How may the structure of a new linguistic community shape language emergence and change? The 1817 founding of the US’s first enduring school for the deaf, the American School for the Deaf (ASD) in Hartford, Connecticut, heralded profound changes in the lives of deaf North Americans. We report the demographics of the early signing community at ASD through quantitative analyses of the 1,700 students who attended the school during its first fifty years. The majority were adolescents, with adults also well represented. Prior to 1845, children under age eight were absent. We consider two groups of students who may have made important linguistic contributions to this early signing community: students with deaf relatives and students from Martha’s Vineyard. We conclude that adolescents played a crucial role in forming the New England signing community. Young children may have pushed the emergence of ASL, but likely did so at home in deaf families, not at ASD.*

Keywords: sign language, American Sign Language (ASL), historical sociolinguistics, signing community formation, language emergence, language change

1. Introduction. Can the structure of a new language community shape the contours of language change? Consider two basic processes by which communities can form, the community structures that result, and the linguistic consequences. When one subcommunity splits from its parent, the conditions are created for language diversification (Campbell & Mixco 2007) or language splitting (Pagel 2009)—as occurred in the settlement of the Pacific islands by Austronesian peoples (Blust 1984, Gray et al. 2009), in the fracturing of the Roman Empire that led to the development of the Romance languages (Posner 1996), and in the geographic isolation of English speakers on Martha’s Vineyard (Labov 1963). The diversification of Proto-Austronesian, of Vulgar Latin, and of English in New England are seen as slow processes, in which the gradual accumulation of linguistic changes resulted in the divergence of these languages and dialects. In contrast, when distinct language communities amalgamate in a novel multilingual community—one that effectively shares no common language—a new language may arise that substantially diverges from the languages of the constituent communities. For example, the enslavement and forced migration of African peoples led to the rapid formation of many plurilingual communities and to the creation of creole languages, some of which differ considerably from their lexifiers and substrates (Arends et al. 1995).

In seeking to characterize the historical development of American Sign Language (ASL), prior scholarship has looked to these two models of language community formation and of language change. Some scholars have theorized the historical development

* We gratefully acknowledge the assistance we received throughout this project from Jean Linderman, the archivist of the American School for the Deaf. She showed us great hospitality when we visited ASD’s archives in June 2021. That same month we visited the Martha’s Vineyard Museum; there we benefited from conversations with Bowdoin Van Riper and Linsey Lee. We also thank Richard C. Pillard, Ulf Hedberg, Nora Ellen Groce, Rebecca Edwards, and Jenny Singleton for helpful email exchanges. Support has come from the Robert D. King Centennial Professorship in Liberal Arts. Throughout this project, Justin Power has been a postdoc on NSF grant BCS-1941560 ‘Regularity and Genetic Relatedness in Sign Languages’ to David Quinto-Pozos (PI) and Danny Law (co-PI). Any opinions, findings, and conclusions or recommendations expressed here are those of the authors and do not necessarily reflect the views of the National Science Foundation.
of ASL as the diversification of a language descended from nineteenth-century *langue des signes française* (LSF; Anderson 1979, Abner et al. 2020; see Reagan 2021 and Power 2022 for discussion). Beginning in eighteenth-century Europe, deaf educators founded schools for the deaf around the world, and many new signing communities formed within and around them (Lane 1984, Plann 1997, Eriksson 1998). The signing community that formed in Hartford, Connecticut, at the first enduring school for the deaf in the Americas, the American School for the Deaf (ASD, established 1817), was connected to the signing community in Paris by Laurent Clerc, a deaf signer of LSF who had migrated to New England to help found ASD (Edwards 2012). Through Clerc, the Hartford signing community inherited aspects of the culture, language, and educational philosophy that had developed within the Parisian signing community (Lane 1984, Fischer & Lane 1993, Hedberg & Lane 2020). On this account, ASL began to diverge from LSF with Clerc’s migration to the US in 1816.

In contrast to this view of the diversification of ASL from LSF, other scholars have seen the development of ASL as a creolization process (Fischer 1978, Woodward 1978, Meier 1984; but cf. Lupton & Salmons 1996 and Kegl 2008 for discussion). On this view, the signing community in Hartford was a novel one whose members had diverse linguistic and communicative backgrounds. In addition to Clerc’s contribution of LSF, signers of Martha’s Vineyard Sign Language may have contributed to the early linguistic ecology at Hartford (Groce 1985, Lane et al. 2000), and signers of other indigenous American sign languages may also have been represented (Woodward 1978). On the creolist account, the formation of this novel multilingual signing community led to the emergence of a new language whose features were in part drawn from the previously existing sign languages of community members (Fischer 1978, Woodward 1978). Following Bickerton (1984), the creolist account has often assumed that children played an important role in the emergence of ASL.

In addition to the two preceding models, a third, arguably unique, process of language-community formation can occur among deaf populations. Although there have been rare instances of isolate-reared hearing children (Lane 1976, Curtiss 1977), hearing children in speech communities almost universally have access to spoken language in childhood. By contrast, deaf children usually lack the analogous signing environment. Perhaps as many as 96% of deaf children are born into hearing, nonsigning families (Mitchell & Karchmer 2004). Deaf individuals are sometimes unable to form a community because they are widely dispersed within a larger population, as was true of Nicaragua prior to the late 1970s (Polich 2005). Moreover, local views may discourage marriage between deaf individuals (Kusters 2012). Nevertheless, deaf signing communities have formed in diverse contexts around the world (Fenlon & Wilkinson 2015). The formation of entirely novel (i.e. de novo) deaf communities can create the conditions for the formation of new signing communities and new sign languages where none had previously existed. Such a community formed in Managua, Nicaragua, around a newly established school for deaf children and led to the formation of the Nicaraguan signing community and to the rapid emergence of Nicaraguan Sign Language (A. Senghas et al. 2004, Polich 2005, R. Senghas et al. 2005). Novel signing communities have also formed in populations that, over a short span of time, began to manifest a high incidence of alcoholism, those attempts either failed or proved very short-lived (Bell 1918, Unterberger 1947, Lane 1976).

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1 Between 1812 and 1818 John Braidwood repeatedly attempted to establish a school for the deaf in the US, first in Baltimore, then in Virginia, then in New York City, and finally again in Virginia. Due to his apparent alcoholism, those attempts either failed or proved very short-lived (Bell 1918, Unterberger 1947, Lane 1976).
of deafness due to factors such as geographic isolation, consanguineal marriage, and the occurrence within the population of a recessive gene for deafness (Groce 1985, Sandler et al. 2005, Zeshan & de Vos 2012, Nonaka 2014). The formation of these so-called village signing communities has led to the emergence of village sign languages where no sign language had previously existed.

In our view, none of these three models adequately characterizes the formation of the early signing community in New England or the historical development of ASL. Unlike the splitting off of subcommunities from a parent language community, the putative diversification of ASL from LSF was largely the product of the migration of one individual from a previously existing signing community (i.e. Clerc from the Parisian signing community) to help found a signing community in a new location. Unlike many creolizing communities in which the first cohorts of adults were speakers of a mature language and in which many of the first children born into those communities may have had access to the language(s) of their parents (Roberts 2000, Siegel 2000), early members of the Hartford signing community, with the exception of late-deafened individuals, likely had very limited access to any mature language present within the speech communities of New England. And, unlike the formation of entirely novel signing communities, the early signing community in Hartford included at least some signers of previously existing sign languages (e.g. LSF and Martha’s Vineyard Sign Language).

Here we argue that we can achieve a new understanding of the formation of the early New England signing community and of the historical development of ASL by closely analyzing the demographic features of the early student population at ASD in Hartford. We have access to rich information about the signing community that formed at ASD, including the names, ages, hometowns, and periods of attendance of all 1,700 students in the school’s first fifty years (1817–1867). In effect, we are studying not the language, but rather the population that would come to use that language—as scholars studying the formation of creoles have done (see Arends 2008 for an overview). Our demographic analyses shed new light on the formation and structure of the Hartford signing community—the earliest community of users of the language that would come to be called ASL—and allow us to identify crucial actors in the formation of the early signing community in New England and in the development of early ASL.

The detailed demographic analyses that we report will be a foundation for extending to signed languages the models of language change that have been developed in work on spoken languages. As we have already suggested, we argue that these models are inadequate for understanding the emergence of some sign languages within novel signing communities, such as that of ASL within the signing community that formed in Hartford. The unique characteristics of such communities will inform theories of language change in both signed and spoken languages. In the remainder of the introduction we set out our principal themes and analytical approach in more detail.

1.1. Contributors to the emergence of sign languages. Scholars have sought to understand who the main actors are in language emergence and change. The literature on sign language emergence has largely focused on the contributions of children. There is strong evidence that some sign languages are in part the product of children (Goldin-Meadow & Mylander 1990, Singleton et al. 1993). Several strands of research

2 Thomas H. Gallaudet spent several months in Paris observing courses at the Paris National Institute, learning LSF, and recruiting Clerc. Léon Vaïsse, a hearing teacher of the deaf from Paris, worked at the New York Institution for the Deaf from 1830 to 1834 (Fay 1893).
have shown that young children have the ability to impose systematicity on relatively less systematic input. Those lines of research include studies of the homesign systems of deaf children of hearing parents (Goldin-Meadow & Mylander 1990), of the acquisition of ASL by a deaf child of deaf, late-learning parents (Singleton & Newport 2004), of the emergence of new sign languages (Senghas & Coppola 2001, Senghas et al. 2004), and of children exposed only to English-like signing (S. Supalla 1991), as well as experimental comparisons of adult and child language learning (Hudson Kam & Newport 2005, 2009). Children have been shown to elaborate new grammatical structures that were not present in their input or that were present only probabilistically. In Nicaragua, it is those children exposed to Nicaraguan Sign Language before age ten (especially before 6.5; Senghas & Coppola 2001) who show the most linguistic sophistication, and it is they who evidently drove the grammatical elaboration of Nicaraguan Sign Language (R. Senghas et al. 2005). However, children cannot fashion a mature sign language in one generation; successive cohorts of children who attended the Managua school in Nicaragua built upon the signing of earlier cohorts (Senghas & Coppola 2001, Senghas 2003).

Children are not the only contributors to language emergence and change. In speech communities, the sources of grammatical elaboration and change are arguably found throughout the community (Bybee 2010, Stanford 2015). For example, the grammaticalization of the irrealis marker *baɪ* in Tok Pisin (from a sentence-initial adverbial to a preverbal marker) began among adult, second language speakers before Tok Pisin had been nativized by children (Romaine 1995; cf. Sankoff & Laberge 1973). Adolescents and adults are thought to have sufficient ‘social clout’ to drive language change within their communities (Eckert 1989, Bybee 2010:119). Adolescents in particular are well connected to social networks within which they can influence language change (Kerswill 1996).

Peer groups also have a role to play in language emergence and change. Gagne (2017) compared second-cohort deaf signers in Nicaragua with the hearing children of first-cohort deaf Nicaraguans. While both groups received linguistic input from the first cohort, only the deaf, second-cohort signers had signing peers; the hearing signers predominantly signed with their parents. Gagne found that the productions of both groups were more regular than the inconsistent productions of first-cohort signers, but only the deaf signers (i.e. those with peers) elaborated the grammatical use of space.

Having developed in relative isolation from the languages of any other signing community (Polich 2001, 2005), the signing community in Nicaragua has provided important evidence for the contributions of children to language emergence. As we have seen, however, sign languages like ASL developed within signing communities that are historically connected to previously existing communities and that inherited some aspects of the linguistic and cultural traditions of those parent communities. What may have been the contributions of the local linguistic ecology to the emergence of ASL?

