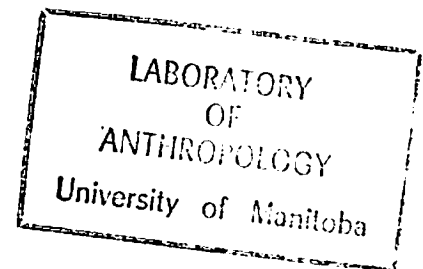


FABRICS FROM UPPER FORT GARRY: UNUSUAL ARCHAEOLOGICAL
EVIDENCE.

by

Gail Fifik

A thesis
presented to the University of Manitoba
in partial fulfillment of the
requirements for the degree of
Master of Arts
in
Department of Anthropology



Winnipeg, Manitoba

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ABSTRACT

The purpose of this thesis was to examine the fabrics recovered from an archaeological site, Upper Fort Garry (DLG-21), located in Winnipeg, Manitoba. The fabrics were recovered from two privy/refuse pits located within the Hudson's Bay Company post. Information on fabrics were used to answer questions of dating and economic variability between the two privies at the Fort and another fur-trade site, York Factory, from a contemporaneous period. The methods employed for studying these questions included the detailed analysis of the fabrics from Upper Fort Garry and the examination of archival documents to determine the economic value of different fabrics. Using a variety of non-parametric statistical tests it was found that differences and similarities existed between the two privies. Overall, the differences between the two privies based on cost indices of fabrics constructed using archival documents from 1846 to 1848, inclusive, and archaeological data were not significant and it was concluded that the Privies were similar. In comparison to York Factory it was found that the two fabric collections were significantly similar based on fibre types and fabric structures. Economic variability

between the two sites was not significant and it was concluded that the total cost of fabrics for both sites was similar although the actual composition of each collection was different.

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Chapter I
INTRODUCTION

Fabrics recovered from DLG-21, Upper Fort Garry, have provided archaeologists with a unique source of data. An investigation into the information provided by analysis of the fabric data was undertaken. It was hoped that such analysis would aid in the dating of the two privies, differentiating between the two privies and provide insights on similarities and differences between fabrics from other fur-trade sites. As well, the fabrics provide a link to aspects of life not often seen in the archaeological record.

AIMS

In detail, the aims of this thesis are to answer the following questions:

1. Can fabric evidence aid in the dating of the privies?
2. Are there differences in fabric remains between Privy I and Privy II? And what are these differences?
 - a) Socioeconomic status,

- b) Imported versus domestic fabrics,
 - c) Differences in garment construction, and/or
 - d) Different groups using the privies, such as different sexes, or ethnic groups.
3. Are there differences between the fabrics from DLG-21 and other fur-trade sites of the same period? If so, what are these differences? And why are there differences?

FABRICS IN THE RED RIVER SETTLEMENT

Fabrics arrived at Upper Fort Garry and the Red River Settlement from England along shipping lines through York Factory while Red River carts brought American goods from St. Paul's, Minnesota and canoes from Montreal travelled the Lake Superior route to bring goods from Eastern Canada (MacBeth 1897b:71). Goods shipped from England were from various countries and included such items as Persian carpets and Indian cottons. Initially most cotton fabrics imported from England originated in India but by 1764 American cotton was being exported to England to be woven (Wilson 1979:238-239). As early as 1640 simple fabrics were made in England or America but fabrics of complex weave were imported to America (Wilson 1979:238-239).

The study of trade using fabric artifacts focuses on the use of imported versus domestic fabrics for various purposes in the Hudson's Bay Company and the Red River Settlement. Two commercial ventures were undertaken in the Red River Settlement to produce cloth, these were the Buffalo Wool Company (1822-25) and the Assiniboine Sheep Company (1831-1833). Both these ventures failed due to poor planning and management.

Domestic production of fabric goods included both woolens, following the arrival of sheep in the settlement, and linens. Linen production was encouraged when agricultural bonuses were offered to farmers for growing flax. Unfortunately, the flax was apparently left to rot in the fields (Ross 1972:135). Whether or not this is true is questionable as one method for processing flax requires that retting, the breaking down of the outer stalk, be accomplished by soaking the raw flax in ponds or wet fields. This step is preparatory to further treatment leading to spinning.

Spinning wheels were made in the Red River Settlement by a local man, Angus Polson, so it can be assumed that from an early date there was local production of cloth (MacBeth 1897:43). Various articles refer to the product of this home industry as Red River Cloth, described as a coarse, red woolen material (Hargrave 1871:179). Fulling of woolens was

possible after approximately 1835 when a fulling mill was purchased from the United States (Ross 1972:338-340). Although Ross (1972:338-340) mentions that problems were such that the machine was not used.

The types of fabrics available in the Red River Settlement were large, as evidenced by the inventories, order letters, advertisements and account books of the HBC. In the 17th, 18th and 19th centuries fabrics,

formed a much greater portion of the total value of a family's goods than they do today, and a higher portion of income was spent on clothing relative to the amount spent on housing (Wilson 1979: 238-239).

Employees at Hudson's Bay Company forts and immigrants to the Red River Settlement brought large supplies of household linens, as well as receiving linens from friends and relatives overseas each year (MacLeod 1947). The army imported the necessary household linens as well as most clothing for its members (Whitfield 1981:19,40).

The study of fabrics from Upper Fort Garry is set within the social context of the period, using the fabrics as social and economic indicators. The total society interacting within the Fort included both the

Red River Settlement and Hudson's Bay Company populations, as well as the British Army from A.D. 1846-48 in particular and other military garrisons at various times. Socioeconomic factors, such as ethnicity and individual preference play a part in the "choice" or purchase of fabric goods. Detecting these factors archaeologically and how or if they changed over time will be examined.

THEORETICAL ORIENTATION

Material objects and their spatial relationships are the data which archaeologists collect, analyze and interpret. In the case of D1Lg-21, the recovery of a large number of fabric artifacts is a unique source of data for the archaeologist and one that is largely unexplored within the framework of historical archaeology during the fur-trade era.

Little information on fabrics from fur-trade sites is available, and most of what is available consists of a descriptive list of artifacts. More detailed analysis of fabrics would contribute to our knowledge. Such information as fibre type, weave and pattern will be used to make comparisons with other sites in the fur-trade era.

Historical archaeology, as defined by Schuyler (1978a:27), is the study of the material remains from any historic period. Historic sites archaeology, on the other hand, deals with a specific historical subject that has temporal, spatial and cultural boundaries (Schuyler 1978a:28). Historical archaeology, in particular, contributes to anthropology and history. It provides a more holistic approach than history to the study of a culture or a time period within a society (Schuyler 1978a:29). "As a social science it is ultimately searching for underlying patterns, process, 'laws' (call them what you will) to explain cultural reality" (Schuyler 1978a:29).

Historic sites archaeology contributes to modern anthropology by studying the processes of European expansion, exploration and colonization as well as those of culture contact and imperialism, that underlie one of the most dynamic periods of world history and which are reflected in both artifactual and documentary data (Schuyler 1978a:30).

Historical archaeology, with a few outstanding exceptions, has fallen short of its potential because of several complex problems. Archaeologists have not fully recognized that there are several ranges of data

which exist in related but different contexts, their interrelationships, and their potential unification into final, more complete constructions. Because of this oversight they have yet to even convincingly demonstrate the unique strengths of the context peculiar to their field - the archaeological record (Schuyler 1978b:275). This will be attempted in this thesis through the use of all sources of data for the analysis of fabrics from Upper Fort Garry.

As a result of failings in traditional theoretical frameworks, Hodder (1982a, 1982b) puts forth a contextual approach. Contextual archaeology has as its goal the analytical identification of ranking and the explanation of that ranking (Hodder 1982b:152). Two areas of interest are:

the formal analysis of sets and the notion that culture is meaningfully constituted in the sense that each material trait is produced in relation to a set of symbolic schemes and has a meaning dependent on its place within those schemes.

And secondly,

... the implementation and reconstitution of beliefs in practices, the ideological manipulation situation of beliefs as part of

social and economic strategies, and the development of models concerning interrelationships (Hodder 1982b:152).

Historical and historic sites archaeology, as well as ethnoarchaeology, Schuyler (1978a:30) suggests, can be used in social, economic and ideological interpretation. Historic sites archaeology, which deals with "a specific historical subject that has temporal, spatial and cultural boundaries" (Schuyler 1978a:28), has control over artifactual data in conjunction with documentary data. This control allows etic and emic analyses of the data and increases the explanatory power of observations and interrelationships put forward by the researcher. The explanatory contexts available to historical archaeologists are outlined in Table 1.

Etic analysis is defined as "investigations based on direct or indirect observation of human behavior" (Schuyler 1978b:269). Emic analysis concentrates on the views and beliefs that the subjects hold concerning their own behavior (Schuyler 1978b:269). The strength of historic archaeology lies in the contexts available to the researcher. The archaeological context creates a data base unique to research serving as a check for historical information as well as providing new data

TABLE 1

Contexts Available to the Historic Archaeologist.

	ETIC (behavior)	EMIC (concepts)
Archaeological context	directly available	present but not available
Historical context	indirectly available	directly available
Oral History context	indirectly available	indirectly available
Ethnographic context	directly available	directly available

not contained within historical documents. The use of documents by the archaeologist give him/her access to the emic level while also providing information at the etic level of analysis. The emic characteristics of documents serve as a filter between the researcher and direct access to human behavior.

Hodder's (1982b) contextual approach offers the archaeologist the best framework within which to explain economic variability. Historical and historic sites archaeology provide the best opportunity for

realizing the potential of this approach. In particular, the different types of data available to the historic archaeologist broaden the traditional archaeological data base and thus strengthen explanations within the contextual framework.

As MacGuire (1982:161) points out, documentary sources stress unusual and major events that are biased by the authors while archaeological data result from everyday processes.

The integration of archaeological and historical documents analyses provides a means of overcoming the limitations of each ... (MacGuire 1982:162).

Otto (1977) in his article about an Antebellum plantation, discusses the importance of the integration of historical data to establish the status of the site inhabitants and the use of archaeological data to test hypotheses. In both cases, neither study would have been complete without the use of historical documents and archaeological data.

LITERATURE REVIEW

An extensive search of the archaeological literature for comparative material has revealed a dearth of information. Analysis of fabrics has often consisted of listing of fabric fragments recovered and occasionally a description of the fibre type and weave. An exception to this is an unpublished paper by K.L. Storr (1980) entitled "Textiles from the Fur Trade: A Textile Glossary for the York Factory Indents 1801 to 1860". Although no archaeological textiles were examined for the paper, it is useful as it lists the types and varieties of materials imported into Rupertsland.

Textiles recovered from the Arctic Salvage Archaeological Project, done by Parks Canada, were analyzed by the Conservation Division of Parks Canada (Sergeant 1977). Analysis included the identification of fibre type, weave type, warp and weft counts and remarks about colour, condition and/or adhesions. This report was not integrated into any final synthesis.

Karlis Karklin (1983), in his report on Nottingham House, noted the location of the fabric remains from within the site and devoted several pages to the actual description of the remains. He concluded that the

fabrics were of European manufacture, except for the woven spruce root and suggested that the flax and yellow metal artifact might be "yellow orrie lace" listed among trade goods imported by the Hudson's Bay Company. Other fabrics were not distinctive enough to be correlated with articles in the trade lists (Karklins 1983:196).

Roger T. Grange Jr. (1977) in his analysis of Ile-Aux-Noix lists two fragments of black cloth under miscellaneous artifacts, and even includes a black and white photo. Yet he provides no other information or synthesis of these fragments.

Wilson and Southwood in their report "Fort George on the Niagara: An Archaeological Perspective", list fabric recovered from the Guardhouse under weaving, apparel and personal effects (1976:206). They provide no further information on the fabrics recovered and do not refer to them again in their analysis.

Previous research on fabrics from an archaeological site have been used for the reconstruction of historical costumes for site animation. An outstanding example of such research is from the Fortress of Louisbourg.

Razzolini (1982) in an article entitled "Costume Research and Reproduction at Louisbourg" outlines the

inception of animation requiring costumes through years of research to the final production of period costume. She points out the importance of archaeological artifacts in the study of costume which reveal more information than is available from historical accounts alone. Artifact analysis of archaeological specimens and research of existing collections yielded information on colours, textures, compositions and thread count. As well as documenting actual fabrics, Razzolini (1982:59) emphasizes the role of costume within society

the various aspects of a person's costume still indicated the level of society in which he or she moved or aspired to move.

In short, there is very little archaeological comparative material with which to integrate the Upper Fort Garry data. Further, the methods by which cloth artifacts can be analyzed and interpreted for processual purposes have yet to be developed.

SUMMARY

The three theoretical approaches outlined can be synthesized into a coherent approach for analyzing and evaluating the aims of this thesis. All three

approaches emphasize the importance of two types of data, two contexts and the need for understanding the relationship between them. Schuyler (1978a, 1978b) writes of artifactual and documentary data while Hodder (1982a, 1982b) speaks of material traits and sets of symbolic schemes. In both cases, they are dealing with emic and etic data or statements. Schuyler (1978a, 1978b) and Hodder (1982a, 1982b) suggest that these data or statements must be examined and explained in terms of their interrelationships.

In terms of the approach undertaken for this study the artifactual context and data were examined as etic data while the historical documents and records were used as emic data with which the etic data could be intermeshed. Following Schuyler (1978a, 1978b), the examination and explanation of both sources of data will lead to a better understanding of the context of the period and indicate trends in fur-trade sites that may be observed in other artifact assemblages.

Chapter II

HISTORICAL BACKGROUND

INTRODUCTION

This chapter will examine the historical period of the Red River Settlement from 1812, the beginning of Selkirk's colonization at Red River, to the Oregon Question of 1846. This time frame was chosen to outline the social context within which the artifactual data could be analyzed and includes the development of socioeconomic groups in the Settlement and Company. The Oregon Question, of 1846, was used as a terminal date because the privies have been artifactually dated to the period of the Sixth Regiment of Foot's stay at UFG, from 1846-1848. The departure of the Regiment marks the end of a period at UFG and the RRS, after this changes in transportation resulted in increased contact with the United States; decreased power of the HBC over the Settlement; and concurrent social changes. Examination of this later period is beyond the scope of this thesis and serves no purpose in the interpretation of the data.

THE EARLY YEARS

The years preceding the decade of A.D. 1821-31 were marked by conflict and violence. The first settlers reached Red River in August 1812 but due to the lateness of the year were forced to winter at Pembina (Guinn 1980:46). The following year was not successful and the settlers wintered at Pembina again. During the summer of 1814 Miles Macdonnell, who was in charge of the settlers, issued a proclamation prohibiting the export of pemmican and other provisions from the District of Assiniboia in order to secure the well-being of the settlement (Guinn 1980:49). The Northwest Company (NWCo) took this action as a threat to their trade as the role of the Red River in the fur trade was one of provisioning (Guinn 1980:49). A systematic plan of opposition to the Selkirk colony was begun. Rumors of Indian attack, promises of relocation to Canada, hospitality and liquor by the NWCo led to rampant desertion among the settlers (Guinn 1980:49). These errant settlers were persuaded by Colin Robertson to return to the Selkirk colony in August of 1815 when he met them at Lake of the Woods (Guinn 1980:51). Between 1815 and 1817 the NWCo fort at the Forks of the Red and Assiniboine Rivers - Fort Gibraltar - and the Hudson's Bay Company (HBC) fort - Fort Douglas - were subject to

attacks, seizures, burnings and rebuilding by both Companies culminating in the Seven Oaks Massacre in which twenty-one of Selkirk's men, including Governor Semple, died (Guinn 1980:52). In January of 1817, Fort Douglas II was seized by Miles Macdonnell, Captain D.D. D'Orseonnens and twenty-eight men from the Métis, led by Cuthbert Grant, and the NWCo (Guinn 1980:52). The years between 1817 and 1821 saw the construction and renovation of Fort Douglas II and Fort Gibraltar II (Guinn 1980:52).

In March of 1821, following Lord Selkirk's death, the NWCo and the HBC amalgamated. This amalgamation, and the 1810 Retrenchment Policy, were to affect the relationships of groups in the Company and in the RRS. The 1810 Retrenchment Policy was instituted in difficult economic times which saw an increase in the cost of fur trade goods, increasing competition from the NWCo, decreasing prices in an uncertain European market and a small proportion of the total trade being held by the HBC (Guinn 1980:41-42). The Retrenchment Policy reflected the economic climate of war-torn Europe with its blockades, the development of industrial revolution management techniques and the planning of an agricultural settlement in Rupert's Land (Hamilton 1983:11). The company cut costs at the expense of their common employees; ie. wage scales

decreased, bounties and premiums were removed, the cost of goods sold to employees was increased and the bargaining power of the Orkney men was broken through diversification of the labor supply. Men were recruited from Ireland, western Scotland, the Shetland Islands, Scandinavia, the Hebrides and Canada (Hamilton 1983:11). This practice increased the number of ethnic groups within the HBC.

The major effect of the 1821 amalgamation was that redundant servants of the companies and their families were encouraged to retire and relocate at Red River to pursue agricultural activities (Guinn 1980:58). Former employees were given farm lots to pursue agriculture, were employed by the HBC as seasonal boatmen and cart drivers, practiced their trades in the settlement, became provision hunters, and/or illegally traded and trapped furs on their own (Hamilton 1983:13). The decade of 1821-1831, for the settlement, was a

building period during which the administrative, social, religious, educational and economic institutions of the community took form (Guinn 1980:59).

This period was marked by the dominant influence of the HBC, as a monopoly which exerted economic control over the area, and as an administrative organization which

ran the Red River Settlement (RRS) from 1821-1836 (Guinn 1980:60,62).

Among the different ethnic groups within the RRS were the Highlanders or Scottish who first arrived between 1811 and 1815, and 1820, arriving in 1820 were Demeuron and Watteville soldiers (Swiss, Italian, German and other mercenaries), French Canadian families and Catholic priests came from Canada in 1818, Hudson's Bay Company officers (most often Highland or Orkneymen), and Métis and English half-breeds. In 1848 the Chelsea pensioners arrived (Bryce 1898:54-62; Wood 1915:105; Ross 1972:47).

Geographic location of homesteads by ethnic identity remained constant prior to and after the establishment of parishes. Early settlers established homesteads near Upper Fort Garry, the Scottish in St. John and Kildonan parishes, the Protestants in St. Paul, St. Andrew (south) and St. Andrew (north) parishes, the French Canadians in St. Boniface (east) and St. Boniface (west) parishes. The Swiss and Demeuron lived along the Seine River (in both St. Boniface parishes). The Métis settled on the White Horse Plains and St. Francois Xavier (east and west) parishes (Sprague and Fyre 1980:180; Gunn and Tuttle 1880:239).

These spatial boundaries were reinforced by social boundaries. Although MacBeth (1897a:51) states "no caste or color lines were drawn, not only was the white friend made welcome, but the belated Indian, ..." this was contradicted by Ross (1972:81) who states "although there is, and always has been, a fair show of mutual good feeling, anything like cordiality in a common sentiment seemed impossible ...". This prejudice is clearly seen in Letitia Hargrave's correspondence (Macleod 1947), for while she pities the natives and wishes to help them - she clearly sees them as inferior to English or Scottish people. And while she states she is puzzled by the class differentials between the country-born who are "anglicized" and those "nativized" she adheres to the norms and treats them differently.

Originally the three socioeconomic groups were closely aligned with ethnicity. Company officers were Highlanders or Orkneymen, agricultural people were Highlanders and Orkneymen as well, being partially composed of retired company men, and hunters were Métis and country-born. This changed as the number of Company employees decreased after the 1821 merger and the hunters increasingly turned to free-trade, hunting and agriculture to earn a living with the declining success of the hunts.

The local social stratification was reflected spatially within the Red River Settlement. An examination of maps of the settlement, parish divisions and written accounts indicate that there was a pattern to the spatial arrangement in the settlement. Parishes, laid out later in time, were divided along ethnic lines and religious lines (Monks, personal communication).

Power and wealth were originally held by the Company's officers and those it accepted as members of its strata. This was usually, though not always, based on ethnicity. During the 1830s and 1840s especially, there was a change in wealth strata with the rise of free-traders. Between 1839 and 1843 illicit trade had increased at an alarming rate. Norman Kittson had established a headquarters at Pembina in the latter year with the intention of attracting the half-breeds to trade furs (Galbraith 1957:60-1). The power structure was also affected because of its base, money/wealth, had been undermined by the free-traders. The majority of these free-traders were Métis and country-born, those excluded from power on the basis of ethnicity who nevertheless became increasingly wealthy as they traded more frequently in the United States.

Social stratification within the Red River Settlement changed over time as the Company's control

over the settlement weakened. Three factors which indicate this loss of control were the inability of the Company to impose laws and rules on the people of the settlement. Between 1821-46 no "police" force was available other than employees engaged in the trade (to support the Company's authority) except a few useless constables who themselves required watching (Galbraith 1957:311).

