Project Number SCB-OSV1

THE REED-SARGENT FIND: CERAMICS TELL THE STORY

An Interactive Qualifying Project Report
submitted to the Faculty
of the
WORCESTER POLYTECHNIC INSTITUTE
in partial fulfillment of the requirements for the
Degree of Bachelor of Science
by

_____
Kenneth J French

_____
John J Ruggiero

Date: 7/21/2000
Approved:

_____
Professor Steven C. Bullock, Major Advisor

1. Ceramics
2. George L. Miller's CC Index Values
3. Old Sturbridge Village

_____
Professor David M. Samson, Co-Advisor

ABSTRACT

This IQP helped Old Sturbridge Village research nineteenth-century ceramics found at a archeological site in Oakham, Massachusetts. We developed a computerized database of the ceramics found at the site, and a program that historians from OSV and elsewhere can use to categorize and inventory these materials and to assign a value based on an index developed by the archeologist George Miller.

ACKNOWLEDGMENTS

We would like to thank Ed Hood from Old Sturbridge Village for his assistance with this project. Mr. Hood provided access to the information regarding the archaeological site, as well as providing assistance regarding Miller's Process.

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

LIST OF TABLES

1. INTRODUCTION AND PROJECT GOALS

This project helped Old Sturbridge Village evaluate nineteenth-century ceramics found at an archeological site located in Oakham, Massachusetts. We developed a computer program that uses the indices developed by archeologist George Miller to help evaluate the comparative value of the ceramics. The program provided a computerized database of the material and a template that researchers at Old Sturbridge Village and elsewhere can use to categorize, inventory, and produce index values for other ceramics located at other sites.

2. THE NANCY JOHNSTON SITE AND OLD STURBRIDGE VILLAGE

2.1. Introduction to the Site and the Discovery of the Ceramics

Working with Ed Hood, a historian from Old Sturbridge Village, we entered data collected from an archeological site, the Reed-Sargent find, located in Oakham, Massachusetts. The site was discovered in 1995 when a porch was removed from a house belonging to Nancy Johnston. Research on the house and its owners revealed that the ceramics could be traced back to the Reed and Sargent families that lived in the house from 1833 through about 1898.

Lewis Reed married Mary Miles in 1824. He purchased the land from his father in 1833 and built a house. The censuses of 1850 and 1860 listed Lewis as a farmer. The value of his real estate of the house and 45 acres of land was $1,500.00 in 1860. This amount was comparable or slightly lower than that of most of his neighbors. His personal estate was listed as $400.00, while his neighbors ranged from $50.00 to $1,300.00, with the typical value less than $400.00. In 1861 his daughter Martha Elizabeth married James Sargent, who was listed in the census as a bootmaker. Lewis Reed sold the house to his son-in-law in September of 1867. Lewis died the following month leaving his wife, daughter and son in law, living in the house until 1898.

The house was then sold by the family and by 1914 George Morse was listed as a renter of the house. The new owners took all of the pottery of the Reed and Sargent families and threw it in the carriage shed area of the house. Later, when improvements were made around 1920, this wood and carriage shed was floored over, and a new porch was added to the house. When work was being done, the ceramics were moved from the carriage shed out to where the covered porch was added onto the house, covering all of the pottery buried underneath.

When the porch was removed in 1995, Old Sturbridge Village researchers examined and excavated all of the pieces of ceramics and other items from under the porch and inside the

carriage shed. The pieces were then cleaned, indexed and cataloged into a Microsoft Access database. Altogether there are 359 lots, or artifacts, from the site. These lots contained plates, teaware, chamber pots and other utilitarian service pieces.[1]

2.2. The Purpose of Old Sturbridge Village

Old Sturbridge Village, a nonprofit educational institution, is an outdoor living history museum. Its collections, exhibits and programs present the story of everyday life in a small New England town during the years from 1790 to 1840. The museum's major exhibit area re-creates the daily life of a rural inland community in the 1830s with its farms, fields, shops, center village of houses and meetinghouses and outlying mill areas. Depicting more than 50 years of change from the vantage point of the 1830s, the Village portrays the family structures, work processes, patterns of taste and the social, economic, legal and religious interactions that made a New England town a complex and changing place.[2]

2.3. How Old Sturbridge Village Benefits from the Study

Study of the Nancy Johnston site ceramics will be used to reevaluate the ceramics used in the house exhibits at Old Sturbridge Village and to develop a better understanding of the social contexts of their use. The information will also help Old Sturbridge Village to purchase antiques and furnish houses at the Village. By developing Miller CC Index Values for these ceramics, Old Sturbridge Village will gain a better understanding of the relative economic status of the Reed and Sargent families. At the same time, they can use the rich documentary information on

---

[1] J. Edward Hood, The Reed-Sargent Ceramic Assemblage (Nancy Johnston Site) (Sturbridge, Massachusetts: Old Sturbridge Village, 1999), 1-3.

[2] Old Sturbridge Village - Statement of Purpose [internet web site] (Sturbridge, Massachusetts: Old Sturbridge Village, 1997- [cited 19 July 2000]); available from http://www.osv.org/pages/stmtpur.htm.

these families to refine the use of Miller's CC Index Values on other archaeological assemblages that lack such documentation.

3. Miller's Process and Categorizing Ceramics

3.1. Definition of the Miller Process and Social Impact

In 1980, George Miller, a historical archeologist, created a procedure for comparing the ceramics found at archeological sites. He researched the English ceramic industry and the prices it charged for its products. Further research led to a 1991 article redefining his index values taking into account the discounting used in the ceramic industry. Together his articles describe how to classify ceramics into groupings and then look up the values in the tables provided. The index value enables archeologists to compare the value of goods found at different sites and to get an idea of the lifestyle of the people that lived in the area. Miller bases his values on CC, or cream colored ware, which is given a value of one. All other types of ceramic forms and designs are evaluated and scaled according to their cost based on the CC ware. The values from the 1990 paper are the most accurate and up to date information prepared for the indexing and assessment of ceramics from 1787 to 1880. These tables show the decrease in pottery prices as mass production of ceramics becomes popular.

3.2. Categorizing Ceramics

According to James Deetz, early American ceramics went through three distinct phases. The first is plain utility ware, with a small amount of delftware. This type was mainly found before the mid 17th century. The second group contains a broad variety of fancier imported wares along with a large number American made utility wares. This group started from the mid 17th century and continued through the late 18th century. In the third group, all of the fine imported ceramics, except for delftware, were replaced by popular creamware and pearlware.[3]

[3] James Deetz, In Small Things Forgotten: The Archaeology of Early American Life (Garden City, New York: Anchor Books, 1977), 51-52.

Looking at these three groups, we can see that people's tastes and preferences have changed over time. The first group was mainly utility ware because people arrived in America with little or no ceramic items and needed to start their houses. They selected items that could be used everyday for cooking, eating and other household items. The small amount of delftware was probably special ceramics either passed down in the family or purchased for a special occasion and not used everyday. During the second period, people began to get established; they sought out the fancier imported wares. People started to decorate their houses and needed fancy tableware for celebrations and parties. The main emphasis moved from becoming established to becoming more civilized and acquiring more expensive items for their homes. The third group shows that people wanted to go back to a simpler ceramic form as their tastes and preferences moved away from the expensive imported items. Using this explanation from Deetz explains how the Reed-Sargent family went through these same kinds of changes. In the 1830s period of their lives, most of the ceramics were decorated imported wares from England. One example would be the Schuylkill Bridge plate from the collection, a painted plate full of decoration and color. During the Sargent years in the household, the older ceramics were kept, along with purchasing the new and more popular White Granite ware. These new ceramics were not painted but were plainly decorated. Through examination of the items located at the site, it is clear to see how the tastes and preferences changed within the household over the years.

3.3. Miller's Ware Types

Common pottery types were identified when examining the Reed-Sargent site. These types included Printed, Painted, Flow Painted, Flow Printed, CC, Shell Edged, Children's ABC and Motto Printed, Sponged and White Granite. In Miller's 1990 article, "A revised set of CC

Index Values for Classification and Economic Scaling of English Ceramics from 1787 to 1880," he describes fourteen different ware types. A brief description of each type is offered below.

CC stands for cream colored, or creamware. Before 1812, CC ware was common in most forms of tea, table, kitchen and toilet wares. From the 1830s on, it was more commonly found in utilitarian forms such as bowls, mugs and chamber pots. This is the base ware type that George Miller uses to measure the cost of the other types of ceramics because its index value is always one. Unlike flatware, index values greater than one are given for CC teas because the addition of handles or fluting can increase the cost for a set of teaware over a standard, plain set.

Fig. 3.1 A creamware plate

Shell edge ware, or edged ware as it was called in the 19th century, was the most common decoration type. These wares are called edged because a rim of color is applied to the outer edge of the flatware. The only decoration or color on the plate is the blue band around the edge, as the picture below illustrates. Edged wares are generally limited to flat wares, sauce boats, tureens and butter boats, which, as a general class, are known as tablewares. These edged wares were

the cheapest decorated tableware available for most of the 19th century, as evidenced by the index values presented in Miller's study.

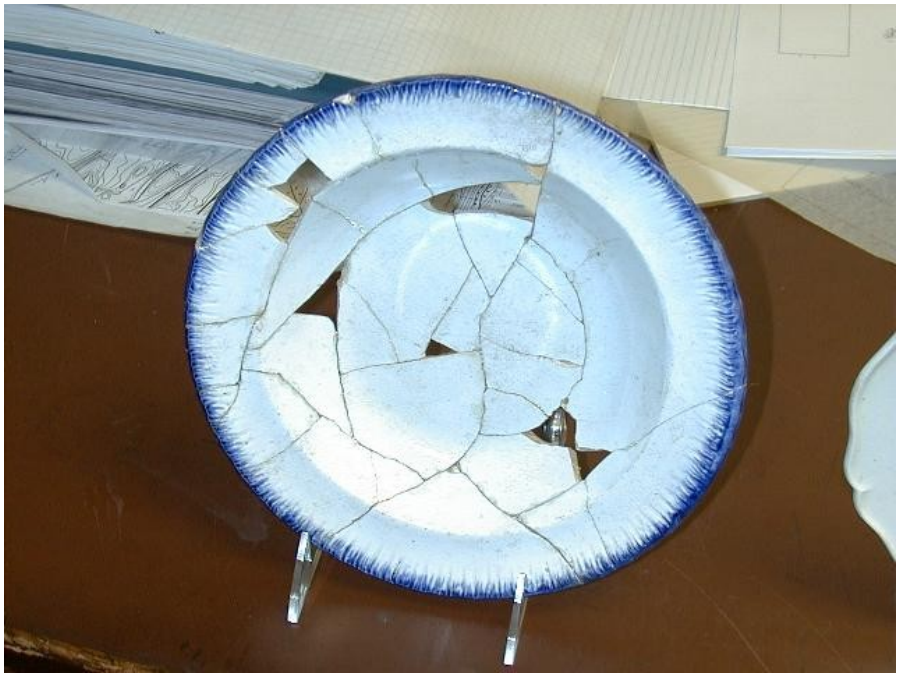


Fig. 3.2 A blue shell edged plate

Ceramics that are painted on top of the glaze are called Enamelled. This type of decoration is most commonly associated with creamware and porcelain. It can also be found on white salt-glazed stoneware, pearlware, whiteware and stone chinas. Because the painting is fired at lower temperatures, a wider range of colors is available than is the case with underglaze colors which have to withstand the high temperature of the glazing oven. In addition to the greater color range, enamel painting produces a sharper image because the colors are not melted into the glaze. The main disadvantage of enamelled decoration is that it can be worn away by use. Enamelled wares were more expensive than underglaze painted wares because the overglaze painting was added after the pottery was produced and required additional firing.

Fig. 3.3 A flow blue plate created between 1844 and 1860 in England

By 1814, willow ware was established as the cheapest available transfer printed pattern in the potters' price fixing lists. Although it was a transfer printed item, the actual pattern on the plate was called willow.

Printed was the most commonly used term in the potters' and merchant's records to refer to transfer printed wares. All of the early printing was done on top of the glaze. Printing under the glaze was first used around 1760 on English porcelain. Early blue printed wares were line engraved and have cruder and heavier designs with minimal shading. Early in the 19th century, the engravers began to use stipples or small dots in the engraving as a shading device which gave greater perspective to the prints. Around 1818, there was a craze for very dark blue printed wares. Dark blue patterns were popular through the 1820s, which was also a period of popularity for blue painted floral patterns. Brown printed pearlwares were imported into the American market as early as 1809. Transfer printed wares declined in popularity in the 1850s and were replaced by white granite ware.

Fig. 3.4 A Schuylkill Bridge plate created in Burslem, England

Stone chinas produced prior to the 1830s were heavily decorated, combining painting or enamelling with printing. Most of these chinas were copies of Chinese porcelains. The main decoration for the early period was usually in a Chinese style and the glaze was almost always tinted blue with cobalt.

White granite and ironstone are the most common names applied to a group of hard white wares. These wares evolved from the ironstone and the stone chinas, and are still in use today. It is called white granite because it avoids the confusion of these plain white wares with the highly decorated stone chinas or early ironstone. Invoices from Philadelphia show that white granite was being imported by the 1840s. Based on the invoices, it can be shown that white granite became the dominant type of flatware in use from the 1850s until the end of the 19th century.

Fig. 3.5 A white granite plate created in Cobridge, Staffordshire, England

Gold gilding on porcelain was perfected in 1723. The early process involved grinding the gold by hand in mediums like honey and then applying the gilding on top of the glaze. In addition, the gold had to be burnished after firing. Because this process was expensive, it was used mostly on porcelain and finely enamelled earthenware. In 1836, this process changed with the development of liquid bright gold. The gold was dissolved by acids and mixed with chemicals that produced a gold that could be fired with enamel colors and would come out of the kiln bright and shiny, without having to be burnished. After 1870, bright gilding began to be more commonly found on cheap earthenwares such as gold banded plates. Use of cheap gilding increased on common wares by the late 19th century and continues today.

Spatter and sponge decorated wares are two closely related types of colored ware. Spattered wares have their color powdered on, whereas sponged wares have their color applied with a sponge. Each manner of production produces a different texture and pattern of color and makes the plates distinct.

Dipped or dipt wares cover various types of decoration that were produced by the application of a colored clay slip. Most dipt wares were colored with muted earth tones such as tan, rust, brown, olive drab, ocher yellow and gray. One exception is blue-banded ware, which became the most common type of dipped ware after the 1840s. These decorations were generally limited to bowls, mugs, jugs, chamber pots, mustard pots, castors or shakers. Dipped teas and teapots exist but they are rare. These wares were the cheapest holloware available with decoration. With the exception of simple handed types dipped wares are not common after the 1840s. Blue-banded wares continued to be produced well into the 20th century.

