture, the fruits of archaeological excavation and survey, and the frontier works themselves. Today, the most visible and prolific element of all these sources of evidence is the archaeological site which is the frontier.

All the frontier sections so far nominated and accepted as part of the multinational ‘Frontiers of the Roman Empire World Heritage Site’ are artificial frontiers, which are defined by military installations linked by an artificial barrier. However, in most countries in Europe, in the Near East and in North Africa, the frontiers consisted of chains of military installations along natural boundaries like rivers, mountains or deserts.

In contrast to artificial barriers such as the Upper German-Raetian Limes, which underwent several changes in advancing lines, the river frontiers of the Roman Empire in Europe along the Rhine and the Danube established by the 1st century AD remained rather static. There are few exceptions to this, mainly on the Balkans, where the Emperor Trajan crossed the Danube around AD 101/102, conquered *Dacia* in modern Romania and established a new province, which lasted until around AD 270.

The military post at al-Heita in the Eastern Desert, Egypt, on the route from *Coptos* to the quarries of *Mons Porphyrites*.

5.1 FRONTIER TYPES

The area of the Roman frontiers encompasses a wide variety of topographic, hydrographical, climatic and ecological regions, including the physical and climatic zones of mountain, woods, grasslands, deserts, river valleys and deltas. These geo-ecological zones had an important impact upon the nature of the frontiers.

The linear barrier south of *Sala* (Morocco) between Bou Regreg and the coast.



5.1.1 ARTIFICIAL BARRIERS

Palisades

In the 2nd century, in different parts of the Empire the ‘barbarians’, as the Romans called them, were separated off not by natural barriers but by artificial frontier-barriers such as palisades or walls. One example is the Odenwald-Limes, an early section of the Upper German Limes. It was a cross-country frontier line accompanied by forts, watchtowers and palisades, which linked the River Main with the Neckar and bridged the gap between the rivers. But there remained further advance and further fortification.⁴⁴

Either Hadrian or, more probably, his successor Antoninus Pius, pushed out from the Odenwald and the Danube, and marked out a new frontier roughly parallel to, but in advance of these two lines, though sometimes, as on the Taunus, coinciding with the older line. This is the frontier, which is now visible. It consists, as is seen today, of two distinct frontier works, one, known as the Pfahlgraben, is a palisade of stakes with a ditch and earthen mound behind it, once extending from the Rhine southwards into southern Germany. The other, which begins where the earthwork stops, was originally also a palisade, to be replaced late by a wall of stone of approximately 3 m height, the Teufelsmauer. It runs roughly east and west parallel to the Danube, which it finally joins at Hienheim near Regensburg. The southern part of the Pfahlgraben is remarkably straight; for over 80 km, it shows a deviation of only a few metres from the absolute straight.⁴⁵

Walls

Also in the 2nd century, other linear barriers were erected: firstly Hadrian’s Wall, a defensive fortification in the Roman province of *Britannia*. It ran from the banks of the River Tyne near the North Sea to the Solway Firth on the Irish Sea, and was then the northern limit of the Roman Empire. It had a stone base and a stone wall. There were milecastles with two turrets in between. There was a fort about every five Roman miles. From north to south, the wall comprised a ditch, wall, military way and vallum

44 Breeze 2011a, 56-61.

45 Breeze 2011a, 76-79.

(another ditch with adjoining mounds). In addition to the wall's defensive role, its gates may have been custom posts.⁴⁶

About 20 years after the construction of Hadrian's Wall, Roman territory was extended to the north by some 160 km: The Antonine Wall, a turf fortification on stone foundations, was constructed between the Firth of Forth and the Firth of Clyde. Representing the northernmost frontier barrier of the Roman Empire, it spanned approximately 63 km and was about 3 m high and 5 m wide. It is thought that there was a wooden palisade on top of the turf. Security was bolstered by a deep ditch on the northern side; a military way was on the south. In addition to the 19 forts along the wall, there are at least 9 smaller fortlets, very likely at intermediate distances of a Roman mile, which formed part of the original scheme, some of which were later replaced by forts.⁴⁷