Mr. Grant had received a warrant from the Governor authorising him to seize all furs that were traded by private individuals, and that were not intended to be delivered to the H.B. Company. Those who assisted Mr. Grant in this unlawful and infernal affair, were to receive half of the plunder as a compensation for their nefarious services (Garrioch 1843-47:60).

The second factor was the increasing number of free-traders who did not purchase licenses. Licenses were granted to free-traders, starting in 1824, in order to reduce resentment of the settlers against the Company monopoly and to collect furs along the American border for delivery to the Company (Galbraith 1957:49). The third factor was the inability of the Company to collect duty on goods (see Garrioch 1843-47 when he discusses his own refusal to pay duty on American goods for at least three years).

An example of a free-trader, of country-born background, was Peter Garrioch. For the winter of 1843 he traded at the Mouse River for the Missouri Fur Company. The following winter he attempted to trade for himself, buying goods at credit price from Sinclair and McDermot at Red River, but the agreement fell through when they decided to sell the goods through their own trader.

In 1844 the Governor of the Hudson's Bay Company, George Simpson, cancelled all licenses and the Governor of Assiniboia, Alexander Christie, issued a declaration prohibiting illegal trading. Contrary to strengthening the Company monopoly within the area, these actions encouraged Red River and United States exchange (Galbraith 1957:63). Attempts by Simpson, that same year, to manipulate currency regulations against free-traders were not approved and illicit-trade continued (Galbraith 1957:65-6). The attempt by Simpson to manipulate the money market was probably a result of the demoralized price system in Southern Rupert's land created by free-traders and American purchasers (Galbraith 1957:311).

In December of 1845 two declarations were issued to all merchants in the colony who traded English goods.

On behalf of the Hudsons's Bay Company, I hereby license Nancy Garrioch to trade and also ratify her having traded in English goods within the Limits of Red River Settlement. - This ratification and this license to be null and void from the beginning, in the event of her hereafter trafficking in furs, or generally usurping any one whatever of all the privileges of the Hudson's Bay Company. ---- Given at Fort Garry this 7th December 1844. Alexr. Christie, Gov. of Assiniboine. (Garrioch 1843-47:40).

When Peter Garrioch spoke to Governor Christie in December of 1845 vis a vis the seizure of all furs "He [Gov. Christie] spoke largely on the validity of their Charter, and of the unlimited privileges and power it conferred on the H.B.C." (Garrioch 1843-47:60). In January of 1846 Garrioch (1843-47:62) notes that Mr. Grant had seized goods and furs on several occasions and the HBC "appear determined at all hazards to establish their points". These journal entries clearly outline the escalating problems of illicit trade in the RRS and the decreasing authority of the HBC over the inhabitants of Rupert's Land.

THE OREGON QUESTION

The Oregon Question [of 1846] was an opportunity seized by Simpson to strengthen the Company's position at RRS "against the increasingly restive inhabitants." (Galbraith 1957:239). While maintaining order at RRS the troops would also counteract the influence of the American traders over the Indians of the frontier (Galbraith 1957:239). If the danger from the United States was so great why does Peter Garrioch mention the threat of war only once during the 1846 journal.

March 23. M... I was informed today that the or a packet from Canada arrived yesterday or the day before. The news the packet brings is important. War is likely to be declared between England and the United States of America. The cause I believe is still the Columbia boundary line (Garrioch 1843-47:71).

Yet, Garrioch then makes plans to apply with the Missouri Company as a trader, travelling to Mr. Kittson's in early May, returning to White Horse Plains May 12 to purchase goods salable in the States and on May 16 starts for St. Peter's (Garrioch 1843-47:76-7). Garrioch's journal (1843-47:78) for September 20 states

... n St. Louis on July 19th ... Here I learnt to a certainty, that the Great Question between the British and the American Governments viz, the Columbia, Barren Columbia question, had been amicably settled.

By the time the troops from England had arrived at York Factory the possibility of war had been eliminated. Yet, the troops were still sent to UFG and remained for two years. Galbraith (1957:316-317) suggests that the troops were not recalled because of the "friendly" Lord Grey in the Colonial Office and that the retention of the troops in the settlement resulted in the "preservation of tranquility among the inhabitants".

Chapter III

METHODOLOGY

ARCHIVAL SOURCES

Archival sources were examined for insights into orders and inventories indicating what was supplied to Upper Fort Garry. Since UFG was a Hudson's Bay Company (HBC) fort, HBC order books and inventories were examined for the fort and for York Factory, because all goods coming by ship from England passed through there. As well, personal journals and accounts were examined to determine purchases, amount of money spent, cost of goods and goods acquired by various customers in the Red River Settlement (RRS) and UFG, including HBC employees.

Historical documents (eg. Hargrave 1871; MacLeod 1947) were examined to gain insight into social relations and lifestyles. This information will be used in conjunction with knowledge from archival sources in the discussion chapter.

ARCHAEOLOGICAL EXCAVATION

The fabrics¹ discussed in the following thesis were recovered during fieldwork carried out at Upper Fort Garry (UFG) from 1981 to 1983. The site, D1Lg-21, is located at the confluence of the Red and Assiniboine Rivers in what is now downtown Winnipeg. The excavated area was located in Bonnycastle Park at the corner of Assiniboine Avenue and Main Street (Fig. 1).

A three dimensional grid reference system was employed for all years.

... all horizontal measurements were taken from the City of Winnipeg's Special Survey pin on the south side of Assiniboine Avenue at the foot of Fort Street. This pin was assigned the location N100m, E100m so that all measurements on the site were taken in terms of north and east coordinates.

Vertical control ... [was] established in metres ASL according to the 232.203 m ASL elevation on the brass Geodesic Survey plug in the pumphouse foundation in the southeast corner of the park (Monks 1983:4).

¹ Fabric is the generic term for all fibrous constructions while textile refers specifically to woven fabric (Emery 1966:xvi).

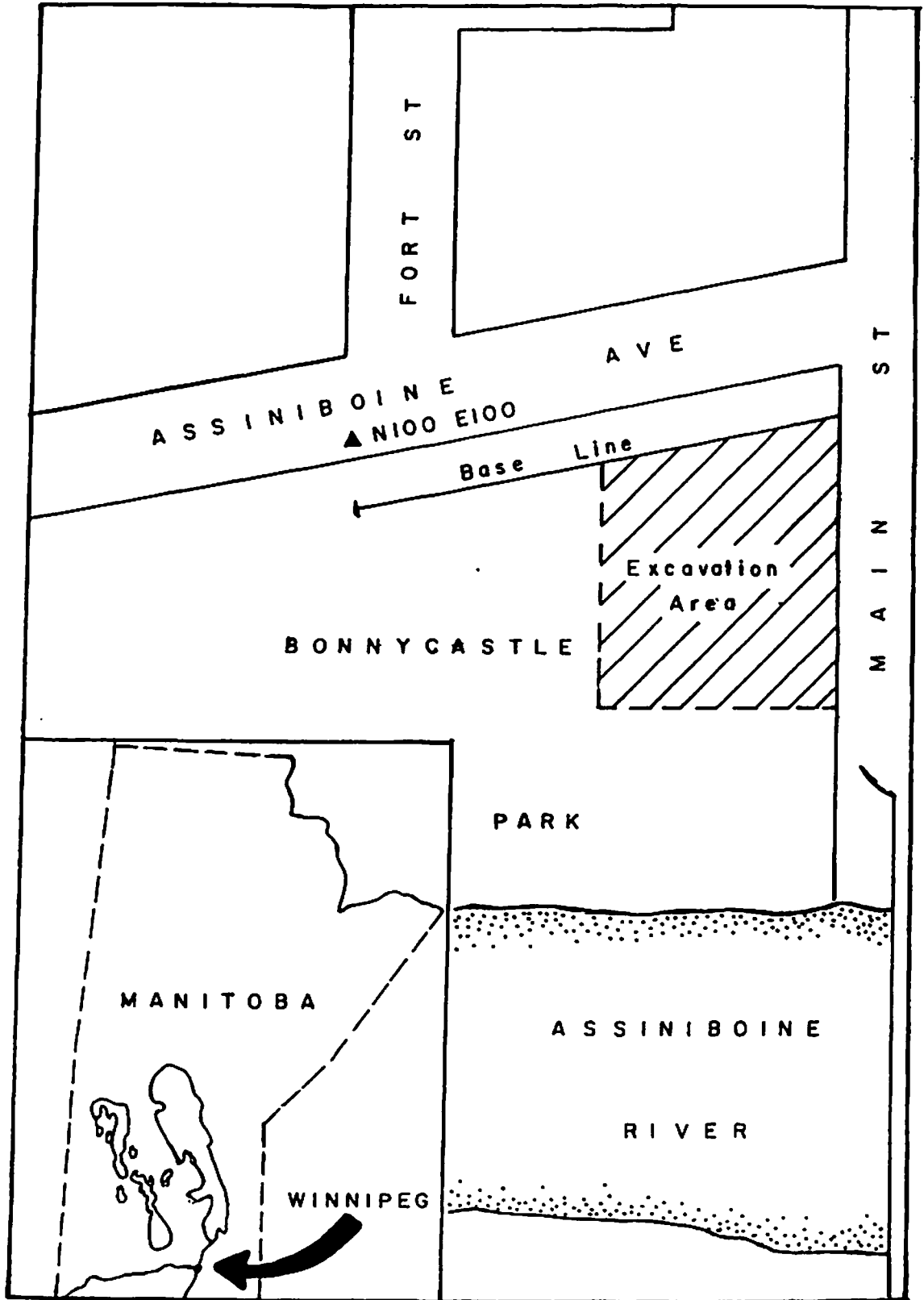


Figure 1: The Upper Fort Garry Site (DLG-21).

Excavation techniques and tools included shovel shaving of overburden and trowelling of cultural strata. Soil samples were waterscreened in the field using a 1/4 inch mesh screen and a garden hose. Units one metre by one metre were surveyed in using a transit and labelled by the coordinates of the northeast corner (Monks 1982:33). During the final field season several trenches were opened with a backhoe to remove recent fill along surveyed lines to examine cobble and mortar alignments in search of structures (Monks 1983:30). Units located in these trenches were either one metre by one metre or one-half metre by one metre (Monks 1983:37). Units were often linked end to end to form trenches.

Artifacts were measured individually from the northeast corner of the units. Artifacts found during waterscreening were assigned the same provenience as the soil samples they were found with. Those found in the backdirt or miscellaneous soil samples were labelled as such.

Of the units excavated, ten yielded textile remains. These were units N93E177, N92E177, N91E177, N90E177, N91E176, N94E175, N94E174, N93E174, N92E174, and N96E174. All these units were located in two structures which have been identified as privy/refuse pits (Fig. 2). Interpretation suggests the presence of

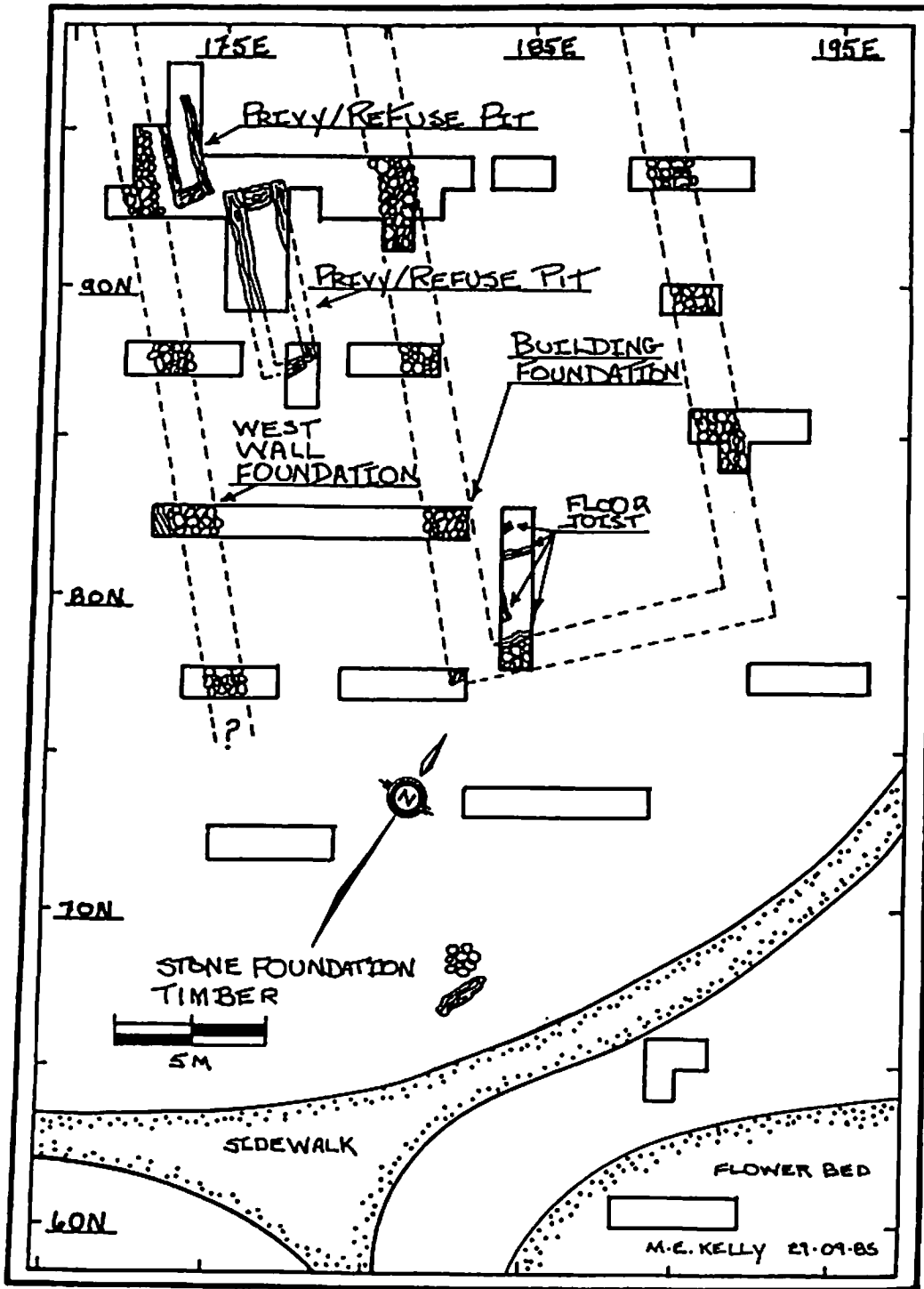


Figure 2: Planview of DLG-21 showing location of Privies I and II.

the west wall of the fort, two wooden cribbed structures called privy/refuse pits in this analysis, and one wall and partial flooring of a building - possibly a fur warehouse (Loewen and Monks 1986). The majority of the textiles from the site were recovered from the two structures identified as privy/refuse pits, hereafter referred to as Privy I and Privy II. The unusually large recovery of textiles, approximately 2,181 fragments and their excellent condition are attributed to the high moisture content of the soil at approximately 231.50 m ASL which created an anaerobic environment. The concentration of cloth in the first structure, the larger of the two, was at a depth of 230.20 m to 231.60 m ASL in a light brown organic matrix. Cloth recovered from the second structure was located at a depth of approximately 230.65 m to 231.31 m and was found in a matrix of organic soil. The distribution of textiles recovered from the site can be seen from Table 2.

Once organic items were removed from this anaerobic environment they required conservation. Textiles, as well as other items, were frozen after removal to prevent deterioration. The fabric was cleaned and dried over the winter and stored in acid-free boxes in a humidity controlled environment at the Museum of Man and Nature in Winnipeg (see Appendix A for details).

TABLE 2

Distribution of Textiles by Unit from Upper Fort
Garry, DLg-21.

Unit	No. of Textiles	% of Total
Privy I		
N92E177	1208	55.39
N91E177	18	0.83
N90E177	145	6.65
N91E176	64	2.93
N93E177	451	20.68
Sub-total	1886	86.48
Privy II		
N94E175	5	0.23
N92E174	6	0.28
N93E174	26	1.19
N96E174	2	0.09
N94E174	192	8.80
Sub-total	231	10.59
Miscellaneous	64	2.93
Total	2181	100.00

ARCHAEOLOGICAL DATA AND ORGANIZATION

The variables examined for each fabric cluster were: locational information including site, unit, level, stratum, ASL, north provenience and east provenience; fabric structure; type of fabric structure; weft - fibre type, twist and picks/cm; warp - fibre type, twist and ends/cm; finish; color of fabric; coloring method; pattern - pattern color(s) and printing technique; stitching; thread; selvedge; marks; primary function; secondary function; and composite piece (see glossary of Appendix B for definitions of technical terms).

These variables provided information on dating of the deposits by the type of fibres present/absent, manufacturing technology for textile production, colors or dyeing technology, printing technology and manufacturing technology of garments.

Fibres were identified using a binocular stereoscopic microscope at powers ranging from 6.4X to 40X, with individual measurements of fibres examined on a binocular microscope at 100X, 250X and 900X. Fibres were then compared with the fibre collection, prepared by the Department of Clothing and Textiles, University of Manitoba, the "Technical Manual of the American Association of Textile Chemists and Colorists, Vol. 56"

(1980) and "Identification of Textile Materials" (The Textile Institute 1975). Fibres which could not be visually identified were subjected to burning and the chemical tests listed in the AATCC Technical Manual (1980:59-64). Several fibres which were deteriorated were analyzed by Brigitta Badour, from the Textile Laboratory, Department of Clothing and Textiles. All fibres were identified as natural fibres suggesting that the samples pre-date the production of man-made fibres, that is, rayon between 1890 and 1900.

As well, the finish of textiles, colors, printing, patterns and dyeing techniques also provide dating information. The commercial introduction of the sewing machine in the 1840s and its widespread use by the 1870s, also provide dating information for the sample (Godfrey 1982:22,27).

Information on coding of fabrics is given in Appendix B while the actual data is listed in Appendix C.

STATISTICAL METHODS

Three statistical advisors were consulted regarding the analysis of data for the fabrics from UFG. They were Mr. Jeff Sloane, Mr. Jit Tan, and Ms Linda Neden from the Statistical Advisory Service, University of Manitoba.

Nonparametric statistical tests were performed on the fabric data because of the nature of the information, that is, it was nominal data and therefore not suitable for parametric tests. Tests were run using a canned program, SAS Version 86, with options 'S=80'. Option 'S=80' specifies that the length of statements on each line is 80 characters. The functions performed by the computer included the sorting of data by privy; generation of a chart using the percent discrete option; a frequency table; generation of a chart using the percent and discrete variables; chi-square test of association; Wilcoxon two-sample test; Kruskal-Wallis test; and correlation (see Appendix E).

Tests were run on each privy separately with certain tests run on the data as a whole for comparative purposes. The results of these tests are discussed in detail in the following chapter. Two tests which were run on the data were the Wilcoxon two-sample test (normal approximation) with a continuity correction of five and the Kruskal-Wallis test (chi-square approximation). Both of these tests are nonparametric tests. The Wilcoxon test is a non-parametric test used instead of the paired t-test when the assumptions underlying the t-test are not valid (Pollard 1979:181). The Kruskal-Wallis test is a non-parametric test used

to measure one-way analysis of variance (Pollard 1979:170). The Kruskal-Wallis test was chosen because it performs counts on observations; assumes that distribution is not normal and that the sample sizes may be different. It is therefore a more robust test than chi-square in this case. The formula used is given in the SAS manual (SAS 1982:498).

Pearson's product-moment correlation, a parametric statistic, was measured for a number of variables within each privy and between privies. Correlation is used to measure "the closeness of a linear relationship between two variables" (SAS 1982:501). The mathematical formulae used are given in the SAS manual (SAS 1982:501-508). It should be emphasized that

Zero correlation does not imply independence but lack of connection between the two variables under consideration [that is, they are randomly distributed] (Pollard 1979:86).

The results of correlation tests run on the fabric data are discussed in detail in the following chapter.

Chapter IV
STATISTICAL ANALYSIS

SAMPLING

All of the textiles were not examined for the purpose of this thesis. The 64 fabrics in the miscellaneous category were not examined because their location, in most cases, could not be ascertained. As such, they were not useful in exploring potential differences between the two structures. A representative sample comprising 20 per cent of the remaining population of textiles recovered was chosen using a random number table. It was determined that this sample would accurately reflect the variety within the population (Sloane, personal communication 1982). A total of 436 textiles samples were chosen from the total population of 2,181. These samples were chosen on a stratified basis, dependent upon the percentage of textiles recovered from each structure and each unit within each structure as shown in Tables 3,4 and 5.