The sign language in use at ASD emerged in a linguistic environment with a variety of possible contributors. The students who arrived at ASD’s doors brought the homesign

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3 Limited contact between nascent Nicaraguan Sign Language and other sign languages has been noted (Polich 2005): for example, in 1979 a Peace Corps volunteer was briefly in Nicaragua with the assignment of teaching sign language and left behind a sign dictionary, and one Nicaraguan deaf man studied in Spain from 1976 to 1982 and had learned Spanish Sign Language. In the 1980s, the ‘total communication’ method of teaching (i.e. simultaneous speech and sign) was introduced from Costa Rica, but Polich (2001:318) reports that it ‘was not widely practiced’.
systems that had evolved within their families (Lane 2004), and students from Martha’s Vineyard may have contributed signs and structures from the village sign language that had emerged there (Groce 1985). Both students and teachers likely contributed gestures in wide use in the American population, and Laurent Clerc may have contributed French gestures. Clerc was also fluent in French (Lane 1984, Edwards 2012), and ASD’s curriculum emphasized the importance of written English, with some students learning to read and write other languages as well (ASD 1828). Clerc contributed signs from his first language, LSF; for example, the ASL number sign three likely has French origins (Fischer 1996), as do many color terms and the morphemes meaning ‘male’ and ‘female’ in the signs son and daughter (Supalla et al. 2021). The influence of LSF vocabulary on emergent ASL was evidently strong: Woodward (1978) estimated that 61% of ASL’s basic vocabulary has origins in LSF. Both Clerc and the other teachers used methodical signs (signes methodiques; de l’Épée 1776, Baynton 1996), which were originally designed to encode French morphology and were adapted to encode English morphology (Stokoe 1975, Edwards 2012). The faculty also fingerspelled English words using the French manual alphabet (Lane 1984). From Laurent Clerc, in particular, students at ASD assuredly had richer sign language input in the classroom than was available to students in Managua.

Notwithstanding the richer input environment in Hartford, could children at ASD have had a role to play in the emergence of ASL that paralleled the role children played in the emergence of Nicaraguan Sign Language? We argue that children did play a role in the emergence of ASL, but that early on they did so at home rather than at school. As we show in §3.1, the composition of the early Hartford signing community was affected by nineteenth-century philosophical and educational notions of how and, crucially, when deaf individuals should be educated.

1.2. The complex relationship between schools and language communities. At their best, primary and secondary schools guide children to literacy. Whether by dint of government policy or community practice, schools often insist on standard dialects, sometimes leading to debates about the use of minority dialects, such as African American Vernacular English, in the classroom (Baugh 2000, Flores & Rosa 2015). Immigrant children may learn the national language in schools (Valdés 1998, McEachron & Bhatti 2005), and indigenous children were often forced to abandon their native languages in the boarding schools for Native American children that were established in the United States and Canada (e.g. Hinton 1994). Schools played a key role in the revival of Modern Hebrew during the decades leading to the establishment of the state of Israel (Ravid 1995).

While the relationship of schools to the formation of signing communities and to the emergence of sign languages seems tight, it is by no means fully understood (Singleton & Meier 2021). In some cases, schools intend to foster signing communities, as was true of ASD during its first fifty years (Baynton 1996). In other cases, signing is tolerated but not fostered; at the Managua school teaching was in Spanish, not sign (Polich 2005). Schools for the deaf have sometimes been segregated by sex, as in Dublin, Ireland.

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4 Citations in the format ‘ASD year’ are of annual reports of the American School for the Deaf. A general entry is included in the references (American School for the Deaf 1817–1905), along with a link to where many of these can be found on Google Books. URLs to specific volumes cited are given in footnotes for the benefit of the reader and so as not to clutter the reference section with redundant publication information. The 1828 report can be accessed at https://www.google.com/books/edition/_/HpY8t4RgFi4C?hl=en&gbpv=1.
since the mid-nineteenth century (LeMaster & Dwyer 1991); differing sign systems in use at the girls’ and boys’ schools (until 1946 and 1957, when the schools respectively restricted the use of sign) led to striking differences in the Irish Sign Language vocabularies once used by adult deaf women and men. Similarly, segregated schools for the deaf in the American South have been linked to the formation of Black ASL (McCaskill et al. 2020 [2011], Lucas et al. 2022).

In the US, the relationship between the signing community and schools for the deaf helped shape the formation of a cross-regional community. Many students, after attending either ASD or another school for the deaf, later became teachers and contributed to the spread of ASL and of American Deaf culture across much of North America via an ever-expanding archipelago of schools for the deaf. By 1867, at least twenty-nine such schools and one college for the deaf had been established in the US and three in Canada (Fay 1873:66–67, 1893). ASD graduates taught at nine other schools for the deaf during this period, including schools as distant as Indiana and South Carolina (Fay 1893, Lucas et al. 2001, Edwards 2012). Laurent Clerc served as principal at the Pennsylvania Institution for seven months during 1821–22 (Fay 1893, Padden & Humphries 2005). Many hearing ASD teachers also worked at other schools for the deaf, either before or after their tenures at ASD. For example, after a few years as an assistant instructor at ASD, Lewis Weld, who was hearing, became principal at the Pennsylvania Institution for the Deaf in 1822 and then succeeded Gallaudet as ASD’s principal in 1830 (Fay 1893). ASD also served as a training ground for teachers of the deaf who would later return to their home states or provinces in order to establish new schools. John A. Jacobs, for example, a hearing Kentuckian, spent thirteen months at ASD learning pedagogical methods and taking private lessons with Clerc before returning home to teach at the Kentucky School for the Deaf (Fay 1893).

The tight connection between the early signing community in the US and American schools for the deaf shaped the community’s age profile, too. ASD, and many other nineteenth-century schools for the deaf, had policies restricting the admission of children (Fay 1893). These policies precluded the early entry of most deaf children into the signing community. At ASD, the minimum age for admission from 1817 until 1843 was originally nine (1817–1821) and later ten (1822–1843). For most students during that period, twelve to fourteen years old was thought to be ‘the best time for the commencement of their education’ (ASD 1843:14). By shaping the early Hartford community’s age profile, this policy likely affected the emergence of ASL; at the same time, the policy may have promoted the formation of the New England signing community.

1.3. The student population at ASD. We report in this article a statistical analysis of 1,700 enrollment records from ASD during the period 1817 to 1867. In 1817, ASD’s first students enrolled; 1867 not only brought the school’s first fifty years to a close, but it also brought the establishment of the oralist Lexington and Clarke Institutions (Fay 1893). Thus 1867 marks a symbolic end to the manualist period in American deaf education (Baynton 1996). These years before the advent of oralism saw the rapid formation of the North American Deaf community and the emergence of ASL. In analyzing these enrollment data, we treat a number of factors: for each student, we consider that student’s gender, age at enrollment, length of attendance, hometown, and whether the student had deaf relatives. We augment the enrollment data with information drawn from a variety of other sources, including census records, ASD’s archives, and the school’s annual reports dating back to its founding.

5 https://www.google.com/books/edition/_/2MWU5m5wLksC?hl=en&gbpv=1
Our analysis of the student population at ASD will lead to a new understanding of ASD’s first half-century—in particular, its role in the formation of the North American Deaf community and in the emergence and spread of ASL. Other somewhat later-established schools, such as the New York Institution (est. 1818) or the Pennsylvania Institution (est. 1819–1821), also played important roles in the formation of the Deaf community and in the emergence of its language, but ASD was the first and, on various grounds, the most influential of these schools (Valentine 1993). Although teachers at ASD were important contributors to the linguistic ecology in Hartford, our analysis focuses on ASD’s students, a group whose demographic characteristics have not been thoroughly investigated. Without access to a systematic analysis of the enrollment data from ASD, scholarship on the school’s history has often represented these students as children (Lane et al. 2000; cf. Sayers 2018), has undercounted the number of students with close deaf relatives (Turner 1868:246, cited by Lane 1984:263), and has not understood the scope and nature of contact between ASD and outlying deaf populations on Martha’s Vineyard (Groce 1985, Lane et al. 2000) or in Canada (Yoel 2009).

In our conclusion (§5), we draw comparisons between Nicaragua and New England: in particular, we consider the roles ascribed to adolescents and adults in the formation of a Deaf community in Nicaragua (Polich 2005, R. Senghas et al. 2005) and to children in the elaboration of Nicaraguan Sign Language (Senghas & Coppola 2001, Senghas et al. 2004). As in Nicaragua, adolescents and young adults in New England likely drove the formation of the American Deaf community. We suggest that, also as in Nicaragua, young children may have had a crucial role to play in the elaboration of ASL, but that, until at least twenty-seven years after the school’s founding, they did not play that role at school.

2. Materials and methods. We now describe the primary sources of data that we used to understand ASD’s student body, as well as our methods for inferring information about students that is missing from historical records.

2.1. Data. Numerous records are available about ASD students during the period from 1817 to 1867. These records can be assigned to the following broad categories: (i) ASD’s own records, (ii) nineteenth-century records from organizations such as the New England Gallaudet Association, as well as nineteenth-century periodicals, such as the American Annals of the Deaf, and (iii) genealogical records, including census records, available in repositories such as Ancestry (https://www.ancestry.com/).

ASD’s records. Some records produced by ASD are freely available on Google Books, including annual reports for every year from 1817 through the early twentieth century. These reports were typically published after the end of each school year and preceding the subsequent school year. They addressed a variety of matters related to the school, including its finances and donors, its admission policies, the academic progress of its students, and its agreements with state governments. The reports also include short compositions by students that were partly anonymized by using students’ initials (Edwards 2012).

See also artistic representations of these students, such as John Carlin’s 1854 bas-relief (https://en.wikipedia.org/wiki/File:American_School_for_the_Deaf_-_Sculptured_Panel_from_Original_Gallaudet_Monument_(1854)_-_January_2016.JPG), which depicts Gallaudet with ASD’s first three students. The girl standing next to Gallaudet and imitating his A-handshape is Alice Cogswell. Contrary to what Carlin’s rendering suggests, she was twelve years old at the time of her enrollment at ASD. The two male students, George Loring and Wilson Whiton, were, respectively, ages nine and twelve at the time of their enrollments.
Summary reports were published in 1844, 1867, 1877, and 1887 as supplements within the relevant annual reports. The summaries are curated overviews of the annual reports published in the preceding years, with supplemental information about students’ ages at enrollment,7 reported causes of deafness, deaf family relationships, students’ lengths of enrollment, and other then-current details about the lives of former students, such as marital or employment status. Much of this supplemental information is not found in the annual reports and was likely based on ASD’s enrollment records, as well as on information known to ASD’s administrators and faculty about the lives of former students subsequent to their leaving ASD. Starting in June 1849, the school kept a record of information about its alumni.

ASD’s enrollment records are kept at its archives in the Cogswell House in Hartford. Jean Linderman, ASD’s archivist, transcribed the school’s enrollment records and shared these data with us.8 For each student, the enrollment records provide the names of parents and siblings, including their hearing status, dates of birth, residences, and dates of enrollment and disenrollment, as well as details about deaf family relationships. Compared with the annual reports and summary reports, the enrollment records allow for a more accurate calculation of students’ ages at enrollment because these records include dates of birth instead of ages as whole numbers. Calculations of periods of enrollment are also more accurate because the dates of enrollment and disenrollment are provided in most cases, whereas the summary reports provide lengths of enrollment in months or years.

While the enrollment records are in many ways richer in detail than other record types, the level of detail is not uniform across all students; see below (§2.2) for our approach to inferring specific dates in deficient records. Individual enrollment records often spanned more limited periods of time than did the summary reports. Presumably, enrollment records were filled out for each student at enrollment and disenrollment; hence, events such as marriage or the births of deaf siblings or children that occurred subsequent to disenrollment may not have been consistently reported. The summary reports, in contrast, were sometimes published many years after a student’s attendance at ASD; the compilers of these reports thus often had access to information about the students after disenrollment that was not available when the enrollment records were written. In sum, the various records produced by ASD are best used in combination in order to compensate for systematic deficiencies in each record type.

**Other primary and secondary historical records.** Many nineteenth-century primary sources are freely available on Google Books, including records produced by the New England Gallaudet Association and other contemporary organizations relevant for understanding the lives of ASD students. Pertinent nineteenth-century periodicals are also freely available online, such as the complete nineteenth-century collection of the *American Annals of the Deaf*. A collection of letters written by Lydia Macomber after her graduation from ASD is available online from the Westport Historical Society.9

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7 We use the words enroll and enrollment to indicate the initial date at which a student began attending ASD. A student’s age at enrollment refers to the age when the student first began attending ASD; the period of enrollment refers to the time between the initial and final dates of attendance. When specifically referring to a student’s daily presence at school, we use the words attend and attendance; for example, see Fig. 1, which reports students’ daily attendance at ASD.

8 We have made the data set available at https://doi.org/10.18738/T8/QSKEW3. We thank ASD executive director Jeffrey S. Bavin for granting us permission to do so.