Ditches

The *Fossatum Africae* ("African ditch") is a linear defensive structure claimed to extend over more than 750 km in northern Africa, constructed to defend and control the southern borders of the Roman Empire in Africa.⁴⁸ Generally the *fossatum* consists of a ditch and earth embankments on either side using the material from the ditch. Sometimes the embankments are supplemented by dry stone walls on one or both sides; rarely, there are stone walls without a ditch. The width of the *fossatum* is generally 3–6 m but in exceptional cases may be as much as 20 m. Wherever possible, it or its highest wall is constructed on the counterscarp. The *fossatum* is accompanied by many small watchtowers and numerous forts, often built within sight of one another. The purpose of the *fossatum* seemed to be for customs and migration control.⁴⁹

There are similar, but shorter, *fossatae* in other parts of North Africa. Between the Matmata and Tabaga ranges in modern Tunisia there is a *fossatum* which was duplicated during World War II. There is also a 20 km long *fossatum* at Bou Regreg in Morocco.

Banks

Another fortified frontier system was built on the western edge of Teleorman's forests in the Roman province of *Dacia* (modern-day Romania) in the 2nd century. The frontier was composed of a road following the border, a three-metre vallum 10–12 m wide, reinforced with wood palisades on stone walls, and also a ditch. This bank with its own line of forts linked by a road is generally known as the *Limes Transalutanus*. It was 235 km long, parallel to Olt River at a distance varying from 5 to 50 km east of the river. The preferred interpretation is that the bank marked the provincial boundary and controlled movement in the areas where there was no natural physical boundary to the province.⁵⁰

As many as six different artificial frontiers were constructed in Britain, Germany, *Dacia* and Africa within the relatively short period of sixty years. While they share some characteristics, there are many differences. The position of the Hadrianic German palisade, Hadrian's Wall in Britain and the *Fossatum Africae* related to existing sites, the new barriers being placed on the outer side of the earlier installations. The Antonine Wall in Britain, the Outer Limes in Germany and the *Limes Transalutanus*, on the other hand, were not built in relation to any other structures. The materials of construction varied. This may have related to what was available. A further difference

46 Breeze 2011a, 61–70.

47 Breeze 2011a, 71–76.

48 Cf. Baradez 1949.

49 Breeze 2011a, 82–84.

50 Gudea/Lobüscher 2006, 31–36; Breeze 2011a, 84–85.

between the frontiers is of particular importance. The various elements of the African, Dacian and German frontiers (forts, watchtowers etc.) tend to be separate and not physically connected by the barrier, while those on the British frontiers are linked.⁵¹

5.1.2 RIVER FRONTIERS

Part of the very essence of a linear frontier system is that it forms a continuous line. In general, artificially constructed barriers have no major problems to demonstrate this linearity. The fortification system itself with its structural details (walls, palisades, rampart/ditches) provides the necessary link between individual monuments (watchtowers, fortlets, forts). Even forts which are placed behind the active demarcation line, like those on the Upper German-Raetian Limes, stand in a fairly obvious relationship to the outer frontier installations. Walking along the frontier on Hadrian's Wall brings the visitor from watchtowers to milecastles and forts. The relationship between the individual frontier elements is clearly visible.⁵²

River frontiers lack those most obvious connecting elements, excepting the Limes road and very often a chain of watchtowers. Although the rivers form a linear obstacle, which connects the individual monuments, the line itself is not easy to define and to present. Forts along the Rhine and Danube frontiers are 10 to 30 km apart, and inter-visibility does not often exist. Watchtowers, the intermediate elements in the archaeological landscape, are not always easy to detect. River frontiers were the River Rhine, Danube, Olt and Euphrates.⁵³

There are long stretches of frontiers where we do not know much about watchtowers sited along them, especially those of the earlier Roman Empire, when they were mainly constructed of timber. An exception to this situation is the recent research on the Lower Rhine Limes, where a longer section of the earliest frontier system was investigated during rescue excavations in the area between Utrecht and Woerden (NL). Here it is clearly demonstrated that wooden watchtowers were a distinct element of the borderline along the river connected by a (Limes) road. Late Roman examples are easier to discern because of their massive stone construction. More than 200 watchtowers, mostly stone towers, are recorded along the Danube banks in Hungary, which form a very tight defence system. It can be assumed that similar systems existed on the other frontier sections too.⁵⁴

A most distinctive feature of river frontiers of course is the river itself. But over the last 2000 years the river beds often changed courses. Because of such changes and floods, many sites on the lower grounds were destroyed by water action. In the 19th century, rivers underwent certain regulatory measures, which did not help to preserve the monuments. But quite a lot of them were detected and investigated through those activities. Even larger threats are the water power stations with their dams and reservoirs. When power stations were built in Serbia during the 1980s, many parts of the Roman frontier, e.g. forts, fortlets, watchtowers and the road through the Iron Gate were flooded and are no longer visible.⁵⁵ There exists a similar situation along the Euphrates in Turkey.

