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Myaamiaataweenki eekincikoonihkiinki eeyoonki aapisaataweenki: A Miami Language Digital Tool for Language Reclamation

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In 1988, a young graduate student at the University of California, Berkeley began searching for materials on a little-known Algonquian language called Miami, which had ceased to be spoken sometime in the mid-twentieth century. Prompted by curiosity to describe this little-known language, the search uncovered two and a half centuries of documentation. This archival record would serve as the basis for the grammatical reconstruction of what is known today as the Miami-Illinois language, a central Algonquian language of the southern Great Lakes region. These materials are crucial not only to the reconstruction of Miami-Illinois, but also for the growing interests of Myaamia (Miami) people to reclaim their language and cultural heritage. The next twenty years proved to be a struggle in locating, duplicating, organizing and building a physical corpus of data for linguistic analysis and use in community revitalization. Language reconstruction from documentation requires tools for archival interaction and access that linguistically-based software and database applications lacked at the time. This prompted Myaamia researchers and language educators to seek out support for the construction of a digital archival database that met the needs of both tribal linguists and community culture and language revitalizationists. The first version of the Miami-Illinois Digital Archive (MIDA) became a reality in 2012 after support from the National Endowment for the Humanities (NEH) was provided to Miami University's Myaamia Center to develop this unique research tool. This paper describes the challenges of working with digitized archival materials and how MIDA has filled the software tool gap between archives, linguists and revitalizationists. The Miami-Illinois Digital Archive can be found at <http://www.ilaatawaakani.org>.

1. Introduction The Myaamiaki (Miami People) are an aboriginal people historically located around the southern Great Lakes region of North America with primary village locations along the Wabash River Valley in what is today north-central Indiana. The language spoken by this group is referred to as *myaamiaataweenki* (Miami Language). The Myaamiaki spoke a dialect of the same language spoken by the various subtribes of the Illinois (Inoka), in particular the Peoria and the Kaskaskia. Today, linguists group together these different dialects as the Miami-Illinois language (Costa 2003:2).

The Myaamiaki signed thirteen treaties that were ratified with the United States Federal Government between the years of 1795 and 1867 (Ironstrack 2009). The 1840 treaty included provisions for the removal of the Myaamiaki from their traditional land base in Indiana. The Miami Tribe, defined by these treaties as a legal entity, was militarily forced in October 1846 to move to a reservation in the unorganized territory, which later became Kansas. Several families were exempt from that removal and remained in the homelands of Indiana as absentee members of the tribal nation for a period of time. In 1937 these Indiana descendants organized themselves separately under a State 501(c)(3) non-profit organization known today as the Miami Nation of Indians of the State of Indiana, Inc.

From 1846 to 1873 the Miami Nation remained on its new reservation lands in Kansas until a second removal to Indian Territory (what would become the state of Oklahoma in 1907) occurred between the years of 1873 and 1884, again leaving some individuals and families behind in Kansas. The fragmentation of the Myaamiaki through forced removal, the government's allotment of tribal lands, and the boarding school era all hindered the ability of the Myaamiaki to maintain communally-based activities, including language use. By the early twentieth century, *myaamiaataweenki* fell into disuse, and by the mid-twentieth century few if any fluent speakers could be found. It should also be noted that the descendants of what have historically been called the Illinois people are today represented by the Peoria Tribe of Indians of Oklahoma. The Peoria dialect of the Miami-Illinois language appears to have lost its last fluent speakers at roughly the same time as the Myaamia dialect, in the mid 1900s.

During the late 1980s, graduate student David J. Costa began inquiring about *myaamiaataweenki* as a potential dissertation topic in linguistics at the University of California at Berkeley. Costa's initial inquiries showed that little was known about the language and that few if any speakers were still living. However, prompted by curiosity to describe this unknown Algonquian language, Costa's search would uncover two and a half centuries of documentation, which became the basis for his doctoral dissertation (Costa 2003).

By the mid 1990s the Miami Tribe of Oklahoma became interested in supporting community efforts towards language revitalization as a result of several families initiating home learning efforts. This was a significant step, since for several years the language had been labeled 'extinct' or 'dead', and it took a great deal of work to reverse this unfortunate perception among tribal citizens. The first tribally-supported community effort came in 1997 with an unpublished Myaamia phrasebook, the re-

sult of an Administration for Native American (ANA) Language grant awarded to the Miami Tribe of Oklahoma (Miami Tribe of Oklahoma 1997). During this period of time Costa continued his work reconstructing the grammar, phonology and lexicon of Miami-Illinois, leading to his completed dissertation in 1994 (Costa 2003).