Clusters rather than elements were randomly sampled because of the manner in which the artifacts were recovered. Due to the nature of the matrix lumps of

TABLE 3			
Total Number of Textile Artifacts Recovered from each Unit.			
Unit	Total		Sample
Privy I			
N92E177	1208		245
N91E177	18		16
N90E177	145		89
N91E176	64		64
N93E177	451		71
Sub-total	1886		528
Privy II			
N94E175	5		5
N92E174	6		6
N93E174	26		12
N96E174	2		2
N94E174	192		79
Sub-total	231		113
Total	2117		641

soil and artifacts were removed from the ground to prevent damage to the artifacts and assigned a catalogue number. It was not until after the fabrics and soil were separated that it was possible to determine how many fabric fragments there were. Although different fabrics were separated out and recatalogued, most retained the original catalogue

TABLE 4

Number of Textiles Recovered by Cluster from each Unit, by Privy.

Unit	Number of Clusters	Number in Sample
Privy I		
N92E177	1002	194
N91E177	11	10
N90E177	52	25
N91E176	45	45
N93E177	254	71
	<hr/> 1364	<hr/> 345
Privy II		
N94E175	5	5
N92E174	4	4
N93E174	13	5
N96E174	2	2
N94E174	79	44
Sub-total	<hr/> 103	<hr/> 60
Total	<hr/> 1467	<hr/> 405

number. In most cases this was not a problem as the fabric structure of all fragments within a cluster were the same type. When different types of fabric structures had been assigned the same catalogue number, that is, to the same cluster, they were recatalogued after selection so that the information provided by analysis was not lost.

Privy	Cluster	Element
Privy I	25.31	28.00
Privy II	58.25	48.92
Total	27.61%	30.27%

The actual number of artifacts within each cluster varied from one to eighteen. A total of 641 elements (artifacts) were examined from a total of 2,117 artifacts, that is, approximately 30 per cent of the elements (artifacts) were sampled.

In total, 28 per cent of the clusters were sampled which was a 30 per cent sample of all elements, or individual artifacts. The discrepancy between ideal sample percentage and actual sample percentage was due to replacement of lost items with other items and recataloguing of the original sample. This larger size sample means that the population was oversampled (as explained below) rather than undersampled, but this in no way affects the representativeness of the sample (Sloane, personal communication 1986). This can be further broken down into a 25 per cent sample of clusters from Privy I and a 28 per cent sample of

elements from Privy I. These percentages were 58 and 49, respectively, from Privy II.

Within each structure each unit was sampled in proportion to the number of clusters it contained. Units with fewer clusters, especially those numbering less than ten, were sampled completely. Those over ten were sampled proportionately; that is, the remaining number of clusters to be sampled were selected proportionate to the actual number of clusters from each unit. In Privy I, the percentages sampled from each cluster ranged from 19.36 per cent, for the largest number of clusters, to 100 per cent for the second smallest number of clusters. The smallest number of clusters, from unit N91E177, eleven in total, was not completely sampled because one cluster containing eleven artifacts was lost. For Privy II, far fewer clusters were recovered archaeologically, a total of 103 clusters as opposed to 1,364 in Privy I. In this instance, clusters of five or less were sampled completely while those over ten were sampled proportionately. Hence five clusters representing 38.46 per cent of unit N93E174 were sampled and 44 clusters representing 55.70 per cent of N94E174 were sampled.

STATISTICAL ANALYSIS

Descriptive statistics were computed using both weighted and unweighted values. The quantity field, the actual number of artifacts/observation, was used as the weighting value. The difference in variance between weighted and unweighted data is greater for the data as a whole (Privy I and Privy II) and the data from Privy I than for Privy II. As well, the difference in standard deviation is greater between weighted and unweighted data for the site as a whole and Privy I than it is for Privy II. The ranges of the mean using weighted vs. unweighted data are not great within datasets or between datasets. It was decided that unweighted data would be used in computing all statistics for comparative purposes because of the lower variance and the high degree of similarity of fabrics within clusters based on physical examination of fabrics.

DIFFERENCES BETWEEN PRIVY I AND PRIVY II

Statistically significant differences between the two privies based on the variables of pattern, type of fabric structure and secondary function were detected using the Kruskal-Wallis test (Table 6). Because the

probability of observing the F values is less than $p = 0.05$, we reject the null hypothesis, that there is no difference in the variable between the privies, and accept the alternative, that there is a difference in

TABLE 6

Results of the Kruskal-Wallis Test for Type of Fabric Structure, Pattern and Secondary Function.

Variable	Test Probability
Fabric structure	0.0016
Pattern	0.0430
Secondary function	0.0041

the variables between the privies.

PATTERNS

Eleven different patterns were found in Privy I while only four patterns were found Privy II (Table 7). Of these, three patterns were found in both structures. The first pattern, which was unidentifiable, occurred at a frequency of one for both structures although it

TABLE 7

Frequency of Artifacts by Pattern by Privy.

Pattern	Privy I		Privy II	
	f	%	f	%
Not identified	1	5.5	1	10.0
Woven	5	27.8	7	70.0
Tartan (one color)	1	5.5		
Tartan (two tone)	2	11.2		
Striped	1	5.5	1	10.0
Rectangles	2	11.2		
Tartan (colored)	1	5.5		
Stocking	1	5.5		
Honeycomb flowers	1	5.5		
Figured leaves			1	10.0
Abstract foliage	1	5.5		
Vermicelli	1	5.5		
Ovals	1	5.5		
Total	18	100.0	10	100.0

comprised 5.5 per cent of all patterns for Privy I and 10.0 per cent of all patterns for Privy II. Two patterns were identified in both structures, these were woven patterns and striped patterns. Of these, woven patterns were more frequent in both structures than striped patterns. The final pattern identified in Privy II was a ribbed silk with figured flowers and leaves. Nine other patterns were identified from Privy I. These were two-tone tartans, solid tartans and colored tartans. As well, border-prints of brightly colored cottons were identified in a variety of

patterns such as ovals with flowers, rectangles on a flowered background, abstract honeycomb flowers with roses and fibre suns on a vermicelli background. One silk monochrome print with abstract foliage and one fancy weave stocking were also identified from Privy I (Fig. 3).

Those showing similar percentages were patterns which were not identified and striped patterns. Woven patterns showed different percentages with 70 per cent of all patterns from Privy II being identified as such while 27.8 per cent of all patterns from Privy I were so identified. As well, those patterns identified from only one privy or the other make up a large percentage of patterns. These differences can be identified as the reason why the Kruskal-Wallis test indicated that Privy I and Privy II were different on the basis of pattern.

TYPE OF FABRIC STRUCTURE

Twenty-nine types of fabric structure were identified for Privies I and II (Table 8). Of these, eleven types were identified for both while eighteen

FREQUENCY

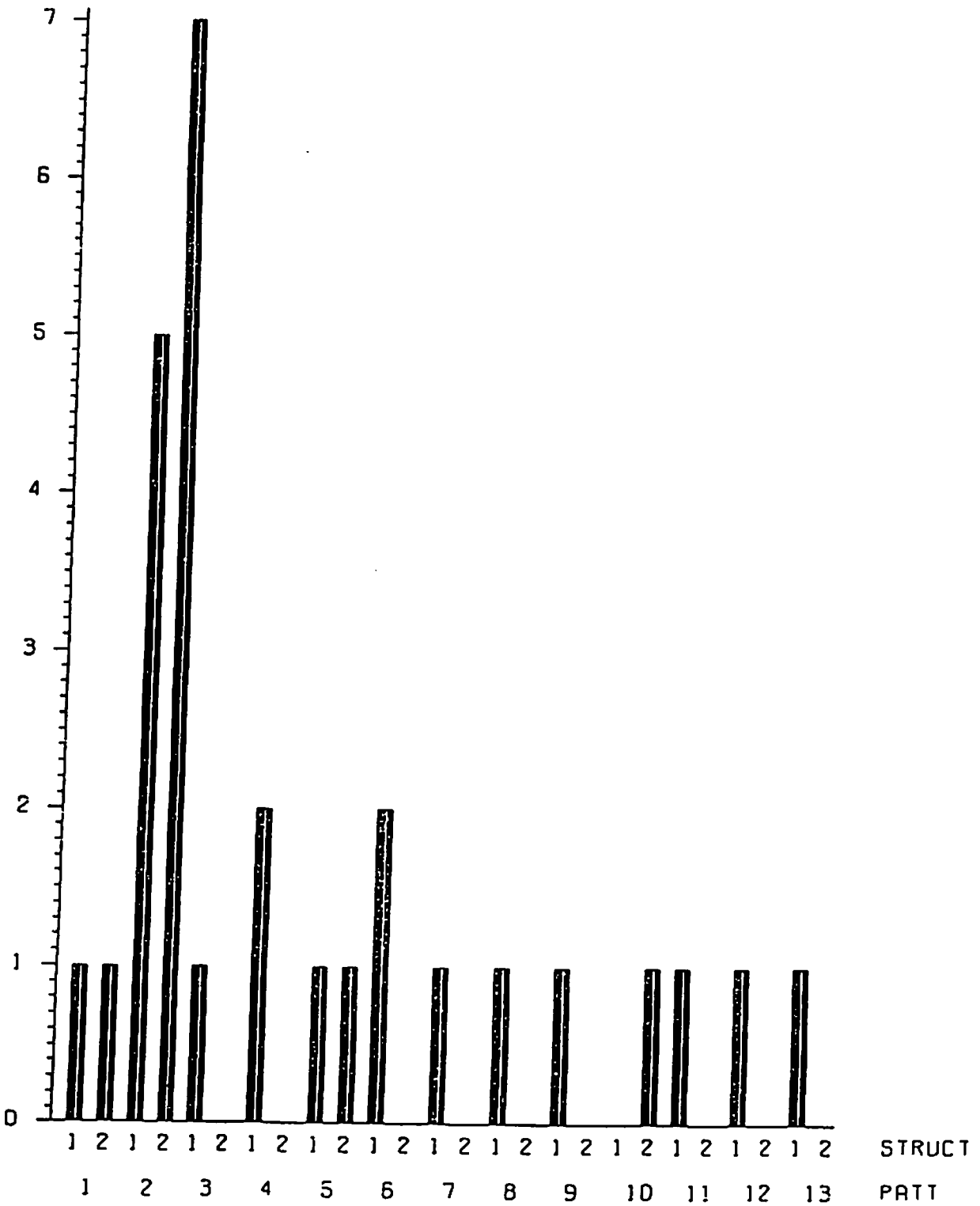


Figure 3: Frequency of patterns by privy.

TABLE 8

Frequency of Artifacts by Type of Fabric
Structure by Privy.

Fabric Structure	Privy I		Privy II	
	f	%	f	%
Not identified	59	17.1	12	20.0
Plain weave	30	8.7		
Balanced plain weave	149	43.2	13	21.7
Extended plain weave	6	1.7		
Warp rib weave	2	0.6	4	6.6
Weft rib weave	3	0.9	3	5.0
Haircord	1	0.3		
Twill weave	2	0.6	2	3.3
Z twill 2:2	22	6.4	4	6.6
S twill 2:2	23	6.7	4	6.6
Z twill 2:1	15	4.4		
Z twill 3:1	1	0.3	1	1.7
S twill 2:1	9	2.6	1	1.7
S twill 3:1	4	1.1		
S twill 3:2	1	0.3	1	1.7
Fancy diagonal	1	0.3	4	6.6
Pointed twill	3	0.8	1	1.7
Satin/sateen	2	0.6	1	1.7
Satin	3	0.8		
Sateen			1	1.7
Honeycomb	2	0.6	2	3.3
Leno	2	0.6		
Velvet			1	1.7
Weft knit			1	1.7
Stockinette	3	0.8		
Rib 1x1	1	0.3		
Honeycomb (knit)	1	0.3		
Plaiting			4	6.6
Total	345	100.0	60	99.9

were identified for either one or the other. The eleven fabric structures which were the same were those which were unidentifiable, balanced plain weave, warp

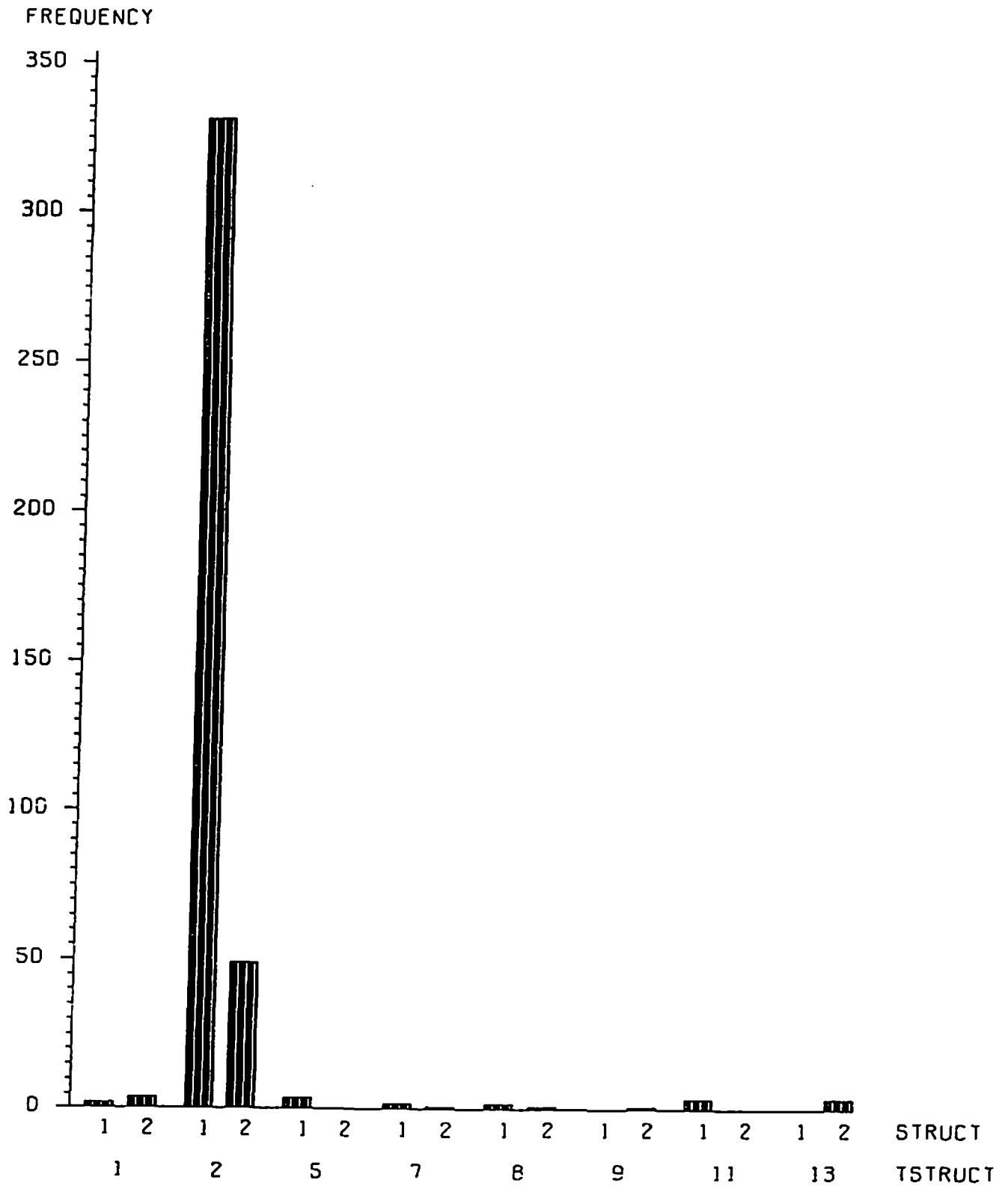


Figure 4: Frequency of type of fabric structure by structure.

rib weaves (repp), weft rib weaves, twill weave, 2:2 Z twill, 2:2 S twill, 2:1 S twill, 3:1 Z twill, fancy diagonal, pointed and herringbone twill, satin/sateen, and fancy weave (twill and tabby) (Fig. 4).

Those weaves identified from Privy I but not Privy II were plain weave (balanced/extended), extended plain weave, 2:1 Z twill, 3:1 S twill, haircord satin, leno, stockinette, 1x1 rib and honeycomb (knit). Those identified from Privy II but not Privy I were sateen, velvet, weft knit and plaiting.

Those showing similar percentages were not identified, Z twill 2:2, S twill 2:2, Z twill 3:1, S twill 2:1, S twill 3:2 and pointed twill. Those showing different percentages were warp and weft rib weaves, fancy diagonal and honeycomb weaves. In both cases the largest single percentage was balanced plain weave which accounted for almost 50 per cent of the Privy I sample and close to 25 per cent of the Privy II sample. This large difference in percentages as well as the difference mentioned above indicate why the Kruskal-Wallis test showed Privy I and Privy II to be different.

SECONDARY FUNCTION

Secondary function of textiles differed

TABLE 9

Frequency of Artifacts by Secondary Function by Privy.

Function	Privy I		Privy II	
	f	%	f	%
Not identified	35	10.1	12	20.0
Wall paper	1	0.3	1	1.7
Furnishing fabric	1	0.3		
Blankets	1	0.3		
Yardage for costume	32	9.2	4	6.7
Hat	1	0.3		
Wrap	53	15.3	6	10.0
Coat	10	2.9	2	3.3
Shawl	3	0.9		
Outer garment	55	15.9	4	6.7
Dress, skirt, shirt	39	11.3	4	6.7
Sweater	4	1.2		
Trousers, jacket	74	21.4	8	13.2
Vest	2	0.6	2	4.0
Shirt	16	4.6		
Gloves	3	0.9	1	1.7
Cuffs	2	0.6		
Hose/socks	1	0.3		
Hose/stockings	3	0.9		
Shoe			1	1.7
Rope			1	1.7
Ribbon/sash	4	1.2	8	13.2
Lining	3	0.9	4	6.7
Tape	2	0.6	1	1.7
Insets			1	1.7
Total	345	100.0	60	100.0

significantly between Privy I and Privy II (Table 9). Several functions were identified in both structures. These were unidentifiable, apparel/yardage for costume, wrap, coat, outer garment (not specified), dress/shirt/skirt, trousers/jacket, vest, gloves, ribbon/sash, lining, wallpaper and tape. Those found in Privy I but not Privy II are yardage available for two or more uses in interior, blankets, hat, shawl, sweater, shirt cuffs, hose/socks and hose/stockings (female). Those identified exclusively from Privy II included shoe pieces, rope and insets (Fig. 5).

Although some secondary functions were identified in both Privies, as mentioned above, the percentages differed. The largest percentage, of one secondary function, was not identified for Privy II and trousers,jacket for Privy I. For the outer garment function 15.9 per cent were identified from Privy I while 6.7 per cent were identified from Privy II. For the dress, skirt,shirt function, 11.3 per cent were identified from Privy I while 6.7 per cent were identified from Privy II. Of the vest function, 4.0 per cent were identified from Privy II while 0.6 per cent were identified from Privy I. For the ribbon/sash function, 13.2 per cent were identified from Privy II while 1.2 per cent were identified from Privy I. And lastly, for the lining function, 6.7 per

cent were identified for Privy II while 0.9 per cent were identified from Privy I. These differences in percentages, taken together with present/absent differences in function are indicative of why the Kruskal-Wallis test finds Privy I and Privy II to be different.

SIMILARITIES

Statistically significant similarities in increasing order were identified on the basis of the following variables: primary function, warp, fabric structure, marks, stitching and weft (Table 10). Because the values in the table are larger than $p = 0.05$ we accept

TABLE 10

Results of the Kruskal-Wallis Test for Stitching, Fabric Structure, Marks, Weft, Primary Function and Warp.

Variable	Test Probability
Warp	0.1211
Primary function	0.0742
Weft	0.7299
Marks	0.5070
Fabric structure	0.4555
Stitching	0.7010

the null hypothesis that there is association.

FABRIC STRUCTURE

While 29 types of fabric structure were identified for both privies, they were mostly types of woven fabrics. Eight were knit and felt fabrics from Privy I, and five

Fabric Structure	Privy I		Privy II	
	f	%	f	%
Not identified	2	0.6	4	6.6
Woven	331	95.8	49	81.7
Knit	4	1.2		
Machine knit	2	0.6	1	1.7
Cellular	2	0.6	1	1.7
Pile			1	1.7
Felt	4	1.2		
Twining			4	6.6
Total	345	100.0	60	100.0

were pile and twined from Privy II (Table 11). A number of unidentified, woven, machine knit, knit and cellular were identified from both structures (Fig. 6).