9 We thank Rebecca Edwards and Jean Lindermann for directing us to the Macomber collection.
Genealogical records. We consulted repositories of genealogical records, such as Ancestry (https://www.ancestry.com/), FamilySearch (https://www.familysearch.org/en/), and Find A Grave (https://www.findagrave.com/), which we used to supplement and to confirm ASD’s records. We searched both US federal and state censuses from the nineteenth century, as well as genealogical records produced about Martha’s Vineyard (Banks 1911, 1925). For information about students’ spouses and families, we searched the Special Census on Deaf Family Marriages and Hearing Relatives, 1888–1895, which was produced by Edward Allen Fay and published in 1898 as a supplement to the 1890 US census. We also visited cemeteries in Hartford and on Martha’s Vineyard.

2.2. Methods. Transcribed records were analyzed using Python (Van Rossum & Drake 2009) and the pandas data-analysis library (McKinney 2010). Statistical analyses were calculated using SciPy (Virtanen et al. 2020) and NumPy (Harris et al. 2020), and figures in §3 were produced using Matplotlib (Hunter 2007) and Plotly (Plotly Technologies 2015).

Inferring dates from incomplete records. For some students, ASD’s enrollment records do not include exact dates of birth (9.9%) or disenrollment. These incomplete records break down as follows. For 5.1% of students (87/1,700) the records include only age (eighty-three students) or no birth information at all (four students). For an additional 1.2% (20/1,700), only the year of birth is provided. For 3.2% (54/1,1700), only the month and year of birth are provided. Finally, six students are found in the annual reports but not in the transcribed enrollment records.

Exact dates of enrollment are provided for all students, but details about dates of disenrollment are missing from 10.6% (181) of the records. In 7.1% (120 records), only the year of disenrollment is provided; in 3.4% (fifty-eight records), only the month and year are provided; and in three records, no disenrollment date is provided.

We inferred full dates for the deficient records in the following ways. In the case of birth dates, if only the student’s age is provided in the enrollment record, we calculated the student’s birth date by subtracting the age from their date of enrollment. If only the month and year of birth are provided in an enrollment record, we assigned the first day of the month as the student’s day of birth. We were able to find information for three of the four students with no birth information by searching genealogical records. However, we were unable to find any information for Joseph Green, who is for that reason omitted from analyses that require a birth date. In the case of dates of disenrollment, if only the year of disenrollment is provided in the enrollment record, we assumed that the student was disenrolled from ASD at the end of the relevant school year, taking into consideration the student’s length of enrollment as reported in the summary reports. For example, according to her enrollment record, Rebekah Allen was admitted to ASD on 26 October 1825 and was disenrolled in 1829. In the 1844 summary report, Rebekah is listed as having attended ASD for a period of four years. Based on the annual reports from that time (both 1829 and 1830), we know that, for the 1828–29 school year, summer vacation began 28 April 1829 and fall vacation began 29 September 1829. Thus, we set Rebekah’s disenrollment date as 29 September 1829 in order to more closely reflect the length of attendance reported for her in the 1844 summary report—that is, from 26 October 1825 to 29 September 1829.

If only the month and year of disenrollment are provided in an enrollment record, and if the month of disenrollment was not the scheduled end of the school year, we checked the records of other students who were disenrolled in the same month and,
when available, set the disenrollment date to the same value. If no parallel records of this type were available for other students, we set the date of disenrollment as the first day of the month.

**Calculating age at enrollment, length of enrollment, and attendance.** We used Python’s datetime module to calculate ages at enrollment, lengths of enrollment, and attendance. We calculated age at enrollment by counting the number of days between a student’s exact or inferred date of birth and the student’s date of enrollment to ASD. Similarly, we calculated each student’s length of enrollment by counting the number of days between the student’s dates of enrollment and disenrollment. In many cases, students had multiple periods of enrollment at ASD; in these cases, we calculated the number of days in each period and summed them. Our method of calculating length of enrollment counts the days during breaks from school—for example, during vacations—that occurred between the students’ dates of enrollment and disenrollment. Hence length of enrollment is not a count of the number of days that students spent in the classroom, but rather the entire period during which they were enrolled as students, including scheduled breaks.

We used Python’s datetime module and students’ dates of enrollment and disenrollment to calculate attendance figures. Beginning on 15 April 1817 (ASD’s first official day) and ending on 25 June 1867 (the end of the fiftieth school year), we counted how many students were in attendance on each day during this date range (18,334 days).

**Plotting the geographic spread of students.** Students’ residences are reported in several of the record types described above, including the annual reports, summary reports, and enrollment records. We used Wikipedia (https://www.wikipedia.org/) and GeoHack (https://www.mediawiki.org/wiki/GeoHack) to find latitude and longitude coordinates for plotting students’ residences. In the records for forty-four students, conflicting residences are provided across documents for students who may have moved during their periods of enrollment at ASD. In such cases, we plotted only the residence listed in a student’s enrollment record.

**Identifying first-degree deaf relatives.** To identify ASD students’ relationships to other deaf individuals, we compared ASD’s records—primarily its enrollment records and summary reports—with Fay’s (1898) data and with other genealogical records, such as census and marriage records. The use of historical primary and secondary records produced outside of ASD served as a method for confirming the accuracy of ASD’s records. Fay’s report was based on questionnaires that were sent directly to deaf individuals, their relatives, and schools for the deaf such as ASD. The Special Census provides specific information about deaf relationships that were at times only summarized in ASD’s records, such as the names and deaf school affiliations of spouses.

**3. Analysis.**

**3.1. Demographic features of the student body.** Here we consider the size of ASD’s student population, the ratio of males to females, the age of students upon enrollment, the duration of students’ enrollment, the students’ hometowns, and the number of students with other deaf individuals in their immediate families.

**Student population size.** Between 1817 and 1867, 1,700 students enrolled at ASD. Because ASD’s records do not generally indicate the race of students, we presume the overwhelming majority were white. However, at least sixteen African American students attended ASD between 1817 and 1867 (Edwards 2012:65, who
counted twelve in total through 1870). ASD’s first African American student, Charles Hiller, was admitted in November 1825 as part of the large influx that year of students from Massachusetts.\(^\text{10}\) We know of no Native American students who attended ASD during this period.

Growth was rapid in ASD’s earliest years; within two months of opening, twenty-one students had enrolled (ASD 1817),\(^\text{11}\) and enrollment nearly doubled (to forty-one) by 16 May 1818 (ASD 1818).\(^\text{12}\) Four factors contributed to subsequent growth in enrollment; see Figure 1.

![Figure 1. ASD student attendance from 15 April 1817 to 25 June 1867. Evident decreases in attendance typically reflect school holidays, after which some students—for example, those who had completed their studies—did not return.](image)

(i) ASD purchased larger premises during the 1819–20 academic year and relocated in 1821. This purchase allowed ASD to enroll eighteen new students in Fall 1819 and gave space for future growth (ASD 1820, 1821).\(^\text{13}\)

(ii) The New England states provided state support for deaf students.\(^\text{14}\) In 1825, Massachusetts, Vermont, New Hampshire, and Maine began providing annual state support for the education of deaf students (ASD 1825).\(^\text{15}\) The 1825–26 school year witnessed the largest single influx of students during this period: enrollment climbed from forty-five at the start of May 1825 to 102 by April 1826. In 1828, the Connecticut legislature appropriated funds for the state’s ‘indigent deaf’ students (ASD 1829),\(^\text{16}\) and in

\(^{10}\) There were apparently few deaf African Americans in New England during this period. The US census of 1850 identified thirteen ‘deaf & dumb’ African Americans in the six New England states. Of these, just four were eligible to attend ASD—that is, they were between ages eight and twenty-five. Three of these individuals were the Boardwin siblings, who all attended ASD. Unlike the Boardwins, Albert Warmly of Cranston, Rhode Island, did not attend ASD, even though he was sixteen in 1850.

\(^{11}\) [https://www.google.com/books/edition/_/pqv-exPD3NwC?hl=en&gbpv=1](https://www.google.com/books/edition/_/pqv-exPD3NwC?hl=en&gbpv=1)

\(^{12}\) [https://www.google.com/books/edition/_/i3Q5lrL-DiAC?hl=en&gbpv=1](https://www.google.com/books/edition/_/i3Q5lrL-DiAC?hl=en&gbpv=1)

\(^{13}\) [https://www.google.com/books/edition/_/VsY0N-5pe8UC?hl=en&gbpv=1](https://www.google.com/books/edition/_/VsY0N-5pe8UC?hl=en&gbpv=1), [https://www.google.com/books/edition/_/9tcq_bW2qYIC?hl=en&gbpv=1](https://www.google.com/books/edition/_/9tcq_bW2qYIC?hl=en&gbpv=1)

\(^{14}\) Not all students were publicly funded. For example, ASD reported that, between 1817 and 1844, 158 students, including seventeen then-current students, were supported by ‘friends’, by ‘themselves’, or by ASD (ASD 1844:35; [https://www.google.com/books/edition/_/xzwAXxJdsC?hl=en&gbpv=1](https://www.google.com/books/edition/_/xzwAXxJdsC?hl=en&gbpv=1)). In comparison, 603 students to that point had received public funding.

\(^{15}\) [https://www.google.com/books/edition/_/mwefTwZj35sC?hl=en&gbpv=1](https://www.google.com/books/edition/_/mwefTwZj35sC?hl=en&gbpv=1)

\(^{16}\) [https://www.google.com/books/edition/_/jC7WF9pSv_wC?hl=en&gbpv=1](https://www.google.com/books/edition/_/jC7WF9pSv_wC?hl=en&gbpv=1)
1844 Rhode Island signed an agreement with ASD to support its students (ASD 1845). All African American students who attended ASD, including two students from New Jersey, were publicly funded, except for David Kirk of Pennsylvania.

Students from outside of New England were not important contributors to enrollment growth except during the earliest years: this group peaked at one-third of the student population (fifteen of forty-five) on 25 May 1819, before falling to 6.1% by the end of 1829. In the 1830s, the group again rose as a percentage of the student population, peaking at 21.8% in May 1839. It fell over the next three decades, however, and constituted 5.2% or less of all students throughout the 1860s, with just eleven students from outside of New England in attendance in June 1867. The founding of new schools for the deaf—such as those in New York (est. 1819) and Pennsylvania (est. 1821)—likely impacted enrollments at ASD. Whereas eleven students from New York and Pennsylvania (seven and four, respectively) were admitted to ASD in its first three school years through 1820 (mean admissions per year = 3.7, SD = 1.9), just thirty-two (twenty-four from New York, eight from Pennsylvania) enrolled from those states during the rest of the fifty-year period (mean admissions per year = 0.7, SD = 0.9).

(iii) Policy changes and educational innovations in the 1840s and 1850s also contributed to growth in enrollment. Enrollments rose sharply during the mid-1840s, when most states providing public support for students at ASD extended that support from four years to five or six (ASD 1846). The formation in 1852 of the Gallaudet High Class, an extended course of study offered to select students following their normal periods of study (Valentine 1993), also contributed to increased length of enrollment. Initially two years in duration, the High Class was extended to four years in 1865 (when it was renamed the Gallaudet Scientific School; ASD 1865). From its formation in 1852 until the end of the period in 1867, fifty students studied in the High Class. Eight of these students returned to ASD years after the completion of their first courses of study.

(iv) In April 1843, ASD lowered its minimum age for admission from ten for privately funded students and twelve for publicly funded students to eight for all students (ASD 1843). One effect was to increase the pool of potential students (ASD 1846). Younger students tended to remain at ASD for longer periods: there is a significant negative correlation between age at enrollment and length of enrollment: \( r(1,697) = -0.44, p < 0.001 \). See below for an analysis of student ages at enrollment.

Table 1 shows that these policy changes and educational innovations were reflected in increases in the average length of enrollment by decade. There is a significant positive correlation between length of enrollment and date of enrollment: \( r(1,698) = 0.32, p < 0.001 \).

17 https://www.google.com/books/edition/_/0z15DcU7TxMC?hl=en&gbpv=1
18 https://www.google.com/books/edition/_/t4Ej_pGNX4MC?hl=en&gbpv=1
19 https://www.google.com/books/edition/_/u9vLUEjB1G4C?hl=en&gbpv=1
20 https://www.google.com/books/edition/_/2MWU5m5wLksC?hl=en&gbpv=1
21 https://www.google.com/books/edition/_/t4Ej_pGNX4MC?hl=en&gbpv=1
The early years of ASL in New England

Table 1. Average length of enrollment at ASD in years, by decade.