The Miami Tribe and Miami University, located at Oxford, Ohio, have shared a long-standing relationship that dates back to the 1970s. Miami Tribe students began attending Miami University as a result of a scholarship program created in 1991 called the Miami Indian Heritage Award (Burke 2009). Through this mutually supportive relationship, tribal and university leaders sensed an ideal opportunity to advance much-needed language research and development. In the fall of 2000, the Miami Tribe of Oklahoma approached their allies at Miami University to develop a language research project. In 2001, both the Tribe and University agreed to support the development of the Myaamia Project, a teaching and research unit within the University with emphasis on language research and cultural education. The project has evolved and expanded over time to become the Miami Tribe of Oklahoma's 'research arm', and now collaborates with multiple departments and programs on campus, including the Department of Computer Science and Software Engineering, our collaborator on MIDA. In recognition of this growth, the Myaamia Project transitioned into the Myaamia Center within the University (Baldwin 2014).

This background and history is all significant in understanding the evolutionary process that has led to current efforts to digitize, analyze, store and make accessible online the vast linguistic archives available for the myaamiaataweenki. Relationship building is always at the core of our work, including any research or technologies we develop.

2. The Myaamiaataweenki sources Miami-Illinois may be unique among native North American languages for not having been natively spoken for at least half a century, yet still having extremely extensive written documentation spanning almost 250 years, most of which exists as unpublished manuscripts in archives and libraries. Purely in terms of written records, Miami-Illinois is one of the best documented Algonquian languages, far more extensively recorded than many other Native American languages which still have speakers.

The earliest documentation of Miami-Illinois consists of three Illinois dictionary manuscripts compiled by French Jesuit missionaries from the 1690s through the 1720s (LeBoullenger nd. [circa 1725]; Largillier nd. [circa 1700]; Pinet nd. [circa 1702]). Taken together, these manuscripts contain tens of thousands of words, collected at a time when the language was in daily use by large, monolingual communities still living in a traditional manner.

In the early colonial period, the language was again documented in several vocabularies, some quite extensive, from the 1790s through the 1860s. Starting in the 1890s, the language received its first attention from the Bureau of American Ethnology, by the Swiss-born linguist Albert Gatschet, who recorded extensive field notes, several native texts and thousands of vocabulary cards, which reside at the National Anthropological Archives at Suitland, Maryland (Gatschet nd.). Not long after Gatschet's work,

the Miami-Illinois language was extensively documented for more than ten years by the Indianapolis lawyer and avocational linguist Jacob P. Dunn, who re-elicited much of Gatschet's data, as well as collecting several new texts and a huge amount of new vocabulary from speakers in both Indiana and Oklahoma. A small portion of Dunn's data was poorly redacted and published by linguist Carl Voegelin in the late 1930s (Voegelin 1938–40), but the bulk of Dunn's data has never been published, and remains at the Indiana State Library and the National Anthropological Archives to this day (Dunn nd.). The last substantial documentation of Miami-Illinois was undertaken by the Bureau of American Ethnology linguist Truman Michelson, who, in one week's worth of fieldwork on the Peoria dialect in Oklahoma in 1916, collected three native texts, a full schedule of kinship terms, numerous verb paradigms and a fair amount of vocabulary. Truman Michelson was the closest thing to a trained Algonquianist and linguist who ever conducted fieldwork with fluent speakers of Miami-Illinois, and so his records are quite valuable, though nowhere near as extensive as one might wish. Again, none of Michelson's notes were ever published, and they too are now preserved at the National Anthropological Archives (Michelson 1916).

From the 1930s through the early 1960s, the last generation of Miami-Illinois speakers was recorded in a handful of brief vocabularies, some recorded by linguists but most by hobbyists. The most valuable of these vocabularies was recorded by linguist Charles Hockett (1985) during two days worth of fieldwork in 1938 with Myaamia and Peoria semi-speakers living in Oklahoma (Hockett 1985). After Hockett's work, the Miami-Illinois language was documented in a scattering of small wordlists, the importance of which is greatly diminished by the lack of any kind of linguistic training by the people who collected them as well as the greatly decreased fluency of the semi-speakers and remembers who were still alive in the 1940s and thereafter. Although people with ancestral native knowledge of Miami-Illinois survived until the late 1970s in Indiana, and to a lesser extent in Oklahoma, no trained linguists worked with these people. Very unfortunately, no significant sound recordings were ever made of any speakers of Miami-Illinois.

Despite being documented for more than two centuries, all the records of Miami-Illinois are problematic, as none of the data was recorded with fully modern standards of phonetic accuracy, and no sources consistently mark all the contrastive sounds of the language. Data from the most fluent speakers tends to have been written down by the least skilled transcribers, while the more accurate later records of the language, transcribed by the first generation of trained linguists, are from a time when speakers were less fluent. Thus, even though there is a massive amount of data on Miami-Illinois, little of it was competently recorded from fluent speakers. As a result, none of the recorded corpus of Miami-Illinois data can be taken at face value, and careful philological analysis must be brought to bear on all of it.