Underglaze-lined and enamelled-upon-glaze-lined wares are types Miller identified as being produced from 1814 to 1833. They have a simple line painted around the rim and the inner edge of the marley that can be either on or under the glaze. Underglaze-lined and enamelled-upon-glaze wares are different from the other decorative types in that they often occur on creamware with brown lines. Most other types of underglaze decoration were on pearl or white wares. Lined wares were almost always limited to tableware and are rare in teaware.

Band-and-line wares became common during the last quarter of the 19th century and are usually associated with hotel wares, special thick cups and plates, which were used at public plates like hotels and restaurants. The band-and-line type is underglaze painted with the two lines usually right next to each other at the vessel's rim. The most common color was green. Green band-and-line hotel wares remained common into the late 1950s when they began to be replaced by paper plates. Band-and-line wares were available in tea and table wares.

Basalt, also known as Egyptian Black, is a dense, fine grained stoneware that has been dyed black with cobalt and manganese. These wares were usually unglazed; however, there is a glazed variety which was referred to as Shining Black. Basalts are most commonly found in

teapots, creamers, sugars and bowls for tea slops. They were also used for decorative wares such as vases and busts.

The development of soft English porcelains began around the 1740s in England. The problem with soft porcelains was that they were extremely fragile and could break easily. William Cookworthy produced the first true hard paste porcelain in 1768. This new hard paste created a more durable product that would not break as easily. Most of the porcelain types developed in the 18th century were replaced by bone china which was developed around 1794. Bone china became the dominant type produced in England by the early 19th century, and it still holds that position today. Bone china has advantages over hard paste porcelain, such as a lower firing temperature, which causes it to have a wider color range.

3.3. Descriptions of Teaware

Miller also discusses tea ware, cups and saucers from this time period. Below are the descriptions of the terms Miller uses to describe the tea ware.

There were two sizes of tea cups produced between 1787 and 1880: London and Irish. London sized teas were the most common and the smaller of the two sizes. Irish sized teas were larger than the London size and were sometimes referred to as Breakfast sized. The majority of the cups recovered from American sites are of the London size.

Teaware could be manufactured with or without handles. The great majority of cups were unhandled until the second half of the 19th century. For the price of a set of CC teas with handles, one could have painted teas without handles. A set of fluted painted teas with handles could have cost more than a set of simple printed teas. The consumer may have chosen to have a more highly decorated set of teas without handles, rather than a simpler handled set for the same amount of money.

Brown edged teas have an enamelled or painted brown line on the top of the rim of the cups and saucers, which is an imitation of the brown iron rim line on Chinese porcelain. Lined teas seem to be most popular from the 1790s to the War of 1812.

Other distinctive descriptions are Fluted, Scalloped, Extra thick, and Pressed. Fluted teas have molded fluting, usually spiraled, up the outside surface of the cups and on the inside surface of the saucers. Scalloped teas appeared for a short period from the mid 1820s through the 1830s. These teas have a slight rim scallop. Extra thick teas were hotel wares meant for use in institutions such as hotels, restaurants, hospitals, and schools. Pressed teas were created with a tool called a Jolly, which is an automatic throwing device that uses a plaster mold to shape the cups with the aid of a template mounted on a wheel to form the inside profile of the cup. The teas listed as pressed shapes that appear to refer to eight, ten, and twelve sided teas, which appeared in the 1850s.

4. Miller's CC Index Values

4.1. Calculating Miller's CC Index Values

Traditionally, Miller CC index values were determined using calculators and paper to create an index for the three main forms of ceramics: flatware, bowls and teaware. Archeologists would first prepare an inventory of the items found and determine a minimum number of vessels (MNV). The MNV is the minimum number of distinct vessels that can be produced from a pile of shards. Next, the items are indexed into the main ware types defined by Miller. These are Band-and-Line, Basalt, CC (Cream Colored), Children's ABC and Motto – Painted, Children's ABC and Motto – Printed, Dark Blue, Decorated Stone China, Dipt, Enamelled, Enamelled-upon-glaze lined, English Porcelains, Flow Painted, Flow Printed, Gold Banded earthenware, Painted, Printed, Shell Edged (sometimes "Edged"), Sponged, Underglazed Line, White China Porcelain, White Granite and Willow ware. Using these standard ware types, the three form types and an index date for the pieces, the researcher would then use tables provided by Miller to determine the value for that particular piece, and multiply by the MNV for that piece. The index values would then be added and averaged over the total MNV of each from type. See Appendix A for an example of a Miller calculation. When all of the calculations are complete, there will be three index values: one for each of the form types. These can then be used to compare items found from other archeological sites from the same time period to compare and contrast the amount of money spent on each ware type by that particular family or region.

4.2. Selecting Target Years for Analysis

One important aspect of the Miller process is choosing a target date for the analysis. This is normally done using a mean date formula which looks at the dates of the ceramics and finds a mean date for the whole collection. Because the Reed-Sargent collection spans many years, this

formula would not accurately portray the value of the ceramics from the two families. Working with Ed Hood, we decided to choose five dates (1835, 1845, 1860, 1872, 1889) for the target years of the analysis. 1835 was chosen because it was early in the Reed family and would give an indication of the income/economic standing at that point in time. 1845 was chosen because it was the middle of the Reed family occupation of the house. This can be used to compare with the early family numbers. The third date, 1860 was chosen to represent the later years of the Reed family before the house was sold to James Sargent. These three dates can be used to compare the Reed family and changes over time. The fourth date is 1872, which is the midpoint of the Sargent family living at the household with the Reed widow. The last year is 1889, which is the midpoint of the Reed widow living at the house. These five dates should give accurate values to the ceramics and can be used to show trends between the Reed family and the Sargent family, rather than lumping all of the years together into one target date.

5. A Program to Calculate Miller CC Index Values

5.1. The Goals of a Program

There are two reasons for developing a program to calculate George L. Miller's CC index values. The program could be used as an inventory system to track and search for individual artifacts within a collection from a site. The program could also calculate the Miller Index for each form type rapidly and repeatedly for various analysis dates and assemblages.

The program was developed to accomplish several goals. It handles artifacts collected from multiple sites. When the artifacts are entered into the program, the user is may specify six important pieces of information for every artifact, in additional to several other notes associated with each item. The six pieces of information that are necessary to calculate Miller index values are the site, form type, decoration type, size, start year for analysis, and minimum number of vessels for each lot.

Given the dates for analysis, the program is able to review the entire inventory of artifacts for that assemblage and generate Miller's index values for that date. Several analysis dates may be specified simultaneously and the program will provide a separate index value for every year. A graph may be generated showing the change in index value from year to year. The index values from several sites can be compared against one another to show the differences in the value of the ceramics between sites.

5.2. Choosing a Software Package

A database management system, or DBMS, is best suited to accomplish the goals stated because it is able to easily handle massive amounts of data.[4] More specifically, a relational

[4] Joseph J. Adamski, Charles Hommel, and Kathleen T. Finnegan, New Perspectives on Microsoft Access 97: Comprehensive - Enhanced (Cambridge, Massachusetts: Course Technology, 1998), 1.7.

DBMS provides the basic functions necessary to accomplish database tasks such as the storage and manipulation of data through the use of related tables. Using related tables allows continuity in entering data. For example, when entering information about a specific artifact into a table containing a list of all artifacts, the user selects the appropriate form type, ware type and size from a predefined list of choices that are contain in three separate, related tables. Additional tasks that a relational DBMS accomplishes are the ability to add, change and delete records in a table, create and run queries to obtain answers to questions one may ask about data already entered, generate formatted reports from the data entered and provide protection of data through security, control and recovery options.[5]

Microsoft Access 97 was chosen as the relational DBMS to use for this project since it is available free of charge to anyone who owns the popular Microsoft Office 97 Professional software package. Old Sturbridge Village has already adopted Microsoft Access 97 as their database management system and the faculty, staff and students of WPI have access to the package on any College Computer Center system. Microsoft Access 97 is a relational DBMS that can easily accomplish all the goals that were set forth for the program.

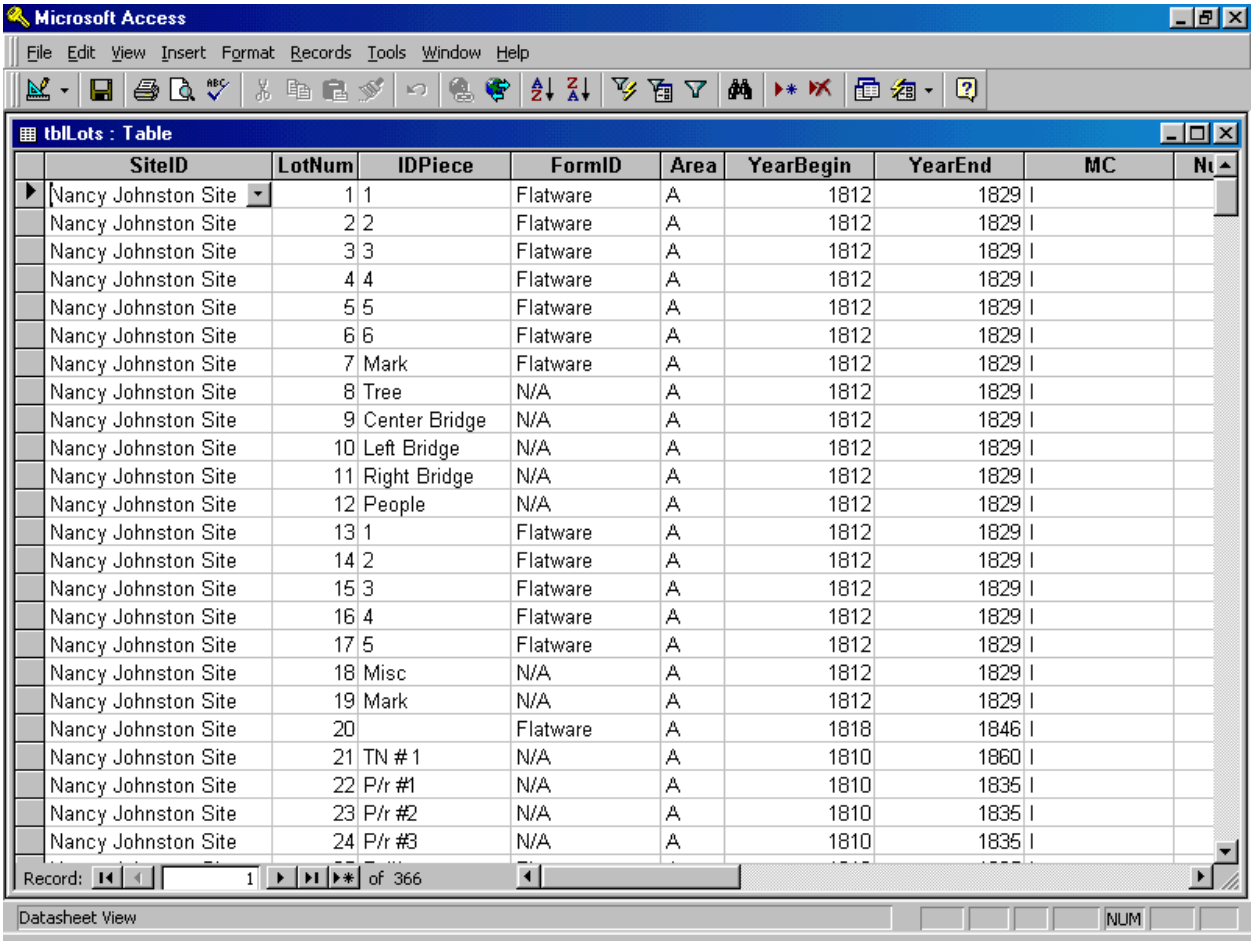
5.3. How Microsoft Access 97 works

Microsoft Access 97 functions by utilizing several different modules called *tables*, *queries*, *forms*, *reports* and *macros*. Access works by storing data in *tables*. Users can enter data into tables through the use of *forms*. Forms can also control the functions of a database. Tables can be analyzed and questioned by *queries*, and output can be standardized and formatted using *reports*. *Macros* can initiate several functions at once to make the database easier to use. Each of these functions is further explained in the following sections.

[5] Ibid., 1.6-1.7.

5.3.1. Tables

Microsoft Access 97 works by storing data in tables. An example of a table is shown below. Tables consist of two main parts: fields and records. Fields are the vertical columns. Each field within a table stores a type of data. Fields can consist of words or numbers. If a field is a numeric field, mathematical operations may be performed on the field. A record is a row in the table. Each record in the table below represents one lot, or group of similar artifacts, from an assemblage.



SiteID	LotNum	IDPiece	FormID	Area	YearBegin	YearEnd	MC
Nancy Johnston Site	1	1	Flatware	A	1812	1829	I
Nancy Johnston Site	2	2	Flatware	A	1812	1829	I
Nancy Johnston Site	3	3	Flatware	A	1812	1829	I
Nancy Johnston Site	4	4	Flatware	A	1812	1829	I
Nancy Johnston Site	5	5	Flatware	A	1812	1829	I
Nancy Johnston Site	6	6	Flatware	A	1812	1829	I
Nancy Johnston Site	7	Mark	Flatware	A	1812	1829	I
Nancy Johnston Site	8	Tree	N/A	A	1812	1829	I
Nancy Johnston Site	9	Center Bridge	N/A	A	1812	1829	I
Nancy Johnston Site	10	Left Bridge	N/A	A	1812	1829	I
Nancy Johnston Site	11	Right Bridge	N/A	A	1812	1829	I
Nancy Johnston Site	12	People	N/A	A	1812	1829	I
Nancy Johnston Site	13	1	Flatware	A	1812	1829	I
Nancy Johnston Site	14	2	Flatware	A	1812	1829	I
Nancy Johnston Site	15	3	Flatware	A	1812	1829	I
Nancy Johnston Site	16	4	Flatware	A	1812	1829	I
Nancy Johnston Site	17	5	Flatware	A	1812	1829	I
Nancy Johnston Site	18	Misc	N/A	A	1812	1829	I
Nancy Johnston Site	19	Mark	N/A	A	1812	1829	I
Nancy Johnston Site	20		Flatware	A	1818	1846	I
Nancy Johnston Site	21	TN # 1	N/A	A	1810	1860	I
Nancy Johnston Site	22	P/r #1	N/A	A	1810	1835	I
Nancy Johnston Site	23	P/r #2	N/A	A	1810	1835	I
Nancy Johnston Site	24	P/r #3	N/A	A	1810	1835	I

Fig. 5.1 Example of a table in Microsoft Access 97

In the table above, several of the fields are related to fields in other tables. For example, the FormID field is related to a similar field in a table called tblForm. When a value is entered into the FormID field below, several choices are given to the user. These choices are the values contained in the similar field located in the other table. This relational concept between tables is the basic principle of operation for relational database management systems.