<table>
<thead>
<tr>
<th>Decade</th>
<th>Average # of Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>1817–29</td>
<td>3.90 (N = 317, SD = 1.79)</td>
</tr>
<tr>
<td>1830–39</td>
<td>4.09 (N = 308, SD = 1.53)</td>
</tr>
<tr>
<td>1840–49</td>
<td>4.66 (N = 395, SD = 1.85)</td>
</tr>
<tr>
<td>1850–59</td>
<td>5.51 (N = 396, SD = 2.03)</td>
</tr>
<tr>
<td>1860–67</td>
<td>5.65 (N = 284, SD = 2.56)</td>
</tr>
</tbody>
</table>

Male-female ratio in the ASD student body. Of the 1,700 students who attended ASD during the school’s first fifty years, 945 (55.6%) were male and 755 (44.4%) were female. Of the sixteen African American students, six were female (37.5%). ASD’s 1844 annual report noted a similar statistical difference between male and female students in the school’s first twenty-five years (males 56.2%, females 43.8%) and attributed the difference to attitudes in the wider society toward the education of females: ‘This disparity is to be accounted for, from the well-known fact, that parents are much more unwilling to send their daughters away from home among strangers, to be educated, than their sons’ (ASD 1844:29). Among white residents of New England aged five to nineteen in the 1850s, the rate of school attendance was higher for males (81.4%) than for females (75.7%; Tyack & Hansot 1992:51). An imbalance of males and females may have been characteristic of schools for the deaf: Cremers et al. (1994:108–9) report that, in nine studies of deaf school populations in the US, Europe, and southern Africa, males constituted an average of 55% (SD = 0.92) of the students. In an analysis of data from the Nijmegen School in The Netherlands, Cremers et al. attributed the excess of boys to an ‘X-recessive pattern of inheritance’ (1994:109) and to an apparent tendency not to refer girls with hearing losses less than 70 dB in the better ear to that school.

Figure 2 shows the percentage of newly enrolled female students by year. The correlation between the percentage of newly enrolled students who were female and year of enrollment was not significant: \( r(753) = 0.09, \text{NS} \). Figure 2 suggests that ASD did not have effective policies discriminating against female applicants or students—for example, policies prohibiting the admission of greater numbers of female versus male students on a yearly basis, or restricting the length of attendance of female students. In

Figure 2. Percentage of newly enrolled female students by year of enrollment during the school’s first fifty years. No female students, and just two males, entered ASD in 1820.

22 https://www.google.com/books/edition/_/xwzAXxJsJssC?hl=en&gbpv=1
fourteen of the fifty school years in the period, the percentage of admitted females was higher than that of males, including three consecutive years (1838–1840). The average lengths of attendance for male and female students were similar: males attended ASD for 57.7 months ($SD = 25.1$), while females attended for 57.0 months ($SD = 25.0$). In addition, students selected for the Gallaudet High Class were split equally between female and male students (twenty-five each). In this respect, ASD’s High Class differed from the Paris National Institute for the Deaf’s *class d’instruction complémentaire*, an extended three-year course of study open only to males (ASD 1845:61).23

Despite the lack of evidence of official policies discriminating against female applicants or students,24 the disparity within the student population was at times pronounced: in the 1820s and 1860s, the percentage of female students in attendance at ASD fell below 40% for extended periods. There were majorities of female students for only brief periods during the school’s first three years and for roughly three years total during the 1840s; during parts of the 1840 and 1841 school years, more than 55% of the students were female. In sum, although greater numbers of males than females attended ASD in this period, girls and young women were well represented during the school’s first fifty years.

**Age at enrollment.** Although ASD students in the nineteenth century are often referred to as children in the literature, in fact the typical ASD student during this period enrolled as a teenager. Figure 3 shows the distribution of student ages at enrollment between 1817 and 1867. The average age at enrollment was 14.4 years25 ($SD = 5.2$); the median was 13.2 years. A majority of students enrolled during adolescence. The median age at enrollment was slightly lower than the mean during the period, but remained above ten for every year through 1867. For the sixteen African Americans, age at enrollment was similar ($M = 13.3$, $SD = 2.6$; youngest student aged 7.8).

![Figure 3. Distribution of ASD student ages at enrollment, 1817–1867. Most students (1,198/1,699, 70.5%) enrolled between ages ten and twenty, while 16.5% enrolled under ten, and 12.9% enrolled above twenty. Five students enrolled above age forty.](https://www.google.com/books/edition/_/0z15DcU7TxCtMC?hl=en&gbpv=1)

23 https://www.google.com/books/edition/_/0z15DcU7TxCtMC?hl=en&gbpv=1
24 ASD did discriminate against its female teachers. As at other schools during this period, ASD paid deaf and hearing female teachers half the salaries that their male counterparts earned (Baynton 1996:56–82).
25 Here and throughout this article, ages are represented as decimals—for example, 10.25 years is equivalent to 10 years, 3 months.
Figure 4 shows the distribution of student ages at enrollment by date of enrollment. There is a significant negative correlation between age at enrollment and date of enrollment: \( r(1,697) = -0.39, p < 0.001 \). This negative trend was in part related to ASD’s stated admission policies. From 1817 to 1821, students were admitted between ages nine and thirty; from 1822 to 1840, the minimum age of admission was ten. In 1841 separate criteria were formulated for publicly (ages twelve to twenty-five) and privately funded (ages ten to thirty) students. On 19 April 1843, the minimum age for admitting students was lowered to eight years old, while the upper limit was lowered to twenty-five (ASD 1843), a policy that remained unchanged until the early twentieth century, when the minimum age at admission was lowered to six years old (ASD 1905).

Young children were not present at ASD until early in the second half of the period— that is, after the 1843 change in minimum age of admission. Table 2 shows that during the entire period just 1.0% of students (17/1,699) enrolled under age eight; before May 1843, just 4.0% (29/724) enrolled under age ten (all between eight and ten). The number of students in this group grew after May 1843: from then through June 1867, 24.1% of students enrolled between ages eight and ten (235/975). No student under age eight enrolled until May 1845 and no student enrolled under age 6.5 until September 1854. The youngest enrollee during ASD’s first fifty years was Winfield Pray, who entered ASD in 1854 nine days before his sixth birthday. He was the only student who enrolled before age six during this period, and his enrollment record indicates that he was ‘received under-age having no home’.

26 https://www.google.com/books/edition/_/2MWU5m5wLksC?hl=en&gbpv=1
28 Given the change in admission policy in 1843, we anticipated a significant quadratic relationship between date of enrollment and age at enrollment. Indeed, that relationship was significant, but the quadratic function explains only a minimal amount of additional variance (linear: \( R^2 = 0.15 \); quadratic \( R^2 = 0.155 \)).
29 There was one exception. Francis Fitch enrolled at age 7.3 on 18 May 1836, but his admission record states that ‘being too young, [he] was dismissed two months later’. Francis reenrolled five years later in March of 1841 at age twelve.
Table 2. Number of students (percentage of student body) who enrolled at ASD under age ten, divided into two time periods: 15 April 1817 to 30 April 1843, and 1 May 1843 to 25 June 1867.

<table>
<thead>
<tr>
<th>Age</th>
<th>1817–April 1843</th>
<th>May 1843–1867</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( n = 724 )</td>
<td>( n = 975 )</td>
</tr>
<tr>
<td>&lt; 6</td>
<td>0 (0.1%)</td>
<td>1 (0.1%)</td>
</tr>
<tr>
<td>6–7</td>
<td>0 (0.4%)</td>
<td>4 (0.4%)</td>
</tr>
<tr>
<td>7–8</td>
<td>0 (1.2%)</td>
<td>12 (1.2%)</td>
</tr>
<tr>
<td>8–9</td>
<td>8 (1.1%)</td>
<td>101 (10.4%)</td>
</tr>
<tr>
<td>9–10</td>
<td>21 (2.9%)</td>
<td>134 (13.7%)</td>
</tr>
<tr>
<td>Total</td>
<td>29 (4.0%)</td>
<td>252 (25.8%)</td>
</tr>
</tbody>
</table>

After 1843, ASD’s student body rapidly became younger, as the percentage of students under age ten grew and the percentage of adult students declined; see Figure 5. From mid-1818 until the mid-1840s, students who enrolled under ten constituted 10% or less of the student population. Coinciding with the change in admission policy described above, there was a sharp increase beginning in the mid-1840s in the percentage of students who enrolled under ten; by the late 1840s that percentage hovered near 30%, where it remained through 1867. Through the early 1820s, the percentage of students aged twenty or over at enrollment exceeded 30% (see Gienow-McConnell 2018 for discussion of the wide range of student ages during ASD’s first ten school years and Valentine 1991 for discussion of adults at ASD during the school’s early years). After the mid-1840s, this group remained below 10% through the end of the period.

Another way of looking at the impact of young children at ASD is to look, for each school day, at the percentage of students who were under age ten. In this analysis, we consider the ages of attendees, rather than their ages at enrollment. George Loring, who was one of the first three students admitted to ASD, enrolled at age 9.4 years. By January 1818, Loring had turned ten. From that point until 1843, students under ten constituted a small proportion of the student body—never larger than 3.4%—and there were several years-long periods with no such students in attendance. After the 1843 change in policy pertaining to age at admission, the proportion of students under ten
years of age in attendance at ASD was somewhat higher compared to the earlier period, but that proportion never exceeded 7.5% of the student body.

In sum, adolescent students were well represented at ASD throughout the period, whereas, before 1845, children under age eight were absent and those under age ten were few in number. Adults were well represented among the student body during the first half of the period, but by the end of the period adults constituted less than 5% of the student body.

**Geographic distribution of students.** In May 1819, just two years after ASD opened, the school changed its name from the ‘Connecticut Asylum for the Education and Instruction of Deaf and Dumb Persons’ to the ‘American Asylum at Hartford, for the Education and Instruction of the Deaf and Dumb’. The school’s new name reflected its intention to draw students from outside of Connecticut (ASD 1819:19). Indeed, in its first fifty years, students came to ASD from California in the west, Havana in the south, Quebec in the north, and the northernmost point in Nova Scotia in the east. In total, 164 students attended ASD from outside of New England; of these, 136 came from other US states, twenty-seven from Canada, and one from Cuba.

![Figure 6. Geographic distribution of student residences at time of enrollment. Each point (0.5 opacity) represents one student; one point in California not shown.](https://www.google.com/books/edition/_/GzOQazef_VUC?hl=en&gbpv=1)

Despite the wide geographic spread evident in Figure 6, over 90% of ASD students (1,536/1,700) came from New England, with every modern county in New England represented by at least one student. A majority of ASD students (868/1,700; 51.1%) came

from Connecticut (279) and Massachusetts (589). Suffolk County in Massachusetts, which includes Boston, sent 117; Hartford County, which includes the city of Hartford, sent sixty-five. Three counties north and west of Boston sent large numbers: Worcester (seventy-two), Middlesex (sixty-nine), and Essex (seventy-three). Twenty students from Martha’s Vineyard (Dukes County, Massachusetts) attended during the school’s first fifty years.

The first student to attend ASD from Canada was Charles Langevin from Quebec, who enrolled in 1828 at age seventeen. Almost half of all Canadian students (13/27) came from Nova Scotia (Carbin 1996 counts thirteen total students from New Brunswick, Nova Scotia, Ontario, and Quebec up to 1850; we identified another fourteen Canadian students who attended between 1850 and 1867). In addition to the twenty-seven students who were resident in Canada at the time of their enrollment, another six were born in Nova Scotia and New Brunswick, according to ASD’s enrollment records, but had moved to Massachusetts before enrolling. Hence there were thirty-three students between 1817 and 1867 who either were born in Canada or who lived there at the time of their enrollment; twenty-three of these students were from Nova Scotia or New Brunswick. On average, these thirty-three Canadian students enrolled in their teens \( (M = 14.1, SD = 4.3) \); no Canadian student enrolled before age eight, and just six students enrolled between ages eight and ten. The share of Canadian students who were female was 33.3% (eleven of thirty-three)—lower than the share for the ASD student body as a whole. Only one student during this period, John Gully (ASD 1856–1859) of Halifax, Nova Scotia, attended after the founding of the school for the deaf in Halifax in 1856. The early connections (pre-1856) between ASD and students from Canada’s Maritime provinces raise the possibility that the influence of ASL on Maritime Sign Language may have begun earlier than previously recognized (Yoel 2009).