The two most problematic phonological features in determining the correct pronunciation of Miami-Illinois words are vowel length and preaspiration of consonants. Vowel length and preaspiration are crucial features in the phonology of Miami-

Illinois, are both fully contrastive, carrying a high functional load,¹ yet they are seldom indicated in most recordings of the language. In the extensive French Jesuit records, vowel length is never marked and preaspiration is only infrequently marked; in the late-nineteenth and early-twentieth century records of the language, both length and preaspiration are marked somewhat more often, though still not dependably. There is no source on Miami-Illinois that marks both features consistently, so these contrastive phonological features must be filled in and all the data phonemicized in order to make materials usable for either linguistic or pedagogical purposes.

There are two primary methods by which phonological details can be filled in for Miami-Illinois data. One is by comparing all the varying original transcriptions for the words, and the other is by comparing the Miami-Illinois words with cognate data from its closely related sister languages. Both vowel length and preaspiration are found in essentially the same places in Miami-Illinois as in neighboring Algonquian languages such as Meskwaki, Ojibwe, Shawnee, and Kickapoo, and so comparing Miami-Illinois transcriptions to cognate words from these languages is extremely helpful in determining the true phonological shape of Miami-Illinois words.

3. Challenges in working with the sources Costa's primary means of organizing the massive amount of data needed for his dissertation analysis consisted of several large alphabetized Word documents that he created containing annotated data from all the different manuscripts. These Word documents, exceeding 1,300 pages, served as the organized data source for Costa's work for more than 25 years. Also at this time linguistic databases were being created, most notably the Summer Institute of Linguistics' (SIL) Shoebox program (Shoebox 2016). An early Shoebox database for myaamiaataweenki was constructed during the late 1980s by Myaamia Center researchers but this database was later abandoned after SIL discontinued support for the Macintosh platform. To store, translate, and analyze the extensive corpus of documentation it was obvious that a much more capable database tool was needed.

The unique challenges of working with the Miami-Illinois corpus have directly dictated the form that any database for storing the data must take. Virtually all pre-existing dictionary database programs are designed for the cataloging of phonemic data taken directly from speakers. Examples are LingSync, WeSay, Lexique Pro, Language Explorer, Online Linguistic Database, and Miromaa.² The needs of a database for Miami-Illinois are far different. In a Miami-Illinois database, one cannot simply include glossed phonemic data with no commentary, since almost none of the primary data in the language is in phonemic form. In support of the phonemicized data, one must also include the original primary data and glosses, precisely as they appear in the sources, as well as whatever additional data is deemed necessary to further support the phonemicizations and glosses. For example, it is not enough to give the

¹For example, in many verbs, the only phonological feature distinguishing the first person singular and the second person singular is vowel length: for example, compare *meenaani* 'I drink' versus *meenani* 'you drink'.

²WeSay: <https://www.lingsync.org/#/home>; Lexiquepro: lexiquepro.com; Language Explorer (FLEX): <http://fieldworks.sil.org/flex/>; Online Linguistic Database (OLD): <http://www.onlinelinguistic-database.org/>; Language Database Software Miromaa: <http://www.miromaa.org.au/>

phonemically-spelled Miami-Illinois word for ‘no, not’, *moohci*; it is also necessary to give the original forms, such as the one given in the early-eighteenth century French Jesuit sources, ⟨m8tchi⟩, as well as its translations given there, ‘seulement’ (‘only’) and ‘même’ (‘even’). Additionally, one needs to include later transcriptions of this word such as Gatschet’s ⟨mú’htchi⟩ and Truman Michelson’s ⟨mó’tci⟩, which both support the phonemic reconstruction *moohci*, as well as the fact that in all sources from the late-1700s onwards this word is translated as simply ‘not’ or ‘no’. In further support of the phonemicizations, it is often helpful to include cognates from other Algonquian languages, so one must also have a dedicated field to include related words, such as Meskwaki *mo·hči* and Shawnee *mobči* ‘even’. Essentially the entries for the individual words must include not only all the data needed to interpret the words for language instruction, but they must also include all the primary evidence gathered to support how the translations, grammatical analysis, and corrected spellings were arrived at.