The largest percentage of artifacts for both Privies, by fabric structure, was woven. For Privy I, 95.8 per cent were woven while for Privy II, 81.7 per

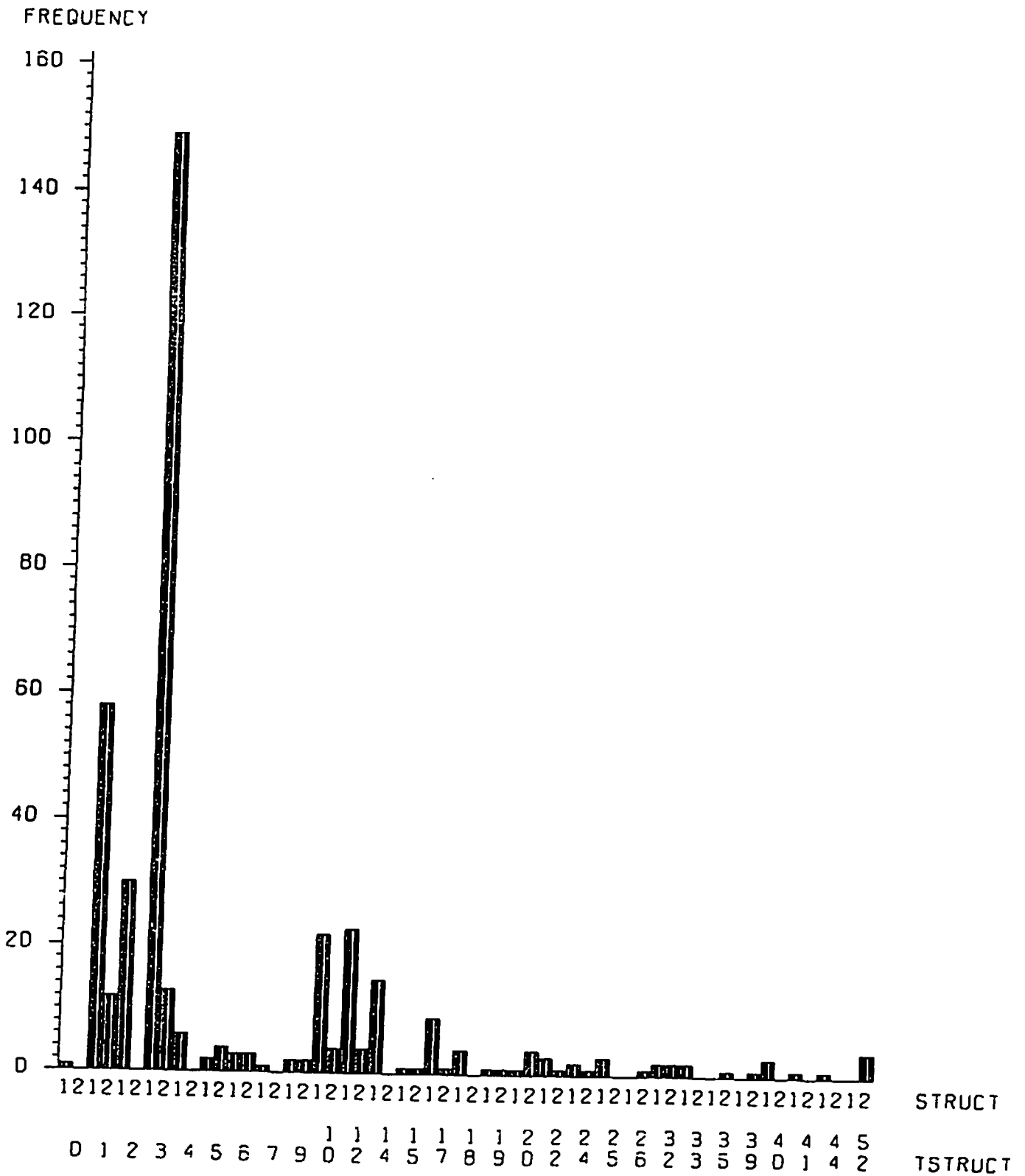


Figure 6: Frequency of fabric structure types by privy.

cent were woven. Similar percentages were also derived for machine knit and cellular fabric structures. Different percentages, other than present/absent differences, were from the not identified variable. These similarities in percentages as opposed to differences are why the Kruskal-Wallis test statistic indicated that both Privies were similar.

WARP AND WEFT

Weft and warp fibres identified from both structures were very similar. The majority of weft fibres were wool (Table 12). Other weft fibre types recovered only from Privy I were cotton, linen and unidentified. Other weft fibre types from Privy II included wool and silk mixed, jute/hemp/ramie and jute (Fig. 7). The majority of warp fibres were wool for both privies (Table 13). A large percentage of silk fibres (28.3 percent for weft and 26.6 per cent for warp) were recovered from Privy II, comparable to the percentage of wool and worsted from that privy. Unlike weft fibres, both privies contained unidentified warp fibres. Like weft fibres, both structures had cotton and linen fibres while only Privy II had wool and silk

TABLE 12

Frequency of Artifacts by Weft Fibre Type by Privy.

Weft	Privy I		Privy II	
	f	%	f	%
Not identified	3	0.7		
Cotton	33	9.6		
Linen	10	2.9		
Silk	22	6.3	17	28.3
Wool	90	26.2	15	25.0
Worsted	123	35.7	18	30.0
Woolen	63	18.3	6	10.0
Cotton and linen	1	0.3	2	3.3
Wool and silk			1	1.7
Jute, hemp, ramie			1	1.7
Total	345	100.0	60	100.0

mixed (Fig. 8). Both structures contained artifacts in which the warp was absent/missing. This code was used to indicate a missing warp where weft was present and for indicating absent warp where textiles were knit and hence contained only weft fibres.

The Kruskal-Wallis test indicated that Privy I and Privy II were similar using the weft fibre type variable. Both the wool and worsted fibre types were of similar percentages while the woolen fibre type was slightly different. The largest difference in percentage was for the silk fibre type, 28.3 per cent from Privy II and 6.3 per cent from Privy I.

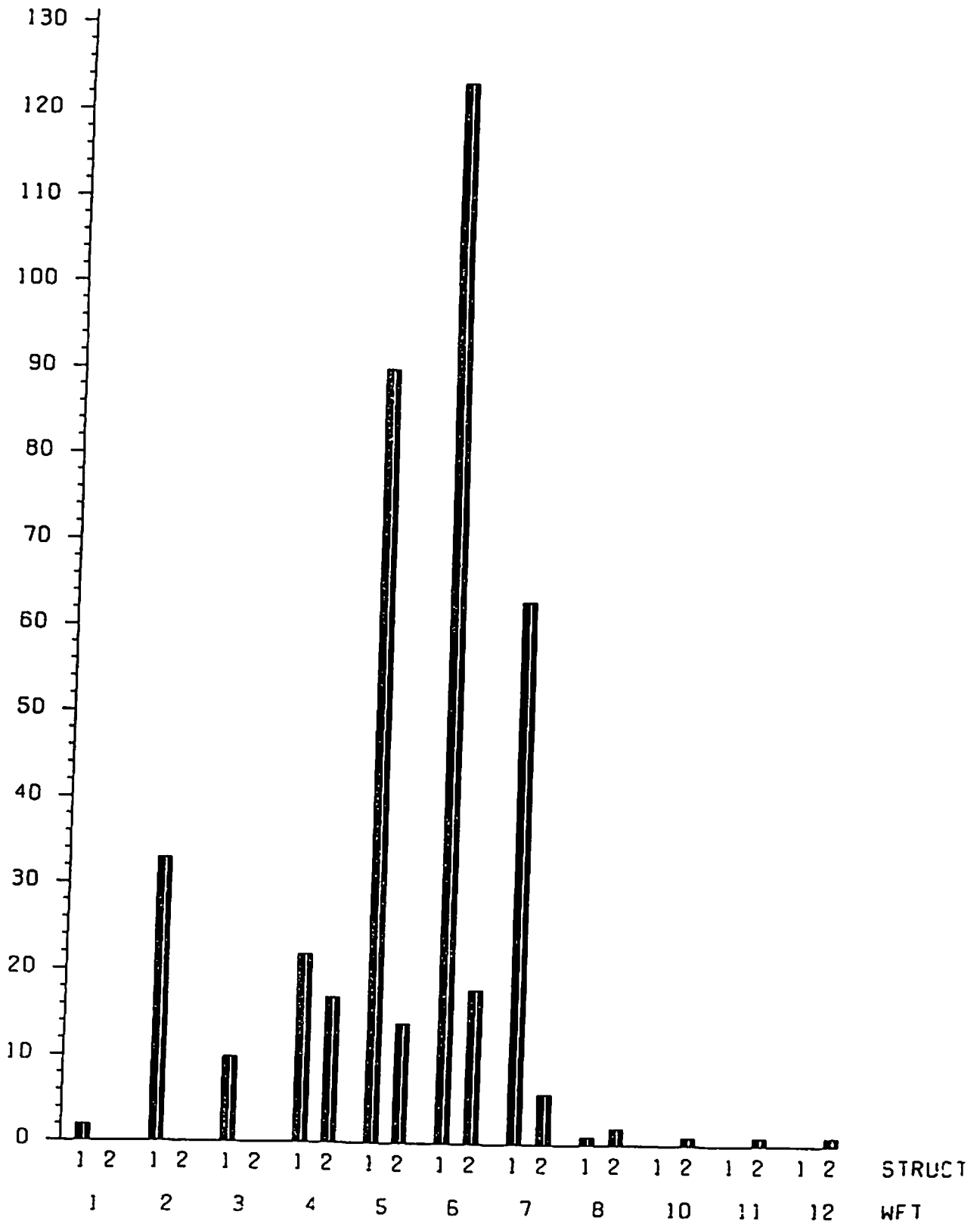


Figure 7: Frequency of weft fibres by type by privy.

TABLE 13

Frequency of Artifacts by Warp Fibre Type by Privy.

Warp	Privy I		Privy II	
	f	%	f	%
Not identified	2	0.6	4	6.6
Cotton	34	9.8		
Linen	10	2.9		
Silk	22	6.4	16	26.7
Wool	90	26.1	14	23.3
Worsted	121	35.2	17	28.3
Woolen	61	17.7	5	8.3
Cotton and linen	1	0.3	1	1.7
Wool and silk			1	1.7
Jute, hemp, ramie			1	1.7
Absent/none	4	1.2	1	1.7
Total	345	100.0	60	100.0

For the warp fibre type, the two Privies contained similar percentages of wool and worsted fibre types, accounting for over 50 per cent in both Privies. Differences occurred between the not identified, silk and woolen fibre types. In the case of silk fibre type, 26.7 per cent were identified from Privy II and 6.4 per cent were identified from Privy I. For woolen fibre type, 17.7 per cent were identified from Privy I and 8.3 per cent were identified from Privy II. Yet overall, the two Privies are similar based on the Kruskal-Wallis test using the warp fibre type variable.

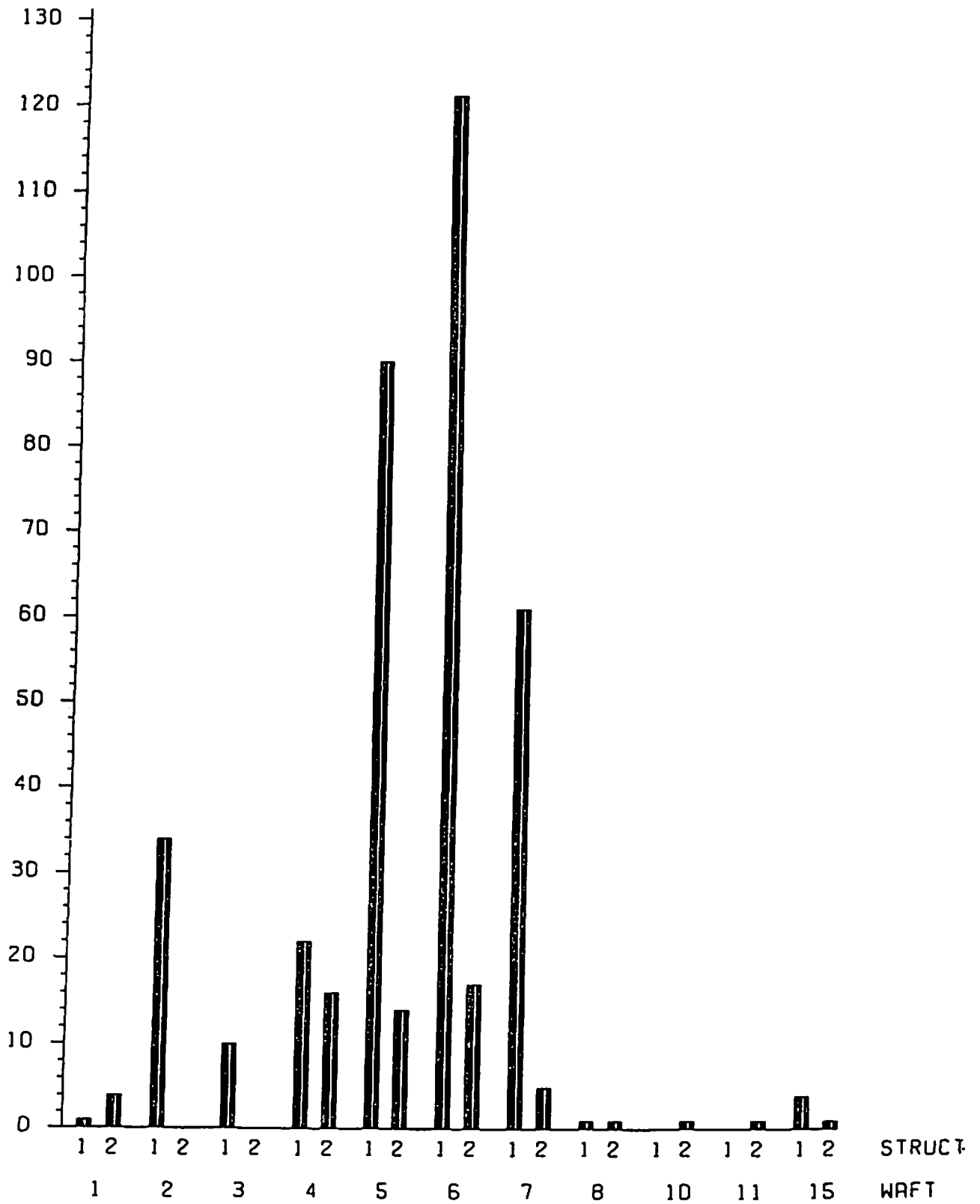


Figure 8: Frequency of warp fibre type by privy.

STITCHING

Both structures were similar in the kinds of stitching present in the sample. Priority, in coding, was given to machine stitching over hand stitching followed by seamed, hemmed, etc. -- in the order in which they are coded from three to nine. Most common, in both samples were textiles with seams, followed by hand-stitched, and not stitched. Both samples contained hand stitched and machine stitched fabrics. Only Privy I had examples of hemmed, seamed and hemmed, and corded seams. Only Privy II had one example of a machine and hand stitched fabric.

PRIMARY FUNCTION

Primary functions identified from both structures were statistically similar (Table 14). In both cases the majority of fabrics were identified as fabrics used for costumes (Fig. 9). The second largest grouping, for Privy I, was unidentifiable. While the third, again for Privy I, was trims followed by furnishing

TABLE 14

Frequency of Artifacts by Primary Function by Privy.

Primary Function	Privy I		Privy II	
	f	%	f	%
Not identified	33	9.5	11	18.3
Linen	1	0.3		
Wall covering	1	0.3	1	1.7
Furnishing fabrics	2	0.6		
Bed coverings	1	0.3	1	1.7
Costume	299	86.7	32	53.3
Trims	8	2.3	14	23.3
Other			1	1.7
Total	345	100.0	60	100.0

fabrics. Other types, represented by a frequency of one, were linens, wall coverings and bed coverings. The grouping with the second highest frequency for Privy II was unidentifiable followed by trims. Groupings represented by a frequency of one for Privy II were wall coverings, bed coverings and other.

The Kruskal-Wallis test probably indicated that the primary function variable was similar in both Privies because the largest percentage, over 50 per cent, was the costume attribute. This similarity, as well as the wall covering and bed coverings, probably determined that two privies were similar.

FREQUENCY

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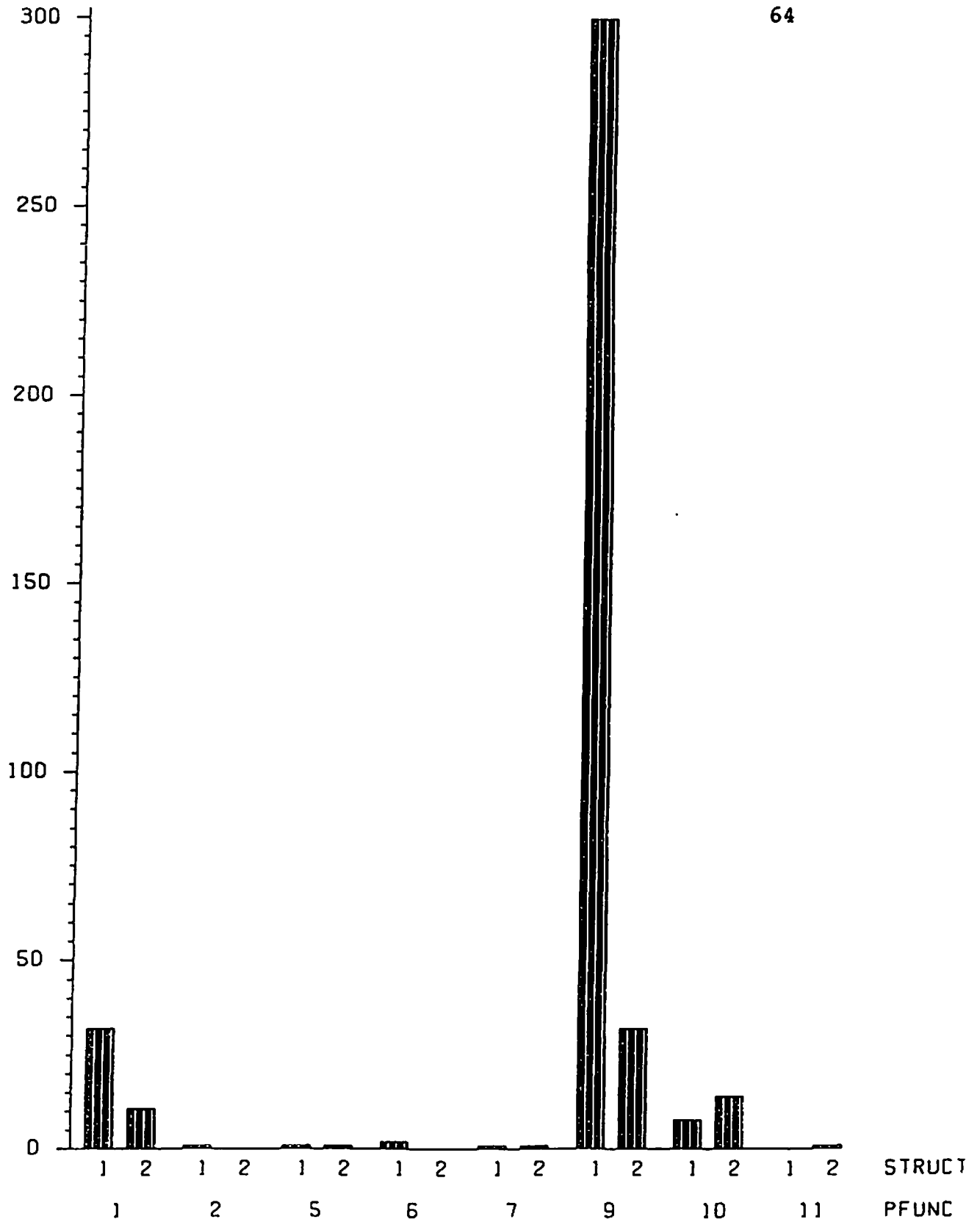


Figure 9: Frequency of primary function by privy.

SELVEDGE AND THREAD

No statistical analysis was done on the selvedge and thread variables because all scores were tied. In the selvedge variable there were only three attributes - absent, present and two selvedges. The most common category was absent for both structures. Three hundred and twenty-three pieces had no selvedge in Privy I while 46 had none in Privy II. For Privy I, 24 pieces had selvedges while only five pieces had them in Privy II. Seven pieces had two selvedges in Privy II while none were identified from Privy I.

In the thread variable nine attributes were identified. Of these, all but one was found in Privy I while only four were from Privy II. The one code present in Privy II and absent in Privy I was silk thread spun ssZ² which had a frequency of five.

The most frequent attribute was uncoded, which was used when no hems or seams and no thread was present. The second most frequent code was absent, used when textiles which had been seamed or hemmed were identified but no thread was present. The thread present code, on the other hand, was used to code

² Thread notation followed was that outlined in Emery (1966:14).

thread which was identifiable as thread but too deteriorated for more specific identification.

Silk accounted for 30 (21.7 per cent) of the 138 coded fragments of thread for Privy I and 13 (68.4 per cent) of 19 for Privy II. Thus, it was the most frequently identified thread fibre from both structures, being the only thread fibre identified from Privy II. Privy I contained silk and cotton, as mentioned above, as well as wool and linen mixed.

