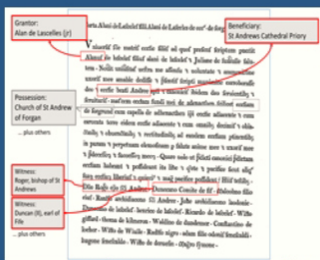


Band 10,2 (2024)

Prosopography in the Digital World



Person No. 8308

Personal

Name

Name Latin: C(ariu)s Iulius Maximus
Family Latin: C(ariu)s Iulius Maximus

Social

sex: male

Signature

Signature PAT: CIL 06, 08795 = CIL 06, 18020

Artifact

Date of inscription: 222-235 A.D.
Context (Funerary, Honorific, Dedicatory, Cession etc.):

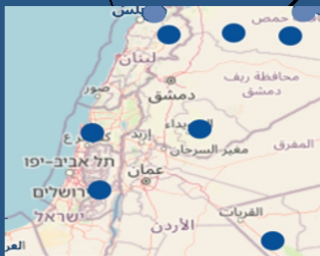
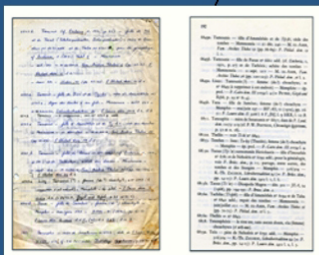
Affiliation and Remarks

Religious affiliation (religy): Deo Num(ino) Matag(bethi)
Other remarks: Salutes the emperor, Severus Alexander

Alphabetical Index for Aramaic H

590 Entries

h? y	1000
h? m?	1000
h? l	1000



Date of inscription: 222-235 A.D.

Search Results 8308

Name (Arabic)	Name (Greek)	Name (Latin)	Gender	Date of inscription	Religiosity (R)	Source (S)
h? y	h? y	h? y	Male	222-235 A.D.	Deo Num(ino) Matag(bethi)	1000
h? m?	h? m?	h? m?	Male	222-235 A.D.	Deo Num(ino) Matag(bethi)	1000
h? l	h? l	h? l	Male	222-235 A.D.	Deo Num(ino) Matag(bethi)	1000

Aramaic Name

Common names

h? y	Zenobia
h? m?	Odaynat, Odaynat, Odaynat, Odaynat
h? l	Zabab
h? m?	Ward
h? y	Yayabab, Yazabab, Yazabab, Yazabab
h? m?	Ogeyab, Ogeyab, Ogeyab, Ogeyab, Ogeyab, Ogeyab
h? l	Seabab, Seabab, Seabab, Seabab
h? m?	Makab, Makab, Makab, Makab
h? y	Hayabab, Hayabab, Hayabab, Hayabab
h? m?	Mogeyab, Mogeyab, Mogeyab, Mogeyab
h? l	Hageyab, Hageyab, Hageyab, Hageyab
h? m?	Yayabab, Yayabab, Yayabab, Yayabab
h? y	Aggab, Aggab
h? m?	Belhazy, Belhazy
h? l	Beahazy, Beahazy, Beahazy

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Foreword: Prosopography in the Digital World

Peter Freiherr von Danckelman

Note of Thanks

This small volume is the result of a workshop hosted in the Lambertussaal, Oldenburg, in June 2023. The editor is most grateful to the Deutsche Forschungsgemeinschaft (DFG) for funding the entire project as part of the *Prosopographia Palmyrena* Project¹, as well as to the Kirchengemeinde Oldenburg for its kind hospitality and to the editors of *Digital Classics Online* for the opportunity to publish the contributions in this journal as a thematic issue. Last but not least, the editor is grateful to all participants of the workshop.

Aims of the Thematic Issue

The workshop – and the papers resulting from it – were planned as a guide to the development and usage of a database in digital prosopography with several goals in mind:

- To gain an overview of how long-established projects can be digitized and then continued.
- To convey the benefits that ‘going digital’ offers to prosopography.
- To include technical papers that shall act as guidance ropes for non-technical academics who are in the process of either proposing or already building a digital, database-based project.

For this purpose, each contribution to this volume fills a niche:

Yanne Broux offers insight into the longest-standing and most complex digital attestation system currently in use within the field, *Trismegistos*. Eivind Heladaas Seland demonstrates how classical prosopography still benefits the field when applied to the merchant families who connected Palmyra and its trading partners in Mesopotamia. Peter von Danckelman aims to demonstrate how a dataset can be pre-structured and later analyzed through digital methods. Jerome Agater has been tasked with a paper to demonstrate his innovative approach to compiling, hosting, and accessing a small yet multilingual database. John Bradley compiles his decades worth of experience in working with digital database projects to guide non-technical academics through some of the most challenging waters of database construction.

1 <https://palmyra.uol.de/> (consulted 11.11.2024).

Achievements of the Thematic Issue

The papers in this volume offer an insight into the benefits of database construction: They are the most accessible platform for accomplished scholars, students, and the general public, meaning that any research published in this way has the possibility to be widely recognized not only by specialists but also by students and the interested public. Accessibility, however, also has its downsides. The search engine used to access the data must have all measures of access, ranging from dating and names to occupations or the reference numbers of major editions. This should always be kept in mind when compiling the dataset in the first place. Another limiting factor is the cross-referencing between literature and on-line databases: Any potential benefit to database accessibility is ultimately limited by the amount of reference it achieves. A student researching a topic in a ten or even five-year-old handbook might well never be made aware of the existence of a database. Databases, on the other hand, do have the potential to be upgraded – both for correction and expansion of the dataset but also to keep up to date with changes in technology. This, however, is also their major drawback: Extensive databases need to be constantly supported by technical staff to ensure they remain accessible and up to date. For smaller databases, the less resource-intensive approach used by Jerome Agater for the *Prosopographia Palmyrena* Database might remedy some of those problems, making databases more viable for smaller projects.

Possibilities of AI-Usage for Prosopography

One of the big questions of our time is how the increasing use of artificial intelligence and ‘chatbots’ like *ChatGPT* might influence prosopography, database construction and database use.

For prosopography in general, the use of AI has obvious benefits: With correct restrictions and guidelines (‘prompts’), even a publicly accessible chatbot-AI should be able to search a given, already digitized dataset for names, dates, titles, abbreviations, etc. While such an effort would of course have to be cross-checked by human eyes and will always remain flawed to a certain degree, a lot of the time and effort necessary for compiling a dataset could be significantly reduced by AI. This does not mean, however, that the field of prosopography is at risk to be outsourced to AI completely in the foreseeable future. A chatbot is only as good as the width of data that it relies on and the prompts that require its output.

The current state of easily accessible chatbots can be readily tested for their ability to perform the extraction of attestation-level data: names, family members and titles. Given the popularity of the platform and its likely usage by students and members of the public, the platform of choice shall be *ChatGPT-4.0*.² For this little experiment, the inscription of choice shall be the first few lines of the Palmyrene tariff law.³ In a first test, the Greek version of the first four lines of the text shall be provided, coupled with the prompt.

Experiment One: *ChatGPT* and a Greek Text

Prompt: “Please extract the names of all persons in this inscription and list them with the names of their parents and grandparents. Also state their offices, titles or other occupations.”

[Ἔτο]υς ημῶν, μηνὸς Σανδικοῦ ιη΄. Δόγμα βουλῆς. Ἐπὶ Βωννέους Βωννέους τοῦ Αἰράνου προέδρου Ἀλεξάνδρου Ἀλεξάνδρου τοῦ Φιλοπάτορος γραμματέως βουλῆς καὶ δήμου, Μαλίκου

2 <https://chat.openai.com/> (consulted 21.04.2025).

3 PAT 0259.

Ὀλαιοῦς καὶ Ζεβεΐδου Νεσᾶ ἀρχόντων, βουλῆ[ς] νομίμον ἀγομένης, ἐψηφίσθη τὰ ὑποτεταγμένα...⁴

The answer of *ChatGPT-4.0* is as follows:⁵

“Here is a structured extraction of the names, including parentage and official titles, based on the Greek inscription provided:

1. Βωννέως Βωννέως τοῦ Αἰράνου

- **Name:** Βωννέως (Bonneus)
- **Father:** Βωννέως (Bonneus)
- **Grandfather:** Αἰράνης (Airanes)
- **Office/Title:** πρόεδρος (President, likely of the council)

2. Ἀλέξανδρος Ἀλέξανδρος τοῦ Φιλοπάτορος

- **Name:** Ἀλέξανδρος (Alexander)
- **Father:** Ἀλέξανδρος (Alexander)
- **Grandfather:** Φιλόπατωρ (Philopator)
- **Occupation:** γραμματεὺς βουλῆς καὶ δήμου (secretary of the council and the people)

3. Μαλίχος Ὀλαιοῦς

- **Name:** Μαλίχος (Malichus)
- **Father:** Ὀλαιοῦς (Olaios)
- **Grandfather:** *Not mentioned*
- **Office/Title:** ἄρχων (archon, magistrate)

4. Ζεβεΐδος Νεσᾶ

- **Name:** Ζεβεΐδος (Zebeidos)
- **Father:** Νεσᾶς (Nesas)
- **Grandfather:** *Not mentioned*
- **Office/Title:** ἄρχων (archon, magistrate)”

Even if caution is still required and the documentation of chatbot responses remains a challenge (especially since the platform – at least for unregistered users – does not yet allow direct links to individual conversations), the use of chatbots to pre-check epigraphic texts in their original language already seems to be a viable option.

Additionally, a standardized method for referencing chatbot responses should be developed, as current practices are limited to approaches like the one used in this work (citing the model, timestamp,

4 Greek text after PAT 0259.

5 ChatGPT-4.0, 21.04.2025.

prompt, and response). For shorter conversations, saving and publishing screenshots – as demonstrated below – could serve as a viable alternative.

Experiment Two: *ChatGPT* Using an English Translation of the Same Text

To further test the capabilities of *ChatGPT-4.0*, a second experiment shall be performed by using not the Greek text, but the English translation from Matthews,⁶ keeping the same prompt: “Please extract the names of all persons in this inscription and list them with the names of their parents and grandparents. Also state their offices, titles or other occupations.”

“In the year 448, on the 8th of the month Xandikos. Decree of the Council. In the presidency of Bonnes, son of Bonnes, son of Hairanos, the secretary of the council and people being Alexandros, son of Alexandros, son of Philopator, in the magistracies of Malichos, son of Olaies, and Zebeidas son of Nesa, at a statutory meeting of the council...”

“Sure! Here’s a structured extraction of the names, along with their parentage and any mentioned offices, titles, or occupations:

1. Bonnes

- **Father:** Bonnes
- **Grandfather:** Hairanos
- **Office/Title:** President of the Council (held the presidency during the decree)

2. Alexandros

- **Father:** Alexandros
- **Grandfather:** Philopator
- **Office/Title:** Secretary of the Council and People

3. Malichos

- **Father:** Olaies
- **Office/Title:** Magistrate

4. Zebeidas

- **Father:** Nesa
- **Office/Title:** Magistrate

Let me know if you want the names transliterated into Greek or Latin forms, or if you’d like help placing them in a historical or regional context.”

While using the English language, the chatbot performed similar to its performance in Greek: It correctly identified the magistrates, their titles, and their families. The conclusion is clear: If the chatbot knows the language in question well and / or the translation is reliable, *ChatGPT-4.0* can perform basic text-based prosopographic research up to the attestation level. Apparently, a suitably critical mass

6 Matthews (1984), 174.

of material for classical languages has been reached by AI chatbots, meaning that now not only specially trained deep neuronal networks like the *Ithaca*-Project for reconstructing Greek inscriptions⁷ can work reliably with classical languages, but publicly accessible AI's have reached this threshold as well. It should be possible to train an AI network to the same language competence and then task it not with text reconstruction but with the extraction of attestation level information.

Given its automated nature, such an AI chatbot should be able to sort and classify data into a pre-sorted data collection, that only would have to be re-checked and corrected, but not wholly re-entered by humans less laborious. Since there is a wealth of both epigraphical and literary sources in Latin to train an AI with, the first field where this could be applied would be a prosopography of the Latin inscriptions – even more so since the required material has already been digitized and can be accessed via two large databases.⁸

Since the ability of an AI to perform its function is largely based on the scale of material it can be trained with, such an approach might not only be viable for the Greek language, but certain languages known in large quantities from cuneiform archives in ancient Mesopotamia as well. Other languages or dialects like Palmyrene Aramaic or Phoenician have a much narrower 'training ground' for AI and will therefore most likely remain inaccessible to such automation, at least for the time being.

The success of English language extraction suggests that *ChatGPT* should already be capable of performing attestation level data assembly, when it is working with the translations of ancient historians into modern languages. To test this hypothesis, *ChatGPT-4.0* shall be tasked with attestation-level prosopography once more, while using an outdated, yet internet-accessible translation of Caesar's *Gallic War*.

Experiment Three: *ChatGPT* Using a Translated Excerpt of a Literary Text

Prompt: "Extract the names, military and civil functions or titles and allegiances for all persons mentioned in this text."

"Caes. Gall. 8,48: Caius Volusenus Quadratus was appointed commander of the horse under Antonius, to winter with him: Antonius sent him in pursuit of the enemy's cavalry; now Volusenus added to that valor which was pre-eminent in him, a great aversion to Comius, on which account he executed the more willingly the orders which he received. Having, therefore, laid ambushes, he had several encounters with his cavalry and came off successful. At last, when a violent contest ensued, and Volusenus, through eagerness to intercept Comius, had obstinately pursued him with a small party; and Comius had, by the rapidity of his flight, drawn Volusenus to a considerable distance from his troops, he, on a sudden, appealed to the honor of all about him for assistance not to suffer the wound, which he had perfidiously received, to go without vengeance; and, wheeling his horse about, rode unguardedly before the rest up to the commander. All his horse following his example, made a few of our men turn their backs and pursued them. Comius, clapping spurs to his horse, rode up to Volusenus, and, pointing his lance, pierced him in the thigh with great force. When their commander was wounded, our men no longer hesitated to make resistance, and, facing about, beat back the enemy. When this occurred, several of the enemy, repulsed by the great impetuosity of our men, were wounded, and some were trampled to death in striving to escape, and some were made prisoners. Their general escaped this misfortune by the swiftness of his horse. Our commander, being severely wounded, so much so that he appeared to run the risk of losing his life, was carried back to the camp. But Comius, having either gratified his resentment, or, because he had lost the greatest part of his followers, sent ambassadors to Antonius, and assured him that he would give hostages as a secu-

7 <https://ithaca.deepmind.com/> (consulted 09.01.2024).

8 The first database is the *Epigraphische Datenbank Heidelberg* (<https://edh.ub.uni-heidelberg.de/home?lang=de> [consulted 09.01.2024]), the second one is the project by Claus and Slaby (<http://www.manfredclaus.de/> [consulted 09.01.2024]).

city that he would go wherever Antonius should prescribe, and would comply with his orders, and only entreated that this concession should be made to his fears, that he should not be obliged to go into the presence of any Roman. As Antonius judged that his request originated in a just apprehension, he indulged him in it and accepted his hostages. Caesar, I know, has made a separate commentary of each year's transactions, which I have not thought it necessary for me to do, because the following year, in which Lucius Paulus and Caius Marcellus were consuls [50 B. C.], produced no remarkable occurrences in Gaul. But that no person may be left in ignorance of the place where Caesar and his army were at that time, have thought proper to write a few words in addition to this commentary.”⁹

The answer of the chatbot is as follows:

“Here is a structured extraction of all **persons**, their **military or civil titles/functions**, and **allegiances** mentioned in the passage from Caesar, *Bellum Gallicum* 8.48.1:

1. Caius Volusenus Quadratus

- **Military Function/Title:**
 - Commander of the horse (cavalry)
- **Appointed by:** Antonius
- **Allegiance:** Roman (supporter/subordinate of Antonius and thus of the Roman Republic)
- **Notable Detail:** Severely wounded in combat with Comius

2. Antonius (likely Titus Labienus or Marcus Antonius, contextually uncertain here)

- **Military Function/Title:**
 - Senior Roman officer or legate (*legatus*) in Gaul
- **Allegiance:** Roman (acting on behalf of Caesar)
- **Actions:**
 - Appointed Volusenus as cavalry commander
 - Accepted hostages from Comius
 - Granted Comius the concession not to appear before any Roman

3. Comius

- **Military Function/Title:**
 - Commander of enemy cavalry
 - General (referred to as “their general”)
- **Allegiance:** Gallic (leader of anti-Roman forces, possibly Atrebates or another Belgic tribe)

9 McDevitte / Bohn (1869): W.A. McDevitte / W.S. Bohn (Edd. / Transl.): Caesar's Gallic War. 1st Edition, New York 1869, retrieved from Perseus: <https://www.perseus.tufts.edu/hopper/text?doc=Perseus%3atext%3a1999.02.0001> (consulted 09.01.2024.).

- **Notable Details:**

- Personally wounded Volusenus
- Later sent envoys to Antonius offering hostages
- Requested not to appear before any Roman

4. Lucius Paulus

- **Civil Function/Title:**

- Consul of the Roman Republic in 50 B.C.

- **Allegiance:** Roman

5. Caius Marcellus

- **Civil Function/Title:**

- Consul of the Roman Republic in 50 B.C.

- **Allegiance:** Roman

6. Caesar (Gaius Julius Caesar)

- **Military and Civil Function/Title:**

- Proconsul of Gaul
- Commander-in-chief of the Roman forces in Gaul
- Author of the commentaries

- **Allegiance:** Roman (leader of the campaign)

Let me know if you'd like a Latin-to-English name concordance or help mapping these figures to broader historical contexts (like Comius' earlier alliance with Caesar)."

Given the high accuracy of *ChatGPT* in this endeavor, AI seems to be a useful tool if the source-material for a prosopography is already available in translated, online-accessible formats. While the AI should not be trusted to perform with peer-reviewed levels of accuracy out of the box, an AI might be very helpful to give scholars a first glance at the scale of a project: How many persons might there be in each book or chapter? Are there any indications of multiple testimony for certain persons? How much time, space and resources should therefore be allocated to said section? AI-enhanced prosopography might also be a key tool for non-classical fields such as contemporary history, where the (already digitized) source-material is even more plentiful,¹⁰ yet the available resources prevent the compilation of even a rudimentary prosopography.

10 Databases that could be used are plentiful – from large, crowd-based projects such as *The Internet Archive* (<https://archive.org/>, consulted 21.04.2025), digital collections of large libraries (such as those from the Staatsbibliothek Berlin, <https://digital.staatsbibliothek-berlin.de/>, consulted 21.04.2025) to the archives of major news outlets (e.g. the online-archive of the German outlet *Der Spiegel*: <https://www.spiegel.de/spiegel/print/index-1947.html>, consulted 21.04.2025).

AI as an Aid to Database Usage

The next aspect of possible AI usage would be the use of an AI to aid the accessibility to large databases like the proposed prosopography of the Roman Latin inscriptions. An AI chatbot might be a useful tool to aid a search process: In addition to using a traditional search system based on single fields for entries like name, date, inscription, region or occupation, an AI chatbot should be able to deliver much more precise answers, such as: “How many persons named Gaius Iulius Bibius lived in the city of Carthage between 200 and 300 AD?” Such an approach might save the experienced database-researcher not much time, but it could aid students and members of the public in their search for information – especially so since they should be able to just enter some parts from a publication and the engine should, in theory, be able to search the databases for them. This approach could benefit both existing databases as well as those that are to be set up in the future. Future database construction might want to think about the incorporation of AI-aided searches from the get-go or incorporate methods to make the database easily searchable by external AI engines.

Abbreviations

PAT: D. R. Hillers / Eleonora Cussini, Palmyrene Aramaic Texts, Baltimore / London 1996.

Sources

Online Sources

Prosopographia Palmyrena: <https://palmyra.uol.de/> (consulted 11.11.2024).

Epigraphische Datenbank Clauss-Slaby: <http://www.manfredclaus.de/> (consulted 09.01.2024).

Project Ithaca: <https://ithaca.deepmind.com/> (consulted 09.01.2024).

Epigraphische Datenbank Heidelberg: <https://edh.ub.uni-heidelberg.de/home?lang=de> (consulted 09.01.2024).

The Internet Archive (<https://archive.org/>, consulted 21.04.2025).

Staatsbibliothek Berlin (<https://digital.staatsbibliothek-berlin.de/>, consulted 21.04.2025).

ChatGPT: <https://chat.openai.com/> (consulted 21.04.2025).

Perseus Digital Library: www.perseus.tufts.edu/ (consulted 09.01.2024).

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Text Editions

PAT: D. R. Hillers / Eleonora Cussini, Palmyrene Aramaic Texts, Baltimore / London 1996.

McDevitte / Bohn (1869): W. A. McDevitte / W. S. Bohn (Edd. / Transl.): Caesar's Gallic War. 1st Edition, New York 1869, retrieved from Perseus: <https://www.perseus.tufts.edu/hopper/text?doc=Perseus%3atext%3a1999.02.0001> (consulted 09.01.2024.)

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Matthews (1984): J. F. Matthews, The Tax Law of Palmyra. Evidence for Economic History in a City of the Roman East, in: The Journal of Roman Studies 74 (1984), 157–180.

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Cooperation of Databases: Are We on the Way to a Single Prosopography of the Ancient World?

Yanne Broux

Abstract: This paper gives an overview of the history of prosopographical projects at KU Leuven, starting with the *Prosopographia Ptolemaica* in the interbellum, its successor *Trismegistos People*, and *Trismegistos*' newest feature, the *Names in the Ancient World* portal. It presents the evolving database models that were adapted to accommodate new types of data, touches upon the question of the prosopographical nature of these resources, and explains *Trismegistos*' stance on the feasibility of a single prosopography of the ancient world.

Introduction

TM People, the onomastic-prosopographic section of the *Trismegistos* portal (*TM*)¹, has long been a collection focusing on Egypt. This is in the first place the result of Leuven's long papyrological tradition. As a direct continuation of the *Prosopographia Ptolemaica* (*PP*), it can boast a ripe age of some 80 years now. During its long history, this project stood at the forefront of methodological innovations, from the breaking down of interdisciplinary walls imposed by languages and source types to the leap to a digital corpus. With the advent of *TM People*, the initial chronological boundaries of the *PP* were pushed out to encompass the entire Late, Hellenistic, Roman, Late Roman, Byzantine and Arab periods up until the disappearance of Greek as a written language, thus paving the way for large-scale diachronic analyses. The ever-growing relational complexity of this database also proved a fruitful playground for experimenting with novel digital methods such as network analysis. In the past years, the first steps have also been set outside Egypt, resulting in the new *Names in the Ancient World* interface. This and other developments have led scholars to ask whether the time is ripe for a single prosopography of the ancient world. In this paper, the long history of the onomastic-prosopographic endeavors in Leuven is sketched, focusing on aspects of data collection and data modeling. It concludes with a section how we see the future of prosopographic databases.

The *Prosopographia Ptolemaica*

The *PP*'s Scope

The history of *TM People* goes back a long way. The first seeds were planted during the interbellum, when Willy Peremans wrote on the relations between foreigners and Egyptians in the early Ptolemaic period.² He realized that such a subject in fact required a comprehensive collection of all people living

1 www.trismegistos.org (consulted 17.04.2025).

2 Peremans (1937).

in the Ptolemaic territories. This idea was in itself nothing novel, as the first editions of the *Prosopographia Imperii Romani* (PIR) and the *Prosopographia Attica* had been completed in 1898 and 1903 respectively, for example.³ What was truly innovative, however, was Peremans' insight that the increasing disciplinary fragmentation was not conducive to this effort. Therefore, as in PIR, all genres of sources were to be taken into consideration: literary as well as documentary, including not only the papyri and ostraca so typical of Egypt, but also inscriptions. More importantly, despite his training as a classicist and historian only, not as an Egyptologist, Peremans insisted on including data from sources written in the indigenous Egyptian language, and not just from Greek sources, which are much better represented in publications, even up until today.⁴

The design of the *Prosopographia Ptolemaica* was ambitious from the start. As stated in the preface to volume 1, a total of four thematic volumes were planned,⁵ in which individuals would be collected according to their principal activities, mentioned explicitly in a source or derived from the context:⁶

1. Civic / financial administration
2. Army & police
3. Clergy
4. Law (judges and notaries), professional and artisanal occupations.

From volume 5 onward, all individuals without a clear indication of a title, occupation, or trade (collectively coined 'functions') would be listed, with only an alphabetical classification.⁷

In the end, however, six thematic volumes would appear instead of just four:

1. Civic / financial administration (1950)
2. Army and police (1952)
3. Clergy, notaries and tribunals (1956)
4. Agriculture and animal husbandry (1959)
5. Trade and industry; transportation; household staff (1963)
6. Royal court; international relations; overseas territories; cultural life (1968).

In volumes 5 and 6, individuals without explicit functions were sometimes also included, since slaves, members of the royal court, and people involved in international relationships were not (always) 'pro-

3 Klebs et al. (1897–1898); Kirchner (1901–1903).

4 In his reevaluation of the subject in 1987, after the publication of the six thematic volumes of the *PP* (see below), Peremans remained cautious about its representativeness, stating that "... the problem [i.e. the relations between foreigners and Egyptians] was not yet ripe for a definitive treatment. After all, the available documentation at this time is still too one-sided Greek. The Egyptian sources, both hieroglyphic and demotic, which according to some are just as numerous as the Greek, still remain for a large part unpublished"; Peremans (1987), 5.

5 In an earlier announcement of the undertaking, only three volumes were envisaged; Peremans (1946).

6 Peremans / Van 't Dack (1950), xiv. In the preface to volume 2, it was further specified that people mentioned in literary sources without a title are only included if their title is confirmed in a non-literary source. If, in a non-literary source, a person has no title, s/he is not included in the first volumes; Peremans / Van 't Dack (1952), xix.

7 Peremans / Van 't Dack (1950), xiv.

professionals' but are nonetheless important to present a more complete basis for domestic and institutional studies.⁸ Volume 6 for the first time includes persons whose names were lost *in lacuna*.⁹

Four more volumes were published over subsequent decades:

7. Alphabetical index of names to vol. 1–6 (1975)
8. Addenda and corrigenda to vol. 1–2 (1975)
9. Addenda and corrigenda to vol. 3 (1981)
10. Foreign ethnics (2002).

No addenda and corrigenda to volumes 4–6 were published in book form, since by the mid 1980s the transfer to a digital environment was in full swing (see below). For the same reason, the originally scheduled alphabetical volumes listing all attested individuals without a clear function never materialized. Even so, there were still intentions to publish parts of the original second phase of the *PP* (persons without functions) in book form, although not necessarily in alphabetical order, since such an ordering was by then already possible in the digital files. At least three books were planned: the only one that materialized was the final volume 10, however.¹⁰

The Age of Index Cards

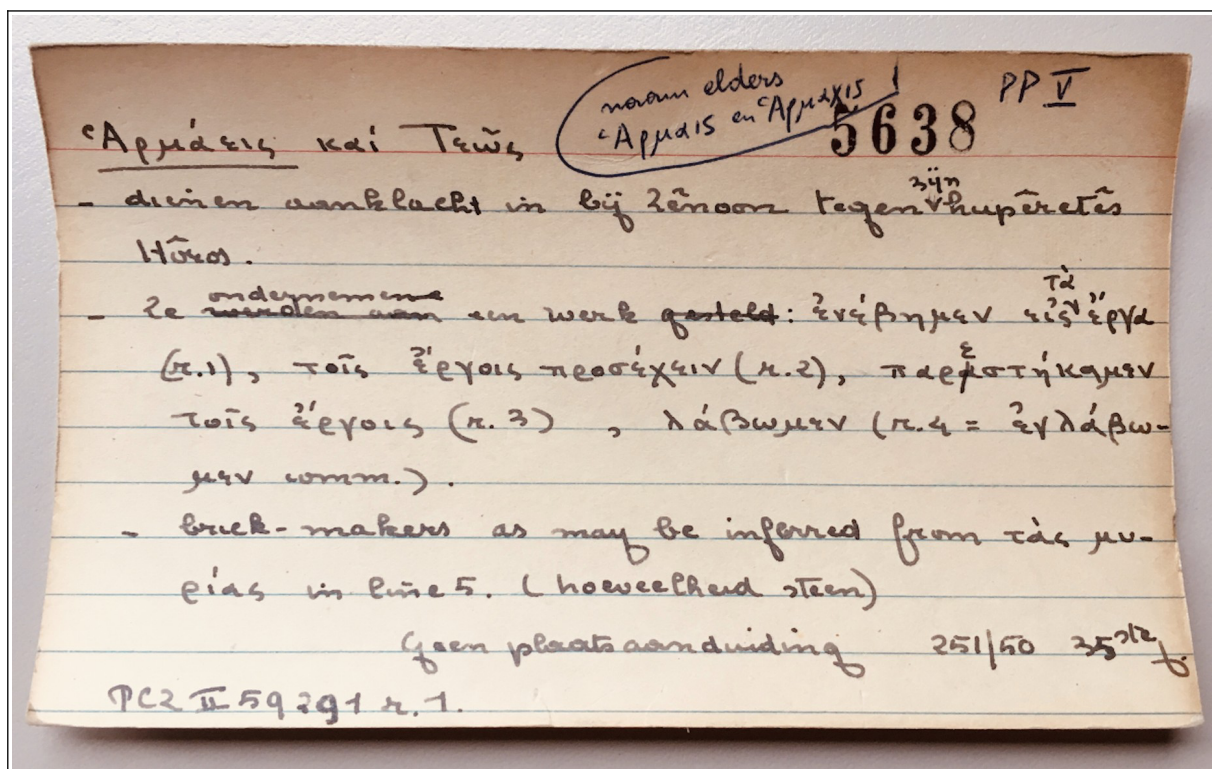


Fig. 1: Index card of Harmais and Teos in TM 935 1. 1.

8 Peremans / Van 't Dack (1968), xii–xiii.

9 Peremans / Van 't Dack (1968), xlvii.

10 Clarysse et al. (2002), xxiii–xxv.

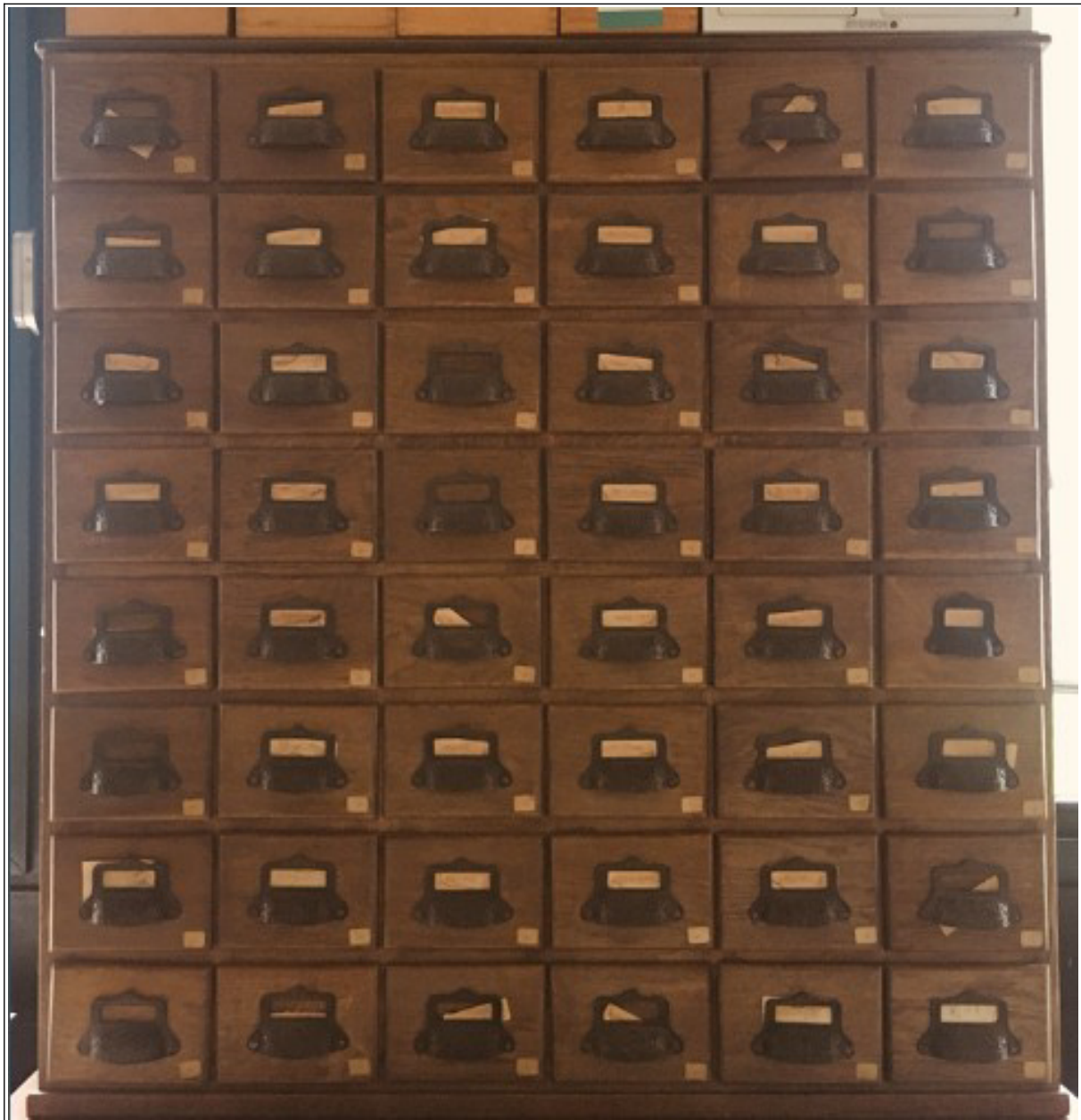


Fig. 2: The filing cabinet containing the original *PP* index cards.

During the first four decades, information pertaining to subjects of the Ptolemaic empire was collected on index cards (fig. 1). To this day, these cards are still kept in the original filing cabinet at the department of ancient history in Leuven (fig. 2), where they are organized alphabetically. Each attestation of a person was recorded on a separate card with a reference to the source text. Each card is stamped with a unique number (not used in the books), the precursor of the *TM* reference ID (for which see below). The name of the person was always converted to the nominative, patronymics were kept in the genitive. Although people mentioned in texts written in Egyptian were included, their names were nonetheless transliterated into Greek if a Hellenized variant was known. Otherwise, a standardized transcription was given.¹¹ If an explicit function was mentioned, it was added in the original language; functions derived from the context were marked as such, e.g. for Harmais and Teos in *TM* 935 l. 1, for which the index card reads “brick-makers as can be inferred from τὰς μυρίας in line 5 (amount of stone)” (fig. 1). The role of the person in the text was described; in fig. 1, for example, it is said of Harmais and Teos that they “ondernemen een werk” (“they undertake work”), with references to the

11 Peremans / Van 't Dack (1950), xv; further elaborated in Peremans / Van 't Dack (1956), vii–viii.

Greek text and line numbers that describe this role. An indication of the provenance and date of the individual was also added.

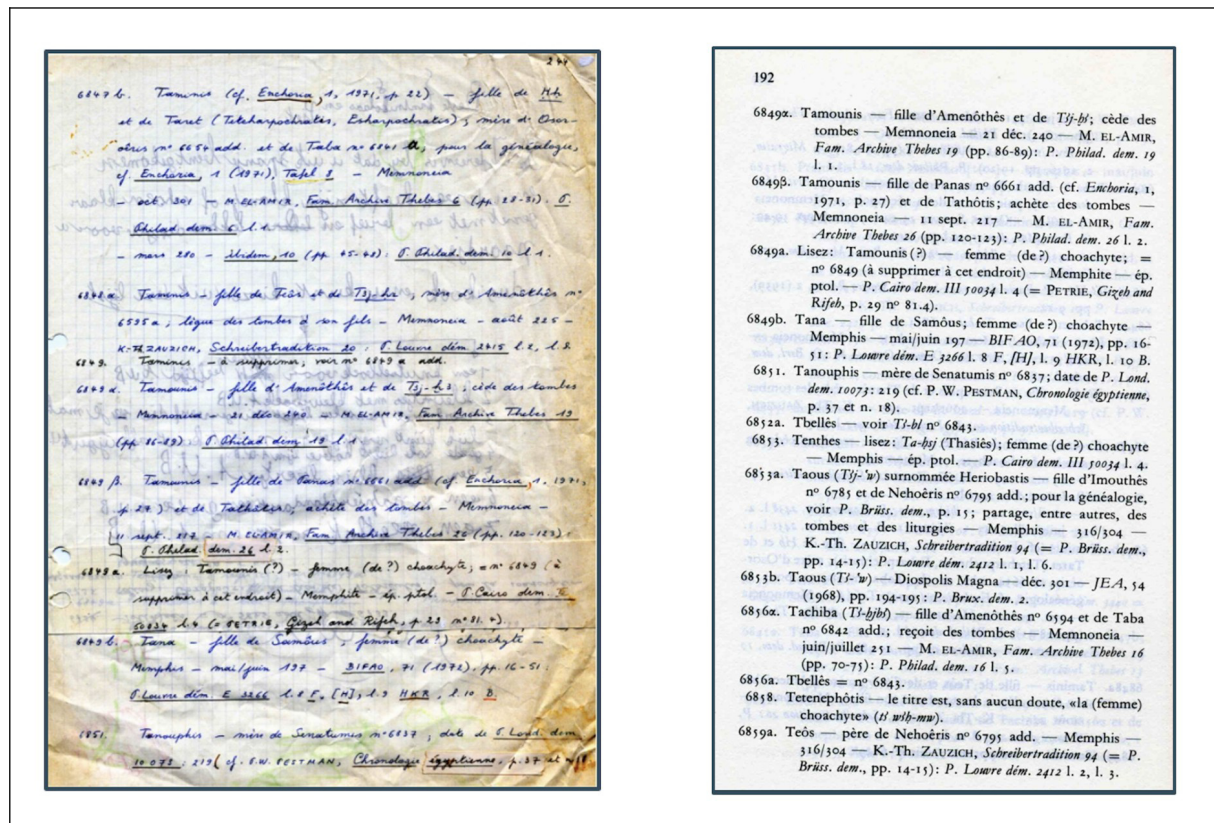


Fig. 3a–b: Manuscript and corresponding published page of *PP* volume 9.

The *PP* never received structural or project funding – the latter was inexistent in Leuven in those days. The majority of the index cards were prepared by Edmond Van 't Dack, Peremans' closest collaborator. Work was often carried out in light of the research of department members, e.g. Jozef IJsewijn, Willy Clarysse, Hans Hauben, and Leon Mooren. The fact that Peremans and van 't Dack were not able to read Egyptian caused a minor problem in volume 2 on the army, where they grouped the Egyptian titles together under the header 'officiers portant divers autres titres' (nos. 2110–2144), but actually these all refer to the same demotic title *mr-mš*.¹² For the third volume, which deals with the clergy, the demotic and hieroglyphic documentation is far more prominent and here an Egyptologist was needed. This task was fulfilled by Herman De Meulenaere, who did a pioneer's work by sifting out the Ptolemaic hieroglyphic monuments from other Late Period texts and proposed French translations for the wealth of hieroglyphic titles.¹³

The index cards were then used to compile handwritten manuscripts (fig. 3a, written by Willy Clarysse) in preparation of the printed volumes (fig. 3b). During this stage, people were grouped alphabetically per function. Numbers were given to each person in a specific function (= 'PP number'). People with more than one function are therefore listed under different sections, or even in different volumes. Thus Artemidoros, who is listed as a *chiliarchos* with the ethnic *Ephesios* to whom a *kleros* is assigned in 251 BC,¹⁴ appears in volume 2 (Army and police) under PP 2291, in volume 4 (Agriculture and animal husbandry) under PP 9151, and in volume 10 (Foreign ethnics) under PP E586.¹⁴ Cross-references to other entries of the same individuals are provided through their *PP* numbers (see,

¹² Information provided by Willy Clarysse.

¹³ TM 2135 l. 12.

¹⁴ In volume 10, all numbers are preceded by an 'E' to indicate that they refer to ethnics.

for example, PP 6856a in fig. 3b), as well as to known family members (e.g. PP 6849β in fig. 3b). Because the order within each function / section is alphabetical, letters were appended to the numbers of new individuals because of last-minute additions or when a volume was re-edited, e.g. PP 4325a. The PP numbers are therefore not entirely meaningless identifiers. The collaborators tried to identify homonymous officials as much as possible, but in general the best they could do was collect all the data and classify them in a clear way, so that other scholars could use the *PP* in attempts at identification.¹⁵

The Dawn of Databases

After publishing the addenda and corrigenda to volume 3 in 1981, Willy Clarysse, encouraged by his computer-savvy son Jeroen, convinced his Leuven colleagues to start with ‘the automatization’ of the *PP*. By then, collaborators had filed over 100,000 index cards, and they were becoming rather difficult to manage.¹⁶ They realized that transferring the data to a digital environment (a concept not yet used at that time though) would not only facilitate the organization and retrieval of data, but they immediately saw the potential for quantitative analysis as well.¹⁷ As an early adopter of modern technology, the *PP* was thus somewhat of a pioneer in ancient history, although certainly not the only one.¹⁸

The initial stages were a bumpy ride, as it took some time to find a suitable operating and database management system, and to deal with the different scripts and thus character sets (this was long before the emergence of the *Unicode* standard!). In the end, they settled on *Filemaker Pro* on a *Macintosh* computer, as it was fast, user friendly, and was designed to facilitate online publishing of the data, which was a rather futuristic motive at that time.¹⁹ Over the next twenty years, data from the printed volumes, as well as new data, often generated by young collaborators for their doctoral dissertation, were added to the database.²⁰ In 2002, at the time *PP X* was published, it incorporated everything from the printed volumes, augmented with all individuals known from the *Zenon archive*, along with a selection attested in Pathyris and the Fayum region.²¹

With the creation of the digital version, the plan was to publish new and revised data on CD-ROM, a plan that was never carried out due to the rise of the internet. Unfortunately, no one who is still around in Leuven today really remembers when the *PP* was launched on the WWW: a report of a meeting held on August 8 1995 states that Jeroen Clarysse had performed quite some work over the summer in order to make the *PP* available online.²² Consulting the TEX table (see below for the *PP*’s database structure) would present no problems as it was in English,²³ but other tables contained Greek and demotic, which would be rendered in Latin transliterations, thus hindering findability, but that was a problem “that would solve itself in a few years”, according to the report. According to Jeroen, the *PP* would thus become “the first serious database on the internet, worldwide, a piece of technology that is

15 Peremans / Van ’t Dack (1950), xvi; the matter is also treated in Peremans / Van ’t Dack (1963) V, xxxvi–xxxix and Peremans / Van ’t Dack (1968), xlv–xlvi.

16 Mooren (2001), 995.

17 Mooren (2001), 995–996.

18 The *Lexicon of Greek Personal Names*, for example, started using computerized files in the late 1970s, but solely to produce camera-ready copies for their publications; true digitization in the form of a database started around the same time as the *PP* in the mid 80s; Matthews / Rahtz (2013).

19 Mooren (2001), 996.

20 An overview of the progress around 1998 is given in Mooren (2001), 999–1000.

21 Clarysse et al. (2002), xxiii.

22 Generously provided by Willy Clarysse.

23 Switching from the French of the first nine volumes to English was a deliberate choice in anticipation of linking to other digital projects such as the *Lexicon of Greek Personal Names*: Mooren (2001), 999.

certainly appreciated by specialists”. However, the report does not provide a scheduled date for the launch.

When searching for the *PP* homepage (prospitol.arts.kuleuven.ac.be [consulted 17.04.2025]) on the *Internet Archive Wayback Machine* (archive.org/web [consulted 17.04.2025]), the page first appears on January 25 2002. This still seems to be a test page, however, as it merely says “dit is de pp” (“this is the pp”), followed by a list of the database’s tables. By November 30 2002, the database was finally alive: the *Wayback Machine* shows a homepage with a menu consisting of four sections: ‘Introduction’, ‘Search’, ‘Help’ and ‘Contact’. The search page provides some concise tips and links to the searchable tables; fig. 4 is a screenshot of the search interface of the Person table captured by the *Wayback Machine* for December 15 2002.