5.3.2. Queries

Another principle of Access is the query. A query is like a question; it "asks" the data to answer questions and then provides a response in the form of another table. An example of a simple query would be to input the sample table above and ask the query to return only those records where the FormID is equal to "Flatware". A new table would be created that would only have the "Flatware" records.

5.3.3. Forms

A third principle of Access is the Form. A form is a way of generating a user interface to enter information into tables. Forms may also be to control the program. Examples of control would be opening and closing other forms and tables, or executing commands. An example of a form is shown below. This example shows how a user may enter values for certain fields into the sample table.

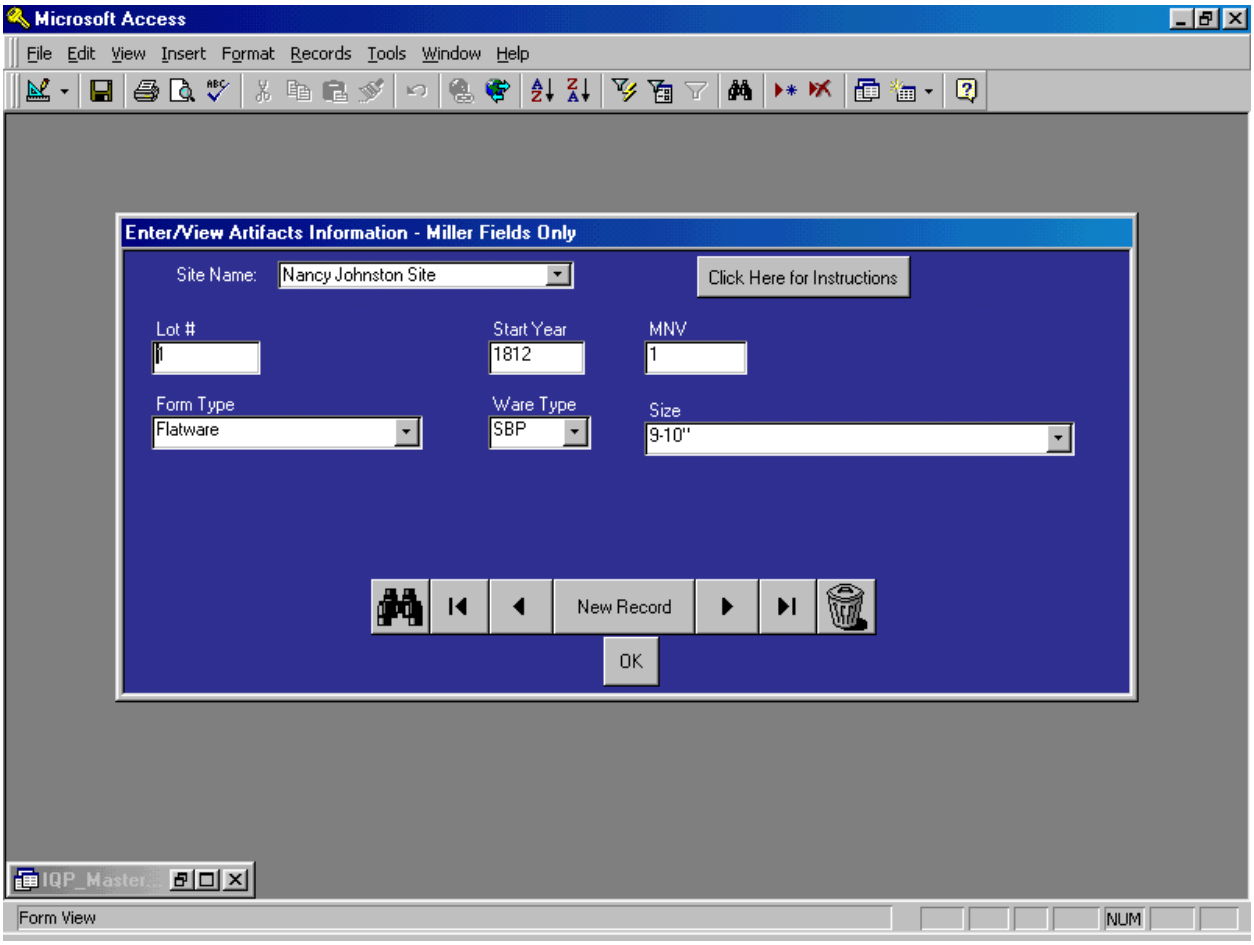


Fig. 5.2 A form that modifies information located in the lots table

5.3.4. Reports

Access is also able to generate reports based on the results of queries. For example, if the result of a query was a table containing a list of form types, years and index values, a report would be able to group the result by form type, then list the years in ascending order with the matching index value next to it. An example of this report is shown below.

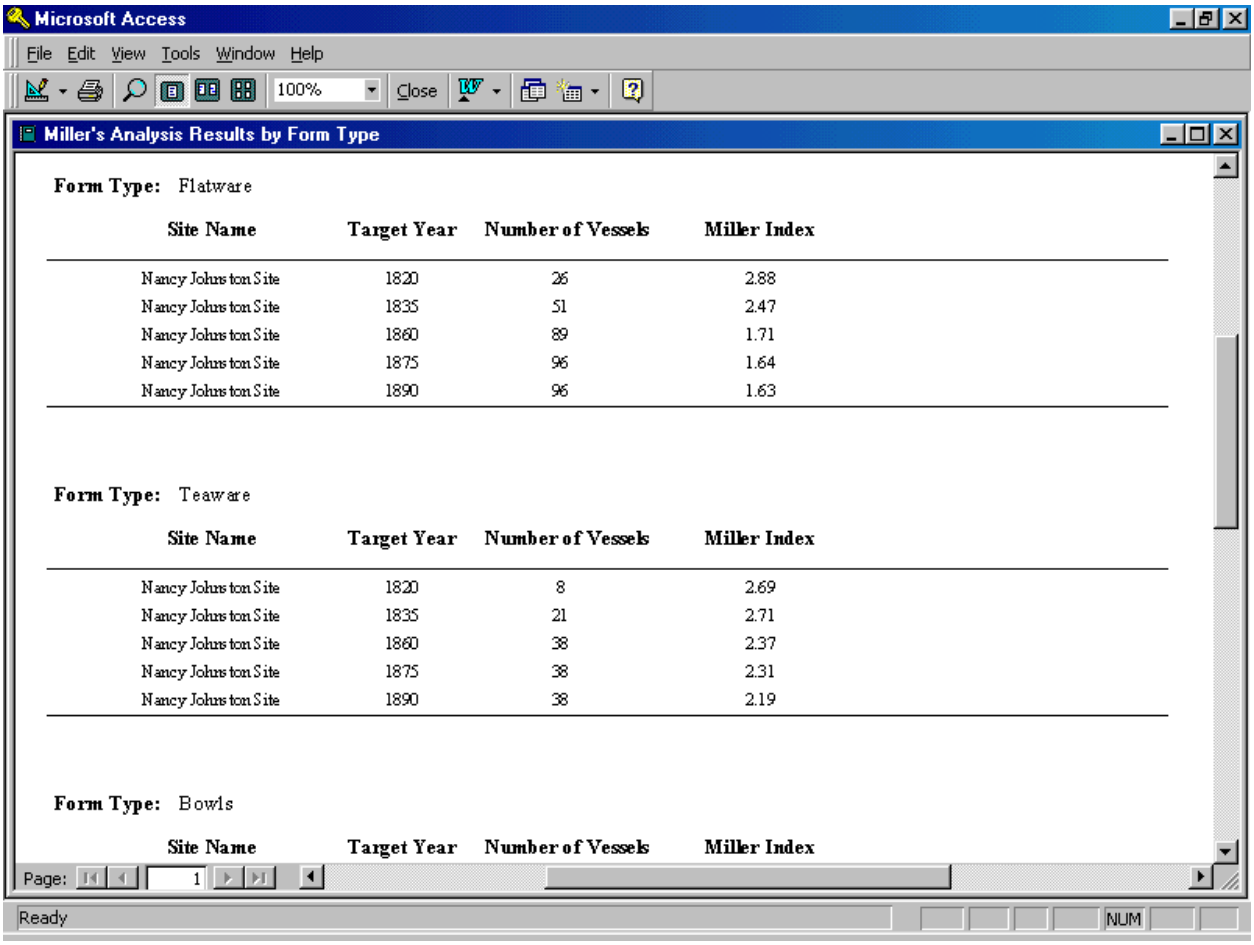


Fig. 5.3 A report, broken down by form type, generated from a query

5.3.5. Macros

One last basic principle of Access is the macro. Macros are commands that may be triggered by clicking an item on a form. Once a macro is triggered, it runs a preset series of commands. For example, a macro may run "Query 1", then run "Query 2" and then display "Report 1" on the screen.

5.4. The Inventory System

5.4.1. The Design (Tables)

The inventory system for the Miller Analysis program is fairly simple. All of the artifacts, regardless of what assemblage, or site, they belong to, are stored in one large table called tblLots. This table contains various fields, some of which are important to obtaining Miller index values and some which are there simply for reference purposes. The list of fields that is contained in tblLots is shown below.

Table 5.1 List of Fields in the Lots Table

Field Name	Field Type	Relationships
SiteID	Number	tblSite
LotNum	Number	
IDPiece	Text	
Area	Text	
YearBegin	Number	
YearEnd	Number	
MC	Text	
NumShards	Number	
RimSize	Number	
MNV	Number	
FormID	Number	tblForm
OSVID	Number	tblOSV
SizeID	Number	tblSize
DecShrt	Text	
DecLong	Text	
Maker	Text	
Location	Text	
Notes	Memo	

An additional table related to the inventory system is the size table, tblSize, which contains a list of all the possible sizes of vessels, grouped by form type. A form table, tblForm, contains the 3 valid form types, which include flatware, teaware and bowls, and a N/A record. The site table, tblSite, contains a list of all sites which a record could belong to. Finally, tblOSV

is a table that can relate user-defined codes to the actual decoration type that Miller uses. For example, in the sample case with Old Sturbridge Village, three letter codes were given to the various types of ceramics. The codes in tblOSV are then related to tblMiller, which contains Miller's decoration types. A map of all the relationships is shown below.

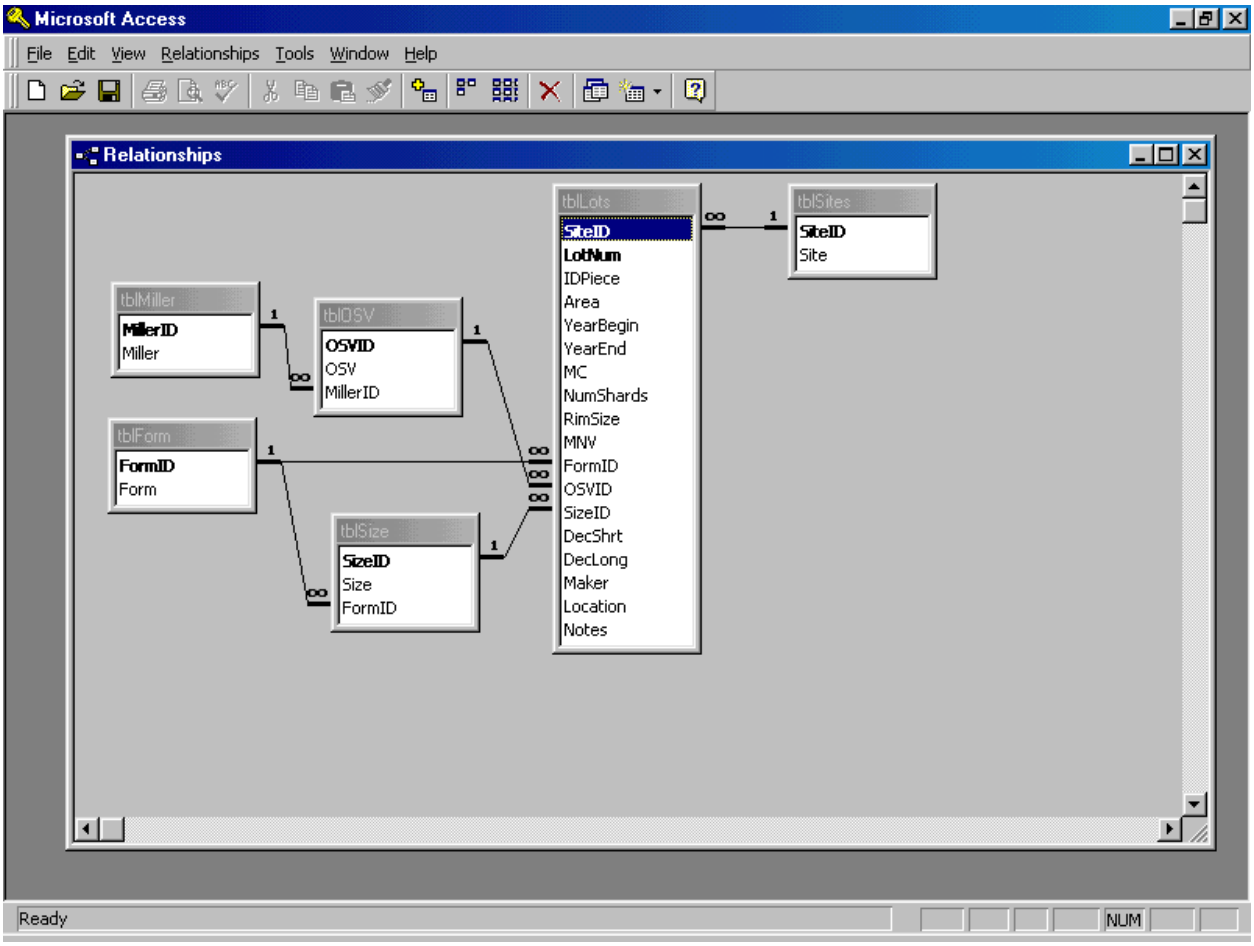


Fig. 5.4 The Access relationships for the program

5.4.2. Entering Data (Forms)

The last component of the inventory system are the forms, where the user may enter data into tblLots by using one of two sets of forms. The first set of forms allows only the fields required for Miller's Analysis to be entered. This would be useful to a user that only wants to enter the minimum information required to perform the analysis and is not interested in a catalog of artifacts at the same time. The form that accomplishes this task is frmLots. This form

actually only contains one field, SiteID, from tblLots. The rest of frmLots calls a sub-form, frmLotsSub. This form contains the rest of the required fields. A sub-form is used to filter the records in tblLots. For example, when the Nancy Johnston site is chosen on the main form, the sub-form only displays the records associated with the Nancy Johnston site. If records associated with another site are in tblLots, the user will not see them. Another feature embedded in frmLotsSub has to do with size selection. When a form is selected, the size field is filtered to only allow sizes associated with the chosen form to be used. For example, when flatware is chosen, only plate sizes from 14 inches to 5 inches may be chosen. In this case, the user does not see the teaware sizes, such as London-Unhandled-Simple. The main form and sub-form are shown below.