MARKS

The two structures were significantly similar in marks. The most common marks or alterations identified from both samples were cut textiles - 175 (91.7 per cent) in Privy I and 32 (97.0 per cent) in Privy II. Cut textiles were more frequent than unmarked textiles for both privies. Buttonholes were the third most frequent alterations after unmarked, for both structures. While only one (3.0 per cent) was identified from Privy II, ten (5.2 per cent) were identified from Privy I. Other marks, each with a

frequency of one, which occurred only in Privy I were a silk hatliner from "LOCKETT", a cotton fragment stamped "C. TED", another cotton fragment stamped "W. STOKES", and a cotton fragment with an unidentified blue stamp. As well, two textile fragments with paint/plaster attached to them were also recovered, one from each structure.

DISCUSSION

CORRELATION

Pearson's product moment correlation test was run as well as Spearman's correlation test. The test results were similar for both tests and the results of the Pearson's tests are quoted below. Correlation between warp and weft fibre type was positive for both structures (0.60); that is, warp and weft were more often the same fibre type than different. Correlation was greater for Privy I (0.65) than for Privy II (0.37) indicating that there were more mixed fibres in Privy II than Privy I. This is supported by frequency tables of warp and weft which indicate 13 (3.8 per cent)

observations were composed of different warp and weft from Privy I while six (10.0 per cent) observations were observed from Privy II.

PRIVY I

The majority of the textiles recovered, 299 (86.7 per cent) from Privy I were coded as costume fragments. Of these, 74 were trousers/jacket fragments; 55 were dress/shirt/skirt fragments; 32 were apparel/yardage for costume; 16 were shirt fragments; 10 coat fragments; four were sweater fragments; three each were shawl, glove and hose/stockings (female) fragments; two each were vest and cuff fragments; and one each was hat, hose/socks and lining fragments.

The second largest category was trims with eight fragments from the total sample. There were four ribbon/sash fragments, and two each of lining and tape fragments. The third largest category was furnishing fabrics, numbering two fragments from the total sample. One fragment was unidentifiable and one fragment was identified as yardage suitable for two or more uses indoors. The following categories were represented by

one fragment each: linen, wall covering and bed coverings.

When primary and secondary functions were broken down by weft it was found that one fragment coded as costume (trousers/jacket) was unidentified. Of the 28 fragments having a cotton weft, one was a piece of yardage suitable for one or more uses in the interior. Of the remaining 27 pieces, two were suitable for apparel/yardage for costume, four were coded as outer garment (not specified), and ten were dress/shirt/skirt fragments.

Nine fragments had a linen weft. Of these, one fragment each was wall paper, outer garment (not specified), and dress/shirt/skirt. Two fragments were trousers/jacket pieces and four were shirt fragments. In total eight fragments were costume pieces while one was a wall covering.

Twenty fragments had a silk weft. Of these, 15 were pieces of costume and five were trim. The costume fragments included six fragments of dress/shirt/skirt, two each of yardage for costume, outer garment (not specified), and hose/stockings (female), and one each of hat, hose/socks and lining. The trims included three ribbon/sash fragments and two lining fragments.

Wool weft fragments numbered 83. Of these 79 were costume fragments, two were trim fragments and one each were linen and furnishing fabrics. Seven fragments had no function assigned to them. The two trim fragments were a ribbon/sash piece and a piece of tape. Of the costume fragments, 24 pieces were trousers/jacket pieces, 16 were outer garment (not specified), thirteen were apparel/yardage for costume, nine were wrap, seven were dress/shirt/skirt, five were coat, two were vest and one each was shawl, shirt and cuff.

Worsted weft accounted for 116 fragments. Again, the majority were costume fragments, some 112 pieces. One each was bed covering (blanket) and trim (tape). Of the 112 costume fragments, 34 were trousers/jacket, 27 were wrap, 20 were outer garment (not specified), 12 were dress/shirt/skirt, ten were yardage for costume, three each were coat and glove, and one each was shawl, and hose/stockings (female).

Fragments with woolen weft numbered 56. All of these were identified as costume fragments. They can be broken down as follows: 17 wrap fragments, 13 trousers/ jacket fragments, 12 outer garment (not specified), five yardage for costume, three each of dress/shirt/skirt and sweater fragments, two coat fragments and one shawl fragment.

One fragment of cotton and linen weft identified as a shirt was recovered.

PRIVY II

The majority, 65.3 per cent, of textiles recovered were identified as costumes or fragments of costumes. Of these, eight observations were identified as trousers/jacket fragments, six observations were identified as wrap fragments, four observations were identified as apparel/yardage for costume, six observations were identified as dress, shirt or skirt and outer garment (not specified) fragments. Two observations were identified as coat fragments. Two observations were vest fragments. One observation was a glove fragment and another was a shoe fragment.

Thus, 18 observations were identified as outer garments, eight as coats, four as yardage for costume, one as handwear and one as footwear.

The second largest category for Privy II was trims. Fourteen observations were trims. Of these, eight were ribbon/sash, four were lining fragments and one each were tape and inset fragments.

Other categories represented by one observation, were unidentifiable, wall covering (wall paper fragment) and other (rope). Although the wall paper fragment is not truly paper, the plaster/ paint coated fragment was used to cover interior walls. Other examples of this type of artifact have been identified from DeLorme House (D. MacLeod personal communication 1986).

Eleven items were not identifiable to secondary function.

When primary and secondary functions are broken down by weft fibre type, it is found that wool fibres, including wool, woolens and worsteds, are most numerous followed by silk, cotton and linen, wool and silk, jute/hemp/ramie and jute. The majority of wool fibres were identified as costume fragments, four were trim fragments and five were not classified. In comparison, the majority of silk fibres were identified as trim fragments, six were costume fragments and two were not classified. Of the fibre mixtures, the cotton and linen mix was identified as a costume fragment while the wool and silk mix was a trim fragment. The jute fibre was a piece of rope while the jute/hemp/ramie was a woven fabric with paint/plaster adhering to it, this was classified as wallpaper as discussed above.

Chapter V
INTERPRETATION

DATING

CERAMIC EVIDENCE

The ceramic artifacts from UFG were dated according to the production dates for ceramic patterns using the method outlined by South (1977a, 1977b; Sussman 1979c) (Table 15). The two privies were dated separately for comparative purposes (Tables 16, 17, 18 and 19). Two terminal dates were calculated for each privy. The first terminal date was calculated using 1882 A.D. because that was the year UFG was dismantled and the second terminal date was calculated using the terminal date for production of the ceramic pattern. Both terminal dates are valid because they fall within the occupation dates for UFG. The ceramic evidence suggests that Privy I dates later than Privy II, 1874.7 compared to 1866.1 (or approximately an eight year difference using either terminal date).

TABLE 15

Legend for Pattern Codes for Ceramic Artifacts.

Pattern Code	Pattern Name
A	Blue Willow
B	T.D. pipes
C	Bosphorous
D	B700
E	Crenulated
F	Continental Views/ Louis Quatorze
G	Camilla
H	Venetia
I	Watteau
J	Passion Flower
K	Broseley
L	Ivy
M	Shamrock
N	Alhambra
O	Wild Rose
P	Ship Border
Q	Ionian
R	Macaw
S	Wellington
T	Ruins
U	Rural Scenes
V	B-772
W	Gem
X	Fibre
Y	Marble
Z	Rose Wreath
1	Antique Vase
2	Portland Vase
3	Strawberry
4	Lily
5	British Flowers
6	Thistle
7	Flower Vase
8	F.I. pipes
9	B.T. pipes

The initial date for Privy II is artificially early at 1832.4 since the fort was constructed in 1836. It

TABLE 16

Mean Date for Ceramic Artifacts from Privy I.

Pattern Code	Dates	Median (-1799)	Count	Product
Pre-1850				
A	1780-1820	1.0	2	2.0
D	1838-1847	43.5	12	522.0
F	1845-1882	64.5	19	1225.5
G	1833-1882	58.5	9	526.5
I	1847-1861	55.0	1	55.0
K	1818-1847	33.5	25	837.5
L	1845-1865	56.0	11	616.0
O	1830-1855	43.5	2	87.0
P	1820-1882	52.0	2	104.0
R	1838-1872	56.0	3	168.0
S	1839-1882	61.5	6	369.0
T	1848-1882	66.0	1	66.0
V	1837-1882	60.5	4	242.0
Y	1822-1882	53.0	1	53.0
Z	1847-1870	59.5	3	178.5
1	1833-1847	41.0	2	82.0
3	1825-1882	54.5	4	218.0
4	1837-1882	60.5	3	181.5
5	1833-1847	41.0	1	41.0
Post-1850				
J	1873-1882	78.5	17	1334.5
N	1856-1882	70.0	3	210.0
Q	1851-1882	67.5	5	337.5
U	1850-1882	67.0	1	67.0
W	1856-1882	70.0	4	280.0
TOTAL			141	7803.5

Mean Date = 1854.3 (1882)

Mean Date = 1857.3 (terminal pattern date)

should be noted that only one ceramic pattern from

TABLE 17

Mean Date for Ceramic Artifacts from Privy II.

Pattern Code	Dates	Median (-1820)	Count	Product
Pre-1850				
D	1838-1847	22.5	1	22.5
G	1833-1882	37.5	1	37.5
K	1818-1847	12.5	9	112.5
O	1830-1855	22.5	4	90.0
P	1820-1882	31.0	1	31.0
R	1838-1872	35.0	2	70.0
T	1848-1882	45.0	6	270.0
2	1831-1833	12.0	2	24.0
5	1833-1847	20.0	2	40.0
Post-1850				
C	1854-1882	56.5	2	113.0
TOTAL			30	810.5
Mean Date = 1847.0 (1882)				
Mean Date = 1847.3 (terminal pattern date)				

Privy II has a production date that post-dates 1850 while eight ceramic patterns recovered from Privy I post-date 1850 in production. The mean date for Privy I is 1854.3 (1857.3) and for Privy II it is 1847 (1847.3).

Several problems arise from using South's methodology. No attempt was made to convert fragments to the number of vessels represented, nor were vessel

TABLE 18

Bracketing Dates for Ceramic Artifacts from Privy
I.

Pattern Code	Dates	Count	Product Initial	Product Terminal
Pre-1850				
A	1780-1820	2	3560	3640
D	1838-1847	12	22056	22164
F	1845-1882	19	35055	35758
G	1833-1882 (1900)	9	16497	16938 (17100)
I	1847-1861	1	1847	1861
K	1818-1847	25	45450	46175
L	1845-1865	11	20295	20515
O	1830-1855	2	3660	3700
P	1820-1882 (1910)	2	3640	3764 (3820)
R	1838-1872	3	5514	5616
S	1839-1882	6	11034	11292
T	1848-1882 (1900)	1	1848	1882 (1900)
V	1837-1882	4	7348	7528
Y	1822-1882	1	1822	1882
Z	1847-1870	3	5541	5610
1	1833-1847	2	3666	3694
3	1825-1882 (1900)	4	7300	7528 (7600)
4	1837-1882 (1900)	3	5511	5646 (5700)
5	1833-1847	1	1833	1847
Post-1850				
J	1873-1882 (1900)	17	31841	31994 (32300)
N	1856-1882 (1892)	3	5568	5646 (5676)
Q	1851-1882 (1900)	5	9255	9410 (9500)
U	1850-1882 (1900)	1	1850	1882 (1900)
W	1856-1882 (1892)	4	7424	7528 (7568)
TOTAL		141	259415	263500 (264345)

Initial Date = 1839.8

Terminal Date = 1868.8 (1882)

Terminal Date = 1874.8 (terminal pattern date)

TABLE 19

Bracketing Dates for Ceramic Artifacts from Privy II.

Pattern Code	Dates	Count	Product Initial	Product Terminal
Pre-1850				
D	1838-1847	1	1838	1847
G	1833-1882	1	1833	1882
K	1818-1847	9	16362	16623
O	1830-1855	4	7320	7420
P	1820-1882 (1910)	1	1820	1882 (1910)
R	1838-1872	2	3676	3744
T	1848-1882 (1900)	6	11088	11292 (11400)
2	1831-1833	2	3662	3666
5	1833-1847	2	3666	3694
Post-1850				
C	1854-1882 (1899)	2	3708	3764 (3798)
TOTAL		30	54973	55814 (55984)

Initial Date = 1832.4

Terminal Date = 1860.5 (1882)

Terminal Date = 1866.1 (terminal pattern date)

types distinguished. This may adversely affect the weighting factor; ie. number of fragments, used to convey representation of dates. Certain vessel types are more prone to breakage than others, for example tea cups versus plates or bowls. Also, many fragments may represent only one vessel. A serious problem in the

calculation of dates for Privy II is that no dates were identified for the pattern "Crenulated" which occurred at a frequency of seven which represents 19 per cent of all ceramic patterns identified for Privy II.

There was a difference in frequency of recovery of ceramic artifacts between the two privies. Both privies were not completely excavated but this difference in frequency also suggests that there were depositional differences. In the case of UFG this can be explained by suggesting that different ranks in the army were using the two privies exclusively. Sussman (1979b:191) states that

The military personnel of the Sixth Regiment of Foot (1846-48) ... probably used metal plates and cups which were carried as part of the personal equipment.

Commissioned officers, on the other hand, dined on ceramic dishes (Sussman 1979b:191). At UFG, it would be expected that the officers, and sergeants and corporals with families, also had their own ceramic dinner services. On the basis of frequency of ceramic artifacts, it is suggested that the lower ranks of the army, ie. privates, used Privy II and the higher ranks, ie. officers, and sergeants and corporals with families, used Privy I.

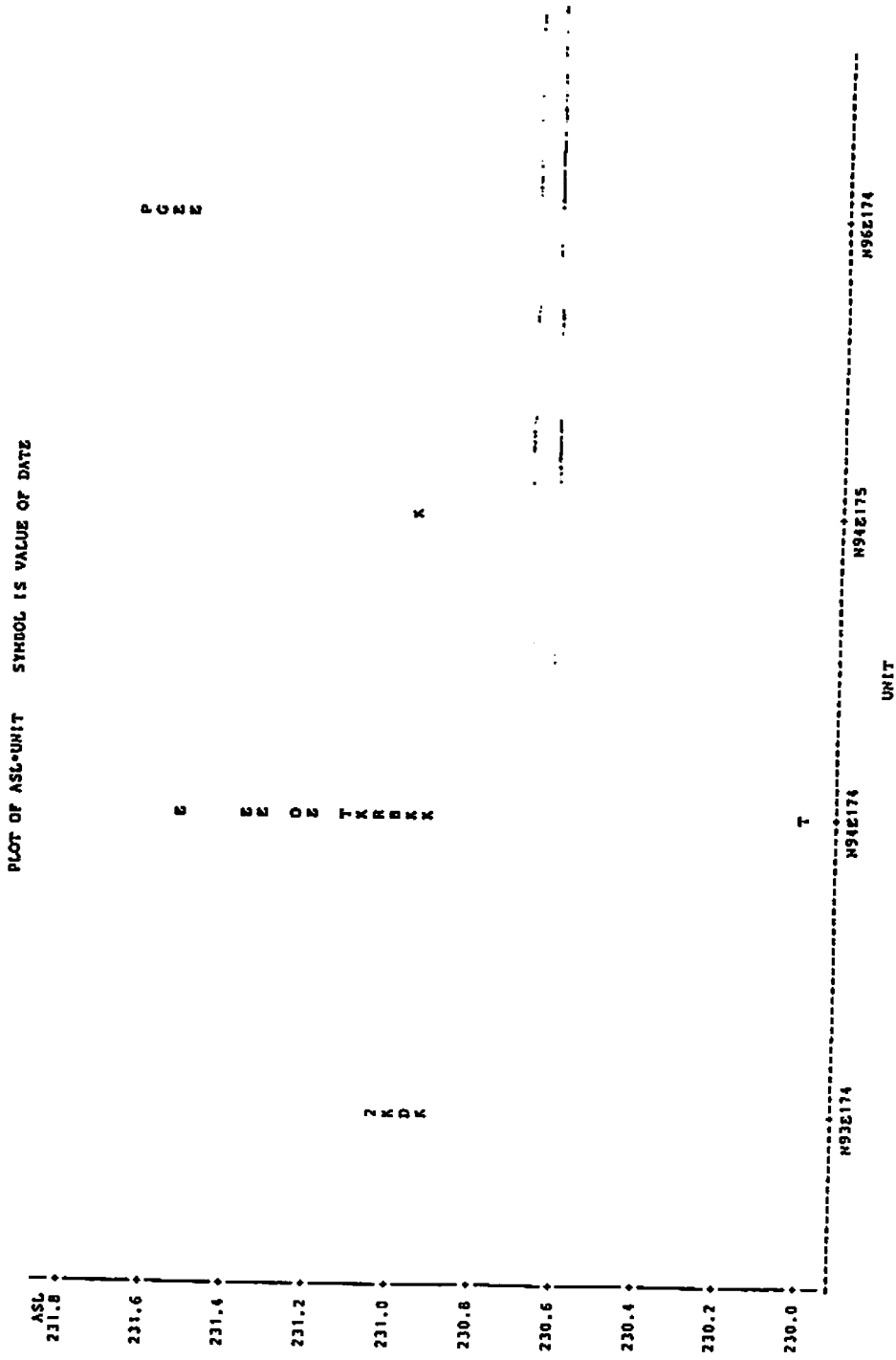


Figure 10: Distribution of ceramics artifacts by pattern by ASL.

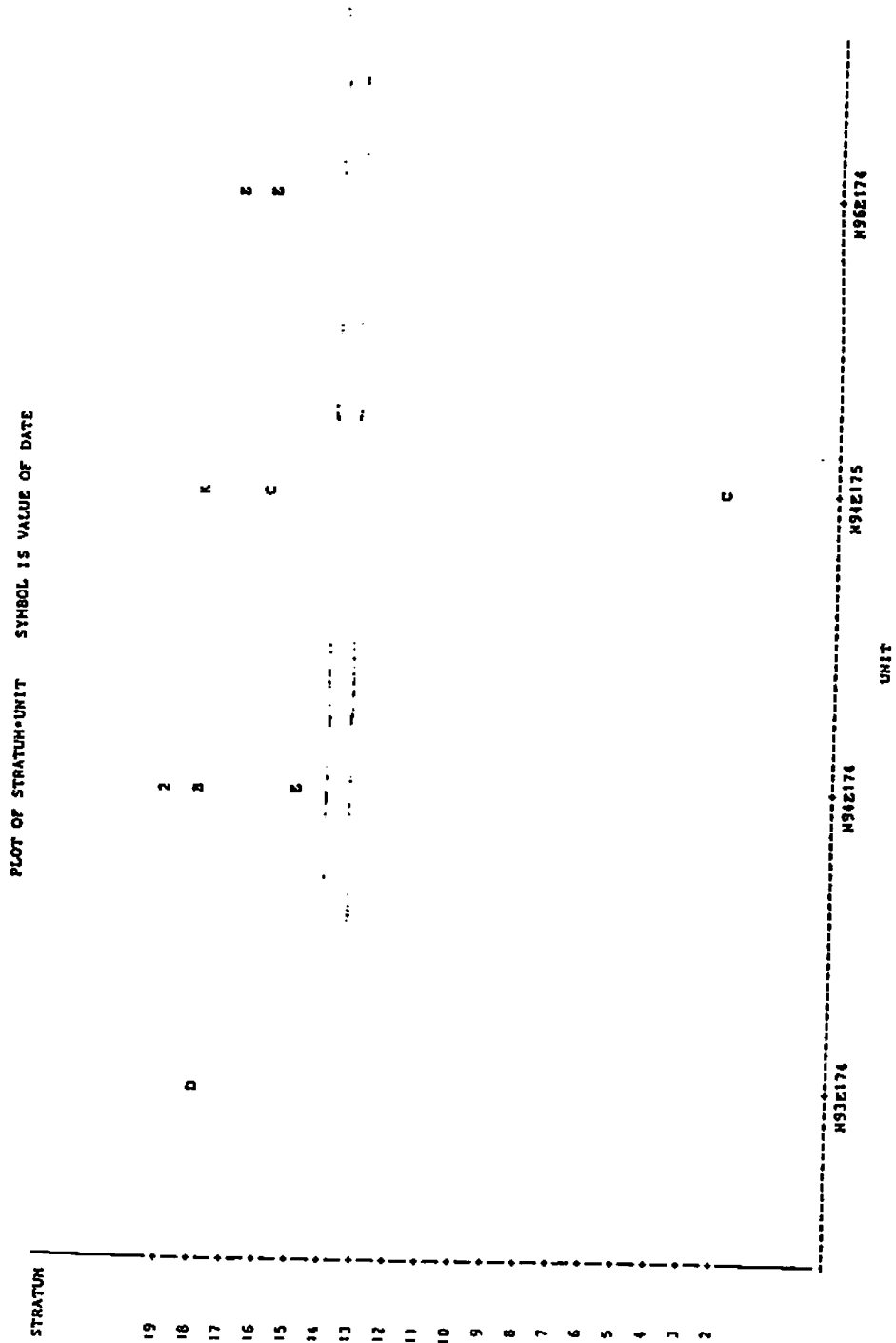


Figure 11: Distribution of ceramic artifacts by pattern by stratum.

