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Article:
Pearce, Laurie E., Svärd, Saana, Waerzeggers, Caroline et al. (2026) White paper on prosopographical studies in the Ancient Near East. Cuneiform Digital Library Journal. ISSN: 1540-8779

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Cuneiform Digital Library Journal 2026:02
<>
*© Cuneiform Digital Library Initiative**ISSN 1540-8779*
Version: 2 September 2026

White paper on prosopographical studies in Ancient Near Eastern Studies

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§0. Project origins

§0.1. The Cuneiform Prosopography Group, consisting of about a dozen Assyriologists, convened in 2021 with the goal of bringing together colleagues engaged in prosopographical research to share new work and to discuss common methodological challenges and solutions thereto. Over the course of 2021 and 2022, members offered a series of presentations which provided context and foundations for these conversations, from which consensus emerged on a number of points: (1) each text corpus presents unique features, with the result that no single methodology can be strictly applied across all corpora, even within Assyriology; (2) most prosopographers work from similar conceptual models and employ similar methods; (3) these models and methods could be captured in a white paper, which would offer perspectives on the current state of cuneiform prosopographic research; (4) awareness of ongoing developments in digital approaches to prosopographical research will continue to inform the practice, and to that end, we proposed on-going engagement with computational as well as disciplinary experts. The group took the NRAD model (Name-(in a) Relationship-(in an) Activity-(in a) Document, see §1.3 below), developed

* The conveners of the prosopography working group are listed first, followed by an alphabetical listing of the remaining contributing authors. Contributors to the various sections are as follows: §1: Pearce; §2.1: Nielsen (lead author), Anderson, Baker, Tenney, Waerzeggers; §§2.2–2.4: Alstola (lead author), Anderson, Devecchi, Gonçalves, Gordin, Groß, and Pearce; §2.5: Waerzeggers (lead author), Anderson, Devecchi, Gordin, Groß, Pagé-Perron and Svärd; §3: Gordin; §4.1: Alstola and Jauhiainen; §4.2: Anderson; §4.3: Waerzeggers; §4.4: Devecchi and Scarpa; §4.5: Gonçalves; §5.1: Richardson; §§5.2-5.3: Svärd.

by the now-dormant Berkeley Prosopography Services, as a starting point of their discussions and added the rubric Archive as the overarching attribute of the model, resulting in the expanded acronym NRADA (§1.4). Working-group participants explored components of the NRADA model in greater depth and developed the framework of the working paper presented here (Section §2). A general scheme for digital implementation of prosopographical research appears in Section §3. Case studies in Section §4 highlight the wide variety of applications of the NRADA model and digital prosopography in Assyriology, which concerns a large and diverse text corpus in multiple languages and spanning three millennia. By way of conclusion, §5 focuses on the larger contexts of prosopographical research, considering questions of what prosopographical research means, or could mean for research in general. It tackles this question from the point of view of social structure and political action, and the contribution of prosopographical work to the study of identity.

§0.2. This study is designed to promote broad conceptual frameworks that support prosopographical research built on corpus agnostic workflows. Although the cuneiform case-studies suggest a specialized audience for this study, the ontologies and digital implementations are adaptable to specific features of various data-sets and investigators' research goals. The multiple authorial voices the reader encounters reflect the extensibility of the conceptual framework, and should reinforce the potential for inter-project communication, extending the value of prosopographical research across disciplines. Care has been taken to avoid, to the extent possible, technical language requiring expertise many of our intended readers may not possess or wish to acquire; this is especially true in the section on digital implementation (§3), which links to more technical writing for those interested in greater detail.

§1. Prosopography: Introduction

> *Prosopography, a term designating the study of individuals (extending often to their families), of the interactions and life histories of the people involved (and, as used in this paper, the result of such study) is at the core of many humanities research agendas, especially those engaged with archival data sets. Although there is no universally applied definition, The Oxford Classical Dictionary notes that as a historical method, prosopography uses "onomastic evidence … to establish (i) regional origins of individuals and (ii) family connections, esp. via marriage-ties but also via adoption (which leaves traces on nomenclature), between individual and individual and between group and group."*[1] *This section underscores foundational challenges in prosopographical research, highlights some landmark developments in prosopographical and onomastic studies in traditional Assyriological research, and recounts the history and intellectual underpinnings of the now-dormant Berkeley Prosopography Service (BPS), to which several members of the present group contributed. It concludes with a brief description of the expansion of the BPS NRAD model that developed out of these conversations.*

§1.0.1. Prosopography relies heavily on onomastic, i.e. personal names, evidence. A core task for the development of a robust prosopography is disambiguation, determining which of multiple attestations of specific names within a text or text corpus identify a unique individual (name instance vs. person). As human communities tend to use a restricted inventory of names, extensive knowledge of an entire archive is necessary for a researcher to state with confidence that this "Marduk-apla-iddina" is the same person as that one. While the process and goal of disambiguation is similar across research disciplines, its rules are corpus specific, dependent on the structure and content of the archive (e.g., chronological and geographical spread and/or institutional background) and on the particular method or methods of name-giving and identification used in a specific period and language community (e.g., family name, father's name, title, profession, nickname, etc.). Disambiguation is essentially an exercise in probabilistic reasoning; its success depends not only on the reliability and completeness of the data and the specificity of the disambiguation criteria, but also, and equally importantly, on the researcher's experience with the corpus.

§1.0.2. The impact on a prosopography of namesake disambiguation decisions may be conceived of as a "what-if" problem: What is the impact on a prosopography (and the reconstruction of the lives it depicts) if two namesakes are collapsed into a single person, or, alternatively, if those namesakes are construed as two different individuals? Ideally, researchers should be able

[1] https://doi.org/10.1093/acrefore/9780199381135.013.5382 (institutional access required).

to demonstrate the validity of their prosopography research outcomes through explicit articulation of criteria and processes employed in the disambiguation process. Clear expression of rules utilized supports the reproducibility of the result and provides a solid foundation against which alternative interpretations of the evidence may be compared.

§1.1. Prosopographical Research in Assyriology

§1.1.1. From Assyriology's earliest days, onomastics, the study of the etymology and morphology of names and practices associated with their bestowal, received attention both in the inclusion of name indices in text publications and in studies of onomastic practices (Pruzsinszky 2021). An early, but representative, example of the inclusion in a primary text publication of name indices and discussions of features of the onomasticon is the discussion of Judean names attested in texts from the Babylonian Murašû archive (Hilprecht and Clay 1898). Development of an onomasticon into a prosopography is facilitated by (1) publication of sufficient data to support more synthetic studies of the connections between individuals and families, and their location in various social contexts; (2) integration of social science theory and methods into Assyriological research. The citation of a few publications highlights a representative arc in the development of onomastic and prosopographical studies for the Neo-Babylonian period: (a) Tallqvist's 1906 *Neubabylonisches Namenbuch*, a "phone book" or "contact list" of names culled from published sources; (b) San Nicolò 1941 utilized the prosopography of named Neo-Babylonian officials co-occurring in dated texts and in undated letters in order to establish a chronology for undated sources; (c) Kümmel's 1979 study of families, professions and officials in sixth-century Uruk identified the vertical organization of professional groups and the hereditary nature of the professions attested in the corpus. Publications for other periods of cuneiform history present comparable materials and histories of publication.

§1.1.2. In the late 1990s, Assyriology, as did many humanities disciplines, took the "archival turn."[2] While the term is built on a strong theoretical foundation — including the role of memory and the perception of reality, as expressed in the work of Derrida and his followers — it also encompasses methodological approaches concerned with the creation, identification, and recovery of an archive. Cuneiform archival and prosopographical studies have largely focused on this aspect of the archival turn, as evidenced in two selected examples of works published in the years immediately surrounding the turn of the second millennium CE: (1) Bongenaar's 1997 study of the Neo-Babylonian Ebabbar temple at Sippar promoted the organization of files around professional designations, and (2) Waerzeggers' 2003 consideration of the well-discussed, but until then inadequately explained, end of archival documentation after Xerxes' second regnal year offered an integrative explanation that accounted for the phenomenon in multiple cities; the supporting prosopographical research contributed to a more nuanced formulation of the composition of cuneiform archives.

§1.1.3. At that point, computers were not yet in widespread use in cuneiform prosopographical and archival studies. This condition soon changed in response both to the contributions of new theoretical approaches in prosopographical research in general and to the increasing integration of open-source and user-friendly software into humanities scholarly workflows.

§1.2. Berkeley Prosopography Services

§1.2.1. Berkeley Prosopography Services (BPS) began in 2009 as part of a University of California, Berkeley effort in the late two-thousand-aughts to develop dynamic, generalizable, corpus agnostic, and interdisciplinary digital tools for humanities and social sciences research (Schmitz and Pearce 2014). The core BPS team consisted of Professor Niek Veldhuis and Dr. Laurie Pearce (Department of Middle Eastern Languages and Cultures), and Patrick Schmitz (Associate Director of Research IT). Team members invested time in learning one another's languages, workflows, and research questions to develop tools that would be useful for the humanities and exciting for information technologists. In a series of international workshops, cuneiformists and technology specialists confirmed both: (1) that corpus specialists employ similar methodologies for disambiguating namesakes, regardless of corpus content, and (2) that the success of the iterative disambiguation process largely depends on the alignment of the probabilities of various data points employed to identify (and collapse) multiple name attestations as the same individual.

[2] Moore et al. 2017 offers a readable approach to the concept of the archival turn.

§1.2.2. Having identified conceptual frameworks and workflows familiar to prosopographers, BPS aimed to enhance their research by introducing new models of cooperation (through workspaces) and new heuristic tools that allowed for dynamic modelling and re-modelling of a data set based on different disambiguation assertions or through the application of different filters, tasks that are not feasible with traditional means. It is crucial to underscore that BPS was never intended to be "a database", which, even in a relational instantiation, reflects (in relatively static form) the decisions a researcher has already made, and does not make transparent the factors that led to those decisions.

§1.2.3. With its open source, corpus-agnostic software, and utilization of well-established standards (Unicode and TEI) and metrics (SNA), BPS software was designed to encode and analyze data preserved in any human language or script. As a domain-independent toolkit, BPS aimed to dismantle the silo mentality common in much humanities research. BPS offered a customizable, out-of-the-box toolkit, an integrated package of digital programs, and environment to support three key areas of prosopographic research:

1. a user-customizable probabilistic disambiguator program to determine the likelihood that two or more instances of the same name (namesakes) refer to the same person. BPS supported user-defined and customizable rules that always resulted in a probability statement (e.g., "80% sure that those two name instances refer to the same person"). Recognizing that disambiguation decisions are not universally accepted, BPS also allowed users to override the computed probability and generate their own assertions that two namesakes are/are not likely to be the same person. Assertions were tracked to develop both a reproducible workflow and a chain of authority for each attribution. The disambiguator thus captured a human research workflow and transformed it into an interactive, cooperative, and organic endeavor that could easily incorporate newly identified text material and accommodate shifts resulting as understanding of an archive evolves.
2. a Social Network Analysis engine computes, utilizing well-established SNA metrics (such as density [of a group], or centrality [of an individual], and identifies cliques and bridges. Such metrics may be used in filtering the data ("show only the persons with high centrality", "show only the cliques"), and help in understanding the structure of the social group reflected in the data. At the time of BPS's development, SNA was already in wide use in the social sciences, but its penetration into the humanities was relatively low. BPS aimed to promote adoption of this methodology in humanities research by rendering the SNA engine and its mathematical operations largely invisible to the users who may have little experience with the complex computations underlying SNA.
3. a graph visualizer automatically generates interactive visual representations of the social networks reflected in the data set. Query filters that enable the user to select areas of focus based upon aspects of the social interactions (e.g., family, type of activity, date range) establish the visualization tool as truly interactive. The graph visualizer draws family trees and social network diagrams that indicate the strength and kinds of relationships between individuals, based upon the computed SNA metrics and utilizing conventional visual markers — nodes (circles) and edges (lines) — to represent the individuals and different types of relationships that connect them. The dynamic character of the process is predicated upon the integration of the graph visualizer with the disambiguator and the SNA engine.

§1.2.4. The interactive aspects of BPS (assertions, filtering) take place in a workspace where a researcher may decide to freeze and/or publish a graph or to make disambiguation assertions publicly available. In their own workspaces, other researchers may decide to accept or reject another's assertions and explore the ensuing results.

§1.3. NRAD(A): The BPS model and its evolution

§1.3.1. BPS labeled the features and process of disambiguating multiple namesakes with the acronym NRAD, representing a "Name in a Role in an Activity in a Document." The Prosopography Group has expanded its working framework to NRADA, appending "in an Archive" as the final context of a prosopographical workflow.

§1.3.2. The work of developing a prosopography begins with reading the basic unit, a Document. For BPS, a cuneiform document was defined as a single physical artifact, regardless of

its generic designation, its status as a component of an archive or dossier, or of a literary, chronographic, or historical work produced in multiple editions, whether over a period of time (e.g., the Assyrian Annals) or as a multi-tablet series (e.g., the Gilgamesh epic).

§1.3.3. In each document, researchers identify Names, which bear attributes specific to linguistic origins, chronological periods or geographic locations. Corpus experts identify the components of a complete name instance, e.g., in Babylonian texts of the first millennium BCE, the inclusion of multiple generations in the formulaic expression: "Personal Name son of Father's Name descendant of Ancestor's Name." The more onomastic detail that can be associated with a name instance, the greater the likelihood that two name instances can be disambiguated or collapsed (i.e., point to a single individual). Until disambiguation is resolved, each name instance theoretically refers to a single, unique person.

§1.3.4. Each individual has a Role in the Activity recorded on the document.

§1.3.4.1. (**a**) Role refers to the specific function the name instance performs in that situation. Any name instance may appear multiple times within a document. However, there is a limited number of roles that a single person can perform within a single activity, for example: a seller of real estate can (logically and) legally guarantee against claims against that property but not serve as a witness to the transaction. Thus, two (nearly) identical name instances that appear in mutually exclusive roles must be disambiguated as two individuals. However, as individuals may hold multiple roles within a community and over the course of their lifetimes, this rule does not apply to (nearly) identical name instances that appear in different documents.

§1.3.4.2. Closely associated with Role are professions and titles, e.g., shepherd, governor, holder of a temple prebendary office, scribe. As these may change over the course of a person's lifetime, and individuals may hold more than one professional title at a time, the BPS model treats professions and titles as attributes of an individual. Useful in disambiguating namesakes, they are not as reliable as discriminators as other factors.

§1.3.4.3. (**b**) The term Activity refers broadly to the "business" that transpires in the text, e.g., sale, lease, marriage agreement, etc. Although the nature of each activity may be further specified, e.g., as the sale of a house, of land, or prebendary office, each activity type is characterized by similar actions: in all sales, regardless of the object sold, individuals serve in the roles of buyer, seller, witness. While a sale implies a purchase, there is no need to label a sale also as a purchase, since identification of the roles various individuals perform makes this clear. In some text categories, e.g., letters, the document may narrate the occurrence or imply the previous circumstances of several events. However, the activity of the letter (Document) itself is the sending and receiving of the letter, in which major roles are sender and receiver. The events it records were activities in and of themselves, with their own actors, who may or may not have been the current sender and receiver. The corpus expert develops an inventory of terms that label the primary focus of each activity.