Fig. 4: The online search interface of the *PP*'s *Person* table (December 15 2002).²⁴

In the end, the online database was not published through Filemaker, as originally envisaged in Mooren's automatization report. With the help of Jeroen Clarysse and Bart Van Beek, a SQL database that mirrored the tables of the Filemaker structure was set up.

²⁴ web.archive.org/web/20040805093759fw_/http://prospitol.arts.kuleuven.ac.be/index_s.html (consulted 17.04.2025) and then go to 'if you want to search for people, start from per'.

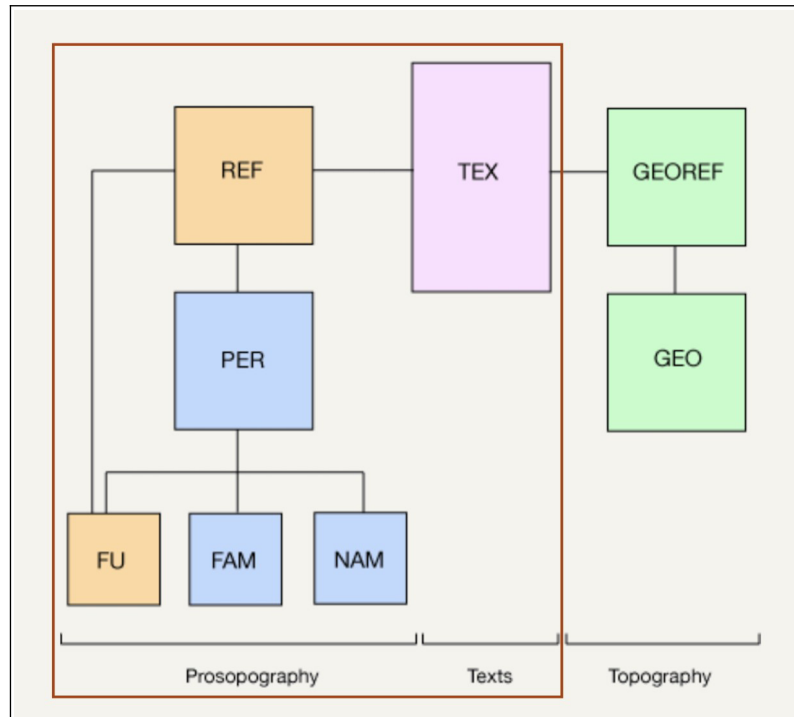
The *PP*'s Database Structure

Fig. 5: The structure of the *PP* Filemaker database.

The *PP* database originally consisted of six related tables (see the boxed-in section in fig. 5):²⁵

TextFile (shortened to *Tex*): the table listing all texts, in any language and on any writing surface, from Ptolemaic Egypt, with information about the language, date, provenance, archive, earlier editions, bibliography, etc. Each text received a unique identifier in the form of the standard edition, e.g. BGU I 1, called the *Tref* in the 1995 report. In 1998, it contained 9,001 entries.

ReferenceFile (*Ref*): the table listing all attestations of persons, indicating the passage in the text where the person is mentioned (to which the *Ref* record was linked through the *Tref* identifier); his name in the nominative form of the original language; functions or ethnics where applicable; and the place and date of activity. The *Per* identifier was added, as well as the *PP* numbers to facilitate retrieval of the corresponding entries in the printed volumes. In 1998, it contained 32,588 entries.

PersonFile (*Per*): the table listing a single record for each individual, where the information provided in his *Ref* files was summarized. Names were converted to a standard form here, on the basis of the *Nam* files (for which see below). Each person received a single, unique identifier, independent of the *PP* numbers, which was used to link his *Ref* records to his *Per* record. In 1998, it contained 21,321 entries.

FamilyFile (*Fam*): the table listing all known family relations of an individual, linked to his *Per* record through his unique ID. The family relations were also linked to the source passages where they were attested through the *Tref* identifier. In 1998, it contained 13,720 entries.

NameFile (*Nam*): the table listing all known nominative forms of variants of a name, as they appear in the sources in the original languages. A standard transliteration in the Latin alphabet was also added to make searching for names easier, as there was still no *Unicode* and typing accents was cumbersome. The 1995 report laconically adds that “with this system, papyrologists are forced to take into account

25 The description of these tables is taken from Mooren (2001), 997–999, who often provides a literal translation of the description of these tables in the unpublished 1995 report.

the Egyptian documentation and Egyptologists are also confronted with the Greek forms of Egyptian names, whether they like it or not”. In 1998, it contained 7,147 entries.

FunctionFile (Fu): the table listing all ‘functions’, a cover term for offices and occupations, that formed the basis of the printed volumes of the *PP*. The Greek and Egyptian forms of these functions were added, alongside an English description and the original French version as found in the books. The functions were linked to the Ref records of the individuals holding them. In 1998, it contained 670 entries.

Two additional tables were added later during the *Fayum Project*, directed by Willy Clarysse and Katelijn Vandorpe (1998–2002):²⁶ **Geo**, a gazetteer of all ancient villages in the Arsinoite nome, and **GeoRef** listing all attestations of these villages. According to the original homepage of the *PP*, it was thanks to this topographic project that the online database and search interface finally materialized (“Realisation: *Fayum Project*”).²⁷

Thanks to this structure, users could now easily browse through the different elements that are important for a prosopography: the sources, the people, and their attestations, their functions, and even the onomastic level. They were no longer bound to the classification determined by the published volumes, but could sort records according to other criteria than a person’s function and the traditional alphabetic listing. It also allowed for more elaborate queries with multiple variables, e.g. all people with a certain title who lived in a certain region or period, or all people named X whose father was named Y. In the printed volumes, one had to go through the list to collect such subsets manually; now they were accessible with just a few clicks. Finding individuals and their attestations in the *PP* was no longer a time-consuming and boring task of checking volume VII (the index) and going to each entry mentioned there, to be supplemented by going through the volumes of addenda. Instead, this was possible with a simple search of merely a minute or so (excruciatingly long according to our current standards!).

But without funding, the project struggled to keep up. Despite these technological advances, the initial goal of offering a comprehensive collection of all individuals living in the Ptolemaic empire, with or without a function or ethnic, was still nowhere in sight. Moreover, 25–30 years after the publication of the addenda and corrigenda to volumes 1–3, and no undertaking for volumes 4–6, many of the original files were in need of an update due to new readings and insights. Luckily, plans were in the making for something new, and although this would take a couple more years, Leuven’s prosopography would greatly come to profit from this new direction.

Trismegistos People

A Brief History of the Overarching Trismegistos Platform

In 2004, Mark Depauw, who had worked on prosopographical data of Akhmim during his postdoc, was granted a *Sofja Kovalevskaya Award* by the Alexander-von-Humboldt-Stiftung for a project centering on multilingualism and multiculturalism in Hellenistic and Roman Egypt (*MaMiGRE*). In order to study this phenomenon, a systematic collection of all texts in all languages was needed. Depauw therefore decided to build a platform that would connect several important databases, such as the *Leuven Database of Ancient Books* (LDAB, which was eventually fully integrated), and the *Heidelber-*

26 web.archive.org/web/20041022104207/http://fayum.arts.kuleuven.ac.be (consulted 17.04.2023) and www.trismegistos.org/fayum/ (consulted 17.04.2025).

27 web.archive.org/web/20040804001137fw/http://prospitol.arts.kuleuven.ac.be/index.html (consulted 17.04.2025).

ger *Gesamtverzeichnis der griechischen Papyrusurkunden Ägyptens (HGV)*. This aggregated collection was, moreover, to be expanded with metadata on Egyptological sources.²⁸

The principles of this new textual platform were inspired by those of the *PP*'s TEX table. All textual sources would be included: documentary (both papyrological as well as epigraphical), literary, and magical; in any attested language and script; on any writing surface. Each text was given a stable, numeric identifier, a number that would become the pinnacle of papyrological infrastructure: the *TM* number. And thus the new *Trismegistos* platform was born.

Since demotic came into use much earlier than the Hellenistic period, the starting date was set to 800 BC. And in line with the *LDAB* the end date was expanded to AD 800, when Greek finally disappeared from the region.

In the course of the project the decision was also taken to use the topographical database created for the *Fayum Project* to document the provenance of each text. This table was therefore expanded to the rest of Egypt and even beyond for texts concerning the Ptolemaic overseas territories. In similar vein, the *Archives Project* was integrated and has over the past decades expanded beyond its initial *Fayum* boundaries as well.

The multilingualism project did not include a prosopographical component, but as the *PP* was linked to the *Fayum* and *Archives* databases, it was also incorporated into *Trismegistos*, allowing the *MaMiGRE* team to draw from this rich data source as well. The person attestations were now connected to the new *TM Texts* through the canonical *TM* number, instead of the standard edition (the old TRef).

Expansion into the Roman and Byzantine Periods

A new impetus for Leuven's prosopographical research was provided in 2008, when the Leuven papyrology team received funding to develop an interdisciplinary database of personal names.²⁹ The aim was to uncover how changes in naming patterns reflected socio-cultural and religious changes under the Ptolemies and the Romans. Quantification was an important aspect of this project, so collecting as much data as possible was paramount. The second phase of the *PP* envisaged by Peremans (see *The PP's scope* above) could finally commence: a collection of all individuals of the Ptolemaic Empire, regardless of whether they were ever mentioned with a function. At the same time, the chronological scope was broadened to include the Imperial, Late Roman, and Byzantine periods.

Data collection was greatly facilitated by the availability of digital full text corpora – for some languages and scripts at least. The largest body of evidence, the Greek (and to some extent also Latin) documentary papyrological material, was collected in the *Duke Databank of Documentary Papyri (DDbDP)*, which started in the early eighties and had been available as HTML on *Perseus* since 1997. From 2007 onwards it was migrated to the TEI XML format and was made available online in 2008, as part of *papyri.info* (alias the *Papyrological Navigator*). This allowed the team to develop a *Named Entity Recognition (NER)* application to automatically tag names (of people as well as places), starting from the onomastic lists compiled for previous projects such as the *PP* and the *Fayum Project*. By developing a rule-based system, strings of names referring to a person, which often include genealogical identifiers, were interpreted and recorded as attestations of individuals. Prosopographical identifications within the same text were carried out during the human quality control phase as well.³⁰ The online *PHI* collection of Greek inscriptions is not open access and could therefore not be used; hence the

28 Depauw / Gheldof (2014), 40–52.

29 Depauw / Van Beek (2009), 31–32.

30 I will not go into the specifics of this procedure here, since they have been described in detail elsewhere; Depauw / Van Beek (2009), 34–40.

names in these texts were entered manually. A large section of Coptic papyrological material was integrated with the help of Alain Delattre and his *Brussels Coptic Database*³¹. The other stages of the Egyptian language (mainly demotic, but also hieroglyphic and hieratic) had to be dealt with manually, as there were no digital collections for these texts. A few years back, *Trismegistos* experimented with OCR (optical character recognition) techniques on print editions, but the lack of a standardized transliteration system for Egyptian proved too large a hurdle to tackle without proper funding. This unfortunately meant that progress was much slower than for the Greek and Coptic papyri. Nonetheless, some 350,000 attestations referring to 239,953 persons were thus created in just under four years.

A New Database Model: the Birth of *TM People*

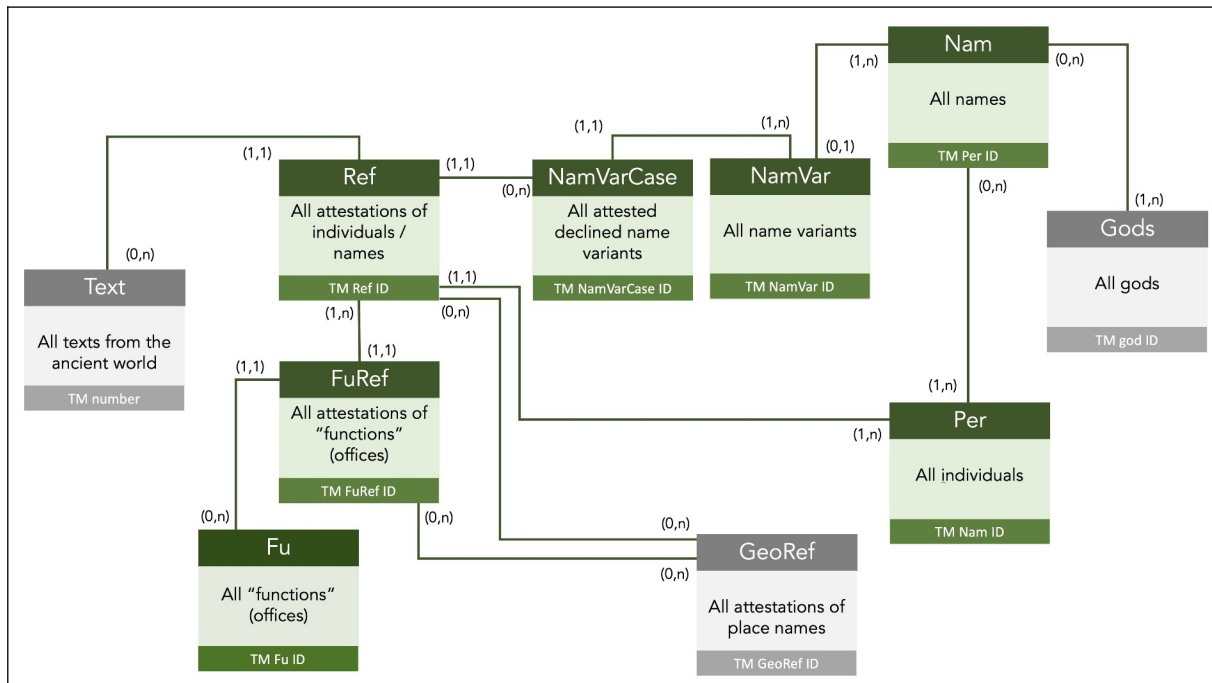


Fig. 6: Simplified overview of the *TM People* structure.

To accommodate the strong onomastic focus of the new Leuven projects, and to facilitate the *NER* procedure, the *PP*'s original database structure needed to be expanded. Several new tables were created (marked with an * in the overview below), and existing tables were remodelled to capture the varying naming conventions used in Egypt during the period under scrutiny.³² This new structure was named *TM People* and can be accessed at www.trismegistos.org/ref (consulted 17.04.2025).

Nam: This table was expanded with a basic typology for names, e.g. mythological, dynastic, title / occupation, flora / fauna. An important category for Egypt is 'theophoric', in which case the name of the god to which the personal name refers can also be entered.³³ A categorization based on name components is also implemented, e.g. Egyptian names starting with *P3-di-* ('He who is given by X') or Greek names ending in *-δωρος* ('Gift of X'). *Nam* currently contains 41,519 names.

***NamVar:** A more refined onomastic structure was created by introducing a separate table, linked to the original *Nam* table through the *Nam ID*, in which all possible (nominative) variants of a name are stored. These do not only include spelling variants, but also the renderings in different languages and scripts. This allows for a more fine-grained level of research: whereas the *Nam* level is crucial to dis-

31 https://wiki.digitalclassicist.org/Brussels_Coptic_Database (consulted 17.04.2025).

32 The number of records listed below for each table represent the version of April 17 2025.

33 In the meantime, *TM* has released its *Gods* database, to which these names are linked in a relational structure (see also below p. 24).

cern general trends or for identification purposes, the NamVar level can be used to discover regional trends or dialectal variation, for example.³⁴ NamVar currently contains 242,966 name variants.

***NamVarCase:** Since Greek and Latin are case languages, all forms of all name variants need to be recorded in order to limit the number of false negatives in the *NER* procedure as much as possible. These forms are linked to the NamVar table through the NamVar ID, but are also the crucial link between the overarching NamVar-Nam onomastic structure and the Ref table, where the attestations are recorded in their declined form (see ‘Ref’ below). NamVarCase currently contains 1,040,219 declined forms.

Ref: The table recording the attestations of individuals was remodeled to cope with polyonymous naming systems: double names, an old Egyptian tradition that was adapted to navigate the multicultural society of the Ptolemies and under the Romans became a status marker of the local elite;³⁵ and the Roman naming system that started to make its appearance in the sources from the late first century BC.³⁶ Although periodically relatively common, when looking at the ca. 10 centuries spanned by *TM People*, polyonymy is a rather marginal phenomenon.³⁷ Therefore, instead of creating a new, relational structure to deal with these different forms of polyonymy and the variation in identification methods this entailed,³⁸ we opted for an easier, database-wise inferior solution by simply creating extra fields in Ref: ‘pseudo1’, ‘pseudo2’, and ‘pseudo3’ for Roman *praenomina* and *gentilicia*, and ‘double’ and ‘triple’ for multiple given names (or *cognomina*). The original ‘name’ field of the *PP* still served to record the main given name or, for Roman names, *cognomen*. This means that, if a person is attested with multiple names, there is a one-to-many relationship between that Ref and the overarching onomastic structure through the NamVarCase IDs of the declined forms.

Another novelty was that names in Greek and Latin were no longer converted to the nominative, as was the case for the *PP*.³⁹ However, for the *NER* procedure to work, i.e. for name forms to be correctly recognized by the algorithm, they had to be stripped of all diacritic marks, and this ‘clean’ version was the only version originally recorded in Ref. This is not very helpful for external users though, since it is important to know whether an attestation has been fully preserved or is the result of an editorial reconstruction. Therefore, at a later stage, the original form as it is given in the edition was added for the Greek attestations extracted from the *DDbDP* by automatic comparison with a lemmatized corpus created from the same data set.⁴⁰ For the other records, these forms are gradually being added manually. Ref currently contains 563,179 attestations of individuals.

Although the Leuven projects during this time tackled the subject of identity from an onomastic perspective, the prosopographical approach was vital to their success. Assessing the popularity of a name or name type and the implications entailed by fluctuations in the name stock can only be done by look-

34 E.g. Blasco Torres (2021), 237–242.

35 By ‘double name’, we mean the use of two given names. Triple names also occur, but they are very rare. This naming tradition has been studied in detail in Coussement (2016) and Broux (2015).

36 We refer to the *duo / tria nomina* used by Roman citizens as ‘Roman names’ or ‘Roman naming system’. For local adaptations to this naming system, see Depauw (2017), 176–198.

37 Currently (April 17 2025), only 1.6% of all attestations in Ref contain a double or triple name, and 4.9% consist of a Roman name.

38 A person with multiple names did not necessarily mention all these names each time (s)he appears in our documentation!

39 For the majority of the existing *PP* entries, the declined form has been added semi-automatically by comparing the existing records to the results of the *NER*. The *PP* also at some stage converted etymologically Egyptian names to Egyptian, even though they were attested in Greek, and the other way round. This also caused problems when converting to the new structure.

40 www.trismegistos.org/words/about (consulted 17.04.2025).

ing at and counting the people bearing those names. The tables that are important from a prosopographical point of view were therefore also improved.

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Fig. 7: Screenshot of TM Per 127729 in the Per table.

Per: Two major alterations were made to the Per table. Firstly, the *PP*'s distinct Fam table was dropped, and family relations were coded through self joins in Per directly. This way, family trees can be displayed more easily in the Filemaker backend (fig. 7). Secondly, just like in Ref, five additional fields were created to deal with polyonymous individuals. Per currently contains 385,097 person records.

Fu: The functions table has not undergone any major changes since the *PP*. It currently contains 2,322 records. It is causing us quite a headache though, since a) it is modeled on the Ptolemaic administration, which was not blindly adopted by later governments, and b) it stays very close to the structure of the printed volumes, where multiple titles were often grouped under a single heading, or a separate heading was used when the precise scope of the office was not clear. Since many of these functions are very specific and cannot be extrapolated to other periods, the injection of Roman and Byzantine data into the new *TM People* led to an explosion of new functions, making it very difficult to navigate this section. There are currently, for instance, six different Fu records for γυμνασιάρχης: one for the original section in *PP VI* ('Gymnasiarques, kosmètes, προεστηκότες d'un gymnase ou d'une palestre'), one for 'gymnasiarches of a gymnasium or of a palaistra' (when the office is known, but the precise institution not), one for 'gymnasiarches of a gymnasium', one for 'gymnasiarches of a palaistra', one for 'gymnasiarches of Alexandria', and one for 'gymnasiarches of a metropolis'. We are therefore currently in the process of developing an overarching FuNam structure where terminology prevails, not the scope of the office. Existing functions will thus be grouped under a principal term, e.g. there will be only one entry for γυμνασιάρχος. This will make it easier for users to find all the relevant attestations without having to perform multiple searches.

***FuRef:** An intermediary table between Ref and Fu was created to deal with Refs where people are listed with multiple functions. This was important to map changes in status and how these are reflected in evolutions in naming practices, or to link certain onomastic phenomena to particular status groups. FuRef currently contains 102,343 attestations of functions.

The Upkeep of *TM People*

After 2013, *Trismegistos* was not able to secure any funding for *TM People*. Names and identity were no longer considered sexy topics, but perhaps more importantly, funding bodies are not interested in ‘used toys’. Securing money for the upkeep and further development of existing projects and infrastructure is extremely difficult. Yet if a project is to remain relevant, its follow-up is just as important as its start-up. Even though these days applications often demand initiatives to ensure the sustainability of a project’s data once the funding is over, getting an extension of that funding to keep everything up-to-date and running is generally not an option, unless an entirely new angle or component is concocted in order to mask the fact that it is a continuation of earlier work.

Despite the decimation of our original staff, we have managed to make significant progress in many respects, not in the least thanks to successful collaborations with partners. Thus in 2013–2014, the *Center for the Tebtunis Papyri* at UC Berkeley worked on the people mentioned in texts originating from the village of Tebtynis in the Fayum. During the *Standards for Networking Ancient Prosopographies* project (SNAP; 2014–2015)⁴¹, our set of name variants was matched with that of the *Lexicon of Greek Personal Names* (LGPN)⁴², and the ones missing in *TM* were incorporated into the NamVar table. And recently the recurring individuals in the extensive second-century AD tax rolls from Karanis have been identified with the help of Ellis Cuffe (currently at Royal Holloway University of London): these are over 8,600 attestations of individuals mentioning at least one parent, often both, and even their paternal grandfather, totalling nearly 27,000 attestations that needed to be checked for merges.

In light of the expansion of *LGPN* into Egypt, in 2019 work started on checking and complementing the data from Lower Egypt and the Fayum. The available attestations were checked for new readings, additional information such as titles and designations of origins, and possible prosopographical identifications. Names in sources published after 2008, when the *NER* procedure was first applied to the Greek papyrological corpus (see above), were extracted with two new *NER* rounds in 2019 and 2021. Texts not in *papyri.info*⁴³ were, and still are, processed manually. In total, 154,942 attestations have thus been checked, and 5,299 new attestations have been added, linked to 4,001 distinct person records.⁴⁴ In 2022–2023, collaborators of the *Urban Biographies of the Roman and Late Antique Worlds* (Universität Basel) have done the same for all (Late-)Roman attestations linked to the cities of Antinoopolis and Hermopolis Magna in Middle Egypt.⁴⁵

We have ourselves also been checking records and adding data for our own research. We are very fortunate that Willy Clarysse, now emeritus professor, is still very active in this respect, and continues to add names and attestations on an almost daily basis. Thus in total, over the past decade, 92,233 attestations (Ref), 65,866 persons (Per), 122,998 name variants (NamVar) and 6,944 names (Nam) have been added to the database. Intertextual identifications of individuals are also an important focus, as this cannot be automated during the *NER* procedure. All individuals with a double name and their known family members had already been processed between 2008–2012, and since then many officials and

41 snapdrgn.net (consulted 17.04.2025).

42 www.lgpn.ox.ac.uk/home (consulted 17.04.2025).

43 <https://papyri.info/> (consulted 17.04.2025).

44 April 19 2023.

45 romeegyptcities.philhist.unibas.ch/en/home-1/ (consulted 17.04.2025).

occupation groups have also been focused on,⁴⁶ as well as individuals bearing a particular name or name (type).⁴⁷

Moreover, the database model continues to evolve as we incorporate more types of information or add more internal links in the database. We had long collected designations of origin in Ref in a simple text field, but in 2021 an intermediary table connecting Ref with the GeoRef table in *TM Places* was created to allow for a more systematic organization of this data.⁴⁸ Linking the two is largely a manual process, since a person's designation of origin does not necessarily occur on the same line as their name, but we currently already have 11,897 links from Ref to GeoRef. A similar intermediary table has been set up to connect FuRef with GeoRef for those titles that contain a geographical delineation (e.g. *preses Thebaidos*), currently still in its initial stages with a small set of 1,673 links.

Another recent addition to the *TM* universe is the *Gods* database.⁴⁹ It is not always easy to draw a line between divine characters and historical beings, with a large group of (semi-)legendary figures that move between these two spheres. However, since *TM People* has always been intended as a collection of historical individuals, we preferred to create a separate environment for the supernatural. *TM People* profits from this new section from an onomastic point of view, however, as personal names containing a theophoric element can now be linked to the divinity in question and thus be classified systematically. Reversely, on the detail page of a particular God, users get an overview of all personal names (as well as toponyms) that refer to that particular deity.⁵⁰

Finally, in the spirit of linked data, we have also started linking to external projects where users can find additional information about an entity. At the moment we have hyperlinks to four onomastic projects: the above mentioned *LGPN* (39,691 links), *LGPN-Ling* (22,167 links),⁵¹ *Adopia* (6,226 links),⁵² and *LiLa* (1,148 links).⁵³ The aim is to link to prosopographical projects as well, both for Egypt and beyond (see below). To make the *TM* data more accessible, in 2018 Frédéric Pietowski, developer of *CLARIAH-VL*,⁵⁴ created the *TM PerResponder* endpoint, through which projects can query *TM*'s prosopographical data using the *TM Per ID* and receive the related data in *RDF* or *JSON*.⁵⁵ A similar tool is currently being developed for *TM*'s onomastic data (NamVar and Nam).

46 E.g. the prefects and procurators in Alexandria, the *strategoi* and royal scribes on the nome level, the *gymnasiarchs* and other *archontes* of the *metropoleis*, bankers, slaves, etc. All individuals involved in imperial estates and the administration surrounding these domains have been checked (and added when still missing) during the author's engagement in the *Patrimonium* project at Université Bordeaux-Montaigne (patrimonium.huma-num.fr/ [consulted 17.04.2025]) and the bibliography at www.trismegistos.org/ousia/about.php#ousia-publications [consulted 17.04.2025]).

47 E.g. Sokrates: Clarysse (2019), 127–133 and Broux (2019a), 1–21; or names of Hellenistic queens: Broux / Clarysse (2016), 347–362.

48 The GeoRef table collects attestations of toponyms in ancient sources and can thus be considered the geographical parallel of the Ref table.

49 Now available at <https://www.trismegistos.org/god> (consulted 17.04.2025).

50 See for example <https://www.trismegistos.org/god/109> (consulted 17.04.2025), the page for Athena.

51 This extension of *LGPN* offers etymological and semantic analyses of the names in *LGPN*: <https://lgpn-ling.huma-num.fr/> (consulted 17.04.2025).

52 A database of personal names from the Iberian peninsula: adopia.huma-num.fr/en/home (consulted 17.04.2025); in light of our expansion to Latin inscriptions, for which see below.

53 A linked data knowledge base of linguistic resources for Latin: lila-erc.eu/ (consulted 17.04.2025), links established in the framework of the new *NIKAW* (*Networks of Ideas and Knowledge in the Ancient World*) project: <https://research.kuleuven.be/portal/en/project/3H220323> (consulted 17.04.2025).

54 clariahvl.hypotheses.org (consulted 17.04.2025).

55 www.trismegistos.org/dataservices/rdf/per/documentation (consulted 17.04.2025).

Is *TM People* Really a Prosopography?

Can *TM People* be considered a prosopography? This depends, of course, on how you define prosopography. There is no real consensus, as is clearly demonstrated in the introduction to the handbook *Prosopography: Approaches and Applications*.⁵⁶ Several scholars cited in the handbook agree that ‘prosopography’ not only consists of data collection, but also the subsequent exploitation and analysis of this data.

As the short manual in the handbook puts it, it is “a historical research technique based on the systematic analysis of biographical data of a selected group of historical actors. The efficiency of prosopography depends on the general research objectives and the specific questionnaire on the one hand and on the available sources and literature on the other”.⁵⁷ In *TM*’s case, some may not consider our delimitation of all known people from Egypt between 800 BC and AD 800 to be “a selected group of historical actors”. Neither do we provide a systematic analysis of this entire group. The *PP* was initiated with a particular research objective in mind, namely to be able to study the relations between the indigenous population and immigrants. This obviously disappeared with the advent of *TM People*. Although the collaborators working on the database during its initial stages were working on specific topics with specific questionnaires (double names and theophoric names⁵⁸), data collection happened on a much broader scale from the start. *TM People* was purposefully designed to become a tool that would be useful for future endeavours as well. Moreover, the quantitative approach of these first projects required a representative sample of the entire name stock of Egypt during this period in order to produce meaningful results. No boundaries were thus set on the available sources, apart from those inherent to the surviving material, which fluctuates over space and time. But these are biases that every analysis concerning the history of Graeco-Roman Egypt, and the ancient world in general, have to deal with, and are thus not specific to the prosopographical method.

As indicated above, an important caveat is that data collection and prosopographical identifications are still ongoing. The available data from Upper Egypt has not been checked systematically yet (at least not for the post-Hellenistic, i.e. non-*PP* material). Names from recent publications still need to be added, and many intertextual identifications remain to be done, but this is ongoing in light of various projects. It is slow work, however, because currently it cannot be automated.⁵⁹ There will, moreover, always be ambiguity regarding the identification of certain individuals, with different views held by different scholars. This is something that cannot be easily accommodated in a database, which is very black and white. Either two attestations refer to the same person and are grouped under the same person ID, or they do not and they are each assigned to a different ID. In a binary world, the ‘maybes’ do not fit in well. Our policy is to remain cautious, and if there is any doubt as to the identification of two person records, we prefer not to merge them, but instead provide cross references indicating a possible match.⁶⁰

Furthermore, *TM People* does not yet offer a systematic collection of titles, designations of origin or residence, age, etc. These are important biographical data, crucial for various research objectives. The Ref database is equipped to deal with these types of data, but they are only being collected on a small scale at the moment, for research on specific officials, towns, or names, for example. Just as with the

⁵⁶ Keats-Rohan (2007), 1–32, esp. 18–21.

⁵⁷ Verboven et al. (2007), 69.

⁵⁸ Double names: Coussement (2016) and Broux (2015); theophoric names: Jennes (2013).

⁵⁹ For efforts on automatic identification, see the *Berkeley Prosopography Services* (<http://berkeleyprosopography.org> [consulted 17.04.2025]). Our AI institute Leuven.AI is currently also exploring with us what is possible in this respect.

⁶⁰ If identifications have been suggested by scholars but we do not agree, or if they are themselves hesitant, we add a bibliographic reference so that users can find the relevant literature on the matter.

prosopographical identifications, however, this is a continuous effort, so the ultimate goal is to have a complete collection.

Some have argued that although the collection and exploitation of data can be seen as two distinct phases in the prosopographical method, they are so interdependent that there is a continuous interaction between the two, and ‘prosopography’ must therefore consist of both.⁶¹ In this respect, it has been suggested to refer to *TM People*, and specifically the Per table, as a ‘list of persons’ rather than a prosopography. However, the data is not collected merely for the sake of collecting. *TM People* is conceived as a tool for researchers who wish to engage in prosopographical (and onomastic) analysis. As such, it may not yet be complete and thus require some fine-tuning before the actual exploitation of the data can begin. But exploitation is most definitely what it is designed for. That the grunt work of data collection has been carried out independently of a particular research project should not be an objection. If this were to be a prerequisite, many of us would be wasting our time with reinventing the wheel time and time again.

Finally, *TM People* has certainly paved the way for what has been coined ‘new’ or ‘mass prosopography’. In contrast to the original ‘elite prosopographies’ of the early 20th century,⁶² the focus is more on social trends, ties, and mobility, and statistical analysis plays an important role.⁶³ Apart from the above mentioned studies on double names (and their socio-cultural implications) and theophoric names (and what they tell us about religious shifts in Egyptian society),⁶⁴ the data has also been used to chart the Christianization of Late Roman Egypt,⁶⁵ for example, or to examine how families in Roman Egypt used hybrid names to reflect their mixed cultural backgrounds with the help of network analysis.⁶⁶ The latter methodology was also exploited in a recent study of daily life and socio-economic interactions in the late Ptolemaic town of Pathyris, starting from the corpus in *TM People*.⁶⁷ Several of the collaborations mentioned above took place in the context of research projects in which this ‘new prosopography’ plays an important role as well.

Names in the Ancient World

Expansion to the Eastern Mediterranean

In 2010 *Trismegistos* first explored an expansion of the texts database outside the realms of Egypt and the Ptolemaic overseas territories, by contacting the *Epigraphische Datenbank Heidelberg* through the intermediary of James Cowey. This led in 2013 to our participation in the *EAGLE*⁶⁸ project coordinated by Silvia Orlandi, an aggregation project of Latin (and some Greek) inscriptions. In the years after that, we began collecting all texts from antiquity, also those in smaller indigenous languages. Due to the success of applying *NER* to the Greek papyri and to the availability of online, full-text corpora such as the *Epigraphik-Datenbank Clauss-Slaby*⁶⁹, the decision to extract the names / people in these

61 Bulst (1996).

62 Although even for Egypt, where the general population is much better represented than in the rest of the Mediterranean, there is certainly a bias toward local elites in certain periods and regions as well.

63 Keats-Rohan (2007), 10–15 and Syme (2007), 131–132.

64 See note 58.

65 Depauw / Clarysse (2013) and Clarysse / Depauw (2015).

66 Dogaer / Depauw (2017).

67 Tambs (2022).

68 www.eagle-network.eu (consulted 17.04.2025).

69 www.manfredclauss.de (consulted 17.04.2025)

texts was any easy one.⁷⁰ The initial stages of setting up the infrastructure, updating the rule-based system to accommodate the particularities of the Roman naming system (in Egypt, the Roman standards of filiation and *tribus* were generally not followed, for example), and extracting (possible) names went smoothly: the ca. 350,000 Latin inscriptions that were available contained 907,064 clusters of capitalized words, of which 433,156 were marked as containing at least one personal name. Then came the arduous task of checking these results.

A first stage simply consisted of checking whether names were correctly identified as such, removing false positives and adding false negatives. With the help of students, ca. 70% of this first stage was realized by January 2017.⁷¹ Without funding, this project ground to halt after that. In 2020, it was picked up again, however, and is now one of the three objectives of *Trismegistos* in its new role as a KU Leuven Core Facility.⁷²

We are now in the second phase of the *NER* process: checking whether the results of the rule-based system have interpreted the clusters of names correctly.⁷³ Since the original dataset on which *NER* was performed was already some nine years old, at the beginning of 2022 we updated it with new texts that had been added to *EDCS* between 2013 and then. Our initial plan was to cover the African provinces first, so we blindly tackled the two Mauretania's (7,143 texts). But when we then moved to Africa and Numidia we realized that the corpus is too large for a single person to manage alone (there are some 48,500 texts in total from these two provinces). We therefore decided to skip these for the time being and moved on to the Eastern Mediterranean, where there are fewer Latin inscriptions. The Cyrenaica, which had long belonged to the Ptolemies, had already been processed together with Egypt. By the end of 2022, Arabia, Syria, Iudaea, and Mesopotamia (3,300 texts in total) were finished. By the end of 2024, the Anatolian provinces (Asia, Galatia, Bithynia et Pontus, Lycia et Pamphilia, Cappadocia, Cilicia, Regnum Bosporum and Armenia), Achaia, Macedonia and Thracia followed. The data from these provinces are available online through the *Names in the Ancient World (NAW)*⁷⁴ page, a new component of the *TM People* portal, thus providing a Latin counterpart to the *Lexicon of Greek Personal Names*.

At the same time, we are working on attestations of persons in literary texts. The *NIKAW* project aims to analyse the circulation of knowledge in antiquity,⁷⁵ and for this it will tag all names referring to individuals (both historical and mythological), gods, and places. We will incorporate these attestations in the relevant *Trismegistos* sections, and thus bring together the documentary and the literary evidence.

Yet Another New Database Model

The *ad hoc* solution devised to accommodate Roman names in Per and Ref in the original *TM People* may have sufficed for the limited number of *duo* and *tria nomina* attested in Egypt; for other regions, especially those that were more Latinized, it has too many drawbacks. A major obstacle is the six name fields limitation, as individuals attested with more than six names cannot be recorded adequately. Additionally, the six separate relations needed to link the original Ref table to the overarching onomastic structure (NamVarCases, NamVar and Nam) affects the performance of the database signifi-

70 In an initial stage the main focus was on personal and place names; for the latter see Verreth (2017). Other entities, such as gods, emperors and kings, and army units (basically any word of which the first letter is capitalized) are also tagged provisionally. In the meantime, some of these have formed the basis of new *TM* components (e.g. *TM Abbreviations* and *TM Gods*) or have been exploited by students for research papers (e.g. formulaic expressions in funerary inscriptions).

71 Broux (2017).

72 <https://tmplus.kuleuven.be/home> (consulted 17.04.2025).

73 For a (slightly) more technical overview of the steps involved in the *NER* procedure, see Broux (2017), esp. 5–7.

74 www.trismegistos.org/ref/naw (consulted 17.04.2025)

75 See above note 53.

cantly: any query designed to find attestations of a particular name, name variant, or name type has to repeat the same search in six different fields. Both in Filemaker and in the online SQL database, this requires a complex series of joins and subqueries that slows everything down considerably. Therefore, a more flexible and straightforward structure has been developed for *NAW* that can accommodate any number of names of whatever type (fig. 8).

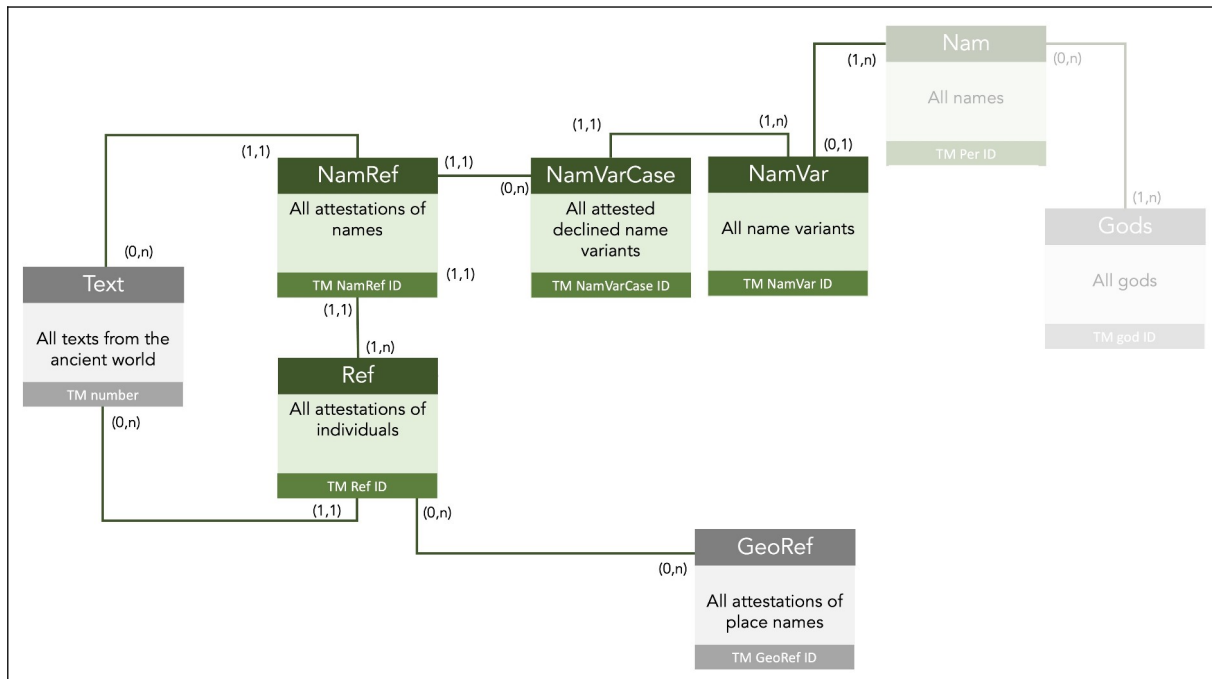


Fig. 8: Simplified overview of the *Names in the Ancient World* structure.

For this, an extra table, *NamRef*, has been added on the original *Ref* level, where each individual name is stored, while *Ref* itself focuses on the entire string that makes up a person's identification.

NamRef: A person's name can consist of multiple elements. These elements can all be of the same kind (e.g. in a double name such as *Arpocratonis q(ui) e(t) Didymi* that consists of two given names),⁷⁶ they can all be of a different type (e.g. *Iulia Lampyrus* with a *gentilicium* and *cognomen*),⁷⁷ or something in between (e.g. *C(aio) Pompeio Sallustio Mariano* with a *praenomen*, two *gentilicia* and a

cognomen).⁷⁸ *NamRef* collects each of these elements individually. The sequence of the names is stored by using a simple numerical field that counts the position of the name in the string (fig. 9). This is then used to display the identification string in the correct order in *Ref*. Linking with *NamVar* and *Nam* through *NamVarCase* takes place on the *NamRef* level with a one-to-one relation. For this, the 'clean' version of the name is again used, stripped of all diacritic marks, while the original form as presented in the (online) edition is also recorded to indicate how much has actually survived. *NamRef* currently contains 37,819 records.

76 TM 69993 l. 8. with <https://www.trismegistos.org/ref/353885> (consulted 17.04.2025).

77 TM 495427 l. 2.

78 TM 204017 l. 1–3.

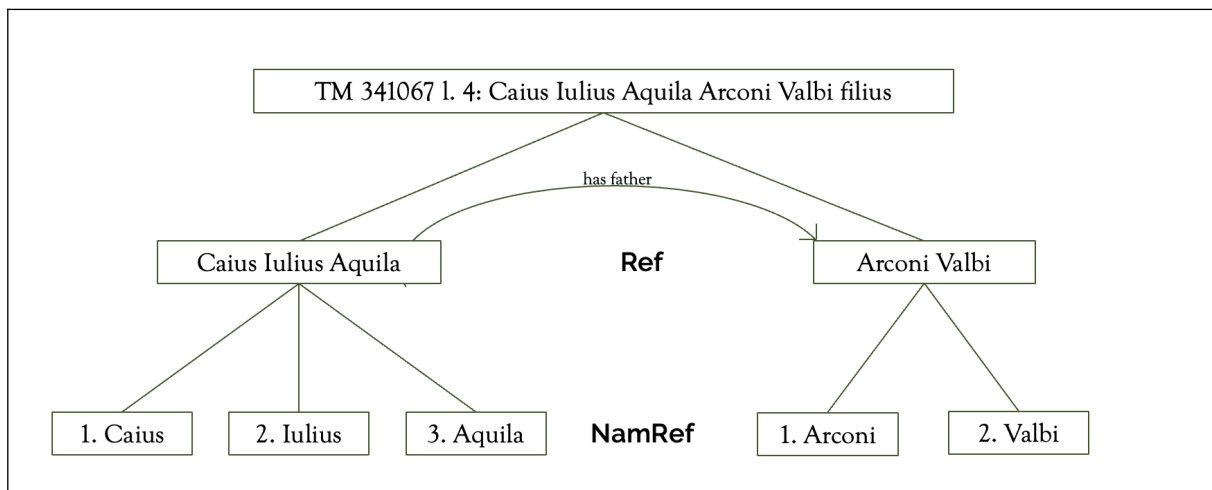


Fig. 9: Recording an attestation in Ref and NamRef.