4. Towards a technical solution Processing the older Jesuit-era materials proved challenging for many years. In 1999, myaamiaataweenki revivalists, who were interested in gaining access to these early sources, initiated the Illinois Project (MIDA 2016). The primary goal of this early project was simply to develop a process for systematically transcribing and translating the Jesuit era manuscripts in order to gain access to new language materials for reclamation efforts. The Illinois Project was initially overseen through the joint effort of members of the language committees of the Miami Tribe of Oklahoma and the Miami Nation of Indians of the State of Indiana, Inc., under the guidance of a ten-year compact agreement signed in 1997. This agreement was intended to create a collaborative environment for each entity to work together and provide volunteer resources for the project and other language reclamation efforts. The agreement reached its end in 2007 and was not renewed. From this point in 2007 the Myaamia Project (now the Myaamia Center) assumed the responsibility of moving the Illinois Project’s goals forward. During this time period we relied heavily on volunteer transcriptionists and project organizers as there were no funds available to support full or part-time research staff. Many hours were dedicated by volunteers over a span of several years who organized this early project and created a great deal of transcription materials that would be used in a later phase of this work. Transcription work to properly prepare and process the vast amount of early data was especially challenging. For these reasons, it became very difficult to move the project forward and so it eventually fell dormant for several years. Reflecting back on this early struggle, the challenges became clear: How do we organize, store, and retrieve massive amounts of data as needed? What would an ideal database system look like? And what functionality would be available to us that would make linguistic analysis more efficient and easier to perform?

In a second attempt to address these problems, the Illinois Project was reinvigorated in 2012 when the Myaamia Center received an award from the National Endowment for the Humanities (NEH) (Inokaatawaakani 2012). The NEH award, along with technological advances, allowed the Illinois Project (now referred to as the Ilaatawaakani Project) to take a significant leap forward by allowing us to re-examine

ways of accessing Jesuit-era source materials, as well as to reassess technological advances in order to determine what type of digital archive and digital research tools were possible. To test the waters, we began working with one of the three primary Jesuit manuscripts (LeBoullenger nd. [circa 1725]). This document was selected as the first to be transcribed due to its numerous example sentences, its well-organized format, and the fact that it had never been edited before. The translated, annotated and analyzed redaction of the LeBoullenger manuscript, with its vast amount of data, would constitute an invaluable source of readily accessible data and properly test our ideas for archival access and development. During the three years of the NEH supported grant, the Ilaatawaakani Project would create the first ever Miami-Illinois Digital Archive (MIDA 2016).

Before looking any further at developmental concepts, it should be noted that MIDA was never intended to be a language learning tool. The purpose for creating MIDA was to eliminate, to a large degree, the cumbersome need to work directly with original source materials as well as to create what current linguistic databases were not providing. MIDA has brought order to the large corpus of language data and allows us to filter out specific kinds of information. As an example, it is not uncommon for useful and important language data to be embedded within the manuscripts in such a way that a typical visual search of the physical pages (in whatever order the manuscript was written) does not easily allow a user to find the entry. For example, the interesting word *alaamatayi* (spelled in the original ⟨aramataye⟩) is glossed by LeBoullenger “avant que de naitre dans le ventre de sa mere”, which translated literally into English is “before being born in his/her mother’s womb.” Upon further analysis, this word turns out to be an adverb, basically meaning “in the womb, in utero.” However, this word is not listed under any word for ‘womb’, nor in any kind of list of terms having to do with childbirth or even body part terms, but is instead hidden under LeBoullenger’s keyword ‘avant’, which in English means ‘before’. This is a fairly typical example of how hundreds of interesting vocabulary items in this manuscript often lurk in places where they cannot be ‘looked up’ in any way until the manuscript is available in a searchable database.

To initiate development of the NEH-supported Ilaatawaakani Project, we pulled together a team of linguists, tribal researchers, computer programmers and communication specialists to design and build a new software application that would address our identifiable needs. Initial design requirements for MIDA included the following stipulations:

- The database must be designed to function as simply as possible and to not do more than what was necessary to meet the Myaamia Center’s research needs.
- It must have a robust search function. Finding something within and among several manuscripts would hinge on a well-designed search application.
- It must be online and accessible to anyone interested for research purposes.
- Some language content created through MIDA, such as stem and morpheme lists, would be shared with the online Myaamia Dictionary, a separate online

resource serving as a community language learning tool (Myaamia Online Dictionary 2016).

Over the initial three years of developing the Ilaatawaakani Project, our understanding has evolved tremendously. This has led to the development of MIDA, which has already become one of the most significant research tools we have developed to date. Future versions of MIDA will include all known linguistic source materials. In the following sections we describe in greater detail project organization including the digitization of the manuscript, the process for building the archive (including search and administrative tools), and initial research uses in different disciplines.

5. Steps in processing a manuscript MIDA requires a four-step process (Figure 1) starting with the preparation of the manuscript and ending with searchable data accessible through the MIDA search engine and the Myaamia online dictionary.

To begin the process, the transcriptionist receives, from the archival library, high resolution (300–600dpi) digital scans for each page in a document and adds page and line numbers for reference directly to the image in preparation for upload (Figure 2). Each document page, including blank pages, are numbered and the text is numbered every ten (10) lines.

A spreadsheet is provided for the transcriptionist to begin transcribing based on the organization of the original document (Figure 3), which in this case includes the keyword (if available), Original French or English, and Original Miami-Illinois entries into the spreadsheet. Each entry has its corresponding page, line and phrase number for reference to the original document. A new spreadsheet was required approximately every 15 pages to maintain usability of the spreadsheets, as they grew quite large.