§1.4. NRADA: expanding the concept of NRAD

§1.4.1. The disambiguation of name instances into individuals with the application of the NRAD heuristic is enriched with the additional consideration of a person's place in the larger archival context (be that groups of texts from a single city, or groups of texts from multiple locations), leading to a more complete and nuanced prosopography. With the expanding understanding of the diversity of cuneiform archival components and organization, the Prosopography Group determined that the BPS concept of NRAD should be expanded to include Archive in the heuristic; appending the "A" of archive, the acronym NRADA was created.

§1.4.2. The scope and aim of BPS was, and remains, computationally ambitious. BPS faced development challenges, especially in connection with making a resource-intensive web service operate effectively through an interface (API) that would run on computing power available to a wide range of users. Particularly challenging were the enormous resource demands of in-real-time computation of SNA metrics and rendering of their visualizations. While the validity of the conceptual foundations of BPS were well-received, both in and out of the discipline, the computational hurdles proved overwhelming. As of 2017, BPS has been dormant. However, as the discussion of the NRAD(A) demonstrates, and as is evident in the following presentation of the state of the art, BPS has had an impact on the field.

§1.5. State of the Art

§1.5.1. Development of BPS coincided with both the archival turn in cuneiform research and the integration of digital analysis into prosopography. Early publications promoting their integration, especially work supported by SNA, include: Waerzeggers' 2014 assessment of the potential for SNA to contribute to the evaluation of cuneiform archives, and Wagner et al.'s 2013 demonstration of proof-of-concept, via a network analysis of a subset of the Murašû archive. Since then, prosopography and SNA have been employed to define, explore, and analyze networks, among others, of intellectual activity (Ossendrijver 2011a, Ossendrijver 2011b; Robson 2019; Escobar and Pearce 2018), and social rank (Bamman, A. Anderson, and Smith 2013; A. G. Anderson 2018; Pagé-Perron 2018). These projects build on digital humanities best practices in the preparation and dissemination of the underlying research through use of open-source software, and discipline-wide conventions. Anderson (A. G. Anderson 2017, A. G. Anderson 2018) committed to Github the data repository (repo) that supported the research for his PhD dissertation concerned with reconstructing social networks evident in Old Assyrian letters and records.[3] This early example of the best practice of sharing a study's underlying data has now been joined by Jauhiainen and Alstola's data repository on Zenodo in conjunction with their publication of "A Social Network of the Prosopography of the Neo-Assyrian Empire" (Jauhiainen and Alstola 2022a, Jauhiainen and Alstola 2022b).

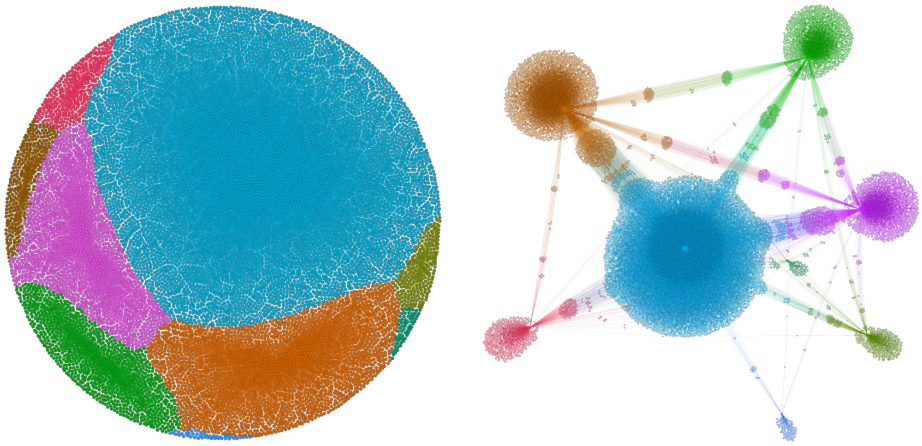
§1.5.2. It is precisely in the area of Neo-Assyrian prosopography that the evolution of the contributions of accessible digital tools and increased computing power is particularly evident. Parpola (1970) had already employed computers to support computations of astronomical phenomena that informed the dating of letters of the Neo-Assyrian scholars. Although limitations of computational accessibility and power at the end of the 20th century meant that digitally-based prosopographical disambiguation did not support the Letters of Neo-Assyrian Scholars (LAS) project, the subsequent The Prosopography of the Neo-Assyrian Empire (PNA) (Radner 1998, Radner 1999; Baker 2000, Baker 2001, Baker 2011, Baker 2017), relied heavily on access to the electronic text corpus of Neo-Assyrian; the *PNA* remains a model of prosopographical research in the field. While a digital version of the *PNA* is currently in preparation, PNAo on Oracc is a repository for updates to the published volumes. The aforementioned work of Jauhiainen and Alstola illustrates the potential impact of the transformation of flat prosopographical data into dynamic representations of that data.

§1.5.3. The Sumerian Networks project (Niek Veldhuis and Adam Anderson) adapted the conceptual disambiguation model of BPS to build reproducible socio-economic networks from the Ur III archives. Preliminary results were demonstrated in a series of workshops; attendees included: Marcel Sigrist, Manolo Molina, Stephen Garfinkle, Stephanie Rost, Yudong Liu, and James Hearne (Figures 1a + 1b). Thanks to specialist input, the network graphs were refined to identify and reflect specific features of the actors, entities, and activities documented in some 15,000 Drehem texts.[4] Veldhuis and Anderson document both the reasoning and the code for the Python-based routines in the JupyterBook environment, and thus provide a transparent record of the empirical network models, and support reproduction and reuse of the data and code.

[3] Note that Gardin and Garelli 1961 already argued for the value of computational analysis in the study of that text corpus.

[4] For visualizations of the network graphs from the Drehem archives see Kulikov, A. Anderson, and Veldhuis 2021

(1a) (1b)



Figures 1a–2b: Two views of the text groups in the Drehem Archive. These figures were originally published in Kulikov, A. Anderson, and Veldhuis 2021, under a CC By 4.0 Attribution 4.0 International license. The images are reused here without modification.

§1.5.4. The expansion of approaches to digital prosopography, which have heretofore focused on SNA, are sure to be forthcoming as additional computational models and tools are considered. Some examples can be found in the development of named entities recognition specifically for cuneiform languages which are then reused in pipelines to create networks of people (Liu et al. 2015; Bansal et al. 2021; Wang, Liu, and Hearne 2022) and Sahala's 2021 University of Helsinki dissertation, which offers insights into the application of methods such as PMI and word-embeddings in the construction of social networks.

§1.5.5 Readers interested in current prosopographical research in cuneiform studies are invited to consult §4 Prosopographical Case Studies, for specific aspects of such projects.

§2. Prosopography ontology

> *Prosopographical research, investigation of a person's family and social connections, begins with and depends on identification of individuals in a data corpus. This section addresses challenges researchers may encounter in developing an inventory of individuals from which a prosopography may be developed. Successful identification of individuals may be complicated by conventions of a given community's naming practices, including: multiple individuals bearing the same or similar names, the use of hypocoristica (nicknames or shortened forms of names) or double-names, orthographic variants, names that are not gender specific (designating either males or females), and foreign language elements. Additional components of a prosopography ontology include identification of the role of each individual in the activity the text records. The nature of the text source and its archival context provide further metadata that contributes to secure disambiguation of individuals. This section considers the above features, and identifies ideal configurations of the data in a text, as well as challenges associated with the identification and implementation of each feature. In this section we expand the NRAD(A) principles as briefly outlined above in §1.3 NRAD(A): The BPS Model/Paradigm and its evolution and §1.4 NRADA: expanding the concept of NRAD.*

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§2.1. Name

§2.1.0.1. When organizing a prosopography, the preferred lemma for any individual will almost invariably be the personal name. While this assertion seems self-evident, it requires the author or team compiling the prosopography to consider an array of factors with regard to standardization of name forms and the application of metadata and attributes to those names. These efforts can both facilitate the clarity of the prosopography's organization as well as aid in the disambiguation of identically named individuals. While we cannot advocate for a single procedure for structuring any prosopography, we can recommend several best practices as a guide to implement across textual corpora when creating a digital prosopography.

§2.1.1. The Name as Lemma

2.1.1.1. Settling on a lemma to represent a particular name requires that the written form follow the rules of normalization for both the language and dialect of that name. In all likelihood, the normalized form of the name in the Latin script will represent different orthographies due to the variant values many signs in the cuneiform script possess. Furthermore, a cuneiform sign's potential for multiple readings can also result in different readings of the same name across multiple publications by different authors. In the interest of consistency and accuracy, these other forms must be rejected but should be cross listed through digital links to the selected lemma. Additionally, each attestation of a name should be assigned a unique personal ID number so that all examples remain differentiated within the data. The number can be randomly assigned because it has meaning only through its correspondence to the attestation. The personal ID number has additional utility in cross-referencing because it conveys both the name and its location (text and line); and, in digital formats, it is easier to enter a number in a cross-referencing field than to write out an Akkadian name in the language's specialized characters.

§2.1.1.2. There are three additional contingencies to take into account: (1) There is the possibility that an individual associated with a lemmatized name was also known by the same name in a different form, either a nickname or an alias. In Akkadian, nicknames or, more formally, hypocoristica, were usually grammatically variant or diminutive forms of one or more elements within the full form of the name (e.g., Šūzubu for Mušēzib-Marduk or Bammaya for Erība-Marduk). Some individuals will appear in the documentation both with a full name and a hypocoristic, while others will only be attested with a hypocoristic form; typically, only one of the options appears in a single text. Ideally, hypocoristic forms should be given their own lemma and cross-listed through links to the fuller forms from which they were derived. Aliases pose a more difficult problem because they represent a different name for an individual or are an identifier such as a title or gentilic that is not a name. Any cross reference should not be at the level of the name but rather within the prosopographical discussion of the individual. (2) Some individuals bear double names, that is, two full names that may be used interchangeably, marked in some corpora with an expression similar to "whose second name is" (e.g., ^{f}Bēltu-rīšat ša šumša [whose second name (is)] ^{f}Yâtu, ^{md}Anu-aḫa-ittannu ša šumšu šanû [whose second name (is)] ^{m}Dumqi-^{d}Anu). Three factors associated with double names strengthen the argument for indexing lemmata individually (as with aliases): (a) the complete expression need not appear every time; (b) only one of a individual's double names may be used in a single text, and; (c) the components of double names may be of differing linguistic origin, as in the Akkadian-Greek names attested in the Hellenistic corpus. (3) Individuals may be identified solely by patronym, matronym or spousal name with the individual's personal name omitted (e.g., *mār*/*mārat* [son/daughter of] Mušēzib-Marduk, *aššat* [wife of] Izkur-Šamaš). If the only goal is prosopography, then lemmatizing should adhere to the same practice as aliases, and the entry should be made under the individual rather than the family member. Studies of other sorts may necessitate the inclusion of the family member's name as lemma with the role, e.g. patronym, clearly stated (see §2.2, below).

§2.1.1.3. As a prosopography is built, there will inevitably be a list of damaged names and names

with uncertain readings. Including such names is an important service to the field; there is the potential that new data will aid the restoration of a damaged name or clarify uncertain readings. Missing or damaged elements must be marked consistently so that they can be found in searches, and the option should be made available to the user of the prosopography to include in a search forms of a name that are missing one or more elements. Uncertain names present a more complicated problem. If there is complete uncertainty in the readings of all signs, one might create a lemma with the signs presented in their simplest or primary reading in lowercase, roman script. If possible, readings for all or parts of the name can be proposed, one may favor a lemma that is not certain as a reading but which involves judgements on how a sign or signs should be read. In these cases, it may be best to link a lemma or lemmata based on possible readings to a lemma consisting only of the primary values of each sign with which the name is written. If such an approach is chosen, it is best practice to have a mechanism for eliminating such multiple entries for a single attestation to avoid overcounting in any statistical analysis, e.g., population statistics.

§2.1.2. Metadata and Attributes

§2.1.2.1. There will be a wealth of potential data that are not part of the name, but which are attributes of the name or provide information about the name.

§2.1.2.2. Bibliography: In-depth bibliographic references pertaining to the reading and interpretation of names can provide a useful paper trail for better understanding of decisions made within the prosopography. These can include rationale for specific readings of names, different scholars' positions on conventions for normalization, as well as arguments for assigning a name to a specific language. Links to this information should accompany the lemma.

§2.1.2.3. Gender: Both individuals and names possess gender. The gender of an individual featuring in a prosopography can be assigned a tag based on what is known about their biological sex. Names can both possess grammatical gender and be marked textually for gender through the use of masculine and feminine personal name determinatives, indicators of familial relationship (daughter, son, wife), or designations of sex and age (nursing girl, weaned boy) (Tenney 2017). However, some names were used by both men and women; the contents of *PNA* preserve seventy-three such instances. It does not always follow that the biological sex of the individual accorded with the grammatical gender of the name or even the marked determinative that preceded it. Throughout the cuneiform record, women's names could have a masculine determinative; at Nippur, Nuzi, and Tikunani, both a masculine and feminine determinative is attested for a name (Brinkman 2007, Abrahami 2011, Justel 2018). Similarly, while a majority of non-occupational family names designated paternal ancestors, a few were derived from matronymics (Wunsch 2006). While these could be marked with a feminine determinative, it was not uncommon for the scribe to employ a masculine determinative when the family name was written, belying the scribal assumption that the ancestor must be male.

§2.1.2.4. Languages: Information about the language of the personal name is a useful piece of metadata that can potentially tell us something about an individual's ethnicity or origins. If the name is Akkadian, distinguishing between the Babylonian or Assyrian dialects is useful and can be implied through normalization and explicitly communicated through metadata. Designating a language also requires a degree of specificity that may not be possible; Aramaic, Hebrew, or Canaanite names may not be distinguishable and the broader designation "West Semitic" may have to suffice. Some names can be interpreted as linguistically Amorite or Akkadian. A name can also be a hybrid, combining elements from different languages. In these cases, it is best to treat "hybrid" as its own tag and tag the name for each language as well.

§2.1.2.5. Theophoric Elements: Divinities are a common element in personal names in the ancient Near East. Their presence can provide a useful window into personal or societal beliefs and the prominence of certain cults at different times and in different places (e.g., Pagé-Perron 2024, Di Vito 1993, Roberts 1972). Digital tagging of divine names within a prosopography is an ideal tool for collecting and sorting these elements in order to determine the frequency with which divine names appear and the theological concepts which the names evince. Cross listing attributes that inform the user about the provenience of the tablet or where it was dated can help localize theophoric elements to specific cities or regions.