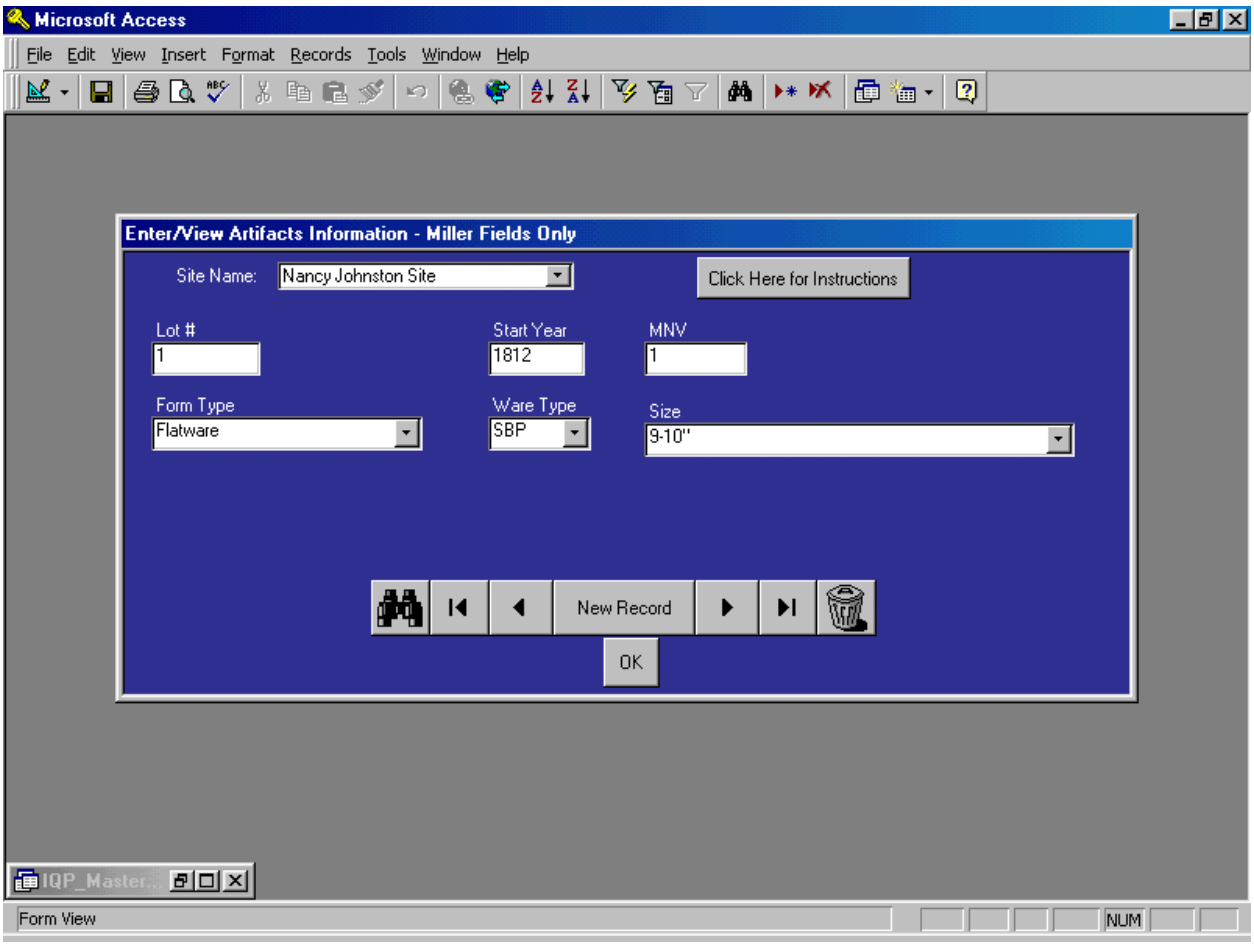


Fig. 5.5 Form for Miller fields only

The second set of forms allows all fields available in tblLots to be entered. This would be useful to a user that wants to enter the information required to perform the analysis and is interested in a catalog of artifacts at the same time. The form that accomplishes this task is frmLotsAll. This form is identical to frmLots in terms of the way it handles the filtering of tblLots based on site. The sub-form for frmLotsAll is frmLotsAllSub, and it also features the same embedded code to filter the size field based on the selected form type. The main form and sub-form are shown below.

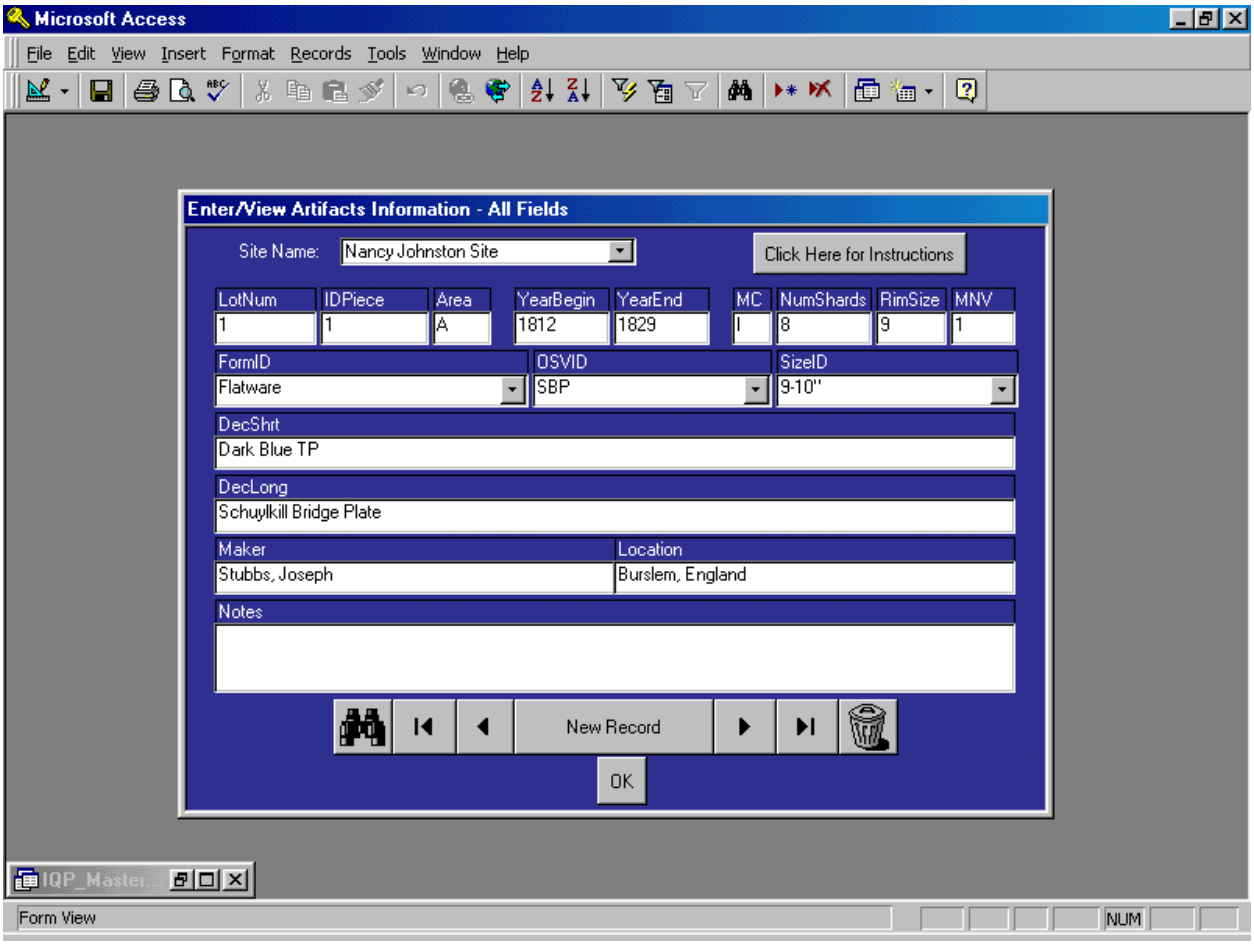


Fig. 5.6 Form for all artifacts fields

Another form associated with the above forms is frmLotsAllHelp, which simply contains instructions on how to fill out either of the two sets of forms above. This form is called by clicking an "instructions" button from frmLots or frmLotsAll.

For inventory purposes, the above sets of forms all have a find and delete feature (the binoculars and trash can). This provides easy maintenance of the records and allows the user to search for a record based on any field shown in the forms. For example, if the user wanted to search for Lot 237, the user would click the mouse on the LotNum field and then click the binoculars. When the find box appears, the user would enter 237, and Access would display the first record that has 237 in the LotNum field.

There are two more forms associated with the inventory system. These forms allow the user to define the site names as well as the user-defined decoration codes. Site names may be added or changed by the user by running frmSites. This form allows the user to add or edit site names, and contains instructions on how to do so. The form modifies the table tblSites. The user-defined decoration codes are setup by running frmOSV. This form modifies the table tblOSV. The user simply enters the codes as they wish and then relates those codes to the decoration types Miller defined. An example of this form is shown below.

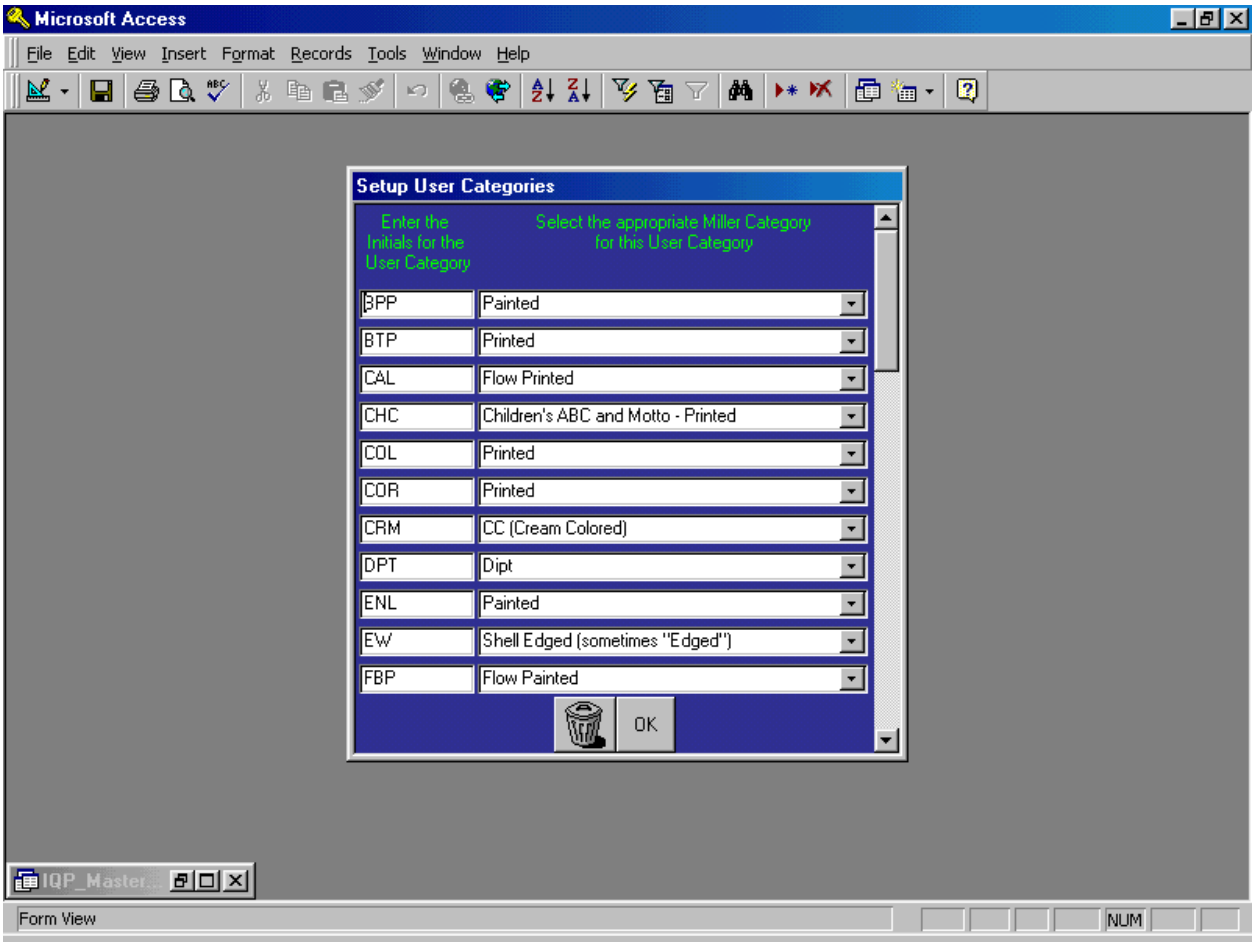


Fig. 5.7 Form to enter user categories

5.5. The Analysis - Calculating Miller's Index Values

This section of the program calculates the index values for each form type for the years and sites specified by the user. The program has the index values from Miller's 1990 article entered into a table called tblCCValues. Fields present in this table include the form type, decoration type, size, year and index value. The first step in calculating the index values is for the user to specify the analysis years and sites for analysis. This is accomplished through two forms, frmTargYear and frmAnalysisSite. These forms simply enter records into corresponding tables, tblTargYear and tblAnalysisSite, that indicate which years and sites to use. The year table is a list the user types in, while the site table allows the user to choose any of the sites present in tblSites. An example of frmAnalysisSite is shown below.