The students who attended ASD from outside of New England, whether from other US states or from Canada, suggest a partial explanation for the widespread use of ASL throughout the United States and anglophone Canada. Another factor also helped spread ASL across the continent: after graduation, many students would take teaching positions at other schools for the deaf; Edwards (2012) identified forty-one ASD graduates who became teachers at ASD or some other school for the deaf. One of these, Samuel Greene (ASD 1855–1859) from Waterford, Maine, would become the first deaf teacher at the Ontario Institution for the Education of the Deaf and Dumb in Belleville (est. 1870; Carbin 2005).

Summary of demographic features. We suggest that, with respect to key demographic features of the student body, ASD’s first fifty years can be usefully divided into two periods centering on the 1840s. While many of the demographic trends highlighted in the preceding sections extended throughout the entire period, one key feature—the age profile of ASD’s student body—changed sharply in the 1840s (Fig. 5). Until 1844, more adult students over age twenty (176) had enrolled than had students below age ten (just forty-one); there had been no students under age eight. From 1845 to 1867, the situation reversed, such that more than five times as many children below age ten

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31 Carbin (1996) states incorrectly that Langevin was seven years old at enrollment.
32 Parentheticals accompanying names in the format ‘(ASD YEARS)’ indicate the time span during which that individual was enrolled at ASD.
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(240, including seventeen below age eight) enrolled than did adults (forty-three). Students who enrolled through 1844 remained at ASD for shorter periods on average (47 months, SD = 20) than did students who enrolled between 1845 and 1867 (63 months, SD = 28). We see therefore that, after the mid-1840s, an increasing number of young students attended ASD and students generally stayed in school for longer periods. The result of these two trends was that ASD’s attendance grew substantially: in June 1840, the student population stood at 142 students; by June 1850, it had reached 200 (Fig. 1).

Four demographic features of the student body remained roughly the same throughout this period. First, the vast majority of students were white residents of New England: overall more than three quarters of the student body came from just four states—Massachusetts, Connecticut, Maine, and Vermont. Second, although fewer in number than students from New England, students from other states and Canada were present throughout the period. Third, the student population typically consisted of a majority of male students, but female students were always well represented. Fourth, children under age eight were entirely absent until 1845 and constituted just 1.9% of students between 1845 and 1867.

3.2. Student groups who may have been linguistic contributors to Hartford sign. In this section, we highlight two groups of students at ASD who may have particularly shaped the development of the sign language emerging in Hartford—that is, Hartford sign. These two groups are (i) students with deaf family members who likely arrived at ASD as users of a family homesign system or after having been exposed to Hartford sign at home, or both, and (ii) students from Martha’s Vineyard, who were presumably users of Martha’s Vineyard Sign Language (MVSL). MVSL is thought to have developed on Martha’s Vineyard between the seventeenth and nineteenth centuries (Groce 1985, Lane et al. 2000).

ASD students with first-degree deaf relatives. Although lacking the insights later provided by Mendelian genetics, administrators and teachers at ASD understood that deafness was likely an inherited trait in many students (see Peet 1852 and Bell 1884 for examples of the focus on inherited deafness during this period). ASD’s annual reports are filled with statistics about causes of deafness as well as the recurrence of deafness among close relatives. In ASD’s periodic summary reports and in their enrollment records, details are included for each student about known deaf family members, including parents, siblings, cousins, aunts, uncles, and other relatives. Considering only students with first-degree deaf relatives—that is, those family members sharing roughly 50% of their genes, such as parents, children, and siblings—approximately 31% (525/1,700) of the student population during this period had at least one such relative. These first-degree deaf relatives likely shared the same household as the ASD student. The 525 students with first-degree deaf relatives belonged to 274 separate families (mean number of ASD students per family = 1.9, SD = 0.9, median = 2.0, max. = 6). Note that the number of students with first-degree deaf relatives reported here is roughly five times higher than statistics provided in Turner 1868 and cited by Lane (1984:263), who reports only 100 students of 1,700 with ‘deaf relatives’.

The proportion of students with first-degree deaf relatives varied over time. Figure 7 shows that these students formed greater than 49% of the then-small student population in July 1817, before falling to 24.1% by the beginning of the 1830s. The percentage of these students then rose again, peaking at 43.9% in March 1842, and remained above 30% until September 1859.
Figure 7. Attendance figures calculated by month for students with first-degree deaf relatives as a percentage of total enrollment during ASD’s first fifty years.33

The first-degree deaf relatives of ASD students included relatives who had attended ASD previously, who were enrolled at ASD at the same time as the student, or who would eventually attend ASD, as well as relatives who never attended ASD or any other school for the deaf.34 Those students whose family members had previously attended ASD may have been exposed to Hartford sign before arriving at school. Two groups of relatives may have provided exposure to Hartford sign: siblings and parents. Figure 8 separates students whose siblings had previously attended ASD from those whose parents had. The first student to arrive at ASD whose sibling had previously attended the school was Mary Howell, who enrolled in June 1818, one year after her brother Thomas. Students with parents who had attended ASD began arriving in the 1840s. Sarah Allen, the first such student, arrived in June 1843; hence Sarah seems to have been the first native signer of Hartford sign to enroll and is a candidate for being the first deaf native signer of Hartford sign.35 For much of the 1830s, 40s, and 50s, students with siblings who had previously attended ASD constituted greater than 10% of the student population, peaking at 18.8% in May 1841. The group of students with alumni parents remained below 5% of the total enrollment throughout the period, peaking at 4.5% in August 1853.

During this period, there were twenty-one students whose parents had attended ASD and 168 students with siblings who had previously attended ASD. Six students had both parents and siblings who had attended ASD previously; these students are included in the group with ASD parents in the counts above and in Fig. 8. Considering both groups together, students who likely had Hartford sign input prior to enrolling in ASD constituted greater than 10% of the student population in 1825, in the three years

33 These figures are calculated by month rather than by day to smooth the wide fluctuations in the first school year (1817–1818) that were due to low numbers of students.
34 Five students during this period had first-degree relatives who attended a different school for the deaf, including George and Charles Acheson, whose mother Susan Lake had attended the New York Institution (1834–1841; Fay 1898).
35 Thomas Gallaudet, the hearing son of Thomas H. Gallaudet and his deaf wife Sofia Fowler, was born in June 1822. In April 1823, a hearing son, Francis Joseph Clerc, was born to Laurent Clerc and Eliza Boardman; both parents were deaf. These two boys may have been the first children to acquire Hartford sign from birth, although English may ultimately have been the dominant language for both.
from July 1833 to June 1836, and for twenty-seven years from July 1837 to July 1864. Students with deaf siblings who previously attended ASD were on average 7.2 years old (SD = 5.6, median = 6.4) when their older deaf sibling enrolled at ASD; thus, the younger siblings may have been exposed to Hartford sign soon thereafter, when the sibling returned home for vacation. On average, the period during which younger siblings were likely exposed to Hartford sign before entering ASD was 6.4 years in length (SD = 4.5, median = 5.9). While older siblings were still in attendance at ASD, this exposure may have occurred only during school vacations. Students with parents who had attended ASD were likely exposed to Hartford sign for an average of 11.7 years before coming to school; this was their mean age at enrollment (SD = 2.2).

A large group of ASD students only had first-degree deaf relatives who never attended a school for the deaf. During this period, there were seventy-one such students, constituting more than 10% of the student population at points during the school’s first eight years. After 1825, this group began an extended decline as a proportion of the student population. By 1867, they constituted less than 2% of all students. The trend toward a lower proportion of students with first-degree deaf relatives who had not attended a deaf school suggests that an increasing proportion of the deaf population in New England was attending school.

**ASD students from Martha’s Vineyard.** Thomas H. Gallaudet’s tenure as principal at ASD lasted from 1817 until 1830. During that time, four students from Chilmark traveled from Martha’s Vineyard to attend ASD. Three of these—Lovey Mayhew, Sally Smith, and Sally’s sister, Mary Smith—enrolled in October 1825, part of the major influx of students from Massachusetts in that year when state support became available (see §3.1). The fourth student, Lovey Mayhew’s brother, Alfred, enrolled in May 1827. As with many other ASD students in the school’s first decade, these students were not children when they arrived in Hartford: Lovey Mayhew was twenty-three years old and her brother Alfred was twenty; Sally and Mary Smith were nineteen and fourteen years old, respectively. During the period 1817–1867, most deaf Vineyard residents attended ASD. However, the three eldest deaf siblings of Lovey and Alfred Mayhew did not.

Twenty deaf islanders attended ASD during the school’s first fifty years (cf. Stedt & Moores 1990, who count six through 1843, as well as Edwards 2012:61 and Baynton et al. 2007, who count twenty-three through 1887). Their ages at enrollment ($M = 15$, $SD = 3.2$), lengths of attendance ($M = 4.3$ years, $SD = 1.5$), and gender ratio (45% female)
parallel those of other ASD students. Tragically, three female students who attended ASD in the 1850s—Mercy Mayhew, Caroline Hammett, and Catharine Luce—died while in Hartford (two of pneumonia, or ‘lung fever’, in 1857, and one of typhoid in 1859). Mercy Mayhew died while enrolled in ASD’s High Class (see §3.1).

The highest number of deaf residents of Martha’s Vineyard who were in attendance at ASD at any one time during the nineteenth century was six: from September 1855 until August 1858, there were either five or six deaf islanders at the school. In total, twenty-five deaf residents born on the island attended ASD through the end of the nineteenth century, while only five who may have been eligible to attend did not.

All twenty ASD attendees from 1817–1867 returned to the island after finishing their studies. Some would later leave for marriage or work—Lovey Mayhew reportedly worked for a time in Lowell, Massachusetts, where many women were employed in textile mills (see ASD’s alumni records). Five female islanders married ASD alumni and moved off-island. Four male islanders met their future spouses at ASD; these spouses moved to the island after marriage. In addition to these four male alumni, Benjamin Mayhew, who was Lovey and Alfred Mayhew’s eldest brother and who did not attend ASD, married Hannah Smith. In her thirties Hannah had attended ASD for one year, the 1842–43 school year. After their marriage, Hannah moved to the Vineyard (Lane et al. 2011).

By 1850, ten deaf islanders had completed their studies at ASD, and just one of these had moved off-island (Mary Smith). In addition to the nine who remained on the island, two former ASD students (Hannah Smith and Sarah Foster) had married Vineyard residents and moved to the Vineyard from off-island. These eleven deaf residents of Martha’s Vineyard constituted 50% (11/22) of all deaf residents of the island in 1850 and 79% (11/14) of all adult deaf residents (i.e. eighteen years and over; see 1850 US census for Dukes County). Thus, by 1850, Hartford sign likely exerted a strong influence on MVSL (Groce 1983).

Students with first-degree deaf relatives and students from Martha’s vineyard. Students with first-degree deaf relatives were a constant presence at ASD from the first month the school opened. Abigail Dillingham, whose younger sister would come to ASD two years later, was the fourth student to enroll at ASD on 16 April 1817. The first three students from Martha’s Vineyard to attend ASD arrived on 25 October 1825; the next day, 26 October, a group of four siblings, the Packer family, arrived from Leyden in northwestern Massachusetts. As we show now, the number of students with first-degree deaf relatives was far greater than the number of students from Martha’s Vineyard.

Figure 9 compares the attendance figures of three groups of ASD students: students from Martha’s Vineyard, students with first-degree deaf relatives (excluding those from Martha’s Vineyard), and all other students. In the late 1820s, when the first four students from Martha’s Vineyard attended ASD and the school’s total population was under 150, at least thirty students with first-degree deaf relatives were in attendance. In the 1850s, when the number of students from Martha’s Vineyard to concurrently attend ASD was at its highest (six), there were at least sixty-five students who had first-degree deaf relatives.

Because the students from Martha’s Vineyard were presumably fluent signers of MVSL when they arrived at ASD, perhaps the most comparable group with respect to their early linguistic environments were those students with parents or older siblings who had attended ASD—that is, those who had likely had Hartford sign input
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Figure 9. ASD attendance of students with first-degree deaf relatives versus students from Martha’s Vineyard.

Figure 10. Comparison of students from Martha’s Vineyard to students who likely had Hartford sign input before entering ASD.