Attempts were made to correlate dates of ceramic patterns with ASL and stratum (Figures 10 and 11). As can be seen from the figures, the mean date calculated for stratum and ASL was not in either ascending or descending order. Therefore, it is suggested at this time that depositional factors have resulted in the stratigraphic mixing of artifacts. Both human and natural depositional factors including artifact use, reuse and discard; cleaning of the privy; slumpage of material; frost heaving and rodent activity may have effected the mix.

Ceramic manufacturers' marks were used to correlate

TABLE 20

Legend of Ceramic Manufacturer's Marks with Dates.

Code	Mark	Date
1	Copeland Late Spode	1847-1867
2	Copeland & Garrett New Blanche	1833-1847
3	Copeland . 6	1847-1867?
4	Copeland	1847-1867

date with strata and ASL (Table 20). This method was more successful than using ceramic pattern dates. As can be seen from the plots (Figures 12 and 13), the

earliest ceramic manufacturers' marks were found at the lowest ASL for Privy I, while marks dated later were found above them. This was also supported by the mean

Stratum	Privy I	Privy II
1	1857	
5	1857	
6	1857	
11	1857	
12	1845.7	
18		1857

date calculated by stratum (Table 21).

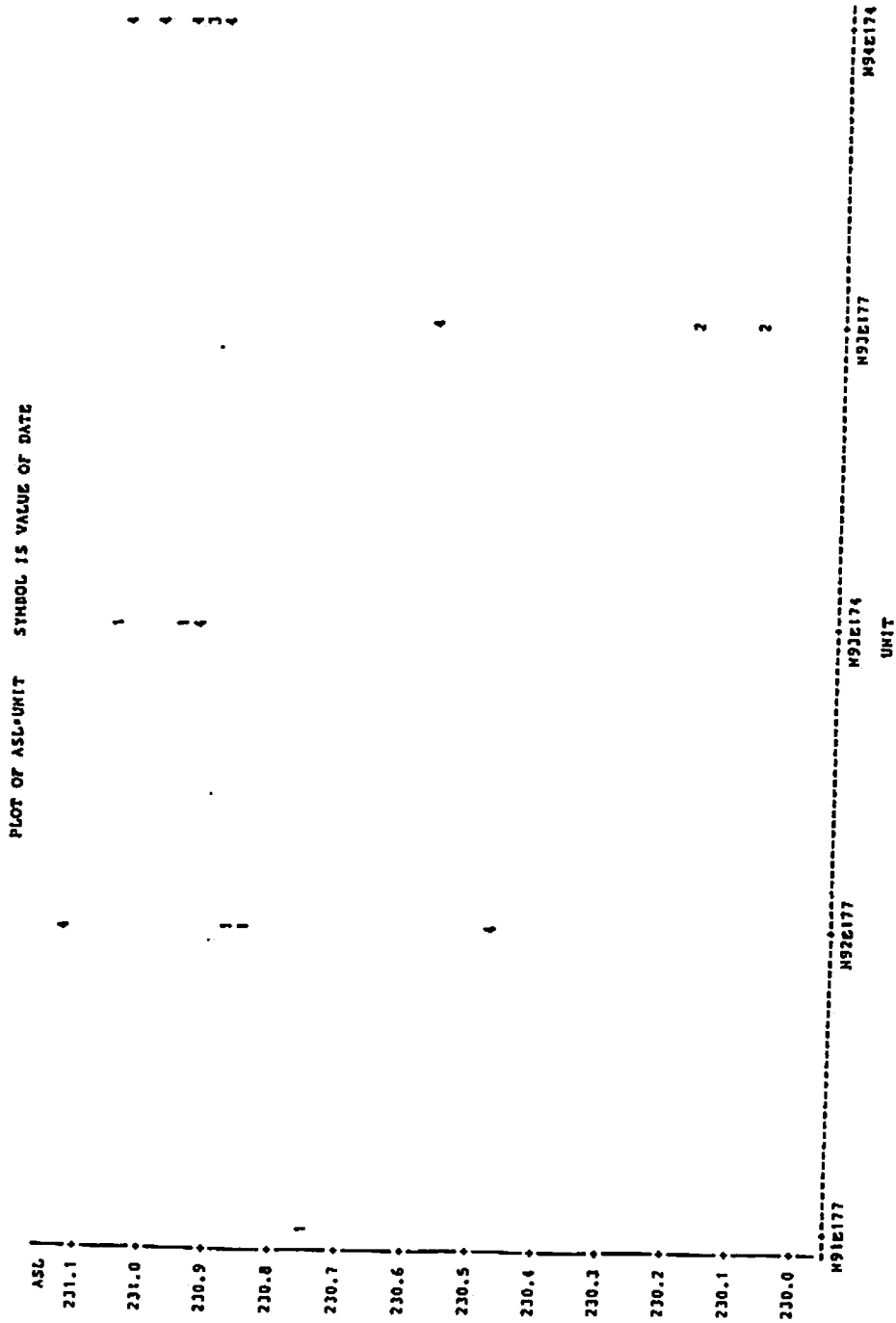


Figure 12: Distribution of ceramic artifacts by manufacturer's marks by ASL.

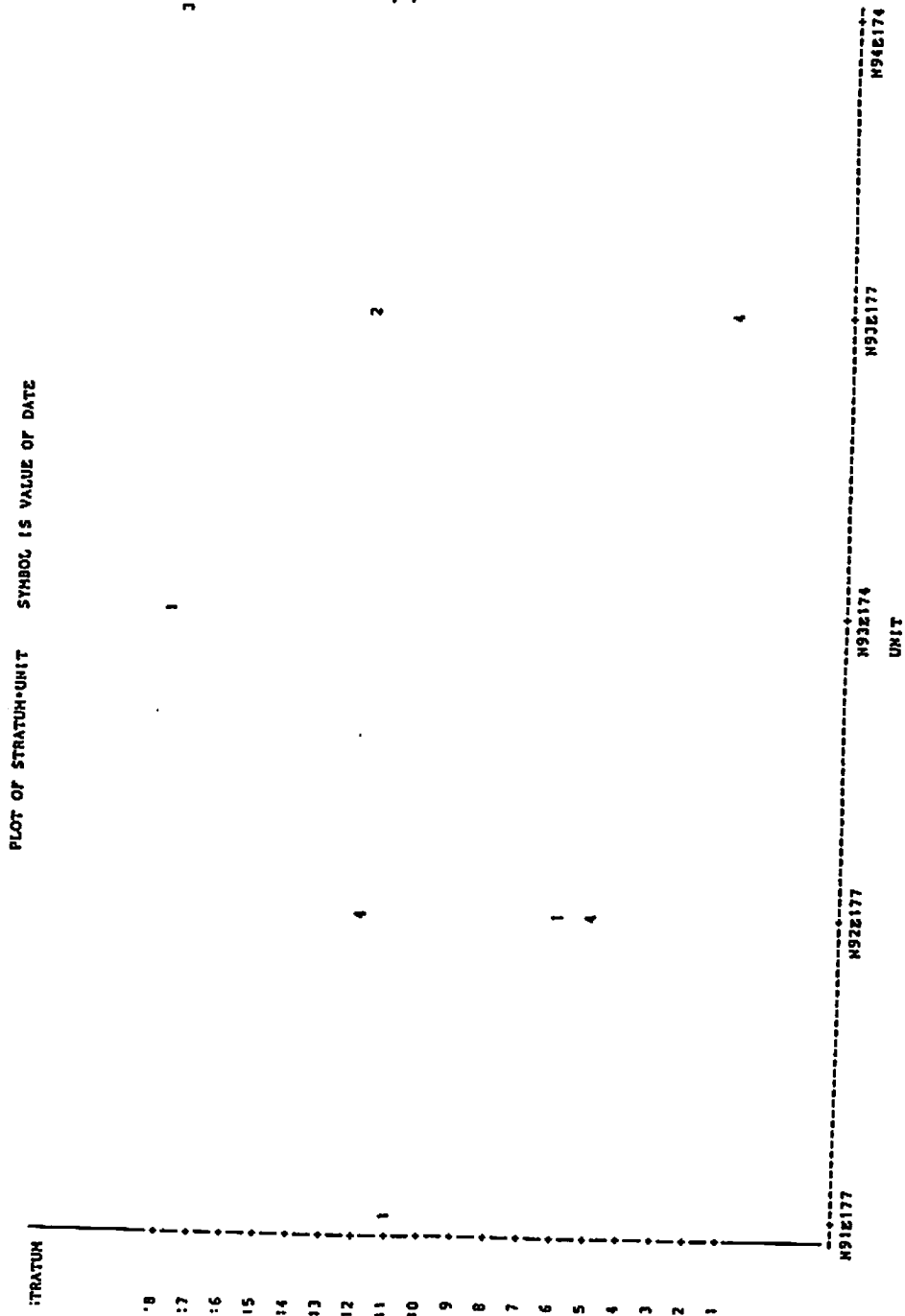


Figure 13: Distribution of ceramic artifacts by manufacturer's marks by stratum.

GLASS EVIDENCE

The glass artifacts from UFG were dated according to the mode of manufacture (Jones and Sullivan 1985)

TABLE 22

Legend for Mode of Manufacture Codes for Glass Artifacts with Dates.

Code	Mode of Manufacture	Date
1	hinged bottom mould	1870/80 to 20thC
2	pressed	1820 to 20thC
3	Rickett type mould	1870-90
4	machine made	1870/80 to 20thC

(Table 22). As with the ceramic artifacts, the glass artifacts were chronologically mixed by ASL (Figure 14) and by strata in both Privies (Table 23 and Figure 15).

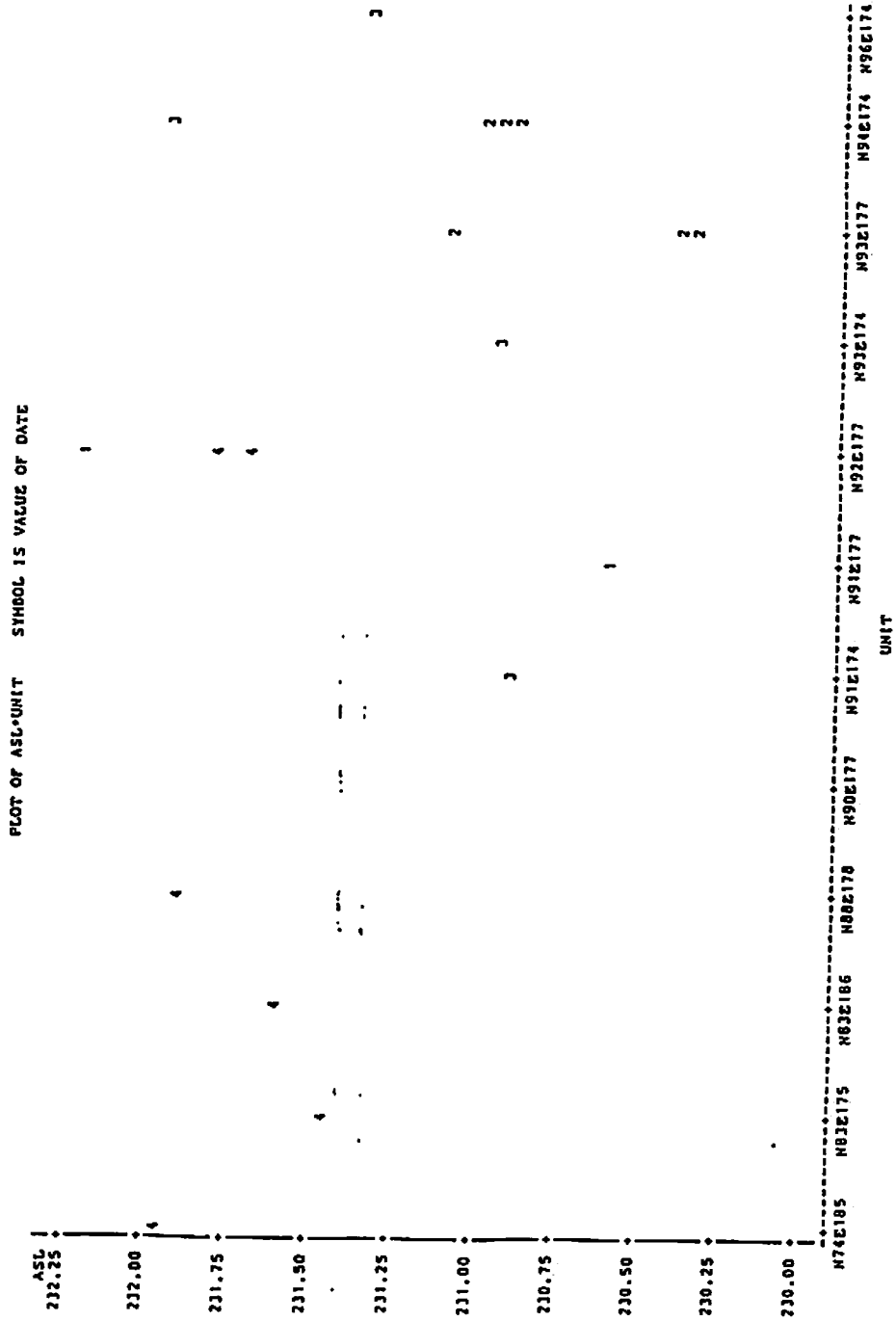


Figure 14: Distribution of glass artifacts by mode of manufacture by ASL.

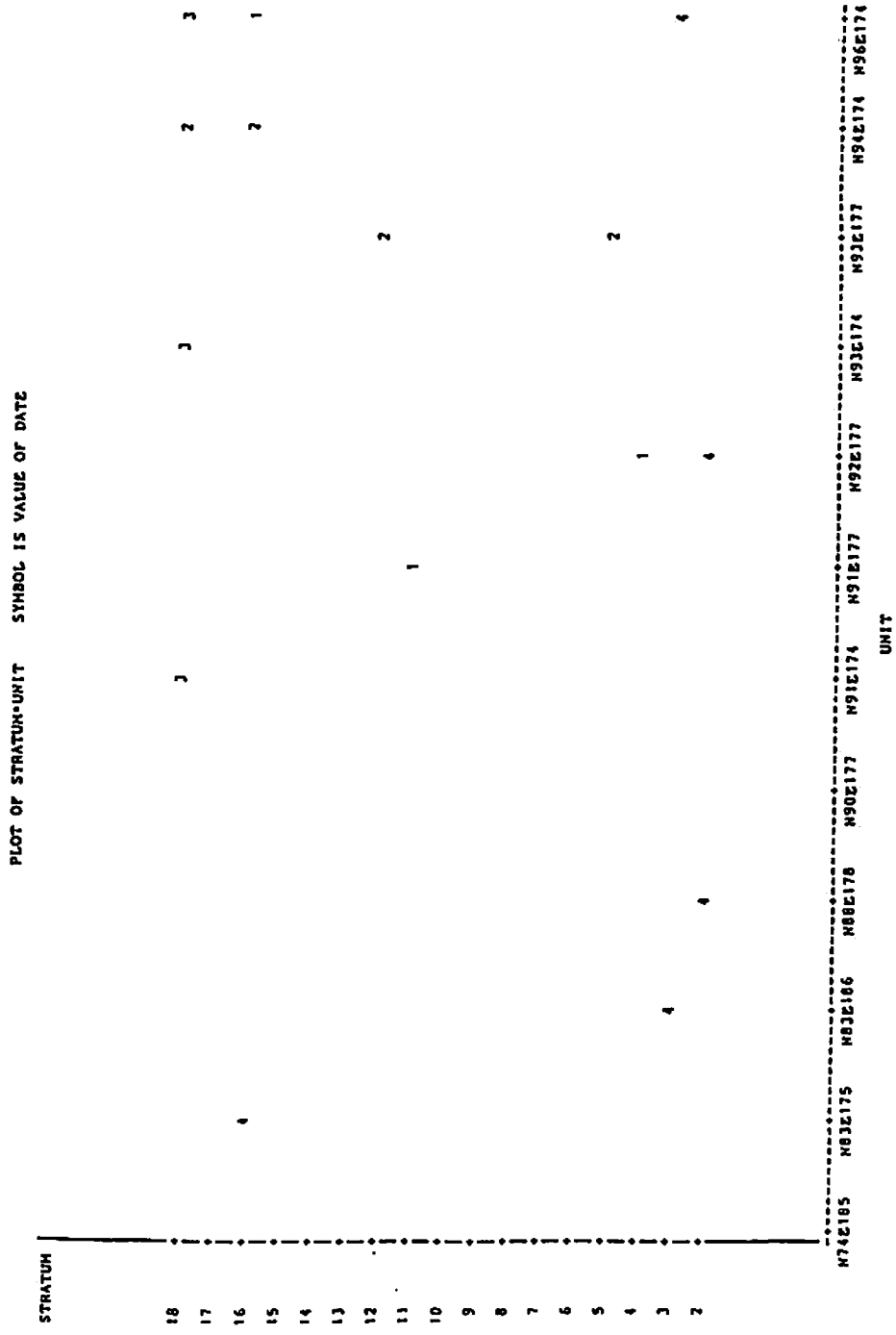


Figure 15: Distribution of glass artifacts by mode of manufacture by stratum.

TABLE 23

Mean Date for Mode of Manufacture by Stratum for each Privy.

Stratum	Privy I	Privy II
2	1885	
3		1885
4	1855	
5	1860	
11	1855	
12	1860	
16		1860
18		1875

NEWSPAPER EVIDENCE

A variety of newspapers were present at UFG. These newspapers were The Times (of London), the Montreal Gazette, the New York Times and a paper from the Isle of Man. The dates for these newspapers are from the years 1846 and 1847. These fragments are all from Privy I. The only date from Privy II was a fragment of a leaflet or newspaper with the date 1880 on it. The poor condition of the paper from Privy II may account for the lack of dates comparable to those of Privy I. This suggests that Privy II was used at a later date than Privy I. It also supports the idea that Privy I was in use during the years 1846-48 when the Sixth Regiment of Foot was garrisoned at the Fort.

TEXTILE EVIDENCE

The textile evidence for dating is scanty. Two fragments were recovered that were associated with the Sixth Regiment of Foot which was at the Fort from 1846-48. These are two cotton fragments, possibly shirts, from Privy I with names stamped on them. The two names, W. Stokes and C. Tedds, are listed on the payroll sheets as privates (WO 12/2415-2417).

The patterned textiles could not be positively identified with known patterns. But, the colours, patterns and printing technology suggest that they fall within the 1815-40 range (Nylander 1980). The lack of floral stripes and foliated pillar prints popular in the 1840s suggests that these types of goods may not have been brought into the RRS by the HBC or that people from the Settlement did not order them. The fibre and vermicelli pattern of one fragment (DLg-21/6006) may be a copy in fabric of both ceramic patterns. The vermicelli ceramic pattern itself is dated from 1828-58 (Sussman 1979b:73). The fancy silk monochrome pattern (DLg-21/5515) is reminiscent of patterns from the French and English silk mills circa 1800-50 (Montgomery 1970; Clouzot and Morris 1927). The cotton prints done in bold colors and abstract

designs remind one of East Indian cotton prints. Unfortunately, during the late 1700s and early 1800s these were being reproduced in a variety of centres around the world although the fastness of Indian dyes could not be copied, and these imitations quickly lost their brightness.

Other dating evidence includes the scarcity of machine stitched fabrics. Fabrics with handstitching are in abundance indicating that there is not a recovery problem since it is assumed that the same thread was used for handstitching as for machine stitching. This suggests that the deposits are earlier than the 1870s when there was widespread use of the sewing machine (Godfrey 1982:27).

SUMMARY OF DATING EVIDENCE

In summary, all the artifact material types examined indicate that both Privies contain material dated potentially from as early as the 1820s and as late as the 1900s. Ceramic patterns identified from Privy I suggest an initial date of 1839.8 and a terminal date of 1874.8 while those from Privy II are 1832.4 and

1866.1, respectively. Manufacturers' marks from ceramics indicate that the artifacts fall within the range of 1833-1867. Glass artifacts are dated from 1820 to the 20th century based on mode of manufacture. Newspaper, and other paper, are dated to 1846 and 1847 for Privy I and 1880 for Privy II. This latter date is not conclusive due to the poor condition of paper recovered from Privy II. The textiles are dated in the range of 1800-1850 based on patterns and scarcity of machine-stitching.