§2.1.2.6. Patronyms, Matronyms, and Spouses: The use of a patronym, matronym, or spouse name

as an additional identifier for an individual is ubiquitous practice throughout the cuneiform record. In many periods, the use of a patronym referenced the individual's actual father; and even in the first millennium, when patronyms were also used as family names, it is not unusual for a patronym in a two-tier genealogy to be the name of the individual's father. In first-millennium texts, the writing PN1 *apilšu/māršu ša* [son of] PN2 makes explicit that it is the father named in the second place. When the simpler writing (which omit the determinative pronoun *ša*, "of") PN1 A/DUMU PN2 is employed, the name in the second place can refer to the father, but not always. In pre-first millennium Babylonian texts, the simple form is presumed to refer to the individual's father rather than to an eponymous ancestor. However, there are indications that some occupational patronyms were operating as family names already in the Kassite period (Brinkman 2006).

§2.1.2.6.1. Matronyms and spousal names are far less common. In text, they are expressed genitivally following the same patterns as patronyms, typically as grammatical constructs. Spousal names overwhelmingly qualify a woman with the name of her husband (PN1 *aššat* [wife of] PN2) rather than the reverse (PN1 *mut* [husband of] PN2). Similarly, in the first millennium, when a person is identified in reference to their mother, the mother will often be identified by a male relative, either her husband or father, providing additional prosopographic data.

§2.1.2.6.2. For individuals identified solely by patronym, matronym, or spouse, see §2.1.1, above.

§2.1.2.7. Occupational Titles: Occupational titles can also be used as identifiers in texts. Usually, the occupational title follows the personal name without any term marking affiliation separating them. In addition, occupations serve as the names of principals at least as early as the Old Babylonian period. The two usages can be distinguished in texts written in some dialects by the presence or absence of the personal name determinative. By the thirteenth century in Babylonia, occupational names appear as patronyms and not always marked with a personal name determinative. As noted above, these occupational patronyms may serve as family names (Brinkman 2006).

§2.1.2.8. Family Names: Family names expanded on the common practice in Mesopotamia of identifying individuals through patronyms or occupational titles. Use of family names may also have been influenced by the presence of tribal groups that designated their members as "sons" of the tribe. As such, family names can be conceptualized as a distinguishing attribute that was part of an individual's full name. Family names were communicated using expressions of filiation, presenting the holder of a family name as the son or descendant of either an ancestral name or occupational title at a remove of one to three generations expressed over two to four tiers. When a family name occupies the second position in a simple, two-tier genealogy (PN1 A/DUMU PN2=FN), it can be difficult to know if the name is a family name or the name of the individual's father unless the researcher has familiarity with the corpus of family names in use, which tended to be distinct. The interpretation of a family name becomes more clear when it is expressed in either a three- or four-tier genealogy (PN1 *apilšu/māršu ša* [son of] PN2 A/DUMU PN3=FN) in which the family name was written in the final tier. These longer genealogies provide useful prosopographic data that aid with disambiguation.

§2.1.2.8.1. Family names could be derived from either ancestral names or occupational titles. While it may not be necessary to give these family names separate lemmata within a prosopography, including separate indices of ancestral and occupational family names can be useful in organizing alternative forms that refer to the same family name. For example, Akubatila was a rare variant writing of the Egibi family name, Šangû-Šamaš was another name for the Šangû-Sippar family, and the aforementioned matronymic family names could be transformed into masculine names. Creation of separate indices of ancestral and occupation family names can also help isolate rare, and therefore uncertain family names appearing only in the second tier of two-tier genealogies.

§2.1.2.8.2. It is advisable to treat family names as a distinct attribute and not as formal names, even though many family names were derived from personal names, and to index them separately as ancestral names and occupational titles. In those rare cases within a corpus when a personal name of an individual also appears as a family name, it is best to keep them separate and cross reference them.

§2.1.2.9. A note on *anonymi*: There are multiple ways of referring to individuals, not all of which employ the name as an identifier. A common way of referencing a person is by title alone, e.g. 'the

king' or 'the governor'. These instances supply an attestation of an individual that should be treated as a name record. If the referent is clear, the attestation can be attributed to a lemma (e.g. Nabopolassar), otherwise it will need to be entered with a descriptor (e.g. 'anonymous') and a unique ID.

§2.1.2.9.1. Most anonymous references recorded in cuneiform texts are made in relation to another (often, a named) entity. For instance, in lists of family units an individual may be mentioned as heading a certain number of unnamed individuals. In legal contracts, a woman may be mentioned with her unnamed child, or a man may be said to own a house together 'with his brothers'. The level of detail that a prosopographer can record for these anonymous references varies widely. For example, the gender and age of the unnamed child may be supplied in the record, whereas the number of co-owning brothers may remain undetermined. Clear guidelines should be formulated by the author and the team to deal with such instances of individual and collective anonymous references.

§2.2. Role

§2.2.1. Definition: Every person mentioned in a document has a specific function and place in an activity, whether as the subject or object of some action or as an indirect mention in the text. It is important to note that very few roles exist in isolation. The majority of roles are executed in a cohort of people, places, and things (such as commodities and other objects)—all interlinked in a documented activity. This is especially true for more formulaic documents, where even the position of a name in the document implies a specific role in the text's message and assumes a diagnostic position in the text template.

§2.2.2. Data and Terminology: Native terminology clearly labels certain roles in some documents. For example, witnesses (e.g., *mukinnu*) and scribes (e.g., *tupšarru*) are often indicated in legal documents. Many more roles can be identified by related verbs (e.g., *nadānu*, "to give, sell") or prepositional expressions (e.g., *ina muḫḫi*, indicating an obligation of the party whose name/title follows to others in the activity). To facilitate the analysis of a prosopographical dataset, it is helpful to keep the number of different roles to a minimum and make a distinction between roles and role attributes. The roles should be general terms such as "witness" that may be expressed through a number of native designations, such as *mukinnu* and *ina ušuzzi*. Finally, professional and official titles given in documents are to be kept separate from roles. For example, if a governor sells a plot of land, he has the role of seller in this particular activity.

§2.2.2.1. In modern terms, each activity has a number of roles for the given subjects and objects of the action(s). By situating roles in terms of the activity, the relational values for each entity become apparent, who is linked to whom, and additional attributes can be assigned to each role. These relational ties can be structured as triples consisting of a subject (PN1), predicate (sends a letter to), and object (PN2). Working with triples allows greater flexibility in corpus-specific work and greater interoperability and reusability of the data.

§2.2.3. Ideal configurations: In an ideal instance, someone's role is clearly stated in a document and modern scholars need not infer it.

§2.2.4. Challenges: Especially in legal and administrative documents, the task of defining a person's role is not always straightforward. Even if a document is completely preserved and fully readable, there can be various possible ways to interpret the roles people have in an activity. To a large extent, this results from the fact that the participants of the transaction knew its context and background, and it was not often necessary to explicate them in the document. As in all prosopographical work, the wider (archival) context of the document guides its interpretation.

§2.2.4.1. For a role to be a meaningful feature in a dataset, it is important to identify and assign a role to every named person in a given document, as null values reduce the systematic computational value of this feature. Sometimes roles are labeled explicitly, and other times they must be inferred through context. In the latter case, one should consider how the morphology and syntax of the text might imply a role for a person named in a document. When no clear role can be determined, whether due to missing text or context, it is acceptable to use the role of "mentioned" in a text.

§2.2.4.2. Letters pose specific challenges, because they mention people who were not involved in the specific act of communication that each letter produces. The letter may narrate some episode in which individuals appear, but this does not make them responsible for the communication process. So, it is important to be able to distinguish the sender, recipient, and perhaps the messenger from

people mentioned in a letter. This differs greatly from what happens, for instance, in a loan contract: all the people mentioned in a loan contract are generally involved in the loan.

§2.2.4.3. In our ontology, roles are defined in relation to an activity that is described in a document. In this sense, the familial relationships "father" and "mother" are not comparable to roles such as "seller" or "buyer." However, kinship ties are very relevant to prosopographical work and disambiguation of homonymous persons. Therefore, it is advisable to encode these relationships as attributes, similar to those of professions and titles.

§2.3. Activity

§2.3.1. Definition: Cuneiform documents record a variety of activities, each relating to several actors. For example, in a legal text that concerns the sale of a cow, the activity is "selling" and typical roles associated with it are "seller," "buyer," "guarantor," "witness," and "scribe." One letter, legal, or administrative text typically relates to only a single activity, but a more complex text, such as a royal inscription, may relate to several activities. In Assyriology, it is common for such documented activities to be linked with specific keywords and their related objects, many of them terms and verbs loaded with legal or scholarly meaning that are also specific to a certain place and period.[5] The original BPS model envisioned one activity per document, e.g., the sending of a letter, and incorporated references to additional activities (such as those reported in the letter) as attributes of the main activity. An individual who sealed a tablet was understood to bear the attribute of "sealer" in addition to the role he played (e.g., witness) in the activity. However, some corpora might be better served by assigning a role of "sealer" to those who affix their seals to tablets; such decisions about structuring roles and attributes are best made by corpus curators.

§2.3.2. Data: Each cuneiform document registers one or more activities. In a prosopographic study, the identification of each activity and its attributes as recorded in a document is an essential step. In most cases, the activity defines the textual genre of the document. Thus, a document recording a loan is defined as a loan document and different procedural operations define administrative documents. While the language of legal and administrative texts is quite standardized, letters can be defined by wording that is specific to the sending and receiving of information. The wording of letters is less standardized than legal or administrative texts, reflecting the great variety of any additional subjects that may be discussed in the body of the letter but have nothing to do with the activity of "letter sending."

§2.3.2.1. Further details associated with an activity can be added as attributes. For example, a loan may have the attribute "interest-free" or "interest-bearing"; a letter may receive the attribute "personal" or "official"; a receipt may refer to an "offering" or be "commercial", and so on. There may also be occasions when the research demands deeper levels of detail. For instance, a loan, with the attribute "interest-bearing" may receive as an additional attribute the commodity that is its object: "silver", "barley", etc.

§2.3.2.2. For the most part, determining the activities referenced in a set of documents is a reasonably straightforward process, but care must be taken to distinguish activities from associated attributes so that the result is useful for the research. On the one hand, a more restricted list of activities facilitates data-management for disambiguation and analytic purposes. Providing detailed attributes associated with the activities supports revision, improvement, and deepening of research questions. Data structures that accommodate decoration of activities with attributes lead to a balance between a restrictive, minimalist approach and a proliferation of types of activities.

§2.3.2.3. The activities registered in a set of documents under analysis may be marked up with computational tools. In this case, a list of possible activities must be elaborated beforehand by the research team, together with heuristic rules that will enable to automate the task of activity identification. However, as cuneiform documents are often damaged, the heuristics may not work well in all cases. For this reason, a manual verification of the results of the automated process is always advisable.

§2.3.3. Terminology

§2.3.3.1. The inventory of emic terminology used to discern a document's activity varies according

[5] For categorization of legal and economic documents, consult the indices of ancient terms in San Nicolò and Ungnad 1935, and Jursa 2005, 9–49. A consideration of the broad scope of legal terminology, useful for identifying attributes of legal activities, is found in Westbrook 2003.

to textual genre. Letters, for example, especially from the second millennium, open with direct speech introducing the parties to the correspondence: ana PN1 *qibīma umma* PN2, "say to PN1, thus says PN2." The order of those mentioned can implicitly refer to their status (Bamman, A. Anderson, and Smith 2013). This formula changes in the first millennium, with *amur* "look," introducing the main content of the letter (Hackl, Jursa, and Schmidl 2014, 29-30). All these actions relate to the dimensions of writing, sending, receiving, reading (maybe out loud), and listening to a letter.

§2.3.3.2. Within a single genre, compilation of emic terminology designating activities is challenging, as Sumerian and Akkadian vocabularies may preserve several terms to designate various activities. Multiple words for letter, unadug (u_3-na-du_{11}) / *unnedduku* / *umunnedukku*, *ṭuppu*, and *šipirtu* varied in meaning, in frequency over time, and in diverse contexts. The term *ṭuppu* can refer both to the physical object as well as the information inscribed on it. Here we distinguish between tablet as document (physical object) and letter as the actions associated with the sharing of that information between one or more persons, identifiable as sender(s) and receiver(s).

§2.3.3.3. Administrative documents may reflect many different procedures, most of which can be understood as specific realizations of the transmission of goods, people, or animals, as well as of information or messages, from one point in the administration to another. Apart from inventory lists, one can distinguish between administrative documents dealing with incoming items and with outgoing items. They record the payers or givers of items and/or the recipients of items. Thus, it facilitates prosopographical research to apply the broad term "administrative" as the activity, and to refine the analysis with the addition of attributes that specify aspects of the action. A vocabulary of roles that can be associated with "administrative" activities is useful in this connection, e.g., recipients, suppliers, agents, supervisors, etc.

§2.3.3.4. Legal transactions, e.g., contracts, testaments, grants, treaties (Westbrook 2003, 11), encompass a great variety of activities, e.g., loans, purchases, marriages, adoptions, manumissions, partnerships, and work obligations. Each of these subcategories can be identified on the basis of the clauses and wording used as well as the roles attested in the document. For instance, a purchase refers to a buyer who buys a product and a seller who sells this very product to the buyer.

§2.3.4. Ideals

§2.3.4.1 In an ideal instance, an activity is readily identifiable in a document and its background and details made explicit. This facilitates the identification of an activity and the roles people play in it. Examples include the activities of lending silver or selling a cow and the related roles of creditor/debtor, seller/buyer, guarantor, witness, and scribe.

§2.3.5. Challenges: Defining activities can be challenging. Often it is not simply a purchase which is documented, but a purchase and, for instance, a loan related to this purchase. Hence, it is not always clear which activity type is in question because two or more activities are closely connected. Moreover, identifying and defining activities assumes contextual knowledge, and not all details of the transaction are typically explicated in the record. This requires the study of a text in its wider archival context and identification of implicit actors and actions, usually unnamed or only hinted at in the texts.

§2.3.5.1. Another difficulty is assigning a date to an activity, as some documents may not be dated, and because, in some cases, the document and the activity/ies it registers are not contemporaneous. Royal inscriptions, for instance, may refer to activities of interest to the king, but which may have happened at different points of time.

§2.4. Document

§2.4.1. Definition: In the context of the NRADA scheme, the term "document" refers to a single cuneiform text. This most often consists of one clay tablet, but stelae, statues, cylinders, prisms, etc. can also be termed documents. In most cases, textual components associated with seal impressions would not be designated as separate documents, although in some schemas, the corpus curator may prefer to mark them as such. A document can refer to several activities, each of them involving one or more individuals with one or more roles. Prosopographical work has primarily focused on legal texts, administrative texts, and letters. As these documents from everyday life refer to a wealth of personal names engaged in different activities, they tend to provide richer prosopographical data than do texts of literary or scholarly text genres.

§2.4.2. Data: Because a document corresponds to a single physical artifact, their identification is relatively simple. In many cases, an incomplete (i.e., broken) artifact retains enough information to allow for identification of an activity; thus, there is no need to exclude broken texts from prosopographical work. In our ontology, we do not understand genres and their subcategories as attributes of a document, but primarily as activities. For example, subcategories of legal texts are regarded as activities of selling, lending, dividing inheritance, etc.

§2.4.3. Terminology: There is no native terminology which would apply to the modern categorization of different document types, such as "legal" or "administrative." However, there are Akkadian terms which refer to "document, tablet" (*ṭuppu*), "letter, message" (*šipirtu*), "promissory note" (*u'iltu*), "(royal) inscription" (*šiṭir šumi*), etc. Moreover, documents were typically written using a well-established structure and terminology which form the basis of modern identification and categorization of different document types and their subgroups.