Inspection of Fig. 10 suggests that students from Martha’s Vineyard could have had the most linguistic influence on Hartford sign in the period from October 1825, when the first three students from Martha’s Vineyard entered the school, until May 1831, when Sally Smith—the last of this group to leave ASD—returned to Martha’s Vineyard. After May 1831, students from Martha’s Vineyard who enrolled at ASD may have had some exposure to Hartford sign from the first group of graduates. In addition, after 1831 the disparity in size between the two groups of students increased such that by June 1843 when Sarah Allen—the first student to enroll whose parents had attended ASD—arrived in Hartford, the group with Hartford sign input formed 14.8% of the student body, whereas the group from Martha’s Vineyard formed less than 2.5%. At the end of the 1850s, when the largest number of Vineyard students to attend concurrently were
present, that group peaked at 3.4% of the student body; at the same time, the group with Hartford sign input formed over 16% of the student body.

4. DISCUSSION. We now consider factors that contributed to the formation of a regional Deaf community in New England, a process that in turn contributed to the development of a nationwide Deaf community and that likely contributed to the development of the Deaf community in Canada. We argue that adolescent and adult students drove the formation of the North American Deaf community. Subsequently, we consider factors revealed by our demographic analyses that contributed to the emergence of Hartford sign, which in turn played a key role in the evolution of ASL.

We consider how various groups of students at ASD—such as young children, adolescents and adults, groups of students with first-degree deaf relatives, and students from Martha’s Vineyard—may have impacted the emergence of Hartford sign. The student population at ASD never included substantial numbers of children under age eight, and none at all were present until 1845. Because they were not present at ASD until 1845, young children did not play an early role in the grammatical elaboration and systematization of Hartford sign while at school; adolescents and adults likely played the more important role in the language’s evolution at ASD. However, the high proportion of students with close deaf relatives—particularly students with first-degree relatives who had previously attended ASD—suggests that young children likely played a role in the elaboration of Hartford sign while still at home.

4.1. COMMUNITY FORMATION. In the mid-nineteenth century, there was a rapid increase in organized activity among deaf people in New England and in the US more broadly. Hundreds of deaf people from around the country attended a tribute to Gallaudet and Clerc in Hartford in 1850 (Lane et al. 2000). The first church for the deaf, St. Ann’s Church for Deaf-Mutes, was formed in New York City in 1852 (Gallaudet 1853, Berg & Buzzard 1989). In 1853, planning for an association of the deaf began, with the New England Gallaudet Association’s constitutional committee convening for the first time in 1854 in Henniker, New Hampshire, ‘in order to promote the education, and temporal and spiritual happiness of our Mute community’ (NE Gallaudet Association 1854:3). There was another gathering of hundreds of deaf people in Hartford in 1854—this time to dedicate a statue of Gallaudet three years after his passing (Porter 1854). Attendees at that gathering and at later ASD reunions in 1860 and 1866 included some of ASD’s African American alumni (Edwards 2012). Periodicals aimed at a deaf audience began to be printed (Edwards 2012). In the American Annals of the Deaf, a professional periodical aimed at deaf and hearing educators of the deaf, the possibility of founding an American state for deaf people was debated (Joyner 2004). As early as 1869, a national association of the deaf was proposed (Rider 1869, Edwards 2012). In sum, by the mid-nineteenth century, not only had a Deaf community formed in New England, but a national community was also taking shape.

How did these regional and cross-regional Deaf communities form between 1817 and the mid-nineteenth century? How did the formation of the New England Deaf community compare with the formation of Deaf communities in other well-studied cases, such as that of the Nicaraguan Deaf community? Here we argue that adolescent and adult students played a key role in the formation of the New England Deaf community. Although students remained at ASD for relatively short periods of time, these students were—after leaving school and returning to their hometowns—mature enough to maintain relationships over long distances, often through letter writing, visits, and marriage.
ASD’s age profile and community formation. During the school’s first fifty years, the age distribution of the student body at ASD was unlike the age distribution of typical primary and secondary schools (see §3.3). The average ASD student was likely older at the time of enrollment \((M = 14.4)\) than the average student in public schools during the period, which were open to children as young as five (Meyer et al. 1979, Snyder 1993); at ASD, the minimum age of admission was never lower than eight years during this period. Both adults and adolescents were well represented in ASD’s student body throughout the period. How did the age profile of ASD’s student body influence the formation of a Deaf community in New England? What roles did adult and adolescent students play in forming this community?

In theorizing the factors that drove the formation of the Deaf community in Nicaragua, Polich (2000:297, 2005) points to an adolescent group (a ‘friendship circle’) that formed, at least initially, for the straightforward purpose of socializing. Although that group was small in number—and therefore perhaps less fertile ground for the formation of a Deaf community (Schein 1989)—Polich argues that adolescence afforded this group sufficient time (roughly twelve years between 1977 and 1989) and sufficient freedom from the responsibilities of adulthood for the beginnings of a community to take shape. It was this group, led by a few catalytic personalities, that drove the formation of the Deaf community in Nicaragua and that initially constituted its core.

Might adolescent ASD students have played a role in driving the formation of the New England Deaf community that was similar to the role adolescents played in Nicaragua? Many of the early leaders of the New England Deaf community attended ASD in their teens. Thomas Brown, the first chairman of the New England Gallaudet Association’s constitutional committee and the Association’s first president (NE Gallaudet Association 1854, Lane et al. 2000), was eighteen when he enrolled at ASD in 1822; he attended until 1827, when he was twenty-three years old. Other members of the constitutional committee included Jonathan Marsh (age thirteen when he enrolled in 1827; attended until nineteen), Samuel Lewis (age twelve in 1829; attended until seventeen), George Marshall Lucas (age thirteen in 1829; attended until age seventeen), and William Chamberlain (age twelve in 1844; attended until sixteen). As with the early leaders of the Nicaraguan Deaf community, these early leaders in New England were adolescents while at ASD, and while there, these students were largely free from the responsibilities of adulthood.

Community formation amid geographic dispersal. Unlike the early core community in Managua, whose members were residents of that city, the early leaders of the New England Gallaudet Association lived in separate parts of New England both before and after attending ASD. The average distance between their homes in Henniker, New Hampshire (Thomas Brown), Windham, Connecticut (Jonathan Marsh), Middletown, Connecticut (Samuel Lewis), Haverhill, New Hampshire (George Marshall Lucas), and South Reading, Massachusetts (William Chamberlain) was 99.9 miles (160.9 km). Thus, the type of dense and local social network among adolescents that developed over the course of twelve years in Managua did not exist among this group of early leaders in New England.

The early Deaf community forming in New England was geographically dispersed. Students who attended ASD during this period were drawn from every modern county in New England, from many other US states, and from eastern Canada. Most of these students likely returned to their hometowns after leaving Hartford. Lydia Macomber (ASD 1832–1836), in a letter to a former schoolmate written three months after finishing at
ASD, complained about being ‘lonesome without any deaf and dumb person to talk with me by signs since Eunice Tripp [a former schoolmate] went home’ (Macomber 1838). The New England Gallaudet Association’s constitutional committee viewed the isolation of deaf individuals as the central problem facing the nascent Deaf community. In the introductory remarks to its proceedings, the committee formulated its mission as follows: ‘The Mutes of New England and other States, in many cases, live where they have not ready access to the company of other individuals of the same class. … It is the object of the proposed Society to remedy this evil as far as possible, and, to ameliorate the condition of the Deaf Mute community’ (NE Gallaudet Association 1854:2).

The geographic dispersal of the early Deaf community in New England may have been due, in part, to the age profile of the student body. Students leaving ASD in adolescence and adulthood likely had responsibilities—for example, to their families or farms—that required them to return to their hometowns (witness Thomas Brown’s return to Henniker to work on his father’s farm; Lane et al. 2000) and that may have prevented them from attending ASD for longer periods. These responsibilities were a centrifugal tendency affecting adolescents and adults that resulted in the dispersal of former ASD students and that might have hindered the formation of a Deaf community in New England.

However, several factors exerted pressure toward community formation. Many of these former students returned to families that included first-degree deaf relatives (see §3.2); although separated from the community in Hartford, these students rejoined satellite communities upon their return home. Some of these communities may have formed larger regional networks based in part on genealogical connections (Lane et al. 2011), and many gained members following the rapid growth of marriages between former students (see below). Furthermore, after leaving ASD, many former students were literate and mobile, two characteristics that enabled these students to maintain social ties with their former schoolmates despite geographic separation.

**Literacy, Mobility, and the Maintenance of Social Ties.** Literacy played an important role in maintaining the geographically dispersed Deaf community. Before the advent in the mid-nineteenth century of newspapers and journals aimed at deaf audiences (Van Cleve & Crouch 1989, Edwards 2012), former ASD students remained in contact by writing letters. Proper letter writing was emphasized in many nineteenth-century American schools (Schultz 2000), including ASD (ASD 1819). One of ASD’s overarching academic aims was for students to master written English (ASD 1818). While students were in Hartford, letter writing served as an important link between students and their families; ASD’s enrollment records are filled with instructions from parents about their desired frequency of letters home from their children. After leaving Hartford, students were prepared to carry on correspondence with their former schoolmates.

Although only limited correspondence among former ASD students has come to light (e.g. Lane et al. 2007), the letters we do have make it clear that many students remained well connected with their schoolmates and with ASD faculty both during and after their stays in Hartford. As early as 1818, ASD’s first two registered students, Alice Cogswell and George Loring, corresponded during school breaks (Cogswell 1818, Loring 1818a); Loring also wrote to the school principal, Thomas H. Gallaudet (Loring 1818b). Lydia Macomber’s correspondence shows not only that former students wrote frequently to

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37 [https://www.google.com/books/edition/_/i3Q5lrL-DiAC?hl=en&gbpv=1](https://www.google.com/books/edition/_/i3Q5lrL-DiAC?hl=en&gbpv=1)
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each other—informing each other about upcoming marriages, births of children, and the whereabouts of friends—but also that many traveled long distances in order to visit their former schoolmates.

The emergence of a dispersed Deaf community in New England was undoubtedly aided by the transportation innovations of the early nineteenth century. Railways began to link major cities in New England in the late 1830s and 1840s: the Western Rail Road line from Boston opened service to Springfield, Massachusetts, in 1839, and five years later the link from Springfield to Hartford was completed (Kirkland 1948). The expansion of the rail network in New England linked smaller cities as well (Fisher 1919). These connections made it easier for students to return home from Hartford during the summer break from school. Starting in 1848, a staff member would, at the beginning of the six-week summer vacation, accompany students by rail to Boston where family members could meet them (ASD 1848). Many ASD students, after attending the school for several years, were experienced long-distance rail travelers.

Had the age profile of ASD’s student body been younger, while holding constant the relatively short periods of attendance (four to six years on average; see §3.1), a Deaf community in New England might have formed more slowly. Younger students who returned home after finishing their studies might not have maintained social connections with former schoolmates as easily as evidently happened. That many ASD students finished their studies in late adolescence or early adulthood likely both facilitated the rapid formation of a Deaf community in New England and decreased the time between the formation of regional Deaf communities and a national one.

As the Deaf cultural network began to grow denser in New England and other parts of the northeast, former students extended the network into new areas of the US and Canada. Some adult students took jobs at schools in other parts of the country. For example, Abigail Dillingham, who enrolled at ASD in 1817 and graduated in 1821 at age thirty-five, became a teacher at the Pennsylvania Institution in 1821 (Edwards 2012). Similarly, Job Turner, after graduating from ASD in 1839 at age nineteen, moved to Virginia to help found the first school for the deaf there and became its first deaf teacher in December 1839 (Van Cleve & Crouch 1989). Other students migrated westward to earn their livelihoods. Edmund Booth, after finishing his studies at ASD in 1832 at age twenty-two, remained on the ASD faculty for seven years; he then headed west to Iowa, where he eventually owned a newspaper. He also joined the California Gold Rush in 1849 (Lang 1984). These former ASD students were, as adults, mobile in a way that a younger student body might not have been.

Marriage and community formation. ASD’s model of deaf education, which was both residential and coeducational, provided the context for long-term relationships, such as marriages, to form. Because, after returning to their homes, former students were scattered geographically across New England, these long-term relationships played an important role in the maintenance of a social network among former students (Valentine 1991, Lane et al. 2011).