Historical evidence indicates that the Fort was torn down in 1882 which leads to a refinement of the terminal date to 1882. Also, the Fort was not constructed until 1836, allowing an adjustment of the initial date for use of the privies - if it is assumed that the privies were in use at the same time as the Fort. In that case, the artifacts from earlier than 1836 are probably a reflection of reuse and curation.

In conclusion, the artifacts support the hypothesis that the privies were used from the time of initial construction until the Fort was dismantled.

ECONOMIC VARIABILITY

ARCHIVAL EVIDENCE

An examination of HBC records for the years 1844 to 1847 inclusive revealed not only the cost of fabric goods imported to the Red River Settlement but also differences between goods imported from one year to the next. While the number of importers remained relatively constant, the amount and variety of items imported increased significantly from 1844 to 1847.

Three years were examined in detail, 1845-47. Prices, in general, remained fairly stable although some items increased in price and others fell. Using these records all fabric goods were indexed following Sussman (1982:41-6) (See Appendix D). The least expensive item which could be purchased was cotton leno which was indexed at 1.00. All other fabric goods were indexed to this value using the mean price from the three years of documents.

As was expected, it was found that ready-made clothing cost more than the fabric to make such

clothing. No women's clothing was imported except for bonnets, shawls and hose. Printed fabrics were more expensive than plain fabrics of the same fibre and weave. Fancy weaves were more expensive than plain weaves. And, finishes affected the final cost of fabric.

From the indices computed, cotton leno was the least expensive fabric available. The cost of cotton textiles increased as the fineness of the fabric and complexity of weave increased such as shirting, osnaburgs, sheeting, diaper, nankeen, cambric and muslin. The more expensive fabrics made from cotton fibres were printed, as in the cambric and muslin textiles. Nankeen, although not printed, is a particular type of cotton fibre originally from China that has a yellowish cast and is usually woven as a twill.

Linen textiles are generally as cheap as cotton textiles. Since they were usually not printed they tended to be less costly. Yet, for plain weaves and other weaves they tend to be more expensive than cotton, possibly because of the cost of processing.

Woolen and worsted textiles were the most expensive fabrics imported by the HBC (no silk textiles were identified from the HBC records examined but they were

privately imported for personal use (Healy 1977)). The most costly textile available was superfine white flannel which was approximately 457 times more expensive than cotton leno. The second most costly was drab camlet indexed at approximately 358. Camlet is a ribbed wool, most probably worsted in this instance, and was most likely a dress fabric. The less expensive textiles were probably woollens in simple weaves with little or no finishing and dyed in colors that take easily.

Mixed fabrics ranged in price, osnaburg (probably a cotton or linen and woolen or worsted mix) was the least expensive followed by huckaback (a cotton and linen mix) while the most expensive was Orleans cloth (a cotton and worsted mix). These mixtures suggest the following order of increasing cost of fibres as: woolen, cotton, linen and worsted. Examination of the documents of the price of cloth, on the other hand, suggests the following order of increasing cost: cotton, linen, woolen, worsted, cashmere and silk. This difference in order is probably because of the uncertainty of the actual composition of mixed fabrics from archival records. And it should be noted at this point that the actual fibre used in the production of fabric often changed from year to year with no mention of the change in fibre content even though the same

name was used to label the fabric. It is a fair assessment, given indices of the same functional item, that silk was the most expensive fibre.

COMPARISON OF PRIVY I AND PRIVY II

Given the above information the two privies at UFG were compared using the variables of weave, pattern and fibre type. These variables only were examined because of the availability of archival information on them. Relative statements about fibre content were possible although specific fibres could not be accurately indexed. The percentages of items identified were compared rather than actual frequencies because of the large difference in absolute numbers of textiles from the two structures. The chi-square tests were run using raw frequencies weighted by the cost factor as relative percentages would have skewed the test results.

Weaves were examined, and those more complicated than plain weave were recorded in percentages. Approximately 29 per cent of all artifacts from Privy II were more complicated than plain weave while 58 per

cent from Privy I were identified as such. Only five per cent of artifacts from Privy II were patterned while 17 per cent from Privy I were.

Comparison between the two privies indicate that there are differences between them as indicated in

Fibre type	No.	%	Factor	Cost
Privy I		% of 344		
Cotton	33	9.07	1.00	9.07
Linen	10	2.91	1.10	3.20
Silk	22	6.40	2.40	15.36
Wool	90	26.16	1.22	31.92
Worsted	123	35.76	1.77	63.30
Woolen	63	18.31	1.22	22.34
Cotton and Linen	1	0.29	1.05	0.31
Total				145.50
Privy II		% of 60		
Silk	17	28.33	2.40	68.00
Wool	14	23.33	1.22	28.47
Worsted	18	30.00	1.77	53.10
Woolen	6	10.00	1.22	12.20
Cotton and Linen	2	3.33	1.05	3.50
Wool and Silk	1	1.67	1.81	3.02
Total				168.29

Table 24. As can be seen, the total cost of fabric goods is greater for Privy II than for Privy I based on the indices. Yet, the chi-square test for homogeneity or independence indicates that the two privies are similar at $p = 0.05$ (chi-square = 3.907 with $df = 7$).

COMPARISON OF FABRICS FROM UPPER FORT GARRY AND YORK
FACTORY

Comparative collections were sought for fabrics from UFG. Similar is taken to mean roughly the same time period, ie. approximately 1830 to 1880 A.D., recovered from an archaeological site and from a fur trade post. Although many fur trade posts have been excavated or surveyed, very few have yielded textile remains. One notable exception is York Factory. Approximately 77 textile artifacts that met the above criteria were recovered during excavation. Parks Canada permitted these artifacts to be examined during the summer of 1985.

York Factory and UFG are both located in what is now the Province of Manitoba. York Factory is located on the shores of the Hudson's Bay, while UFG is located at

the confluence of the Red and Assiniboine Rivers. The distance between these two Hudson's Bay Company posts is approximately 640 miles. The time period dealt with was 1830 to 1880 A.D. concentrating on the years 1840 to 1855 A.D.

The similarity between the textiles from York Factory and UFG was assumed to be strong given that:

- a) York Factory served as the depot or warehouse for the Northern Department of the HBC so all items imported by the HBC from England were distributed from York Factory to HBC posts in the interior;
- b) both UFG and York Factory were HBC posts; and
- c) all orders for the RRS made through the HBC were filled by the same merchants that the Company dealt with in England.

Differences between the two collections of textiles could have occurred given that:

- a) private orders made by settlers in the RRS and officers of the Company, or gifts sent by relatives in England on the HBC ships could have been from merchants whom the Company did not deal with;
- b) articles imported from St. Paul's, in the United States, were increasingly important because of accessibility from prior to, ie. the 1820s, and following the Oregon Question, ie. the 1850s. These items were imported mainly by and for the RRS, including private storekeepers in the settlement, with a few articles being shipped north to York Factory.

Textiles from York Factory were recovered from two types of areas, the first type of area was over-represented by clothing and the second type of area was not. The latter areas include the front palisade, native campsite, interior of the depot/old octagon, east fur store and the boat builder's house. The former areas include the sawpit and woodyard, ice house exterior, unidentified feature near the sawpit and the back of the depot.

On the other hand, textiles from UFG were recovered from two privies rather than several diverse and scattered locations. The majority were recovered from the larger privy, Privy I.

The fibre types which were identified for both sites were natural as opposed to man-made fibres. One exception from York Factory was a synthetic fibre, probably rayon (C. Feniak -#9K905F1-99-15520) from the sawpit. Natural fibres identified from York Factory were wool, bast (including hemp and/or jute), silk, cotton and unidentified animal hair. Similar fibres were identified from UFG. In addition, linen and ramie were identified from UFG. Mixtures of fibre types were only identified from UFG not from York Factory. These mixtures were cotton and linen, silk and wool, and cotton and wool.

A breakdown, by percentage of the total fibre type, including unidentified fibres, for the two posts is shown in Table 25.

	YF	UFG
Wool	77.0	78.0
Bast	15.0	0.5
Silk	4.0	9.0
Cotton	1.0	8.0
Animal hair	1.0	
Synthetic	1.0	
Linen		2.0
Ramie		0.5
Cotton and Linen		1.0
Silk and Wool		0.7
Cotton and Wool		0.3
Unidentified	1.0	0.5
Total	100.0	100.0

The table illustrates that the two posts contain similar percentages of fibres in two instances. First, wool comprised 78 and 77 per cent of the total sample respectively at UFG and YF. This was expected given the wool industry in England, as well as the need for warm clothing. Second, in both samples silk comprised less than ten per cent of the sample, at UFG it was

nine per cent and at YF it was four per cent. Again, this was expected given the cost of silk, as well as its poor insulation value.

Table 25 illustrates three major differences between UFG and YF. First, the absence of animal hair and synthetic fibres at UFG and of linen and ramie and mixtures at YF. Ramie was separated from bast fibres in this instance because it was woven cloth rather than twine or rope. Second, bast fibres comprised 15 per cent of the YF sample and less than one per cent of the UFG sample. The significantly greater proportion of bast fibres at YF is consistent with its emphasis on ship and shipping activities. And finally, the larger percentage of cotton fibres at UFG, eight per cent compared to one per cent at YF is the result of several factors. Some of these are the availability of cotton from the United States in the RRS and hence at UFG; the larger population of UFG and the RRS with income to spend on furnishing fabrics, among which were cottons; and the presence of the army at UFG, which used cotton for part of their uniform.

For the purpose of comparison, structures of the fabrics were grouped into six broad categories. These were tabby, including balanced and extended tabby, twill, satin, cellular and unidentified. The breakdown, again by percentages, based on these categories is shown in Table 26.

TABLE 26

Fabric Structure by Percentage for York Factory
and Upper Fort Garry.

Fabric Structure	YF	UFG
Tabby	70.0	52.0
Twill	11.0	25.0
Satin	1.0	2.0
Felt	10.0	1.0
Cellular	3.0	1.0
Knit		2.0
Unidentified	5.0	17.0
Total	100.0	100.0

Table 26 illustrates similarities and differences between YF and UFG based on fabric structure. There are three similarities between the two sites. First, tabby comprises the greatest percentage by type of fabric structure. This was expected as tabby is a common weave type being most simple and inexpensive to manufacture. Cellular types of fabric structure comprised less than five per cent for both sites. The gauze-like structure of some of the artifacts emphasizes their fragility which accounts in part for their low frequency. Finally, artifacts of satin structure comprised one per cent at YF and two per cent at UFG. Two reasons for this are the cost of satin fabrics, generally more expensive, and the end use of such fabrics, either for linings or dress fabrics which precludes their use in everyday wear.

Differences between YF and UFG based on fabric structure are most significant for twill and felt structures. The absence of knits at YF is not significant given that it is only two per cent of the UFG sample. Twill structures were 25 per cent of the UFG population and 11 per cent of the YF one. As with cotton fibres, the difference in twill structure could reflect an economic consideration. Twill is more often associated with worsteds which are more expensive than woolens, which are associated with fulled tabby. A larger percentage of the population at RRS and UFG could have afforded twilled articles than at YF. Last, felt comprised ten per cent of the YF sample and one per cent of the UFG sample. This difference could be due to the insulation value of felt and therefore its more common use at YF, where the weather is more severe, than at UFG.

In conclusion, given the similar time span of the two Hudson's Bay Company posts, the fibre types and fabric structures are similar. The chi-square test result for fibre type was $\chi^2 = 27.604$ with 11 degrees of freedom while for type of fabric structure $\chi^2 = 25.343$ with 6 degrees of freedom. Thus, the null hypothesis was rejected in both cases and it was concluded that the chi-square test was indicative of association or similarity between the two sites. On

the other hand, it would be incorrect to state that the two sites were associated because in both tests over 20 per cent of the cells had expected counts of less than five. Calculations, based on the indices of the cost of fibre types and percentages present at both posts, indicate that the total value, by fibre type, was greater at UFG (130.06) than YF (104.54). The largest percentage of fibre type for both posts is wool and of fabric structure it is tabby. The differences between the two posts are due to the ship and shipping activities of YF, presence of the army at UFG and the larger and wealthier population at UFG.

Chapter VI

CONCLUSION

The textiles from Upper Fort Gary were approached with three questions in mind. These were:

1. Can fabric evidence aid in the dating of the privies?
2. Are there differences in fabric remains between Privy I and Privy II? And what are these differences?
 - a) Socioeconomic status
 - b) Imported versus domestic textiles
 - c) Differences in garment construction
 - d) Different groups using the privies, such as different sexes, or ethnic groups
3. Are there differences between the fabrics from D1Lg-21 and other fur-trade sites of the same period? If so, what are these differences? And why are there differences?

The methods employed to answer the above questions included analysis of the fabrics themselves, as outlined in Chapter II and Appendix B. Although no patterns were positively identified from the resources available, the style, colours and technology suggest

that the patterns fall within the 1815-40 range (Nylander 1980) although it should be noted that the popular floral stripe and foliated pillar prints of the 1840s are not found within the sample. This may simply reflect a choice made by the HBC when ordering goods or availability of goods for export by particular suppliers. The fibre and vermicelli pattern (D1Lg-21/6006) may reflect an imitation of those ceramic patterns, the latter which dates from 1828-58 (Sussman 1979b:73).

Archaeological evidence suggests that the privies were in use from 1846-48 A.D., the time at which the fort was occupied by the Sixth Regiment of Foot. Textiles indicating the presence of the army include two cotton fragments of tabby weave bearing army stamps. These stamps were actually the names of soldiers in the army, they were "W. Stokes" and "C. Ted[ds]".

Other indications of the presence and use of the privy by the army include metal military items bearing the Sixth Regiment of Foot insignia.

As stated elsewhere in this thesis, the dates for the two privies from UFG are based on ceramic, glass, paper and fabric evidence. Overall, the evidence suggests that the privies were in use from the initial date of construction of the Fort until dismantlement.

Closer examination of the artifacts and stratigraphic evidence suggests a narrower range, that is, that the privies date from initial construction to approximately the 1850s or 1860s.

Investigations show that those individuals of higher social class purchased more ready made clothing items than those of lesser social classes (Fifik 1984). Social class for the purpose of this thesis was defined by criteria of economic positions which consequences included honor and privilege differentials and thus to a certain extent were flexible and permeable (Berreman 1981:15).

Research into the source of goods and their relative cost was completed and the results are outlined in Appendix B and in Chapter V. As concluded earlier Privy II contained fabrics that were more costly than those from Privy I. Following Otto's suggestion of using historical sites artifacts as status indicators by "projecting historical documentation against the quantitative variability of the archaeological record" was fruitful. While it was impossible to match artifacts with the historical record perfectly, several general conclusions were made regarding the "value" of different types of fabrics based on fibre, weave, finish, printing and dying.

Garment construction, for the most part, consisted of handstitched garments. The majority of fabrics recovered from both privies were cut. Some artifacts were cut in such a manner as to suggest that they had been remodelled or cut down to be remade into smaller garments.

The presence of imported goods is well documented in archival sources, and suppliers to the HBC have been researched and published by various authors (Sussman 1979a, Lafléche 1979). There are well over 75 suppliers of fabric products to the HBC between the period 1820-75 A.D. inclusive (Sussman 1979a, Lafléche 1979). These goods included such items as belts, cloth, ribbons, shawls, hats, cotton goods, caps, woollens, blankets and prints to name only a few. Goods were purchased and shipped privately from companies not listed as suppliers, and in such cases, they were researched. The silk hatliner bearing the company name "LOCKETT" was one such item, unfortunately, further research did not shed any light on the actual company.

It was not possible to distinguish between domestic fabric and imported fabric by examining the artifacts and it is thought that all of, or the majority of, textiles were imports from either England or the United States.

The scarcity of machine stitched fabrics and the abundance of handstitched fabrics suggest that the deposits predate popular use of the sewing machine, that is, the 1870s (Godfrey 1982:22,27).

Although it was known that the garrison included men, women and children, textile evidence indicating the presence of children is scanty and inferential at best. No specific items of clothing have been identified within the sample though it appears that some items of clothing were cut down or recut to make clothing for a smaller individual such as a child.

Many of the clothing items and textile remains suggest the presence of men and women. Such items as sashes, petit point belts, and stockings are indicative of the presence of women while woolen gaiters, long underwear and socks suggest the presence of men. The few sewing or tailoring items such as straight pins, needles, scissors or thimbles which were recovered suggest poor preservation of the metal artifacts, lack of sewing/tailoring activities at that location or disposal of these items in a different area.

The comparison with York Factory suggests that the differences between the two sites reflects functional differences in the purposes of the two posts. The greater percentage of bast fibre, representing rope for

the most part, reflect York Factory's emphasis on ship and shipping activities. The large percentage of felt fabrics reflects the need for fabrics which provide insulation in the harsher climate of York Factory. The greater variety of fibres and finer fabrics identified from UFG indicate that the population could afford and chose to buy more expensive fabrics than that of York Factory suggesting that the population of UFG was of higher socioeconomic status than York Factory.

The analytical techniques employed for examining the fabrics were outlined earlier in this thesis. In some cases when the fibres were badly deteriorated they could not be identified.

Statistical analysis of the data was successful and due to the large sample size the tests are robust. As with all archaeological populations and samples, the researcher is limited to nonparametric test but this is not necessarily a drawback. In many cases, nonparametric tests are as robust as parametric tests if the conditions and assumptions are met.

Interpretation of economic variability based on fibre types was sound but the inability to accurately identify and define historically documented textiles with archaeological textiles is a weakness. The results of Sussman's (1982) method of indexing for the

fabrics did not accurately reflect the qualitative differences between the assemblages. The reason for this failure is inherent in the indexing method which does not differentiate between fragments and complete garments.

The thesis has examined the fabric artifacts as part of the archaeological data available to the researcher and the archival documents as part of documentary data. An examination of both sources of data within the context of UFG and YF indicates that each post had differing lifestyles reflected in the choice of fibre types and fabric structures identified at each site. According to HBC documents, the goods available at each post was comparable, tht the archaeological evidence indicates that the choice of goods differed. The choice of goods reflects the different functions of the two posts and the different social contexts at each post.

In conclusion the fabrics can be utilized as economic, technological and time period indicators to aid in our interpretation of Upper Fort Garry.

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Appendix A

CONSERVATION OF TEXTILES FROM UPPER FORT GARRY.

The following information was elicited from Ellen Robinson, a conservator with the Museum of Man and Nature in 1986. All textiles were excavated in 'clumps', placed in plastic bags, and frozen until treatment could be undertaken.

THE 1982 TEXTILES

The 1982 textiles were:

1. Thawed,
2. Hand-washed in cold tap water (length of washing varied greatly),
3. Placed on plastic covered cardboard, pinned down with straight pins around edges,
4. Air-dried, and
5. Placed in acid-free envelopes.

THE 1983 TEXTILES

The 1983 textiles were:

1. Either freeze-dried prior to washing, or kept frozen until washing,
2. Hand-washed in a 5% aqueous solution of sodium metaphosphate (length varied from hours to days),
3. Rinsed in cold tap water for same length of time they had been in sodium metaphosphate,
4. Cleaned with a dental cavitron (not used on delicate textiles),
5. Placed on plastic covered cardboard,
6. Sprayed with a 15% solution of PEG 400/tap water (allowed to soak in for circa one hour, then blotted),
7. Sandwiched between plastic covered cardboard. These packages were secured with string and encased in plastic. A few holes were made to provide air circulation, and
8. Some of the 'nice' 1982 textiles were rewashed in 1983 -using sodium metaphosphate, PEG and freeze-drying.

Appendix B

CODING FORMAT FOR FABRICS FROM UPPER FORT
GARRY.