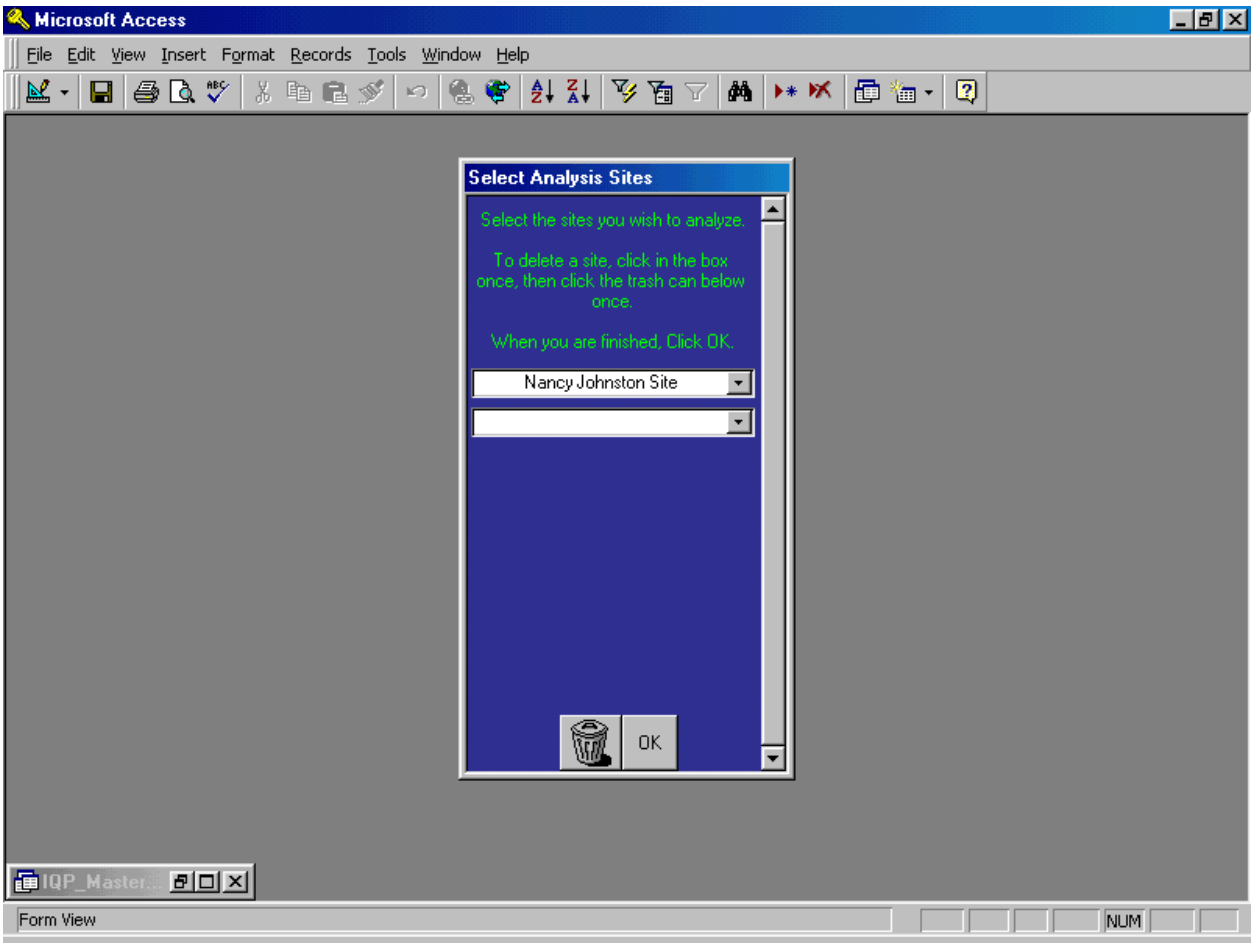
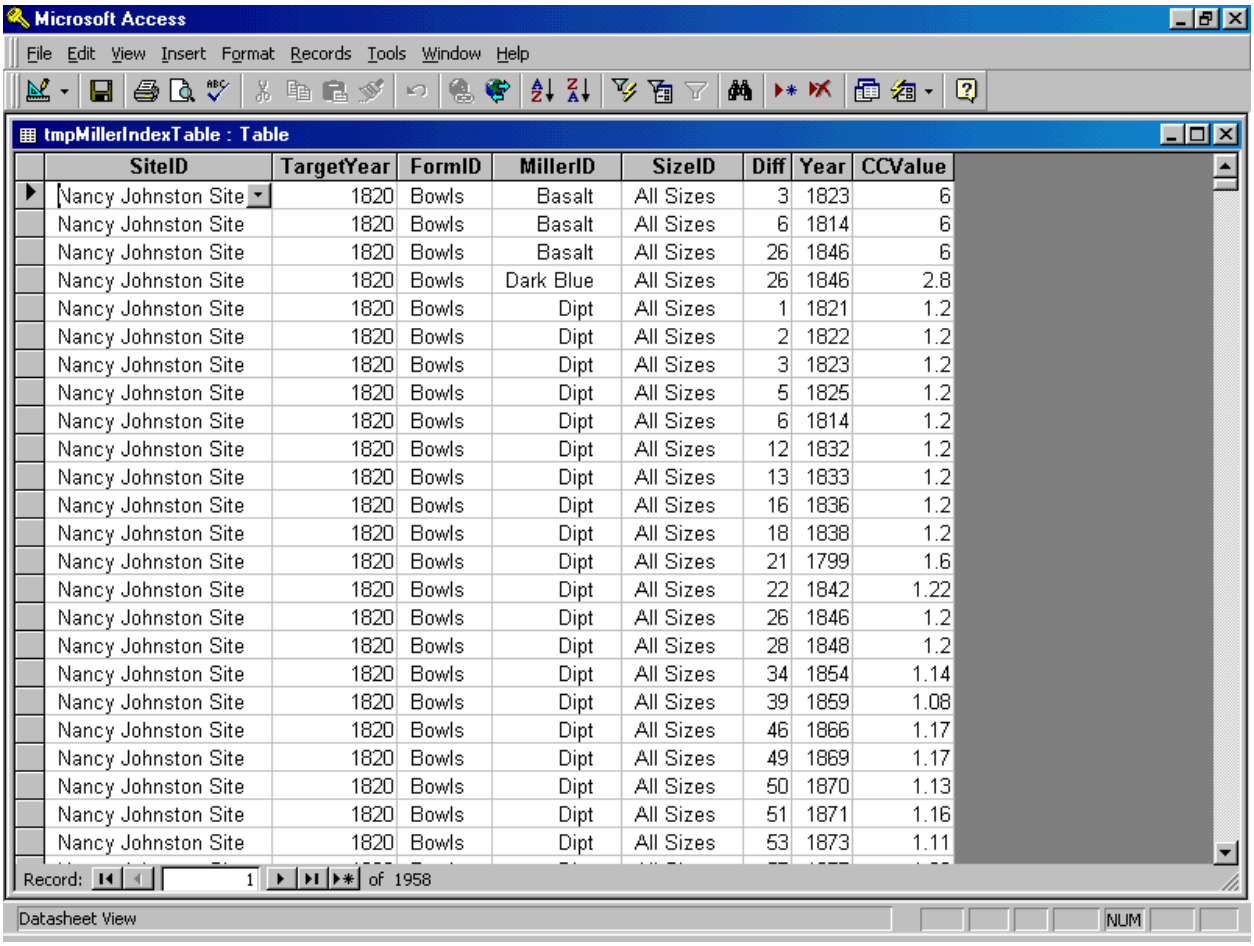


Fig. 5.8 Form to choose the sites for analysis

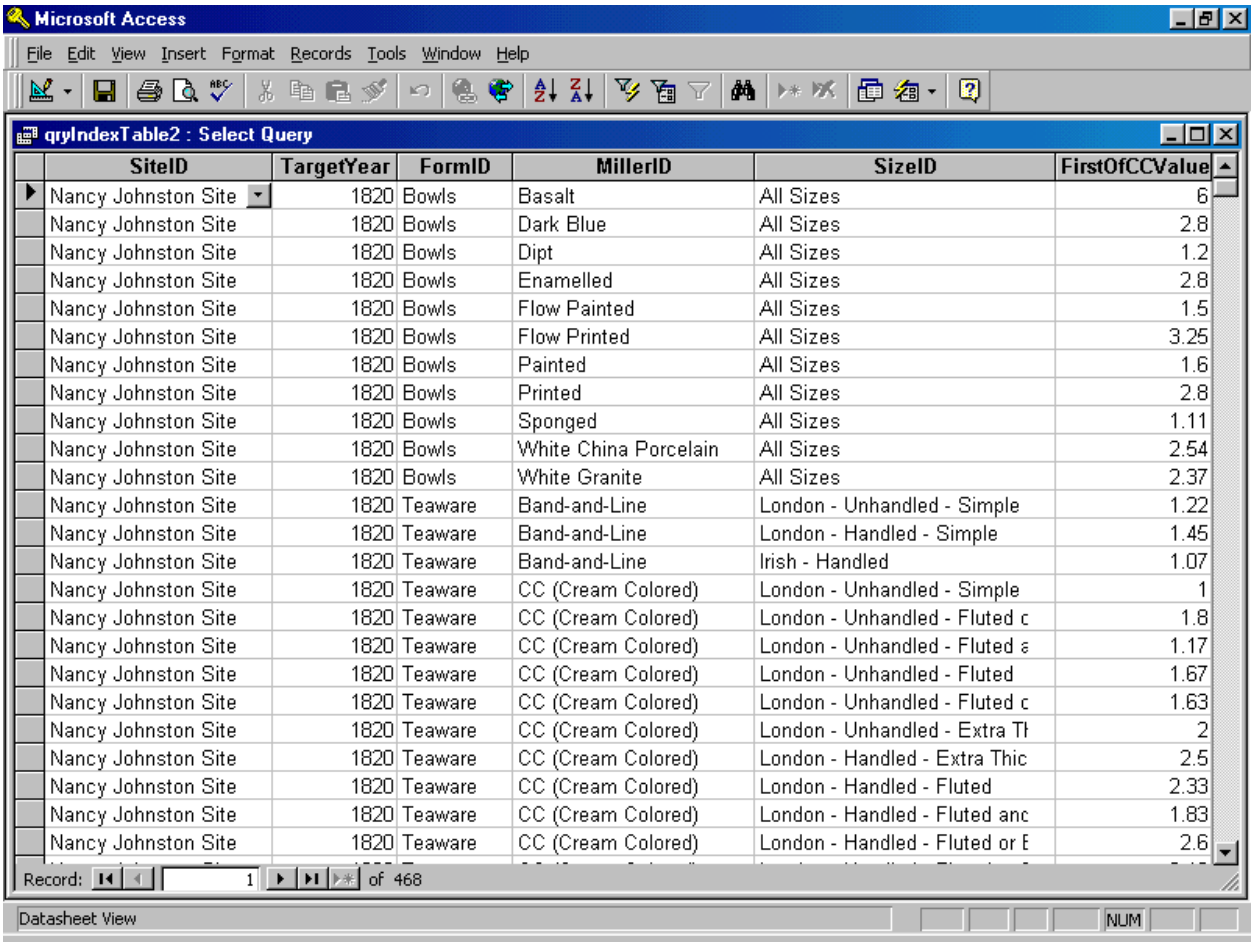
After the years and sites are chosen, the program executes a query called qryIndexTable1. This query takes the table with the Miller values in it, tblCCValues, and adds two additional fields: SiteID and TargetYear. It also finds the difference between each Year field in the table and the Target Years. For example, if a record has a Year of 1820 and the Target Year is 1840, the Diff field in the table will contain a value of 20. The table is then sorted by site, target year, form type, decoration type, size, difference and year. By sorting in this order, every combination of form, decoration and size will be ordered according to the closest match to the analysis year (the smallest Diff value) for each site and analysis year. In the event of a tie in Diff values, the lower year will be selected first. The new table that is created is titled tmpMillerIndexTable. It should be noted that if tblCCValues had 100 records and the user specified two years and two sites for analysis, the new table has 400 records. An example of the table is shown below.



SiteID	TargetYear	FormID	MillerID	SizeID	Diff	Year	CCValue
Nancy Johnston Site	1820	Bowls	Basalt	All Sizes	3	1823	6
Nancy Johnston Site	1820	Bowls	Basalt	All Sizes	6	1814	6
Nancy Johnston Site	1820	Bowls	Basalt	All Sizes	26	1846	6
Nancy Johnston Site	1820	Bowls	Dark Blue	All Sizes	26	1846	2.8
Nancy Johnston Site	1820	Bowls	Dipt	All Sizes	1	1821	1.2
Nancy Johnston Site	1820	Bowls	Dipt	All Sizes	2	1822	1.2
Nancy Johnston Site	1820	Bowls	Dipt	All Sizes	3	1823	1.2
Nancy Johnston Site	1820	Bowls	Dipt	All Sizes	5	1825	1.2
Nancy Johnston Site	1820	Bowls	Dipt	All Sizes	6	1814	1.2
Nancy Johnston Site	1820	Bowls	Dipt	All Sizes	12	1832	1.2
Nancy Johnston Site	1820	Bowls	Dipt	All Sizes	13	1833	1.2
Nancy Johnston Site	1820	Bowls	Dipt	All Sizes	16	1836	1.2
Nancy Johnston Site	1820	Bowls	Dipt	All Sizes	18	1838	1.2
Nancy Johnston Site	1820	Bowls	Dipt	All Sizes	21	1799	1.6
Nancy Johnston Site	1820	Bowls	Dipt	All Sizes	22	1842	1.22
Nancy Johnston Site	1820	Bowls	Dipt	All Sizes	26	1846	1.2
Nancy Johnston Site	1820	Bowls	Dipt	All Sizes	28	1848	1.2
Nancy Johnston Site	1820	Bowls	Dipt	All Sizes	34	1854	1.14
Nancy Johnston Site	1820	Bowls	Dipt	All Sizes	39	1859	1.08
Nancy Johnston Site	1820	Bowls	Dipt	All Sizes	46	1866	1.17
Nancy Johnston Site	1820	Bowls	Dipt	All Sizes	49	1869	1.17
Nancy Johnston Site	1820	Bowls	Dipt	All Sizes	50	1870	1.13
Nancy Johnston Site	1820	Bowls	Dipt	All Sizes	51	1871	1.16
Nancy Johnston Site	1820	Bowls	Dipt	All Sizes	53	1873	1.11

Fig. 5.9 Query result based on form type, ware type and size

The second step is to trim tmpMillerIndexTable to contain only one CCValue for each combination of form type, decoration type and size for each analysis year and site. This is accomplished through qryIndexTable2. This query groups the records by SiteID, TargetYear, FormID, MillerID and SizeID, and then chooses the first line from group. The first line will be the one with the smallest Diff value, and the lower Year in the event of a tie. The new table is stored in temporary memory within Access. An example of the query is shown below.