§2.4.4. Ideals: An ideal instance of a "document" would be a complete artifact with fully readable and comprehensible text that provides detailed information about the names, roles, and activities of the people mentioned in it. Moreover, an ideal document would have well-documented archaeological provenience and could be placed in a wider archival context. An example of an ideal document is a clay tablet found, during modern scientific excavations, together with other documents of similar content, thus allowing the assignment of the tablet to an ancient archive. If the tablet recorded, for example, the purchase (or sale, depending on the perspective) of a slave, we could identify the activity of selling and a number of names and roles related to it, including the buyer and seller of the slave as well as the slave himself. In addition, the witnesses and scribe would be listed towards the end of the document.

§2.4.5 Challenges: There are no major challenges related to the term "document" as defined here.

§2.5. Archive

§2.5.0.1. Most cuneiform texts that record historical persons (such as contracts, accounts, letters, etc.) were written in contexts where other texts were also produced. In this section, we discuss the prosopographical use of sets or collections of texts, by asking what type of information about an individual can be gleaned from the setting of the texts' production. We focus our discussion on the archive, but it should be stressed that this is far from the only documentary context that is relevant for prosopography. For instance, when charting the careers and activities of state officials, it may be revealing to trace the scatter of textual footprints that these individuals left in archives across their jurisdiction. Such assemblages of texts, put together by the researcher in the process of their investigation, are usually referred to in ancient history as "dossiers" (Vandorpe 2009).

§2.5.1. Definition: The *Encyclopaedia Britannica* defines 'archive' as "an organized body of records produced or received by a public, semipublic, institutional, business or private entity in the transaction of its affairs and preserved by it, its successors or authorized repository through extension of its original meaning as the repository for such materials."[6] This definition has long been applied in archival science and enjoys wide currency in ancient history (e.g., Faraguna 2013), and in Assyriology (e.g., Veenhof 1986, 7).

§2.5.1.1. Two principles that inform this definition are nonetheless problematic when dealing with ancient Near Eastern archives. To start, it is often difficult, if not impossible, to determine the degree of intentionality behind the formation of a given corpus, as many text collections came into existence through what Hirschler 2016 called "counter-archival practices," i.e., the dismantling, cleaning, moving, or destroying of archives. Finds of cuneiform texts often consist of discards, cast away by their ancient owners when they no longer needed them (Zimansky 2005, 315; Rutz 2013, 309). This means that the historian often encounters assemblages of clay tablets which had already been removed from the primary archive, thrown out as rubbish, repurposed as fill, or set aside for some future purpose that was never realized (Klinkenberg 2016, 56-59). In such scenarios, preservation is an accidental side-effect of the durability of the clay tablet and the processes

[6] This definition is from the 1972 edition. The revised definition in the online version ([https://www.britannica.com/topic/archives]; accessed 20/06/2022) is shorter, omitting the 'private entity' from the sources of archival production. It is thus less useful for our present purposes, as many of the archives from ancient Mesopotamia were generated by individuals and families in the private sphere.

of site formation. Unintentionally preserved deposits are not the same thing as the "organised body of records produced or received by a public, or private, entity in the transaction of affairs." Nevertheless, those accidental deposits may reflect some of the principles of organization that informed the original archive from which they had been removed.

§2.5.1.2. Another problematic aspect of the definition cited above is the description of an archive as a "body of records." The order in which cuneiform records were kept is often unknown. The history of the field of Assyriology is intimately connected to practices of looting, destruction, and treasure hunting on Middle Eastern sites, from the 19th century to the present. Archives with a fully documented archaeological context constitute only a minority of all available archives. This means that it is often impossible to say whether tablets were actually part of a body of records when they were discovered. Museum archaeology offers some clues for reconstructing dispersed collections: tablets that are found together were also often traded and sold together (Vandorpe 1994; Baker 2004, 3-17). The make-up of museum collections thus reflects, however faintly, histories of discovery. While widely used, "museum archaeology" remains tricky, as tablets may have been brought together by looters after they were taken out of the ground, creating connections that do not reflect actual storage.

§2.5.1.3. In view of these limitations, Assyriologists often adopt flexible definitions of "archive." For instance, Postgate defines Middle Assyrian archives as "assemblage[s] of documents found together and sharing some common features [...] which suffice to show that they belonged together in some way" (Postgate 2013, 81). We may modify the first element of this definition by adding that such assemblages may also consist of documents that were likely found together.

§2.5.2. Why are archives relevant for prosopography?

§2.5.2.1. For the process of disambiguation, archives help to assess the probability that homonymity refers to the same person. Like-named individuals who occur in the same archive more likely refer to the same person than those that occur in different archives. The archive thus helps to assign multiple attestations to unique historical individuals. Within archives, dossiers provide similar anchorage, e.g., a name instance attested only in a dossier pertaining to property in locality A may not be the same person if the same name instance appears in locality B.

§2.5.2.2. There is a second reason why archives are relevant in prosopographic research. Whereas the text places a person in a specific activity at a certain time and place, the archive establishes the person in the wider social and institutional field that made his/her activity and its recording possible or necessary. In other words, the archive establishes a given person's horizon of activity, situating that individual within the sphere of influence of the archive-keeping household. Indirectly, this horizon provides knowledge of the network of individuals with whom a given person could have been acquainted and it reveals the administrative procedures that brought that person into purview of an institution. Given that most persons mentioned in cuneiform texts only occur one time, this horizon offers valuable, even if minimal, contextualization.

§2.5.2.3. Archival information can also be marshalled into assessing a person's social capital: if a person appears in more than one archive, they functioned as "bridges" between disparate social networks. Better connected than most others in their environment, they potentially occupied a position of influence (Pagé-Perron 2018, 202; Kulikov, A. Anderson, and Veldhuis 2021).

§2.5.2.4. The possibility of a person appearing in multiple archives complicates the statement that we made at the start of this section regarding the probability that like-named individuals occurring in an archive likely refer to a single person. Archives are not isolated silos of data even though most of the persons they document will not appear anywhere else. Assessing how likely it is that like-named persons in archive A and archive B are the same individual requires considerations beyond homonymity. As an example, consider the case of Kalbāya, son of Ṣillāya of the Nabāya family (Waerzeggers 2014, 223). This man is well-known from the Egibi archive from Babylon; his daughter was married to the Egibi chief Marduk-nāṣir-apli. At first sight, it seems unlikely that his namesake attested in an archive from Sippar is the same man. However, because this archive shares more persons with the Egibi archive (Waerzeggers 2014, 37), the two Kalbāya's can be considered the same person with reasonable certainty. Other cases of cross-archival homonymy are less straightforward. For instance, a certain Bēl-uballiṭ, son of Marduk-ušallim of the Mudammiq-Adad

family, is attested once in the Egibi archive from Babylon and once in the Ilia A archive from Borsippa (Nbn 140 and BM 96175). In both instances, he acts as a scribe. Moreover, the family name Mudammiq-Adad, while not rare, was not very common. Also in terms of chronology, a match is possible. However, these two archives are not known to have shared any other persons, meaning that Bēl-uballiṭ would have been a rare go-between. How likely this scenario may be is difficult to assess. More easily resolved is the case of Bēl-iddin son of Bēlšunu, attested five times in the archive of Marduk-rēmanni, always in relation to a very minor settlement in Sippar's countryside (Waerzeggers 2014, 158-159). This renders it unlikely that the namesake attested in the archive of a Borsippan priest (Legrain 1913, nos. 30-38) is the same individual.

§2.5.3. Terminology: Emic terminology equivalent to the modern notion of archive is not yet attested. Collections of learned texts were sometimes designated *gerginakku*, especially in the first millennium (Robson 2013), but the extent to which that label was applied to archival tablet collections is not known. Descriptions such as "if a tablet shows up in the house of PN" imply the existence of a domestically kept archive, but they do not provide us with any explicit terminology.

§2.5.3.1 Researchers distinguish a number of archival types on the basis of the type of transactions recorded in an archive, the identity of the archive-keeping entity, and the findspot of the archive: e.g., family archive, business archive, palace archive, merchant's archive, temple archive etc. Such labels are useful indicators of the context in which an ancient person is attested, but it should be emphasized that these classifications often simplify ancient complexities, as storage and dumping practices do not always align with the practices of production. Family archives could end up inside temples alongside those of the "official" administration. For example, the Late Achaemenid Kasr archive was found inside the satrapal palace of Babylon but relates to private, not public, affairs.

§2.5.3.2 In keeping with the tradition encapsulated in the definition of "archive" in the Encyclopaedia Britannica, most Assyriologists define archives as collections of utilitarian texts (letters, accounts, contracts etc.). They usually distinguish archives from libraries, defined as collections of literary and scholarly texts (e.g. Pedersén 1998, 3). However, this distinction is often blurred in practice, as documentation pertaining to mundane transactions was often kept in the same place as texts resulting from intellectual activity. Moreover, the library-archive distinction simplifies typologies of cuneiform text collections. Royal inscriptions, votive deposits, monumentally displayed legal transactions (e.g. kudurru) and so-called "museums" all served archival functions of sorts.

§2.5.4. Ideals: The following ancillary information about the archive in which a person is recorded is relevant for prosopographic purposes.

- Time span: the time span covered by an archive provides approximate dates for the lifespan of the individual operating inside the archive's sphere of control.
- Provenience (exact findspot and archaeological information, coordinates of the site): the place of deposition of the archive offers an indication of the place of activity of the persons attested therein, even if the archive was discarded or dumped in ancient times. If the archive is unexcavated, the assumed provenience based on internal or museum-archeological criteria can be included in a prosopography, with the same goal of identifying a person's area of activity.
- Archival cluster: it is useful to collect information on archives that originate from the same site and/or time, as this supports tracing the social networks that would have been reachable by the same individual, e.g. Neo-Assyrian post-canonical archives from Kalhu.
- Identity of the archive-producing entity (e.g. scribal bureau, temple office, family): this is relevant for understanding how a given person is positioned in the social and institutional landscape.
- Material finds related to archives, such as sealings and storage jars.

Additionally, it may be useful to record which files (defined as groups of related texts or "dossiers", e.g., those associated with the activities of a particular individual) exist within an archive and to which file a particular text recording a specific individual belongs.

§2.5.5. Challenges: We have seen that the archival context provides an important horizon of interpretation for prosopography, especially for the pur-

pose of disambiguating like-named entities. However, the procedure is complicated when prosopographical information is used to reconstruct dispersed archives. Many archives were scattered in antiquity or in modern times. Scholars use different criteria to reconstitute groups, ranging from information mentioned in the texts (persons, type of activity, place of writing, date), the material features of the tablets (paleography, diplomatics, sealing practices, preparation of the clay and shape of the tablet), and information on provenience (when and where the tablet was excavated/looted, with which other texts it was traded, etc.). Because prosopography often relies on archives, and archival reconstruction relies (in part) on prosopography, there is a circularity that causes a methodological challenge. In view of this loop, it is good practice to distinguish clearly between excavated and reconstructed archives in the design of a prosopography.

§3. Digital Implementation

This section provides an explanation of key terms in digital data modelling and database design, and an overview of current relevant digital tools and resources.

§3.0.1. Digital prosopography, which involves studying individuals from historical records using digital tools, requires a dataset, which can be linked to persons mentioned across different sources, including texts, art, or material culture. This is true whether the datasets are focused on the people themselves, on related events, physical places, or any other type of information that can be related to a person. For example, the various pieces of data asserted on people in written sources are considered "factoids" by Pasin and Bradley 2015; see also Schwartz, Gibson, and Torabi 2022. Another essential consideration in dataset construction is which metadata to include. Examples for metadata about a person might include details such as the language of their name, their function in the text they are mentioned in, and any known dates of creation or discovery.

§3.0.2. After deciding what data and metadata one wishes to collect, there are two important aspects to consider when gathering prosopographical information with modern research tools: (1) the file and format of the digital dataset; (2) the ontology, or standards and structure, decided upon for the dataset.

§3.1. Files and Formats of Data

§3.1.1. Data must be stored in a particular file format. It is highly recommended to use open-source formats, as opposed to proprietary formats. Examples of proprietary formats include Office DOC(X) or XLS(X), as well as Filemaker FMP files, and so on. The disadvantages of proprietary formats are: (1) those without a paid subscription cannot open them in the original programs; (2) attempts to open them in other programs often distorts the original data, and (3) if these companies go out of business or stop supporting older file formats, it will be impossible for all to access the data. This was the fate of many datasets from the 1980s up to the early 2000s.

§3.1.2. Common open-source or machine-readable formats, i.e. formats that can be opened on any computer using various different programs, include (but are not limited to):

- CSV or comma-separated values: a spreadsheet format for tabular data;
- XML or extensible markup language: a flexible text file format for annotated data, commonly used for online publishing. An important subtype of XML is directed by the Text Encoding Initiative (TEI/XML), which develops guidelines for cultural heritage texts in XML format;
- JSON or JavaScript object notation: a file format originally derived from JavaScript, and similar to XML with its ability to store annotated data of no particular structure;
- CoNLL or Conference on Natural Language Learning, is a common text file format used in natural language processing (NLP) for storing textual and linguistic data (Buchholz and Marsi 2006).

§3.1.3. The advantages and disadvantages of each of these file formats depend on the structure of the data, the goals of the prosopography and its structure, and the tools used to create the prosopographical database.

§3.1.4. A prosopographical database can be stored in a single CSV, XML, or JSON file. Due to the multiple possible relationships between data points in prosopography (i.e. shared family members, or shared textual sources, etc.), there are different ways of organising connections between data points.

§3.1.5. One such way is in a relational database (Bradley and Short 2005). In such databases, data

is stored in tables (preferably CSV files), and each record (row) is assigned a unique identifier (ID), for example, one CSV file for individuals and another for textual sources. In the individuals table, instead of citing the textual sources by their names, one can enter their unique IDs from their own table and thus consistently link between the two.

§3.1.6. Another approach is to directly label the information on the digital rendering of the ancient source, for which XML is particularly useful (especially while following TEI conventions), although other file formats are also possible. Personal names can be tagged or annotated with their disambiguation directly on their attestation in the original document, keeping the contextual information of their appearance.

§3.2. The Role of Ontology and Standards

§3.2.1 In addition to collecting data, a digital prosopography project must consider how the data is structured and interpreted, especially when linking different datasets. For example, if family relationships (e.g. "f." vs. "father"), or modern designations of texts (e.g. "CUSAS 28, 1" or "CUSAS 28 01") are marked inconsistent, parsing that data will become significantly more difficult and the dataset will not be as accessible. Generally, it is better to avoid free text fields in a dataset, as that is counterintuitive to structured data, and makes the data less searchable and less machine-readable. Furthermore, if one wants to link a new prosopographical database to any existing dataset that uses certain conventions, one needs to follow those conventions already established.