Distinctive features of river frontiers are bridgehead fortifications.⁵⁶ We do know about very few bridgehead fortifications in the earlier Roman frontier system, such as the fort of Iža in Slovakia and the fort of *Dierna*/Orşova in Romania. Both of them were

51 Breeze 2011a, 85.

52 Jilek 2009, 42; Visy 2015, 27-36.

53 Jilek 2009, 42.

54 Jilek 2009, 42-45; Visy 2015, 32.

55 Jilek 2009, 45.

56 Cf. Bohy 2014, 141-146; Visy 2015, 31-32.



Southern gate of the bridgehead fort of *Kelemantia/Iža* (Slovakia).

constructed when Roman political Decisions led to caused advances into Barbarian territory. Little is known about permanent bridges which crossed the major river frontiers. One of the greatest achievements in Roman architecture is the so-called Trajan's Bridge, a stone bridge, which spanned the Danube close to the forts of *Pontes* (near Kladovo in Serbia) and *Drobeta*/Turnu Severin in Romania. The bridge was built after Trajan's decision to turn the territory north of the Danube into the Roman province of Dacia at the beginning of the 2nd century. In late Roman times more bridgeheads such as *Contra Aquincum*/Budapest in Hungary and *Divitia*/Cologne in Germany, were established to control, and more so to protect, the crossing points and the traffic on the river. These installations were heavily fortified and several of them survived quite well on the left side of the Danube in Hungary. Closely related to the establishment of river frontiers is also the development of the infrastructure.⁵⁷ The fort at Göd, some 10 km from the Danube in the Barbaricum, belongs to this category, too, although it was never finished.

The Limes road linked the individual military installations and other ancillary features. Quite often along a natural boundary, the Limes road usually runs well behind the course of the river, dictated by the terrain. Watchtowers and fortlets and sometimes also forts, are connected to a supra-regional Limes road by smaller roads.⁵⁸

The histories of each of the river frontiers were different. From the time of Augustus, legions were based on the Rhine waiting to move forward. The units in the Danube provinces tended to be deployed internally, but had moved up to the river by the late 1st century. On the Euphrates the situation was different again with the legions lying astride potential invasion routes and therefore in essentially defensive positions. Gradually units were spread out along the river frontiers and, as the decades passed, the number of such units increased.

By the late 2nd century, every frontier province in Europe from the North Sea to the Black Sea contained at least one legion, in addition to many auxiliary units. The legions were generally placed strategically, to control routes used by the army, river crossings or potential invasion routes. The auxiliary units were spread along the rivers. In some areas, such as along the long stretch of the Danube through Lower *Pannonia* facing

⁵⁷ Jilek 2009, 46.

⁵⁸ Visy 2003, 43-46; Jilek 2009, 47.

the Great Hungarian Plain, the forts were more or less equally placed, about a day's march apart, that is 22 km, elsewhere their locations related closely to the local terrain. The control of routes remained important for the disposition of the auxiliary units. It can be no coincidence that the cavalry units based in Lower Germany lay to each side of the legion which itself was strategically placed at the start of one of the major routes into Germany, or that one of two cavalry units in Upper Germany lay on another route into Germany. The same held for the frontier on the Euphrates: each main line of movement over the border was controlled by a legion.⁵⁹

The military installations along the river frontiers in Europe were occupied over a period of 400 years, mostly from the reign of Augustus to the final years of the 4th, and on the Lower Danube even to the 5th and 6th centuries AD. In the late Roman period, those frontier defences were modernized and turned into strongly fortified military bases. The remains, which in many cases survived astonishingly well to the present day, in- and outside of settlements and in the open countryside, are the most distinctive and still visible witnesses of the European river frontiers. The consequences of this situation are extremely complex military sites, archaeologically and chronologically.