Ref: The Ref table in this structure has the same purpose as the original Ref table in *TM People*: recording the details of a person attestation. The main difference is that the onomastic interpretation of the names no longer takes place in this table, but in NamRef. If a person's identification string contains a *tribus* or *origo*, these are also recorded in an intermediary table and are linked to the corresponding record in the GeoRef table (fig. 8), in the same way as we are doing for the Egyptian data in the original *TM People*. Titles and status markers are not yet collected systematically, but if they are inserted in the middle of a person's identification, they have been tagged and entered, as they would otherwise break up the string and the attestation would be incomplete. This is the case with *Sextus Valerius Fuscinus augur Thevestini filius*, for example:⁷⁹ if *augur* were not tagged, this would result in two unconnected strings, *Sextus Valerius Fuscinus* and *Thevestini filius*, and we would lose the information that Thevestinus is Fuscinus' father and that this patronymic was part of the latter's identification. Finally, the new Ref table also records family relationships if genealogical identifiers are used in a person's identification by adding the Ref ID of the father, mother, or spouse to the record (if a patronymic is added, the grandfather's Ref ID is recorded as a father in the record of the person's father). Slaves and freed(wo)men are linked to their (former) owner in the same fashion. The *NAW* Ref table currently contains 20,635 records.

After some debate, we have decided not to store the new attestations from outside Egypt in the same tables as those from Egypt. From a technical perspective, this would require quite some data manipulation to convert the six-field system of the original Ref table into a relational structure, as well as a complete rebuilding of the frontend database and online interface to accommodate this new structure. Equally important are the repercussions this would have on the workflow of our collaborators, both internally and externally. This huge enterprise would involve taking the backend offline for the duration of the conversion, during which our partners would have no access to their data. Moreover, once the new structure would be in place, all collaborators would have to be retrained, as it implies a whole new way of entering and manipulating data. Therefore, for the time being at least, the NamRef and Ref tables of *NAW* are kept as separate tables.

We realize all too well that, for a project of which the main goal has always been to foster interdisciplinarity, keeping the data separate does not seem very helpful. However, the name attestations in *NAW*'s NamRef are linked to the same onomastic tables as the original *TM People* Ref. There are no separate NamVarCase, NamVar and Nam tables for *NAW*: all names, variants and declined forms are stored in the same onomastic structure. *NAW* starts from this onomastic perspective, thus allowing users to compare the data from Egypt with the data from elsewhere (fig. 10).

⁷⁹ TM 203280 l. 3.

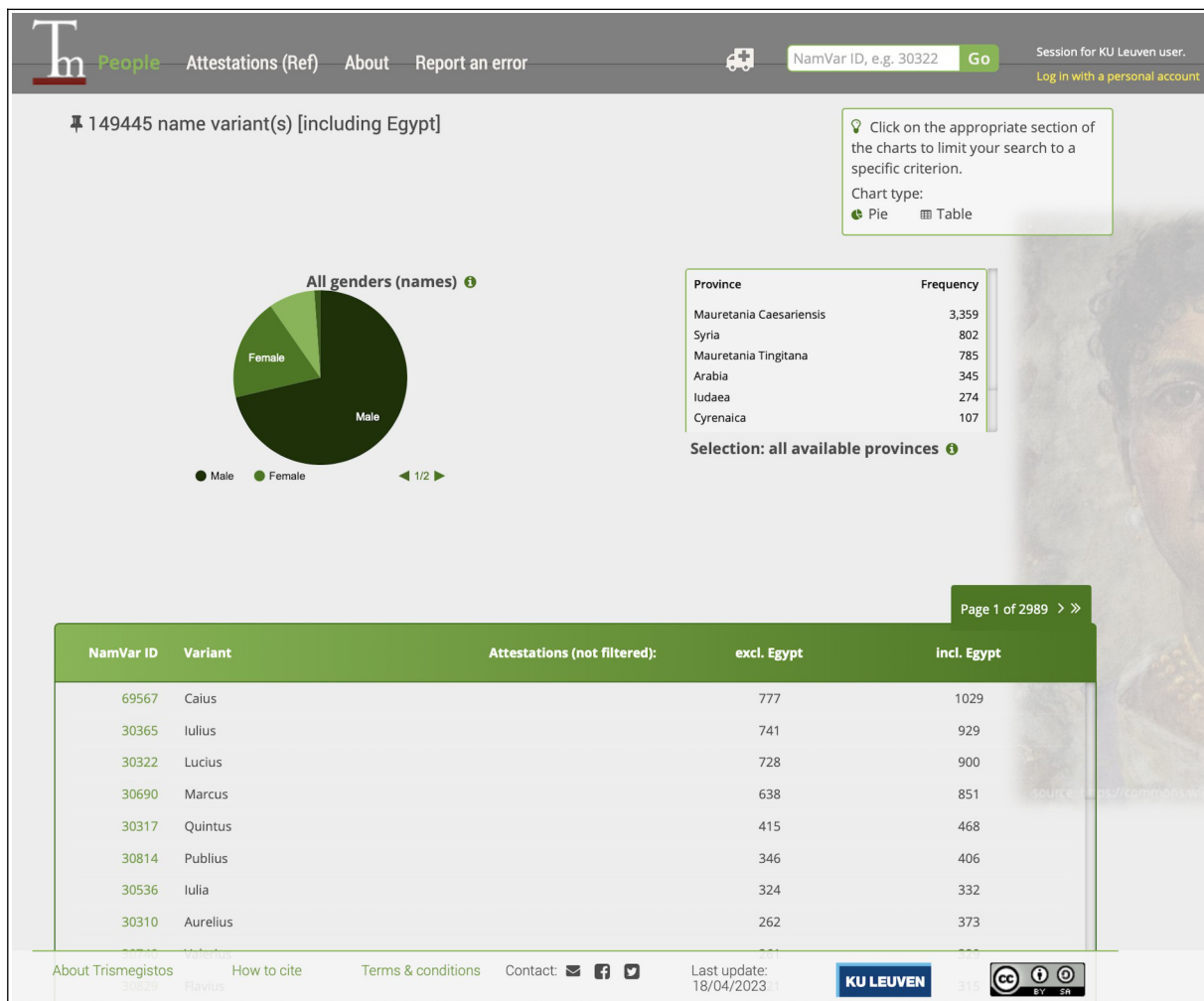


Fig. 10: NAW homepage.

There is an important caveat regarding the onomastic interpretation of these new names from Latin inscriptions. While it is easy to assign an attested name to a particular variant, as a variant is basically a specific reading of a name in a certain language, deciding which are variants of the same name and should thus be grouped together is often less straightforward, and requires human input. Common Latin and Greek names that are attested in many provinces are generally also attested for Egypt and have therefore already been assigned to a Nam record. But many less common names, especially indigenous names from other provinces, are new for us. Since we are not familiar with the many local onomastic habits across the Roman Empire, we have decided that we would not try to do all this work ourselves, but to collaborate with projects that are specialized in specific regions or languages and link to them in order to point our users to more information about such names. Therefore, many variants are not yet linked to a Nam ID (and this is why the Nam and related Gods tables have been faded out in fig. 8). This has no repercussions on their findability, however, as the online interface is programmed to search on both the Nam and NamVar levels.

Finally, the *NAW* overview in fig. 8 does not include a Per table. No prosopographical identifications have been carried out on the data from the Latin inscriptions, not even if a person is attested multiple times within the same text. The reason for this is the subject of the last section of this paper.

Toward a Single Prosopography of the Ancient World?

This brings us to the ultimate topic of this paper: are we moving toward a single prosopography of the ancient world? In short: not if it is up to us.

An important prerequisite of a prosopography is the disambiguation of (often homonymous) individuals. Producing such a collection supposes detailed background knowledge about the context in which these people are mentioned. Overall, the ancients, and especially the elites, whose names make up the bulk of our documentation, were fairly conservative when it came to naming their children. Among the Romans, the eldest son usually inherited his father's *praenomen* and *gentilicium*, often even *cognomen*, while in the Eastern Mediterranean, where family or clan names were less widespread, names were passed down from grandparents to grandchildren, or even down each generation. Is the Egyptian property owner Marcus Aponius Saturninus the same person as the homonymous Moesian legate of AD 69, or is this the legate's father? Or, a third possibility: are they all the same individual?⁸⁰ In the first half of the first century AD, the sons of Eutychos sell some vacant lots to Chrates, son of Akousilaos.⁸¹ Three of Eutychos' sons are likewise named Eutychos: the eldest is identified as Εὐτυχος πρεσβύτερος (TM Per 270706), the youngest as Εὐτυχος τρίτος (TM Per 141970). The middle brother, who had already passed away at the time of the sale, was Εὐτυχος δεύτερος (TM Per 270720). But which of the three brothers should Εὐτύχου τοῦ Εὐτύχου be identified with, if no name suffixes are given?⁸² Untangling family relationships and assigning attestations to the right individuals requires a thorough knowledge of imperial as well as local career paths, regional epigraphic and scribal habits, modes of identification, and so much more, a knowledge that needs to be combined with a close reading of the sources. And even then we often still do not know, as the two examples here demonstrate.

We believe it is beyond the reach of a single project to achieve this for the entire ancient world. We consider a more realistic option to be a constellation of prosopographies in a linked data infrastructure, as was the idea of the *SNAP* project.⁸³ The various obstacles we were confronted with in phase 1 (2014–2015) of this project, however, have made us realize that onomastic groundwork needs to be done in order to make this possible.

Rather than a prosopography of the entire ancient world, *TM* therefore aims to create an exhaustive list of names and their attestations as a preparatory step toward a possible linked data infrastructure. *TM People* already has an extensive multilingual hierarchical gazetteer structure. With *NAW*, we are in the process of enlarging this collection by including names from other areas and languages, often in collaboration with partner projects. For variants as they are attested in the sources (e.g. Ἀλέξανδρος), the approach will be more 'traditional', either through entity recognition when a full text corpus is available (such as for the Latin inscriptions), through (semi-automated) integration of other lists if available (e.g. the lemmatized names of persons from *LiLa*⁸⁴), or even through manual data entry when nothing digital is available.

As each attestation of a name and person receives a stable identifier, this forms a sound basis from which to start linking prosopographies, since the attestation level is more or less invariable.⁸⁵ For this,

80 Broux (2019b), 164.

81 TM 25197.

82 The two attestations without name suffixes have been assigned to a separate Per ID (TM Per 251681) instead of arbitrarily choosing between one of the three brothers.

83 See above, with note 41.

84 See note 53.

85 In rare cases, new editions no longer read a name as such and an attestation is deleted. At other times it is not entirely clear whether two or more names belong to the same person, or refer to a person with a patronymic, for example. In such cases, we take a cautious approach and split them up into separate Refs. If in an external prosopography these names do happen to be considered to belong to a single person, we simply link to that same entity from each of the Refs.

NAW does not need its own prosopographical level: we simply link our attestations to the persons they correspond to in external prosopographies. There is no restriction to the number of hyperlinks we can add to an attestation, as they are stored in a related table. The only prerequisites are that the external prosopography is available online and that it uses unique, stable identifiers for its person records.

Over the past 15 years, as database management systems have become more accessible and scholars more digitally trained, more and more researchers and projects have been creating digital prosopographical datasets. Increased awareness of reproducibility and sustainability (often spurred by funding agencies) have resulted in the publication of many of these databases online, either through a dedicated website with a search interface, or by depositing them in repositories such as *Zenodo*.⁸⁶

Finding these relevant datasets is not always easy though, so accessibility is again one of the first things *TM* wants to improve by linking prosopographies. A second benefit of this approach is that it solves the issue of conflicting identifications. If two prosopographies do not agree on whether the available sources on Marcus Aponius Saturninus refer to a single person or not, and each project groups the attestations differently, *NAW* simply links some of the attestations to Saturninus Sr. and the others to Saturninus Jr. in prosopography A, while all attestations are also linked to the single Saturninus in prosopography B. This leaves room for alternative interpretations, which would not be possible if we were to collect everything in a single environment,⁸⁷ and thus gives a better impression of the ambiguity that often surrounds these identifications.

We will even try to go further. For the transliterated versions of ancient names that are normally used in scholarly literature and that can display an astounding variation (e.g. ‘Alexandros’ or ‘Alexander’), we will, in a later stage, try a machine-learning approach similar to what we are currently developing for source references.⁸⁸ This way, references to names (and perhaps one day individuals) from the ancient world can be feasibly annotated in modern scholarly literature as well. Linking these annotations to the Refs they refer to will create automatic bibliographies of names and individuals that can serve as a useful starting point for further research. We thus hope to, if not close, then at least lessen the gap between online databases and ‘classical’ scientific literature.

86 More and more institutions now have their own repositories where their researchers can publish their data (not restricted to database formats).

87 Which we do for Egypt, however, with all the complications this entails. As indicated above, we are cautious when it comes to identifications and try to reflect these complications through cross-references to other person records and with bibliographical references. However, users often tend to overlook these additions and simply look at whether the same Per ID is used or not, thus losing all nuance.

88 Linking traditional scholarship of the Ancient World with digital tools through Artificial Intelligence: <https://research.kuleuven.be/portal/en/project/3H210378> (consulted 17.04.2025).

Abbreviations

LGN	Lexicon of Greek Personal Names
PIR	Prosopographia Imperii Romani
PP	Prosopographia Ptolemaica
SNAP	Standards for Networking Ancient Prosopographies
TM	Trismegistos

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Digital Corpora

Trismegistos (www.trismegistos.org [consulted 17.04.2025]). Trismegistos stable identifiers are given throughout this paper. For ancient documents this is the TM number (<https://www.trismegistos.org/text/++number++>); for people this is the TM Per ID (<https://www.trismegistos.org/person/++number++>).

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The Caravan Families of Palmyra: Prosopographical Evidence of Elite Involvement in Long Distance Commerce

Eivind Heldaas Seland

Abstract: The role and involvement of the Palmyrene elite in the organization of the famous caravan trade of the ancient city has been a long-standing historiographical issue. Prosopographical evidence allows us to trace the family connections of several the caravan leaders mentioned in Palmyrene inscriptions and thus to situate them in their social milieu. While it has been well known that some of the caravan leaders were also individuals of considerable civic and military standing, the results of the present study indicate that many of the otherwise unattested individuals engaged in the organization and operation of long-distance trade involved in caravan trade also belonged to a set of Palmyrene elite families. It is suggested that families were important organizational units in Palmyrene commerce, that commercial activities were not detrimental to social status within the Palmyrene elite, and that income from trade was a vehicle of social mobility in ancient Palmyra.

Introduction

Palmyra is located in the Syrian Desert, at an oasis which was important to the pastoral population of the region due to the perennial presence of abundant water, and the extensive seasonal salt-flats south of the city. The city was situated along the most convenient route between Damascus and Homs in western Syria and the Euphrates to the east, with regard to water and topography, and in a favorable spot for anyone moving from the desert towards the agricultural regions to the northwest.¹

The oasis has been settled since the Neolithic,² but it was never a place of more than regional importance until the Roman period. A number of scholars suggest that what was a village throughout most of the year, and likely doubled as a place for market-fairs and common religious cult during the summer when the nomads had their flocks in the region, became the focus of a larger, more permanent settlement and political unit in the final period of the Seleucid Empire, when semi-nomadic groups formed polities on the desert fringe, including in addition to Palmyra also the Nabataean, Ituraean, Emesean, and Osroenean polities.³

During the first two centuries AD Palmyra grew into a city of perhaps 30,000–40,000 inhabitants.⁴ A substantial, but unknown segment of the population will have continued to reside in the hinterland, permanently or for parts of the year, subsisting to a large degree on animal-products.⁵ In the third century Palmyra experienced three parallel and interrelated processes. In the city one of the elite families

1 Seland (2024).

2 Cremaschi / Zerboni (2016).

3 Sartre (2005), 12–25, 32–14; Sommer (2018), 66, 157; Gawlikowski (2021), 21–22.

4 Hammad (2010); Campmany Jiménez et al. (2022); Gawlikowski (2021); Raja (2022).

5 Meyer (2017).

managed to monopolize power and assume status of royalty. In the Near East, Palmyra achieved regional hegemony in the years following the capture of Valerian at the hands of the Sassanians in 263 AD, and, in 270–272 AD, Palmyra's ruler, Zenobia, made an attempt at imperial power on behalf of her minor son, Vaballathus. All three trajectories came to an abrupt end with the Roman capture of the city, 272 AD, and its sack following an unsuccessful rebellion in the year after.⁶

There is little controversy that a substantial part of Palmyra's prosperity should be ascribed to the city's key role in the long-distance commerce between the Indian Ocean and the Mediterranean.⁷ As with the city itself, the origins of Palmyrene long-distance trade are not securely known, but by the turn of the Common Era Palmyrenes were operating caravans between Babylonia and Syria. A few decades later they were present in Southern Mesopotamia, and soon they were active in maritime trade in the Persian Gulf. By the second century AD Palmyrene merchants were operating as far south and east as the Indo-Parthian Kingdom on the Indus Plain. By the end of the second century there were Palmyrene shipowners in Egypt, and in the third century Palmyrenes dedicated inscriptions in Southern Arabia and on the Indian Ocean island of Socotra.⁸

Less agreement exists on two interrelated issues about the organization of Palmyrene caravan trade and the nature of the Palmyrene polity. The first pertains to who funded, protected, carried through and profited from the caravans. The second concerns the status of these people in Palmyrene society. Were they rich, politically influential, well respected? These discussions echo two wider debates within ancient history. One originates with Max Weber and his model of the ancient city as a consumer city.⁹ Were city elites landowners living off rents, as Weber assumed was the pattern in most ancient cities? Or were they merchants and producers, as increasingly became the case in the late medieval and early modern period? The other debate is the modernism-primitivism or formalism-substantivism controversy about the nature of ancient economies: Can they be studied with the same tools as modern market economies, or were they different in the sense that economic actions were to a much larger degree embedded in social and political relations? Were Palmyrene merchants part of the city's elite or were they socially marginalized?¹⁰

With regard to Palmyra these debates have rarely been addressed explicitly, but the modernist/formalist/producer-city position was reflected in the notion first advanced by Theodor Mommsen and Mikhail Rostovtzeff that Palmyra was a city ruled by an aristocracy of so-called 'merchant princes', with explicit parallels to the Late Medieval cities of Northern Italy, Germany and the Netherlands, where merchants dominated city councils, and cities maintained extraterritorial trading stations, so called factories, in foreign territories.¹¹ A substantivist/primitivist/consumer city model was first advanced by the French classicist Ernest Will. He realized that the people who were honored in the Palmyrene caravan inscriptions (see below) were not the merchants themselves, but rather powerful individuals who had assisted them in various ways. Will saw these patrons as traditional, land-owning elites, who were able to mobilize animals, guards, handlers, and, in some cases, money towards the completion of a caravan expedition, and that this took place as acts of euergetism, that is of public benevolence, rather than as direct economic investments.¹² Thus, for Will, the caravans were embedded in the socio-political matrix of Palmyra. The merchants Will considered to be commercial experts

6 Andrade (2018); Hartmann (2001).

7 Teixidor (1984); Drexhage (1988); Seland (2016).

8 Cf. Seland (2016), 75–88.

9 Weber (1921).

10 Cf. Manning (2018), 17–71.

11 Mommsen (1904), 428–429; Rostovtzeff (1932a).

12 Will (1957).

of modest political and social standing, and the caravan leaders attested in the inscriptions he saw as technical experts and mid-tier managers rather than parts of the urban elite.

Subsequent scholarship has largely sought to reconcile Will's insight that the persons honored in the inscriptions were rarely merchants, with the realization that there certainly were caravan leaders who were also men of considerable social status and economic means, that trade does appear to have been of vital importance to the city, and that it is hard to explain the prominence, scale and longevity of Palmyrene trade without elite endorsement, involvement, and investment.¹³ Most studies have focused on the civic, religious, military, and tribal status of the people shown public respect in the caravan inscriptions, but the problem pointed out by Will remains, viz. that these individuals were not honored for their commercial activities, but for their civic acts of support towards the caravans. This article turns instead to the people who are mentioned in the inscriptions as leaders or members of the caravans that received help. As argued below, Palmyrene caravan leaders were not the subordinate commercial and logistical experts envisioned by Will. Rather they were tightly integrated in the Palmyrene elite. They held prestigious civic and religious offices and were closely related to other such office holders. Some of them served as caravan leaders on several occasions, and certain families were involved in caravan trade over several generations. The people they honored with inscriptions and statues were not their superiors, but their peers. Past commentators have also emphasized the role of families in Palmyrene caravan trade,¹⁴ but this is the first study to systematically investigate the issue. Arguably it offers a way to resolve the debate on the role of the Palmyrene elite in the city's long-distance trade. In a certain manner the Palmyrene elite were indeed 'merchant princes' in the sense that political elites were deeply involved in the operation of caravan trade. But this was only one of their diverse sources of authority, reinforcing the impression that commercial activities were deeply embedded in the socio-political matrix of the Syrian desert-city.

Method

In most cases we know little more than the name of these individuals and the fact that they served as caravan leaders or traveled with a caravan in a certain year. Here, however, the Palmyrene epigraphic habit, with its preoccupation with patrilinear genealogies, comes to our help. Caravan members figuring in the inscriptions are mentioned with up to five ancestors and in some cases their family or tribe. This allows us to trace the prosopographical networks of the people traveling with Palmyrene caravans, and in some cases to identify them with documented funerary monuments. Prosopography, with its emphasis on common characteristics within a group,¹⁵ seems well adapted to reveal more about these individuals, who on first sight appear unexceptional compared to their more illustrious compatriots honored in the inscriptions.

Our main source of information about Palmyrene caravan trade is a group of c. 35 inscriptions.¹⁶ The number is approximate because strictly speaking, some of the texts deal with related matters such as diplomacy, taxation, and expatriate communities, rather than caravans. Most texts are bilinguals, Greek and Aramaic, but some have only been preserved in Aramaic. They were prominently displayed in public spaces in Palmyra, including in the Agora, several sanctuaries, and the colonnaded street. When the inscriptions were set up, they were accompanied by bronze statues, none of which are preserved. Typical texts honor a named male individual for his services towards a caravan. These services are sometimes unspecified, in other cases economic assistance, military protection or diplomatic inter-

13 E.g. Andrade (2013); Gregoratti (2015); (2020); Sommer (2018); Seland (2014); (2016); Yon (2002); Young (2001).

14 Gregoratti (2015); Yon (1998).

15 Verboven / Carlier / Dumolyn (2007).

16 Drexhage (1988); Fox / Lieu (n.d.); Gawlikowski (1994); Yon (2002), 263–264.

vention are mentioned. The texts also frequently mention caravan leaders, who are the group of interest in this study. These are usually not mentioned because of their service, but as sponsors of the inscription or simply in order to identify the caravan.

The c. 3,200 known Palmyrene inscriptions are gathered in the corpora of *Palmyrene Aramaic Texts* (PAT) and *Inscriptions Greques et Latines de la Syrie* (IGLS). For the current purpose the specialized *Inscriptiones palmyrenae selectae ad commercium pertinentes* (IPSCP) has been particularly useful in collecting most of the relevant texts. The present study utilizes earlier work to shed new light on a historical problem. This was only possible thanks to the prosopography of c. 6,000 names organized into 606 genealogies based on the texts then available by Palmira Piersimoni,¹⁷ and greatly helped by Jean-Baptist Yon's comprehensive 2002-study of the Palmyrene elite.¹⁸ A new, digital database with somewhat different scope is currently being developed by the *Prosopographia Palmyrena* project (von Danckelman, this volume), but has not been utilized here. It will surely enable better understanding of the socio-political embeddedness of Palmyrene caravan trade in the future.

Based on the texts collected in IPSCP with the addition of a single inscription not included there,¹⁹ 22 Palmyrene individuals were identified on the basis that they either served as caravan leaders (Aramaic: *rb šyrt'*, Greek: συνδιάρχης and variants) or actually and personally are said to have traveled, e.g. 'go up'/'go/come down' (*slq/nht*, ἀναβαίνω/κατελθόντες) with the caravan (tab. 1). This distinguishes them from the group of caravan patrons discussed in most scholarship on the subject, who are honored for their services to the caravan, but not for leading it, and who are not said to have traveled with it. Thus, illustrious Palmyrenes like Soados, son of Boliades, celebrated in a number of inscriptions between 132 and 145 AD,²⁰ and Septimius Worod,²¹ one of the most powerful individuals next to the royal family during the final decades of the Palmyrene polity, have not been included. Soades and Worod certainly assisted Palmyrene caravans, but, although they might have, there is no evidence that they themselves led or traveled with them. Most of the individuals are simply mentioned in the inscriptions in order to identify the caravan that sponsored the text, but some (seven) were receiving honors from a caravan or from the city for their leadership. This partial overlap between caravan leaders and caravan patrons is already well established and has received considerable scholarly attention.²² A single person who is not explicitly said to have headed or traveled with a caravan was also included: Ḥaddudan b. Ḥaddudan Firmôn (ID14). Ḥaddudan dedicated an inscription in Palmyrene²³ in 159 AD honoring Marcus Ulpius Yarḥai, son of Ḥairan Abgar (ID11), for help he received in Spasinou Charax, an important Palmyrene destination at the head of the Persian Gulf. This year Abgar, the son of Marcus (ID13), led a caravan from Spasinou Charax, and it is assumed that Ḥaddudan's participation in this caravan is the context for the assistance he received. Then 17 of these individuals were identified in 12 of Piersimoni's genealogies, enabling us to consider their position in Palmyrene society. Apart from their ID in the table below, individuals and their families are also identified with their IDs in Piersimoni's prosopography.

17 Piersimoni (1995).

18 Piersimoni (1995); Yon (2002).

19 PAT 0274.

20 See Andrade (2012); Gregoratti (2021); Yon (2002), 99–130.

21 E.g. PAT 0288.

22 Andrade (2013); Gregoratti (2015); Sommer (2018); Yon (2002).

23 IPSCP G 22

ID	Inscription	Name and patronyms	Year AD	Piersimoni (family, person)	Action/office
1	IPSPC G14 / PAT 0197	ḤGGW YRḤBWL Ἀγεγος Ἰαριβωλεους	132	–	Synodiarchês
2	IPSPC G14 / PAT 0197	TYMRŠW TYMRŠW Θαιμαρσος τοῦ Θαιμαρσου		–	Synodiarchês
3	IPSPC G8 / PAT1397	MRQS 'LPYS 'BGR ḤYRN 'BGR Μάρκος Οὐλπιος Ἀβγαρος Αἰρανου	135	129 Abgar, 'BGR3	Travelled with
4	IPSPC G10 / PAT1412	MLKW 'ZYZW Μαλχος τοῦ Αἰζειζου	140	–	Travelled with
5	IPSPC G12 / PAT0262	NS' ḤL' NS' ḤL' RP'L 'BSY Νεση̄ς Ἀλᾱ τοῦ Νεση̄ τοῦ Ἀλᾱ τοῦ Ῥεφαέλου τοῦ Ἀβισσέου	142	52 Abissai, NŠ'8	Synodiarchês
5	IPSPC G13 / PAT 1419	NŠ' ḤL' NŠ' ḤL' Νεση̄ς Ἀλᾱ τοῦ Νεση̄ τοῦ Ἀλᾱ	150	52 Abissai, NŠ'8	Travelled with
6	IPSPC G15 / JSS4	ML' ŠM'WN Μαλη̄ς Συμῶνου	144	–	Synodiarchês
7	IPSPC G15 / JSS4	ḤNBL ŠM'WN BZQ' Ἐννιβήλος Συμῶνου τοῦ Βαζέκη	144	–	Synodiarchês
8	PAT0274	ZBD'TH ZBDL' YDY Ζαβδεάθος Ζαβδελᾱ τοῦ Ἰαδδαίου	155	234 Yaddai, ZBD'TH8	Synodiarchês
9	IPSPC G18 / PAT0306	ḤYRN YRḤY TYM' Name not given in Greek version	157	77 Annubat, ḤYRN6	Travelled with
10	IPSPC G18 / PAT0306	ḤBYBY YRḤY ḤYRN Name not given in Greek version	157	77 Annubat, ḤBYBY7	Travelled with
11	IPSPC G18 / PAT0306	MRQS 'LPYS YRḤY ḤYRN 'BGR Μάρκων Οὐλπιον Ἰαραῖον Αἰράνου τοῦ Ἀβγάρου	157	129 Abgar, YRḤY4	Travelled with
11	IPSPC G23 / PAT0307	MRQS 'LPYS YRḤY ḤYRN 'BGR	150–160	129 Abgar, YRḤY4	Travelled with

		No Greek version of text			
12	IPSPC G19 / PAT1399	YDY ZBDLH YDY Ιαδδαιος Ζαβδιλα τοῦ Ιαδδαιου	157	234 Yaddai, YDY7	Synodiarchês
13	IPSPC G21 / PAT1409	ʾBGR (MRQS ʾLPYS YRḤY) ḤYRN ʾBGR Ἀβγαρος (Μάρκου Οὐλπίου Ἰαραιου Αἰρανου) τοῦ Ἀβγαρου	159	129 Abgar, ʾBGR5	Travelled with
14	IPSPC G22 / PAT1395	ḤDWDN ḤDWDN PRMWN No Greek version of text	159	11 Firmôn, ḤDWDN8	Received help Karka Maišan
15	IPSPC G25 / PAT1373	NŠʾ BLYDʾ Νεσῆς Βωλιάδους	161/ 163	232 Taimšamš, NŠʾ6	Synodiarchês
16	IPSPC G27 / PAT0309	TYMRŠW LŠMŠ MLKW ʾBY No Greek version of text	100– 150	44 Aʾabi, TYMRŠW15	Travelled with
17	IPSPC G28 / PAT0294	TYMRŠW TYMʾ MQYMW GRBʾ Θαιμαρσας Θαιμη τοῦ Μοκίμου τοῦ Γαρβᾶ	193	65 Garba, TYMRŠW4	Synodiarchês
18	IPSPC G29 / PAT1378	ʾGYLW MQY ʾGYLW ŠWYRʾ Ογηλος Μακκαιου τοῦ Ογηλου τοῦ Αγεγουτοῦ Σεουιρα	199	60 Sewira, ʾGYLW14	Synodiarchês
19	IPSPC G30 / PAT0295	[YDY] TYMRŠW TYMʾ MQYMW [GRBʾ] Ιαδδαιος Θαιμαρσα τοῦ Θαιμη τοῦ Μοκιμου τοῦ Γαρβα	211	65 Garba, YDY6	Travelled with
20	IPSPC G31 / PAT0276	YWLYS ʾWRLYS ZBYDʾ MQYMW ZBYDʾ ʾŠTWR BYDʾ Ιούλιος Αὐρήλιος Ζεβειδας Μοκιμου τοῦ Ζεβειδου τοῦ Ασθωρου Βαιδα	247	97 Baida, ZBYDʾ 11	Travelled with
21	IPSPC G32 / PAT0282	YWLYS ʾWRLYS ŠLMLT MLʾ ʾBDY Ἰούλιος Αὐρήλιος Σαλαμαλλαθος Μαλη τοῦ Ἀβδαιου	257/ 258	287 ʾAbdai, ŠLMLT3	Synodiarchês
22	IPSPC G33 / PAT1360	YWLYS ʾWRLYS NBWMY TYMŠMŠ BWNʾ ŠBY	Post 211	13 Baʾâ,	Synodiarchês

		Ἰούλιον Αὐρήλιον Νεβουμαίων Θαιμισαμσου τοῦ Βωννεους Σαβει		NBWMY35	
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Tab. 1: Identified and presumed Palmyrene caravan leaders and co-travellers.

Results

Before assessing the position of Palmyrene caravan leaders in their prosopographical networks, some observations can be made on basis of the list of individuals alone:

- It was possible to serve as caravan leader more than once. Nešâ, son of Ḥalâ (ID5), led caravans in 142 and 150 AD. ‘Ogēlu, son of Maqqai (ID18), is honored for leading caravans multiple times.
- The instances may be several years apart, and others might serve as caravan leaders in the intervening years. Malâ and Ḥanibâl, sons of Šim’on (ID6,7), 144 AD, thus serve between the documented terms of Nešâ.
- The example of Malâ and Ḥanibâl moreover demonstrates that there might be more than one caravan leader for a single caravan and that these could be brothers.
- Likely there could be more than one caravan in a single year. In 157 AD inscriptions mention caravans from Choumana (probably near Babylon²⁴) and Spasinou Charax.²⁵

Abgar Family

One of the most prominent caravan families of mid-second century Palmyra was the Abgar family of the Roman Sergia tribe.²⁶ Marcus Ulpius Yarḥai (ID11) is mentioned in a series of inscriptions from the 150s AD, making him one of the most celebrated caravan patrons. He is also lauded for his patriotism (Φιλοπάτρις).²⁷ In most cases he holds the role of a caravan patron, not said to travel or lead himself, but on two occasions he is reported to have accompanied merchants going to Palmyra from Choumana and Selukia.²⁸ Although Yarḥai is the most famous member of this family, his brother Abgar (ID3) led a caravan from Spasinou Charax to Palmyra in 135 AD, and his son, also named Abgar (ID13) served as *synodiarch* in 159 AD. The *nomen* Ulpius shows that the family received their Roman citizenship during the rule of Trajan (98–117 AD). This was rare in Palmyra and marks them as a part of the city’s absolute elite already at that point.²⁹

²⁴ Seland (2016), 39.

²⁵ IPSPC G18 and G19.

²⁶ Piersimoni (1995), 129, 654; Yon (2012), 142; fig. 1.

²⁷ PAT 1403, 2763.

²⁸ IPSPC G18, G23.

²⁹ Sommer (2018), 121.

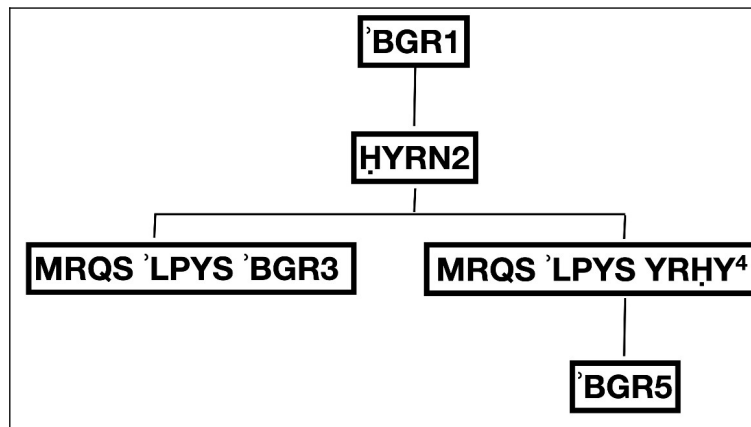


Fig. 1: Family tree of the Abgar family, Sergia tribe.

Firmôn Family

Among the most longstanding families of Palmyra were the Firmôn family (fig. 2), documented across eight generations.³⁰ Their scion Ḥaddudan (ID14 / ḤDWDN8) received help from Marcus Ulpius Yarḥai (ID11) when the former was in Spasinou Charax, 159 AD,³¹ presumably as part of the caravan lead by the latter's son Abgar (ID13). The Firmôn family apparently belonged to the Palmyrene elite for most of the city's documented history, although the earliest generations can only be reconstructed on grounds of genealogies given in the funerary inscriptions.³² Firmôn, the name of the eponymous ancestor, is held to be of Iranian origin,³³ indicating a rare case of geographical mobility in the early phase of Palmyrene history. Apart from Ḥaddudan, notable family members included his brother Yarḥibôlâ (YRḤBWL'9), who on evidence of a banqueting *tessera* seems to have held the position of *symposiarch* or the college of priests in the sanctuary of Bel,³⁴ the top religious office in Palmyra. Their cousin, also named Ḥaddudan (ḤDWDN12), purchased eight niches for his family in the famous Tomb of the Three Brothers 160 AD.³⁵ The latter Ḥaddudan's brother, Abgar ('BGR13), traveled with the *strategos* Yarḥai in the desert east of Palmyra.³⁶ 'Awidâ ('WYD'17), the grandson of the latter Ḥaddudan, was honored by the council of Palmyra together with his cousin Yarḥibôlâ (YRḤBWL'19), in 175 AD for providing bronze doors for the sanctuary of Bel,³⁷ while his sister Tomallakis (TLMK18) contributed 2,500 denarii towards the restoration of the bath of Aglibôlos and Malachibêlos, 182 AD.³⁸ The activities of the Firmôn family, especially generations 5–7 active in the latter half of the second century AD, are thus visible in many spheres and on the very top level of Palmyrene society: Trade, religion, military activity, and euergetism. Ḥaddudan's presence in Spasinou Charax, 159 AD, is a clear indication that some of the family's wealth stemmed from commercial activities.

30 Piersimoni (1995), 11, 563.

31 IPSPC G22 / PAT 1395.

32 Brughmans et al. (2021).

33 Piersimoni (1995), 11, 563; Yon (2012), 260, 262.

34 RTP 35; Milik (1972), 237.

35 PAT 0523.

36 PAT 2810.

37 IGLS 17.21.

38 PAT 1397.

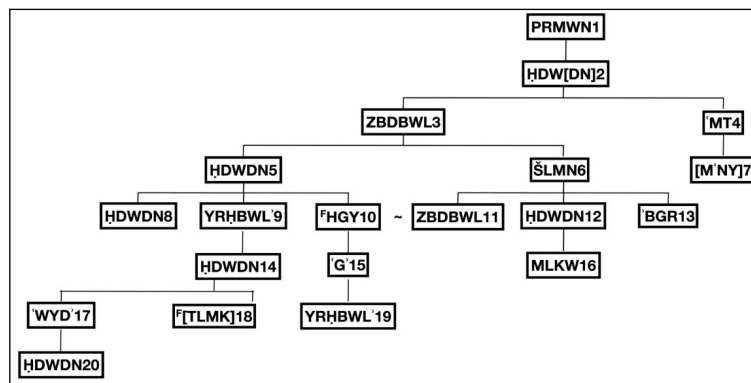


Fig. 2: Family tree of the Firmôn family, Sergia tribe.

Baidâ Family

The Baidâ family (fig. 3) is attested across six generations,³⁹ the final of which is of interest here. Julius Aurelius Zebeidas (ID20 / ZBYD'11) was honored by the members of a caravan he had accompanied to Vologesias in 247 AD.⁴⁰ His namesake and brother (ZBYD'10) bought tomb 150, the so-called Marôna tomb, named after its founder Julius Aureus Marôna, at an unknown date.⁴¹ This is significant not only because the purchase of an entire house-tomb signifies considerable wealth, but also because the Marôna tomb was the find-spot of the famous relief depicting a man standing between a ship and a camel (fig. 4), being a rare depiction of commercial involvement in Palmyrene art.⁴² Their cousin Bar'athe (BR'TH12) was honored by the people and the council of Palmyra at an uncertain date because 'he loved his city' (*rhym mdyth*).⁴³ In sum this shows the direct involvement in the operation of caravan trade by a family belonging to the utmost elite of Palmyrene society in the mid third century AD.

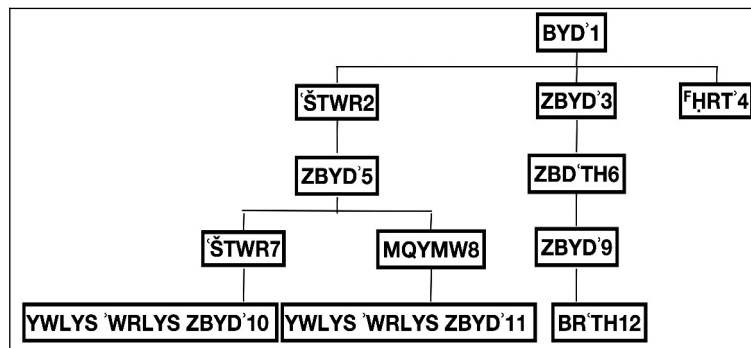


Fig. 3: Family tree of the Baidâ family.

39 Piersimoni (1995), 97, 636; fig. 3.

40 IPSPC G31 / PAT 0276.

41 Gawlikowski (1970), 146; PAT 0565.

42 Seland (2017).

43 PAT 1359.



Fig. 4: The ship relief from the Marôna/Baidâ family tomb (Palmyra Museum A24/1226; Photographer: Jørgen Christian Meyer).

Taimšamš Family

The Taimšamš family (fig. 5)⁴⁴ is notable because it was the family of the single individual that received the most civic honors for his benevolence towards the caravans according to the Palmyrene epigraphic record, Soados, son of Bôliades.⁴⁵ Soados (S'DW5) was active in the 130s and 140s AD. In 132 AD he was honored by the people and council with four statues in sanctuaries of Palmyra and an edict from the Roman Governor of Syria, Publius Marcellus.⁴⁶ In 144 AD he received further four statues in gratitude for leading military action against robbers threatening a caravan from Vologesias,⁴⁷ and in 145/146 AD another four statues were dedicated in gratitude of his many services to Palmyrene merchants, citizens and caravans in Vologesias. He is also said to have been honored by emperor Hadrian and his son Antoninus and to have established a temple of the Roman emperors in Vologesias.⁴⁸ It is notable, however, that Soados is never mentioned holding the office of caravan leader or honored for traveling with the caravans.⁴⁹ He is thus the prime example of a caravan patron as a role distinct from that of a caravan leader.⁵⁰ When situating Soados within his family, it nevertheless becomes clear that he hardly kept arm's length to commercial activities. Indeed we have to look no further than to his brother, Neša (NŠ'6, ID15), who served as *synodiarch* of a caravan returning from Spasinou Charax in 161 or 163 AD.⁵¹ That the family was well established as part of the Palmyrene

⁴⁴ Piersimoni (1995), 232, 637.

⁴⁵ Andrade (2012); Gregoratti (2015), 57.

⁴⁶ PAT 0197.

⁴⁷ IPSPC G15.

⁴⁸ PAT 1062.

⁴⁹ Yon (2002), 110–111.

⁵⁰ Young (2001), 135–136, Will (1957).

⁵¹ IPSPC G25 / PAT1373.

elite already before the generation of Soados and Neša is revealed by an inscription stating that their uncle Zebaida (ZBYD'3) held the top religious office of *symposiarch* in 117 AD.⁵²

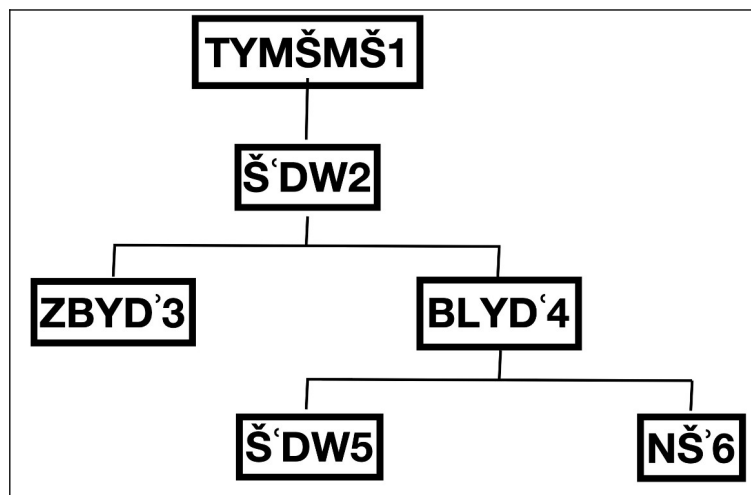


Fig. 5: Family tree of the Taimšamš family.

Garbâ Family

Less famous, but no less interesting is the Garbâ family (fig. 6),⁵³ documented across a respectable seven generations spanning from the first until the third century AD. In 193 AD Taimaršû, son of Taimê (ID17 / TYMRŠW4), was honored by the caravan he had traveled with from Spasinou Charax for his financial assistance of 300 gold *denarii*. In the Aramaic version he is explicitly mentioned as caravan leader.⁵⁴ In the same inscription his sons Yaddai and Zabdibôl are honored in capacity of being his sons. Yaddai is very likely identical with ID19 / YDY6, who was honored by the merchants who traveled in the caravan he headed to Vologesias 211 AD.⁵⁵ The Garbâs were thus involved in the operation of caravan trade over at least two generations, the sons traveling with their father before one of them would later assume the responsibility of caravan leader in his own right. That the family's standing in Palmyrene society did not rest on caravan trade alone is indicated by an inscription dedicated by the people and council 158 AD, honoring Taimaršû's brother Zebîdâ for unspecified services.⁵⁶

⁵² PAT 0265.