§3.2.2 This is where ontology comes into play. Ontology refers to a formalized set of definitions and relationships between concepts (e.g. Giovannetti et al. 2022). In digital humanities, it is a way to ensure that terms used across different datasets or projects have consistent meanings. An example of this standardization is the use of controlled vocabularies, such as lexicons (for standardized word definitions), onomastica (for standardized personal names), and gazetteers (for standardized place names).[7] These vocabularies are used across different research projects to maintain consistency and facilitate linking datasets.

§3.2.3 Many such vocabularies are open and accessible online, especially via a Uniform Resource Identifier (URI). URIs look like regular web addresses (URLs), but they also function as IDs across vocabularies shared on the web. This ensures interoperability across different platforms and projects, as they all refer to the same digital object as defined by the publishing project's ontology.

§3.2.4 Using closed vocabularies and publishing on the web adheres to linked open data (LOD) standards.[8] LOD is a principle in which datasets are made available online in formats that are both open and linkable. This allows researchers to connect their data with other datasets around the world, creating a global web of linked information. When an ancient text is annotated following LOD principles, its persons, places, and events can be linked to other data collections that use the same URIs and ontologies. This enables broader comparative research and ensures that datasets from different disciplines or projects are connected and their information is shared, enriching research possibilities.

§3.2.5 An example of an Assyriological prosopography using available URIs, and as such connecting itself to existing LOD ontologies, is Prosobab. Prosobab is a relational database at its core, made up of three main tabular datasets: attestations, individuals, and tablets. Attestations are singular occurrences of individuals on a tablet, individuals are disambiguated attestations of the same person, and tablets are the textual sources on which the attestations are found.

§3.2.6 When one uses the Prosobab interface to search and view attestations, they are linked to an Attestation ID (which leads to the same page), a PID, which leads to that attestation's disambiguation, and the museum number of the tablet on which the person is attested. Each one of those has a unique URI identifier. For example, ^{Id}EN-*i-da-a-n-ni* is attested in BM 29419 as a witness. His attestation URI is https://prosobab.leidenuniv.nl/attestation/68. He is disambiguated as Bēl-idanni, and his individual URI is https://prosobab.leidenuniv.nl/individual/24782. His individual URI shows that he is attested in two documents, BM 29419 and BM 26646. Each of those tablets has a unique URI as well, for in-

[7] See Bond, Dilley, and Horne 2021.

[8] This type of linked data architecture is also known as a knowledge graph, a good example of which is https://Syriaca.org, see Michelson 2021.

stance https://prosobab.leidenuniv.nl/tablet/t9 is the URI for BM 29419.

§3.2.7 In addition to the metadata collected on this tablet for the Prosobab project, it is linked to two external databases: CDLI and the British Museum. Both use unique identifier URIs for their objects. The use of URIs takes advantage of additional information stored in other databases and accessible from them, and allows future projects to take advantage of the data collected for Prosobab and incorporate it in future datasets that are open access and accessible.

§3.3. Open Access Tools and Resources

§3.3.1 All of these approaches, namely, relational databases, text markup, and linked open data standards and vocabularies, are supported by large communities with well documented open-source tools and programming languages (Flanders and Flanders and Jannidis 2019 is a good introduction into data modelling). The following provides an overview of some of the available resources known to the authors as of December 2024, but it should be noted that such resources are often updated and replaced. The Digital Ancient Near Eastern Network (DANES) publishes tutorials and whitepapers on tools and methods for digital and computational analysis of ancient languages, and keeps a frequently updated list on its OpenDANES platform.

§3.3.2. Some well-known open-source relational database systems are SQLite, PostgreSQL (on which also pgAdmin is based), and MariaDB. One could use the programming language R, for example, to store and query data in an SQL relational database. To learn more about how to setup an SQL server from a database see the following tutorial, which also explains how to run Omeka, an application that allows a researcher to present data online.

§3.3.3. Structuring a text in XML with attributes is a common preprocessing task. One can even go from OCR (Optical Character Recognition) into structured text using something as simple as regular expressions (or Python for the more initiated). TEI/XML is better documented for classical languages such as Ancient Greek and Latin, but there is also a Cuneiform transliteration encoding standard documented under the EpiDoc flavor. The field of Natural Language Processing (NLP) has many tools for text annotation (e.g. Brat, see also the following list). One well established annotation platform built originally for literary texts, but is now more general purpose, is CATMA.

§3.3.4. One of the central networks dealing with ancient world linked data is Pelagios, which also has a specific activity dedicated to people. A well-known member of this group is the project SNAP:DRGN, which created standards for LOD ontology of ancient prosopographies, and which is currently maintained on the project GitHub (Bodard 2021). As for relevant annotation tools using LOD standards, Pelagios created Recogito (Vitale, Simon, and Barker 2020), which is currently in the process of becoming standalone software.

§3.3.5. There are several resources for working with the many repositories of cuneiform texts, if one wishes to annotate existing digital textual corpora. Texts in CDLI and eBL are stored in ATF formats, another open access textual format that follows strict conventions to represent cuneiform texts (see ORAAC's ATF documentation or the eBL ATF flavor). The Compass notebooks by Niek Veldhuis provide instructions on how to acquire texts from ORACC, ETCSL, CDLI, and BDTNS, and some basic implementations of how to work with the different file formats used in each of these projects.

§3.3.6. For accessing metadata on cuneiform sources, CDLI stores a variety of structured formats of their metadata, including JSON files with extended metadata, and as linked open data (LOD) files in TTL, JSON-LD, RDF/XML and RDF/JSON. For more information on their catalogue see here. Similarly, existing onomastica or prosopography databases could also be linked, as does Prosobab for first-millennium Babylonian names.

§4. Prosopographical case studies

Participants in the working group offered informal presentations of their prosopographical research, highlighting issues related to the composition of the corpus investigated and/or methodological concerns. Leaders of prosopographical projects (and members of their research teams) share their experiences and insights in working with specific corpora of cuneiform texts. Each case study reflects the shape and scope of individual projects, all of which deal with texts from second and first millennium BCE. No attempt has been made to harmonize the presentations to fit a particular schema or to cover all periods systematically.

§4.1. Turning the Prosopography of the Neo-Assyrian Empire into a Social Network

§4.1.1. "A Social Network of the Prosopography of the Neo-Assyrian Empire" (Jauhiainen and Alstola 2022b, Jauhiainen and Alstola 2022a) is a dataset semi-automatically extracted from the printed edition of the Prosopography of the Neo-Assyrian Empire (*PNA*, Radner 1998, Radner 1999; Baker 2000, Baker 2001, Baker 2002, Baker 2011). The aim was to create digital data that would allow other researchers to study the Neo-Assyrian prosopographical records with Social Network Analysis and other computational methods. The dataset, which contains over 17,000 individuals, has been published as two undirected networks: a two-mode network of persons connected to the texts in which they are attested, and a one-mode network of all individuals connected by common documents. The data is in CSV (Comma Separated Values) files, which can be opened with text and spreadsheet editors and, for example, with the Gephi visualization tool (Bastian, Heymann, and Jacomy 2009). Several attributes are provided for each person in the networks. An overview of methods and workflows used in creating the dataset is given in Jauhiainen and Alstola 2022b, and all the data, scripts, and more elaborate documentation are available in Jauhiainen and Alstola 2022a.

§4.1.2. The earlier *PNA* volumes (1/I–3/I) were made available to us by Simo Parpola as plain text files that clearly marked individuals and the documents in which they are attested.[9] The last volume (3/II) was available only as a PDF file from which data extraction was more difficult, and which resulted in some missing and erroneous data. Individual persons were collected from all files and homonymous individuals were distinguished by consecutive numbers (e.g., Aššūr-iddin_1), following the numbering of individuals in the *PNA*. Successful extraction of document names required their standardization and the use of concordance lists, because many texts were known by their museum numbers in the earlier PNA volumes and by publication numbers in the later volumes. In addition to a unique ID number, each individual has several attributes that could be automatically extracted from the *PNA* files: personal name, language and gender of the name, profession or similar description, place of activity, ethnicity or geographic origin, period of attestation (corresponding to the reigns of Assyrian kings), and start and end dates for the period of attestation (for filtering and creation of timelines in networks). The attribute data was standardized to facilitate its use in statistical analysis.

§4.1.3. The semi-automated extraction process made it possible to follow the NRADA scheme only partially. While names and documents are indicated in the formatting of the plain text files, roles and activities are described in running text without any markers that would aid their extraction. The workflow used for the creation of the dataset did not allow the extraction of roles and activities, but as this data is always included in a *PNA* entry, its automatic extraction might be possible using a more sophisticated method. Information about the archival context of a document is not a standard part of a *PNA* entry, but it is sometimes included in the running text. It is also missing from the extracted dataset, as a consequence of the limitations of the applied methods and workflow.

§4.1.4. As it is a very large co-occurrence network with rich attribute data, the *PNA* network can be best used for analyzing large-scale patterns or trends in Neo-Assyrian social structures. The network can be easily split into smaller parts on the basis of dates, places, or publication numbers of the documents, allowing both more focused and comparative studies. This can be done with the most common network analysis software, for example using filters in Gephi. Bennett, Tambs, and Lindén 2024 have analyzed a subnetwork from the reign of Sargon II to study the elites of the Assyrian Empire. The dataset can also serve as raw material for building more nuanced networks by correcting and enriching the data.

§4.1.5. The dataset is openly available and free for everyone to reuse, adapt, and expand. To enhance the quality of the network data and maximize its usability, it would be helpful to create a platform that allows users to submit their corrections and additions to the dataset. This might follow the example of Cuneiform Digital Library Initiative (CDLI), which utilizes crowdsourcing as a means of adding and correcting data (https://cdli.earth/).

§4.2. Old Assyrian Prosopography

[9] The files Simo Parpola shared were those typeset for the *PNA* using Ventura Publisher, saved as plain text, which facilitated the digital processing. We are grateful to Parpola for providing these files.

§4.2.0.1. As of yet, there is no prosopography in existence for the Old Assyrian texts (c. 22,500), but as digital text editions are being prepared, the likelihood of production of an online digital prosopography increases. The NRADA method (described in §2 Prosopography ontology), includes identifying the Names, Roles, and Activities for a given Document in an Archive (NRADA). Simply stated, this process involves identifying all the attributes of personal names in a given document, but it requires specialist supervision in order to identify the types of labels which specialists use in the subfields of Assyriology. To illustrate this process, this section will begin at the end of the acronym and work backward to the front, starting with the broadest category (archive) and narrowing down to the most granular level, that of the name.

§4.2.1. Old Assyrian Archives (NRADA)

§4.2.1.1. The majority of the 22,000 Old Assyrian tablets were found in the merchant quarters, located just outside of the ancient city gate of Kanesh, northeast of the main mound (hüyük) at Kültepe, Turkey. The so-called Old Assyrian "archives" reflect the personal records within a private house and often include dossiers from members of the same family over multiple generations. However, there are numerous documents in this large collection which cannot be identified with a particular archive. Therefore, to properly locate an Old Assyrian tablet of unknown provenience in an archive, it is best to note the person who presumably owned or retained the text.[10]

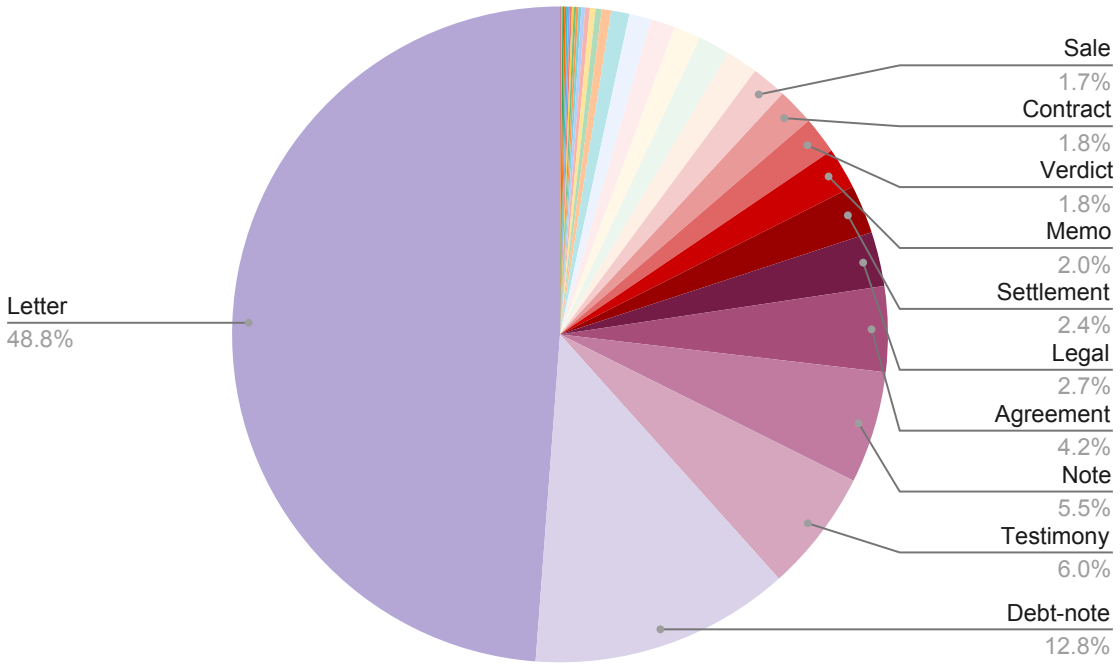


Figure 2: Numbers of texts of each type: Account settlement (22); Administrative order (52); Adoption (4); Agreement (182); Bulla (58); Contract (79); Debt-note (555); Divorce (12); Eponym List (5); Incantation (4); Legal (116); Letter (2113); List (68); Marriage (13); Memorandum (88); Note (239); Oath (6); Pledge (2); Quittance (67); Redemption (10); Royal (4); Sale (75); School text (4); Seal (20); Separation (5); Settlement (104); Accounts (23); Statute (4); Testament (8); Testimony (260); Transaction (39); Treaty (4); Verdict (79); Votive (1); Week-eponym list (2).

[10] For more information on the private archives from Kültepe-Kanesh, their archaeological layout and potential owners, see Hertel 2014.

§4.2.2. Old Assyrian Documents (NRADA)

§4.2.2.1. Within the Old Assyrian private archives, we find a robust typology of documents extending over 40 different types, with letters constituting half of the corpus (Veenhof, Eidem, and Wäfler 2008). The proportion of document types can be seen for a subset of the published texts (c. 6,000), as illustrated in Figure 2.

§4.2.2.2. Understanding the document typology inherently leads to the subsequent delineation of activities and roles for each document. This type of categorization has proven to be a crucial first step, not only for determining the roles to assign each actor of the document, but also in providing a persistent feature for resolving the ambiguity of homonyms in the corpus.

§4.2.3. Old Assyrian Activities (NRADA)

§4.2.3.1. The activities of a named entity are normally dictated by the type of document, as discussed above. With a very robust set of document types, there are also myriad activities in which the actors of a given text find themselves engaged. Often the classification of activities can lead to a better understanding of events taking place in the corpus as well. To illustrate this point, one can find more than 200 texts in the Old Assyrian corpus which deal with the aftermath of a death in the family. The subsequent activities surrounding the death of a merchant belong to a wide range of categories, including writing letters to family members, requesting financial documents and corresponding funds for settling accounts, seizing persons of interest (for the collection of debts), giving testimony before witnesses (outside of the court of law), sealing up of archives and houses, etc. Each one of these activities may have a corresponding series of roles, which are further delineated in related documents.