SiteID	TargetYear	FormID	MillerID	SizeID	FirstOfCCValue
Nancy Johnston Site	1820	Bowls	Basalt	All Sizes	6
Nancy Johnston Site	1820	Bowls	Dark Blue	All Sizes	2.8
Nancy Johnston Site	1820	Bowls	Dipt	All Sizes	1.2
Nancy Johnston Site	1820	Bowls	Enamelled	All Sizes	2.8
Nancy Johnston Site	1820	Bowls	Flow Painted	All Sizes	1.5
Nancy Johnston Site	1820	Bowls	Flow Printed	All Sizes	3.25
Nancy Johnston Site	1820	Bowls	Painted	All Sizes	1.6
Nancy Johnston Site	1820	Bowls	Printed	All Sizes	2.8
Nancy Johnston Site	1820	Bowls	Sponged	All Sizes	1.11
Nancy Johnston Site	1820	Bowls	White China Porcelain	All Sizes	2.54
Nancy Johnston Site	1820	Bowls	White Granite	All Sizes	2.37
Nancy Johnston Site	1820	Teaware	Band-and-Line	London - Unhandled - Simple	1.22
Nancy Johnston Site	1820	Teaware	Band-and-Line	London - Handled - Simple	1.45
Nancy Johnston Site	1820	Teaware	Band-and-Line	Irish - Handled	1.07
Nancy Johnston Site	1820	Teaware	CC (Cream Colored)	London - Unhandled - Simple	1
Nancy Johnston Site	1820	Teaware	CC (Cream Colored)	London - Unhandled - Fluted c	1.8
Nancy Johnston Site	1820	Teaware	CC (Cream Colored)	London - Unhandled - Fluted a	1.17
Nancy Johnston Site	1820	Teaware	CC (Cream Colored)	London - Unhandled - Fluted	1.67
Nancy Johnston Site	1820	Teaware	CC (Cream Colored)	London - Unhandled - Fluted c	1.63
Nancy Johnston Site	1820	Teaware	CC (Cream Colored)	London - Unhandled - Extra Th	2
Nancy Johnston Site	1820	Teaware	CC (Cream Colored)	London - Handled - Extra Thic	2.5
Nancy Johnston Site	1820	Teaware	CC (Cream Colored)	London - Handled - Fluted	2.33
Nancy Johnston Site	1820	Teaware	CC (Cream Colored)	London - Handled - Fluted anc	1.83
Nancy Johnston Site	1820	Teaware	CC (Cream Colored)	London - Handled - Fluted or E	2.6

Fig. 5.10 Query result that selects one year for each group of form, ware and size

The final step in the analysis process is qryResults. This table relates the SiteID, FormID, MillerID (through tblOSV) and SizeID columns between tblLots and the results of qryIndexTable2 together. This essentially matches every record in tblLots with an appropriate CCValue. The query then groups these records by Site, Form and Target Year and sums the MNV fields from tblLots. It then calculates the miller index by multiplying each lot's MNV by its newly assigned CCValue, summing that, and dividing by the sum of the MNV. It performs this task for each group based on Site, Form and Target Year. The results are stored in temporary memory within Access and an example is shown below.

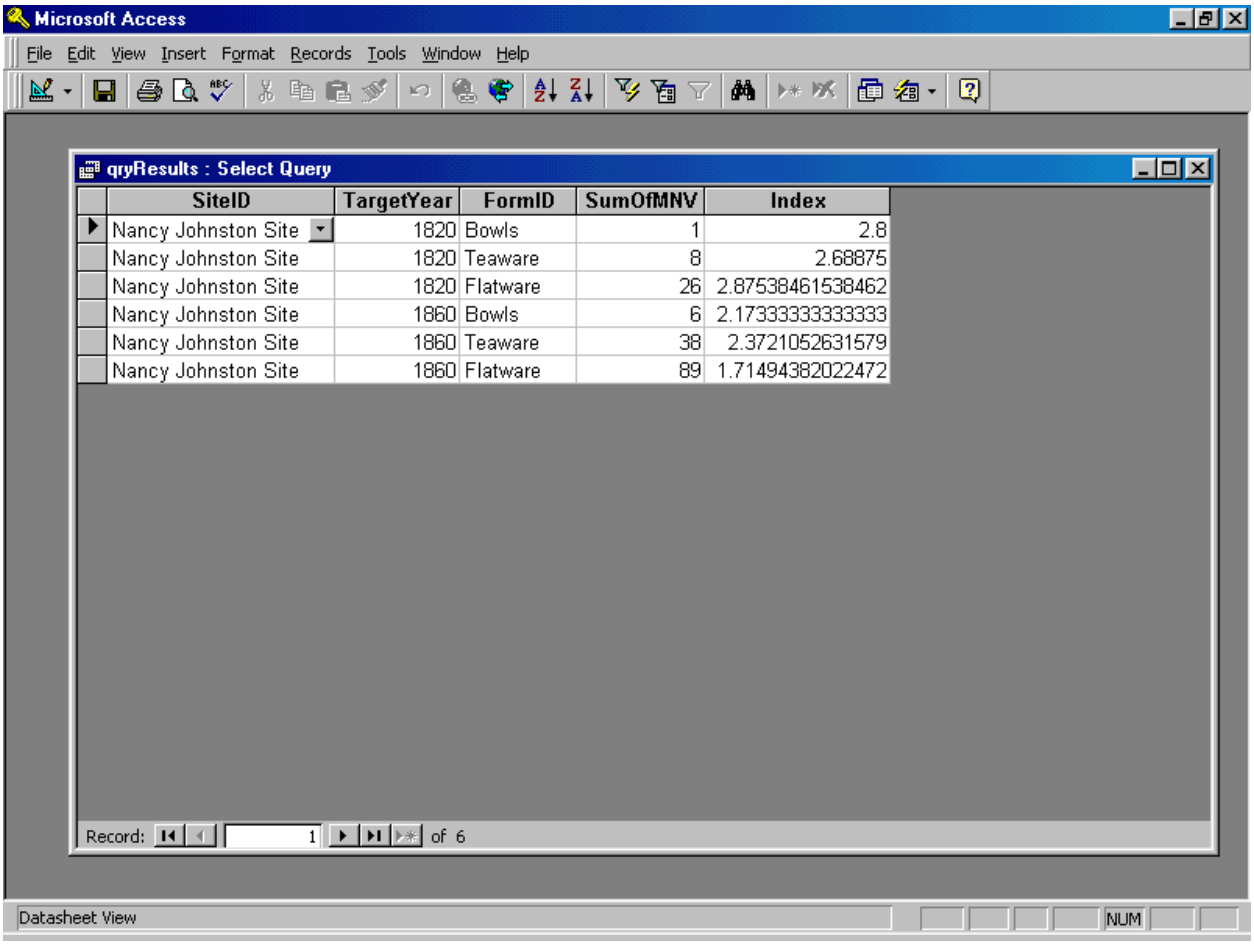


Fig. 5.11 Query that shows the results of the Miller calculation by form type

One final query is run for report purposes, qryReport. This query looks up the text values for the FormID and SiteID fields in their corresponding tables, since internally Access has only stored these values as their representative numeric ID values. By performing the text lookup, the actual text categories will be shown in the reports instead of their numeric ID codes.

5.6. The Results - Generating Reports from the Analysis

The final task of the program is to display formatted reports for both screen display and printing. This is fairly simple to accomplish using the report features of Access. The first report is called rptReport. This report displays the results from qryReport by grouping the results by Analysis Year and displaying the values for each form type. If multiple sites were selected, it would display the form types of the first site first, followed by each additional site. An example of this report is shown below.

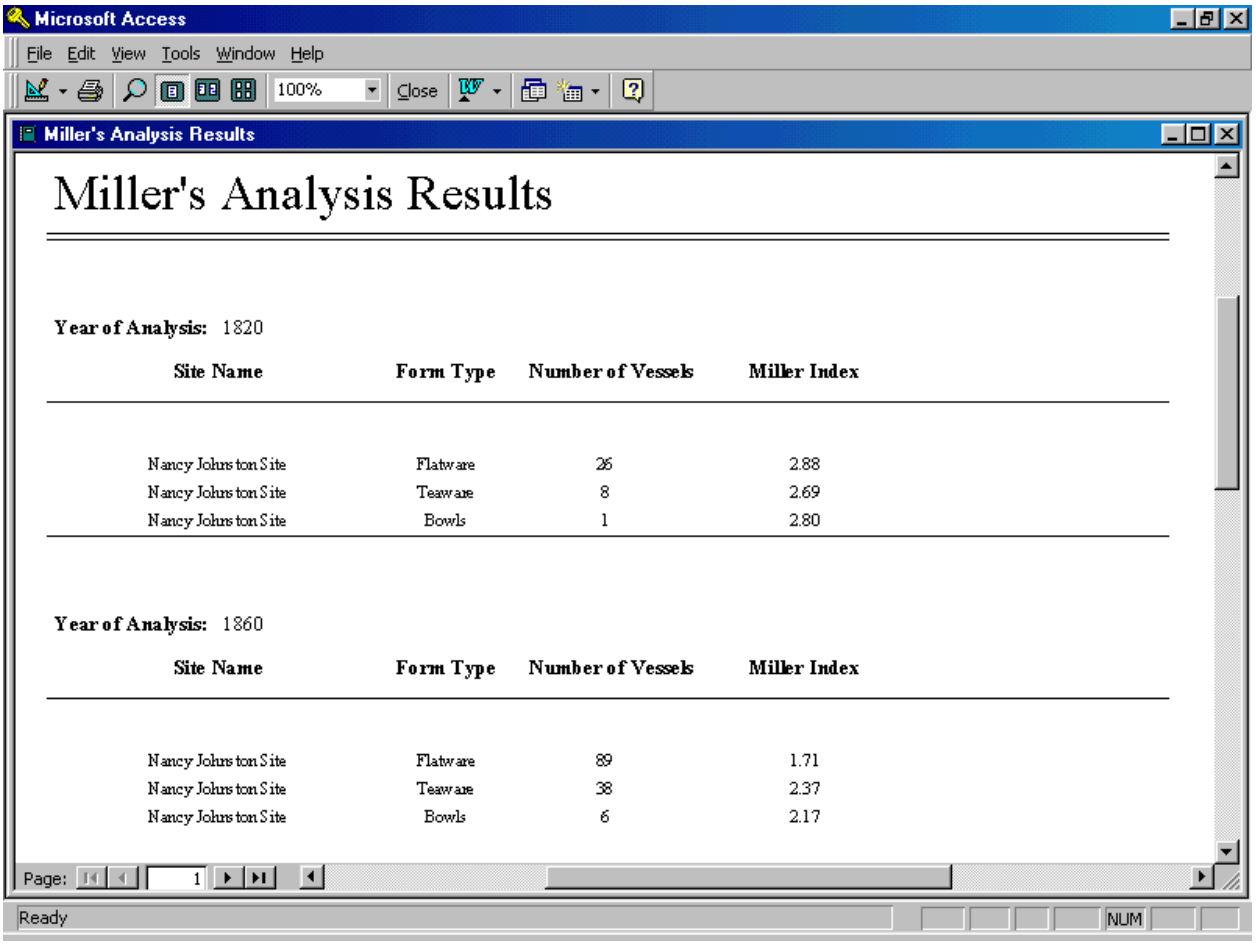


Fig. 5.12 Report that shows Miller CC Index Values by year

The second report, called rptReportByForm, is identical to the first, except it groups by Form Type and lists the Analysis Years in ascending order. The information for the first site is displayed first, followed by the additional sites. An example of this report is shown below.

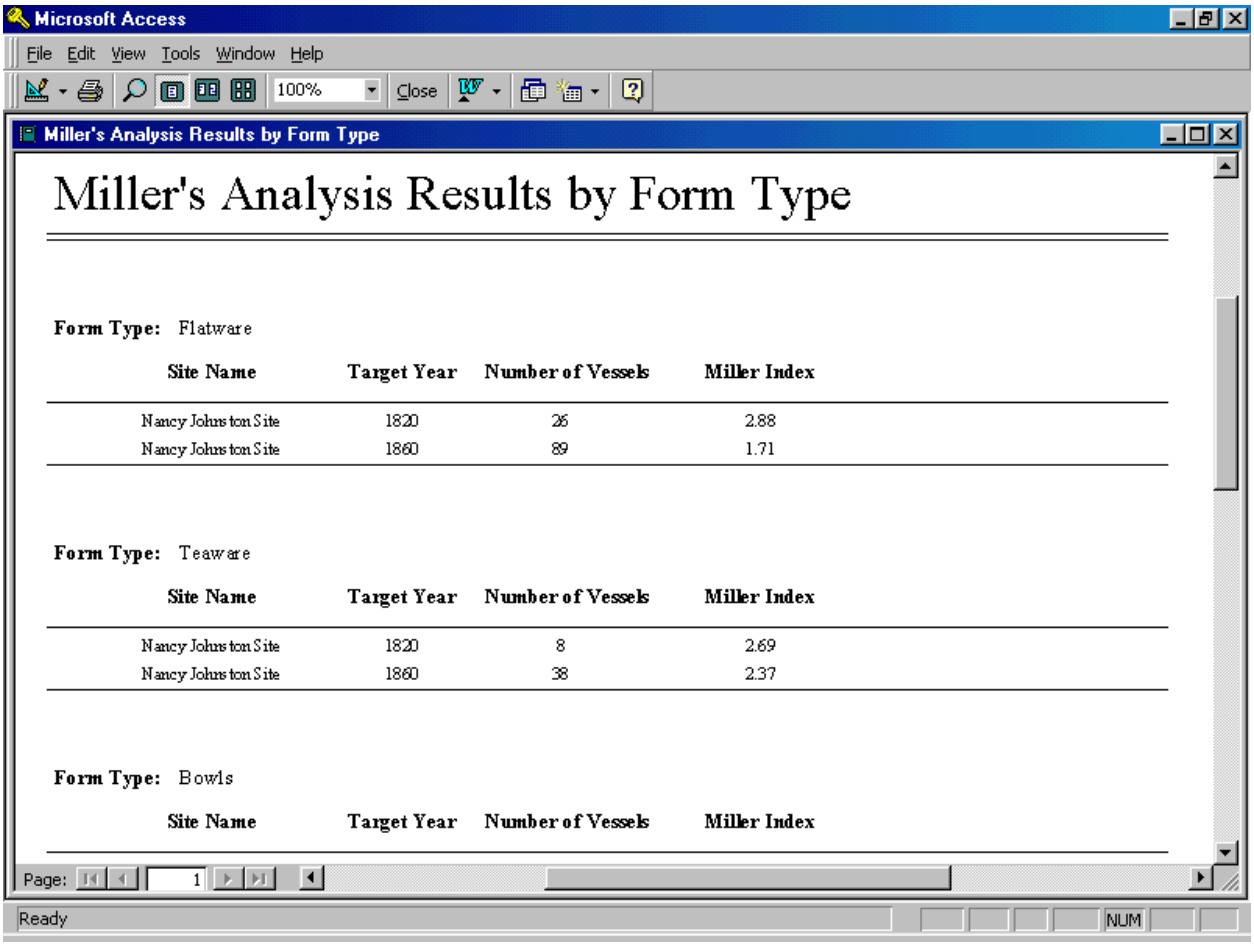


Fig. 5.13 Report that shows Miller CC Index Values by form type

Finally, there are two graphs that the program generates. The first graph, called rptGraph, shows each form in a group with a graph of the corresponding values for each Analysis Year. It should be noted that if multiple sites were used with this graph, Access would add the numbers for the sites together, yielding an erroneous result. This report should only be used if one Analysis Site is chosen.