⁵³ Piersimoni (1995), 65, 608.

⁵⁴ IPSPC G28 / PAT 0294.

⁵⁵ IPSPC G30 / PAT 0295.

⁵⁶ IGLS 17.1.73.

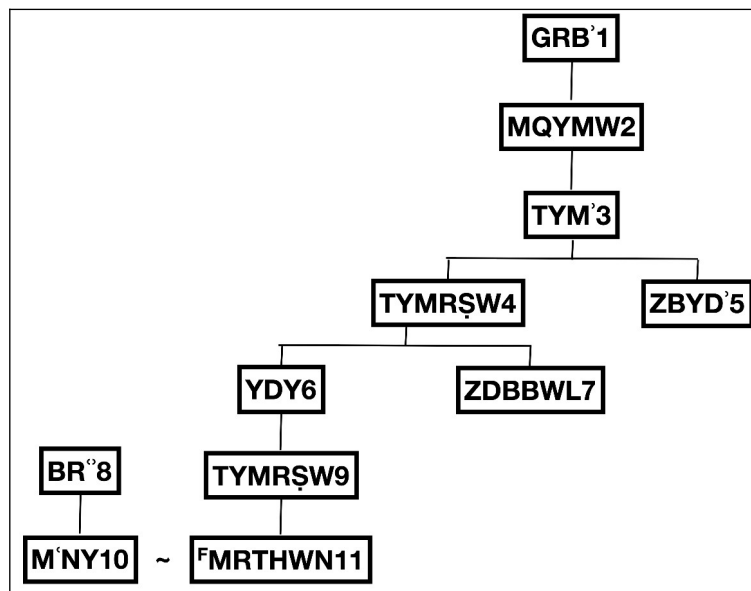


Fig. 6: Family tree of the Garbâ family.

A'abî Family

An example of a family belonging to the utmost civic and religious elite of Palmyra, but nevertheless having members involved in the direct operation of caravan trade is the A'abî family (fig. 7).⁵⁷ Yarhibôlâ (YRHBWL'12) appears in several texts. He constructed a temple to Baal Hamon at Jebel Muntar on the outskirts of Palmyra in 89 AD along with two others, he served as *symposiarch* (head priest), and he was *synedros* (president) of the council.⁵⁸ His son Šalman is attested as *symposiarch* on two *tesserae*.⁵⁹ In later generations, Yarhibôlâ's grand-nephew Mezabbana (MZBN'22) also served as a priest.⁶⁰ Yarhibôlâ's nephew Yarhibôlâ (YRHBWL'16) is famous in Palmyrene historiography for conducting an embassy to the kingdom of Elymais, on the coast of present-day Iran, on behalf of the (Palmyrene) merchants of Spasinou Charax,⁶¹ 138 AD. This is, parallel to Soados, the typical role of a caravan patron, acting for the merchants rather than as a merchant. Yarhibôlâ's brother Taimarşû (ID16 / TYMRŞW15), however, did travel with a caravan in person at an uncertain date in the first half of the second century AD,⁶² documenting the family's direct involvement in Palmyrene caravan trade.

⁵⁷ Piersimoni (1995), 44, 590.

⁵⁸ Yon (2002), 50–51.

⁵⁹ RTP31 and 34, cf. Yon (2002), 50–51.

⁶⁰ PAT 0816.

⁶¹ IPSPC G9 / PAT 1412.

⁶² IPSPC G27 / PAT 309.

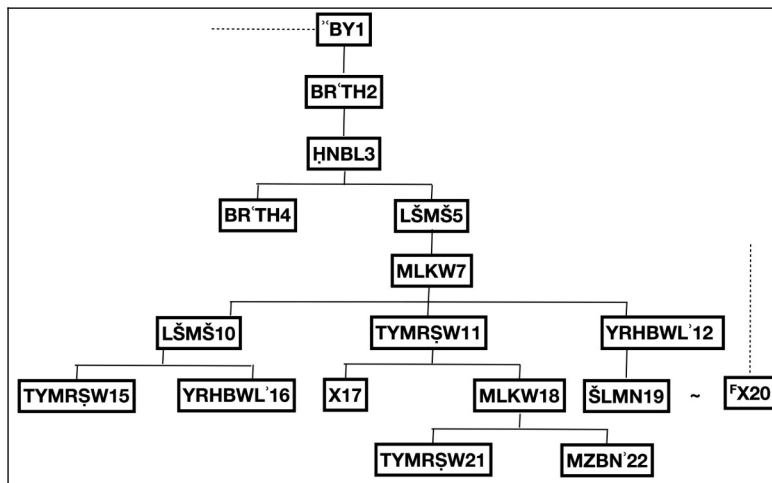


Fig. 7: Family tree of the A'abī family (partial).

Further Families

Finally there are several examples of the importance of family in Palmyrene caravan trade that do not require a discussion of the entire family tree. Neša (ID5) of the 'Abissai family (Piersimoni [1995], 44) served as caravan leader on two occasions, in 142 and 150 AD.⁶³ No other offices are attested for his family, but the family can be traced across nine generations, possibly indicating a long-standing elite status in Palmyra.

Another prestigious family that was involved in the caravan trade is the Ba'as,⁶⁴ that can be attested across 11 generations and that had three known family tombs.⁶⁵ Their last known scion was Julius Aurelius Nebomai (ID22) who served as *synodiarch*, likely sometime in the third century.⁶⁶ The brothers Zabda'ateh (ID8) and Yaddai (ID12) each served as caravan leaders from Spasinou Charax 155 and 157 AD. Zabda'ateh built tower tomb 38 nearly twenty years later,⁶⁷ signifying that the family⁶⁸ had continued to enjoy wealth and prestige Palmyrene society over a prolonged period.

The Annubat family⁶⁹ boasted two cousins, Hairan (ID9) and Ḥabībî (ID10), who traveled with a caravan from Choumana, likely in Babylonia⁷⁰ in 157 AD,⁷¹ honoring Marcus Ulpius Yarḥai (ID11). Ḥabībî's grandson, also named Ḥabībî, died in Rome and was commemorated by an unnamed brother there.⁷² It is not certain that he was in Rome on business, but neither is it unlikely, and in any case it attests that the family continued to enjoy a certain affluence.

A case arguably demonstrating a different kind of family network is that of the Šewîrâ family (Piersimoni 60). Their latest attested descendant, 'Ogêlu (ID18), received four statues from the people and council due to his longstanding military assistance to the caravans as *strategos*.⁷³ This would situate him among the most prominent caravan patrons, but he is also honored for his tenure as caravan leader

63 IPSPC G12, 13 / PAT 0262, 1419.

64 Piersimoni (1995), 13.

65 Tower tombs 21, 67 and 68; Piersimoni (1995), 565.

66 IPSPC G33 / PAT 1360.

67 Piersimoni (1995), 699.

68 Piersimoni (1995), 235.

69 Piersimoni (1995), 77.

70 Seland (2016), 39.

71 IPSPC G18 / PAT 0306.

72 PAT 0250.

on multiple occasions. ‘Ogêlu’s family is interesting because his great grandfather dedicated an inscription in Wadi Hauran in Iraq together with his brother and a third individual 97 AD.⁷⁴ This shows a longstanding connection with the desert regions that Palmyrene caravans passed through, presumably with the nomads inhabiting these regions, and arguably also with military service, adding to the civic and religious sources of prestige and authority that other Palmyrene families involved in caravan trade boasted.

Discussion

Situating Palmyrene caravan leaders with their families by means of prosopography allows several observations to be made. The most important is that the distinction between a group of caravan patrons and a group of caravan leaders, the latter being of lower status than the former, as argued by Will in his famous study⁷⁵ and accepted with modifications in much of subsequent scholarship including my own, cannot be maintained. Caravan patrons and caravan leaders do figure as separate categories in the epigraphic record, albeit with some limited overlap, the former group being on the receiving end of honors paid for and dedicated by the second group. However, there is little discernible difference in status. The caravan leaders we are able to identify within their family networks were sons, brothers and nephews of the individuals who were honored for their benevolence towards the caravans. It follows that they did not merely belong to the same sociopolitical and socioeconomic strata, but that they were connected with each other by kinship, friendship, and marital alliances. That, however, does not imply that Palmyra was ruled by a clique of ‘merchant princes’, as some commentators and most scholarship pre-Will have assumed. The cases outlined above reveal that commercial activities were only one basis of authority, others being religious, civic and military activities. Historical sociologist Michael Mann’s model of the sources of social power springs to mind. Mann argues that social power takes the form of overlapping networks of ideology, economy, military capacity, and politics.⁷⁶ Palmyrene caravan leaders specialized in one of these sources of power, but through their families, they diversified and integrated into other spheres of Palmyrene society.

This conclusion has arguably been anticipated by former studies of the Palmyrene elite showing how involvement of commercial activities was among their diversified means of securing income and influence in Palmyrene society.⁷⁷ This study, however, proceeds in the opposite direction, tracing the integration of commercial specialists in the civic, religious, and military elites of Palmyra. In that it also has bearings on our understanding of the place of trade in Palmyrene society. While elite involvement in trade in the Roman world is well documented, there is also evidence such activities were concealed. The most famous example is the anecdote that Cato the Elder engaged in maritime loans through a *societas* of 50 partners, using his freedman as his agent in order to avoid social stigma.⁷⁸ Cicero, while

73 IPSPC G29 / PAT 1378.

74 PAT 2738.

75 Will (1957).

76 Mann (1986–2013).

77 Esp. Andrade (2013); Seland (2016); Sommer (2018); Yon (2002).

78 Plut. Cato mai. 21,5.

looking down on small scale trade, nevertheless condoned large scale operations, especially if profits were invested in landed properties.⁷⁹ Even if allowing for variety over time and between different regions, commercial activities nevertheless rarely brought bragging rights within the social elites of the Roman world. Palmyra was different with respect to this. While the caravan inscriptions do not boast involvement in caravan trade, they show no attempts at hiding it. The elite status of the caravan leaders honoring their close family members will have been evident to contemporary observers. This does mark Palmyra as rather unique among ancient cities, making it fully deserving of its often applied label of caravan city.⁸⁰

79 Cic. off. 1,151.

80 Rostovtzeff (1932b); Millar (1998).

Abbreviations

- PAT: D.R. Hillers / Eleonora Cussini; Palmyrene Aramaic Texts, Baltimore / London 1996.
- IGLS: J.-B. Yon; Inscriptions grecques et latines de la Syrie. Palmyre. Tome XVII – Fascicule 1, Beyrouth 2012.
- IPSCP: S. Fox / G. Lieu; Inscriptiones palmyrenae selectae ad commercium pertinentes. Select Palmyrene Inscriptions on Commerce, Sydney, no date, https://www.mq.edu.au/_data/assets/pdf_file/0018/24525/106178.pdf (consulted 19.09.2023).
- RTP: H. Ingholt / H. Seyrig / J. Starcky; Recueil des Tesserres de Palmyre, Paris 1955.

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Figure References

Fig. 1: After Piersimoni (1995), 654.

Fig. 2: After Piersimoni (1995), 563.

Fig. 3: After Piersimoni (1995), 636.

Fig. 4: Photo Jørgen Christian Meyer.

Fig. 6: After Piersimoni (1995), 697.

Fig. 7: After Piersimoni (1995), 608.

Fig. 8: After Piersimoni (1995), 590.

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Prosopographia Palmyrena: Conception and Usage

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Abstract: This paper aims to present the process of establishing and using a database containing the prosopography gathered from the *Corpus of Palmyrene Inscriptions*. Therefore, a brief introduction to Palmyra and its epigraphic heritage will be given first. Then, the method of collecting and sorting the various data points will be explained. The problems of prosopographical identifications in Palmyra and the Palmyrene diaspora will then be discussed, including issues such as similar names, conflicting genealogies, missing provenance, inconsistent dating, and group affiliation. Finally, the essay proposes a method of mass-group analysis that aims to both reconstruct social groups of Palmyra and then compare those groups with other known Palmyrene groups.

Palmyra

Palmyra, known as ‘Tadmor’ (*tdmwr*) in Palmyrene, is a city located in the desert steppe of what is now southern Syria, once part of the Roman province of Syria. In historical accounts, Palmyra is most famous as the power base for Odaenathus’ defense of the Roman East and Zenobia’s bid for imperial glory. By the mid-270s AD, after these illustrious days, Palmyra was plundered, its trade networks collapsed, its epigraphic tradition faded, and much of the city was abandoned.¹

While the city itself is situated in an oasis, it once controlled a vast amount of territory, called the Palmyrena, that likely stretched all the way up to the Euphrates and was dotted with villages, extensively cultivated fields and pastures for Palmyrene pastoralists.² The rapid decline of the city preserved not only the magnificent ruins of Palmyra, but also a unique corpus of often bilingual inscriptions dating from the late years BCE to 274 AD. In addition to that, an extensive trading network and military service of Palmyrene soldiers in Roman auxiliary units led to an extensive Palmyrene Diaspora, preserved in Inscriptions found as far from Palmyra as Britain, North Africa or Rome itself.³

Since its ‘rediscovery’ in the 18th century, a substantial collection of Palmyrene inscriptions has been edited and is now accessible through three key publications. *The Palmyrene Aramaic Texts (PAT)*, edited by Delbert R. Hillers and Eleonora Cussini,⁴ includes 2,832 inscriptions, representing the majority of known Palmyrene inscriptions across Europe, Asia, and Africa, along with an extensive glossary and annex. This is complemented by Jean-Baptiste Yon’s *L’épigraphie palmyrénienne depuis PAT*, 1996–2011⁵ and his *Inscriptions grecques et latines de la Syrie*. Palmyre. Tome XVII (IGLS

1 Sommer (2018), 164–175; Hartmann (2001), 375–423; Smith (2013), 175–184.

2 Meyer (2017), 24–57.

3 E.g. Britain: PAT 0246; Rome: PAT 0247–PAT 0250; Northern Africa: PAT 0252–PAT 0253.

4 Hillers / Cussini (1996), 24–331.

5 Yon (2013), 338–363.

XVII), which focuses on Greek, Latin, and bilingual inscriptions from Palmyra.⁶ Additional Latin inscriptions are scattered across the Italian peninsula, modern Algeria, Tunisia, and particularly the ancient Roman province of Dacia.

Altogether, the Palmyrene corpus consists of approximately 3,200 inscriptions written in Palmyrene Aramaic, Greek, and Latin. These inscriptions record the names of around 8,300 individuals, primarily found in funerary, honorific, or dedicatory contexts. The amount of personal information provided varies significantly; however, in the case of short funerary inscriptions, it is not uncommon for only the deceased's name to be mentioned, often followed by a patrilineal genealogy ranging from a single generation to more than eight. The first prosopography of the Palmyrenes was compiled by Palmira Piersimoni in 1995. It contains an alphabetical list of all known Palmyrenes to that date, including information about the Name, the family, the date of the inscription and the bibliographical information of the inscription itself. Piersimoni also painstakingly reconstructed the family trees for hundreds of Palmyrene clans and families.⁷

While the Database of the Prosopographia Palmyrena follows the basic approach of using names, families, and dates on an attestation-level, it does not attempt to replicate the family trees but rather tries to broaden the information for each entry and thus enable new approaches to different parts of the Palmyrene society.

How to Create a Database for the Palmyrene Prosopography?

The creation of this database relied heavily on the extensive work of the Palmyrene Aramaic Texts (PAT). Each inscription in the PAT includes a standardized header providing critical interpretive data. A typical header reads like this:

PAT 0052 **Ber '35 p 102 X** **A.D. 249**
 Prov: Palmyra, S-W Necropolis, Tomb of Malku.
 Loc: Palmyra, *in situ*. *Funerary: Cession. On*
doorjamb. Group: see Ber '35 p 91. Bib: *Ingholt*
'35 pl XLI, 1; MF Concession 21.

Fig. 1: Header of PAT 0052, Hillers / Cussini 1996, 31.

From the header, a large amount of information for the database could be gathered and divided in four main categories:

- I. Referential information: The number within the PAT and further references. It is therefore possible to filter for the information of all persons mentioned in a distinct inscription.
- II. Provenance: The inscription's provenance is typically provided, though its precision varies. Some locations are detailed down to a specific funerary tower or temple, while for many others, only "Palmyra" or "Palmyrena" is noted – if anything at all. Provenance data was used to map the approximate location of each entry. The modern location of the inscriptions was excluded from the database

⁶ Yon (2012), 13–419.

⁷ Piersimoni (1995).

since it rarely pertains to the individuals mentioned, and it may have changed since the PAT's publication, particularly due to the site's destruction by Daesh and widespread looting.⁸ If necessary, for example to verify whether a particular inscription was acquired by a specific collection during a particular excavation, locations can still be accessed via the PAT or other cited references.



Fig. 2: A characteristic Palmyrene funerary bust, representative of those housed in numerous collections and museums worldwide.⁹

III. Dating information: If a date is given within the inscription, it usually refers to the month and the year of the Seleucid or Macedonian era. The header of the PAT conveniently translates this into the

⁸ As an example: The large group from the Tomb of Male (PAT 0026-PAT0043) was marked as “*in situ*” by the PAT, but after extensive destruction and looting by various terrorist groups, their present location can not be taken for granted.

⁹ This particular example is displayed in the Louvre, cataloged under Inventory No. AO5004 = PAT 0735. Neither the Louvre nor the PAT provide precise provenance information. For the display at the Louvre: <https://collections.louvre.fr/en/ark:/53355/cl010127833> (consulted 21.04.2025).

Christian Era.¹⁰ Regrettably, there does not yet exist a reliable and widely applied method to date Palmyrene inscriptions via iconographic or paleographic criteria.¹¹

IV. Classification information: The PAT mainly classifies inscriptions based on their context as funerary, funerary foundation, funerary cession, honorific, dedicatory, *tessera* or graffito. In most cases the material or object on which the inscription was found is also mentioned, i.e. on relief, on column drum, on wall or on door lintel.¹² This information shall allow the database to be searched by different groups of inscriptions.¹³ Via the usage of these categories it should be possible to identify certain groups and subgroups, then search for their representation in other categories. As an example: How many people named *mlkw* are known from honorific inscriptions from 156 to 230 AD? From the texts themselves, several types of information were extracted and gathered for the database.

Of course, the largest category consists of names. These were always copied in the grammatical form found in the inscription. After extraction, the names were organized into several fields.

A) The name of any person in (if present) Palmyrene, Greek, and Latin.

B) The genealogy and / or family of any person in any language present (Palmyrene, Greek and Latin).

This was also divided into:

name, child of, grandchild of, great-grandchild of, descendant of, parent of, grandparent of, great-grandparent of, ancestor of, brother / sister of, uncle / aunt of, niece / nephew of, cousin of, child in law of, parent in law of, spouse of.

If applicable, this information was collected in all three languages present in the corpus. From the name and family information, the sex of the person in question could be derived and was entered as well (if applicable – sometimes it remains unclear).

Furthermore, each inscription was searched for:

type / name of office, social standing and / or employment (Butcher, *Symposiarch*, *Grammateus*, Slave, Freedman, Patron etc.), Roman citizenship (if visible through the name), worshiped gods, tribal affiliation (*bny mtbwl*, *bny kmr*² etc.).

If applicable, further information – such as the institution or person setting up an honorary inscription or locations mentioned – was noted under ‘further remarks’. Another charter indicates the likely identity of one person with a namesake from a different inscription, breaching the gap between attestation and full identification.

10 All the Christian dates given in the database are those from the editions. The dates corrected by Andrew G.K. Taylor are given in a field for other information. See Taylor (2001), 203–219.

11 The *Palmyrene Portrait Project* has come to the conclusion that a stylistic dating method can be applied (see Rubina Raja et al. [2021]). But the results are not all published yet, so they are not available for our project.

12 The dispersion of Palmyrene art through dozens of museums and collections means that the classification does often-times not correspond with knowledge about the provenance or the original location of the inscription. This affects relief inscriptions more than those on column drums or walls.

13 Other epigraphic collections, like the annotations to the PAT by Yon (2013), are not designed in the same manner, e.g. they do not display a classification and the provenance is not always provided. In those cases provenance had to be left open and a classification was attempted by the author.



Fig. 3: A Palmyrene funerary Inscription.¹⁴

Problems of Palmyrene Prosopography

After collecting the necessary or available details for each entry, using the Palmyrene prosopography presents several challenges, particularly in identifying individuals. This classic prosopographical difficulty is exacerbated by the nature of the evidence. This section identifies these issues and explores how – or if – they can be addressed.

¹⁴ Louvre Inventory No. AO 2205 = PAT 0460. It is known that the inscription came to the Louvre through the expedition of Bellon and Bequillard, but no further details about the exact provenance are published by either the Louvre or the PAT. See: <https://collections.louvre.fr/en/ark:/53355/cl010127815> (consulted 26.04.2025).

Since many identification approaches require substantial argumentation for each individual, the database takes a distinct approach. Every person mentioned in an inscription receives a unique entry, preserving the grammatical form used in the text.¹⁵ Where identification is deemed likely or certain – though this is rare – related inscriptions are linked under a “likely identical with namesake from” label. This leaves the final identification decision to the user, while clearly distinguishing information from separate inscriptions, such as location, worshiped gods, inscription type, date, and social details.

The Problem of Similarity

The Palmyrene corpus features a wide range of names, yet some, like *hyrn*, *yrhy*, *mlkw*, and *mqymw*, appear hundreds of times and often dominate short genealogies. Distinguishing between individuals with similar names is a significant challenge, especially when inscriptions lack additional details (e.g., date, genealogy, occupation) and precise provenance is unknown, rendering identification nearly impossible. However, the frequent recurrence of these names enables statistical approaches to group analysis. Since many Palmyrene families favored a limited set of names, their presence or absence in specific contexts may suggest cultural ties or family involvement. Examples of such group reconstructions are provided later.

The Problem of Changing Names

The majority of well-attested names in the Palmyrene corpus is always written in the same manner.¹⁶ For instance, in PAT 0057 and PAT 0058, the father of *ywlys ʾwrllys ydyʿbl* (Iulius Aurelius Idiabel) is named *ʿbdšmyʿ* (Abdischamaia)¹⁷ in one and *ʿbšmyʿ* (Abschamaia)¹⁸ in the other. This discrepancy is compounded by the Greek rendering in PAT 0057, Ἀβισαμαίας, which omits the Palmyrene Dalet and corresponds more closely to *ʿbšmyʿ* from PAT 0058. This name is also poorly attested: the only other occurrence is found on the famous Palmyrene prayer tablet in the Hoq-Cave on Socotra, which gives the reading *ʿbšmyʿ*.¹⁹ Such variations can hinder identification, as a search for *ʿbšmyʿ* misses *ʿbdšmyʿ*, despite referring to the same person in this case. Other names, like *lšmš*, *lšmšy*, and *lšmšw*, or *mqymw*, *mqym*, *mqymy*, and *mqymt*, show multiple variants from a common (often theophoric) root. Rare variants might reflect errors, abbreviations, or preferences, but individuals could also be known by different forms of their name. Without supporting evidence like genealogies, dates, provenance, or multilingual variants, identification becomes dubious when names deviate even slightly.

This sort of deviation gets even more puzzling when it only applies in one language, but for a major institution of Palmyra: The name of the tribe *bny kmrʿ* is always spelled this way in their Palmyrene inscriptions, but until 182 AD, the Greek version usually gives a deviation of the form Χομαρήνων.²⁰ That practice changes in 182 AD, when a different version is encountered for the first time in a dedication for a benevolent woman, which mentions a tribe called the Χωνειτών.²¹ The tribe is then also known under the name Χωνει[τών] in the famous inscription that mentions it as part of the ‘four

15 Unlike in Greek, the Aramaic language does not change the consonants of the names due to grammatical forms. Since the vast majority of inscriptions is bilingual or in Aramaic, it was decided to follow this pattern for the Greek names and gather their forms as written within the inscription.

16 This is true for most well attested names like *ʿgʿ*, *mlkw*, *hyrn* or *yrhy*. For an overview see Hillers / Cussini (1996), 429–441.

17 PAT 0057.

18 PAT 0058.

19 Yon (2013) no 115; Gorea (2012), 453–454.

20 Like in PAT 1134 from 67 AD.

21 IGLS XVII 312.

tribes'.²² During the next section, one example of a possible, yet by no means certain, identification of a person with different written names shall be given.

Identifying a Roman *centurio* in Palmyra?

In the year 135 AD, a Roman *centurio* called *ywlys mksms* / Ἰούλιος Μάξιμος was honored with an inscription and a statue at the Agora of Palmyra, erected for him by a member of Palmyra's leading family of that time, *mrqs ḥlpys ḥbgr*, as well as the members of the caravan he evidently had helped in distress.²³

This Roman *centurio* might have been identical to a *centurio* named *gys ywlys mksyms* / Ἰούλιος Μάξιμος who, twenty years prior, set up a dedication at the Great Colonnade – the only such inscription from a *centurio* in Palmyra that is known to us.²⁴ Could he have been the same man? While the gap of twenty years is significant, it is not so great that an identity is impossible.²⁵ The spelling differences for *mksyms* / *mksms* might be explained by the fact that one inscription was set up by the man himself while the other was made to his honor. To push our luck even further, a third inscription of yet another Roman *centurio* with Palmyrene connections can be found, which refers to a *centurio* of a Palmyrene unit stationed in the province of Africa under the command of a man called *mksmws*.²⁶ Given that a career change from the legions into the auxiliaries would have been a strange career choice indeed,²⁷ the identity of *mksmws* with the centurions mentioned in Palmyra must be highly dubious at best.

If one accepts the assumption of the identity of the different Iulii Maximii mentioned in the two inscriptions set up in Palmyra itself as fact, the reconstruction of his military career would read somewhat like this: Given that Gaius Iulius Maximus was already a *centurio* in 115 AD, we can assume that he joined the legions at least some time before that. Since 'our' Maximus enjoyed a career of more than 20 years as a *centurio*, I would argue that he very likely started his career either as a *centurio* or in another somewhat elevated position.²⁸

The fact that his dedication was bilingual in Greek and Aramaic shows that he was already familiar with local customs, making it likely that he originated from Roman Syria, but since no genealogy is mentioned he was very likely not a Palmyrene by birth. He could, however, have acquired a sense of cultural belonging to the broader sphere of Palmyra while serving as a local commander on the river-border, a position that at least one other Roman *centurio* was honored for.²⁹ Having (re-)joined one of the legions in Syria, he would have been a very useful asset whenever the legions had to deal with Palmyrene warriors. The fact that he was personally honored for a very specific deed towards a spe-

22 PAT 1063.

23 PAT 1397.

24 PAT 1548: Ἰούλιος Μάξιμος.

25 Yon (2012), 202 argues in that favour: "vraisemblablement du meme". LeBohec (2015), 47 notes a centurion who served for a total of 40 years.

26 PAT 0253.

27 The renowned inscription from Philippi (00522 = IDRE-02, 363), associated with yet another Tiberius Claudius Maximus, demonstrates that transitioning from legions to auxiliary units was generally feasible. However, this Tiberius Claudius Maximus never achieved the rank of *centurio*. It is doubtful that a legionary *centurio* would have accepted a posting in an auxiliary unit, as a *centurio cohortis* earned approximately 5,000 *sestertii* annually, while a legionary *centurio* commanded around 18,000 *sestertii*. This significant pay disparity underscores the unlikelihood of such a transfer. For a reconstructed pay scale of the Roman army: Speidel (2009), 378.

28 For Roman soldiers who began their careers as centurions: LeBohec (2015), 47.

29 ILGS XVII 00207 and 208 mention a *centurio* called Celestico as the *curator ripae superioris et inferioris*, most likely referring to a position at the Euphrates.

cific Palmyrene caravan would then indicate that he was put in charge of a *vexillation* that either manned a garrison somewhere along the track or guarded the caravan itself. This, however, raises another problem: Why would a *centurio* of a legion serve as a caravan-guard in the fringes of the desert?³⁰ Surely the Roman army had learned its lesson at Carrhae: Heavy, unsupported legionary infantry was unsuited to desert warfare. Several solutions come to mind. First of all, Maximus could have been in command of the cavalry contingent of a legion, but since those cavalymen were vital for scouting and communications it seems unlikely that a whole unit of them would have been delegated to such a task. Another solution might be that Maximus was a supernumerary officer who was specifically detailed for duty in Palmyra.³¹

There is, however, a third solution, which hinges on the exact meaning of the Palmyrene phrase *lgywn*. Apart from PAT 1548 and PAT 1397, this term can be found in several other inscriptions: One inscription where it is used to specifically identify a *centurio* of the Fourth legion,³² one very late inscription where one of the deeds of the honorand is that he “brought the legions to Palmyra”,³³ and an even later dedication that a Roman soldier “from the Legion in Bosra” set up to honor Odaenathus.³⁴ Only two of those cases refer to specific units, whereas the usage in PAT 0278 is more general: ‘Legion’ is used as a synonym for ‘Roman army’. If Maximus used *lgywn* in this way, he might very well have been ‘only’ a *centurio* of the auxiliaries.

This concise study highlights key challenges in identifying individuals across Palmyrene inscriptions. Variations in names within Palmyrene texts, coupled with significant temporal and geographical gaps – such as those observed in Numidia – complicate the process, though these obstacles are not insurmountable. While the name in question is exceedingly rare within the Corpus of Palmyrene Inscriptions, it is relatively common across the broader Roman Empire. This prompts a compelling question: were multiple men named Maximus commanding centuries of Palmyrene soldiers between 100 and 135 CE, or was there a single individual? The answer may remain elusive.

Genealogy, Ancestor or What?

Another problem of Palmyrene prosopography is that, while most names in genealogies are connected with expressions like *br* (son), *brt* (daughter), *bnt* (children), or *bny* (sons, children, member), this does not always convey the same meaning, as can be shown by the usage of *bny*: *bny* can identify three different social relations. That of brothers to their father: “*ʔlhbl wmʿny wšky wmlkw bny whblt*”³⁵ – “*ʔlhbl* and *mʿny* and *šky* and *mlkw*, sons of *whblt*”³⁶. That of a member of a tribe: “N.N. (*mn*) *bny mʿzyn*”³⁷ – “N.N. (from) the sons of *mʿzyn*” or that of membership in a temporary or recurring group, like a caravan: “Sons of the caravan, *bny šyrt*”³⁸ or “sons of the symposium, *bny mrzḥ*”³⁹.

Likewise, the *br* connecting father and son is sometimes omitted – often before the last name in a genealogy, indicating that this last name might be that of a more distant ancestor. This is, however no

30 Yon (2012), 202, argues that Maximus was most likely a *centurio* of the *III Gallica*, stationed to the east of Palmyra.

31 For supernumerary officers: LeBohec (2015), 46–47.

32 PAT 0308, Latin-Aramaic.

33 PAT 0278, dated to 242 AD.

34 PAT 0290, dated to 251 AD.

35 PAT 0486.

36 Note that the *w* (“and”) is the connecting particle that is affixed to the beginning of a word in Palmyrene Aramaic to connect it to the previous word or sentence. Other such particles are *b* (“in”) *l* (for) or *m* (of).

37 PAT 2772, PAT 0179.

38 PAT 0197, 0262, 0309, 1397, 1412, 1419, IGLS XVII 127.

39 PAT 0177, PAT 0178, PAT 0326.

general rule, since sometimes *br* is omitted entirely⁴⁰ or in the middle of a genealogy.⁴¹ Therefore, if a *br* at the end of an inscription is missing, the database has added these personal names as if a *br* had been written, i.e. as the father of the last person connected with a “*br*”. “*mqymw br mlkw br lšmš mlkw*” gets “*mqymw, son of mlkw, son of lšmš (son of) mlkw*”.

Another difficulty can be found with rare words attached to a genealogy without a *br*. Such an expression might be a name, but it could also describe a role in the tribe or clan such as ‘chief’ or ‘elder’.⁴² Other descriptions refer to a connection to the family like ‘foster mother’.⁴³ Very rarely there is even a job description to be found, like ‘baker’ or ‘butcher’.⁴⁴ In other cases the job description itself might have become hereditary: Three funerary cession documents emphasize the role of one party’s family as ‘physicians’.⁴⁵

The usage of distant ancestors mentioned in several inscriptions is often used as the basis for reconstructing family relations. This, however, is also prone to difficulties as shall be demonstrated for the so called Firmon family.

The house of Firmon is a well documented family that was chosen as one of the studied groups for the kinship network analysis of Palmyrene genealogies.⁴⁶ In PAT 0260 from 175 AD the name *prmwn* / Φίρμωνος is attached at the end of a long genealogy: “*yrhbwł', son of hwdn, son of zbdbwl, son of hwdn (son of) prmwn*”. Here, *prmwn* is not connected with any word or particle, marking him most likely as a distant ancestor. Since the Aramaic name is found in the next line of the inscription without any apparent connection to the genealogy, it was at first falsely omitted from the database entirely.

Within PAT 1571, a dedicatory inscription likely from the first century AD, *prmwn* / ΦΙΡΜΩΝΟΣ is again placed as the last (fourth) name of the genealogy. The name in the Aramaic version is again used without *br*, but this time the Greek version⁴⁷ connects it with the rest of the genealogy by using ΤΟΥ: Should this be interpreted as ΦΙΡΜΩΝΟΣ being a more distant ancestor or as him being the direct grandfather of preceding person?

A third inscription, Schuol 25 from 159 AD, however, being only in Aramaic, gives “*hwdn, son of hwdn prmwn*”, placing him as either the grandfather or an ancestor, and matching neither the number nor the practice nor the placement of either PAT 0260 or PAT 1571.

While it still remains entirely possible that the persons mentioned in all three inscriptions were related to each other, such discrepancies should be a warning sign against the hope of reconstructing seemingly flawless family trees.

40 This is most common on *tesserae*. As an example, the reverse of PAT 2811 provides four names but no indication if those names are from the genealogy of the first person or if all four persons were invitees or if only two persons were named and had the customary patronym added to their name.

41 This can be seen in PAT 0115: One genealogy provided goes as follows: “*yrhy br 'gylw br tymh' br 'ydn 'sry, br zbdbwl, br 'ydn*”. Is *'ydn 'sry* one name? Does it refer to an ancestor, since *'ydn* is the name of the last ancestor mentioned? Or was the *br* omitted by accident and two different persons are meant?

42 Most commonly referred to as *rb* or *rb'* – “*leader, elder, head*”. Examples for the practice of adding this word to a genealogy can be found in PAT 1760, PAT 1871, PAT 1901, PAT 2302, PAT 1660, PAT 1167, PAT 2768, PAT 2227, PAT 1019, PAT 1043.

43 PAT 1954.

44 Baker: *nhtwm*, PAT 1458, Tailor: *tbh'*, PAT 0415. A detailed analysis of Palmyrene occupations can be found in Cussini (2017), 84–96. For their usage in funerary inscriptions see also Yon (2021), 132.

45 *sy'* / *'sy'* is mentioned in the cession texts PAT 0044, PAT 0048, PAT 0049. Two other occurrences are in PAT 0094 and PAT 1558.

46 Brughmans et al. (2021), 41–84. For the reconstruction of the family tree see Piersimoni (1995), 563.

47 PAT 1571: [Διὶ ὧ]ΨΙΣΤΩ ΚΑΙ ΕΠΗΚΟΩ ΜΑΝΝΑΙΟΣ ΑΜΜΑΘΟΥ 2 [τοῦ Αδδ]ΟΥΔΑΝΟΥ ΤΟΥ ΦΙΡΜΟΝΟΣ ΥΠΕΡ ΣΤΩΗ 3 [ρίας αὐτοῦ] καὶ τῶ]Ν ΤΕΚΝΩΝ ΜΗΝΙ ΠΕΡΕΙΤΙΩ 4 [...].

Dating of Palmyrene Inscriptions

The vast majority of inscriptions from Palmyra are undated, and in many cases, the exact provenance is unknown. Therefore, dating evidence is crucial for any attempt to securely identify individuals. The span during which a secure identification can be made shall be estimated as one generation, so roughly 25–30 years. A prime example of this can be found in the person of *mrqs ʾlpys yrhy*, son of *hyrn* / Μάρκος Οὔλπιος Ἰαραῖος, son of Αἰρανῆς: His Roman name and genealogy are mentioned in seven entries of the database, all except two of which can be securely dated between 156 and 159 AD.⁴⁸

In this case, the genealogy and the name allow the identification of *mrqs ʾlpys yrhy* in the undated inscriptions of PAT 1403 and PAT 1422, although there is confusion about the Greek version of his name in PAT 1422, where the name Μάρκος Οὔλπιος Αἰρανῆς, of the tribe Sergia, son of Ἰαραῖος, likely refers not to the *mrqs ʾlpys yrhy* mentioned in the Aramaic text but to another person entirely.

But even dated evidence from Palmyra is not entirely unproblematic: The date itself often only provides the year. Sometimes the month is mentioned by name, and very rarely the day is also mentioned using Palmyrene number symbols that are already transcribed into Arabic numerals in the publications of the inscriptions.⁴⁹

To avoid confusion and ease the search for dates, the database only mentions the year, mostly using the modern dating formula and not the ancient Seleucid calendar. It overwhelmingly relies on the dates provided by the editors.⁵⁰ Having established a date for an inscription, the next question is: What precisely, does the date in an inscription actually date? There are several possibilities for this, depending on the nature of the inscription.

For dedicatory inscriptions on religious objects, like altars, one can be quite certain that any date provided would be at least roughly coherent with the date on which the dedication itself took place.⁵¹

Funerary foundations, on the other hand might date one of several occasions: They could mark the ‘opening’ of the monument, but they might also indicate the date when construction was begun or when the facade was finished.⁵² Since almost no Palmyrene funerary inscription gives any indication of the age or date of birth of the deceased,⁵³ we can only assume that funerary foundations were, at most times, undertaken while the owner was not only alive but also both economically and physically well-off.⁵⁴

48 PAT 1396, PAT 1397, PAT 1403, PAT 1409, PAT 1411, PAT 1422.

49 There are some carefully dated relief-inscriptions like PAT 0005, PAT 0009.2 and PAT 0902, as well as the door-lintel funerary inscription PAT 0510.

50 There are several instances where the dating formula was not translated into the modern calendar by the editors (PAT 0094, PAT 0095, PAT 0525, PAT 1364, PAT 1684). For these inscriptions the date of the Seleucid Era was used, and they are marked as “S.E.” in the database. A correction of the dates used by the PAT was subsequently published by David Taylor (Taylor [2001]).

51 Examples for that might be found in PAT 1677, 2632, 0257, 0179, 0360. PAT 0340 and PAT 0341 even provide the exact day of the dedication itself.

52 Palmyrene tomb towers were built in a continuous process over a longer period of time, as shown by several surviving texts that document extensions and subdivisions within larger tomb complexes. For example, the foundational inscription of the Tomb of Male (PAT 0026) dates to 109 AD whereas the last cession text from this complex, PAT 0043, dates to 237 AD. For the construction process: Henning (2013), 41–47.

53 Notable exceptions to this are PAT 0923 and the diasporic inscription PAT 0253.

54 The prime example for this is *hyrn*, son of *bwn*², son of *rbʿl*, who’s funerary foundation is dated to 52 AD (PAT 2801). He is then honored by the priests of Bel in 56 AD, indicating that he was not only alive but retained a powerful presence in the Palmyrene society.

Since some funerary inscription supply us with information about brothers and mothers of the founder who were mentioned as beneficiaries of the foundation,⁵⁵ but fathers are not mentioned in this manner, we can further claim that most builders of funerary monuments only took to the task after their fathers had already died. Funerary cessions are another matter entirely, as those documents seem to have been largely based on the actual sales contract, sometimes even copying specific details like witnesses or the name of the scribe who set up the contract.⁵⁶ Therefore, it can be assumed that the date in the cession inscription matches the date of the original contract.

Honorary inscriptions are presumably also straightforward, but it must be kept in mind that they indicate the date when the inscription was either ordered (by the *boule* or the person who set the inscription up) or the date when the inscription was completed. The action or deed of the honorand lies always in the past and may have taken place several years ago, as indicated in the inscription of 'gylw, son of mgy, son of 'gylw, son of šwyr', who in 199 AD was, amongst other things, honored for several campaigns he undertook, indicating years or perhaps even decades worth of service.⁵⁷

Other inscriptions may allude to more recent, specific events, a pattern most strikingly observed in the so-called 'caravan inscriptions.' These texts, tied to the grand annual caravan, pay tribute to the benefactor who supported each expedition.⁵⁸

But even there a certain delay has to be anticipated. Formulas such as 'by the sons of the caravan' indicate that the decision to honor an individual was taken while the caravan was still gathered as a distinct social community. We do not know how long it took each caravan to set the inscription up, but there are several hurdles to consider: First, the location for the inscription and the statue had to be identified and, if it was to be placed in a temple, the priesthood had to grant permission. Then the statue and the inscription had to be commissioned, completed, and finally unveiled – presumably in some sort of celebratory fashion, especially if the council was involved.⁵⁹ All of this required not only time but also quite considerable amounts of financial investments, especially if the statues were made of bronze.⁶⁰ The *Tariff Law* states that, when imported, bronze images should be taxed as half a camel-load of metal, suggesting that import of heavy bronze images was common enough to warrant special taxes.⁶¹ If bronze images had to be commissioned, cast and then transported to Palmyra from abroad, this would add considerable delay to honorific actions. Additionally, the funds needed for all of this could only be collected after at least some of the goods had been sold. Also, not all caravans honored deeds that were performed for homecoming caravans,⁶² adding what could potentially be a years-long delay between the deed and the finished inscription. We have no secure way of knowing how long each individual delay lasted, but the possibility of a delay should be kept in mind when one attempts to

55 In PAT 1134, the funerary founder alleges that his monument should also benefit his brother, half-brothers and his mother. PAT 2816 mentions the brother and the mother of the founder, while PAT 1051 mentions not the erection of a whole monument, but of a funerary *stela* by a son for his deceased mother.

56 PAT 1624, for a detailed analysis of the legal aspect of funerary cessions: Cussini (2016), 42–52; Cussini (2010), 337–355.

57 PAT 1378.

58 Seland (2016), 58–61.

59 The process of erecting inscriptions in Palmyra reveals nuanced social and administrative practices. Certain honorary inscriptions, such as PAT 1364 and PAT 1372, were commissioned by the honorees' family members, reflecting personal initiative and familial devotion. In contrast, others, like PAT 1062, required a formal decree from the council, which not only authorized the statue's erection but also stipulated that its costs be covered by public funds, underscoring the role of civic approval and communal resources in such undertakings.

60 Citing the structural strength of the columns on which they were originally placed, Gawlikowski (2021), 95 argues convincingly that the honorary statues must have been made as hollow-bronze castings.

61 PAT 0259.

62 Outgoing caravans are found in PAT 1419, PAT 1411, PAT 0279.

cross-reference certain honorary inscriptions with known dates for Roman-Parthian wars or other known events from outside Palmyra.

Provenance

Next to the date the provenance of an inscription provides an indication that people of the same name and similar genealogy are identical or at least related to each other. This is most obvious when large distances are involved.

However, the information regarding the original location of an inscription given in the PAT is often necessarily vague, providing locations such as ‘Palmyra’. In other instances, the specific funerary monument is known, but not the exact location of the inscription within the often vast structures. Even if the provenance from the same monument is secure, matters are further complicated by the fact that some names have hundreds of occurrences within the corpus and that many Palmyrene families tended to name their sons after either their grandfathers or their fathers.

This complicates the identification of individuals buried within the same funerary monument: People might be mentioned multiple times in different contexts within the same monument – or some of those mentions might belong to another person belonging to a different branch or generation of the same family, bearing the same name. They may very well be related, but there might also have been a century between them: Provenance from the same funerary monument indicates relation (be it by blood or, when sales contracts come into play, by business association of different families) but in and of itself is insufficient to prove a match of identity.

The type of inscription is also of importance: One person may be mentioned in several dedications, honorific inscriptions, funerary foundations and funerary cessions, but it is very unlikely that he or she was buried in different funerary towers. But even there a caveat applies: Archaeological research indicates that sometimes, funerary towers displayed reliefs of persons who were not buried in them. This was likely done for reasons of prestige and lineage.⁶³

Other applications of provenance in contemporary research include the identification of distinct groups, such as the Palmyrene residents of Dura-Europos, the inhabitants of the Palmyrena region, and the benefactors associated with specific temples.