§4.2.3.2. In one such text, known as "Schmidt 2 (unveröffentlicht)", appearing in Eisser and Lewy (1930, 259-263, Nr. 246), we see a number of legal activities mentioned in the arbitration of a dispute between two parties, in an attempt to prevent a lawsuit; the deposition of the same parties is recorded in another document (see Kienast 1960, 27-33). Schmidt 2, a witnessed arbitration with discovery brought from both parties, describes an accusatory exchange between the sons of Pūšu-kēn, and one Suen-rē'ī, the son of Amur-Ištar, both of whose fathers had recently died (REL 105, c. 1869 BCE). In short, the former claims that the latter holds their inheritance, and the latter disputes the claim. Their testimonies are recorded before witnesses and "the dagger of Aššur" at the colony of Kanesh. Of the several actions expressly stated in the text, we will choose three that can be associated to specific roles, as expressed through terminology based on verbal roots specific to each activity; these will be discussed in the following paragraph.

1. the suit and seizure of people and funds ($\sqrt{ṣbt}$)
2. the injunction for arbitration ($\sqrt{wšb}$)
3. the giving of testimony ($\sqrt{ndn}$)

§4.2.4. Old Assyrian Roles (NRADA)

§4.2.4.1. The roles that are assigned to a given name in a document are dependent on both the type of document and the activities mentioned. Continuing with the example in Schmidt 2, the arbitration and subsequent actions that follow the death of two merchants, the following roles correspond to both the deposition (the Activity of the tablet) and actions mentioned.

1. the suit and seizure of people and funds (based on the verbal root $\sqrt{ṣbt}$)
   (a) role 1: litigant (1 subject of $\sqrt{ṣbt}$, 2 object of $\sqrt{ṣbt}$) or party (1, 2)
   (b) role 2: attorney (attorney of 1, attorney of 2)
   (c) role 3: scribe (if expressly stated)
2. the injunction for arbitration (based on the verbal root $\sqrt{wšb}$)
   (a) role 1: accuser (litigant 1, or party 1)
   (b) role 2: accused (litigant 2, or party 2)
   (c) role 3: attorney (attorney of 1, attorney of 2)
   (d) role 4: witness (1, 2, 3)
   (e) role 5: scribe (if expressly stated)
3. the giving of testimony (based on the verbal root $\sqrt{ndn}$)
   (a) role 1: litigant (1, 2) or party (1, 2)
   (b) role 2: attorney (attorney of 1, attorney of 2)
   (c) role 3: witness (1, 2, 3)
   (d) role 4: scribe (if expressly stated)

§4.2.4.2. It is important to note that this process of labeling roles cannot yet be automated, since none of these roles were explicitly marked in the text. However, if the text is lemmatized and given labels for syntactic and morphological features, then the vast majority of implicit roles should be identifiable. Until that time, the proposed process provides one example of a standard, which can be evaluated by scholarly consensus.

§4.2.5. Old Assyrian Names (NRADA)

§4.2.5.1. Due to a preponderance of papponymy in the Old Assyrian corpus, specialists have been careful to make a distinction between the onomasticon or catalog of names, and the people who were using these names over the many (at least six) generations documented at Kanesh. Fortunately, in a document such as Schmidt 2, there are a significant number of patronymics as well, which help to disambiguate homonymous individuals living contemporaneously in Kanesh into discrete persons.

§4.2.5.2. Suffice it to say, it is no small task to identify these features for each name on a text. Further, there is no guarantee that NRADA can completely resolve the issue of identifying two distinct people using the same homonym. However, once the NRADA features have been articulated, the process of creating a prosopography can continue with greater transparency and reproducibility.

§4.3. Prosobab: Prosopography of Babylonia (c. 620–330 BC)

§4.3.1 Prosobab is an online database of recorded inhabitants of Babylonia between c. 620 and 330 BCE, developed at Leiden University since 2019 in the context of a project funded by the European Research Council. The records from which Prosobab draws its data are mostly legal documents from private archives; palace and temple archives, which are also available from this period, have not yet been entered.

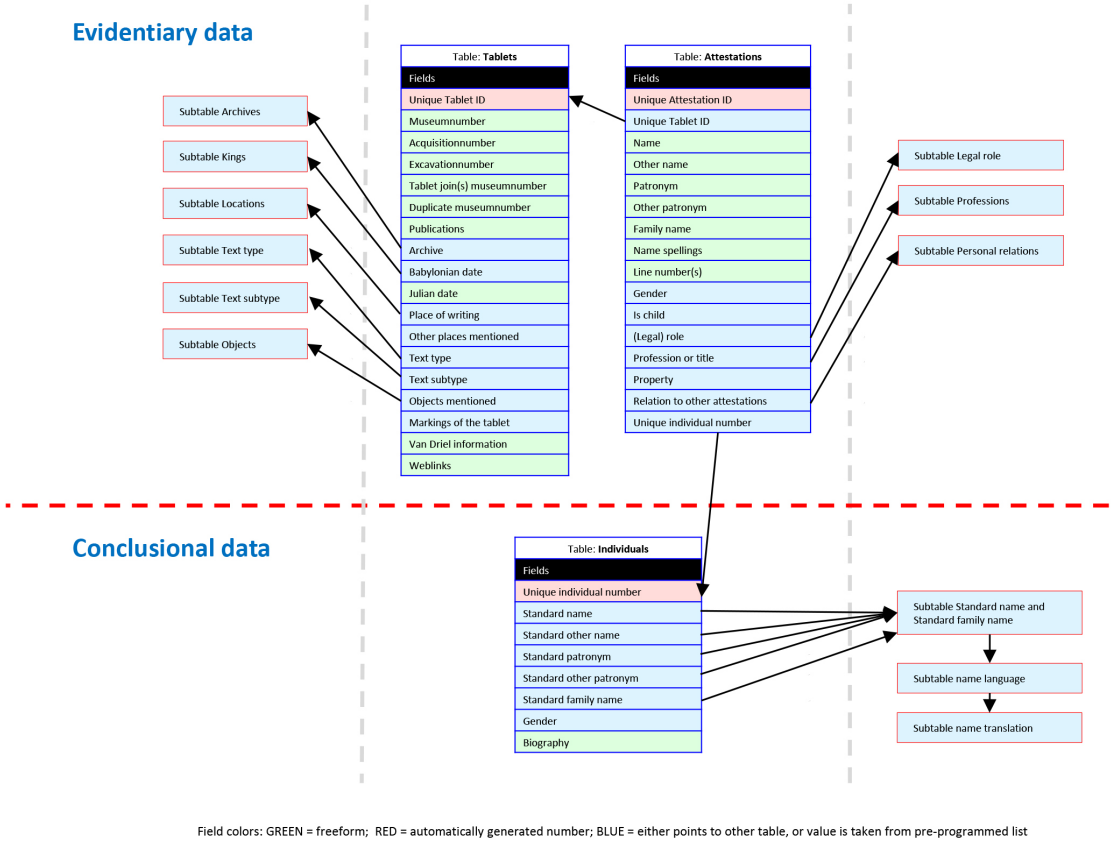


Figure 3: The database structure of Prosobab (courtesy M.M. Gross and G. Suurmeijer).

§4.3.2. The MySQL database (using PHP, Javascript and jQuery) reflects in its structure a distinction that is fundamental in prosopography, the difference between a named entity attested in a text and the historical person referenced by that attestation. In Prosobab, this distinction is maintained in the database design and in the workflow underlying the data entry (see Figure 3).

§4.3.3. In a first step, Prosobab gathers the bare facts that a given record supplies about the named entity. This is the realm of what this paper calls NRADA, to know the onomastic information (name, nickname, patronym etc.), the person's recorded activity, and information culled from the document (text genre, date and place of writing, etc.) and from the document's archival origins. Also collected at this point is metadata about the tablet as object, e.g., information about the tablet's current whereabouts (museum number, etc.), its history of excavation (excavation number, etc.) and its history of publication (text edition number etc.).

§4.3.4. At this first level of data processing, Prosobab presents attestations and makes no assumptions about the historical persons referenced in the texts. A name attestation in a source text belongs to the realm of evidence, whereas the identification of a historical human being belongs to the realm of interpretation by the researcher, who decides, through an intellectual process, whether to collapse multiple attestations of the same name entity into one person or to split them into several persons. Prosobab keeps such scholarly conclusions strictly separate from the data assembled in the first phase. Whereas the evidentiary data is relatively stable (and probably not subject to much revision in the future), the conclusional data is more sensitive to new insights and differing opinions between researchers. That is why Prosobab presents the conclusional data separately in an 'ID card' that lists all attestations that its team members have assigned to a particular ancient individual.

§4.3.5. The identification process done in Prosobab is, so far, not aided by a probabilistic tool. Collapsing attestations into a single person, or splitting them in multiple ones, is a process based on the team member's judgment of the archival, onomastic, and socio-economic information available in the texts. For the sake of transparency, Prosobab provides radio buttons that signal three levels of certainty in the process of attributing attestations to individuals. Users who do not wish to follow the authorial choices by the Prosobab team can disregard the conclusional data contained in the ID cards and work only from the attestations table.

§4.3.6. The main input of Prosobab is plain text handled via webforms and stored in a structured relational database (MySQL). Users have maximum control over how they query data, with Prosobab allowing combinations of any number of fields in customized searches. Moreover, users can extract not only their search results but all data published in Prosobab in a variety of formats (CSV, Excel, JSON). The code underlying the database is also available in open access (Stein 2022).

§4.4. Kassite Prosopographic Records

§4.4.0.1. The project Kassite Prosopographic Records (KPR) aims to provide a structured digital collection of data associated with individuals involved in administrative, economic, and social activities in Kassite Babylonia (1595-1155 BCE) in order to facilitate the reconstruction of the socio-economic organization of Babylonia during this period (Devecchi and Scarpa 2023).

§4.4.1. Formal representation of data The formal representation of the data relies on the *Factoid-based Prosopographic Ontology* (FPO).[11] The FPO revolves around the notion of factoid, intended as "what a particular source says on its own, rather than what we now believe arises out of our reading of a range of sources" (Pasin and Bradley 2015, 89).

§4.4.1.1. The KPR project employs factoids to represent relationships between two or more individuals in order to establish connections between the persons involved and the source(s) in which they appear. Three main types of relationships emerge from the records: kinship, administrative and professional. The focus on relationships allows for the structured collection of explicit data points, revealing the social context and complex networks of interactions among individuals; at the same time, it is functional both to the disambiguation among homonymous individuals and to the project's goal of reconstructing the structures of control and management of primary resources. Figure 4 illustrates an example of a factoid captur-

[11] Pasin and Bradley 2015; the scheme is available at [https://github.com/johnBradley501/FPO]. Accessed: 16 October 2023.

ing the kinship relationship between two individuals.

§4.4.1.2. In order to account for the complexity and peculiarities of the Kassite epigraphic record, specific classes and properties have been added to FPO's original ontological scheme, thus yielding the Kassite FPO (or KFPO). For instance, cuneiform texts and seals have been introduced as specific types of sources and new properties have been created to fit, e.g., the representation of individuals in the Kassite world, where people can be described according to culture-specific terms for age and gender.

§4.4.1.3. Besides the extended version of FPO for the prosopographic domain, the project uses the following vocabularies: the Friend Of A Friend (FOAF) ontology to describe persons, their activities and their relations to other people; the Bibliographic Ontology (BIBO) to describe bibliographic sources; the Dublin Core (DC) to describe structural aspects such as data curation.

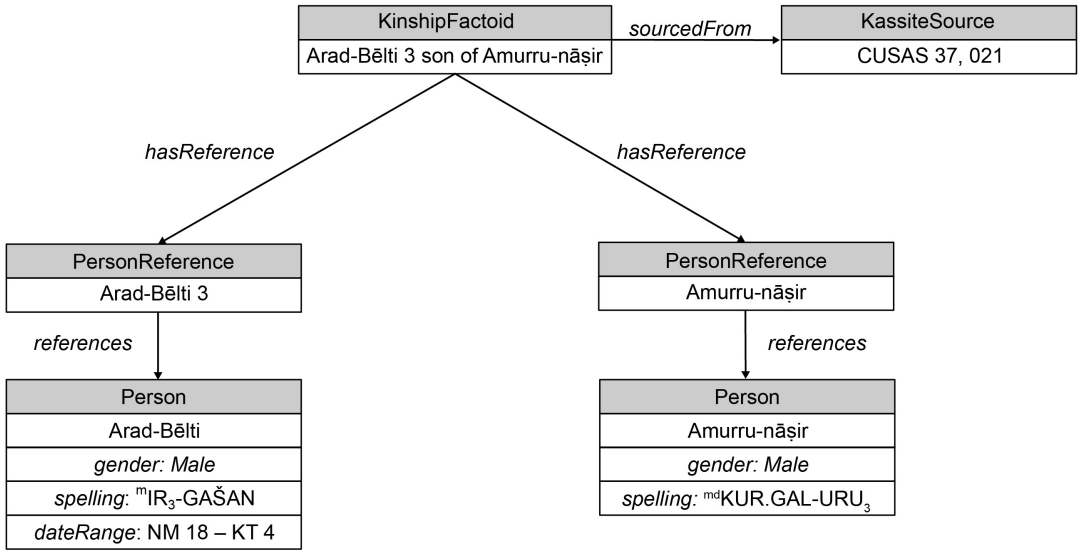


Figure 4: A factoid depiction of the kinship relationship between two individuals.

§4.4.2. Structure of the database: from data collection to extraction and processing The data collection is carried out by using an installation of the Omeka S(emantic) platform, a relational database which allows collecting, publishing and sharing data with Linked Open Data.

§4.4.2.1. The database is structured around four main types of records: person, relationship, source (cuneiform texts and seals), and bibliographic reference. A template defines the metadata scheme of each type of record by combining terms from the RDF vocabularies uploaded to the platform, while consistent data-entry is ensured through the extensive use of drop-down menus with standardized options. Records can be interconnected, becoming hubs for all related items in the database.

§4.4.2.2. Each item within the database possesses a unique identifier and a stable URL. Figure 5 illustrates the basic structure of a person record.

§4.4.2.3. During data collection, records are accessible solely through the Omeka S dashboard and are published on the front-end website upon validation. Once a record is made public, users can retrieve public data from the database using Omeka's built-in REST APIs in a JSON-LD format. A query system is being developed to effectively extract and evaluate the collected data, allowing for quantitative and qualitative analysis and the use of visualization techniques, including

those utilizing Social Network Analysis, to complement data collection and prosopographic analysis.

§4.4.2.4. In conclusion, by employing ontologies and a factoid-based prosopographic approach, the KPR database allows researchers to analyze complex networks of relationships and investigate the underlying social and economic structures. Preliminary results validate the methodological choices and indicate new avenues for investigation, showcasing the potential of digital prosopography combined with a multi-methodological approach in the study of ancient societies.