ASD was a residential and coeducational school throughout this period. Valentine (1993:280) suggests that, while coeducation in the US had become relatively common following the American Revolution (see Tyack & Hansot 1992), a coeducational residential school such as ASD may have been ‘a novelty’. For some activities, ASD segregated students by sex. In addition to separate dormitory areas, male and female students

38 https://www.google.com/books/edition/_/tCAZb8kxtoEC?hl=en&gbpv=1
sat at separate tables during mealtimes (ASD 1829, Valentine 1993) and were engaged separately in extracurricular work, with male and female students, respectively, learning trades and domestic work (ASD 1825). This gendered division of labor was apparently common in nineteenth-century schools (e.g. Fletcher 1943 for a similar arrangement at the Oberlin Institute).

Although female and male students were kept separate for parts of the day, they attended lessons together in ‘the same rooms and generally in the same classes’ (ASD 1845:49). In this approach to coeducation, ASD differed from its model in Paris. ASD’s 1845 annual report includes a description by then-principal Lewis Weld of his 1844 visit to schools for the deaf in Europe. In his report on the Paris Institute, Weld notes that, while the school was open to male and female students, these students were educated and housed separately and had little interaction outside of a small number of contexts, such as chapel. Even there, male and female students sat in separate sections, with the females in the chapel gallery (ASD 1845). During a trip to the Paris Institute in 1847, Clerc found that, as was the practice in 1816 when he was last employed at the school, male teachers were kept apart from female students (Clerc 1848, Hedberg & Lane 2020).

Marriage between deaf partners was viewed negatively by some prominent scholars in the nineteenth century (Bell 1884) and perhaps even by faculty at ASD, such as Gallaudet, who may have initially had reservations about Clerc’s 1819 marriage to Eliza Boardman (Porter 1858). If, early on, Gallaudet indeed opposed marriage between deaf partners, or perhaps marriages between a teacher and a student, he may soon have had a change of heart. In 1821, Gallaudet himself married a former ASD student, Sophia Fowler. Later, he supported at least one marriage between deaf partners by officiating at their wedding; see the record of Linda Taylor and William Sanford’s 1849 marriage in Hartford, which lists T. H. Gallaudet as ‘Ordained Minister of the Gospel’ (Connecticut 1849).

Laurent Clerc and Eliza Boardman’s marriage in 1819 was one of the earliest recorded marriages between deaf partners in the US (Fay 1898). Over the next decades, beginning particularly in the 1830s, the number of such marriages increased rapidly. Fay, whose analysis aggregated survey responses from deaf individuals and deaf schools across the US, reported eight marriages between deaf partners in the 1820s compared with 198 in the 1850s and 1,017 in the 1880s. This rapid increase coincided with the growing number of schools for the deaf. By the end of the 1820s, four residential public schools for the deaf had been established in the US; that number rose to twenty-one by 1859 and to fifty-three by 1889 (Best 1914).

Of the increasing number of marriages between deaf partners, many were between former ASD students, or between former ASD students and former students of other schools for the deaf. Nearly a third of all students who attended ASD during its first fifty years (32.5%; 553/1,700) eventually married another former ASD student. An additional eighty-eight ASD students married former students of other schools for the deaf in the US, Canada, or Europe. Thus, 37.7% (641/1,700) of students who attended ASD during this period eventually married a student of some school for the deaf. The frequency of these marriages in our data exceeds previously reported statistics. Bell (1884) reported that only 23.8% of ASD students (502/2,106) married an alumnus of any school for the deaf between 1817 and 1877.

39 https://www.google.com/books/edition/_/jC7Wf9pSv_wC?hl=en&gbpv=1
40 https://www.google.com/books/edition/_/mwefTwZj35sC?hl=en&gbpv=1
41 https://www.google.com/books/edition/_/0z15DcU7TtxMC?hl=en&gbpv=1
This pattern extended to the African American students who attended ASD. The Boardwin siblings—Delia, Susan, and George—all married alumni of schools for the deaf, as did three other African American students from ASD. Delia married Oliver Badger, a white student who attended ASD with her from 1848–1851 (Lane et al. 2011). Her siblings, Susan and George, married African American students from ASD, Henry Simons and Sarah Taylor, respectively. Adam Mettrash married an African American woman named Elizabeth Pepinger, who had previously attended the New York Institute. Adam and Elizabeth Mettrash had a deaf son, Robert Le Grand Mettrash, who was baptized in 1865 by Thomas Gallaudet (Thomas H. Gallaudet’s eldest son) in St. Ann’s Church for Deaf-Mutes in Manhattan (Episcopal Diocese of New York 1865). Robert later enrolled at ASD in 1872 and may have been the first African American student in New England who was a native signer of emergent ASL.

Many of these marriages between former students of schools for the deaf brought together deaf partners whose hometowns were separated by long distances; witness the marriage of Thomas Brown and Mary Smith (Lane et al. 2000). In a preliminary analysis of 100 marriages that occurred between 1817 and 1867 in which both partners had attended ASD, the median distance between the partners’ hometowns was 45.4 miles (73.1 km). These marriages between former ASD students crisscrossed New England, creating a network of deaf relationships that stretched northeastward into Nova Scotia and westward to Illinois.

That such long-term relationships between deaf partners were forged at ASD and that these relationships contributed to the formation of a cross-regional Deaf community is illustrated by Mary Perkins of Newbury, Massachusetts (ASD 1847–1853) and Ralph Atwood of Watertown, Connecticut (ASD 1848–1858). The inauspicious beginning of their relationship is recorded in ASD’s Record of Offences – against good order and the rules of the Asylum. In Mary’s final year at ASD when she was seventeen years old, Ralph—then age fifteen—was caught stealing money from the closet of Abraham Boardwin, the school’s steward. After being questioned by the principal, Lewis Weld, Ralph admitted that he had been stealing money, ‘perhaps two or three dollars’, from the steward’s closet for nearly a year and that he had used the money, in part, to purchase gifts for Mary, such as a ‘great sugar-heart’, which he surreptitiously left in her desk. For his offenses, Ralph was ‘whipped severely’ and was asked not to return to ASD after the end of the school year. Mary too was disciplined, though less severely, for willingly receiving Ralph’s gifts and because ‘she oggled him from the windows’. Mary graduated from ASD in 1853. Ralph was allowed to return to the school in May 1854; he graduated in 1858.

The relationship that formed at ASD became a marriage in 1863, when Mary and Ralph wed in her hometown of Newbury, Massachusetts. Ten years had passed between her graduation and their marriage. The two likely remained in contact via letter writing; perhaps Ralph also traveled by rail to visit her: Watertown was close to the New York and Hartford rail line, on which one could travel to Newbury via Hartford, Springfield, and Boston, a trip of roughly 180 miles (290 km). Shortly after their marriage, by 1865, the couple moved to Columbus, Ohio, where Ralph, then described as ‘a deaf mute of excellent education and aptness to teach’, became a teacher at the Ohio Institution (1866:8). Mary worked there as assistant matron. Later, both worked at the Arkansas Institute as teachers, before Ralph briefly served as Principal at the New England Industrial School for the Deaf in Beverley, Massachusetts, and then returned to the Ohio Institution (American Instructors of the Deaf 1912, Edwards 2012). Thus, these two former ASD students contributed to the spread of Hartford sign beyond New England into other parts of the country.
4.2. Emergence of Hartford sign. We now consider the consequences for language emergence of two features of the New England signing community, namely the age distribution of students at ASD and the representation at ASD of students with first-degree deaf relatives. We argue (i) that, because young children were largely absent from the signing community at ASD, in particular before 1845, they played a relatively less important role in the emergence and early evolution of Hartford sign in school, while adolescents and adults played a more important role there, and (ii) that the elaboration and nativization of Hartford sign may have been enabled by a decentralized network of families and small signing communities, with the community in Hartford representing the network’s hub in New England. In these small-scale communities, children may have played a prominent role in the early evolution of Hartford sign.

Student ages at ASD and their impact on the evolution of Hartford sign. In their account of the emergence of Nicaraguan Sign Language, R. Senghas et al. (2005:303–4) draw a fundamental distinction between the role of children and the roles of adolescents and adults in language emergence. They argue that, whereas the human ability to acquire, systematize, and elaborate language (‘constructive linguistic abilities’) peaks in childhood, the ability to create the types of stable social situations conducive to the development and persistence of linguistic conventions (‘constructive social abilities’) comes later in life. According to these authors, adolescents/adults and children played complementary roles in the emergence and evolution of Nicaraguan Sign Language: the older signers provided the stable social context and the linguistic input for younger signers (Polich 2000, 2005), while the younger signers systematized and elaborated the emerging language’s grammar (Senghas & Coppola 2001).

In a comparison of children at the Managua school who had been exposed to sign language under age ten, those in the second cohort (i.e. students who enrolled from 1983–1990) exhibited more frequent spatial modulation of verbs (akin to verb agreement; Lillo-Martin & Meier 2011) than those in the first cohort (enrolled from 1978–1983). There was no difference between cohorts for those students exposed to sign language after ten (Senghas & Coppola 2001). Furthermore, first-cohort students who had been exposed to sign language under age ten exhibited greater fluency, producing more morphemes per minute compared with students who arrived at the school after age ten. Second-cohort signers who were exposed to Nicaraguan Sign Language before age 6.5 signed more fluently than their first-cohort counterparts, but there were no differences between cohorts for the other two groups (6.5–10 and >10). Thus, the research in Managua suggests that children exposed to accessible language under age ten, and particularly those exposed before 6.5, may elaborate novel grammatical structures and produce language more fluently compared to children first exposed to accessible language later in life.

The presence of large numbers of adolescent and adult signers in Hartford apparently fostered the rapid formation of a Deaf community, and, in Laurent Clerc, that community drew on richer linguistic resources than were available to the nascent signing community in Managua. However, in contrast to the situation in Managua, young signers were absent from ASD’s student body early on: as noted in §3.1, there were no students under age 6.5 until 1854, none under eight before 1845, and just seventeen

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42 Another important source of linguistic input may have been Wilson Whiton (ASD 1817–1825), the third student to enroll at ASD. He was hired as an assistant instructor in 1826 and taught for forty-six years until his retirement at age sixty-seven in June 1872 (ASD 1873; https://www.google.com/books/edition/_/A80ftl3XAwC?hl=en&gbpv=1); he likely interacted with every student during this period.
under eight through 1867. Thus, during ASD’s first quarter century, children under age eight could not have played the same role at ASD in the emergence of Hartford sign that young signers at the Managua school would later play in the emergence of Nicaraguan Sign Language. This difference in the demographic profiles of the signing communities in Hartford and Managua raises new questions about the timelines along which ASL and Nicaraguan Sign Language emerged. If young children played a crucial role in the systematization and elaboration of Nicaraguan Sign Language, but such children were largely absent at ASD, were those processes relatively slower in the emergence of ASL?

The absence of young signers in Hartford was due to school policy: recall from §3.1 that the minimum age of admission remained at age eight from 1843 until roughly 1905, when it was lowered to age six (before 1843, the minimum age of admission was higher). Indeed, due to ASD’s admission policy, children under age eight were likely not represented at the school in large numbers until the early twentieth century, so they could not have driven the language’s evolution while at school in Hartford before that point in time. If policies about minimum age of admission at other schools for the deaf mirrored those of ASD during the nineteenth century, children under eight may not have played a central role in the evolution of ASL inside American schools for the deaf until the twentieth century.

Adolescent and adult signers in Hartford, given their greater numbers, likely played important roles in both aspects of the emergence of Hartford sign—that is, both in the formation of a stable signing community and in the evolution of the community’s language. What were the characteristics of these older signers at ASD? During the school’s first fifty years, students were admitted, on average, in adolescence (M = 14.4 years old). Particularly after 1843, many newly enrolled adolescent signers had previously been exposed to Hartford sign—either from siblings or parents who had attended the school. However, a majority of students (69.0%; see §3.2) did not have first-degree deaf relatives; hence the typical ASD student during the school’s first half century likely had little access to visual language during childhood. If so, these late-learning students’ first experience of accessible language occurred when they arrived at ASD.

These students’ delayed access to sign language may have affected their acquisition of Hartford sign; such delays negatively affect language acquisition by late learners of a sign language when compared to native signers (Mayberry & Eichen 1991, Mayberry et al. 2002) or to L2 learners of a sign language (Mayberry 2010). In a study of two adolescent learners of ASL as a first language, Morford (2003) found that, even after seven years using ASL, these signers had problems in comprehension and sentence-repetition tasks.