Rarity

While some names like *mlkw* (more than 400 attestations) occur hundreds of times, certain names only occur very rarely in the Palmyrene inscriptions, and if such a person is also of prominence, it is very likely that multiple occurrences refer to the same man or woman.

A prime example is *blyd^c*, the father of the famed *š^cdw*, son of *blyd^c*, son of *š^cdw*, son of *tymšmš*: There are fifteen entries for the unabridged form of *blyd^c* in the database.⁶⁴ Three of those entries can be securely traced back to the father of *š^cdw* by date (144, 145 and 147 AD) and genealogy.⁶⁵ Others can be discarded because the genealogy is clearly off.⁶⁶ Only five entries are undated,⁶⁷ and only four remain without a genealogy.⁶⁸

63 Henning (2013), 98.

64 PAT 0341 (twice), PAT 1919, Yon (2013) no 55, Yon (2013) no 54, PAT 0800, Yon (2013) no 58, PAT 1062, Pat 1373, PAT 0316, PAT 0115, Yon (2013) no 134, PAT 2549, PAT 2405 and PAT 1552.

65 PAT 1062, PAT 0115, Yon (2013) no 58.

66 PAT 0870, 0341 (2x), 0800, 1919, Yon (2013) no 54.

67 PAT 0800, Yon (2013) no 134, PAT 2549, PAT 2405 and PAT 1552.

68 Yon (2013) no 134, PAT 2549, PAT 2405, Yon (2013) no 55.

The one dated entry without genealogy can be dismissed because it is likely too late (220 AD).⁶⁹ This leaves us with three mentions that are undated and without genealogy, meaning they might refer to *blyd*^ε, father of *š^εdw*: two *tesserae* (PAT 2549, PAT 2405) and a ceramic fragment (Yon 2013 no 134).

Roman Citizenship

Another very useful indicator to differentiate between individuals is Roman citizenship. This observation holds true in most cases provided the inscription predates the Constitutio Antoniniana. Before that pivotal moment, the *tria nomina* was exceedingly rare in Palmyra, its presence offering a refined hint as to when citizenship was granted to a specific family.⁷⁰

The presence of Roman names in later Palmyrene inscriptions also allows for some insight into the worth attached to it: There are several Palmyrene inscriptions where only one or two parties from a contract (mostly funerary cessions) are represented as Roman citizens, whereas other parties are merely mentioned with their traditional Palmyrene names.⁷¹ In many cases it can be noticed that those who chose to display their Roman citizenship were freedmen and women, thus not displaying their gratitude for being ‘Roman’ but rather their status as freedmen.⁷² Another example of the usefulness of Roman names is their absence: Roman citizenship is almost never mentioned in inscriptions from the Palmyrene hinterland, and not at all in the extensive record represented by the corpus of *tesserae* from Palmyra.

Establishment of Groups

Depending on the topic or question of the research, distinct groups can be established based on different categories that persons from different entries have in common. This might be name, dating, location, type and / or material of inscription, employment, worshiped gods, sex, visited temples and / or locations, held offices, kinship-networks like tribes or families, citizenship or even the usage of certain formulas within an inscription. Note that those groups may or may not be based on actual or perceived groups from the Palmyrene society.

Once such a ‘research-group’ is established it can be studied for details: Are there connections between group members other than the selected group-criteria? Can connections between several groups be established? Are there onomastic similarities? How does this group compare to another group? Depending on the observations made during the analysis, the shape of the group can then be altered, other groups can be constructed, or the question asked to the group can be changed.

Problems of Religious Groups

Many surviving honorary inscriptions were found on the premises of Palmyrene temples, yet it is not always clear whether the people honored in the said temple actually worshiped the deity associated with it, or whether they were ‘just’ honored there for social reasons. For example, the individuals honored by the elusive ‘four tribes’ of Palmyra were honored with statues in four temples, yet they were

69 Yon (2013) no 55.

70 E.g. *mrqs ʔlpys yrhy* (PAT 1399, 1409, 1403, 1396), who received his citizenship under Traian, the same happened to *mrqs wlpys ʔlhbl*, one of the ‘four brothers’ of the Tomb of *ʔlhbl* (IGLS XVII 181, PAT 0486). For the usage of the *tria nomina*, as a status symbol to indicate Roman citizenship in Palmyra see Smith (2013), 95–104; Sommer (2018), 162.

71 This can be seen in PAT 0048, PAT 0051, PAT 0052, and PAT 0054, a series of funerary cessions where one party consequently does not use the *tria nomina* although other sellers and / or buyers are very fond of its usage. Presumably they were freedmen who wanted to display their new status.

72 A prime example for this can be found in PAT 0072, PAT 0073, PAT 0075, where a freedman is first just known as *wrnd*, freedman of *ʔntyks* in 186 AD and then as *ʔwrls wrnd* when he sells part of his property in 228 AD. His patron is never mentioned with such a *nomen gentile* and only ever appears as *ʔntyks*.

not honored for accomplishments in the religious sphere but served in a military, civic and economic capacity.⁷³ The same is true for the Statues of *ḥšš*, son of *nšʔ* and his brother *mlkw*, son of *nšʔ*: Both were honored in the temple of Bel, yet for accomplishments that were either political or economic in nature.⁷⁴

Therefore, people mentioned in honorific inscriptions found in temples are not listed as ‘worshippers’ of the said god – this only applies to inscriptions where the god or goddess himself / herself is mentioned. In this case, normally all people mentioned in the inscriptions are listed as devotees of the cult, even if only one person dedicated the altar or inscription in question. This decision was made because a) one can presume a certain degree of continuity of religious alignment within a family, b) many altars were devoted not only in the name of the persons dedicating them but also in the names of spouses, children and sometimes even household members and c) if genealogies are presented, the benefactors clearly wanted the names of their ancestors displayed in a religious setting.

Example: The Worshipers of Abgal

Question: Are there connections between the Worshipers of Abgal and the Palmyrene elite? By using the gods mentioned in several inscriptions, groups of worshipers of certain deities can be reconstructed. In this case, there are a couple dozen persons that can be associated with the god Abgal.⁷⁵ The vast majority of the inscriptions mentioning this god was found not in Palmyra itself but in the rural village of Khirbet-es-Semerin where a temple was dedicated to this god.⁷⁶ There are only very few inscriptions dedicated to this god outside of Khirbet-es-Semerin: one in El-Mekeimle⁷⁷ and three in other locations, presumably in other parts of the Palmyrena.⁷⁸ Therefore, most worshipers of the god Abgal seem to have been men of the steppe, which make several connecting observations all the more interesting.

Two of the inscriptions from Palmyra were set up by the same man: *nbwzʔ*, son of *kptwt*,⁷⁹ servant (*tlyʔ*) of *ʔdynt* (Oadaenathus).⁸⁰ *ʔdynt* was in turn also honored in the temple of Abgal in Khirbet-es-Semerin.⁸¹ It seems that the worshipers of Abgal were well connected even before *ʔdynt* came to power:

73 PAT 2769 (171 AD) mentions a civil career, PAT 1063 (198 AD) service as a *strategos* (with mentioning of a God in the Greek version), PAT 1378 (199 AD) service as a *strategos* and action against the nomads as well as service to a caravan.

74 PAT 0261 reads: “Statue of *ḥšš*, Son of *nšʔ*, Son of *bwlhʔ*, (son of) *ḥšš*, / erected for him by the sons of *kmrʔ* and the sons of *mtbwl* for he was / a leader for them and built the peace between them and he helped them, / in everything, large and small, / to his honor, in the month Kanwan, Year 333”. PAT 1352 gives: (g) “Malikou, (Son of) Nesa, son of Bola, who was called Asasou from the Phyle of the Komarens, / (honored) by the Palmyrenes of the Demos, for his devotion (*pal*) in the month *knwn* of the year 336, a statue of *mlkw*, / son of *nšʔ*, grandson of *bwlhʔ*, who was called *ḥšš*, / who is from the sons of *kmrʔ*, erected for him by all / the merchants who are in the city of Babylon, for he did good to them / in everything and he aided the construction of the Temple of Bel and he gave from his own purse, what nobody ever did, / for this reason, he received this statue for him, in his honor.”

75 PAT 1697, Yon 2013 no 61 (3x), Yon (2013) no 174 (3x), PAT 1678 (2x), 1676 (2x), 1675, 1673, 166 (3x), 1669, 1668 (2x), 1684 (3x), 1683 (2x), 1665 (2x), 1664 (3x), 1680 (2x) 1671 (7x), 1670 (2x), 1680 (2x).

76 PAT 1678 (2x), 1676 (2x), 1675, 1673, 166 (3x), 1669, 1668 (2x), 1684 (3x), 1683 (2x), 1665 (2x), 1664 (3x), 1680 (2x) 1671 (7x), 1670 (2x), 1680 (2x).

77 PAT 1697.

78 Yon (2013) no 61, Yon (2013) no 157, Yon (2013) no 174. Gorea (2002), 162–164 places the location of Yon (2013) no 61 somewhere in the North-West of Palmyra.

79 This man may be identical to a *kptwt* who functioned as lieutenant to a *strategos* operating in the area around Aleppo, as mentioned in PAT 2757.

80 Yon (2013) no 61, Yon (2013) no 157.

81 PAT 1684.

In 199 AD a man called *ʔbgl*, son of *šʕdw*, is mentioned on an altar in Khirbet-es-Semerin.⁸² Given the short genealogies and all the caveats already explained we can of course not be certain, yet it seems plausible that this man was the son of the famous *šʕdw*, son of *blydʕ*, who led a party of warriors against enemy raiders.⁸³ Such family connections make it likely that the temple of Abgal served as a gathering point for steppe warriors for generations.

This theory can be somewhat strengthened by another onomastic gem: The very rarely attested name *ʔsry*, mentioned as the name of the father and grandfather of men honored in the temple of Abgal,⁸⁴ is also mentioned in an inscription from the year 147 AD. It was set up in the temple of Bel in honor of *šʕdw*, son of *blydʕ*, by his friend *yrhy*, son of *ʕgylw*, son of *tymhʔ*, son of *ʔydʕn ʔsry*.⁸⁵ All of this suggests that the temple of Abgal in Khirbet-es-Semerin served as a gathering place for warriors from the Palmyrene steppe who had pledged allegiance to various high-ranking Palmyrene nobles.

How to Identify a Palmyrene in the Palmyrene Diaspora

For the purpose of the database it was necessary to define certain characteristics to distinguish ‘Palmyrenes’ from ‘others’ when living abroad. Most of these characteristics are based on culture and language: For the purposes of the database, each person mentioned in a Palmyrene inscription was treated as a Palmyrene, even if said person clearly was not – be it a Roman emperor like Hadrian, a Roman proconsul like Mucianus or the hellenistic king Seleucus Nicator.⁸⁶

While it is clear that not all persons mentioned in those inscriptions could be called ‘Palmyrene’ by any standard (ethnicity, religion, language, culture etc.) or would ever have dreamed of calling themselves Palmyrene, they still belong to the world of the Palmyrene diaspora – be it as the founder of a city in which the Palmyrenes lived, as was the case for Seleucus, or as the reigning emperor or proconsul of their day. Others might be Roman officers who commanded Palmyrene auxiliaries or spouses married by Palmyrene merchants and veterans settling abroad.

The concept of the ‘world of the diaspora’ also includes soldiers and veterans of Roman auxiliary units who were originally levied in Palmyra: While some of them clearly originated from Palmyra, others might not have – but their connection to the ‘Palmyrene World’ still would have been strong since they would have served alongside Palmyrenes for decades, presumably using Palmyrene style weapons and tactics and perhaps also adopting some cultural and religious habits from their Palmyrene comrades.

An intriguing example of a possible identity can be made for a certain *šʕdw*, son of *lšmšy*, who is mentioned in a dedicatory inscription from Rome (PAT 0249) and might be identical with a man of the same name who in 127 AD dedicated a statue to his father *lšmšy* in the temple of Bel in Palmyra (PAT 0266).

A different example is from Dura Europos: The name *nšwr* is very common in Dura Europos, with four to five inscriptions (out of 55) mentioning that name.⁸⁷ In Palmyra, the name is only mentioned thrice: Two times it is the grandfather of Septimius Odaenathus⁸⁸ and once the ancestor of a man

82 PAT 1667.

83 IGLS XVII 128.

84 PAT 1664, 1665.

85 PAT 0115.

86 Hadrian’s most famous reference in Palmyrene epigraphy is in PAT 0259, the *Tariff Law*, where Mucianus is also mentioned. Seleucus Nicator is mentioned in an inscription from Dura Europos, PAT 1095.

87 PAT 1094, 1096, 1097 and 1104. The Palmyrene Inscriptions of Dura Europos are PAT 1067–1221.

88 PAT 0558, 2815.

whose funerary relief was found in the area of the Diocletian Camp,⁸⁹ meaning that if any onomastic connection between the *nšwr*-family in Dura and Palmyra is to be drawn, one of these two would most likely be the link.

Statistical Approach

Analyzing Palmyrene inscriptions ‘in bulk’ can yield statistical results, e.g. it can be determined that, generally, the same names were popular both in the Palmyrena and on small clay tiles called *tesserae* found in Palmyra itself, indicating that the inhabitants of Palmyrena were well connected to the city dwellers. This result is not surprising and affirms the notion of Palmyra as a polymorphic society.⁹⁰ Such results are not limited to onomastics, but can also provide insights into the particular behavior of certain Palmyrene groups.

One such example is the marriage pattern of Palmyrenes residing outside of Palmyra: There are only scarce examples for married Palmyrenes in the Western part of the empire and – with one difficult to explain exception⁹¹ – there is no example that Palmyrenes abroad married Palmyrene women. In fact, two inscriptions can even be interpreted in such a way that their commissioners deliberately tried to hide their marriage with foreign women from countrymen, since the marriages mentioned in the Latin parts of the inscriptions are not displayed in their Palmyrene counterparts.⁹² Also, comparisons about the ‘marriage patterns’ of larger groups might reveal similar lifestyles: The Palmyrene diaspora in the Euphrates-fortress of Dura Europos seems to have been almost exclusively male, with neither a marriage nor a Palmyrene woman being mentioned at all. This can be pared with the observation that the women from the Palmyrena are exclusively found within fixed settlements and not out and about in the steppe itself,⁹³ indicating that Dura Europos was perhaps frequented by Palmyrene nomads from the Palmyrena who were accustomed to leaving their wives behind.

If groups are large enough, the occurrence of names within that group can be counted and then compared to the occurrence of the same names in other groups. As a very small example: There are several Palmyrene names in the *Tariff Law*, the largest surviving Palmyrene inscription which mentions a bunch of magistrates in the first few lines.⁹⁴ The names in question are: *bwn*² (2x), *hryn*, *ʔksdrs* (2x), *ʔlly*, *mlkw*, *mqymw*, *nš*², *plpṭr* and *zbyd*².

89 PAT 1950.

90 The polymorphic character of Palmyra is especially affirmed by Sommer (2018), 145–226.

91 PAT 0252.

92 PAT 0246, PAT 0248.

93 PAT 1791 (Bazuriyyeh), PAT 0317 (el Karasi), PAT 1705 (Khirbet Fauran) PAT 0555 (Qaryatein), PAT 0716 (Qaryatein) PAT 0257 (Qaryatein).

94 PAT 0259. The leading editions of the *Tariff Law* are Matthews (1984), 157–180 as well as Shifman (2014). A search for the families of the persons themselves has (with one possible exception, *bwn*², *son of bwn*²) remained inconclusive. This is due to the difficulty in dating Palmyrene inscriptions. As an example: The name Ἀλέξανδρος is found in two undated inscriptions (IGLS XVII 557, IGLS XVII 37). The only instances where the name is mentioned in inscriptions 40 years prior or after the *Tariff Law* from 137 AD are PAT 0300 from 179 AD and Yon (2013) no 132 from 99 AD, and the other securely dated occurrence (PAT1135) from the second century dates to 191 AD – two generations removed.

Palmyrene name	Occurrence in general corpus	Occurrence in <i>Tariff Law</i>	Percentage
<i>bwn</i> ⁹⁵	51	2	3.9%
<i>hyrn</i>	233	1	0.4%
<i>ʔlksdrs</i> ⁹⁵	3	2	66.6%
<i>ʕlly</i>	5	1	20%
<i>mlkw</i>	419	1	0.2%
<i>mqymw</i>	243	1	0.4%
<i>nš</i> ⁹⁶	62	1	1.6%
<i>plpṭr</i>	1	1	100%
<i>zbyd</i> ⁹⁶	132	1	0.7%

Tab.1: Palmyrene names in occurrence on the *Tariff Law*.

This, in turn raises the question: Why do the members of the Palmyrene elite mentioned in the *Tariff Law* use either extremely common names like *mlkw*, *hyrn*, or *mqymw*, or extremely uncommon names like *plpṭr*, *ʔlksdrs*, or *ʕlly*?

If we reverse the perspective and examine the Greek versions, we obtain the following results:

Greek name	Occurrence in general corpus	Occurrence in <i>Tariff Law</i>	Percentage
Βωννέους	3	2	66.6%
Αἰράνου	33	1	3,03%
Ἀλεξάνδρου	8 ⁹⁶	2	25%
Ὀλαιοῦς	1	1	100%
Φιλοπάτωρος	1	1	100%
Μαλίχου	9	1	11.1%
Ζεβεΐδου	6	1	16.6%
Νεσᾶ	16	1	6.25%

Tab. 2: Greek names in occurrence on the *Tariff Law*.

95 This only applies for one Palmyrene rendering style of the name. When the variations *ʔlksndrws* (PAT 0286, PAT 0278, PAT 2754) and *ʔlksndrys* (PAT 1135) are added into the equation, two out of eight Palmyrenes of that name were mentioned in the *Tariff Law*.

96 IGLS XVII 37, IGLS XVII 557, PAT 0259 (2x), PAT 1412, PAT 1135 (2x) PAT 0286, PAT 0278 is in honor of a Roman emperor, PAT 0300 and Yon (2013) no 132.

Curiously, *mqymw*, father of *ʿlly*, grandfather of *mlkw*, is not mentioned in the Greek text. Apart from that, the comparison of the percentages looks like this:

Palmyrene name	Percentage of occurrences in the general Corpus	Greek Name	Percentage of occurrences in the general Corpus
<i>bwn</i> ²	3.9%	Βοννέους	66.6%
<i>hryn</i>	0.4%	Αἰράνου	3.03%
<i>ʾlksdrs</i>	66.6%	Ἀλεξάνδρου	25%
<i>ʿlly</i>	20%	Ὀλαιοῦς	100%
<i>mlkw</i>	0.2%	Μαλίχου	11.1%
<i>mqymw</i>	0.4%	—	—
<i>nš</i> ²	1.6%	Νεσᾶ	6.25%
<i>plpṭr</i>	100%	Φιλοπάτωρος	100%
<i>zbyd</i> ²	0.7%	Ζεβεΐδου	16.6%

Tab. 3: Palmyrene and Greek names in comparison.

Due to the smaller sample-base, all Greek percentages are higher, but certain names correspond very well to each other, especially *plpṭr* – Φιλοπάτωρ and *ʾlksdrs* – λέξανδρος. Since in the following text all three names are attached to the same person, *ʾlksdrs br ʾlksdrs br plpṭr*, the ‘secretary of the *boule*’, this might be explained in several ways.

First of all, he might be of Greek rather than Palmyrene heritage – a theory that would indicate that the secretary had technical or administrative duties that required specialist skills only found outside of Palmyra, i.e. knowledge of Greek language, law and proceedings. This seems unlikely, since Palmyra had already managed such tasks for over a century when the new *Tariff Law* was established, and other known secretaries of the *boule* often had distinctly Palmyrene names.⁹⁷ Moreover, even highly wealthy or influential foreigners were not normally introduced with a genealogy.⁹⁸

Secondly, the name could be made up to make Palmyra’s institutions look even more Greek. This is unlikely as well: Some of the other names used are very traditional Palmyrene and one – *bwn*², son of *bwn*², – can in fact be traced back.⁹⁹

This leaves a third option: The deliberate adoption of Greek-sounding names. The use of Greek nicknames is documented in Palmyra, particularly among high-ranking circles.¹⁰⁰ It seems plausible that at least some of the magistrates mentioned in the *Tariff Law* chose to be known by their nicknames to better fit into the picture of a Greek-style *polis* constitution the *Tariff Law* paints. This practice – sometimes even applied to ancestors – was continued in inscriptions from the mid-3rd century.¹⁰¹

97 PAT 1375, PAT 1370, PAT 0305.

98 An example for this is the funerary foundation inscription of Lucius Spedidus Chrysanthus (PAT 0591), who, although offering variations of his inscription in three languages, did not offer a genealogy in any version, which is highly unusual for Palmyrene funerary foundations.

99 Piersimoni (1995), 570.

100 PAT 0280, PAT 0305, PAT 2754, Yon (2013) no 132.

101 The prime example is PAT 0286, where the grandfather of a Roman knight Ἰούλιος Αὐρήλιος Σεπτίμιος Ἰαδῆς is called Ἡρώδης in Greek and *srykw* in Palmyrene.

The Case for a Digital Palmyrene Prosopography

A Palmyrene prosopography by Palmira Piersimoni is already available. It not only contains an alphabetical list of all known Palmyrenes based on the edited inscriptions available in 1995, but also reconstructed family trees for hundreds of Palmyrene clans and families.¹⁰² This digital prosopography project, however, can offer several advantages, as there are:

- **Accessibility:** A digital prosopography can be accessed by a wide range of researchers on all levels, making access to the field of Palmyra easier for students.
- **Breadth of information:** Piersimoni's paper-based prosopography was naturally limited by the availability of space and therefore only provided the name, date, family and bibliographical references for each entry. As has been shown, a digital database can go much beyond that.
- **Correctability:** The inevitable faults of the data set (typos, misunderstandings, misreadings, omissions etc.) can be corrected with (relative) ease.
- **Updating:** In case of new findings, the database can be updated with new information.
- **Ease of use:** The database can be used to search for people in rapid succession and under multiple angles. Further search options are to be added as work on the database progresses.
- **Group identification:** The database shall allow researchers to easily identify specific groups within the Palmyrene society.
- **Expandability:** New search and filtering options can be added over time.

Lessons Learned

The Prosopographia Palmyrena database, while valuable, offers room for improvement, as the author of this essay has discerned through its use and the insightful feedback from workshop participants and the editors of Digital Classics Online. The following observations have emerged from this experience:

- A) Engaging technical experts at the outset of a project is crucial to prevent the need for extensive data restructuring later.
- B) In keeping with the tradition of Palmyrene stonemasons, Greek names should be entered in a dedicated field, in uppercase letters without diacritics and in the grammatical form used in the inscription. This approach streamlines search functionality and simplifies the design and use of a virtual keyboard.
- C) Incorporating a field for transliteration would significantly enhance the database's usability – provided the name already has a known and established transliteration.
- D) While the database follows Piersimoni's practice of recording names in the grammatical form found in the relevant inscription, including both the nominative and the genitive form of Greek names, would greatly simplify user search patterns.
- E) For reasons of clarity and consistency, the different dates in the texts should also be given uniformly converted to the Common Era (CE).

¹⁰² Piersimoni (1995).

- F) The project would have benefited considerably from broadening its scope to encompass not only individuals but also the inscriptions themselves, including – whenever feasible – photographs of the inscriptions alongside their complete texts.
- G) Names of Palmyrene deities should be recorded more consistently to facilitate the reconstruction of Palmyrene religious groups.
- H) Although markers of profession and social standing are increasingly scarce in Palmyrene inscriptions, dividing the search field into subsections would have been advantageous: social (e.g., Euergetes, heads of Symposia), religious (e.g., priests), political (e.g., magistrates, Governors), military (e.g., ranks), while maintaining a separate section for civilian professions (e.g., physicians, writers, stonemasons).

List of Abbreviations

- CIL: G. Wilmanns / J. Schmidt / R. Cagnat, *Corpus Inscriptionum Latinarum*, vol. 8, *Inscriptiones Africae Latinae*, Berlin 1881.
- PAT: Hillers / Cussini (1996): D.R. Hillers / E. Cussini, *Palmyrene Aramaic Texts*, Baltimore / London 1996.
- IGLS XVII: J.-B. Yon, *Inscriptions grecques et latines de la Syrie. Palmyre. Tome XVII – Fascicule 1*, Beirut 2012.
- Yon (2013): J.-B. Yon, *L'épigraphie Palmyrénienne depuis PAT, 1996–2011*, in: M. Gawlikowski / G. Macjerek (eds.), *Studia Palmirenskie XII*, Warsaw 2013.

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- Louvre Collection: <https://collections.louvre.fr/en/ark:/53355/cl010127833> (consulted 21.04.2025);
<https://collections.louvre.fr/en/ark:/53355/cl010127815> (consulted 26.04.2025)

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Figures

Fig. 1. Header of PAT 052, Hillers / Cussini 1996, 31.

Fig. 2: Louvre. No. AO 5004 = PAT 0735. <https://collections.louvre.fr/en/ark:/53355/cl010127833>.

Fig. 3: Louvre. No AO 2205 = PAT 0460. <https://collections.louvre.fr/en/ark:/53355/cl010127815>.

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Building a Digital Prosopography: Towards a Scholarly / Technical Partnership

John Bradley

Abstract: The paper explores how digital resources can be successfully built for historical projects. It focuses on projects that use highly structured data as the paradigm for representation, and it explores the basis for a collaboration between technically-oriented partners who understand and can work within the formalisms of highly structured digital data and historians who must ensure that the formal structures that emerge properly represent the historical issues. The author has experience with over 20 such projects and believes that a rich, understanding of the model for the structured data that is shared between technical staff and historians is the key component in achieving success. Through looking at examples from these projects the paper shows how this shared understanding can positively affect several aspects of the project work and the resulting digital resource.

Introduction

I recently came across an article (which must remain anonymous here) written by historians who had obviously not enjoyed, or even benefited from, their development of a digital historical resource. In the article it became evident that the work had presented the historians with a number of serious academic problems that were made worse by their sense that they were not properly in control of their project. Clearly, they had problems working with the part of the project they called the ‘computer engineers’ who were meant to be working with them to transform their ideas into a digital form. The historians felt that they were not properly in control of the project and that, as a consequence, their historical concerns were not being addressed.

There is indeed a challenge in creating academic digital resources. On one hand, the digital representation has to be expressed in forms that are amenable to digital expression through a number of highly disciplined and highly formal representations. To make effective use of these formal means of expression to produce something useful does require highly technical digital expertise which can usually only be found with technically trained personnel. However, on the other hand, what needs to be expressed in this highly structured, perhaps even rigid, set of formalisms must satisfactorily capture a complex historical conception which must come out of the expertise of academic historians. Furthermore, if the material that is developed is to be shared by an academic public, it needs to be understandable to them; a community who, because they are outside the development work and are mostly unfamiliar with the nature of highly structured data, are less likely to be able to grasp what the resource is all about than the historians in the project are.

An Analyst's Perspective

I am not an historian, and, indeed, although I have worked almost my entire professional career of more than 40 years in academia, was only actually even made an academic by King's College London in 2011 – 4 years before my retirement. Nonetheless, the reason why I think I have something to say here is based on my experience; mostly in what was classified as an 'academic related' post first at the University of Toronto starting in 1977, and then at King's College London since 1997 in what was called a 'Senior Analyst' post.¹ During my time at King's I worked, with varying levels of involvement, with academic partners on the building of a good number of digital resources: my CV lists more than twenty. The degree of success, as judged by the project's historian academic partners, did vary – but I think it is fair to say that almost all of my historian colleagues have expressed a large degree of satisfaction with what was produced. Several of them were of sufficient research quality that they were submitted by our historian partners as evidence of high quality research to the UK's Research Assessment Exercise (RAE) and Research Excellence Framework (REF)² initiatives. All were projects that involved the creation of highly structured data (the kind of data stored in formal databases) to represent scholarly research (mostly history), and almost all of them resulted in the provision of public scholarly access for the resources that were developed.

Some of the projects in which I have been involved include:

- *Prosopography of Anglo-Saxon England*³ (Janet L. Nelson [KCL], Simon Keynes [Cambridge] and Stephen Baxter [Oxford], Harold Short [KCL] as technical director; I had a relatively junior role here as principal analyst): recorded information about individuals that appear in historical sources related to Anglo-Saxon England. *PASE*'s sources are of all kinds from, for example, Saint's Lives, through chronicles, letters, legal charters and even Domesday book.
- *People of Medieval Scotland*⁴ (Dauvit Broun [Glasgow], David Carpenter [KCL] and Matthew Hammond [initially from Glasgow]; I was co-investigator and technical director here): another prosopography based almost entirely on Scottish medieval charters in the period from 1093 to 1314.
- *Digital Prosopography of the Roman Republic*⁵ (Henrik Mouritsen and Dominic Rathbone and Maggie Robb [all KCL]; again I was technical director and co-investigator): unlike the other prosopographies in which I was involved which worked directly with primary sources, *DPRR* aimed to assemble and combine together a set of about 20 pre-existing mostly 20th century prosopographies, including T. R. S. Broughton's masterful *Magistrates of the Roman Republic*, first published in the 1950s, which forms the backbone of the database.
- *Art of Making in Antiquity*⁶ (William Wootton [KCL] and sculptor the late Peter Rockwell; here I was co-investigator): about a third of my projects were not prosopographies. Rockwell, as an active artist and sculptor living in Rome, became interested in how historic sculptors created their works – what tools and processes did they use – and he looked at evidence for these things on the pieces themselves. He created an archive of thousands of

1 See some discussion of this in Bradley (2023).

2 <https://www.ref.ac.uk> (consulted 12.03.2024).

3 <https://pase.ac.uk/> (consulted 12.03.2024).

4 Broun et al. (2014); <https://www.poms.ac.uk/> (consulted 12.03.2024).

5 Mouritsen et al. (2016); <https://romanrepublic.ac.uk/> (consulted 12.03.2024).

6 <https://artofmaking.ac.uk/> (consulted 12.03.2024).

images that showed what evidence he found. We worked with him and King's historian William Wootton to present a subset of his images and to identify the evidence of how the objects they showed revealed the processes and tools used in their making.

No project of this kind is perfect, of course, but almost all of the ones in which I was involved were completed and digitally published within the funded period, and with the funds provided by the funding body. They created resources that have been, broadly speaking, thought of as historically interesting and useful by our partners and by the broader research community. Furthermore, there was a sense of ownership of the online resource by all the partners, technical and scholarly alike. And the happiest result came about when historian partners felt themselves to be fully owners of the data, its structure, and presentation. One way or another, there was a partnership involved. Figuring out how to make it work well is key.

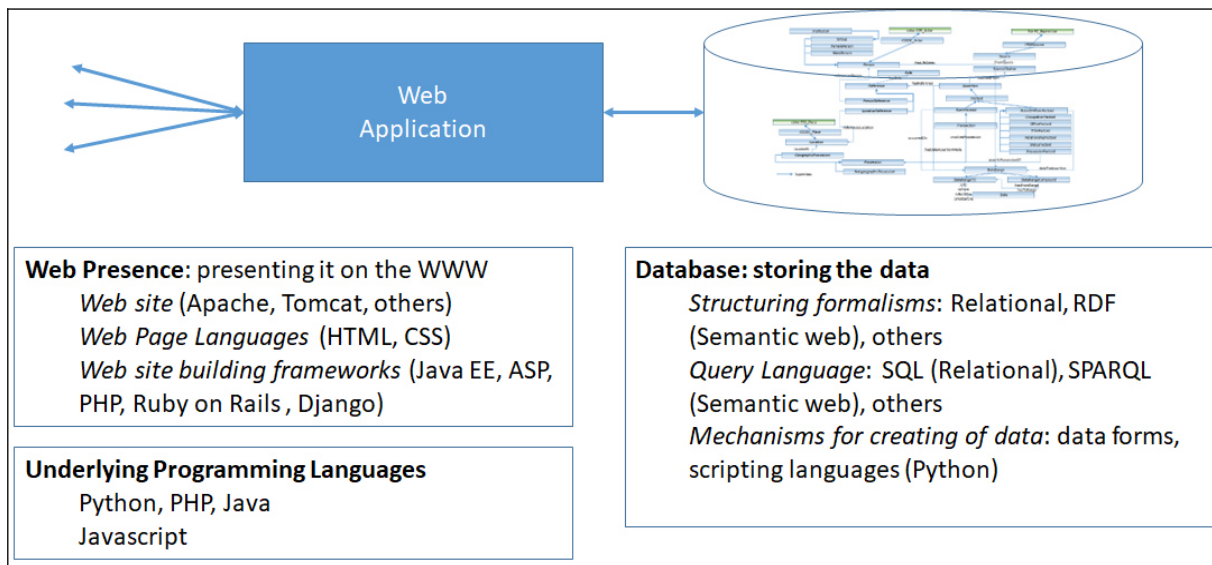


Fig. 1: Technical components in a structured data web application.

Technical Challenges

The kind of project we shall consider here is one that represents its materials in the form of highly structured data, and shortly in this paper will be a description what this means in a bit more detail. For the present, however, it is sufficient to understand that this paper considers projects that involve first the creation of a database (or similar technology such as, say, the semantic web) to hold the results of the scholarship, followed by its subsequent publication on the World Wide Web.

Fig. 1 provides a high-level overview of the technologies involved in the creation of such a project. On the right is a representation of the database which is holding the highly structured data.⁷ On the left is the piece of software called the 'Web Application'. Someone can use it via the World Wide Web to access and interact with the data in the database. The challenge that I am exploring here comes out of the nature of the two groups of technologies (for the database, and for the web application) that are represented in the boxes at the bottom of the figure.

Focusing on the right side of fig. 1 for a moment, I believe that one needs to understand that although the formalisms of all database technologies now being used (relational, semantic web, NoSQL etc.) have many times over proven to be quite expressive in the situations for which they were developed,

⁷ The structure in the database shown in fig. 1 upper right corner will be too small to be examined in detail here. A full-size version can be found at <https://www.kcl.ac.uk/factoid-prosopography/overall-concepts> (consulted 12.03.2024) and similar diagrams for other projects will appear later in this article.

they are also quite rigid. Our experience has shown that the relational database model – far and away the most widely used data paradigm – can work well with a broad range of materials of interest to historians, and other humanities scholars too. But it is not trivial work to find out how. Furthermore, the tools in which databases are created (shown in fig. 1 in the box below the representation of the database) are meant to be managed by technical professionals. Thus the mechanisms to get the data into the database – via, say, web data forms, or perhaps extracted from, say, spreadsheets – require software created by professional developers to be built to request the data and transform it into a form suitable for deposit. All this work is built using software platforms that are designed in such a way to assume that technical professionals are using them. Some of the technologies are named in the right-hand box in fig. 1. A person initially without this technical training could, of course, acquire enough to do some of it, but to do it well requires extensive technical training and experience.

Furthermore, this is only a part of the whole story of the role of technology because although data structures such as those in a database can reflect well the expressive needs of many historical projects, including prosopography, the data in the database becomes largely inaccessible to an historian user. The mechanisms to interact with it – through the established query languages – are, again, aimed at professional technical folk, and are not appropriate to historians unless they invest considerable time in learning their formalisms and means of expression.

Hence the need to create a presentation of the data in ways that historians can access. Almost inevitably this involves the World Wide Web as the medium, with the historian user using her browser as the access software. In almost all of the projects I have been involved in this was managed by creating as a part of the project work an elaborate piece of software called a web application in fig. 1 that sits between the user's browser and the data. Here, again, complex technical issues must be managed, and they are different from the formalisms involved with the data and data storage. All the technologies (summarised in the box below the 'Web Application' box) are, again, meant to be used by highly professional developers with possibly years of training behind them.

There are other approaches than web applications that can be used to create materials that someone could access from the World Wide Web (see the strategies of 'minimal computing' which does away with a web server, but puts specialised functionalities into web pages, for examples), but in all mechanisms that I know of, the building of objects which allow the public through their browser to have access to a databases is so complex, with many different specialisms and involving different technical people, that their development still requires a substantial involvement of the technically trained. It is not surprising that unless one thinks through the issues with care, the historians can feel that they have lost control of the project: exactly as I mentioned at the very beginning of this paper. So, if this is to be avoided, regular and substantial collaboration between the historians and the technical team is necessary. Historians cannot expect to just leave the technical folk to 'get on with it'. Instead, in our experience, a kind of enduring partnership must be created and maintained, in which information is exchanged in both directions. What is the nature of these interactions, and partnership?

Structure and Semantics

There is, of course, more than one area where significant and ongoing collaboration is most useful. However, undoubtedly the most important, indeed the *key* domain, is in the area of the way the data is formally structured in the database that will be holding it. The formalisms of data design are quite rigid and significant complexity can lie in the details. Nonetheless, with some effort, it is possible to have a shared rich and deep understanding of the data with its structures. From this it then becomes possible to retain scholarly control of first the mechanisms that are created to put the materials into the database and then the public web interface – what a user sees of the data and how they can interact and

move through it – that will represent the material in a historically responsible manner. In spite of the need for much of the development work to be done in highly technical frameworks controlled by highly technical people, by fully grasping the formal design of the data, and understanding how to work with it to define and manage the public presentation of it, historians can be in control of this material.

One important thing to understand is that the formalisms are not merely rules for how the data must be organised; they also provide a framework into which the semantics of the material being represented can be expressed. A database structure must encapsulate part of the semantics of the material being studied and its scholarly interpretation. I use the word ‘semantics’ here, but it is worthwhile clarifying a little more what I mean by it.

Jerry Fodor, the well-known philosopher spoke about semantics in 2007:

“Semantics [...] is part of a grammar of [a] language. In particular, it's the part of a grammar that is concerned with the relations between symbols in the language and the things in the world that they refer to or are true of. [...] The intuition is that [...] semantics is about how they relate to their referents in the nonlinguistic world.”⁸

Fodor connects semantics to grammar and thus makes them both linguistic ideas: for him semantics become a key component both of thinking about the world, and also language that one uses to describe it. The nature of semantics for highly structured data – databases, XML, Semantic Web, etc. – are not so clearly related to natural language with its grammatical structures. Words are used of course – to name things that are represented – but the relationships between these words-as-names is incorporated into structures that appear to be quite different from natural languages, even though these structures still capture something about the significance of Fodor’s ‘nonlinguistic world’. So, how does this work? If the meaning between the names is not captured by a language, how is it captured? We will look at a simplified version of the process of building the semantic structure that was used in the prosopographical project *Peoples of Medieval Scotland (PoMS)*.

8 Fodor (2007), 1.

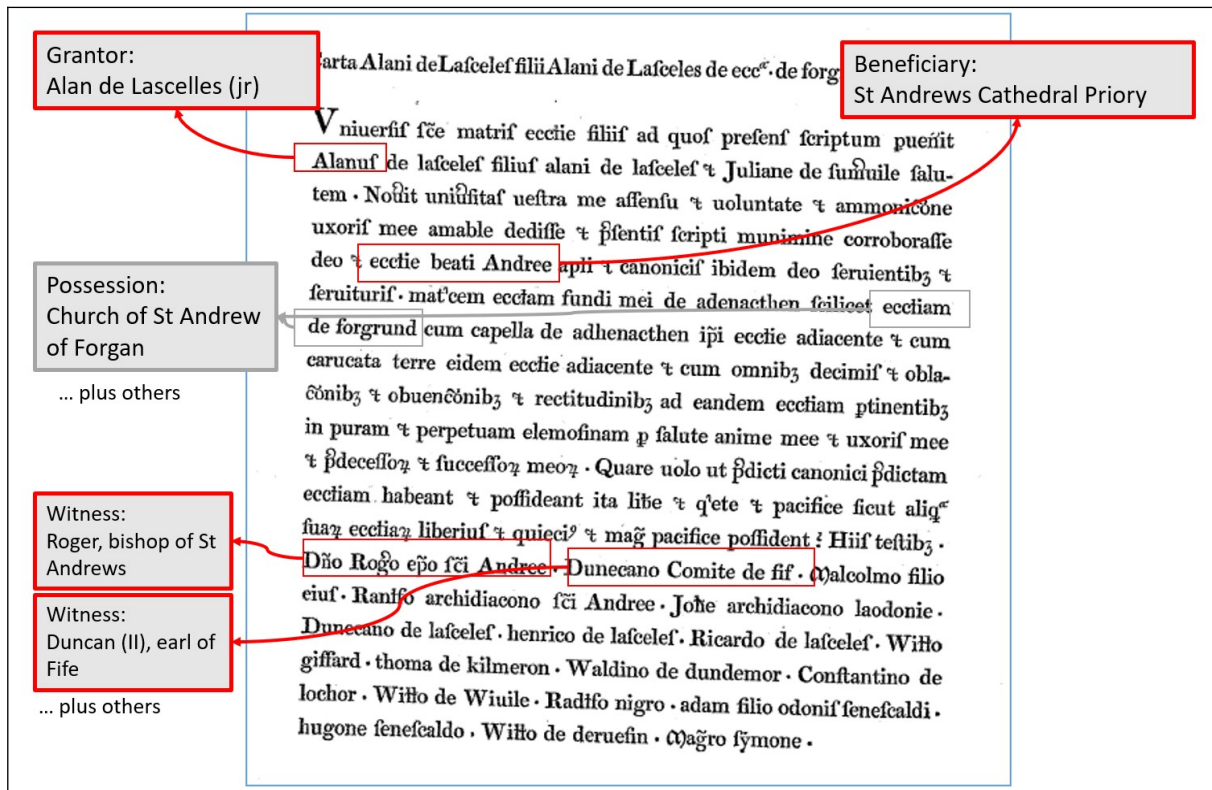


Fig. 2: A transaction based legal charter in *St Andrews Liber*, 260 (3/337/1).

PoMS's primary sources were medieval charters, and fig. 2 shows an example of one of them, from Thomas Thomson's May 1841 edition of the Cartulary of the Priory of St Andrew's.⁹ This charter has Hammond Number 3/337/1.

What kind of historical, prosopographical, assertions could be taken from a document like this – what, in some sense is this document 'about'? As a legal charter, it is about a transaction of some land. People are, of course, involved, as are possessions. Fig. 2 annotates the reference to Alan de Lascelles, the grantor, and the Priory of St Andrew's as the beneficiary in an exchange of the Church of St Andrew in Forgan, plus some other, named, pieces of property. A list of people are identified as witnesses, including Roger, Bishop of St Andrew's, and Dunan, Earl of Fife.

There is more prosopographical information in this document than just this. A woman is identified as Alan's wife, and is presented as a person who consents to this transaction. Furthermore, the text of the charter followed certain legal conventions that were also of interest to the *PoMS* historians. In the interest of simplicity, how these other items were handled will not be discussed at present.

PoMS did not transcribe the text of the charter itself. Instead, it developed a data structure that could record what the document was about that was of interest to the project. Fig. 3 shows the kind of diagrams that was useful in the early planning phases of the project. Later diagrams were more complex as the project team gradually identified what formal structure would be needed to adequately capture what needed (historically) to be formally represented.

⁹ Thompson (1841), 260.