Record title dcterms:title	The record title corresponds to the actor's personal name; progressive numbers are assigned to distinguish among namesakes	○
Name kfpo:hasNameInSourceAs	The normalized version of the actor's personal name	○
Spelling(s) of the name kfpo:spellingOfTheName	Transliteration in latin characters of the actor's name, variants included	●
Gender kfpo:gender	The actor's gender, based on the personal determinative that precedes the name in the sources	◆○
Sex-age designation kfpo:sexAge	The sex-age terminology related to the actor, if attested in the sources	◆○
Patronymic kfpo:hasPatronym	The actor's paternal lineage	
Date range kfpo:dateRange	The time period encompassing the actor's activities, determined by the earliest and latest available sources	
Profession(s) / Title(s) kfpo:titleInCuneiform	The actor's professional and/or official titles	◆○
Role(s) kfpo:hasRoleName	The role(s) played by the actor in a given set of activities	◆○
Associated seal(s) kfpo:hasSealSourceId	Cylinder seals used and/or owned by the actor → Seal record	★○
Ethnonym kfpo:ethnonym	'Ethnic' group, if attested	◆○
Location(s) kfpo:hasLocationName	Geographical names linked to the actor's activities	◆○
Actor's Bio kfpo:bio	A concise summary of the actor's life and background, encompassing the available evidence and information extracted from the sources	●
Kinship relationship(s) kfpo:hasKinshipReference	List of the kinship relationship records involving the actor; such records are organized by kin dyads, i.e., son-father, daughter-father, etc. → Kinship relationship record	★○
Administrative relationship(s) kfpo:hasAdministrativeReference	List of the administrative relationship records involving the actor; such records are organized according to types of administrative interactions such as e.g., 'receives from', 'gives to', etc. → Administrative relationship record(s)	★○
Professional relationship(s) kfpo:hasProfessionalReference	List of the professional relationship records involving the actor → Professional relationship record(s)	★○
Occurs in kfpo:sourcedFrom	List of the sources where the actor is attested, arranged in alphabetical order → Source record(s)	★○
Record reliability ecrm:P40_observed_dimension	The reliability's degree of evidence interpretation	◆
Bibliography kfpo:bibliography	A collection of references essential for comprehending the actor's social standing and context → Bibliographic record(s)	★
Contributor(s) dcterms:contributor	List of the record's author(s)	
Last edited dcterms:modified	Timestamp indicating the most recent significant edit of the record	

★ = linked to another record(s) in the database (→ indicates the type of associated record); ◆ = value(s) selected from a dropdown menu with standardized options; ● = rich text (HTML input); ○ = available as a search parameter within the advanced query panel

Figure 5: Structure of the Person Record in KFPO.

§4.5. The Old Babylonian Archive of Nūr-Šamaš Represented by the NRADA Ontology[12]

§4.5.0.1. The archive of Nūr-Šamaš originated from illegal excavation(s) and was offered to the Iraq Museum in the 1930s.[13] It is composed of 121 documents, of which 116 are loan contracts in which Nūr-Šamaš serves as creditor. In the following, only these 116 documents are considered.

§4.5.0.2. The stable document structure of a loan contract favours considerably the process of organizing information with the view of performing prosopographic studies and Social Network Analysis. In the following paragraphs, information from each document is organized according to the NRADA ontology (see §2).

§4.5.1. Names (NRADA)

§4.5.1.1. Personal names occur in the documents of the archive of Nūr-Šamaš either alone or accompanied by attributes, like kinship relations and occupation, as exemplified in the following:

- A personal name followed by an occupation, such as 'Sîn-nāṣir, gardener' (Document 9 (IM 43827), *sin-na-ṣir* NU-^{geš}KIRI$_6$).
- A personal name followed by a kinship relation and the name of the relative, such as Nūr-Šamaš, son of Kūbiya (Document 1 (IM 43553) and several others, *nu-ur$_2$*-^{d}UTU DUMU *ku-bi-ia*), or Mašum, son of Zanātim (Document 1 (IM 43553), ^{m}*ma-šum* DUMU *za-na-tim*).
- A personal name followed by a kinship relation in reference to a previous name, such as Lamassātum, his wife (Document 7 (IM 43599), ^{m}*am-ti-la$^{!}$-ba u$_3$ la-ma-sa$_3$-tum* DAM-A-NI).

§4.5.2. Names are associated with roles (NRADA)

§4.5.2.1. In the documents considered here, the name Nūr-Šamaš is always associated with the role of creditor. When a name refers to someone who contracts a loan from Nūr-Šamaš, then this name is associated with the role of debtor. Finally, several names appear associated with the role of witness.

§4.5.3 Names are associated with roles played (by a person) in an activity (NRADA)

§4.5.3.1. As these documents are loan contracts, all the names are associated with roles played in the same kind of activity, namely, loan. A loan may have attributes, for instance, loan of barley and loan of silver.

§4.5.4. Names are associated with roles played (by a person) in an activity described in a document (NRADA)

§4.5.4.1. Names, roles, activities, and documents are interconnected:

- The name Mašum, with the attribute son of Zanātim, is associated with the role of debtor played (by someone with this name) in a loan of silver described in Document 2 (IM 43895).

§4.5.5. Names are associated with roles played (by a person) in an activity described in a document that belongs to an archive (NRADA)

§4.5.5.1. To avoid the risk of merging identical names appearing in different archives, it is essential to keep each NRAD description connected to its corresponding Archive:

- The name Munānum is associated with the role of witness played (by someone with this name) in a loan of silver in Document 1 (IM 43553) of the archive of Nūr-Šamaš.

§5. Discussion

Previous sections focus on practicalities and best practices of creating prosopographical data and working with it. Here, at the end of this white paper, our aim is rather to discuss prosopographical research in a larger context, to consider the questions of what prosopographical research means, or could mean for research in general. §5.1 below tackles this question from the point of view of social structure and political action, outlining how the work of Lawrence Stone can be relevant for the study of ancient Near Eastern prosopographies. §5.2 focuses on prosopographical work for the study of "identity" in light of Stone's work. The final section, §5.3, presents a summary and some concluding thoughts regarding the white paper.

[12] Adapted from Gonçalves 2023.

[13] Dijk 1966 copies and Reschid 1965 transliterations are available at the CDLI.

§5.1. Prosopography and "Noise": Historical Possibilities and Problems

§5.1.1. What are the uses of prosopography? What are its objects of study, and what are the prospects for its use in historical studies of ancient Mesopotamia? Let us be didactic about this. In his influential 1971 essay, the English historian Lawrence Stone identified two kinds of scholars who pursued work in a prosopographical vein: those of an "elitist school" who focused on the lives of the Great and the Good, and a "more statistically-minded mass school" with social history commitments to the principle that history "cannot usefully be defined exclusively in terms of power and wealth." These approaches are both about a century old by now (although robust applications of the method only emerged by the 1950s and 1960s) and have remained largely Anglophone. Ever the structure-maker, Stone also delineated two basic kinds of historical problems addressed through prosopography: the interests of "the roots of political action" on the one hand, and social structures and mobility (SSM) on the other (Stone 1971, 46-48).

§5.1.2. Let us begin with social structure, because "political action" is more rarely explored in our literature and requires a little more explanation.[14] In fact, Stone teased out three separate strands of historical problems related to social structure/mobility. The first is the analysis of the roles of titleholders and occupational groups and changes in these roles and groups over time (SSM1). The second intersects with the first in a more complex way: the study of social mobility, whether by kinship, ethnicity, or geographic origin, into and across the ranks of position-holders—the recruitment of cadets and clients into existing administrative or commercial structures and the changes these processes bring (SSM2). The third has the even loftier goal of relating such changes to larger political, religious, or social trends (SSM3).

§5.1.3. So far, so good. Broadly speaking, the first kind of approach (SSM1) might seem most familiar to Assyriologists working with personal name databases, because it conforms so well with the kinds of work necessary to carry out archival analyses. In addition to the literature cited in the Introduction (§1.5 State of the Art), other large-corpus based studies which partly or largely rely on prosopographical or social-network approaches include Tenney 2011 on Kassite period Nippur, Charpin 1986 on Old Babylonian Ur, Goddeeris 2002 on northern Babylonia in the Old Babylonian period, Boer 2014 on Old Babylonian Amorite names, Pomponio 1983 on Early Dynastic Fara, the University of Florence website for Ebla, Jordan 1971 on Ur III Umma, Beaulieu 2011 on Judeans in Babylonia, and the (unfortunately now-defunct) "Old Assyrian Prosopography Database" compiled by Thomas Hertel (see A. G. Anderson 2017 and Kloekhorst 2019).[15] And then there is, of course, the immersive achievement of the Prosopography of the Neo-Assyrian Empire series, standing just shy of 2,000 pages long.[16] Prosopographies help not only in establishing the roles and relations of individuals and groups within bounded corpora, but in resolving nagging problems of documentary incompleteness: reading broken names, titles, and toponyms, estimating missing dates, establishing provenience, etc. This kind of work is a prerequisite for explaining any archive as part of a working economic or administrative system.

§5.1.4. The second and third kinds of project (SSM2 and SSM3) often seem out of reach for want of the kinds, amount, or temporal range of evidence necessary to make claims about politics or society. Raija Mattila's *The King's Magnates* (SAAS XI, 2000) and Eleanor Robson's *Ancient Knowledge Networks* (Robson 2019), both relying on prosopographic information, are successful examples of this kind of project, but they can only deal with the limited numbers of people who are relatively well-documented.[17] For larger and less well known

[14] But see Jursa 2021 on a politics ("possibly") of prosopography.

[15] For a contrasting approach, see Galil 2007 demographic study of "lower stratum families" in the Neo-Assyrian period without attention to individual identities, and the many meticulously detailed works of Ran Zadok on various onomastica, too numerous to catalog here.

[16] Prosopography of the Neo-Assyrian Empire, edited by Karen Radner and Heather Baker, volumes published 1998-2016.

[17] These should not be confused with studies relying on onomastic forms for historical argument, which run the risk of mistaking the linguistic bases of personal names as indications of cultural change. Especially Amorite names in the Ur III and Old Babylonian periods have been adduced in this manner (see the critique of Homsher and Cradic 2017, with literature).

populations, the quantities of data which would make studies like these more possible are precisely what ever-larger and more powerful prosopographical tools might deliver.

§5.1.5. And so, how then "political life"? Clearly this alludes to politics with a little "p," not a big one. Even so, it can be hard to imagine the transformation of masses of distilled data into findings on society-wide political conflict, cooperation, and change. Few have dared to approach such a work;[18] dedicated work on an open-ended project of this nature would require a control of sources at large scale and an ability to interpret sociological trends at successive levels. But more important are the questions: Do we expect that defining groups of elite power-holders will show us the framework of political society? Or can we look for some wider population of stakeholders beyond these in-groups?

§5.1.6. Let us use a specific example to illustrate the scale of the problem. A Database used by Seth Richardson records about 17,500 individual attestations of people appearing in texts dating or datable to the reigns of Ammiditana, Ammiṣaduqa, and Samsuditana of Babylon, a period of roughly eighty years. One of the virtues of this database is that it includes attestations of every person mentioned in these documents—not only well-known people like Utul-Ištar *abi ṣābim*, but every otherwise unknown Dadaya, Ibbitum, and Pirḫum along the way. Of these 17,500 attestations, only 5,780 document a person mentioned in at least one other text. This leaves 11,720 attestations (67%) as a person who is possibly, probably, or certainly not mentioned in any other text; and even among the mentioned-more-than-once attestations, a very large majority of who remains are only mentioned in two documents. This ratio of poorly known to well-known people is very high. Yet we suspect it is also very typical of most corpora, the paradigm rather than the exception.

§5.1.7. Like any other technology, prosopography is not a value-neutral tool; it invites its own questions. And this question has been hiding in plain sight; prosopography only makes it visible to us. So, what is one to do with these poorly attested people? From a micro-historical perspective, the prospect of trying to animate any meaningful information from single mentions seems wildly uninviting. But from a macro-historical point of view, it seems urgently necessary to account for their superabundance. What can we say about economic and administrative systems which primarily document the names of people who are not officers, titleholders, merchants, or landowners with large central archives? What rich stories can be told about those who only intermittently and not systematically come into contact with the written record? What is the purpose of systems documenting their names without seeming interest or ability to connect or integrate them as meaningful reference points? If there is a political question inside of the prosopography project, it is related to not only distinguishing signal from noise—as all of Stone's approaches want—but the meaning of the noise itself.

§5.2. Prosopography and Identity: Possibilities and Problems

§5.2.1. This section presents two short case studies. Both are related to Stone's first approach, the analysis of the roles of titleholders and occupational groups and changes in these roles and groups over time (SSM1). First, we focus on the very well attested queen Naqi'a, mother of King Esarhaddon, followed by an analysis of an interesting woman who is only known from one text but whose connections are extensive. Both cases highlight the potential that prosopographical work can bring to this kind of analysis, offering an opportunity to enrich qualitative research with quantitative perspective.

§5.2.2. As space is limited, we will not dwell on the research relating to the study of identities. Instead, we refer here only to the classic and much used definition by Henri Tajfel, that social identity is "that part of an individual's self-concept which derives from his knowledge of his membership of a social group (or groups) together with the value and emotional significance attached to that membership" (Tajfel 1978, 63). Self-understanding of an individual is difficult to reach in our ancient sources, but we find this definition useful in a modified way: it directs our efforts to attempting to identify memberships in social groups that could have been significant for the individual.

§5.2.3. Researching ancient identities based on prosopographical material offers possibilities to study both identities of individuals and the identities of social groups. A successful analysis of an in-

[18] Again, see Jursa's aptly-titled "Diplomatics, Prosopography, and Possibly Politics" (Jursa 2021 for a sketch of just such a possible project.

dividual's identity can be carried out by, for example, tracing the life and social connections of a single well-attested individual. At the same time, particularly Social Network Analysis offers possibilities for quantitative analysis of identities. In this section, we will next present two very brief case studies to highlight possibilities and limitations of both quantitative and qualitative approaches to the study of ancient identities, when identities are understood as potentially significant memberships in social groups.

§5.2.4. We will start with a case study on an individual's identity. Queen Naqi'a is the best attested woman in the Neo-Assyrian empire. A careful study of the sources shows that she is attested in circa forty documents (Svärd 2015, 177-223). Thus, it is quite possible to discuss, or at least speculate on her identities as a woman, member of a social elite, and member of a language community. As modern gender studies point out, gender cannot be studied in isolation, as a person's gender identity is much influenced by other factors, such as class, age, or linguistic identity (Svärd forthcoming). Obvious building blocks of Naqi'a's identity were her gender and position as the queen. As a woman and a queen, her documented activities point to the importance of her role for royal ideology, as an integral part of the project of building the Assyrian monarchy and her dynasty. In the texts, her activities tend to mirror the activities of the king, rather than only other elite women (Svärd 2015).