The second graph, called rptGraphSite, shows each form in a group with a graph of the corresponding values for each Site. It should be noted that if multiple analysis years were used with this graph, Access would add the numbers for the years together, yielding an erroneous result. This report should only be used if one Analysis Year is chosen. An example of the first graph is shown below.

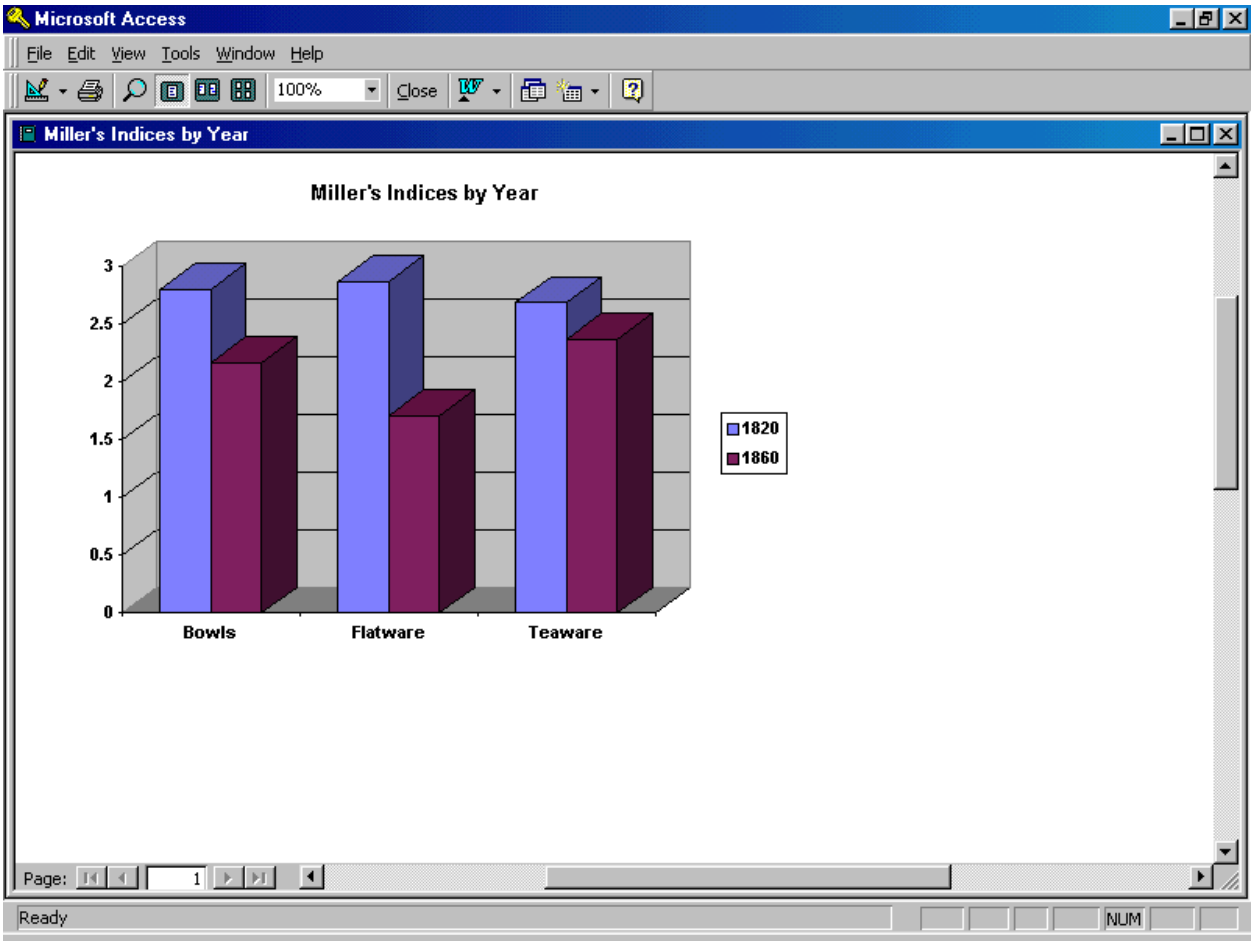


Fig. 5.14 Graph that shows Miller CC Index Values for every analysis year

5.7. The User Interface - A Menu System

The final feature of the program is the menu system. The menu system provides an easy-to-use graphical interface where the user can select a task to perform at the click of a button, without knowing what tables, queries, forms, reports or macros are necessary to perform the task. For example, if the user wishes to enter the years for analysis, the user would choose the *Analysis Menu*, followed by *Select Target Years*. If the user wanted to view the graph of the miller analysis by site, the user would choose the *Graphs Menu*, followed by *Miller Analysis by Site*. A picture of the Graphs Menu is shown below.

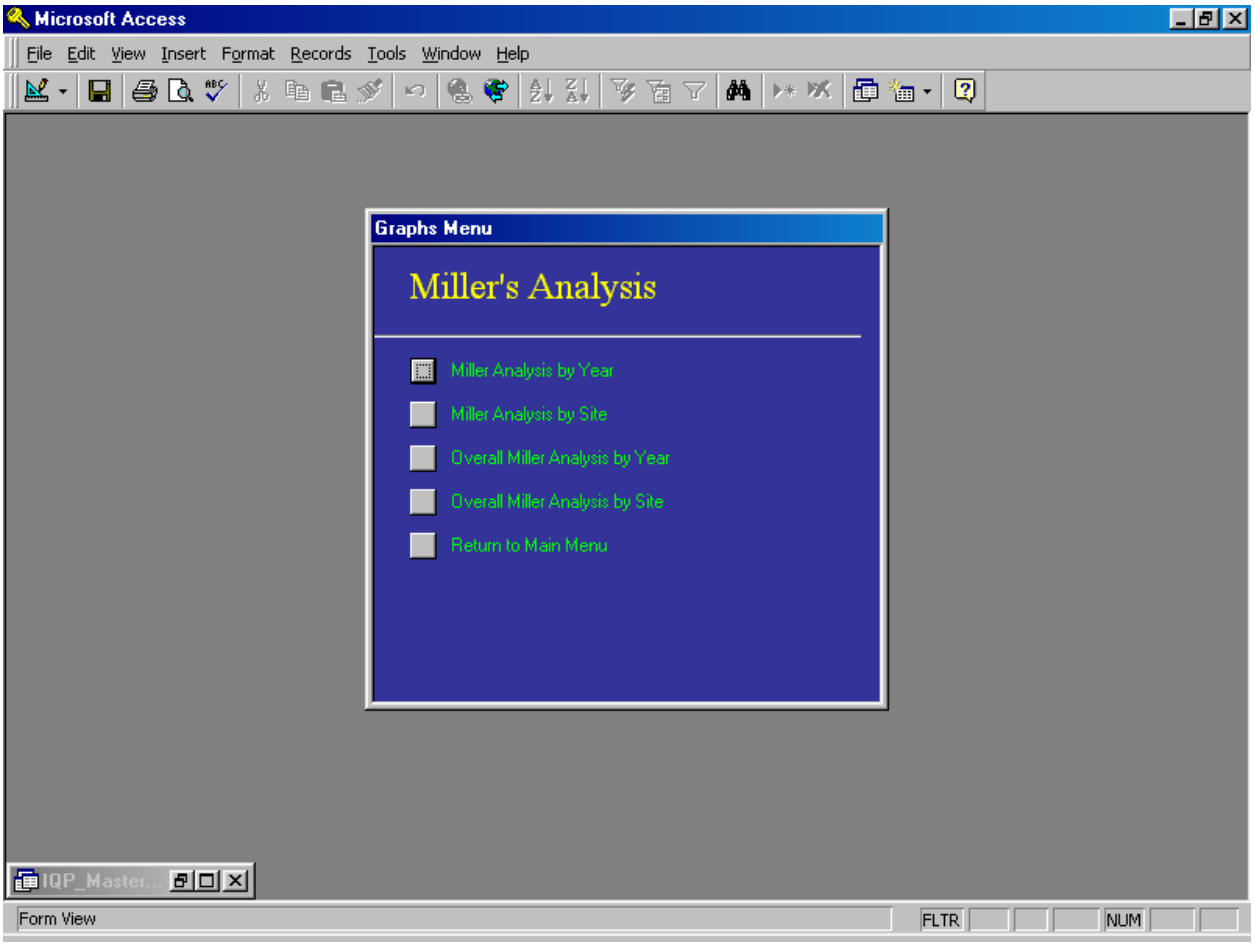


Fig. 5.15 A sample of the menu system

6. COMPARISON WITH OTHER SITES

The Miller CC Index Values obtained from the Nancy Johnston site, as calculated by the program, are shown in the table below. Many more reports generated from the Nancy Johnston site can be found in Appendix A2. Values are shown broken down by form type and as a whole.

Table 6.1 Flatware from the Nancy Johnston Site

Year	Number of Vessels	CC Index Value
1835	51	2.47
1845	66	2.44
1860	89	1.71
1872	96	1.74
1889	96	1.63

Table 6.2 Teaware from the Nancy Johnston Site

Year	Number of Vessels	CC Index Value
1835	21	2.71
1845	31	2.54
1860	38	2.37
1872	38	2.32
1889	38	2.19

Table 6.3 Bowls from the Nancy Johnston Site

Year	Number of Vessels	CC Index Value
1835	1	3.00
1845	6	2.21
1860	6	2.17
1872	6	2.14
1889	6	2.07

Table 6.4 Overall CC Index Values from the Nancy Johnston Site

Year	Number of Vessels	CC Index Value
1835	73	2.55
1845	103	2.46
1860	133	1.92
1872	140	1.91
1889	140	1.80

In a Master's Thesis written at the University of Massachusetts at Amherst in 1989, Mark Bograd compares many sites using Miller's CC Index Values. Appendix A3 reproduces the tables from Bograd's thesis and includes the Reed-Sargent values calculated using the Miller program. By comparing the value of the ceramics from Bograd's thesis to the ones collected from the Reed-Sargent site, it can be seen that in flatware the Reed-Sargent collection in 1835 is ranked second on the list of sites. In 1845, it is equal to the Tavern, suggesting that the Reed-Sargent site has the same value as the working business. The collection is valuable and the amount of money invested in the ceramics is greater than most of the other sites compared. The other three dates rank towards the upper half of the table. This shows that the flatware from the Reed-Sargent family ranked better than most of the farmers of the time and seemed to be similar in value to the merchant family in the tables. In teaware, the Reed-Sargent site is in the upper half of the table. This puts it in line with the merchant, planter and tavern in index value. In bowls, the Reed-Sargent site is towards the top of the list and has the highest value for 1835.

Based on all of these charts, we can see that the Reed-Sargent household was middle class for the period and had flatware, teacups and bowls that were in taverns, houses owned by merchants and other farmers of the time. This shows that the Reed-Sargent families invested in ceramics that were more costly than the other farmers of the time period. Using the Miller index values makes it easy to compare different sites over different time ranges because of the CC ware

being indexed at one. As we can see from the data presented above, this site was considered middle class based on the types of ceramics found.

7. PROBLEMS WITH MILLER'S PROCESS AND THE PROGRAM

Some questions arise when a computer program is used to calculate the index values. The first issue is that all of the artifacts entered need to have mandatory fields filled out for the Miller analysis to work. These fields include site, form type, ware type, target year and MNV. If any of these fields are missing, the program cannot compute the value for those items. In the Nancy Johnston assemblage, this was evident in the final CC Index Values. There were 359 artifacts entered into the inventory system, but only 140 vessels were counted in the analysis. Many of those vessels not counted were redware, yellow ware or porcelain, all of which Miller does not have CC Index Tables for. There were also 40 white granite ware vessels that were not counted because there were not enough shards for some of the pieces to constitute counting them as full vessels. It should be pointed out that white granite ware is the ware type for 104 of the 359 pieces, so the majority of these pieces were counted.

The next issue is that the Miller tables are missing years for items. An algorithm examines the tables and finds the years for the item based on its form type, ware type and MNV; If a year in the table matches the target year, the program will return the value. Otherwise, it will take the closest value, whether it be higher or lower. In the event of a tie, when the target year is exactly in the middle of two choices, the program will take the smaller year as the target year. Another issue related to the date problem occurs when the year is chosen from the Miller table, but the year is before the start date of manufacture of that artifact. It is not clear whether it is best to use the closets year for the analysis, whether the piece should be ignored or the dates should be recomputed to find a date that is within both the Miller tables and start of manufacture.

Another problem with the program is that it cannot analyze multiple sites for different analysis years. For example, the program would not be able to analyze the Nancy Johnston site

for 1860 and the J. Hale site in Ohio for 1824. It is possible to run an analysis for each site and year separately to manually compare the index values, but the program will not perform this comparison automatically.

There are also limitation on the graphing capability of Access. If the graph that shows index values on the vertical axis, form type on the horizontal axis and year by series is used when analyzing multiple sites, the program will add the index values for each site, form type and year and display the sum. This is a problem with the graphs, as there are really too many variables to graph at once. Therefore, when using the graphs in the program, only one site can be specified for a multiple years, or multiple sites can be specified for one year.

8. THE MEANING OF MILLER INDEX VALUES

Using the ideas presented by Miller allows historical archeologists to have a method of determining the material status of a family based on the ceramics they left behind. The example of the Reed-Sargent site shows that Miller's process appears to be accurate in determining the value of the ceramics. Using other sources, we have verified the findings of the analysis that was performed on the Reed Sargent collection. The final results from the analysis, when compared with other sites from across the country, gives the site a fairly high rating, again proving that the Reed-Sargent families were middle class. Through the use of the program, we could easily compute the five dates and compare them with other sites from across the country. After looking at census records and the values produced by the program, we can see that the Reed family was relatively prosperous.

A1. Sample Miller Calculation

In the 1990 paper by George Miller, he includes tables that are used to lookup the index values for the various types of ceramics. Below is a portion of the table for Printed wares. The numbers across the top are the rim diameters of the flatware. The dates going down the first column are the years that Miller has index information. To use the table match up the rim diameter with the year, to find the index value.