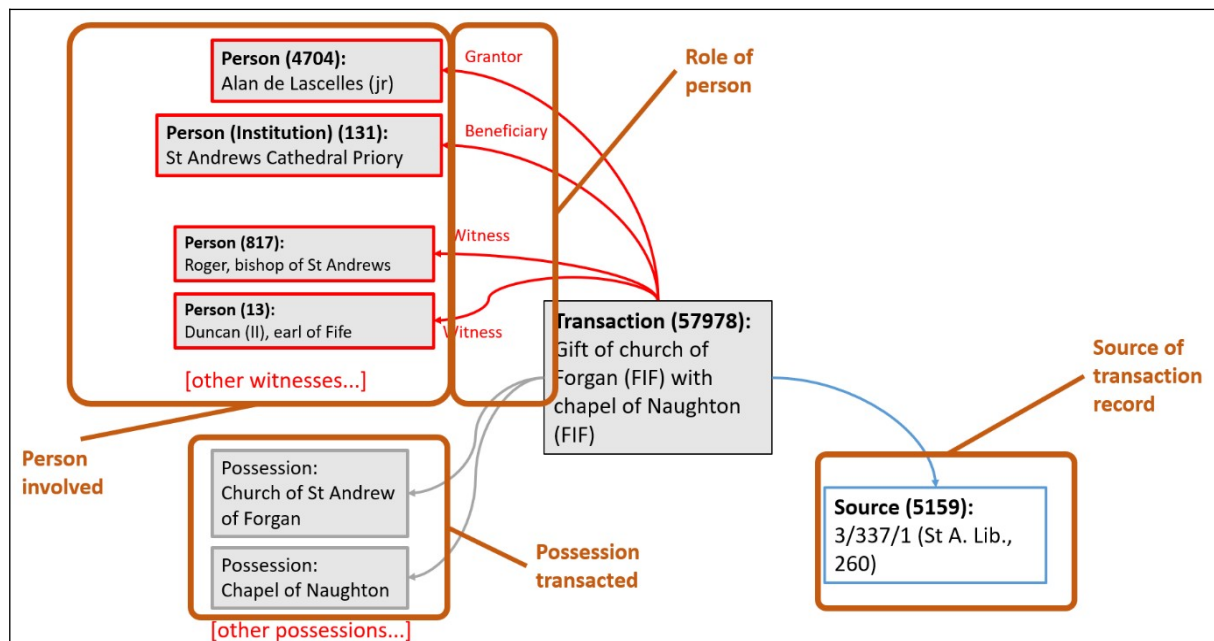


Fig. 3: A model for a transaction in *PoMS*.

Fig. 2 identified several of the spots in the text where persons were mentioned. In fig. 3 some of the persons that appeared in the text are displayed top left as formal digital entities that represent the corresponding historical persons: Alan de Lascelles, St Andrew's Priory, Roger the bishop and the other people mentioned as witnesses. The bracketed numbers are IDs for these particular persons. The possessions have also become digital entities.

In addition to the persons, the transaction itself (showing in the middle of fig. 3) became a formal entity in *PoMS*'s data structure with its own ID number: 57978. The roles of the people in this transaction are shown as lines that connect the transaction to the various people involved: Alan de Lascelles (historical person with ID 4704) is identified as the grantor for this transaction, etc. (in the actual data, Lascelles' wife is also formally identified as a consenter to the transaction).

Finally, the historical source for the transaction is given as an instance of *PoMS*'s source entity. Its ID is 5159, and the transaction is identified as found in it by the line that connects the transaction to its source.

Fig. 3 has focused on a particular transaction – but a good part of the work in capturing the semantics for representation in a database requires the step of generalising from particular instances such as this particular transaction into concepts that will apply across the data as a whole. For *PoMS* it was evident that the project would be interested in all transactions, to varying degrees like this one, along with a selection of other assertions that the sources made about persons, such as personal relationships and offices they held. After looking at a number of surviving legal charters the *PoMS* team concluded that all transactions would involve specific classes of entities:

- First, historical people who were referenced as being involved in each transaction.
- Second, these people would have specific roles in any particular transaction: as grantor, as beneficiary, as witness, as consenter, and perhaps other roles too.
- Third: all transactions were going to involve one or more possessions.
- Finally, there would always be a source in which the transaction appears. *PoMS* did not choose to transcribe the sources into, say, TEI. However, it did record bibliographic information about each source that it used in its database.

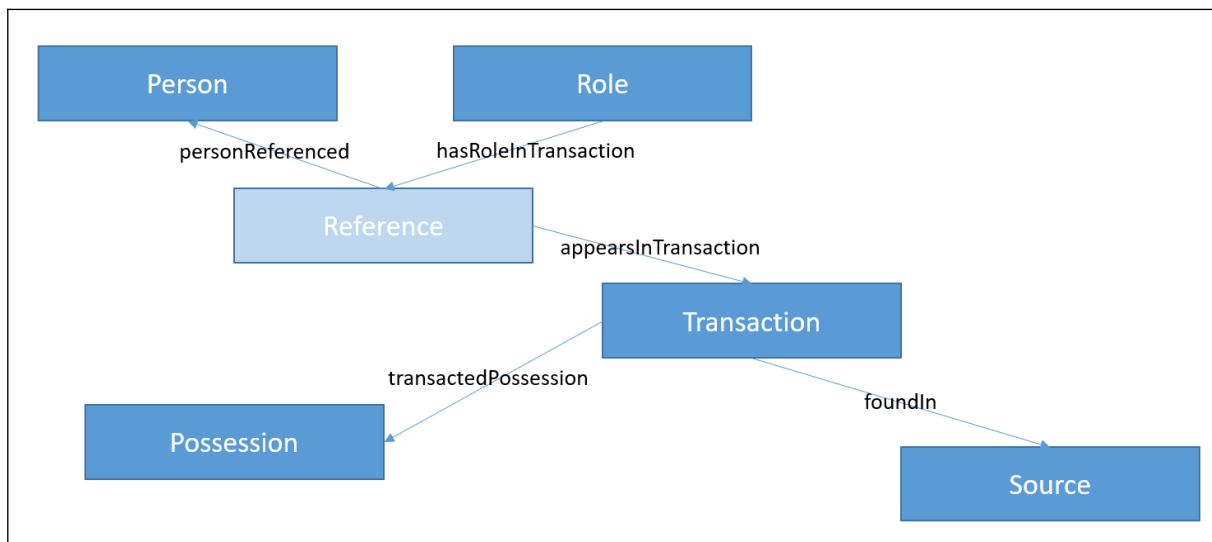


Fig. 4: Entities and relationships for transactions in *PoMS*.

Database representation becomes most useful when you have many instances of things that exhibit the same or similar characteristics. Fig. 4 shows how the analysis for specific transactions was generalised into a set of overarching concepts that expressed what *PoMS* intended to record about transactions.¹⁰ Here can be seen the types of entities that were identified in the previous figure: Person, Role, Possession, Transaction and Source (plus a new one: Reference, which is necessitated by the need to connect roles to people in transactions, but also turned out to have semantic significance itself which was discovered during the analysis). The lines between the entities are named in ways that suggest the nature of the connection. In the end our actual structure to deal with transactions was more complex than this, and was the result of a more complex and time consuming process that took a number of months to complete and looked at a range of sources. The structure that emerged became the primary structure that was expressed in a database. Even after this amount of planning work, the resulting structure for transactions turned out to be incomplete, and had to be modified somewhat on a few occasions during the project work.

Prosopographies like *PoMS* are interested in transactions because they express significant and interesting things about historic people. Right at the start of his 1970 article on the idea of Prosopography Lawrence Stone suggests a range of other kinds of assertions that are interesting too:

“Prosopography is the investigation of the common background characteristics of a group of actors in history by means of a collective study of their lives. The method employed is to establish a universe to be studied, and then to ask a set of uniform questions – about birth and death, marriage and family, social origins and inherited economic position, place of residence, education, amount and source of personal wealth, occupation, religion, experience of office, and so on. The various types of information about the individuals in the universe are then juxtaposed and combined, and are examined for significant variables.”¹¹

Indeed, one of Stone’s ‘uniform questions’, marriage and family, appears as an assertion in the charter we’ve been looking at, since Alan’s wife is explicitly identified as his wife there. Other kinds of information found in charters are people’s offices and sometimes their occupations.

¹⁰ Well, in truth, only a part of what *PoMS* chose to record about transactions in fig. 4: this is in fact a simplified diagram since, as we will see later, *PoMS* chose to record other characteristics of the transactions that are not shown here.

¹¹ Stone (1971), 46.

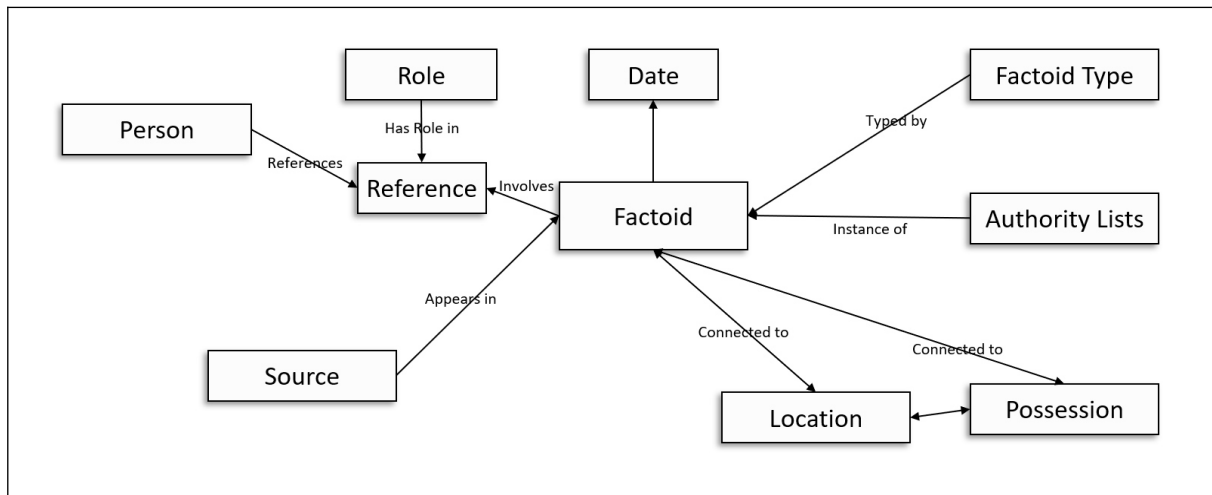


Fig. 5: A simple representation of the prosopographical factoid model.

Thus, it is useful to perform a further generalisation beyond the transaction-focused one that we have just seen by turning the kind of thinking represented by our analysis of legal transactions into a more general approach that will cover other kinds of assertions found in the sources too. It was from this kind of thinking in earlier prosopographies developed at King's that the idea of the factoid arose, and this idea was found to work well with *PoMS* as well. This chapter is not the place to expand upon the idea of the prosopographical factoid in great detail, or to explain why it has been given this slightly ironic name. There is more information online at the factoid website,¹² and, more specifically in terms of legal charters at a recent article.¹³ A simple schematic of the factoid model for data can be seen in fig. 5.

If we compare fig. 4 – which is specific to legal transactions – with the factoid-oriented one in fig. 5 we can see many similar elements. However, the central change is that the central box that was labelled 'transaction' in fig. 4 has become 'factoid' in fig. 5. In Bradley 2018 the factoid is described as “a spot in a source that says something about a person or persons.” It is thus an assertion. The transaction becomes one type of assertion/factoid and other kinds of assertions can be included as well.

- As has just been stated, in *PoMS* the legal transaction is one type of factoid.
- Relationships between people is another (and indeed, we found this second kind of factoid in the husband-wife relationship provided inside what was primarily a legal document),
- and titles and occupations are a third.
- Other kinds of assertions might be of interest too.

For all these types of factoids:

- We have people referenced, and a historical source, and place (or 'spot') in the source identified.
- Some factoids can involve references to associated geographic locations and/or (as we have seen) possessions: land and other kinds of things.
- The *Factoid Typ* entity is referenced to specify which kind of factoid we are dealing with: transactions, relationship, title, occupation, etc.

¹² Bradley (2018): <https://www.kcl.ac.uk/factoid-prosopography> (consulted 12.03.2024).

¹³ Bradley / Rio / Hammond / Broun (2019).

- *Authority Lists* are used for a broad range of semantic purposes centred on Prosopography's frequent dependency on classification of people. One kind of authority list would be associated with relationships and specify what kind of relationship was specified: son, mother, aunt, etc. Another would be the list of titles or occupations so that each title or occupation factoids can point to one of them.

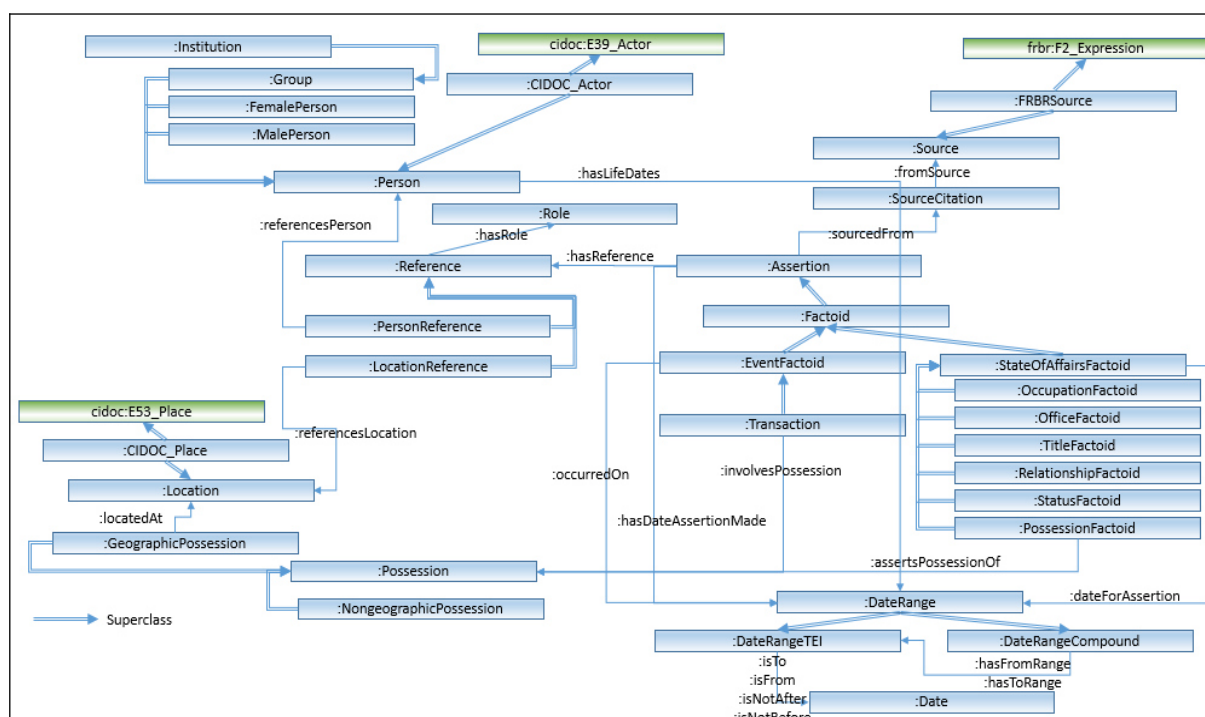


Fig. 6: A diagram representing the *Factoid Prosopography Ontology*.

A further generalisation and enrichment of the factoid approach is given in its Semantic Web representation through the *Factoid Prosopography Ontology* described in Bradley 2018. An Ontology has been described by Thomas Gruber as a conceptualization. The objects, concepts, and other entities that are assumed to exist in some area of interest (called *Classes* in Semantic Web terminology) and the relationships that hold among them form such a conceptualization, and in the Semantic Web an ontology is “an explicit specification of [such] a conceptualization.”¹⁴

Fig. 6 shows the overall structure of the *Factoid Prosopography Ontology*, focusing on the classes and relationships between them. It is richer and more complex than the simple representation of the Factoid shown in fig. 5, but one can still see many of the same components in it: Person, Factoid, Source, Reference, Role, etc. One thing an ontological description can do is present different ‘kinds’ of classes. People, for example, come in different kinds, and the classification by sex and the recognition of legal corporate entities that act as people in legal documents are shown as ‘kind of’ relationships (with a double line) in this diagram. We’ve already mentioned that factoids come in various kinds, and the common kinds are shown here. Dating can be a complex historical process and some of that complexity is dealt with by the classes shown in the bottom right corner which adapt the Text Encoding Initiative’s dating formalisms¹⁵. One can find an extensive description of the whole ontology at Bradley 2018.

One of the ways that ontologies work is as a *basis* for a data structure for a specific project. By incorporating ontologies such as the *Factoid Prosopography* in the structure developed for a particular project one explicitly associates the semantics attached to it to the structure developed by the project as

14 Gruber (1993).

15 TEI 2022, Section 3.6.4.a.

well. In the Semantic Web thinking, one or more external ontologies can provide common core ideas upon which a project can build their own specialised ontology for their specific needs.

- Not all projects may need all the kinds of things here – others will need new kinds of things that are not here, but perhaps connect to these core elements.
- Sometimes entities shown here will need to be extended further to serve the needs of a particular project. One can see an example of this where the Possession class by itself was insufficient for *PoMS*'s needs.

The *PoMS*-specific ontology was based on this general factoid one, but the single Possession class that the *Factoid Prosopography Ontology* includes was insufficient of its needs. Thus, *PoMS*'s ontology enriched the single possession class the *Factoid Prosopography Ontology* gave by defining an entire set of kinds of possessions. You can see this extension, plus others, in the diagram shown in fig. 7, which in turn comes from the online description of *PoMS*'s ontology.¹⁶

Fig. 7 reveals a relatively complex structure when compared to the previous figures discussed here. However, you can find types of entities and relationships between them that correspond with both the *Factoid Prosopography* approach, and *PoMS*'s analysis of the sources and the transactions found within them that has been described here earlier.

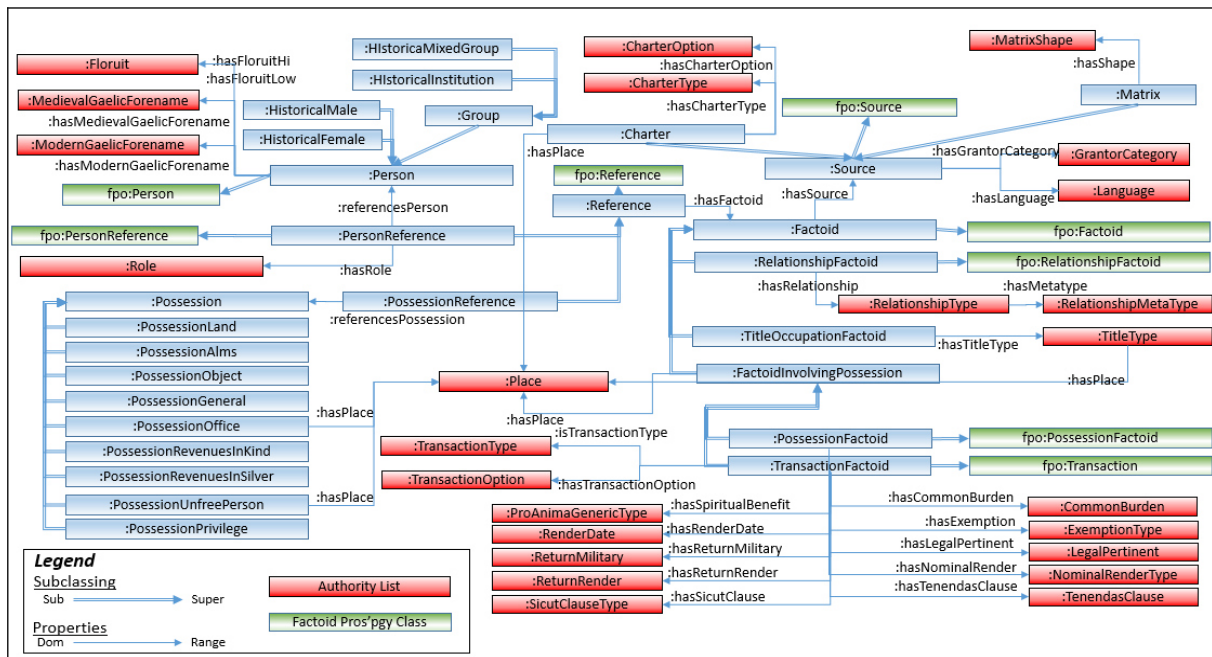


Fig. 7: A diagram showing *PoMS*'s ontology.

There are clearly areas where the entities described in the *Factoid Ontology* shown in fig. 6 have been extended. In the bottom left area we can see the significant different types of Possessions that were identified by the *PoMS* team during the analysis phase of the work and that appeared as possessions in Scottish Medieval Charters: kinds of things ranging from property as land, to property as unfree persons or possessions as offices, or specific objects such as horses or golden statues. Elsewhere, the person structure in *PoMS* followed closely that of the generalised *Factoid Prosopography Ontology*, but it was extended to deal with certain aspects of Gaelic naming practices. The 'Source' corner of the ontology was enriched by a recognition that not only the charters, but the attached seals and the matrices that created them provided prosopographical information. In addition, charters were classified into types by the *PoMS* team, and each charter was then classified according to this scheme.

¹⁶ <https://www.poms.ac.uk/rdf/doc/ontology.html> (consulted 12.03.2024).

Finally, in a project so focused on legal charters, it is perhaps not surprising that the rudimentary model for transactions that was described earlier in this paper was enriched substantially by further pieces of information reflecting Medieval Scottish interests, such as a transaction's Render Date, or associated Common Burdens.

What the data model is like will affect the semantics associated with the database, and will, as a consequence, control what kinds of assertions the database can make about the historical sources. Thus, the organisation of *PoMS*'s data demanded a complex structure for the complex historical task that *PoMS* represented. Indeed, one should, surely, expect a substantial historical project drawn from rich materials to require a complex and subtle analysis, and this figure is simply a result of the complexity that the historians uncovered and formally expressed in their sources.

As a consequence, it should be clear that the creation of this model is a task that requires the detailed understanding of the historians who can judge to what extent the formal model represents adequately what is needed. They must be closely involved in the formal expression of the data that the model represents if it is to capture properly what they feel should be said about their materials. For *PoMS* the preliminary model took many months to create, and was based on a close analysis of a good number of charters. In any project of this kind, and certainly for *PoMS* too, the modelling work will to some extent continue throughout most of the building of the data, and thus requires a continuous partnership between the historians, who might, from time to time, spot problems in the expressiveness of the current model, and can then work with the technology team who can implement changes to address them.

The Model and Data Preparation

This paper has illustrated how the data model is connected to an idea of semantics and thus can explicitly represent some significant part of the scholarly meaning of the material. The data model will affect the semantics associated with the database, and will, as a consequence, control what kinds of assertions the database can make about the historical sources. I have tried, through this extended illustration, to make it clear that the creation of the model is a task that requires the understanding of the historians who can judge to what extent the formal model adequately represents what is needed. Ideally, then, its development can be a significant partnership between the historians and the technical team; an arrangement that is likely to continue throughout the project.

Having developed a repository for the data, the project will then be ready to move on to the phase of putting materials into it. Here is one place where the model is critical since it will affect in many ways the mechanisms that can be created by the technical team to collect the data.

Data forms are the classic way to get data into a database, and they have been widely used in projects in which I have been involved. Fig. 8 shows portions of one of about 20 different forms for data entry that was created for the *Prosopography of Medieval Scotland*, and this particular one was used to enter the information for its transaction factoid. *PoMS*'s researchers would read the source text, locate the aspects of interest to the *PoMS* project, and record them in this and other forms. Like most of the data entry mechanisms that *PoMS* used, this particular form is generated semi-automatically by the *Django* framework¹⁷ which we use to build our data-oriented projects. Its ability to create and adjust these forms relatively painlessly as the data structure is first created, then modified, is a major advantage we have found for the *Django* platform over other frameworks with which we are familiar.

Perhaps the first thing to note is that even though the project is a prosopography, and one might think that a form for persons would be front and centre, that is not so for *PoMS*. Most of the time the data entry operation was centred on the sources being read, and thus it was centred on factoid-based forms,

17 <https://www.djangoproject.com/> (consulted 14.03.2024).

like the transaction shown in fig. 8. Records for individual historic people were created as needed as the source was read but, surprisingly perhaps, this often was carried out as a seemingly secondary operation – driven by their appearance in the sources.

Fig. 8 shows the transaction form as it was filled in by the *PoMS* researcher about the transaction from source 3/337/1 that formed the basis for the discussion here earlier. The entire form is rather long and complex, and fig. 8 shows only three fragments of it. The top part, which is also the top of the form itself, begins with an area for specifying the historic source; the legal charter; for this transaction. Within the database the Source is a separate entity, so the first form element, labelled ‘Document’, is actually used not just to hold a bit of text that identifies the document, but instead to point to the appropriate instance of the Source entity that describes it bibliographically.

The top fragment shows the 'Description' section with a 'Short description' field containing 'Gift of church of Forgan (FIF) with chapel of Naughton (FIF)' and a 'Notes' field. Below this is the 'Dates' section with checkboxes for 'Has firm date', 'DAY only firm date', 'Undated', and 'Either/or'. It includes date pickers for 'Date of factad - FROM' (October 1199) and 'Date of factad - TO' (July 1202), with a 'Firm date [preview]' field showing 'October 1199 X 7 July 1202'. At the bottom are buttons for 'Delete', 'Save and continue editing', 'Save and add another', and 'Save'.

The middle fragment shows the 'Associated people' table:

Person	Role	Nameoriginal	nametranslation	Standardmedievalform	Order
Alan de Lascelles (d.p.1204)	Grantor	Alanus de lascelles filius alani de lascelles et J	Alan de Lascelles son of Alan de Lascelles an		1
St Andrews Cathedral Priory	Beneficiary	ecclesie beati Andree apostoli	church of Blessed Andrew the apostle		2
Amabel, wife of Alan de Lascelles	Consentor	uxoris mee amabile	my wife, Amabel		3

The bottom fragment shows the 'Spiritual benefits' section with a list of 'Available Generics' (All Relatives, Ancestors (pro anima), Ancestors (pro salute), Ancestors (pro), beloved (carorum), Benefactors (pro anima), Body (pro salute corporis mei), Book of Life mentioned) and a 'Chosen Generics' list (Ancestors (pro salute anime), Any Spiritual Benefit, Self (pro salute anime), Successors (pro salute anime), Wife (pro salute anime)).

Fig. 8: Three fragments from *PoMS*'s transaction data entry form.

Other source-related information that has not been mentioned here before appears here too. The transaction is specified as a ‘Gift’, and the person entering the data can also assert that this transaction is the primary thing presented in this particular source. Below the source area on the form is a field for a short verbal description of this transaction. The system can then display this to the user whenever that is appropriate. Then, below that is the dates area, which is revealed to be a rather complex structure: dates being, of course, in historical sources like this, a complex matter to handle with the flexibility that is required.

The second fragment of fig. 8 shows that part of the form which focuses on the people that are connected to the transaction. Although this area is part of a form about the transaction, it actually specifies what references are associated with the transaction. Each reference, in turn, will point to the person

rather than simply name them, and when the form is filled in the researcher is presented with a mechanism that allows him/her to either select or (if an entity for them did not yet exist) create a new person entity. The role of the person in the transaction is indicated in the 2nd column, and two data attributes are also attached to the person reference that record what the source actually says to identify the person, and how this bit of Latin could be translated into modern English.

As was mentioned earlier, the *PoMS* team wished to record a rich interpretation of their transactions, and the third segment of fig. 8 provides an example of one of the other kinds of information that *PoMS* collected: what the *PoMS* project called ‘generic Spiritual benefits’. Often charters of this period used formulaic language to say that something was being done for the good of someone’s soul, and here the project team could choose from the list of formulae found (on the left) to indicate which ones actually appeared in this document.

It is probably obvious by now that the form is quite complex reflecting the complex nature of what the *PoMS* team wanted to say about transactions. It is useful to note two things about it.

First of all, the form makes it evident that the structure diagram shown in fig. 7 does not tell the whole story about the structure of the *PoMS* data. It emphasized the kinds of entities that were involved in the dataset, and how they were interconnected. What it did *not* show was the kinds of information that are *attached* to each type of entity: for Person Entities, things like a head name, and perhaps other data such as floruit dates, for Transactions: dates, or short bits of narrative attached to a transaction that records something the team wants to say to the user audience. These kind of attributes are a kind that don’t point to other entities, but instead hold relatively simple values; numbers or bits of text. There is often many of these for each kind of entity.

Second, the things a form shows and how it works *must* align with the data structure: it cannot be made to work otherwise. If what the form allows to be entered cannot be made to match the historical needs of the project, this is an indication that the model behind the form is inadequate or inaccurate. If this problem occurs, the data model must be changed, and then the form changed too to reflect the new model. In that the semantics of the data structures must be in the domain of the historian, the contents and order of the data entry form can, and should, be sorted out between the historian and technical team as partners: the technical team is responsible for what the tool generating the form can accomplish, and the historian for what it does express and how it does so in ways that best facilitate the entry of the material by the historical team.

Although we have found forms to be the usual mechanism for inputting data into databases, it is not unusual to sometimes have other mechanisms too. Academic project partners sometimes find it more convenient to create materials in, say, a spreadsheet or perhaps an XML document. Indeed, a spreadsheet is often proposed as a method of data collection since it would appear to be a kind of half-way house towards structured data, and historians are relatively comfortable dealing with it.

Fig. 9 is an example of this alternate, and in some circumstances better, approach to entry of the data. It deals with material which the *Digital Prosopography of the Roman Republic project (DPRR)*¹⁸ wanted to include that came from T.C. Brennan’s *The Praetorship in the Roman Republic*¹⁹. The principal research associate in *DPRR*, Dr Maggie Robb, collected the material from Brennan and put it into a spreadsheet. The technical team then wrote a 298 line Python script – a little software programme – to take the material in the spreadsheet and transform it into data loaded into *DPRR*’s database. We will not consider the details of this process here, but you can see that this work which allowed this approach to be taken was a part of the ongoing partnership between the historians involved in *DPRR* and the technical team well after the database was up and running. The script was what is often called ‘throwaway’ code in that it did precisely and only the job of handling the Brennan spread-

18 Mouritsen et al. (2016); <https://romanrepublic.ac.uk> (consulted 12.03.2024).

19 Brennan (2000).

sheet, and was not needed again for anything else. However, although it did require a professional technical understanding to create it, it was not a large technical challenge to create, and was written in a day or two.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
1	Type	Person ID	Post ID	Date Sour	Date Start	Unce Date	End	Unce Page	Note Ref	Praenome	Nomen	RE	Filiation	Cognome	Patrician	Certainty	Father	Grandfath	Brother	Province	Original Name	Text	
2	1 Same Praetorship	486	904	366	366	0	366	0	725	Sp.	Furius	48	M. f. L. n.	Camillus	Patrician	Certain	M. Furius (44)	Camillus			Sp. Furius (48) M.f. L.n		
3	1 Same Praetorship	511	991	350	350	0	350	0	725	P.	Valerius	300	P. f. L. n.	Poplicola	Patrician	Certain					P. Valerius (300) P.f. L.n		
4	1 Same Praetorship	494	998	349	349	0	349	0	725	1 L.	Pinarus	18		?Natta	Patrician	Certain					L. Pinarus (8) (?Natta)		
5	1 Same Praetorship	533	1035	340	340	0	340	0	725	L.	Papirius	45	L. f. L. n.	Crassus	Patrician	Certain					L. Papirius (45) L.f. L.n		
6	1 Same Praetorship	586	1153	318	318	0	318	0	725	L.	Furius	14			Patrician	Certain					L. Furius (14)		
7	1 Same Praetorship	522	1214	308	308	0	308	0	725	4 M.	Valerius	137	M. f. M. n.	Maximus	Patrician	Certain					M. Valerius (137) M.f. M		
8	1 Same Praetorship	603	1291	296	296	0	296	0	725	P.	Semproni	85	P. f. C. n.	Sophus							P. Semproni (85) P.f. C		
9	1 Same Praetorship	591	1300	295	295	0	295	0	725	5 Ap.	Claudius	91	C. f. Ap. n.	Caecus	Patrician	Certain					Ap. Claudius (91) C.f. Ap		
10	1 Same Praetorship	647	1318	293	293	0	293	0	725	M.	Attilius	50	M. f. M. n.	Regulus			M. Attilius (49)	Regulus Calenus			M. Attilius (50) M.f. M.n.		
11	1 Same Praetorship	640	1331	292	292	0	292	0	725	L.	Papirius	53	L. f. Sp. n.	Cursor	Patrician	Certain					L. Papirius (53) L.f. Sp.n.		
12	1 Same Praetorship	673	1366	283	283	0	283	0	725	6 L.	Caecilius	92		Metellus Denter							L. Caecilius (92) Metellu		
13	1 Same Praetorship	681	1382	280	280	1	280	1	725	7 Q.	Marcus	78	Q. f. Q. n.	Philippus							Q. Marcus (8) Q.f. Q.n. f		
14	1 Same Praetorship	727	1475	257	257	0	257	0	725	A.	Attilius	36	A. f. C. n.	Calatinus							A. Attilius (36) A.f. C.n. C		
15	1 Same Praetorship	718	1497	253	253	0	253	0	726	11 L.	Postumius	56	L. f. L. n.	Megellus	Patrician	Certain	L. Postum L. Postumius (*19)	Megellus			L. Postumius (56) L.f. L		
16	1 Same Praetorship	767	1543	242	242	0	242	0	726	Q.	Valerius	157	Q. f. P. n.	Falto	Patrician	Certain					praetor ur Q. Valerius (157) Q.f. P		
17	1 Same Praetorship	790	1584	234	234	0	234	0	726	P.	Cornelius	42			Patrician	Certain					praetor ur P. Cornelius (42)		
18	1 Same Praetorship	793	1614	227	227	0	227	0	726	12 C.	Flaminius	2	C. f. L. n.								Sicilia C. Flaminius (2) C.f. L.n		
19	1 Same Praetorship	834	1665	218	218	0	218	0	726	21 M.	Aemilius	19, 67		Lepidus	Patrician	Certain					Sicilia M. Aemilius (19, 67) Le		
20	1 Same Praetorship	818	1668	218	218	0	218	0	726	22 C.	Terentius	83	C. f. M. n.	Varro							?Sardinia C. Terentius (83) C.f. M.		
21	1 Same Praetorship	835	1666	218	218	0	218	0	727	23 C.	Attilius	62		Serranus							?praetor C. Attilius (62) Serranus		
22	1 Same Praetorship	856	1702	217	217	0	217	0	727	T.	Otaclius	12		Crassus							Sicilia T. Otaclius (12) Crassus		
23	1 Same Praetorship	857	1703	217	217	0	217	0	727	24 M.	Pomponius ?						M. Pomponius (*5) Matho or N	inter pere M. (?) Pomponius (20, cf			praetor ur M. Aemilius (20, 128) R		
24	1 Same Praetorship	854	1700	217	217	0	217	0	727	25 M.	Aemilius	20, 128		Regillus	Patrician	Certain					praetor ur M. Aemilius (20, 128) R		
25	1 Same Praetorship	855	1701	217	217	0	217	0	727	26 A.	Cornelius	257		Mamulla	Patrician	Certain					Sardinia A. Cornelius (257) Mam		
26	1 Same Praetorship	810	1720	216	216	0	216	0	727	M.	Claudius	220	M. f. M. n.	Marcellus			M. Claudius (219)	Me	Sicilia		M. Claudius (220) M.f. M		
27	1 Same Praetorship	788	1723	216	216	0	216	0	727	I.	Postumius	40	A. f. A. n.	Albinus	Patrician	Certain					Gallia I. Postumius (40) A. f. A.		
		BrennanExptv13																					

Fig. 9: Some of Brennan’s *The Praetorship of the Roman Republic* expressed as a spreadsheet.

The Model and the Public View

So far this paper has considered tasks involved in the creation of the database. The contention here is that although the creation of the structure of the database is a highly formal and technical task, and requires technical expertise to achieve it successfully, it must grow out of the historian’s understanding, interests and aims. Although few historians will be familiar with the formal issues involved in highly structured data, it is possible, with some effort, to understand in some detail how the design works. In this way, control of the database becomes not purely to domain of the technologist, but also something that is properly and fully jointly owned. By involving him or herself substantially in the design, the historian can also then direct the creation of mechanisms that put the materials into the database in ways that work best for his or her needs.

However, this is not the end of the engagement between historians and technical staff. As fig. 1 shows, the database, by itself, will be unusable by the great majority of historians. These days, the common way to give access to a historian community is through the World Wide Web, and conventionally this means that a web application has to be created that sits between the database and the World Wide Web so that an historian, using a web browser, can make use of the data.

As discussed briefly earlier, the creation of this web front end involves quite a different set of skills from those needed for database creation, often requiring different technical folk. Furthermore, in pretty well all of the projects in which I have experience, it has proven to be the most complex piece of technical work of all. Even then, however, historians must keep engaged with the work of building the web application so that the resulting software server presents their material properly and accessibly. Given the highly technical nature of the work needed to build this web application, how can historians retain control of the result so that they are also happy with what appears? The issue comes more into focus when one sees what the data in a database looks like when viewed without a web application to provide some interpretive packaging.

As it happens, one can see the data from both the *PoMS* and *DPRR* projects essentially directly as they appear in their databases. Because of the significant interest in the digital humanities at a time in the idea of ‘open data’ (where raw data are made freely available directly for others to use) we decided to provide, in addition to our presentation-oriented web application, two data portals which gave direct access to the *PoMS* data and the *DPRR* data in their raw Semantic Web RDF expression. Later in this

paper there will be an argument about how this might be useful, but for now it is useful to see what the raw data for *PoMS* or *DPRR* is like.

To build these portals, we chose to follow the Open Data principles developed by Tim Berners-Lee (the inventor of the WWW), and described in a highly influential paper by him and some colleagues in 2009²⁰. Of the set of principles described there for Open Data, there are two pieces necessary for our discussion here.

- The first one is that all entities represented in the data need to have access mechanisms that follow open and public standards. Berners-Lee proposes using URIs (which are almost identical to the WWW's URLs) as public identifiers for these entities.
- Then, second, the resulting data that is returned should be provided in a form that is compatible with further processing by the person that fetched it, and is in an open format. Berners-Lee proposes the W3C's RDF format²¹ for this.

This is exactly what was done with the *PoMS* and *DPRR* data. For both projects all their database materials were expressed in RDF, and all of it was made accessible world-wide through URI's which anyone can fetch by giving the URI to their browser. For those interested in information on a classically-oriented project, there is extensive discussion of the nature and implications of this for *DPRR* in an article in the *Digital Humanities Quarterly*²². Here, we shall continue to centre our material on the *PoMS* example of a transaction started earlier.

The first principle from Berners-Lee requires that all entities have a public identifier that gives access to the data that is attached to it²³.

In true Open Data fashion, one can simply give this URL/URI to your browser to see the data that is attached to it displayed as a list of RDF assertions. Fig. 10 shows the data for this transaction starting a little way into that list of assertions. It is not straightforward to see one's way around this list of RDF statements, but it is useful to see how the semantics attached to this transaction have been represented.

As fig. 10 implies, RDF statements have three parts. The first line in fig. 10, for example, formally asserts that this entity is of type 'Transaction Factoid'²⁴.

Continuing the exploration; the 15th RDF statement in the list in fig. 10 identifies the source in which this transaction can be found. Attribute *hasSource* identifies the source using the Source's public URI/URL²⁵ that RDF and Open Data requires. What source this actually is can be found by going to look at this URL for the source itself.

Elsewhere one can see RDF assertions related to the dating of the Transaction. This paper has not discussed how dating is handled in *PoMS* in any detail, but one can find groups of assertions about dates that allow for complex dating to be represented. The charter source that was available to *PoMS* for this transaction was undated in any explicit form, but from examining the witness list and knowing when the various people were in office, it was possible to provide a plausible date range.

20 Bizer / Heath / Berners-Lee (2009).

21 Cyganiak et al. (2014).

22 Bradley (2020).

23 For the *PoMS* transaction described earlier this is <https://www.poms.ac.uk/rdf/entity/Factoid/57978> (consulted 12.03.2024).

24 <https://www.poms.ac.uk/rdf/entity/Factoid/57978> (consulted 12.03.2024).

25 <https://www.poms.ac.uk/rdf/entity/Source/5159> (consulted 12.03.2024).

<https://www.poms.ac.uk/rdf/entity/Factoid/57978>	rdfs:type	vocab:TransactionFactoid
<https://www.poms.ac.uk/rdf/entity/Factoid/57978>	rdfs:label	"Factoid 57978 (transaction): Gift of church of Forran (FIF) with chapel of Naughton (FIF) St Andrews Liber. 260 57978."
<https://www.poms.ac.uk/rdf/entity/Factoid/57978>	vocab:FactTransactionTenendasClauseOrigLang	"in puram et perpetuam elemosinam"
<https://www.poms.ac.uk/rdf/entity/Factoid/57978>	vocab:hasAssociatedWebpage	<https://www.poms.ac.uk/record/factoid/57978/>
<https://www.poms.ac.uk/rdf/entity/Factoid/57978>	vocab:hasDatingNotes	"Election of William Malveisin, archdeacon of Lothian to see of Glasgow x death of Bishop Roger of St Andrews."
<https://www.poms.ac.uk/rdf/entity/Factoid/57978>	vocab:hasFirmDate	"October 1199 X ~ July 1202."
<https://www.poms.ac.uk/rdf/entity/Factoid/57978>	vocab:hasFromMonth	10
<https://www.poms.ac.uk/rdf/entity/Factoid/57978>	vocab:hasFromYear	1199
<https://www.poms.ac.uk/rdf/entity/Factoid/57978>	vocab:hasID	57978
<https://www.poms.ac.uk/rdf/entity/Factoid/57978>	vocab:hasPlace	<https://www.poms.ac.uk/rdf/entity/Place/136>
<https://www.poms.ac.uk/rdf/entity/Factoid/57978>	vocab:hasPlace	<https://www.poms.ac.uk/rdf/entity/Place/1748>
<https://www.poms.ac.uk/rdf/entity/Factoid/57978>	vocab:hasPlace	<https://www.poms.ac.uk/rdf/entity/Place/442>
<https://www.poms.ac.uk/rdf/entity/Factoid/57978>	vocab:hasShortDesc	"Gift of church of Forran (FIF) with chapel of Naughton (FIF)"
<https://www.poms.ac.uk/rdf/entity/Factoid/57978>	vocab:hasSicutClause	<https://www.poms.ac.uk/rdf/entity/SicutClauseType/1>
<https://www.poms.ac.uk/rdf/entity/Factoid/57978>	vocab:hasSource	<https://www.poms.ac.uk/rdf/entity/Source/51592>
<https://www.poms.ac.uk/rdf/entity/Factoid/57978>	vocab:hasSpiritualBenefit	<https://www.poms.ac.uk/rdf/entity/ProAnimaGenericType/12>
<https://www.poms.ac.uk/rdf/entity/Factoid/57978>	vocab:hasSpiritualBenefit	<https://www.poms.ac.uk/rdf/entity/ProAnimaGenericType/42>
<https://www.poms.ac.uk/rdf/entity/Factoid/57978>	vocab:hasSpiritualBenefit	<https://www.poms.ac.uk/rdf/entity/ProAnimaGenericType/53>
<https://www.poms.ac.uk/rdf/entity/Factoid/57978>	vocab:hasSpiritualBenefit	<https://www.poms.ac.uk/rdf/entity/ProAnimaGenericType/75>
<https://www.poms.ac.uk/rdf/entity/Factoid/57978>	vocab:hasSpiritualBenefit	<https://www.poms.ac.uk/rdf/entity/ProAnimaGenericType/8>
<https://www.poms.ac.uk/rdf/entity/Factoid/57978>	vocab:hasTenendasClause	<https://www.poms.ac.uk/rdf/entity/TenendasClause/5>
<https://www.poms.ac.uk/rdf/entity/Factoid/57978>	vocab:hasToDay	7
<https://www.poms.ac.uk/rdf/entity/Factoid/57978>	vocab:hasToMonth	7
<https://www.poms.ac.uk/rdf/entity/Factoid/57978>	vocab:hasToYear	1202
<https://www.poms.ac.uk/rdf/entity/Factoid/57978>	vocab:hasTransactionOption	<https://www.poms.ac.uk/rdf/entity/TransactionOption/12>
<https://www.poms.ac.uk/rdf/entity/Factoid/57978>	vocab:hasTransactionOption	<https://www.poms.ac.uk/rdf/entity/TransactionOption/22>
<https://www.poms.ac.uk/rdf/entity/Factoid/57978>	vocab:isDare	true
<https://www.poms.ac.uk/rdf/entity/Factoid/57978>	vocab:isPrimary	true
<https://www.poms.ac.uk/rdf/entity/Factoid/57978>	vocab:isTransactionType	<https://www.poms.ac.uk/rdf/entity/TransactionType/2>
<https://www.poms.ac.uk/rdf/entity/PersonReference/1098542>	vocab:hasFactoid	<https://www.poms.ac.uk/rdf/entity/Factoid/57978>
<https://www.poms.ac.uk/rdf/entity/PersonReference/1137652>	vocab:hasFactoid	<https://www.poms.ac.uk/rdf/entity/Factoid/57978>
<https://www.poms.ac.uk/rdf/entity/PersonReference/1174082>	vocab:hasFactoid	<https://www.poms.ac.uk/rdf/entity/Factoid/57978>
<https://www.poms.ac.uk/rdf/entity/PersonReference/1209012>	vocab:hasFactoid	<https://www.poms.ac.uk/rdf/entity/Factoid/57978>
<https://www.poms.ac.uk/rdf/entity/PersonReference/1241722>	vocab:hasFactoid	<https://www.poms.ac.uk/rdf/entity/Factoid/57978>
<https://www.poms.ac.uk/rdf/entity/PersonReference/1272232>	vocab:hasFactoid	<https://www.poms.ac.uk/rdf/entity/Factoid/57978>
<https://www.poms.ac.uk/rdf/entity/PersonReference/1299702>	vocab:hasFactoid	<https://www.poms.ac.uk/rdf/entity/Factoid/57978>
<https://www.poms.ac.uk/rdf/entity/PersonReference/1324012>	vocab:hasFactoid	<https://www.poms.ac.uk/rdf/entity/Factoid/57978>
<https://www.poms.ac.uk/rdf/entity/PersonReference/1344232>	vocab:hasFactoid	<https://www.poms.ac.uk/rdf/entity/Factoid/57978>
<https://www.poms.ac.uk/rdf/entity/PersonReference/1360842>	vocab:hasFactoid	<https://www.poms.ac.uk/rdf/entity/Factoid/57978>

Fig. 10: RDF data attached to a *PoMS* transaction factoid.