The spreadsheets were created in a web-based service allowing access to documents from anywhere, as well as the critical feature of allowing multiple users to edit the same spreadsheet simultaneously. This was important so that collaborators who are not always in the same location can not only do their work, but assist each other with reading original text and translations.

The transcription and French translation steps are always done in spreadsheet form for reasons of efficiency. Figure 4 illustrates a few lines from a partially completed spreadsheet. Final transcription work from the LeBoullenger document alone resulted in approximately 25,000 spreadsheet lines of data.

Once the transcription and translation of the French text is complete, the spreadsheet data is then uploaded into the MIDA database for further work. The process begins by providing English translations and analyses of the original Miami-Illinois data transcribed from the LeBoullenger document on the MIDA website. There are three primary parts to this task; the first step is filling in the contemporary spelling of the Miami-Illinois words. As mentioned above, the data in the Illinois dictionaries is recorded in an inconsistent writing system, which fails to mark all the phonemic contrasts of the language. Thus, it is necessary to re-transcribe the Miami-Illinois data into the modern, phonemic orthography. We also provide a place for supporting evidence to show how these phonemicizations are decided upon. There is also a

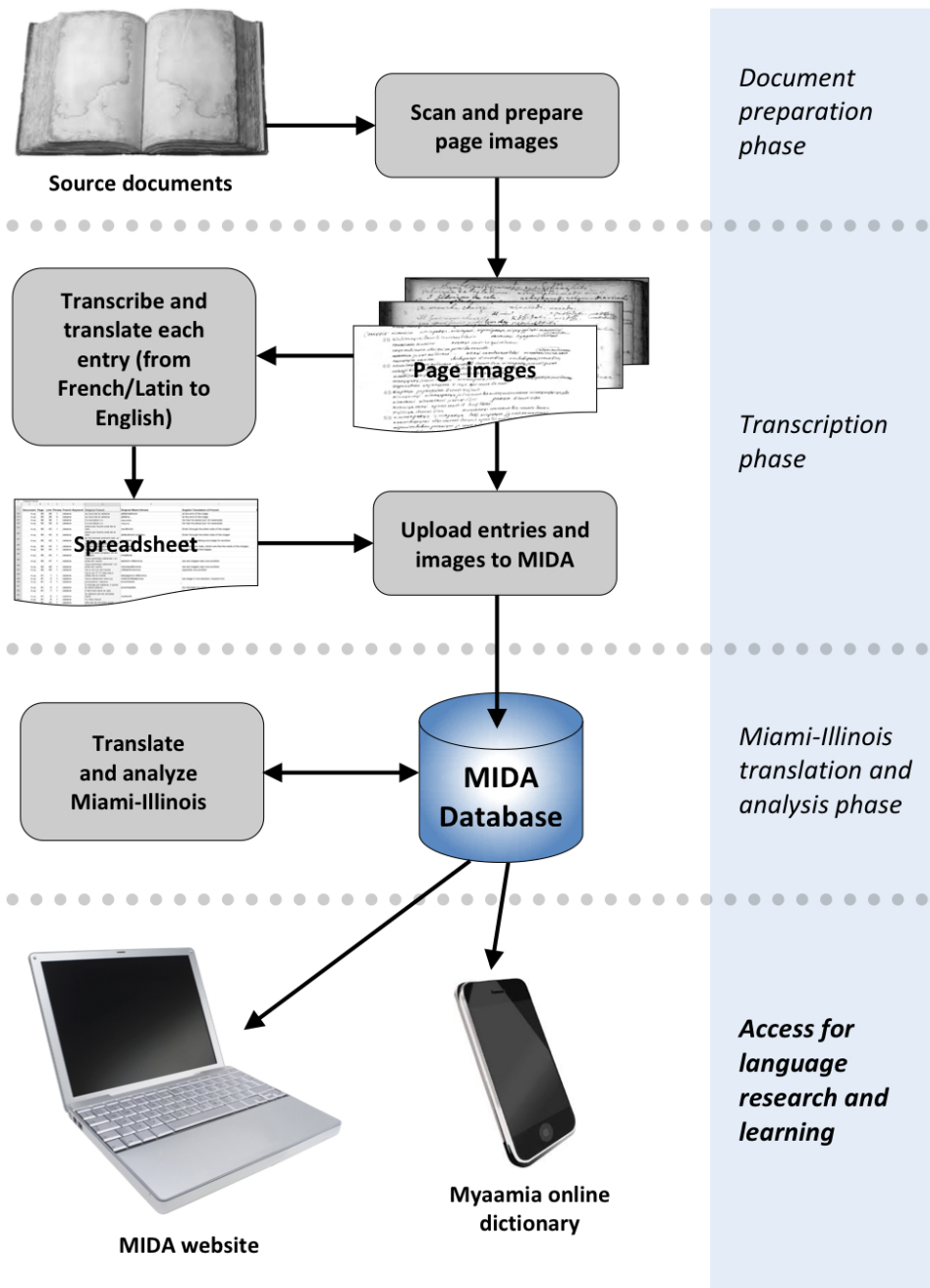


Figure 1. Four (4) step process in building data for MIDA

cognate field, discussed above, where one enters cognate words drawn from the sister languages as well as original forms of the words drawn from other Miami-Illinois sources.