However, the signing community that formed at ASD—which may have shown substantial linguistic variation due to the varying backgrounds of the students—developed within a milieu that encouraged signing among students and between students and teachers (Edwards 2012). The residential setting provided ample opportunities to sign—whether in the classroom, during mealtimes, or in the dormitories—within and across peer groups; see Reilly & Reilly 2005 and Jones & Singleton 2020 for the role older deaf students can play in socializing younger students in residential school settings and in facilitating their acquisition of sign. Such a sign-rich environment must have led to innovations in Hartford sign. Certainly, sign names, place names, and other novel

43 In 1850, the Pennsylvania Institution had a minimum age for admission of ten years old (Pennsylvania Institution 1851); in 1853, the New York Institution’s minimum age for admission was twelve (Peet 1854). The first class of students at the Kentucky School for the Deaf (est. 1823; Fay 1893) included seventeen individuals with a mean age of 19.4 years ($SD = 5.7$, range = 12–30).
lexical signs would have been innovated there. For example, the origins of the ASL sign president are thought to be traceable to a visit in 1817 to ASD by then-President of the US James Monroe (Barnard 1834, Supalla et al. 2021). We have seen that many ASD students who enrolled in adolescence or adulthood later became leaders of the early Deaf community, and many became teachers at ASD and at other schools for the deaf. These individuals may already have been leaders within the signing community at ASD; hence their language usage may have had an outsized influence on the rest of the community. Even after 1843, as the number of students who enrolled under age ten increased, the norms developing among the adolescents and adults at ASD may have shaped the emergence of Hartford sign.

Students with first-degree deaf relatives. Although many ASD students were evidently late learners of Hartford sign, nearly a third (31%) had first-degree deaf relatives with whom, presumably, they communicated regularly in some form of sign before arriving in Hartford (see §3.2). These students likely had widely varying experiences with visually accessible language before entering ASD, depending on such factors as the number of deaf family members, the ages of those family members, a student’s birth order with respect to other deaf family members, and whether any deaf family members had previously been exposed to Hartford sign. These various groups of students likely contributed differently to the evolution of Hartford sign.

An older sibling can have important consequences for the amount of language heard or seen by younger siblings and hence for those younger siblings’ language abilities (Tsinivits & Unsworth 2021). German (2021) found that, in a family of five deaf siblings in Mexico, the eldest sibling produced pantomimic forms that combined path and manner features, whereas younger siblings separated path and manner features in their classifier forms. Senghas et al. (2004) characterize this type of segmentation as evidence of grammatical elaboration. Thus, it may be that deaf children, with just one older sibling serving as a linguistic model, can elaborate novel grammatical structures. It may also be that the presence of deaf siblings facilitates grammatical elaboration (Gagne 2017).

We now identify three groups within the larger group of deaf students with first-degree deaf relatives. One group of students with first-degree deaf relatives were those who were the first deaf members of their families ($n = 265$). These students—particularly those whose deaf siblings were much younger—may not have had accessible linguistic input during childhood and may have used a homesign system when they arrived at ASD.

A second group of students were born to deaf parents who did not attend ASD or any other school for the deaf. There were fifteen such students; seven attended in the first half of the period and eight in the second. Some of these students’ parents had apparently been the only deaf members of their own natal families. For example, Thomas Brown’s (ASD 1822–1827) father, Nahum, had hearing parents and siblings (Lane et al. 2000). However, five students (Benjamin, Erastus, and Abigail Lovejoy and Thomas and William Swett) had both a deaf parent and a deaf grandparent, neither of whom had attended a school for the deaf (Lane et al. 2011). Hence the Lovejoy and Swett siblings may have come to ASD with homesign systems that had been independently elaborated over three generations.

Benjamin Lovejoy enrolled in 1844, while Erastus and Abigail both enrolled in 1860. Thus, before enrolling at ASD, Erastus and Abigail had likely been exposed to Hartford sign by Benjamin. Thomas Swett enrolled in 1837, while William did so in
1839. Thomas and William were the nephews of Thomas Brown, who had graduated from ASD in 1827. The Swetts and the Browns, including Thomas, lived in the same town—Henniker, New Hampshire. Hence the Swett siblings may have been exposed by their uncle to Hartford sign before enrolling at ASD.

In addition to the Lovejoys and Swetts, two other students whose deaf parent (specifically, their father) did not attend a school for the deaf (Olive and Stephen Scovel) had likely been exposed to Hartford sign by their earlier-enrolled sibling, Harriet. In sum, five students may have come to ASD as third-generation homesigners, and ten students were second-generation homesigners. Of these ten, four had no deaf siblings, two had deaf siblings who never attended a school for the deaf, and four had deaf siblings who attended ASD (two of these four had a previously attending sibling).

A third group had family members who had previously attended ASD: twenty-one with earlier-enrolled parents and 168 with earlier-enrolled siblings. These 189 students included six who had both parents and siblings who had attended ASD. The earlier ASD attendees likely provided Hartford sign input to younger deaf family members before their family members arrived at ASD. The median age of the 168 students whose siblings had previously attended ASD was 6.4 years when their oldest sibling first enrolled (see §3.2). Hence eighty-three of these students were under 6.4 years old when first exposure to Hartford sign likely occurred. The twenty-one students with ASD-attending parents were exposed to Hartford sign from birth. Counting these two groups together, at least 104 children were likely exposed to Hartford sign before age 6.5. Thus, although young children played a less central role in the emergence and elaboration of Hartford sign while at ASD, they may have played an important role in the language’s evolution while at home. When these children later arrived at ASD, the likely result was that new groups of students included classmates with some prior knowledge of Hartford sign. If this is correct, entering students who had no deaf relatives would have gained exposure to Hartford sign both in the classroom and in informal interactions among their classmates.

Sarah Allen was the first student to attend ASD who had at least one ASD-attending parent. She arrived in June 1843 at age 10.25. Her parents, George Allen and Mary Russell, had both attended ASD; George enrolled in 1817 at age fourteen but stayed just one month, while Mary enrolled at age fifteen and stayed for the then-typical four-year course (1822–1826). Sarah’s two younger siblings both entered ASD before age ten: her brother, Asa, enrolled in 1845 at age nine, and their sister, Eliza, began four years later, also at age nine. By the time Eliza enrolled at ASD, Sarah had completed five years at the school and Asa had completed three. Thus, in addition to the Hartford sign input provided by her parents, Eliza’s siblings likely provided her sign input while they were at home during the two months of scheduled school breaks (two weeks in April–May and six in August–September; ASD 1843).44

The Allen family’s situation may have been typical of the situations of other students with ASD-attending parents and older deaf siblings. The parents, George Allen and Mary Russell, attended ASD during its first decade, when students generally enrolled in their teens and sometimes attended for relatively brief periods. Neither George nor Mary had first-degree deaf relatives; hence, we may assume that they experienced delays in language acquisition and that their signing exhibited features characteristic of late learners of a sign language. These parents provided signed input for their three deaf

44 https://www.google.com/books/edition/_/2MWU5m5wLksC?hl=en&gbpv=1
children, whose own language likely exhibited greater systematicity and more elaborate grammatical structures compared to the language of their parents (Singleton & Newport 2004). The younger deaf siblings also received signed input from older siblings.

In sum, young children in New England during this period likely played a role in the systematization and elaboration of Hartford sign while at home, before entering ASD. These young signers were dispersed across New England in families with multiple deaf members. Thus, just as the Deaf community in New England was forming across a geographically dispersed network, early on the community’s language was being systematized and elaborated in scattered deaf families. Hartford likely functioned as a hub both for the dispersed Deaf community and for the elaboration of Hartford sign. Students who had acquired the language as young children in separate parts of this emerging Deaf network met in Hartford. Because of the age profile of the student body at ASD and because of school policies about minimum age and length of attendance, the process by which Hartford sign emerged and contributed to the evolution of ASL was apparently less localized than was true of the emergence of Nicaraguan Sign Language in Managua.

5. Conclusion. By the end of ASD’s fiftieth year, the deaf cultural and sign linguistic landscapes in the United States and Canada had drastically changed from the years prior to 1817. Before ASD’s founding, relatively small deaf communities were scattered across North America (Groce 1985, Lane et al. 2000), but by 1867 a cross-regional Deaf community with a shared language stretched from New England across much of the US and eastern Canada. Numerous Deaf cultural and educational institutions formed during this fifty-year period, the number of marriages between deaf partners increased rapidly, and signers of emergent ASL who had attended schools for the deaf such as ASD spread their language to many parts of North America. In New England, the growth of the Deaf community and the spread of ASL contributed to the decline of MVSL (Power & Meier 2022) and may have impacted Maritime Sign Language in eastern Canada.

Our quantitative approach to analyzing the early signing community in Hartford has shed new light on key features of this community. In turn, these insights can add nuance to our understanding of the formation of new language communities—particularly, new signing communities. In our view, the early signing community in Hartford was a novel language community—that is, one that formed where none had previously existed. But, through Clerc, that community would inherit cultural and linguistic traditions that had developed in the signing community in Paris. In this way, the introduction of LSF in the US, and the subsequent emergence of ASL, may parallel the ‘indigenization’ of English in communities around the world in which English had not previously been spoken (Mufwene 2015:6); that is, it may parallel the formation of World Englishes (Kachru 1985; also postcolonial Englishes: Schneider 2007).

As with ASL, many sign languages have emerged within signing communities that have historical ties to the nineteenth-century Parisian Deaf community. *Língua Brasileira de Sinais* (Brazilian Sign Language) and *Lengua de Señas Mexican* (Mexican Sign Language) are thought to have emerged in novel signing communities that formed when Eduardo Huet, a deaf French educator and signer of LSF, migrated to those countries and helped to establish schools for the deaf there (Ramsey & Quinto-Pozos 2010). LSF is not the only sign language that has been indigenized in new populations, Russian Sign Language spread across the former Soviet Union via schools for the deaf. For example, Tajik Sign Language emerged within an apparently novel signing community when hearing Soviet educators established a school for the deaf.
near Dushanbe and introduced a variety of Russian Sign Language to their students (Power 2023).

Our analyses add nuance to typologies of signing communities. Like other so-called national signing communities or macro-communities (Fenlon & Wilkinson 2015; cf. Hou & de Vos 2022 for discussion), the signing communities in Hartford and Managua were centered in schools for the deaf and expanded to become the predominant signing communities in their respective countries. However, despite both being school-centered, the signing communities in Hartford and Managua formed in linguistic ecologies with distinct features. Early on, ASD was the center of a network spread across New England. That network rapidly expanded during the nineteenth century, as new school-centered signing communities were founded in other parts of the US and in Canada (Edwards 2012, Supalla & Clark 2015). In contrast, the community in Managua, which included few groups of deaf relatives early on, was apparently much less widely dispersed (Polich 2005). As we have shown, young children were absent at ASD, but children were well represented in Managua (R. Senghas et al. 2005). Unlike the school in Managua, ASD actively fostered the use of sign language (Baynton 1996, Polich 2005). Thus, although both signing communities are considered national signing communities, they formed in crucially distinct ways.

The approach in this article can be applied in analyses of other signing communities in the United States. Annual reports of other early schools—such as the New York, Pennsylvania, and Kentucky Institutions, as well as many others—have yet to be thoroughly analyzed. The approach may shed light on the formation of dialects of ASL, such as that of Black ASL (McCaskill et al. 2020 [2011], Lucas et al. 2022). Similarly, schools for the deaf in other parts of the world—such as those in Vienna (Venus 1854), Manchester (Manchester School 1838), New South Wales (New South Wales Institution 1881), and many more—published reports about their students and teaching faculty. In the future, analyses of such records will provide a deeper understanding of the early formation of Deaf communities and of the social conditions within which their sign languages evolved.

REFERENCES


Bell, Alexander Graham. 1884. Upon the formation of a deaf variety of the human race. Presentation at the National Academy of Sciences, New Haven, CT, 13 November.


German, Austin. 2021. The emergence of segmentation in Zinacantec Family Homesign. Presentation at the 20th meeting of the Texas Linguistics Society, University of Texas at Austin, 5 March.


Loring, George. 1818a. George Loring to Alice Cogswell. April 22, 1818. In collections at Cogswell House, American School for the Deaf.


Virtanen, Pauli; Ralf Gommers; Travis E. Oliphant; Matt Haberland; Tyler Reddy; David Cournapeau; Evgeni Burovski; Pearu Peterson; et al. 2020. SciPy 1.0: Fundamental algorithms for scientific computing in Python. *Nature Methods* 17.261–72. DOI: 10.1038/s41592-019-0686-2.


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