- The resulting data range is shown in a human-readable form as the value of the *hasFirmData* property (RDF assertion 6 in fig. 10), and the property *hasDatingNotes* (assertion 5) explains why these dates are proposed.
- As well as showing the date in a human friendly way, the date is broken down into its constituent parts to make it machine processible by means of a set of *hasFrom* and *hasTo* attributes. You can see the year and months for the range given in machine-friendly numbers elsewhere in the list.

Associated places involved in the transaction are given through three *hasPlace* attributes, which provide URLs that identify the three places we mentioned earlier.

PoMS's historians were interested in certain kinds of formulaic language that appeared in the charter text. One can find assertions related to the Spiritual Benefits associated with the transaction, for example. The use of other formulaic language was also captured: the use of the 'Dare' phrase, the kind of 'Sicut Clause' and the 'Pro Anima' and 'Tenendas' clauses that appeared.

Finally, one can see the linking to information about people associated with this transaction at the bottom of fig. 10. There are ten links to persons visible here, but there are more links below this part of the display. In fact, twenty-one people are connected to this transaction, most of them as witnesses. For each reference one can see who they are, and what their role is in the transaction by following the URL link to their Person Reference entities.

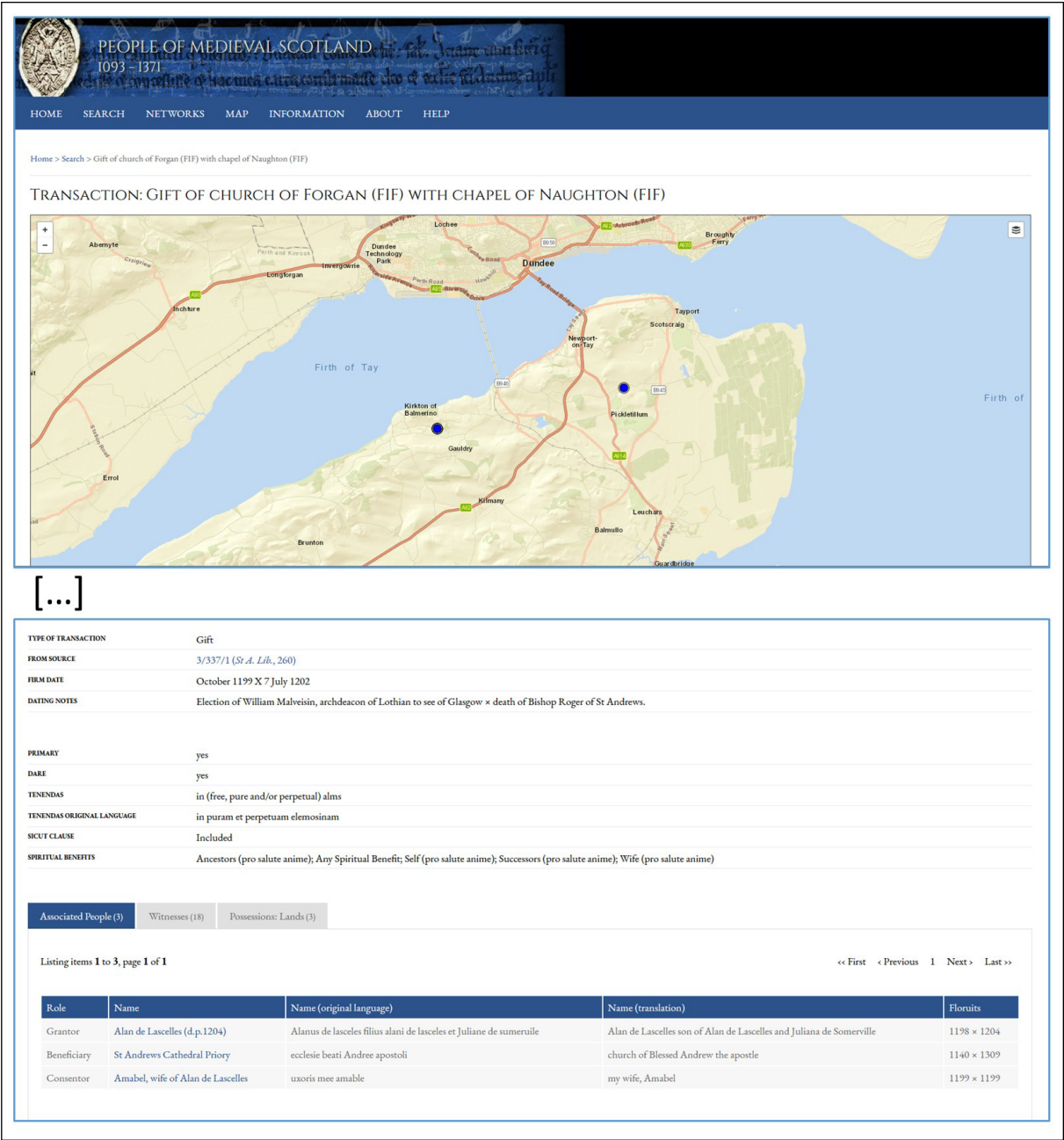


Fig. 11: *PoMS*'s web application's display of a transaction factoid.

One can see that this raw-data approach does give one access to the materials that *PoMS* holds about this transaction. However, it is difficult to see things in it. It is not, to use the well-worn phrase, user friendly. This is where a web application comes in. It packages up the data like this in a way that allows a human user to more readily grasp what is going on. Fig. 11 shows the same material – this particular transaction – as *PoMS*'s web application presents it. One can see this display live with the following URL: <https://www.poms.ac.uk/record/factoid/57978> (consulted 12.03.2024).

PoMS's web application has been programmed to start with a heading as a label for the rest of the display (indeed the reader might recall the place where this was entered in fig. 8). This heading is intended to ground the human viewer, and the web application has programming in it to assemble this label from a couple of attributes from the transaction itself and display it here for that purpose. The next thing one sees is a map showing the main geographic locations that are coded as places in the attributes connected to the transaction. We can immediately see a benefit in the web application approach over the simple data access we saw in fig. 10: the application can be coded so that, as it does here, it automatically generates this map display directly from the place data we had in our database.

The second part of fig. 11 shows the contents of the display below the map: a more prosaic display of the rest of the data for our transaction. This may be less technically exciting than the map was, but it has been designed to serve the human user more readily than the display of the RDF data does. The firm date is shown more or less exactly as it appeared in the RDF display, but other items are more significantly transformed. In particular, attributes which pointed to what we call authority list items such as value of the Tenendas Clause or Sicut Clause are shown with their corresponding names that immediately mean something to the human user rather than their associated URI identifiers. Even more significantly, the references to persons have been resolved into actual names, to the roles they have been assigned, and to the floruits in which they appear in the historical record.

Note as well horizontal clickable headings for ‘Associated People’, ‘Witnesses’ and ‘Possessions’ which groups these associated entities into semantically useful groups. All this material could simply have been listed one after the other in the display. Instead, the reader can choose one of the categories here to focus on it. This was a decision of the historians to present it this way.

Overall, the screen layout, with its use of highlighting and positioning has made the data much more accessible than it was in the dump of raw data we saw earlier. This was a consequence of some thinking both by the technical graphic design specialists that worked with the *PoMS* team and by the historians who considered how the layout could best be designed to be effective for other historians. Thus, the layout of the page was not purely a technical issue. It had to be dictated by the historical demands of the project. The page needs to speak to historians.

The software to slot the data into the various places required to display the transaction in this way required sophisticated technical work with the *Django* software framework. The mapping, of course, required even more effort. All this work had to be carried out by a technical team. However, these technical programming tasks that displayed this data for this part of the web application was guided by both graphic design and historical principles. Since the historians had a good understanding of *PoMS*’s data structure they were in the best place to do this, and the layout, as a consequence, reflected their interests and they felt in control of it.

Of the various projects in which I have been involved, the design details of how their material was to be presented varied – based on the interests of the historians, and the content of their project’s respective data sets. This functional range in design could be quite significant. Fig. 12 shows how person data is shown in the *Prosopography of the Byzantine World (PBW)*²⁶ and the *Clergy of the Church of England Database (CCed)*²⁷. It shows only the beginning of each of the full displays.

In the top area we see the display for *PBW*’s historical person Aaron 101. The UR²⁸ will generate the same display. In *PBW* the header acts as an historical display name for the person, and is followed by a floruit date ‘E / M XI’: early- or mid-ninth century. There is a limited other general attributes stored in the *PBW* database for its persons. However, at the bottom one can see the area reserved for the factoids associated with Aaron 101: there are 23 factoids that assert that this person held a dignity or office, etc. Details about them can be seen by unfolding the area by clicking on it. The figure has the Narrative factoid area unfolded, and you can see the beginning of list of 17 ‘Narrative’ factoids associated with Aaron 101.

In contrast, the *CCed* display for its historical persons prioritises a person’s career path. This is a consequence of the nature of the sources from which *CCed* was built, and the interest of the historians who wanted *CCed* to focus on the careers of their clergy.

26 Jeffreys et al (2016); <https://pbw2016.kdl.kcl.ac.uk/> (consulted 12.03.2024).

27 Burns et al. (2017); <https://theclergydatabase.org.uk/> (consulted 12.03.2024).

28 <https://pbw2016.kdl.kcl.ac.uk/person/Aaron/101/> (consulted 12.03.2024).

Prosopography of the Byzantine World

Home

PBW 2016

Chronology

Seals

Reference

About

FAQ

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Back to results

Aaron, brother of Alousianos

E / M XI

Ααρών (DO IV.75.1)

ID: Aaron 101

Permalink

http://pbw2016.kcl.ac.uk/person/Aaron/101/

View this person in PBW 2011

Expand all

Collapse all

Dignity/Office23

Description4

Kinship9

Location15

Narrative17

1048: Realizing that his troops were not worthy of the large Turkish force under Asan 101 (sent by Tughrul Beg 51), he sent letters requesting reinforcements from the governor of Ani and Iberia Katakalon 101 Kekaumenos who soon joined him

Skytizes 448.51-449.58

1048: Instead of invoking the help of God and proceeding in concord with Kamenas (Katakalon 101) and Gregorios 127 (to face the invading Turks), he expected Liparites 101 to come to their aid

Search

Surname begins with:

Diocese:

Date:

From

To

Browse Persons

Browse Locations

Browse Bishops

A

B

C

D

E

F

G

H

I

J

K

L

M

N

O

P

Q

R

S

T

U

V

W

X

Y

Z

Bradley, Johannes (1725-1725)

Bradley, John (0-1578)

Bradley, John (1597-1597)

Bradley, John (1603-1603)

Bradley, John (1661-1662)

Bradley, John (0-1676)

Bradley, John (1669-1673)

Bradley, John (1680-1761)

Bradley, John (1685-1685)

Bradley, John (0-1742)

Bradley, John (1725-1799)

Bradley, John (1743-1743)

Bradley, John (1759-1801)

Bradley, John (1765-1770)

Bradley, John (1770-1771)

Bradley, John (1776-1814)

Bradley, John (1779-1794)

Bradley, John (1779-1780)

Bradley, John (1817-1826)

Bradley, Joseph (1662-1677)

Bradley, Joseph (1676-1676)

Bradley, Joseph (1713-1764)

Bradley, Joseph (1831-1835)

Bradley, Lewis (1718-1735)

Bradley, Marmaduke (1553-1553)

Bradley, not given (1622-1622)

Bradley, Peter (1634-1634)

Bradley, Peter (1662-1669)

Bradley, Ralph (1562-1604)

Bradley, Ralph (1583-1583)

Bradley, Ralph (1589-1598)

Person: Bradley, John (1759 - 1801)

CCEd Person ID: 23040

Show all records

Key to Code Numbers

View Person Record for Bradley, John

Retrieve Record: Person ID 6

Comments

EDUCATION EVENTS

MA : Oxford / Oriel

ORDINATION EVENTS

deacon : 23/09/1759 (Hume, John/Oxford 1758-1766)

priest : 28/10/1760 (Hume, John/Oxford 1758-1766)

APPOINTMENT EVENTS

domestic chaplain : Henley, Robert, 1st earl of Northampton/Baron Henley of Grange (1708-1772) (10/06/1772 - 12/12/1774)

Rector : Wortling (07/07/1772 - 12/02/1801)

Rector : Cholderton (15/12/1774 - 09/08/1801)

DEATH EVENTS

Death (12/02/1801)

Fig. 12: Displaying person data in *PBW* and *CCEd*.

The difference between the two displays for historical persons was thus caused not only by the difference in the semantic nature of the structure of the database, but also by the interests of the historians: who for *PBW* could not organise the data they had usefully into a career path and those for *CCEd* who could. Both these displays were based on historical considerations, rather than technical ones.

There need not be a ‘one style fits all’ approach when it comes to how the web application can be created to display information drawn from the database. Although the coding work to make the displays operate will have to be done entirely by the technical team, it is clear that it requires an understanding of the meaning (or semantics) of the dataset, as well as an understanding of how things should be presented to most benefit historian users. Thus the decisions about how to present the data lies, at least in good part, in the domain of the historian project partners, and as long as the historians have a strong understanding of the data model so that they understand exactly what is possible to expect from the data, those partners can, and indeed must, have a prominent role in what gets built.

Navigation and Data

The presentation of the data is not the only task for a web application. Users also have to have ways to find the things that interest them in these often large and complex datasets – a task often described as navigation. What strategy can be employed to help readers find items that are of interest to them?

When one thinks about the situation in which users find themselves while using databases like these, it becomes clearer what overall paradigm should be. *PASE* has about 20,000 people in it, *CCEd* has nearly 200,000. Simply reading, or even skimming them, is not an option. Instead, researchers will usually find themselves thinking of criteria that will focus in on the people they might be interested in. The web interface should, then, model this criteria-driven approach. Fortunately, this approach fits well with how web applications for databases actually work. In almost all of them all actions involved in getting material from the database – including supporting finding things in it – involve what is called database *querying*. The paradigm is not so much one of exploring or browsing the data; one must think instead of asking questions of it. And all the standard database paradigms provide their own highly formal *query language* that a web application must use to do exactly this.

It is possible to see what interaction through a formal query language with a collection of data is like, since the *Digital Prosopography of the Roman Republic (DPRR)* data is, like *PoMS* shown earlier, available as RDF through its RDF server²⁹. Since the data is in RDF format, RDF's query language SPARQL³⁰ is made available for *DPRR*'s RDF portal. Here is a simple query in SPARQL that works with the *DPRR* RDF server:

```
PREFIX: <http://romanrepublic.ac.uk/rdf/ontology#>
SELECT ?Source (COUNT( ?assertions ) AS ?NumbAssertions )
WHERE { ?assertions a :Assertion ;
:hasSecondarySource ?secondarysource .
?secondarysource a :SecondarySource ;
:hasAbbreviation ?Source . }
GROUP BY ?Source
ORDER BY DESC( ?NumbAssertions )
```

There will be more to say about RDF and its SPARQL query language later, but for now the main thing to understand is that it is not a straightforward thing to write. Like all the mainstream query languages, SPARQL is rigid and highly formulaic. And its cousin query languages: SQL for relational databases, XQUERY for XML-based databases, etc., are all similarly formal and not trivial to master. It takes significant intellectual effort to sort out how SPARQL works in general, and after that one must then understand the data structure you are querying well enough to be effective. As we saw earlier, just as simply showing the data exactly as it is is insufficient to allow the data to be used readily in historical research; exploring the data through SPARQL queries is also outside the range of most historians.

As a consequence of this, it is common practice to put mechanisms into the web application that allow users to specify criteria in ways closer to that they can readily understand. The application's job then becomes taking these criteria, translating them into a formal data query and translating the results returned from the database into an understandable HTML display that a user can see on his/her browser. Fig. 13 shows this process underway in the *Clergy of the Church of England Database*. It is described there as a *search*, and presents the user with a form containing specific fields that can be used to specify criteria for selection.

29 <https://romanrepublic.ac.uk/rdf> (consulted 12.03.2024).

30 Harris / Seaborn (2013); <https://www.w3.org/TR/sparql11-query/> (consulted 12.03.2024).

Fig. 13: A query and results for the *Clergy of the Church of England Database*.

The form allows you to specify names (or just name beginnings), specific locations, a diocese or arch-deaconry, and various other criteria for filtering. The *CCed*'s web application then uses the specified criteria to filter the persons and select ones that match all the criteria that were given. Fig. 13 shows a search that asks for people who served in the Diocese of Gloucester, who have subscription information associated with them, and who had careers under way during the period 1700–1720. When this Search button is pushed the criteria are turned into a query in SQL and it is run against the database. The bottom left area shows the first twelve of the fourteen people that match the criteria.

There is a basic and advanced search (with more options for criteria). What options were chosen to be included in the form as criteria were selected by *CCed*'s historians, and to do this they needed an understanding of what the structure was in the database, and from that, some sense of how these criteria could be combined together into a single query so that historically valid and useful results would be generated.

This kind of 'select by form' approach is widely used as a search-oriented navigation mechanism. However, one of the problems with this relatively simple technical approach is that it is possible, indeed sometimes far too easy, for a searcher to create combinations of criteria for which none of the data matches the criteria and as a consequence nothing is returned.

My technical team considered the problem in the early 2000s and adopted a strategy in 2006 for search/navigation called *faceted browsing*. The first project in which it was used was *British Printed Images to 1700H*³¹, and we have continued to use it for data-oriented projects such as our prosopographies ever since. By using the faceted approach one avoids 'dead end' criteria combinations – which result in nothing being selected – from arising. The most significant cost to using this approach is that the software in the web application must be an order of magnitude more complex than the basic 'criteria from a form' approach shown in fig. 13 for *CCed*.

The ideas in faceted browsing grew out of the closely related idea of *faceted classification*: an approach to the library classification of books that was invented by the great Indian library scientist Shriyali Ramamrite Ranganathan. The central idea here was that one classified books along multiple paths or facets (personality, matter, energy, space, and time) in a single multi-component classification entry.³² By 2003 people were thinking of how the principles of faceted classification could be applied

31 Hunter (2007). This site has been moved to a new host, and no longer uses the faceted approach.

32 Ranganathan (1962).

to the World Wide Web. We were much influenced by William Denton's article³³, in which he presented an argument about why a multi-faceted approach could be useful, and put the ideas from faceted browsing into the context of designing a faceted scheme for a collection of data that he claimed kept users properly in mind.

The faceted approach resonated particularly strongly with us when we realised that the elements in the search form for *CCEd*, for example, could be viewed from a multi-faceted perspective: the facets being the clergyman's name, the places where he had a living, the diocese to which he was responsible, the dates in which he held posts, and several others.

Several of our faceted search mechanism take on the form of this kind of *faceted browsing*. *PoMS* provides an example of this.³⁴ The facets for selecting people – such as historical persons' names, historical sources in which they appear, titles they held, roles and personal relationships, kinds of property, and many more – are listed down the left-hand side. A user selects one of these, and two things happen: the list of people who are connected to that facet appear on the right, and the list of facets is adjusted so that the list contains only those still available among the historical people selected by the first facet selection – in this way one avoids allowing a user to select two or more criteria that, when combined, apply to none of the historical persons. They can now select a second selection criteria knowing that at least some historical figures have both their first and second criteria applying to them. The experience of the user is that they select people by a sequence of filtering steps, hence the term *browsing*.

An alternative approach to faceted searching was taken on for *DPRR* (*Digital Prosopography of the Roman Republic*). You can see two screen shots in fig. 14 suggesting how it works by showing the first two steps in an exploration. The readers can, alternatively, go to the *DPRR*³⁵ search facility itself and try it out for themselves.

The top panel in fig. 14 shows the top part of the search screen as it appears when one first sees it. At a quick glance it appears similar in style to the 'criteria by form' mechanism used for *CCEd* and illustrated in fig. 13. However, something that is relevant to the faceted search mechanism has been added: there are the numbers beside many of the items which specify how many historical people have that particular attribute assigned to them. For example, beside the status of *nobilis* is the number 264, meaning that 264 individuals have been recorded as having the status of *nobilis* in *DPRR*. We can only see a part of the full search form here, but from it one does get a sense of the range of data recorded in *DPRR* for historical persons from this display, and consequently the range of facets they can specify. Filtering by names is possible in the top area, filtering by a range of kinds of personal data (including life dates) from the second, and by career in the third.

Suppose a user wishes to focus on adopted people. She can see under 'Life Events' in the Personal Data box that *DPRR* has 64 people recorded as adopted. If she clicks on this the search engine will then focus on only those people who are adopted, and the screen changes to that shown in the bottom panel of fig. 14. It looks quite similar to the panel above, but there are changes. First, almost all the numbers have changed. Whereas, when the full set of people were included there were 264 classified as *nobilis*, now, among the adopted people there are only 15. Furthermore, the Female group has entirely disappeared because *DPRR* has no adopted women recorded. Similarly, the Life Events-Restored category has disappeared because there are no records of adopted people being restored.

A major theme of this paper is that historians need to hold on to the structure and the semantics it implies if the work that is produced is to be satisfactory as a piece of digital publication for historians.

33 Denton (2003).

34 <https://www.poms.ac.uk/search/> (consulted 12.03.2024).

35 <https://romanrepublic.ac.uk/person/> (consulted 12.03.2024).

This paper has shown several examples of why this is necessary and how it works, and this same need extends to the selection of the facets, and the semantics behind them too. If the web application is to support a particular facet the developers need to know how to query the data in the backing data structure to make it happen. Thus, a direct connection between all the facets and the data structure can, and indeed must, be identified if they are to work properly from a historiographic point of view. Historians have to be engaged in establishing what facets should be made available to the user, and they must ensure that the data structures enable the facets they want to provide. Although the technical work to set up facets is a complex technical one, it cannot be done satisfactorily by the technical team alone.

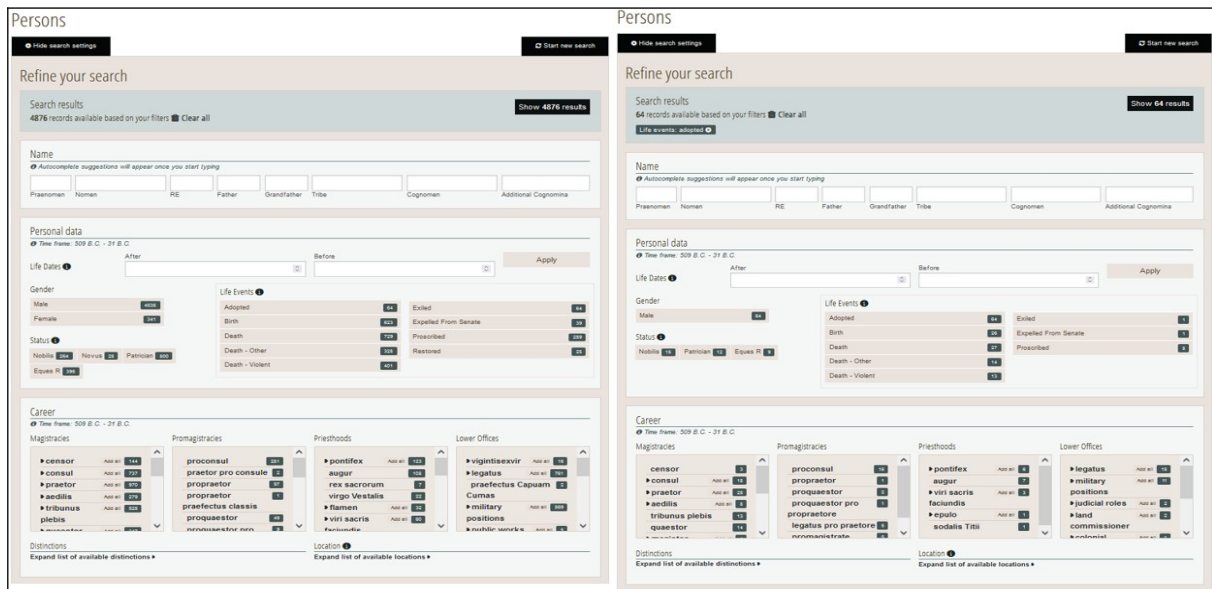


Fig. 14: Faceted searching in DPRR.

There is a final point that I can make about searching through data with faceted browsing, and it is this: although faceting browsing has worked well in almost all of our projects' web apps as a way to help historian users engage reasonably effectively with our projects' data, the faceted approach has limitations. The thinking involved in creating faceted browsing results in a mechanism which enables only certain pathways through the data to be made available: they only allow certain types of queries to be asked. In the end, there will always be questions that could be legitimately asked (through query languages such as SQL or SPARQL) of the data that any manageable facet approach will not be able to deal with.

An example can be found in the SPARQL query that was shown earlier in this paper. The point then was that using the query language against the data directly was a complex thing, beyond the capability of most historians. However, this particular query, written in the SPARQL query language, asks the *Roman Republic Prosopography* (DPRR)'s RDF server to count the number of assertions made for each of the sources that DPRR draws on. From which sources did the project team draw on heavily, and which were used quite a bit less? Although DPRR has a rich set of facets that support faceted browsing, it does not provide a way to ask this question. If this query is given to DPRR's RDF server it sends back a list of the sources with the count of the number of assertions that came from each one. Furthermore, unlike the web-browser orientation that has been seen above, the tabular result is available in a form that allows for further independent processing.

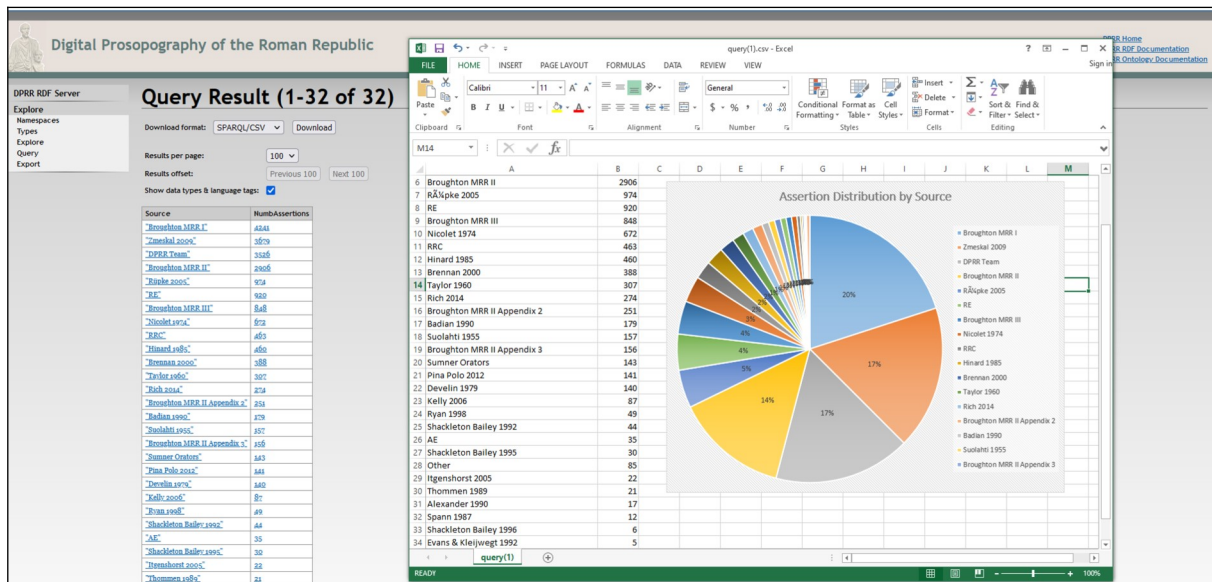


Fig. 15: DRRR sources and their contribution.

Fig. 15 shows a simple example of this. The tabular result of the query (shown on the left) has been imported directly into an Excel spreadsheet, and from it a pie chart has been generated; providing a visualisation of the results.

This simple example illustrates that although we have found that the web app approach with faceted browsing creates a web experience that is understandable and usable by most historians, it can only give specific kinds of access to the data: along paths that are predefined in the facets. It also limits what historians can readily do with the results: look at them. In contrast, direct access to the data through one of the standard query engines allows one to ask any kind of question that the data structure is capable of answering. Furthermore, unlike the web application approach which focuses on presenting results for human viewing on the browser, standard query systems such as SPARQL return results in the form of data that allows for further processing. In experiments with our RDF servers we've gone beyond relatively straightforward processing such as Pie Charts to including passing data to geographic mapping systems, and creating data that could be given to more sophisticated analysis tools, such as the Social Network Analysis tool *Gephi*.³⁶ Anyone who is prepared to learn a significant amount of technical knowledge can do this with our RDF servers. The raw data for projects such as ours can support kinds of research that cannot be carried out with our given web application mechanisms.

Summary and Conclusions

In my own experience over many projects I have found that the execution of a data-oriented historical project is a complex venture best viewed as an extended partnership between the historians and a technically oriented team. Although, of course, the product of such a project must be something valid and useful to historians, who thus must of necessity lead on issues involving the meaning of results, the nature of digital data representation means these projects cannot be carried out without engaging technologists in a complex and continuous way.

In the approach to digital resource building we have used across many projects, project work begins with the definition of data structures that are meant to represent the ideas the project wishes to represent, and developing this, in and of itself, requires a long-term partnership between the historians and

36 <https://gephi.org/> (consulted 14.04.2025).

the technical team who must jointly understand how to use the forms and structure of data engines such as databases to represent materials.

To achieve this one must be sure that historians engage closely and carefully with the database structure. The formalisms of a database can be quite expressive, but their semantics are also quite rigid, and historians need to be sure that they fully understand what is being represented, and how. This does require a focused dipping into the technical concepts behind data structuring on the part of the historians, but the formal conceptions of structured data are not so complex as to make this impossible. But they can be subtle – so historians should invest some time to understand fully how they work.

Furthermore, one should not underestimate the amount of initial work needed to sort out how the database should be structured even before building anything digital: the more one gets right from the beginning the better off one will be, because retrofitting in changes, once the web application is being developed in particular, can often require quite a bit of technical effort and delay. One should expect a complex model to be evident before any significant coding work is undertaken. In addition, whatever design one come up with, one should expect to have to change it perhaps more than once, and perhaps even quite late in the project. A supportive, but intellectually critical engagement between the technology and the history partners is essential to make this practical. Overall, one needs technical people with a deep understanding of how to do this on-board and onside throughout the project, and the historians will need to respect what their technical partners know and contribute.

After a database is built, and mechanisms are in place to allow material to be put into it, one will need to make it available to the general community. There are various approaches to this, but for the projects in which I have been involved, this has always meant the construction of a web application that sits between the database and the outside world who will access it using browsers and the World Wide Web. The technical work for creating the web application requires expertise in quite different technologies than what are needed for database design – expect to need more than one person on the technical team. Furthermore, the work to create a web application is often more complex and subject to error than the database work is.

- The database structure will drive what the web application can do. While it is being built, you might expect to discover that changes to the underlying structures are necessary, perhaps even quite late in the day. Expect this in the project's planning.
- One needs to think about how materials in the database are to be represented as WWW HTML pages. This requires historian expertise and active critical participation, but will need to be filtered through technical understanding of web page design.
- One also needs to think about how a user community will navigate: how they will find things of interest to themselves. We have taken on the faceted browsing approach for this, but it is both conceptually and technically complex to implement, and you need technically sophisticated team members to make it work. Overall, the amount of work to do to build it should not be underestimated.

As mentioned briefly earlier, recent thinking has developed an approach to web-oriented presentation that removes the server-based web application and instead puts all the user interaction into the HTML pages using Javascript. However, even when a complex web server is replaced by complex Javascript run in the browser, similar complex development work still needs to be done. Overall, then, whether a web application is used or not, to make results available over the WWW projects require an enduring partnership between a technical team of probably more than one person (with different expertise), and the historians. This must be funded and planned for from the beginning.

The idea of an intellectual partnership between scholars and non-scholars in the academy is not a particularly new one. See, for example, the comments of the historian of religion Jaroslav Pelikan from his book *The Idea of the University*. About those “who usually stand outside the classroom but without whom research would halt”, he wrote as follows:

“Indeed, even such a term as ‘providers of support services’ is becoming far too limited to describe both the skills and the knowledge required of those who hold such positions. Scholars and scientists in all fields have found that the older configurations of such services, according to which the principal investigator has the questions and the staff person provides the answers, are no longer valid, if they ever were; as both the technological expertise and as the scholarly range necessary for research grows, it is also for the formulation and refinement of the questions themselves that principal investigators have to turn to ‘staff’, whom it is increasingly necessary – not a matter of courtesy, much less as a matter of condescension, but as a matter of justice and of accuracy-to identify instead as colleagues in the research enterprise.”³⁷

I was invited to say a few words at the launch of *The Making of Charlemagne’s Europe* project³⁸, and I chose to comment on the intellectual partnership that I had found there:

“To me, it has been striking that the historical team was evidently so highly committed to exploring and developing sophisticated models for their data – particularly around the some of the complex aspects of historical charters of charters – say, for example, possessions. In my view this has been one of the real strengths of the partnership between the history and the digital humanities aspects of this project. Overall, then, the work on Charlemagne can be characterised by a strong sense of commitment, a high degree of intellectual engagement, often a strong sense of excitement, sometimes a sense of adventure (!), and I hope we are now finishing this project with a strong sense of satisfaction at the quality of work that we have achieved.”

37 Pelikan (1992), 62.

38 <https://charlemagneeurope.ac.uk/> (consulted 12.03.2024).

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Figure References

- Fig 1: Figure created by author.
- Fig 2: Underlying text from Thompson 1841. Labels added by author.
- Fig 3: Figure created by author.
- Fig 4: Figure created by author.
- Fig 5: Figure created by author. An extension to figure in <https://www.kcl.ac.uk/factoid-prosopography/about> (consulted 12.03.2024).
- Fig 6: From <https://www.kcl.ac.uk/factoid-prosopography/overall-concepts> (consulted 12.03.2024).
- Fig 7: From <https://poms.ac.uk/rdf/doc/ontology.html> (consulted 12.03.2024).
- Fig 8: Screenshots of administrative interface for the *PoMS* project (Broun et al. [2014]).
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Prosopographia Palmyrena: A Different Approach towards the Implementation of a Digital Prosopography

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Abstract: This essay outlines the software implementation part of *Prosopographia Palmyrena*, a digital prosopography database application. Operating with limited resources, we harnessed modern web technology to build an interface that enables users to explore Palmyrene inscriptions and their relationships. We describe the merits of using spreadsheets for data accumulation during our research phase and explore the complexities of database implementation. Our different approach centres around a server-less, database-less application integrating modern web technology, static site generation, and client-side interaction to yield a user-friendly platform for navigating the data corpus. Additionally, we describe some selected features that we were able to implement. As outlook the essay describes some features we want to implement in the future.

Introduction

There are well-regarded implementations of digital prosopography databases like *TMpeople*¹ and *DPRR*.² These projects have matured and grown over many years or are implemented by a dedicated department. The young *Prosopographia Palmyrena* has a much smaller team behind it, consisting only of one researcher gathering data from the vast corpus of Palmyrene inscriptions, and one developer who joined late in the project. With limited resources available, we chose a different technological approach to implement a subset of interesting features for researchers and other users. This paper describes some of the challenges for small research teams and presents our unconventional solution using modern web technology to deliver a database-less, server-less application as an interface for browsing and searching through the data corpus.

Challenges for Small Research Teams

Databases and their Database Software

Databases are a complex topic, whether in computer science or in a historical context. For small research teams working on a project to create a digital prosopography application, often no developer is available at all. In the market there are no common ready-made solutions to publish a prosopography to the web. Not many universities in Germany have established a department for the digital humanit-

1 <https://www.trismegistos.org/ref/> (consulted 29.04.2025).

2 <https://romanrepublic.ac.uk> (consulted 29.04.2025), excerpt from the introduction: “The *Digital Prosopography of the Roman Republic (DPRR)* is the result of a three-year, AHRC-funded project based at the Department of Classics and the Department of Digital Humanities at King’s College London.”

ies.³ Consequently technical expertise from data- or computer-scientists is often hard to come by and may not be available up front for many projects. Heuristically, it's useful to concentrate on the tasks the researcher needs to do anyhow. Therefore the work on data acquisition and gathering begins before technical challenges can be faced.

For many decades database software is dominated by relational database⁴ concepts⁵. The *DPRR* uses a relational approach for example, see fig. 1. While the current systems allow the storage and query of data, the upfront setup of such a database can be a challenge in itself. The prominent interface for these databases is the formal language SQL.⁶ This textual access method is cumbersome to use for people without prior experience in data science or who are used to a graphical user interface. To present the data in a queryable form, a graphical application is the way to go, allowing users to take full advantage of the assembled data.⁷ Obviously, another layer of software increases the complexity of the entire system. Furthermore once a project transitions from the collection and research phase to operational use, the list of tasks to keep the database and application software running only grows: maintaining the underlying subsystems, the frameworks used in the application, the application code and servers is required to ensure the continuous operation of the service.

For *Prosopographia Palmyrena* the challenges we faced were accordingly twofold:

1. The database application needs to run without constant need for maintenance for many years.
2. The database application should present a user-friendly interface to query the underlying digital prosopography data via the web.

A Step Forward with Spreadsheets

If a database consists only of uniform records tracked and stored in one table, a spreadsheet software can be used perfectly fine as an editor for the data in its tabular form⁸ during the research phase (see fig. 2 for an illustration of the record structure in *Prosopographia Palmyrena*).

However, spreadsheets have some drawbacks:

- In collaborative settings, update anomalies are possible when researchers attempt to update the same records, resulting in one update silently overwriting the change-set of the other. Additionally, conflicts can arise when the data is updated in parallel, preventing one change from being committed to the database and requiring the author whose transaction failed to manually resolve any conflicts. This is assuming it is even possible to open two concurrent editing sessions for the database table at all.

3 I.e., an established department like the Department of Digital Humanities, Faculty of Arts & Humanities, King's College London, <https://www.kcl.ac.uk/ddh> (consulted 29.04.2025) in UK.

4 Relational database software works as an engine to create, fill, update and manage tables of tuples containing data atoms like numbers or strings of characters. The tables of a database then connect or relate to one another via *joining*; the values for an identifier of one table map to the values of an identifier of another table, creating a relation between the two tables. For arbitrary N:M connections, a third table can be used connect two tables by mapping the identifier of one table row to an identifier of the other table's row in the same way.

5 Like MySQL and PostgreSQL servers in the open-source world, FileMaker and Microsoft Access in home and office settings, or commercial databases like IBM's DB2 or Oracle in business settings.

6 Structured Query Language.

7 Other methods do exist though, for example *DPRR* presents an RDF-based interface.

8 Usually Rem.: then in an unnormalized form.

- Spreadsheets can also be extremely slow when handling large datasets.
- Office spreadsheets like Microsoft Excel and LibreOffice/OpenOffice Calc have limits on the maximum length of tables and number of records they can handle.
- Working with many interrelated tables is not well supported, if supported at all.
- While learning SQL might be complex, it also enables the execution of complex ad-hoc data queries in a standardized way. As a result, many software frameworks provide common support for various database solutions using SQL – which is not the case for spreadsheets.

However, storing the data in a table is generally a very good way to accumulate the data in the first place, and spreadsheets have some advantages, too:

- They are a known and generally well understood tool. Researchers are accustomed to using spreadsheets in various settings and situations.
- Additionally if the dataset is below 100,000 rows, considerations such as size, speed, and data types are usually irrelevant because today's machines are just fast enough. The size of the problem domain fits well within the comfortable range for these systems.
- If only a few researchers are updating the data set,⁹ and updates are generally not performed concurrently, conflicts and anomalies are reasonably unlikely and/or can be quickly addressed. Considerations that are valid for 'high volume – fast paced' setups are not applicable in this situation.
- Another advantage is the absence of problems with the operation of the system:
 - A spreadsheet application is a self-contained system that can be maintained and set up quickly by a single researcher.
 - The system works offline, eliminating the need for an internet connection.
 - Additionally, by copying a single file, backups are both quick and easy, while divergent branches of the dataset can be derived in the same way for experimentation.
 - Sharing a snapshot of the entire database can be achieved by providing the file via email or otherwise.

Appropriately, a spreadsheet has been successfully used to store the record corpus of *Prosopographia Palmyrena* during the primary research and gathering phase.

⁹ For our *Prosopographia Palmyrena* Peter von Danckelman did all the work.

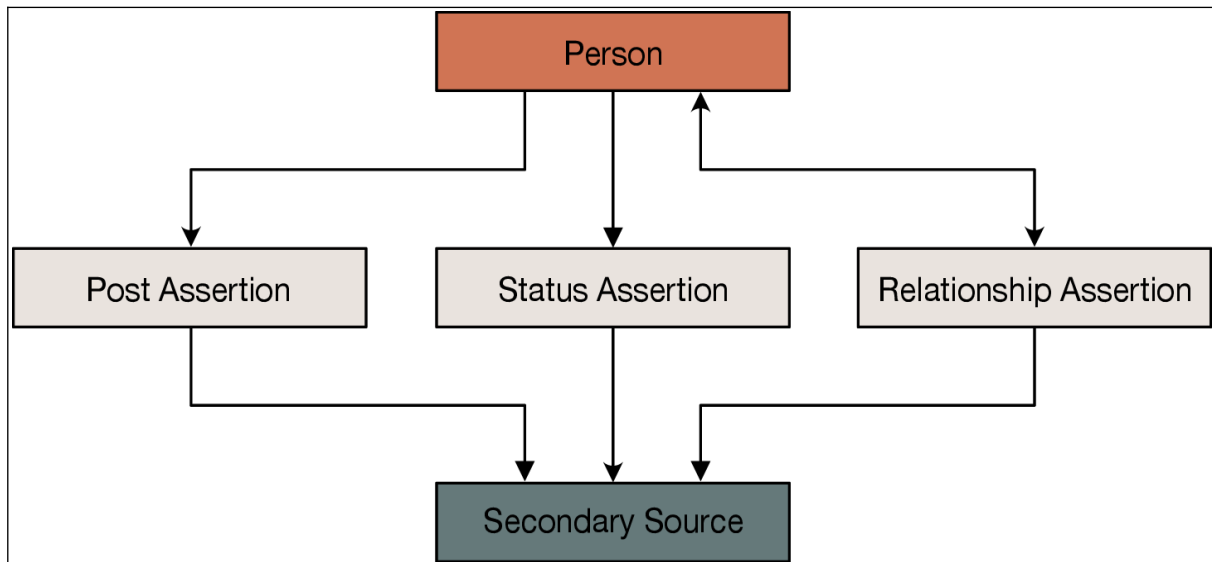


Fig. 1: Table and relational structure of *DPRR* (redrawn from FV [2017]).