§5.2.5. Her Aramaic name, Naqi'a ("Pure"), which is paired with its Akkadian translation Zakūtu, is alone not an indication of linguistic identity (let alone "ethnic" identity) but at the same time, her use of a double name is hard to dismiss altogether.[19] Dedications using both names come from the same time period (reign of Esarhaddon), all are made for Esarhaddon and for her own life, and all are dedications to goddesses. Two of the dedications are even on two sides of the same clay tablet (RINAP 4 2005 and 2006) with different names, which strongly suggests that both names were in active use at the same time. If there was a particular reason to use one or the other in particular contexts, we cannot see it. For Naqi'a, one of the names of course might have been more personal. It is possible that the "primary" name would be Naqi'a, as that name appears slightly more often and also in three text types (inscription, dedications, oracular queries) whereas Zakūtu appears in two text types (dedications, treaty). As Akkadian can be considered the dominant language in the Assyrian court, it seems that the use of the Aramaic version of her name was a deviation from—an exception to—that norm. Exceptions are usually there for a reason, so very tentatively we suggest that Aramaic language might have been of some importance to Naqi'a, or else why not use Akkadian Zakūtu?

§5.2.6. Studying Naqi'a can gain further depth by examining her connections to other people in a network (see Figures 6 and 7). Figure 6 shows connections between Naqi'a and other people in the network, altogether eight persons (nodes) and twenty connections (edges). However, Figure 7 demonstrates the dramatic increase of numbers when one zooms out to the connections of the people who are connected to Naqi'a; 1102 nodes and 6157 edges.

[19] The name Naqi'a is attested in one short inscription (RINAP 4 2009) and two dedications, one to Bēlet-Ninua in Nineveh (RINAP 4 2005) and one to Bēlet-Bābili, presumably in Babylon (RINAP 4 2008). The name is also attested in two oracular queries (SAA 4 151 and SAA 4 190). The name Zakūtu is attested in a dedication to Mullissu in Assur (RINAP 4 2006) and to an unknown deity (RINAP 4 2007) Most famously, she is referred to with the name Zakūtu in the treaty relating to Assurbanipal's ascension to the throne, in SAA 2 8. See Svärd 2015, 177-223 (Appendix 1) for more details on texts referring to Naqi'a.

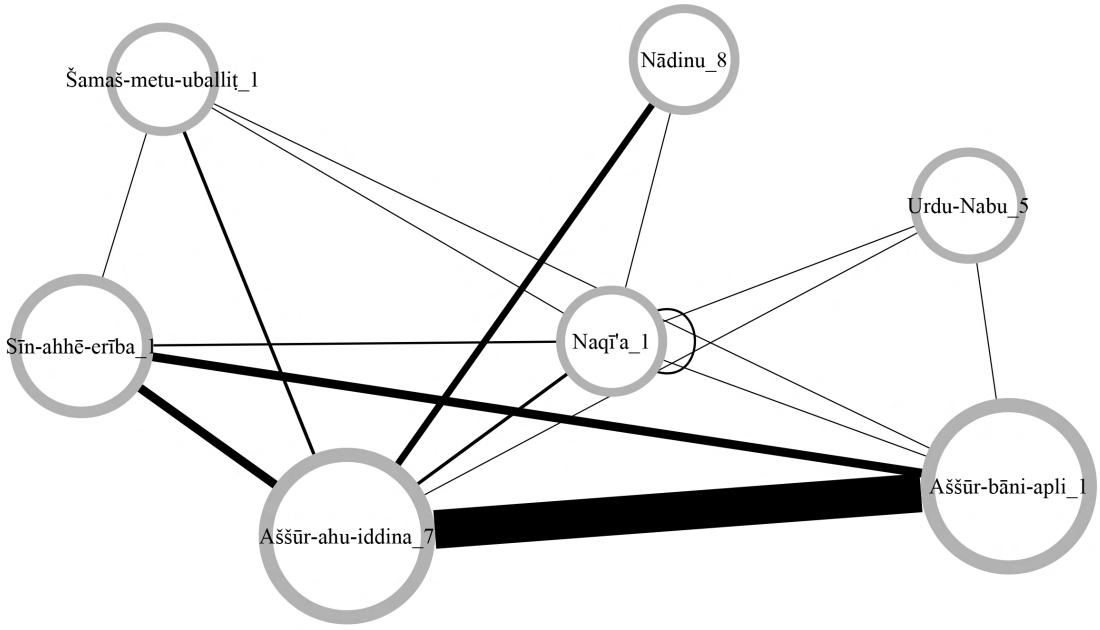


Figure 6: Ego network of Naqi'a, first degree (based on Jauhiainen & Alstola 2022a, 2022b, one mode co-occurrences network, Naqi'a and Zakūtu nodes combined).

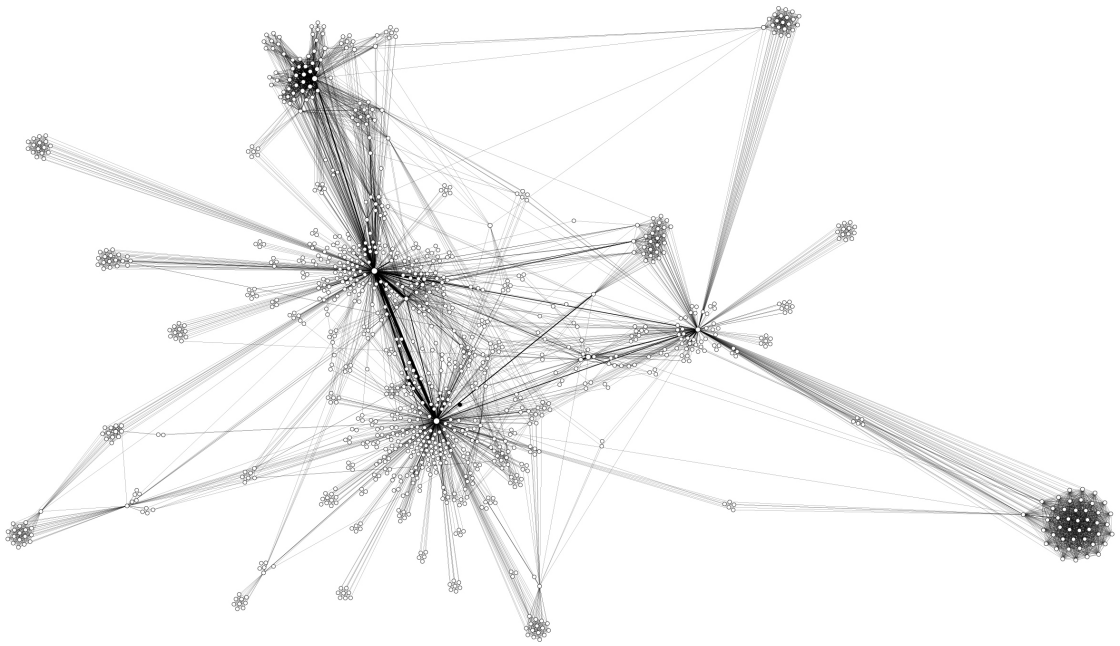


Figure 7: Ego network of Naqi'a, second degree (based on Jauhiainen and Alstola 2022a, 2022b, one mode co-occurrences network, Naqi'a and Zakūtu nodes combined, Naqi'a node colored black).

§5.2.7. Based on qualitative research on Naqi'a, one can understand her role and power in court, but Figure 7 shows that the people she is connected with are, in turn, connected to many other people, thus demonstrating her reach in the prosopographical network and giving another type of view, a bird's eye view, of her life and relations. The network highlights her role as a powerful individual in the Neo-Assyrian empire. Her own direct connections are not extensive, as her name appears relatively rarely in the texts, but in the second-degree network they extend to encompass most of the Neo-Assyrian elite. Despite the intriguing use of both the Akkadian (Zakūtu) and Aramaic (Naqi'a) forms of her name, her connections are not focused on other people with Aramaic names, or on other women. Her connections (and extended connections) in the network support the conclusion that her identity was less dependent on her belonging to a gender group or linguistic group but related first and foremost to her high social status as a member of the elite.

§5.2.8. With Naqi'a we started with the individual and then expanded to the extensive network of people she was embedded in, adding a quantitative approach. Another option is to start research from a quantitative perspective, from a bird's eye view. This kind of approach focuses on large groups of people and their social group identities. The main issues here are methodological – how to select parameters, how to quantify connections between individuals and most importantly, how to best interpret numerical results. While there are many potentially valid definitions for "elite" and "Neo-Assyrian elite," the kind of bird's eye view offered in Bennett, Tambs, and Lindén 2024 (based on Jauhiainen and Alstola 2022b, Jauhiainen and Alstola 2022a) is a useful additional viewpoint to research. In their work, a network method called "weighted k-core centrality" has proven useful to identify elite groups within a co-attestation network. The network is built from co-attestations in correspondence dated to the reign of Sargon II (721-705 BCE) and the results align with more traditional Assyriological research regarding elite individuals, indicating that the method is potentially useful for other co-attestation networks as well. Such quantitative approaches need to be used in tandem with traditional tools of a historian (such as close reading) but together they can enrich our view of the past and make prosopographic research even more relevant for our field.

§5.2.9. The second case study focuses on a less well-known person, who is nonetheless documented in an interesting position in the letter that she writes. Sāraia writes to the palace scribe regarding seven servants of the governor of Bit-Naialu who are to be handed over to the house of Marduk-erība (SAA 16 49). She writes that seven people have come to her. Their background is not totally clear as she described them as: "There are seven persons, servants of my lord, whom the governor of Bet-nayalani took and gave to Marduk-erība." They complain that their new lord Marduk-erība does not allow them to enter, presumably not allowing them to enter the palace or to gain an audience with the palace scribe. Luukko suggests that Marduk-erība himself was a palace scribe ca. 668–650 (Luukko 2007, 253) but that this letter was written at an earlier date, when Marduk-erība was the deputy of palace scribe (Luukko 2007, 246). In any case, the request of these seven individuals is for Sāraia to intervene – "Speak in the presence of the palace scribe" – which suggests that her role was that of an important intermediary. While perhaps not a member of the elite, she nonetheless had some kind of position that would let her access an important official, the palace scribe.[20] Nothing more is known about Sāraia, but from prosopographical perspective, her network is extensive, through her connection to the many individuals mentioned in the text, particularly the palace scribe. Individuals acting as intermediaries and bridges can be identified from quantitative data and their roles in prosopographical networks traced, potentially indicating their memberships in social groups.

§5.3. Summary and conclusions

§5.3.1. Section 1 provided some departure points for our work, outlining first the history of prosopographical research in Assyriology (§1.1), introducing the development of NRADA principles, namely the focus on "Name in a Role in an Activity in a Document in an Archive" for prosopographical work (§ 1.2, §1.3 and §1.4) and exploring the current state of art (§1.5). With this white paper, the Cuneiform Prosopography Group aimed to outline conceptual models and methods that we have in common with each other, despite different requirements of different corpora that we work with. We hope this white paper offers in-

[20] Text also discussed in Svärd 2015, 163-164.

sights into the current state of cuneiform prosopographic research and encourages on-going engagement with computational as well as disciplinary experts.

§5.3.2. §2 expanded and explicated the NRADA principles, describing a prosopography ontology. For all the NRADA components, several practical best practices are suggested (§2.1 Name; §2.2. Role, §2.3 Activity, §2.4. Document, and §2.5 Archive) in order to provide the reader with concrete proposals on how to "do" prosopography. §3 addresses the important turn in prosopographical studies: increasing use of digital tools. BPS was one of the first, but definitely not the last project to develop digital methods in Assyriological prosopographical work. Section 3 introduces the basic concepts and tools needed for doing digital prosopographical work in Assyriology and gives an overview of current relevant digital tools and resources. Furthermore, it encourages researchers to follow the so-called FAIR principles (although the term is not explicitly used in Section 3) and improve the Findability, Accessibility, Interoperability, and Reuse of digital assets (https://www.go-fair.org/) in the field of Assyriology.

§5.3.3. The main aim of §4 was to present concrete case studies of prosopographical work. We believe that sharing these experiences will provide various models for others. The usefulness of the NRADA scheme comes through in all case studies, although they present diverse projects. The case studies provide useful concrete examples of how to apply NRADA principles and how to create prosopographies. Most of the case studies have a digital component. The first case study discussed turning the prosopography of the Neo-Assyrian empire into a social network (§4.1), the second focuses on Old Assyrian prosopography (§4.2). The third (§4.3. Prosobab) and fourth (§4.4. Kassite Prosopographic Records) both highlight the importance of keeping separate the data that is encoded in the ancient text itself and the conclusions that modern researchers make based on this data. The final case study (§4.5 the Old Babylonian archive of Nūr-Šamaš) presents a concrete case of how NRADA can be applied in an Old Babylonian archive.

§5.3.4. §5 so far has discussed prosopographical research in a larger context, on the one hand focusing on social structure and political action (§5.1), and on the other hand focusing on prosopographical work for the study of "identity" (§5.2), both with qualitative and quantitative research methods. To conclude here, our main results relate to the common ground that we as a group have explored. We found a consensus in our meetings on three major points: 1) the NRADA features are a fruitful way of approaching prosopographical research in the field of ancient Near Eastern studies 2) as demonstrated in §4, the NRADA need to be considered in light of peculiarities of each individual prosopographical project and 3) when dealing with the very large amounts of individuals, the digital methods play a crucial role in helping researchers construct historical knowledge based on prosopographies.

§6. Acknowledgments

§6.1. Participants in the Prosopography Working Group gratefully acknowledge the support of the following persons and institutions in their research:

§6.1.1. Caro Liikanen, a BA student at the University of Helsinki, harmonized many of the inconsistencies in formatting and bibliographic references in the first complete draft of this paper. Their work significantly contributed to bringing this work to press.

§6.1.2. Carlos Gonçalves: The São Paulo Research Foundation (Fundação de Amparo à Pesquisa do Estado de São Paulo — FAPESP — Grant 2021/01363-6)

§6.1.3. Elena Devecchi and Erica Scarpa: the database Kassite Prosopographic Records (KPR) was developed within the framework of the projects "Writing Uses: Transmission of Knowledge, Administrative Practices and Political Control in Anatolian and Syro-Anatolian Polities in the 2nd and 1st Millennium BCE" (PRIN 2017) and "Networks of Power: Institutional Hierarchies and State Management in Late Bronze Age Western Asia (NePo)" (PRIN 2020), funded by the Italian Ministry of Research and directed by Stefano de Martino (University of Turin), and with funds of the Department of Historical Studies of the University of Turin.

§6.1.4. Tero Alstola, Heidi Jauhiainen, and Saana Svärd: We gratefully acknowledge the funding by the Research Council of Finland, particularly their funding for the Centre of Excellence in Ancient Near Eastern Empires (decision numbers 298647, 312051, 312052, 312053, 330727, 336673, 336674, and 336675), as well as funding from the University of Helsinki and Kone Foundation.

§6.1.5. Laurie E. Pearce, Niek Veldhuis: Berkeley Prosopography Services received material support from the University of California Social Science Matrix (2014-2016) and from the National Endowment for the Humanities (2010-2018), and developmental support from the University of California office of Research IT (2009-2018).

§6.1.6. Caroline Waerzeggers and Melanie Groß: Prosobab was developed with funding of the European Research Council (project no. P682241); it is hosted and supported by Leiden University.

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