All the river and artificial frontiers of continental Europe share a common feature: with very few exceptions all forts lay on, or close to, the frontier line itself, that is the river bank or the linear barrier. The two great European rivers housed the imperial fleets. While their primary purpose was probably defence like the soldiers of the army, they presumably also helped supply the frontier forces.⁶⁰

5.1.3 MOUNTAIN FRONTIERS

Rivers can flow through mountainous terrain and the resulting gorges, as on the Middle Danube or the Euphrates, can act as a severe impediment to movement, and settlement. Often, the army seemed to consider that little extra protection was required in such circumstances.⁶¹

For the Romans, passes were significant for the control of routes. Valleys were always important lines of communication. Forts were carefully placed in *Dacia* to watch over passes through the Carpathians and similarly in the Caucasus Mountains. The speciality of such frontiers is that the forts were built in the valleys along a road, while the frontier line with towers ran within sight on top of the nearby hills. Where there were breaks in the high plateaux beside the River Euphrates which allowed for a route across, a legionary fortress was established. In Germany, every pass in the hilly countryside of the Odenwald was guarded by a fort or fortlet. In northern Britain, a network of fortlets controlled the passes through the Southern Uplands in the Antonine period. The only mountains which appear to have been treated differently were the Atlas Mountains in North Africa, but this may relate in part to our poor knowledge of the details of the frontier installations.⁶²

An unusual province in Europe was *Dacia*. Its frontiers were mainly defined by the Carpathian Mountains. These offered a boundary as well as an obstacle to attack. Their form helped create a uniquely defended province, a useful reminder that the Romans could adapt to special and different circumstances. The shape of *Dacia* helped to create its own unique military deployment. To the north and east, the outer shell lay in the mountains. The main pass to the east was strongly guarded with additional units being based there. Some towers have also been recorded in this sector. A similar pattern

59 Breeze 2011a, 115.

60 Breeze 2011a, 116.

61 Breeze 2011a, 133.

62 Breeze 2011a, 144-145.

pertained in the west where several auxiliary forts protected the access route along the Mureş Valley.⁶³ A noticeable concentration of forts was in the gap between the western and northern Carpathians. The purpose of a specific arrangement of forts, fortlets, towers and barriers was to control access to the province.

5.1.4 DESERT FRONTIERS

The frontiers in the desert areas were entirely different from land or river frontiers. Here water was also important, though not in the same way. Rainfall governed the extent of farming and settlement and therefore the boundary of the empire and the positioning of Roman forts. The location of the forts in *Syria* and *Arabia* closely related to the line of the 200mm isohyet. When forts were built in the desert, their location was determined by the position of oases or the presence of sub-surface water which could be reached by wells. The resulting pattern is rather different from that on a land or river frontier. The placing of a fort at an oasis not only had the advantage of ensuring that there was a water supply for the troops but also enabled the soldiers to supervise the civilians living there or using the oasis while travelling as well as denying its use by an enemy.⁶⁴



The desert fort of Qasr al-Bashir (Jordan).

There are considerable differences between desert frontiers. There are, however, two important constants, the extent of Roman rule related to the rainfall and to the area of cultivable land. On all desert frontiers, the distances between forts are larger than on the land and river frontiers of Europe which suggests that the lines of forts which can be drawn on a map do not relate to the same type of frontiers. A strong argument is that the forts constructed under Diocletian and later in Arabia were to protect travellers on the caravan route leading from the Red Sea northwards. Their construction followed the early Saracen raids and it remains possible that the forts

63 Breeze 2011a, 133-134.

64 Breeze 2011a, 118.

also protected the local provincials from such raids. There is evidence for increased agricultural production in several frontier areas which could have encouraged raiding.⁶⁵ We have desert frontiers in Syria, Arabia, Egypt, *Cyrenaica* and *Tripolitania*. In Arabia and in North Africa, outposts were established at considerable distances beyond the presumed frontier line, or rather beyond the main line or group of forts. In North Africa, these almost appear to be part of a continuous forward movement of the frontier in *Numidia* through the 2nd century into the early 3rd. This move, however, stopped in the early 3rd century after the actions of Severus. One purpose of his forts may have been to guard caravan routes into the empire, and this seems also to have been the situation in Arabia where the outposts sat astride routes into the province. The outposts there may have had an additional role of maintaining contact with people beyond the frontier. One unusual feature in both *Arabia* and *Numidia* was the use of legionaries to man forts and outposts. The reason for this is not known. It possibly reflects the relative lack of auxiliary troops in these provinces. Possibly the legionaries here were otherwise underemployed as there were few threats.⁶⁶

Military outpost near the quarries of *Mons Claudianus* in the Eastern Desert (Egypt).