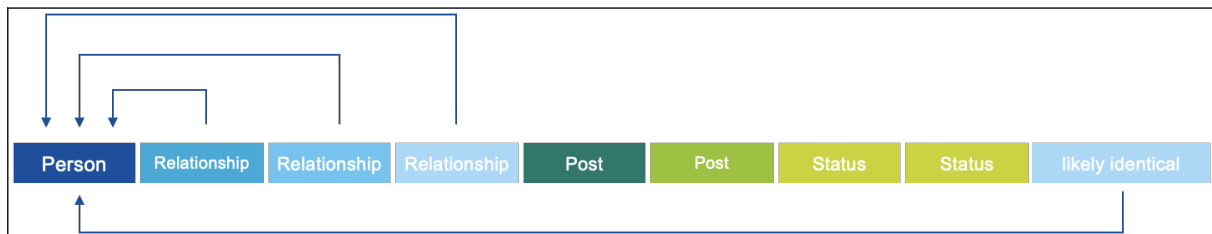


Fig 2: Single self referential table structure of *Prosopographia Palmyrena*.

Making a Dataset Accessible on the Internet

Once a dataset with the corresponding table(s) has been created, how can it be published so that researchers can benefit from the available corpus?

For a spreadsheet-contained database, there are some freely available ways of publishing a version on the web:

1. The file containing the spreadsheet data could be shared in its raw form through platforms like Google Sheets or Microsoft Office 365, enabling others to access and/or edit the table. The spreadsheet implementations from Google or Microsoft would then be utilized to query the dataset. The file could also be downloaded from these platforms in raw form and opened in a local spreadsheet software, again such as Microsoft Excel or OpenOffice/LibreOffice Calc.
2. The dataset could be migrated to an existing but more sophisticated and demanding solution like the application that runs the *DPRR*. It requires its own server setup to run a Python application and a relational database.
3. Alternatively, a new solution could be developed for the dataset, and then the data could be migrated or imported into the newly implemented system. However, realistically, this approach is often too challenging for most teams that lack developers or have limited experience in application and database development and programming.

These apparent solutions come with their own challenges:

1. The database should be accessible to everyone. While spreadsheets offer a user-friendly interface for tabular data, they lack a proper query interface that accurately represents the data domain and its internal relationships.
2. Application servers are unavailable, i.e., running a *Ruby on Rails*¹⁰ or *Django*¹¹ application with an own database server on the infrastructure available with correct firewall settings, logging, etc. is friction and currently not really supported without hiring a dedicated system administrator or operator.
3. We don't have support for continuous operation, so as before, the system will have to run without intervention or constant observation.

Some additional characteristics of our project provide room for creating solutions:

- Given that the collection phase is mostly complete, we anticipate infrequent updates to the dataset. Consequently, there's no necessity for us to develop or maintain editing interfaces, as this would be a waste of resources given their expected usage.
- The dataset that has been compiled and researched from the text corpus is not extensive in the context of modern computing. Currently, *Prosopographia Palmyrena* consists of fewer than 10,000 records.

¹⁰ *Ruby on Rails* is a prominent framework; it is the technology used to implement AirBnB, GitHub, Hulu, and Shopify.

¹¹ *Django* is another prominent framework; it is the technology used to implement Disqus, DropBox, Instagram, and Spotify.

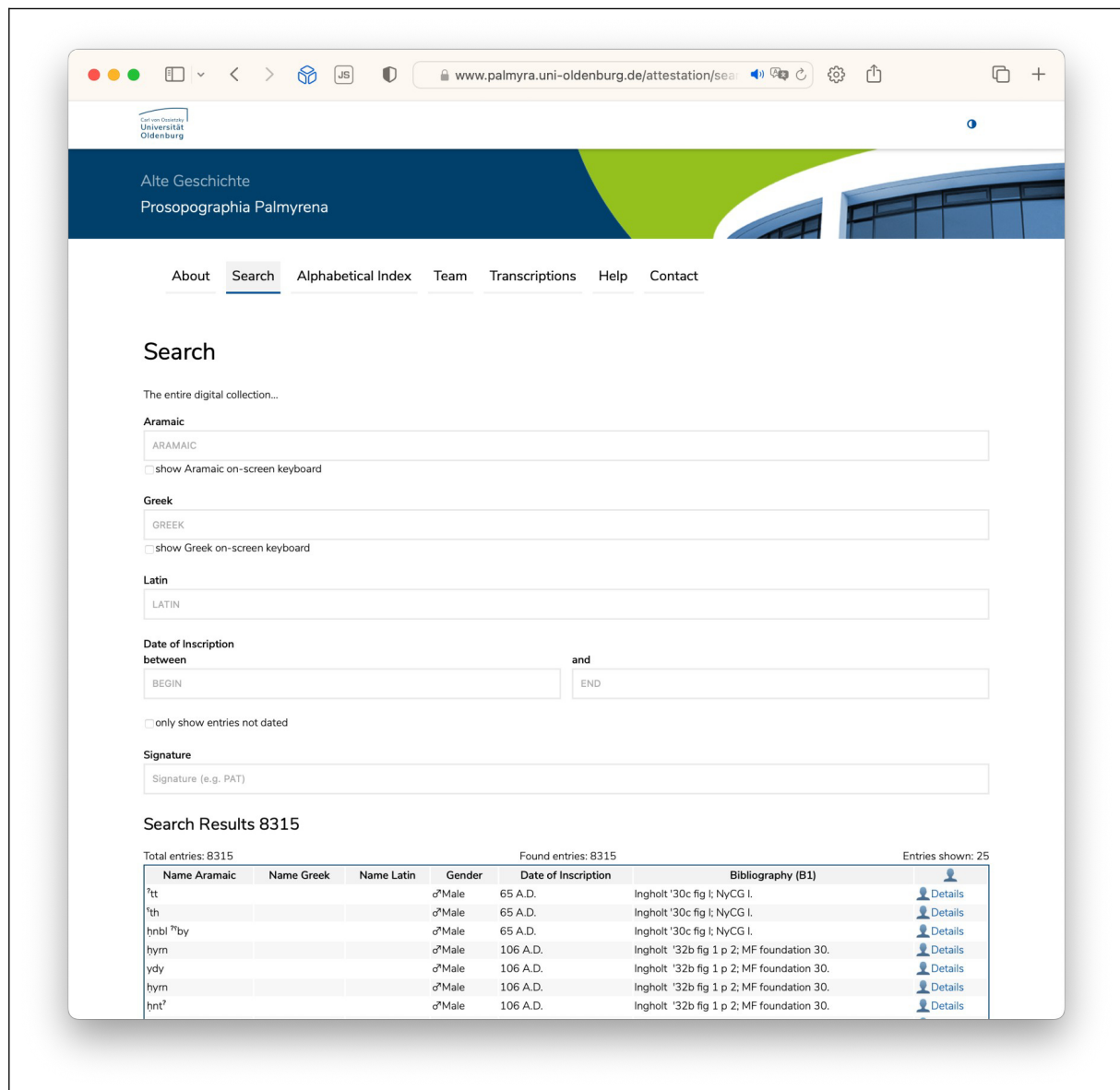


Fig 3: Primary search interface of *Prosopographia Palmyrena*.

A Solution Using a Different Approach

In the last decade, an old trend has resurfaced: *static site generators*. Instead of having an application run on the server and dynamically generate responses on the fly based on user queries and navigation, static pages are generated in advance from a data corpus. This corpus could be an existing catalogue or a content management system containing articles. Each entry in the corpus is then transformed into an HTML file within a path structure, already pre-rendered and populated with its data content.

These static files, representing the data corpus, are served through a conventional web server. This technique eliminates the need for an application to reside on the server, which means there's no requirement to maintain a database, periodically update an application framework for security, or constantly monitor servers for potential failure.

As long as a standardized and cost-effective static web server is available, the data can be effectively served. Furthermore, since high-performance static web servers are not resource-intensive, the likelihood of our servers being overwhelmed by Google, AI crawlers/spiders, other bots or over-eager users is greatly minimized.

A Blast from the Past

Interestingly, a similar approach has been employed by John Bradley et al. to publish the dataset of *Prosopography of the Byzantine Empire*¹² on a single CD-ROM. They achieved this by generating tens of thousands of HTML files. These HTML files encapsulate the entire data in a deconstructed form. Alongside this, a limited¹³ dynamic query system operating within the browser is initiated on every page. While the primary interactivity stems from navigating between the pages, this dynamic system facilitates the formulation of more intricate queries and introduces a degree of additional dynamism. Importantly, all these operations occur within the client's browser and therefore necessitate no specialized server or application.

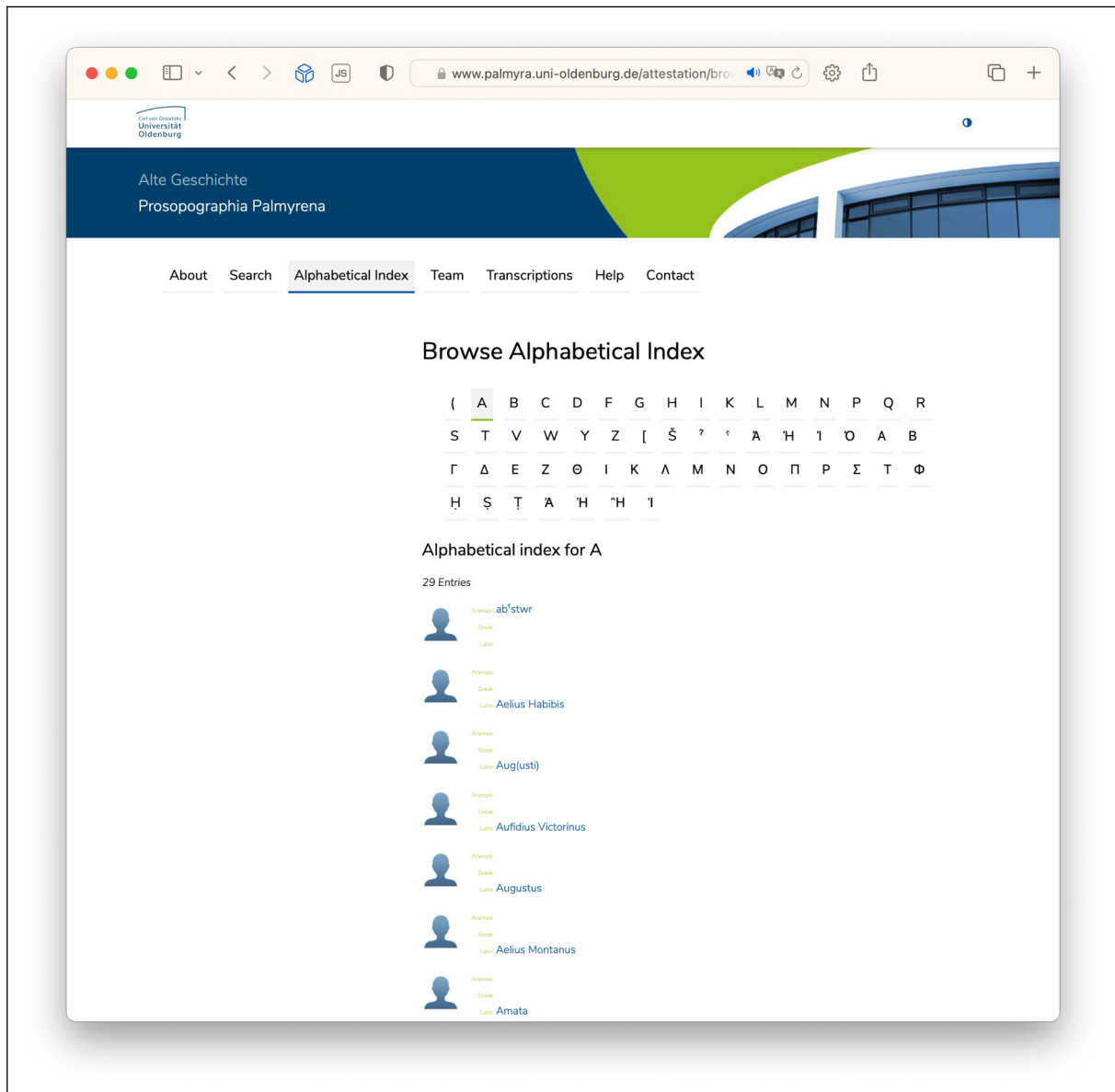


Fig 4: Index interface of *Prosopographia Palmyrena*.

We can utilize our spreadsheet to generate the entire site using the same methodology, thus satisfying the requirements for the first challenge concerning database software.

¹² <https://pbe.kcl.ac.uk/data/help/about.htm#intro> (consulted 29.04.2025).

¹³ Due to the constraints of that language's implementation at that time.

Realizing a Query Application

Considering the enhanced capabilities of today's browsers and client computers, we can move the application layer from the server into the client application as well. By doing so, we satisfy the requirements for the first challenge related to application software as well. Similar to the approach employed for the *Prosopography of the Byzantine Empire*, once a page is loaded, we can initiate dynamic client software that includes the necessary query engine. This way, we can offer comprehensive search options without the need for an application to be operational on the server (see figs. 3 and 4 for the user interface created). We envisioned that this approach would yield additional advantages, such as increased speed (since information requests no longer need to traverse between the client and the server) and enhanced interactivity. Indeed, this expectation has proven accurate.¹⁴

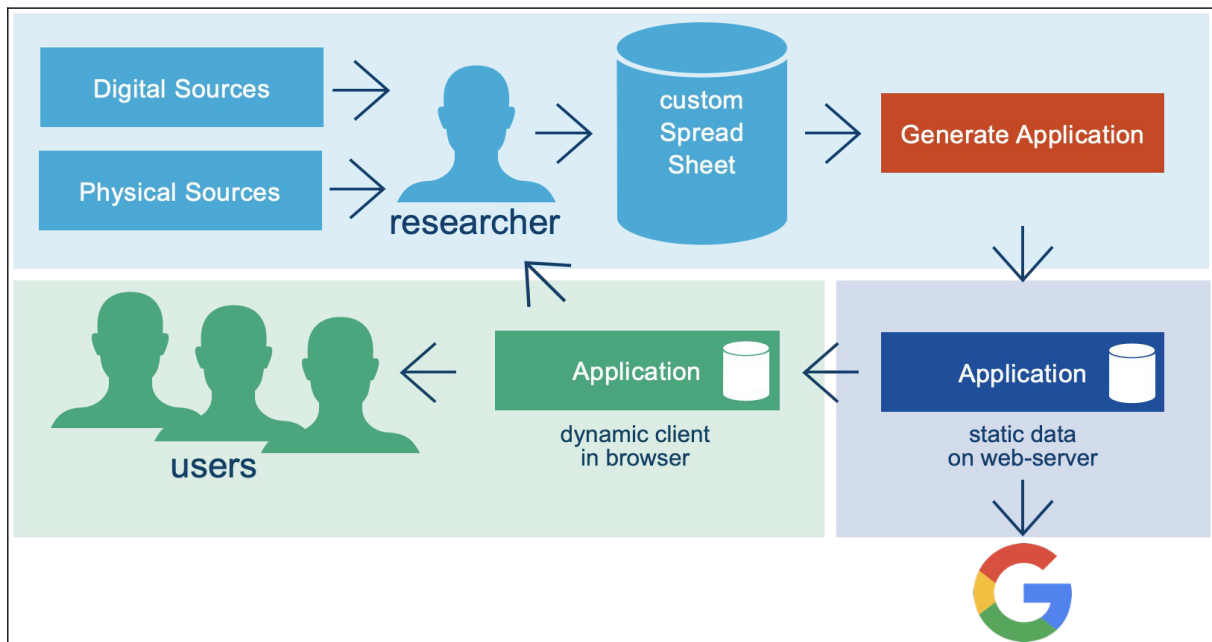


Fig. 5: Data- and workflow of our approach.

About the Enabling Technology

Following the mentioned resurgence of static site generators, the *NEXT.JS* framework (referred to as *Next.js* in subsequent paragraphs) emerged prominently. *Next.js*¹⁵ not only serves as a static site generator, but it also functions as a fully-integrated framework for our browser-based application.

Adopting an opinionated approach, *Next.js* generates the complete static setup, including a server-side section encompassing all HTML files, the associated path and folder structure, and optimizing assets such as images and style definitions in the form of CSS.¹⁶ Additionally, it can be employed to produce other HTML-like text-derived file formats, for example RDF documents¹⁷ for automated access and *Scalable Vector Graphics (SVG)* for generating figures or drawings.

¹⁴ As we can immediately react to events in the user interaction. For example, providing an on screen input for entering data or an interactive map for exploration of the geographical context of an attestation/person record.

¹⁵ *Next.js* is written in a typed superset of JavaScript called TypeScript. TypeScript is the de-facto standard of developing applications with the JavaScript language. TypeScript gets transformed to JavaScript via a transpilation step, where JavaScript acts as a transpiler target.

¹⁶ *Cascaded Style Sheets* the language for specifying the look (and partially behaviour) of elements on web pages.

¹⁷ Like they are available for *DPRR*.

By pre-rendering entry points for all dataset entries, *Next.js* provides a foundation for search engines, including Google, to crawl and index the corpus. Consequently, this significantly enhances the data's discoverability.

For *Prosopographia Palmyrena*, *Next.js*'s capacity to serve as the framework implementing dynamic client-side interaction has been particularly advantageous. It serves as the foundation on which we build the logic of our user-facing application and querying interface.¹⁸

The sequence of actions unfolds as follows: Whenever a static page from the server is requested, the entire application is downloaded with it and automatically initiated by the browser. This brings the application back to life from a 'freeze-dried' state. This flow is illustrated in fig. 5.

Providing the Database

The rows of the database table, originally derived from the spreadsheet, are extracted and then compressed and consolidated into a single structured text file for storage, specifically in the widely used JSON¹⁹ format.

The complete dataset is downloaded into the client application as immediate, fixed data.²⁰ However, this approach is not scalable to hundreds of thousands of rows due to size and memory constraints. Nevertheless, the JSON storage file is approximately 2.7MB in size, which is still smaller than a typical mobile photo or video advertisement.

After the data has arrived in the client, the JSON data is initially deserialized into plain JavaScript objects, which are subsequently reconstructed into modelled entities. These modelled entities are themselves plain JavaScript objects and serve a purpose similar to the *Django* models, *RoR ActiveRecord*s, or *Java Hibernate* instances, that typically constitute the data layer for a server-side application. Every entity, such as an attestation, possesses a unique ID corresponding to the original row number in the source spread-sheet. This ID functions as primary key.²¹ Attestations can cross-reference each other using their unique IDs. From the Palmyra corpus, a few hundred individual persons were identified by Peter von Danckelman; each person's entry has references to their associated attestations using these IDs.

Updating the Database

Rather than offering a distinct editing interface for this system, the spreadsheet remains the primary source for the *Prosopographia Palmyrena* database. Whenever changes occur within this spreadsheet due to data updates, the dataset within it is leveraged to regenerate the static HTML files (amounting to less than 10,000) in a matter of seconds. Subsequently, we can deploy the static dataset to our static web server, rendering it instantly accessible to users and enabling Google and other search engines to index it.

18 Using the principle *inversion of control*, where the framework provides the flow structure while the users define the actions to take within said flow.

19 *JavaScript Object Notation*, a textual file format to store structured data consisting of numbers, strings, dictionaries and lists often used in the web context. An example looks like this: {"author": "J  r  me", "publication": "Digital Classics Online", "date": 20230801}.

20 It's also thinkable to store everything in an SQLite database, push that to a server and use one of the HTTP-Range queries to fetch specific rows. This approach is described in a blog post from 2021 here: <https://phiresky.github.io/blog/2021/hosting-sqlite-databases-on-github-pages/> (consulted 29.04.2025).

21 An approach also originally used by *Ruby on Rails*' well-regarded *ActiveRecord* data-modelling subsystem.

Data Querying the Base

In our solution the querying is achieved using the native methods of the programming language (JavaScript) rather than a dedicated framework or query language.

Over the past decade, the methods for querying object graphs (or rather: arrays of objects) in JavaScript have evolved significantly. While the available methods might not be as comfortable for the programmer as other interfaces,²² they demonstrate reasonable speed (given our data-size) and straightforwardness. In modern browsers, object queries – even through large datasets – are optimized, requiring only a few fractions of a second to search through many thousands of rows. The more intricate operations found in professional database systems don't particularly offer an advantage in this context, given that the results are presented instantaneously anyway.

However the reification of queries is not inherently provided, meaning an abstract representation of a query isn't readily available. Because of this, we needed to construct our own notion of a query. Consequently, it takes more time to make a query formulate able for our application's interface.

What might typically constitute a simple query, possible relational in nature, becomes another generic search in our current solution. For instance, when a person possesses a *childname_in_aramaic* attribute (see fig. 6 for context of use), locating all potential children of that attestation's person involves executing a search for that name and subsequently displaying the results. It's then up to the user, drawing from their domain expertise, to determine whether the attestations represented in the results correspond accurately.

In the future, a more refined approach could involve referencing the child through its specific unique ID, as discussed earlier – moving back towards the relational database approach.

22 Like SQL, Microsoft's *Linq*, the methods of *ActiveRecord* from *Ruby on Rails*, or the *Django* query manager.



Fig. 6: Relationship diagram for every attestation.

Visualizing Locations

A considerable number of entries within the *Prosopographia Palmyrena* offer some form of geographical context. This context might be derived from place names mentioned in attestations, the inscriptions' physical locations, or external sources.

- Certain entries possess geographic information directly associated with them.
- For some, only contextual locations data is available.
- However, certain entries lack any form of ascertainable location.

Whenever a direct geographic reference exists, it can simply be displayed. In situations where explicit information is absent but contextual details are available, the context can be presented in place of concrete geographic information. The dots in fig. 7 mark all locations present within the application's data.

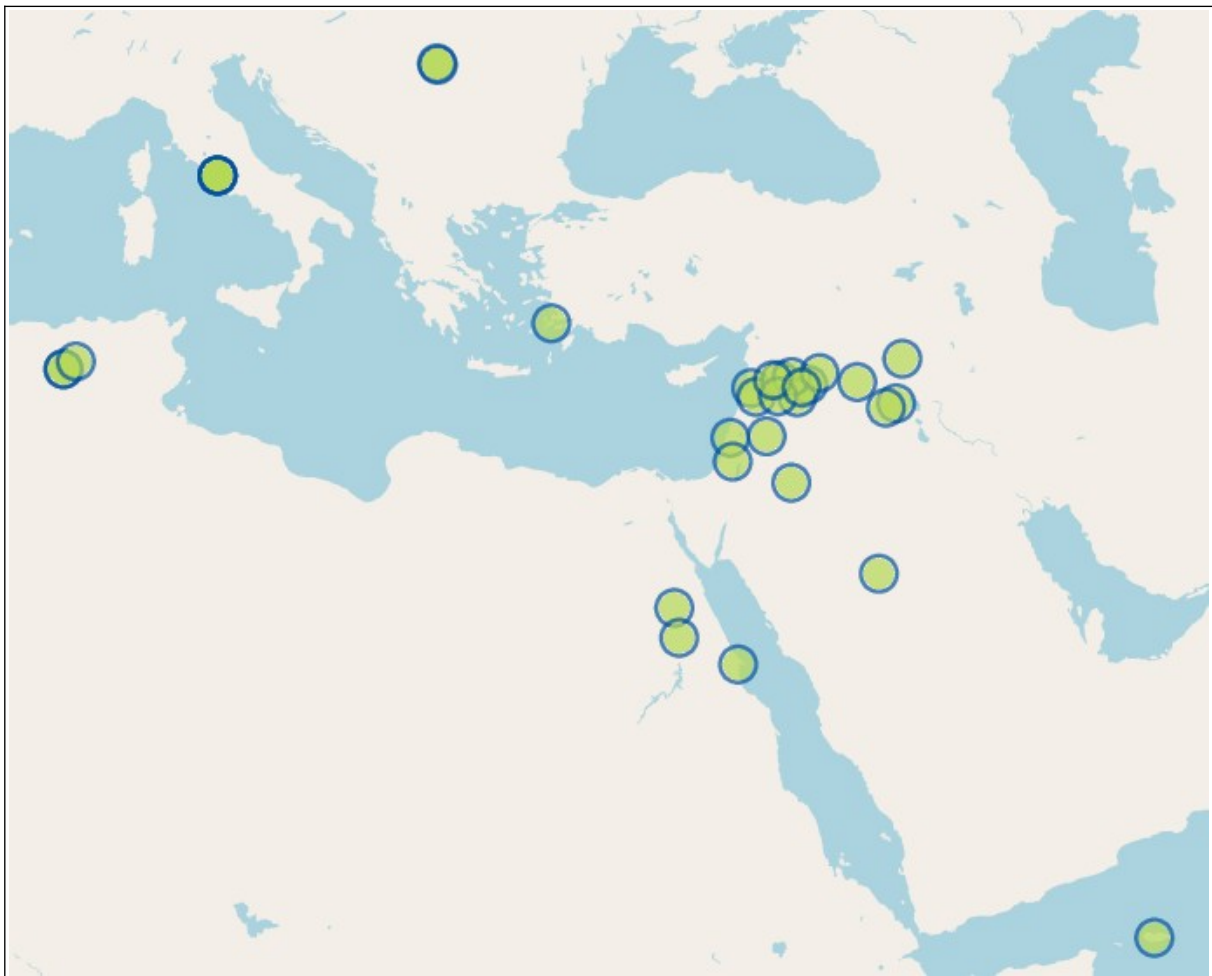


Fig. 7: All approximate locations in *Prosopographia Palmyrena* with base map from OSM.

GPS Coordinates

The locations are internally mapped to GPS coordinates for display on an interactive map. We employ the widely used WGS84 world geographic system as the foundation for these coordinates. This system is renowned for its utilization in GPS and platforms like Google Maps.²³

²³ In addition to the conventional representation using degrees, minutes and seconds (e.g. 53°9'N, 8°13'O), the use of decimal-degree is becoming more prevalent (e.g. 53.14684981205692, 8.184430032093898). This decimal-degree notation can be stored with high efficiency, within acceptable inaccuracies inherent to floating point numbers.

Map Data

We employ the collected data along with map images generated from the *OpenStreetMap Project* (OSM) for our base map (also used in fig. 7). OSM operates as a collaborative mapping initiative where volunteers contribute, update and expand mapping information, similar to Wikipedia. The mapping data is governed by the *Open Database License* (ODbL), permitting access, usage, and contributions.²⁴

To visualize the georeferences, we utilize the *OpenLayers* library.²⁵ This well-established library was created and is used by OSM itself. *OpenLayers* offers the necessary software infrastructure for map interaction, including functions like zooming, panning, and handling the retrieval of base map data. It also provides the API to present geographic features such as markers for our locations. Being open-source software, *OpenLayers* can be extended and modified as needed.

Shareability

Our objective is to ensure that every entry, location, and search within our system can be referenced by a URL,²⁶ allowing researchers and others to directly access linked information. In a way, this is our first step towards a constellation of prosopographies in a linked data infrastructure.

When a link is shared through messaging apps, social media posts, or other mediums, the tool responsible for presenting the shared content can generate a comprehensive preview of linked URL. Many common messaging clients, including Apple Mail, WhatsApp, Facebook, and X (Twitter), do this.

The preview might encompass plain text, an image or even a video, often displayed in the form of a card-like visual. In *Prosopographia Palmyrena*, the ‘card’ symbolizing the shared entity already contains some relevant information. This concept serves as a homage to the index cards utilized in past filling cabinets. To achieve this, we render an image integrating relevant textual details along with the project’s name and originating institution.²⁷

This approach ensures that even our concise URLs offer immediate context. Consider fig. 8, which portrays a fictional conversation between two researchers discussing an attestation regarding the children of Νεσῶ using Apple’s *iMessage* application. The URL²⁸ is automatically retrieved by *iMessage*, the location of the generated image is extracted, and the generated image is showcased as a card, supplying the aforementioned context information.

24 <https://wiki.osmfoundation.org/wiki/Licence> (consulted 29.04.2025).

25 <https://openlayers.org> (consulted 29.04.2025).

26 For example <http://www.palmyra.uni-oldenburg.de/attestation/597> references an attestation for ῥῶδω (Soadu).

27 Abteilung Alte Geschichte, Department für Geschichte, Carl von Ossietzky Universität Oldenburg.

28 <http://www.palmyra.uni-oldenburg.de/attestation/729> (consulted 29.04.2025).

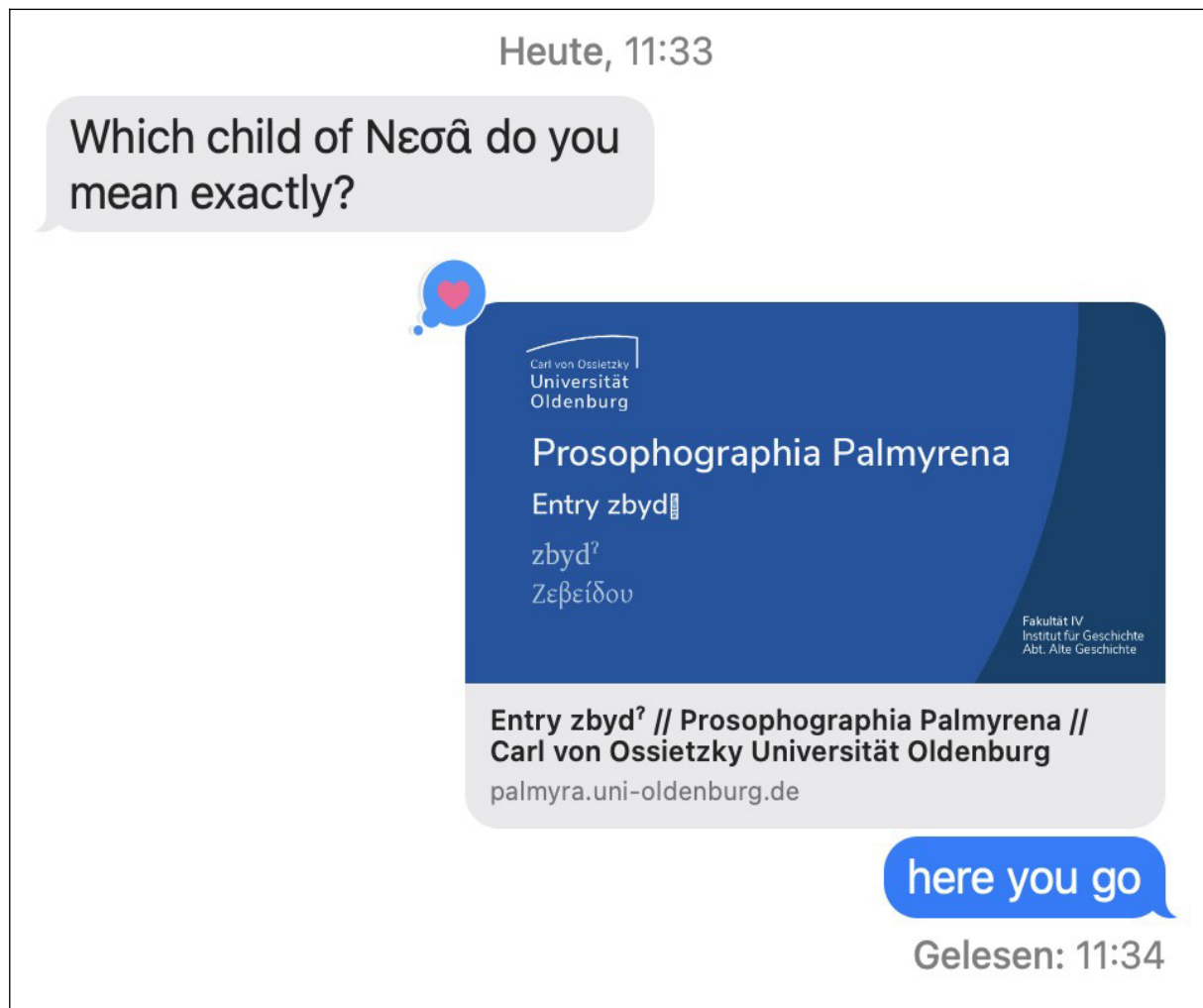


Fig. 8: A possible dialogue between two researchers using Apple's iMessage.


Realizing Aramaic Input

Text is comprised of characters,²⁹ yet computers store text as sequences of numbers. These numbers, in turn, represent something else than their value – like the characters. Each character can be assigned a specific number, enabling the computer to reference it. However, there are different schemas to agree on what character is represented by which number.

Historically, when computer resources were more limited, a single number represented a single character in the West. Traditionally, the byte ranging from 0 to 255 formed the foundational unit of the number system. Character encodings were then devised to fit all characters within these 255 slots. The renowned ASCII text encoding for instance, covers the Latin alphabet and certain control codes. However, the world utilizes a much larger array of characters than ASCII can hope to accommodate. European scripts, which include only some special characters, often fit within the 255 possible values of a byte. Yet, Asian scripts like Japanese and Chinese demand a much greater number of 'characters'. As a result, encodings were designed that use more than one byte to represent a single character.

²⁹ The relationship between text, characters, and individual glyphs is of course more complex, but for our understanding the abstraction level of assuming text to be assembled from characters is sufficient.

Older languages and scripts like Aramaic weren't initially considered by implementers.³⁰ Consequently, these uncommon scripts generally lacked defined encodings and couldn't be effortlessly represented on computers. Researchers addressing these challenges have employed various strategies:

- Some researches have developed ad-hoc encodings tailored for their specific needs.
- Others have utilized fonts, that map a Latin character (e.g. 'A') to an entirely distinct glyph like ,³¹ which they actually intended to display.

Font Approach

A notable instance is the collection developed by Ulrich Seeger³²: He designed numerous fonts³³ for the transcription of Semitic texts. With the font approach all individuals working on a transcribed text must use the same encoding and have the specific font installed in order to accurately read the text with its intended characters. Within a confined working group, achieving this consistency can be managed by configuring all computers of the group accordingly. However, when the audience extends to the global internet, accommodating an array of diverse and often constrained systems becomes unrealistic.

Solution: Today's *Unicode*

The *Unicode* system assigns a unique number to each character/glyph. In *Unicode Version 15*, 149,186 characters are defined.³⁴ Naturally, this exceeds the capacity of representation by a single byte. To address this, encodings for *Unicode* employ multiple numbers to represent a single character.

Unicode characters are entered through specialized keyboard layouts (e.g. English, German, Japanese etc.) or potentially by inputting their individual numeric values. The latter approach can be slow and cumbersome, as it necessitates the input and recall of lengthy numbers, just to represent a single character.

In principle, users should be able to compose search queries using characters from the script/language, with the computer competently handling the text. However, in practice, users often encounter difficulties in typing specific characters and may need to resort to entering *Unicode* numbers instead. Custom keyboard layouts can be devised to mitigate this issue; for instance, Ulrich Seeger created a keyboard layout for macOS enabling direct character input (see fig. 9).

Users frequently encounter obstacles when their systems are restricted. In settings like public libraries, users lack control over available input methods and are unable install software.

30 Indeed, numerous companies within the business realm focused primarily on rendering their predominantly English/European texts feasible for representation.

31 Hieratic sign A1 from Papyrus Petersburg 1115, taken from <https://commons.wikimedia.org/wiki/File:Hieratic-sign-A1.svg> (consulted 29.04.2025).

32 Ulrich Seeger, Universität Heidelberg, Semitistik, Seminar für Sprachen und Kulturen des Vorderen Orients <https://www.uni-heidelberg.de/fakultaeten/philosophie/ori/semitistik/seeger.html> (consulted 29.04.2025).

33 You can find the fonts and a description from Ulrich Seeger on his website: https://www.uni-heidelberg.de/fakultaeten/philosophie/ori/semitistik/seeger_fonts.html (consulted 29.04.2025).

34 <https://unicode.org/versions/Unicode15.0.0/> (consulted 15.09.2023).

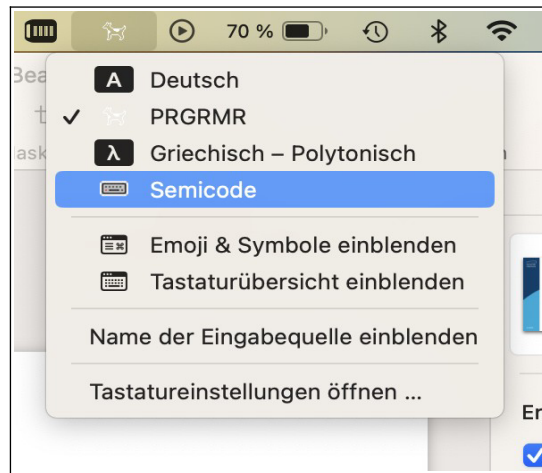


Fig. 9: *Semicode* keyboard layout for macOS-based Systems to insert Aramaic *Unicode*.

Our Solution: Provide an On-Screen Keyboard

We opted for an on-screen keyboard to allow users to input Aramaic and Greek script, without having to activate or install extensions (or change any settings at all). Users can either directly type the characters, if their system allows this – or they can use the mouse to enter special characters from the text systems (see fig. 10 for the entire keyboard layout for Greek and Aramaic).

Searching through *Unicode* Texts

Within *Unicode*, certain characters can be formed from different combinations of glyphs. For a single character, there might be multiple ways of forming the corresponding visual shape with *Unicode*. One simple example is the German umlaut ‘ü’. There is a dedicated glyph for this character, but the same shape can also be constructed by combining the glyph for ‘u’ with the diacritical glyph ‘̈’.

When users search through the database, they typically input a character in one specific way or another. Consequently, our application standardizes each text into a canonical form during the search process. This way, the original form of the character used for the description becomes irrelevant. To achieve this, a standardized *Unicode* normalization algorithm is employed, available as efficient native code through the web browsers.

During the workshop *Prosopography in the Digital Age* Yanne Broux³⁵ highlighted an additional challenge concerning Greek text. Due to the usage of polytonic Greek, multiple variations of a letter, such as ‘α’, exist. This variance arises from users and researches inputting Greek according to their preferred spelling. As users might inconsistently use or omit diacritics, addressing this issue is a consideration for the future.

35 KU Leuven.

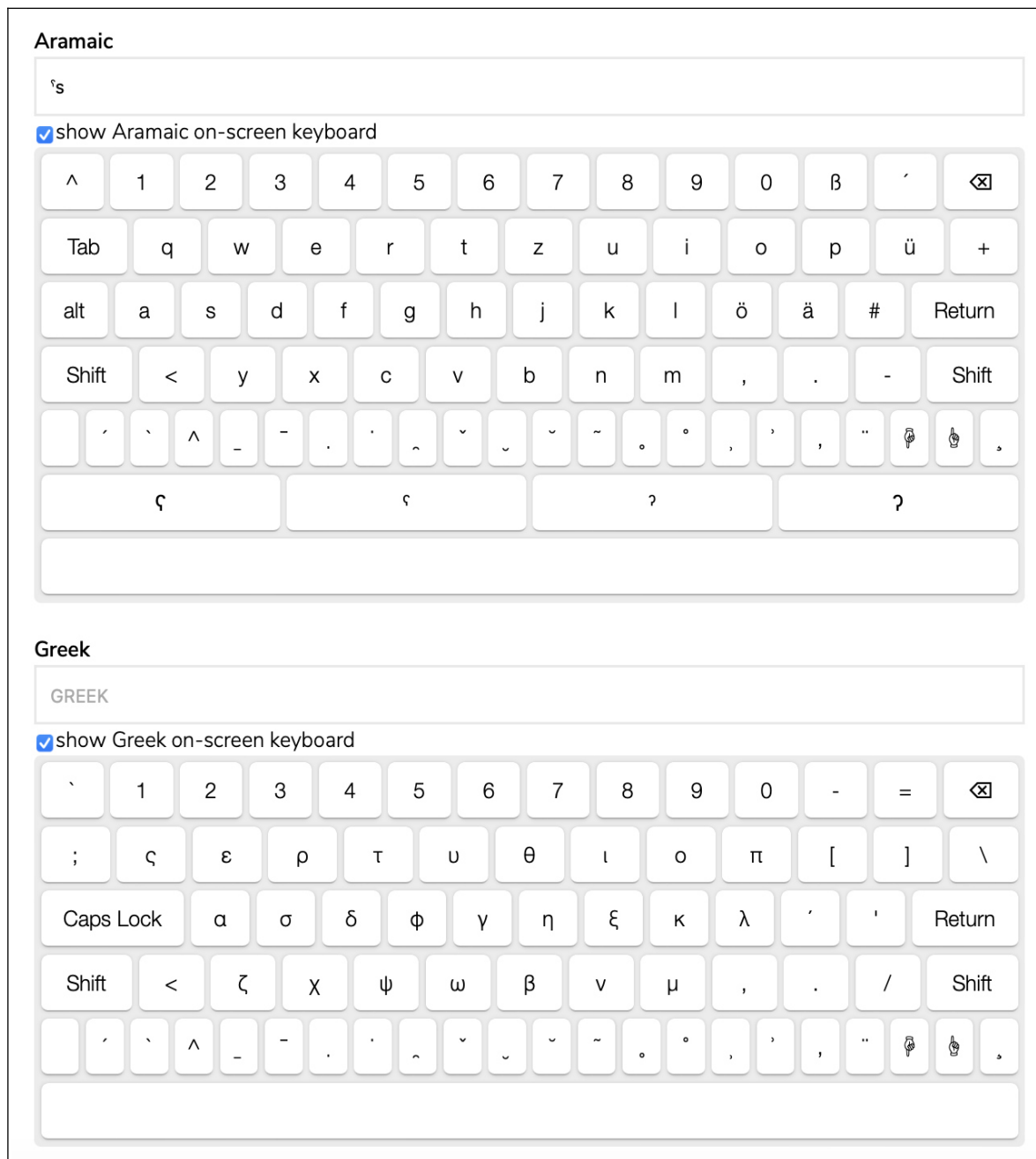


Fig. 10: On-screen keyboards for Aramaic and Greek in *Prosopographia Palmyrena*.

Outlook and Further Work

While the database can already be searched for the most relevant aspects, the set of attributes that can be queried is currently limited to the most prominent and relevant attributes. Ideally we want to extend the queryable set to match the entire set of attributes available. Furthermore the map representing all locations within the data could be used for filtering records via their location. This would allow users to visually explore the data in its geographical context. While the data stored inside the application can be searched and browsed, exporting the data set or subsets of the data to a text-, spreadsheet-, or other data file could be useful for researchers. Finally, it will be interesting to hear more from the users of the database application about their use-cases and their preferences, once the system is in regular use. The further development of *Prosopographia Palmyrena* will then be guided by the needs of users and researchers.

Abbreviations

SQL	Structured Query Language
RoR	Ruby on Rails
OSM	Open Street Map
OL	Open Layers
HTML	Hypertext Markup Language
DPRR	Digital Prosopography of the Roman Republic
JSON	JavaScript Object Notation

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https://www.uni-heidelberg.de/fakultaeten/philosophie/ori/semitistik/seeger_fonts.html (consulted 29.04.2025).

<https://unicode.org/versions/Unicode15.0.0/> (consulted 29.04.2025).

Figure References

Fig. 1: Table and relational structure of *DPRR* (FV [2017]).

Fig. 2: Single self referential table structure of *Prosopographia Palmyrena*.

Fig. 3: Primary search interface of *Prosopographia Palmyrena*.

Fig. 4: Index interface of *Prosopographia Palmyrena*.

Fig. 5: Data- and workflow of our approach.

Fig. 6: Relationship diagram for every attestation.

Fig. 7: All approximate locations in *Prosopographia Palmyrena* with base map from *OSM*.

Fig. 8: A possible dialogue between two researchers using Apple's *iMessage*.

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