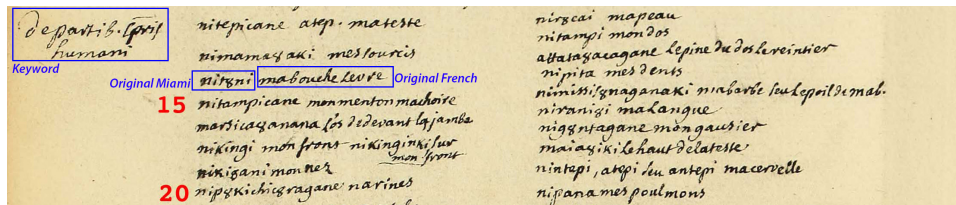


Figure 3. Organization of the entries in LeBoullenger

Document	Page	Line	Phras	French Keyword	English Translation of French Keyword	Original Miami-Illinois	Original French	English Translation of French	Mod
Le Boullenger	250	14	1	homme (de parti b. Cpris humani)	man [Lat., concerning a part of the body of a human]	niBni	ma bouche Levre	my mouth, lip	
Le Boullenger	250	14	2	homme (de parti b. Cpris humani)	man [Lat., concerning a part of the body of a human]	nipita	mes dents	my teeth	
Le Boullenger	250	15	1	homme (de parti b. Cpris humani)	man [Lat., concerning a part of the body of a human]	nitampicane	mon menton machoire	my chin, jaw	
Le Boullenger	250	15	2	homme (de parti b. Cpris humani)	man [Lat., concerning a part of the body of a human]	nimissisBnaganaki	ma barbe seu Le poil de ma b.	my beard [Lat. or] the fur of my beard	
Le Boullenger	250	16	1	homme (de parti b. Cpris humani)	man [Lat., concerning a part of the body of a human]	marsicaBanana	L'os de devant la jambe	the bone on the front of the leg	
Le Boullenger	250	16	2	homme (de parti b. Cpris humani)	man [Lat., concerning a part of the body of a human]	niranibi	ma Langue	my tongue	
Le Boullenger	250	17	1	homme (de parti b. Cpris humani)	man [Lat., concerning a part of the body of a human]	nigBntagane	mon gausier	my throat	

Figure 4. Spreadsheet Entries for Transcription and French Translation

The second step consists of filling in corrected English glosses to the Illinois data. While it is essential to provide the literal English translations of the French glosses, often the original glosses are just as imprecise as the original transcriptions of the Illinois words. Thus, it is necessary to provide revised English translations, informed by our actual knowledge of Miami-Illinois grammar and data elsewhere in the corpus. For example, LeBoullenger’s form ⟨ac8eng8sa⟩ is glossed as ‘petite s[ouris]’, literally ‘little mouse’, though it is clear from the modern records that this word in fact means ‘chipmunk’. As a more subtle example, LeBoullenger glosses the imperative ⟨nissahanto⟩ as ‘abats cette perche’, or ‘knock down that pole’, though it is clear from the structure of this verb, and from related forms recorded elsewhere, that its actual meaning is more like ‘knock it down! (by instrument)’; that is, that this verb explicitly indicates that the action is accomplished by some kind of tool, and that it can refer to any kind of standing object being knocked down, not just poles. And finally, the third step is to provide the grammatical analysis of the Miami-Illinois words, by breaking down all the Miami-Illinois words into their constituent parts, including their stems and stem components. Such data enables users to search on all words in the manuscripts, which share certain morphemes, so as to compare their usage across dozens or even hundreds of different words. Figures 5–6 show screenshots of a typical search, and results based on these last steps.