Diocletian was at work on all frontiers, as demonstrated by the construction of forts in a new style of architecture. In North Africa, ironically, the last major threat came with an invasion from across the sea, by the Vandals who sacked Carthage in AD 439. Roman rule ended here and in the Near East with the Arab invasions of the 7th century.⁶⁷

5.1.5 SEA FRONTIERS

The ultimate frontier was the sea. Such a frontier was achieved in the West where Rome's armies reached the Atlantic in *Mauretania Tingitana*, Spain, Gaul and through much of Britain. Once the conquest of Spain and Gaul had been completed, these new provinces were largely demilitarized. Bringing the boundary of the empire to the sea accordingly had advantages in terms of stability and manpower. The sea offered

⁶⁵ Breeze 2011a, 132.

⁶⁶ Breeze 2011a, 132.

⁶⁷ Breeze 2011a, 132.

important lines of communication as well as cheaper transport than travel overland. Some scattered outposts of the empire were only reached by sea, including the cities and forts around the Black Sea.⁶⁸

The Romans may not at first have been sailors, but during the empire they developed their fleets to ensure that the seaways were as open as land routes as well as using them as part of the armoury of protection in the frontier lines. Rome was normally able to control activities within the Mediterranean basin, but the western seaboard was more difficult. Defensive measures were taken against attacks from Franks and Saxons, but, so far as we know, no proactive military expeditions were launched to stop the problem at the source.⁶⁹

The clearest evidence for the protection of a sea frontier lies within the pages of Arrian's *Circumnavigation of the Black Sea*, written in the 130s. Arrian describes the units based at four forts around the south-eastern edge of the Black Sea, and their purpose. One purpose of the forts would appear to have been to keep watch over the adjacent tribes. Arrian also describes the physical location of the forts, recording which river mouth each fort sat beside and guarded. He specifically mentioned pirates on the Black Sea and stated that they needed dealing with. This was particularly important because the north Black Sea coast provided corn for the army of *Cappadocia* and the supply lines needed guarding from pirates, who had previously been a threat in the region.

The forts running along the Black Sea coast eastwards from *Trapezus*/Trabzon had a dual role in that they faced both to sea in order to provide bases for the fleet seeking to keep the seaways open and protect traffic from pirates and inland to keep watch over the peoples of Colchis. After Arrian's governorship, the chain of forts was extended further round the eastern coast of the Black Sea. The forts along the southern and eastern fringes of the Black Sea were supported by the fleet based at *Trapezus*/Trabzon located at the north-east corner of the province of *Cappadocia*. Several forts are known between the Danube delta and the Crimea, some probably serving as fleet bases.⁷⁰

The roads from the Nile across the Eastern Desert and Red Sea Mountains reached the western coast of the Red Sea at several locations. Travellers along these routes were protected by soldiers based in fortlets. In AD 137, Hadrian created a new road, the *via Hadriana*. The construction of this road may have been intended to improve contact between the interior of the province of Egypt and the fleet at the Red Sea.⁷¹

At the western end of the empire, at the North Sea, piracy became a serious problem in the late 3rd century. A special command was created and given to Carausius. He had been given the responsibility throughout the Belgic and Amoric areas of clearing the sea, which was infested by Franks and Saxons. It is in this context that the forts of the Saxon Shore were constructed. This was a military command, consisting of a series of fortifications on both sides of the English Channel. Already in the 230s, several units had been withdrawn from the northern frontier and garrisoned at locations in the south, and had built new forts at Brancaster, Caister-on-Sea and Reculver. Dover was already fortified in the early 2nd century, and the other forts in this group were constructed in the period between the 270s and 290s.⁷²

68 Breeze 2011a, 146.

69 Breeze 2011a, 158.

70 Breeze 2011a, 148-152.

71 Breeze 2011a, 152.

72 Breeze 2011a, 153-158.