Table A1.1 Printed ware table from Miller's 1991 article

Year / Size	14"	12"	10"	9"-10"	8"	7"	6"	5"
1796	6.0	5.25	7.5	4.33	3.93	4.0	4.22	
1814	5.45	6.0	4.8	3.33	3.42	3.5	3.61	3.73
1816	5.45	5.14	4.8	2.86	3.0	3.0	3.0	3.01
1823	5.45	6.0	4.8	3.33	3.41	3.5	3.61	3.73

Using the values above a simple Miller analysis can be done for example of the process. The ceramic artifacts found from the example site will be as follows:

Table A1.2 Sample Inventory Table

Description	MNV	Miller Type	Date
Plate 1 10”	1	Printed	1814
Plate 2 7”	1	Printed	1814
Plate 3 5”	2	Printed	1814
Plate 4 9”	0	Printed	1814

Using these numbers and setting the target date for 1814, the Miller analysis is as follows. First take any piece that have an MNV greater than zero and lookup the CC index value from the table. Next multiply the index value times the number of vessels found, using the MNV for the number found. Then add up all of the values for each ware type. In the example above

when multiplied and added the answer is 15.76. The last plate was not counted because the MNV was zero. Next 17.25 is divided by the total number of vessels (4). This gives an answer of 3.94. All of the other ware types would be computed in a similar fashion.

A2. Miller Values for the Nancy Johnston Site

The report *Miller's Analysis Results by Form Type* shows the Miller CC Index Values for the Nancy Johnston Site categorized by form type and listed for the range of analysis years. The report *Overall Miller's Analysis Results by Site* shows the CC Index Values not broken out by form and listed for the range of analysis years. The graph *Miller's Indices by Year* shows the first report in a graphical form, while the graph *Overall Miller Indices by Year* shows the second report in a graphical form.

Miller's Analysis Results by Form Type

Form Type: Flatware

Site Name	Target Year	Number of Vessels	Miller Index
Nancy Johnston Site	1835	51	2.47
Nancy Johnston Site	1845	66	2.44
Nancy Johnston Site	1860	89	1.71
Nancy Johnston Site	1872	96	1.74
Nancy Johnston Site	1889	96	1.63

Form Type: Teaware

Site Name	Target Year	Number of Vessels	Miller Index
Nancy Johnston Site	1835	21	2.71
Nancy Johnston Site	1845	31	2.54
Nancy Johnston Site	1860	38	2.37
Nancy Johnston Site	1872	38	2.32
Nancy Johnston Site	1889	38	2.19

Form Type: Bowls

Site Name	Target Year	Number of Vessels	Miller Index
Nancy Johnston Site	1835	1	3.00
Nancy Johnston Site	1845	6	2.21
Nancy Johnston Site	1860	6	2.17
Nancy Johnston Site	1872	6	2.14
Nancy Johnston Site	1889	6	2.07

Fig A2.1 Miller's CC Index Values by form type

Overall Miller's Analysis Results by Site

Site Name: Nancy Johnston Site

Target Year	Number of Vessels	Miller Index
1835	73	2.55
1845	103	2.46
1860	133	1.92
1872	140	1.91
1889	140	1.80

Fig A2.2 Miller's CC Index Values by site

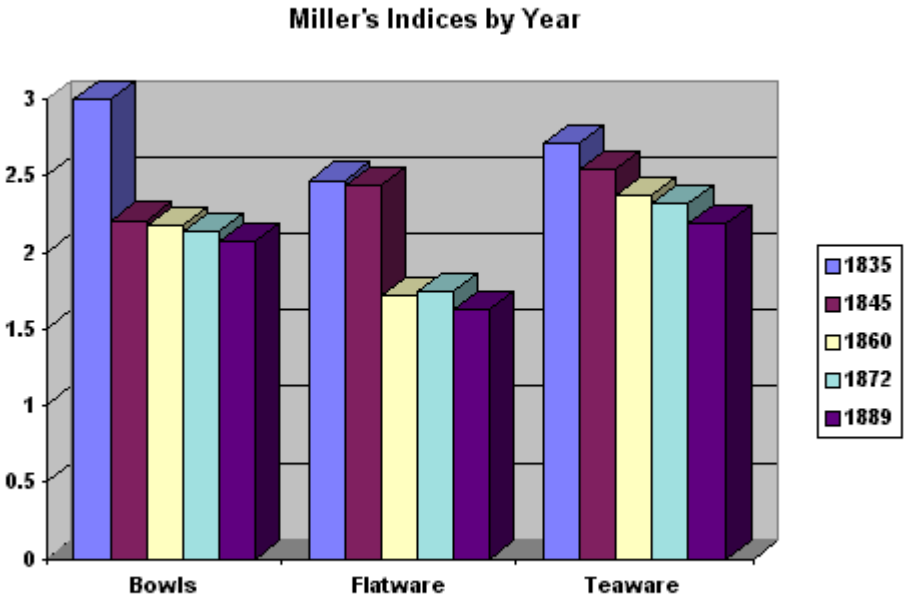


Fig A2.3 Miller's Index Values by year

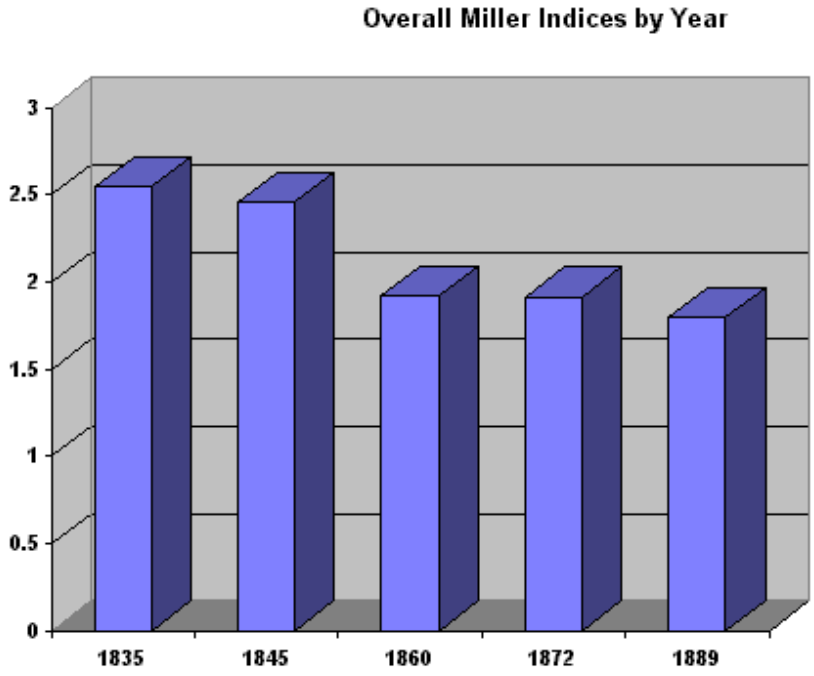


Fig A2.4 Overall Miller Index Values by year

A3. Mark Bograd Tables for Comparison

Below are the tables from his report with the Miller numbers for first an average Miller number, and then the numbers for flatware, teaware, and bowls.

Table A3.1 Average value index for the sites

Site	Occupation	State	Index Year	Index Value	Vessel Count
Diaz	Merchant	CA	1846	2.69	74
Cannon's Point	Planter	GA	1824	2.63	211
Reed-Sargent	**Farmer**	**MA**	**1835**	**2.55**	**73**
Reed-Sargent	**Farmer**	**MA**	**1845**	**2.46**	**103**
Walker Tavern	Tavern	MI	1846	2.37	35
Green	Merchant	DE	1833	2.29	94
T. Mendenhall	Merchant	DE	1824	2.15	45
Cannon's Point	Overseer	GA	1824	1.94	105
Reed-Sargent	**Farmer**	**MA**	**1860**	**1.92**	**133**
Reed-Sargent	**Farmer**	**MA**	**1872**	**1.91**	**140**
Franklin	Glassworker	OH	1824	1.90	94
Reed-Sargent	**Farmer**	**MA**	**1889**	**1.80**	**140**
Cannon's Point	Slave	GA	1824	1.76	92
Franklin Glass	Factory	OH	1824	1.67	62
Black Lucy	Freed Slave	MA	1833	1.53	58
E.H. Williams	Farmer	MA	1796	1.45	23
M. Tabbs (2)	Tenant Farmer	MD	1846	1.44	41
Skunk Hollow B	Black Laborer	NJ	1824	1.43	64
M. Tabbs (1)	Tenant Farmer	MD	1824	1.42	16
J. Hale, Farmer	Farmer	OH	1824	1.34	45

Table A3.2 Teaware index for the sites

Site	Occupation	State	Index Year	Index Value	Vessel Count
Diaz	Merchant	CA	1846	3.59	35
Green	Merchant	VT	1833	3.04	40
Cannon's Point	Planter	GA	1824	2.78	77
Reed-Sargent	**Farmer**	**MA**	**1835**	**2.71**	**21**
Reed-Sargent	**Farmer**	**MA**	**1845**	**2.54**	**31**
T. Mendenhall	Merchant	DE	1824	2.44	30
Cannon's Point	Slave	GA	1824	2.44	22
Walker Tavern	Tavern	MI	1846	2.37	35
Reed-Sargent	**Farmer**	**MA**	**1860**	**2.37**	**38**
Reed-Sargent	**Farmer**	**MA**	**1872**	**2.32**	**38**
Cannon's Point	Overseer	GA	1824	2.24	35
Reed-Sargent	**Farmer**	**MA**	**1889**	**2.19**	**38**
Franklin	Glassworker	OH	1824	2.15	33
E.H. Williams	Farmer	MA	1796	2.12	5
Franklin Glass	Factory	OH	1824	2.11	21
E.H. Williams	Farmer	MA	1814	1.83	5
Black Lucy	Freed Slave	MA	1833	1.68	17
Skunk Hollow B	Black Laborer	NJ	1824	1.53	11
M. Tabbs (2)	Tenant Farmer	MD	1846	1.50	18
J. Hale, Farmer	Farmer	OH	1824	1.46	17
M. Tabbs (1)	Tenant Farmer	MD	1824	1.44	3

Table A3.3 Flatware index for the sites

Site	Occupation	State	Index Year	Index Value	Vessel Count
Cannon's Point	Planter	GA	1824	2.69	121
Reed-Sargent	**Farmer**	**MA**	**1835**	**2.47**	**51**
Walker Tavern	Tavern	MI	1846	2.44	112
Reed-Sargent	**Farmer**	**MA**	**1845**	**2.44**	**66**
Cannon's Point	Overseer	GA	1824	1.99	51
Diaz	Merchant	CA	1846	1.92	34
Cannon's Point	Slave	GA	1824	1.90	36
Franklin	Glassworker	OH	1824	1.86	44
Green	Merchant	VT	1833	1.83	35
Reed-Sargent	**Farmer**	**MA**	**1872**	**1.74**	**96**
Reed-Sargent	**Farmer**	**MA**	**1860**	**1.71**	**89**
Reed-Sargent	**Farmer**	**MA**	**1889**	**1.63**	**96**
Black Lucy	Freed Slave	MA	1833	1.61	25
Skunk Hollow B	Black Laborer	NJ	1824	1.51	36
Franklin Glass	Factory	OH	1824	1.47	33
M. Tabbs (1)	Tenant Farmer	MD	1824	1.46	8
M. Tabbs (2)	Tenant Farmer	MD	1846	1.43	19
J. Hale, Farmer	Farmer	OH	1824	1.23	20
E.H. Williams	Farmer	MA	1814	1.11	11
E.H. Williams	Farmer	MA	1796	1.06	11
T. Mendenhall	Merchant	DE	1824	00	--

Table A3.4 bowl index for the sites

Site	Occupation	State	Index Year	Index Value	Vessel Count
Reed-Sargent	**Farmer**	**MA**	**1835**	**3.00**	**1**
Walker Tavern	Tavern	MI	1846	2.32	10
Reed-Sargent	Farmer	MA	1845	2.21	6
Reed-Sargent	**Farmer**	**MA**	**1860**	**2.17**	**6**
Reed-Sargent	**Farmer**	**MA**	**1872**	**2.14**	**6**
Reed-Sargent	**Farmer**	**MA**	**1889**	**2.07**	**6**
Diaz	Merchant	CA	1846	1.68	5
Green	Merchant	VT	1833	1.59	19
T. Mendenhall	Merchant	DE	1824	1.57	15
E.H. Williams	Farmer	MA	1802	1.57	7
Franklin	Glassworker	OH	1824	1.54	17
Franklin Glass	Factory	OH	1824	1.37	8
J. Hale, Farmer	Farmer	OH	1824	1.36	8
M. Tabbs (1)	Tenant Farmer	MD	1824	1.29	5
E.H. Williams	Farmer	MA	1814	1.26	7
Black Lucy	Freed Slave	MA	1833	1.24	16
Cannon's Point	Planter	GA	1824	1.23	13
Cannon's Point	Overseer	GA	1824	1.23	19
Cannon's Point	Slave	GA	1824	1.23	34
M. Tabbs (2)	Tenant Farmer	MD	1846	1.20	4
Skunk Hollow B	Black Laborer	NJ	1824	1.18	17

REFERENCES

Adamski, Joseph J., Charles Hommel, and Kathleen T. Finnegan. New Perspectives on Microsoft Access 97: Comprehensive - Enhanced. Cambridge, Massachusetts: Course Technology, 1998.

Bograd, Mark D. "Whose Life Is It Anyway?: Ceramics, Context, and the Study of Status." Masters Thesis, University of Massachusetts at Amherst, 1989.

Deetz, James. In Small Things Forgotten: The Archeology of Early American Life. Garden City, New York: Anchor Books, 1977.

Hoffman, James. Introduction to Structured Query Language [internet web site]. Internet, 1996- [cited 19 July 2000]. Available from http://w3.one.net/~jhoffman/sqltut.htm.

Hood, J. Edward. The Reed-Sargent Ceramic Assemblage (Nancy Johnston Site). Sturbridge, Massachusetts: Old Sturbridge Village, 1999.

Larkin, Jack. The Reshaping of Everyday Life: 1790-1840. New York: Harper & Row, 1988.

Miller, George L. "Classification and Economic Scaling of 19th Century Ceramics." Historical Archeology 6, no. 14 (1980) 1-40.

Miller, George L. "A Revised Set of CC Index Values for Classification and Economic Scaling of English Ceramics from 1787 to 1880." Historical Archaeology 25, no. 1 (1991) 1-25.

Old Sturbridge Village - Statement of Purpose [internet web site]. Sturbridge, Massachusetts: Old Sturbridge Village, 1997- [cited 19 July 2000]. Available from http://www.osv.org/ pages/stmtpur.htm.