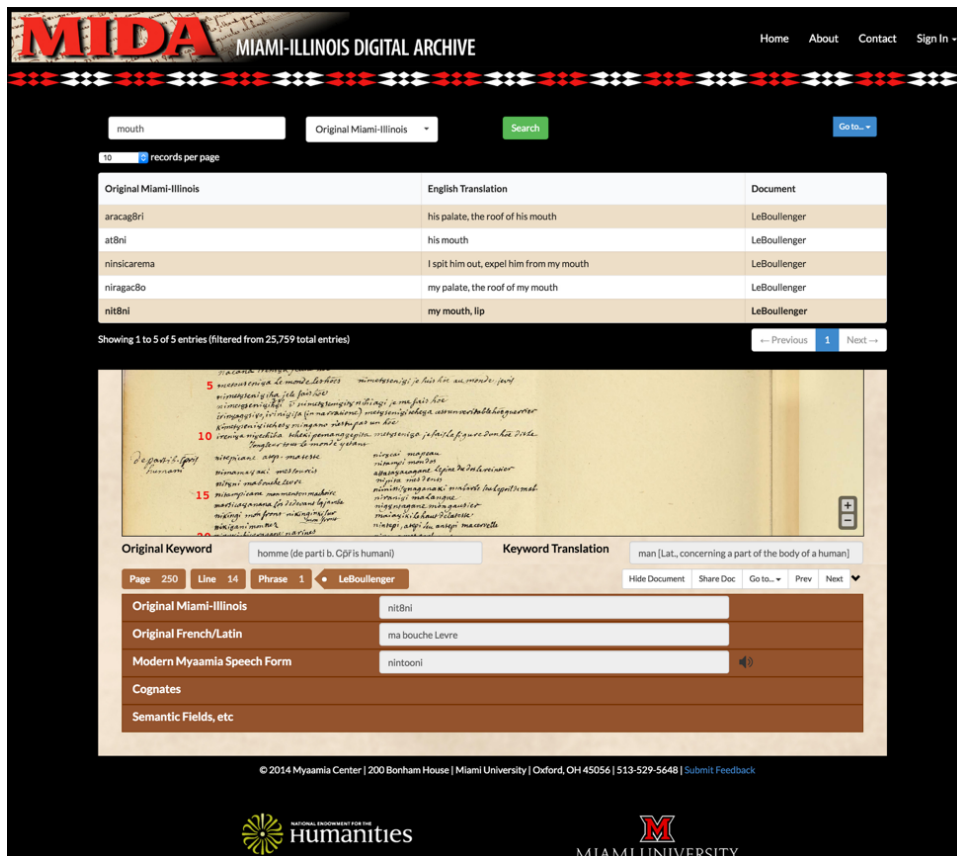


Figure 5. Typical search result

Needless to say, completion of all three of these categories for each entry in the manuscript is an extremely time-consuming project. Some words submit to a very simple, obvious analysis, while just as many words are of more obscure origin and require extensive research before their entries can be even partially analyzed. A significant number of words resist analysis entirely. Given the size of the LeBoullenger manuscript as well as that of the other equally large or larger Jesuit dictionaries that will be added to MIDA in the course of time, it is clear that an exhaustive analysis of all the data in all of these manuscripts is a process that will span decades, long after the process of keying in the data and translating the French glosses is complete.

As noted above, the transcriptions and their French translations were originally recorded in spreadsheets. Translation and linguistic work required a more sophisticated database to support storage of stems, morphemes, and cognate information as well as comprehensive search capability to locate other entries in the corpus for cross-reference. These additional fields are added to MIDA after the spreadsheet data has been uploaded.

Original Keyword Keyword Translation

Page 250 Line 14 Phrase 1 LeBoullenger Show Document Share Doc Go to... Prev Next

Original Miami-Illinois

Modern Miami-Illinois Spelling Comments

English Translation

Original French/Latin

Modern French Spelling

English Translation Comments

Modern Myaamia Speech Form

Stem	Morpheme	Translation	Part of Speech
-toon-		mouth, lip	n.inan.dep

Comments

Cognates

Form	Translation	Source	Language
netooni	my mouth	Voorhis 1988	Kickapoo
nindoon	my mouth	Nichols & Nyholm (1995)	Ojibwe
nitooni	my mouth	Voegelin 1938-1940	Shawnee
nindóni [?]	my mouth	Michelson (1916)	Miami-Illinois
nintó-ni	my mouth	Hockett (1938)	Miami-Illinois

Comments

Semantic Fields, etc

Semantic Field	Syntax
body parts	<input type="checkbox"/>

Figure 6. Search result with expanded fields

MIDA contains an advanced search function allowing the user to search within or among manuscripts and by any data field. Figure 7 shows the field menu of the search function.

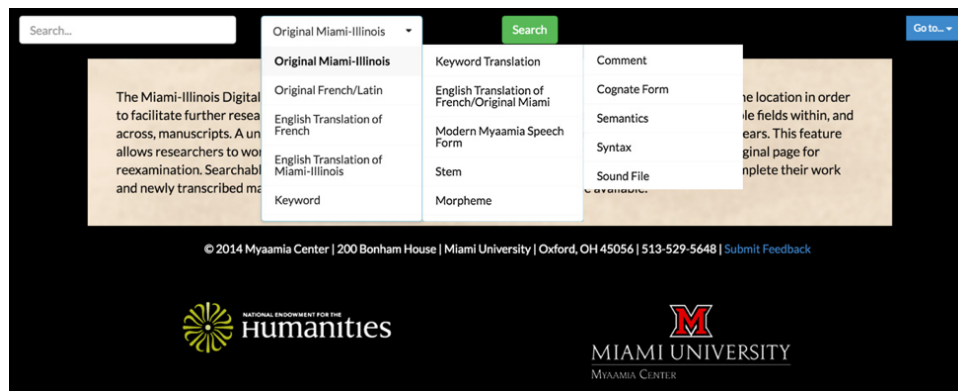


Figure 7. Advanced search function menu

MIDA also supports many additional features including:

- No login needed for general users (search only);
- Accounts and login required for editors (search and update);
- Comprehensive search engine for general users and researchers;
- A feature that logs changes made to records by editors;
- Administrative tools for spreadsheet data import/export, account management, and account creation.

6. MIDA architecture and implementation The Miami-Illinois Digital Archive (MIDA) is implemented using a version of the industry-standard web service solution commonly referred to by the acronym LAMP. The complete MIDA system is hosted on a commercial web hosting service that runs the Linux operating system (the ‘L’ in LAMP) and a web server (typically Apache, the ‘A’ in LAMP). The underlying database is a relational database management system using MySQL (the ‘M’ in LAMP). The web pages, search logic, and database loading code are programmed using a combination of the HTML, PHP (the ‘P’ in LAMP) and JavaScript programming languages.

7. Current use and future development The first version of MIDA is in use by linguists, tribal educators, historians, and ecologists. While MIDA has been populated with the data from only one Jesuit-era manuscript (LeBoullenger), at the time of this publication two more manuscripts from the same era, namely Pinet and Largillier, are near complete with initial stages of transcription and their French translation finished.

The Largillier manuscript will likely be the next dataset to come online, within the next year. Following the entry of these early sources our current goal is to process and upload all the known Miami-Illinois source materials and to make them accessible and searchable within future versions of MIDA.

As previously stated, MIDA is not designed to teach *myaamiaataweenki*, but serves as a critical link between the archival sources and the various research specialists and educators who are looking for data to serve their individual interests and program needs. One of the most powerful features of this new software is its ability to retrieve a digital copy of the original page when further examination and interpretation are needed. This immediate access to copies of the original, coupled with contextual information and linguistic analysis, is what makes MIDA unique in its function. For communities having to reclaim their language from documentation, where documentation becomes the main source for language, a heavy research component is necessary and MIDA allows for that research to progress faster and more efficiently.

Easy access to linguistic, cultural, historical and ecological information is invaluable in cultural revitalization work. The ability to search within and between documents at the same time for specific content is a luxury we have not had up to this time. Tribal educators who might be developing curriculum for something as simple as the reintroduction of traditional games can now search ‘game’ in MIDA and obtain a wealth of information that can then be forwarded to linguists and cultural experts for help with translation and interpretation before they utilize the information in community culture and language vitalization programs. Ecologists are now able to search for a wide range of food plants in MIDA and can gain insight into traditional dietary information that has direct use and value for our ongoing ‘cooking with traditional foods’ project.

8. Closing The Ilaatawaakani Project was essential in creating the Miami-Illinois Digital Archive (MIDA). The years of struggle, the numbers of individuals who contributed to ideas, and rapidly developing technologies all factored into our evolving understanding of what was possible. Just as there is no one-size-fits-all solution to revitalizing languages, there is no one tool that will serve every community’s language archive needs. The Ilaatawaakani Project (formerly the Illinois Project) began in 1999, and seventeen years later we have reached a milestone in the development of a long-term archival tool that specifically meets our linguistic research and cultural vitalization needs. Development was delayed by the need for more capacity building, secured funding, and other human resources. Bringing these multiple resources together in a way that supports further development takes time and much effort. The ground-breaking work of language reconstruction, the development of the Myaamia Center, and the relationship nurtured through Miami University’s College of Engineering and Computing were also vital relationship building activities that laid the foundation for a collaborative project like this to be successful.

Despite the challenges, the Ilaatawaakani Project’s process has allowed us to explore the extent to which we could develop a digital archive that specifically met

the needs of community-based language research and development. Hopefully, our work in the reconstruction and reclamation of Myaamia language and culture will continue to afford us opportunities to establish new research tools and methodologies for archival work. The development of MIDA has not only opened up new possibilities for archiving and utilizing large amounts of linguistic sources, but has also impacted our ability to access critical cultural and ecological information for tribal educational programs. Many of us who work with the Miami Tribe of Oklahoma are honored to observe the true beneficiaries of all this work—the many Myaamia children who for the first time in over a hundred years are afforded the opportunity to hear and speak myaamiaataweenki and to learn many new and exciting aspects of their complex history, language, and culture.

The Miami-Illinois Digital Archive can be found at www.ilaatawaakani.org.

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