VARIABLE FORMAT

Site	1-6
North unit	7-10
East unit	11-14
Level	15-16
Stratum	17-18
ASL	19-22
North provenience	23-26
East provenience	27-30
Catalogue number	31-36
Class	37-38
Quantity	39-40
Fabric Structure	41-42
Type of Structure	43-44
Weft Fibre Type	45-46
Weft Twist	47
Ends/cm	48-50

Warp Fibre Type	51-52
Warp Twist	53
Picks/cm	54-56
Finish	57-58
Color of Fabric	59-60
Coloring Method	61
Pattern	62-64
Pattern Color(s)	65-66
Printing Technique	67-68
Stitching	69
Thread	70
Selvedge	71
Marks	72-73
Primary Function	74-75
Secondary Function	76-77
Composite Piece	78

CODING FORMAT

FABRIC STRUCTURE

- 01 Not identified
- 02 Woven
- 03 Hand woven
- 04 Machine woven
- 05 Knit
- 06 Hand knit
- 07 Machine knit
- 08 Cellular
- 09 Pile
- 10 Lace
- 11 Felt
- 12 Braiding
- 13 Twining (plying,cording)

TYPE OF FABRIC STRUCTURE

01 Not identified

Woven

02 Plain weave (balanced/extended)

03 Plain weave balanced

04 Plain weave extended

05 Warp rib weaves (repp)

06 Weft rib weaves

07 Haircord

08 Hopsack

09 Twill weave (not identified)

10 Z Twill 2:2

11 Z Twill 3:3

12 S Twill 2:2

13 S Twill 3:3

14 Z Twill 2:1

15 Z Twill 3:1

16 Z Twill 3:2

17 S Twill 2:1

18 S Twill 3:1

- 19 S Twill 3:2
- 20 Fancy diagonal
- 21 Cavalry twill
- 22 Pointed and herringbone twill
- 23 Diamond design

- 24 Satin/Sateen (not identified)
- 25 Satin (warp-faced)
- 26 Sateen (weft-faced)
- 27 5-end satin
- 28 8-end satin
- 29 5-end sateen
- 30 8-end sateen
- 31 Crepe
- 32 Fancy twill and tabby

Cellular

- 32 Honeycomb
- 33 Leno
- 34 Mock leno

Pile

- 35 Velvet
- 36 Terry

37 Velveteen

38 Corduroy

Knit

39 Weft knit

40 Stockinette

41 Rib 1x1

42 Rib 2x2

43 Float stitch

44 Honeycomb pattern

45 Tricot

46 Locknit

47 Satin

Crochet

48 Crochet

Lace

49 Bobbinet

50 Leavers lace

Other

51 Braiding (oblique interlacing)

52 Plaiting (interlanking)

WEFT FIBRE TYPE

- 01 Not identified
- 02 Cotton
- 03 Linen
- 04 Silk
- 05 Wool (not identified)
- 06 Worsted
- 07 Woolen
- 08 Cotton and linen
- 09 Cotton and wool
- 10 Wool and silk
- 11 Jute, hemp or ramie
- 12 Jute
- 13 Hemp
- 14 Ramie

WEFT TWIST

- 1 Not identified
- 2 S twist
- 3 Z twist
- 4 No twist (I)
- 5 szS
- 6 zzS

7 ssS

8 ssZ

9 iiS

WEFT PICKS/CM

001 Not identified

002 Absent

WARP FIBRE TYPE

01 Not identified

02 Cotton

03 Linen

04 Silk

05 Wool (not identified)

06 Worsted

07 Woolen

08 Cotton and linen

09 Cotton and wool

10 Wool and silk

11 Jute, hemp or ramie

12 Jute

13 Hemp

14 Ramie

15 Absent/none

WARP TWIST

1 Not identified

2 S twist

3 Z twist

4 No twist (I)

5 szS

6 zzS

7 ssS

8 ssZ

9 iiS

WARP ENDS/CM

001 Not identified

002 Absent

TYPE OF FINISH

- 01 Not identified
- 02 None
- 03 Bleached
- 04 Calendared/Pressed
- 05 Mercerized
- 06 Watered
- 07 Fulled
- 08 Brushed
- 09 Machine gigging

COLOR OF FABRIC

- 01 Not identified
- 02 Green
- 03 Brown
- 04 Black
- 05 Dark brown
- 06 Gold
- 07 Black/brown
- 08 Red
- 09 Beige
- 10 Blue
- 11 Red/brown

- 12 Brown and beige (twill)
- 13 Black and brown (twill)
- 14 White
- 15 Black and beige (twill)

FABRIC COLORING METHOD

- 1 Not identified
- 2 Natural
- 3 Bleached
- 4 Yarn/fiber dyed
- 5 Piece dyed
- 6 Printed

PATTERN/DESIGN

- 001 Not identified
- 002 Woven pattern (ie. 6091)
- 003 Solid tartan (ie. 6088)
- 004 Two tone tartan
- 005 Striped (ie. 11821)
- 006 Rectangles on a flowered background,
border print (ie. 5951)

- 007 Colored tartan
- 008 Stocking (ie. 11960)
- 009 Abstract honeycomb flowers with rose,
border print (ie.12969)
- 010 Figured leaves and flowers on ribbed silk
(ie. 11718)
- 011 Abstract foliage, monochrome border print
(ie. 5515)
- 012 Vermicelli and fiber sun, border print
(ie. 6006)
- 013 Ovals with flowers, border print (ie. 6048)

PATTERN/DESIGN COLOR(S)

- 01 Not identified
- 02 Gold and brown
- 03 Blue and green
- 04 Beige
- 05 Brown and red/brown
- 06 Red(maroon), blue and white
- 07 Green and brown
- 08 Brown and beige
- 09 Red(maroon), green and beige
- 10 Red and blue

- 11 Blue
- 12 Blue and gold
- 13 Red, blue and green
- 14 Black and red
- 15 Black and beige
- 16 Blue(turquoise) and white
- 17 Green and beige
- 18 Blue and black

PRINTING TECHNIQUE

- 01 Not identified
- 02 Relief technique (not identified)
- 03 Roller print
- 04 Block or stamp print
- 05 Warp print
- 06 Engraved (copperplate or engraved roller)
- 07 Resist technique (not identified)
- 08 Wax, paste or starch resist
- 09 Mechanical resist (tying, sewing or folding)
- 10 Stencil
- 11 Screen print
- 12 Misc. direct application (ie. painting, dripping, airbrush)

- 13 Heat transfer
- 14 Roller and block printed
- 15 Roller printed and engraved

STITCHING

- 1 Absent
- 2 Present
- 3 Hand stitched
- 4 Machine stitched
- 5 Seamed
- 6 Hemmed
- 7 Machine and hand stitched
- 8 Seamed and hemmed
- 9 Corded seam

THREAD

- 1 Absent
- 2 Present
- 3 zzS (silk)
- 4 ssS (silk)
- 5 zzS (wool)

6 iiS (silk)

7 Linen

8 ssZ (silk)

9 Cotton

SELVEDGE

1 Absent

2 Present

3 Two selvages

MARKS

01 None

02 Cut

03 Buttonhole(s)

04 C. T. Lockett

05 C. TED[DS]

06 18 (stamped)

07 Blue stamp

08 W. STOKES

PRIMARY FUNCTION

- 01 Not identified
- 02 Linen
- 03 Floor covering
- 04 Furniture covering
- 05 Wall covering
- 06 Furnishing fabrics
- 07 Bed coverings
- 08 Samplers
- 09 Costume
- 10 Trims
- 11 Other

SECONDARY FUNCTION**Linen**

- 01 Tablecloths
- 02 Napkins
- 03 Towels
- 04 Tray cloths
- 05 Bed Sheets
- 06 Pillowcases
- 07 Pillow shams

- 08 Antimacassars
- 09 Doilies
- 10 Dresser scarves
- 11 Placemats

Floor Covering

- 12 "Oriental" carpets
- 13 North American Indian rugs and blankets
- 14 Other floor coverings

Furniture Covering

- 15 Upholstery
- 16 Stool tops
- 17 Shelf hangings
- 18 Heavy table covers
- 19 Runners
- 20 Lambrequins
- 21 Mats
- 22 Pillows
- 23 Pillow tops

Wall Coverings

- 24 Draperies
- 25 Curtains

- 26 Wall hangings
- 27 Valances
- 28 Wall covering, wall plastering

Furnishing Fabrics

- 29 Includes yardage or fragments suitable for two or more uses in interior.

Bed Coverings

- 30 Quilts
- 31 Coverlets
- 32 Blankets
- 33 Afghans
- 34 Bedspreads
- 35 Bed Hangings

Samplers

- 36 Embroidery samplers
- 37 Crochet samplers
- 38 Macrame samplers
- 39 Berlin woolwork samplers
- 40 Darning samplers
- 41 Knitting samplers

Costume

42 Apparel/yardage for costume

43 Headgear

44 Hat

45 Bonnet

46 Cap

47 Neckwear

48 Collar

49 Tie

50 Ascot

51 Jabot

52 Scarf

53 Fischer

54 Guimps

55 Neckband

56 Cravat

57 Wrap

58 Coat

59 Cape

60 Shawl

61 Outer Garment (not specified)

62 Dress, skirt, shirt

63 Skirt

64 Sweater

65 Trousers, jacket

66 Vest

67 Shirt

68 Suit apron

69 Underwear (not identified)

70 Nightwear

71 Foundation garments

72 Lingerie

73 Bustles

74 Handwear

75 Gloves

76 Mitts

77 Muffs

78 Purse

79 Handkerchief

80 Cuffs

81 Legwear (not identified)

82 Spats

83 Hose/Socks

84 Hose/ Stockings (female)

85 Hose (male)

86 Gaiters

87 Footwear (not identified)

88 Shoe

89 Slippers

90 Other

91 Parasol

92 Rope

93 Belt

94 Trims

95 Ribbon, sash

96 Buttons

97 Lining

98 Tape

99 Insets

COMPOSITE PIECE

- 1 Not identified
- 2 Two pieces of cloth
- 3 Three pieces of cloth
- 4 Four pieces of cloth
- 5 Cloth and metal
- 6 Cloth and paint/plaster

GLOSSARY

Fabric structure: refers to the technique by which fabrics are made from fibres. This term encompasses all types of weaving, as well as techniques of knitting lacemaking, braiding and felting (Taylor 1972:46).

Refer to Emery (1966), Taylor (1972) and Seiler-Baldinger (1979) for discussion of specific types of fabric structures.

Weft: yarns that run perpendicular to the longer dimension or selvage of a fabric (Taylor 1980:304).

Warp: yarns that run parallel to the selvage or long dimension of the fabric (Taylor 1980:308).

Yarn: applied when the assemblage of fibers is employed in the manufacture of a fabric (Taylor 1980:147).

Thread: a product used to join pieces of fabric together to create textile products. Thread is frequently of plied construction (Taylor 1980:147).

Finish: mechanical or chemical, permanent or nonpermanent and general or functional procedures applied to fabrics (Taylor 1980:223).

Pattern: (printed or not printed) those fabrics that have been decorated by a motif, pattern or design applied to the fabric after production (Taylor 1980:271).

Appendix C

DATA FOR TEXTILES FROM UPPER FORT GARRY.

D1LG21N094E174	5798	20212063052063025	071	38	0961
D1LG21N094E174	11701	10935044064044041	400212	3	1095
D1LG21N094E174	11702	10203053019052019	034	73	031097
D1LG21N094E174	11703	10203044070044048	064		3021095
D1LG21N094E174	11704	10203044027043026	064	3	1095
D1LG21N094E174	11706	20203043043044040	064	13	021097
D1LG21N094E174	11707	20210064065064022	034		0961
D1LG21N094E174	11711	10222051001051001	034		1098
D1LG21N094E174	11716	2020905100105100107034			020965
D1LG21N094E174	11717	10220064001064001	034	18	09662
D1LG21N094E174	11718	10232044067044032	01013		2020942
D1LG21N094E174	11719	20206042098044035	400214		20209622
D1LG21N094E174	A11719	10206042119044032	400212	51	020962
D1LG21N094E174	11720	7020905100105100107034			020957
D1LG21N094E174	11721	1020306300106200107034			020965
D1LG21N094E174	1172313	2021906300106200107041		31	0209882
D1LG21N094E174	11724	1022607203207202507034		53	020961
D1LG21N094E174	11728	10205042040042080	400215		020942
D1LG21N094E174	11729	1020106100106100109034		33	020957
D1LG21N094E174	11731	1022406200106200107054		58	020965
D1LG21N094E175	5805	10101073002011002	091		011
D1LG21N094E175	5809	10206042130042036	400218		020962
D1LG21N094E175	5810	10212063042063036	134		0957
D1LG21N094E175	5812	1020307202407301508034			01 5
D1LG21N094E175	5814	10101073002011002	091		01
D1LG21N096E174	10000	10203113008112004	091		05286
D1LG21N096E174	11825	11352121001011002	091		1192

D1LG21N090E17741	0.86	0600120006091	50833044046044028	024002	421	0984
D1LG21N090E17740	0.93	6109	10203052015052014	031	1110	020961
D1LG21N090E17736	1.43	50 70 10055	1020306201606201607034		13	01
D1LG21N090E17741	0.86	60 120 11732	40210063022063016	041	1110	020961
D1LG21N090E17741	0.86	60 120 11734	1020105100105100107034		1110	020961
D1LG21N090E17741	0.86	60 120 11735	18020305202005201607034		21	0961
D1LG21N090E17742	0.83	11737	100210063018062016	054		020961
D1LG21N090E17742	0.83	11742	1020306100106100107054		341	09582
D1LG21N090E17742	0.83	A11742	10203063016063012	031	341	09582
D1LG21N090E17742	0.83	11744	1020105100105100107054		2510	020957
D1LG21N090E17742	0.83	11747	10225044055044050	064	02	321020961
D1LG21N090E17742	0.83	11748	10225044055044050	064	02	321020961
D1LG21N090E17742	0.83	11751	50222052032052020	034		2011098
D1LG21N090E17742	0.83	11755	120101011002063011	034		01
D1LG21N090E17742	0.83	11757	10203073016073015	034	21	020961
D1LG21N090E17742	0.83	11759	102020620010620010705		21	020961
D1LG21N090E17742	0.83	11761	1021806200106200109034			020957
D1LG21N090E17742	0.83	11763	5020306201206201007034			0965
D1LG21N090E17739	1.05	30 120 11764	5020305201605201407034			020942
D1LG21N090E17740	0.93	11767	10203052014052014	074		020961
D1LG21N090E17740	0.93	11768	30210065023063017	07	21	020965
D1LG21N090E17736	1.43	50 70 11770	1020107200107200107084			0957
D1LG21N090E17736	1.43	50 70 11771	70202052014052012	07		0942
D1LG21N090E17736	1.43	50 70 11772	10203062020062016	093	13	020962
D1LG21N090E17742	0.83	12939	10224	07054	33	020965
D1LG21N091E17641	0.88	5954	1020405201205201207034		51	0957
D1LG21N091E17642	0.83	6011	10205044026044050	10400203	2	1095
D1LG21N091E176		6088	10232044056044044	09400304		0942
D1LG21N091E17641	0.88	11780	40203052012052011	034		0965
D1LG21N091E17641	0.88	11781	2020105100105100107034			020961
D1LG21N091E17641	0.88	11782	4022406200106300107034		31	020965
D1LG21N091E17641	0.88	11783	4020106100106100107025			020975
D1LG21N091E17643	0.78	11784	1110105100105100109041			020958
D1LG21N091E17642	0.83	11785	10202052012052009	031		020961
D1LG21N091E17642	0.83	11786	1020107100107100107081			020958
D1LG21N091E17642	0.83	11787	10210062014062010	400405		0960
D1LG21N091E17642	0.83	11788	1020106100106100107034			0961
D1LG21N091E17642	0.83	11789	1020106100106100107054			020961
D1LG21N091E17642	0.83	11790	1020205100105100107074		51	020965
D1LG21N091E17642	0.78	11791	30210061001066001	041	1020	0965
D1LG21N091E17642	0.78	11792	1020306201106201007084			020942
D1LG21N091E17642	0.78	11793	1020306301506201407034		51	020961
D1LG21N091E17643	0.78	11794	20203063012062012	081		020942
D1LG21N091E17643	0.78	11795	10203062014062014	034		020961
D1LG21N091E17643	0.78	11796	10214063022063020	035		0962
D1LG21N091E17643	0.78	11797	3020306202006301907034			0965
D1LG21N091E17643	0.78	11798	1020105100105100107081			020942
D1LG21N091E17643	0.78	11799	1020106100106100107054			020965
D1LG21N091E17643	0.78	11800	40210066018062016	034		0965
D1LG21N091E17643	0.78	11801	1021005201205301107034			020961
D1LG21N091E17643	0.78	11802	10212062010062008	034		0942
D1LG21N091E17643	0.78	11803	10214063008062006	034	15	0957
D1LG21N091E17643	0.78	11804	1020106100106100107031		32	030965
D1LG21N091E17643	0.78	11805	10214063025063021	034		020961
D1LG21N091E17643	0.78	11806	20210062022063018	034	51	020965
D1LG21N091E17643	0.78	11807	10214063025063020	034	35	020965
D1LG21N091E17643	0.78	11808	1020106100106100107054			020957
D1LG21N091E17643	0.78	11809	1020106100106100107054			020957
D1LG21N091E17643	0.78	11810	1020206300106300107034			020957
D1LG21N091E17643	0.78	11811	1020206300106300107034			020957
D1LG21N091E17643	0.78	11812	1020305201205201107034			0965
D1LG21N091E17643	0.78	11813	10217063025063022	111		0962
D1LG21N091E17643	0.78	11814	10217063029063025	041	55	020962

D1LG21N091E17643	0.78		11815	10210063022066022	041		0965
D1LG21N091E17643	0.78		11816	10217053030053025	041	33	0962
D1LG21N091E17643	0.78		11817	10541061007151007	034		0964
D1LG21N091E17643	0.77		11818	10222062022062021	034	2	1098
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D1LG21N093E177	1197513	1110106 06 09055		21 020958
D1LG21N093E177	11976	10203052012052011 034		16 020958
D1LG21N093E177	11979	9020306201306201307034		020965
D1LG21N093E177	11987	10744041016041016 061		212 0983
D1LG21N093E177	11996	3020307201207201207081		51 020965
D1LG21N093E177	12004	2020207200107300107114		020961
D1LG21N093E177	12007	5020306201206201007055		51 020961
D1LG21N093E177	12969	1020304404004404003	60090904	2 0942
D1LG21N093E177	12970	10212062019063017 031		020961
D1LG21N093E177	12971	10203062012062009 051		51 020965
D1LG21N093E177	12975	20218063026063023	400408	0942
D1LG21N093E177	12977	10203062018062014 034		0942
D1LG21N093E177	1297813	2020305201205200907051		020965
D1LG21N093E177	12982	1020305201205200907051		020965
D1LG21N093E177	12986	102010510010510010705		020961
D1LG21N093E177	12988	1020305201205200907051		020965
D1LG21N093E177	12994	10214073008063008 124		0957
D1LG21N093E177	12998	10217066019062017 031		2 0965
D1LG21N093E177	13000	30203062011062010 034		0965
D1LG21N093E177	13001	10201072001073001 074		17 01
D1LG21N093E177	1300213	1020306200106200107054		020942
D1LG21N094E174	1438	10201062002151001 031		01
D1LG21N094E174	1535	5020106100106100109071		231020957
D1LG21N094E174	5530	7020105100105100107071		48 0209582
D1LG21N094E174	5534	10205044032042116 074		521021097
D1LG21N094E174	5535	10203042026047042 105		3021095
D1LG21N094E174	5539	10101042001073001 071		01
D1LG21N094E174	5546	10203042072042042 091		1110201
D1LG21N094E174	5570	10203044072044048	400210	1097
D1LG21N094E174	5571	11352062001062001 034		3 1095
D1LG21N094E174	5587	3020105100105100107071		51 020957
D1LG21N094E174	5589	91352062001062001 034		3 1095
D1LG21N094E174	5592	1020307301007200707034		01
D1LG21N094E174	5596	10210063054063029 071		020965
D1LG21N094E174	5604	10220052018052018 031		511020965
D1LG21N094E174	5605	130739052001052001070305		51 020975
D1LG21N094E174	5608	10203042116044034	10400111	020942
D1LG21N094E174	5669	1020105100105100107034		01
D1LG21N094E174	5670	1021205200105200107054		020965
D1LG21N094E174	5673	1020105100105100107		0201
D1LG21N094E174	5688	10210063054063030 041		0961
D1LG21N094E174	5718	10220061001061001 024		020965
D1LG21N094E174	5737	1020107100107100109041		581020958
D1LG21N094E174	5739	10832062001062001 034		07
D1LG21N094E174	5759	1021206201806201608041		020942

Appendix D

COST INDICES FOR FABRICS FROM UPPER FORT GARRY.

The cost indices for fabrics from Upper Fort Garry were computed on the basis of archival data from three years, 1846 to 1848 inclusive. Two indices were computed, one for ready made clothing and a second for fabric and ready-made clothing (Tables 27 and 28).

It should be obvious from the above tables that ready-made clothing is much more expensive than cloth. For example, while fustian trousers were indexed at 20.7 in 1848, fustian cloth was indexed at only 2.3. In terms of fibre type, cotton is cheaper than worsted. If one looks at the vests, it is notable that silk is more expensive than woollen or blue cloth vests, blue cloth is assumed to be worsted. Also, cashmere becomes more expensive in relation to the other fibre types over the years studied. With regard to thread, blue cotton thread is the least expensive while silk is the most expensive.

TABLE 27

Cost Indices for Ready Made Clothing.

ITEM	Year		
	1846	1847	1848
VEST			
fine blue cloth	10.1	10.1	9.9
fancy quilting	5.9	5.9	5.7
Valentia	6.5	6.5	6.5
figured cashmere	8.4	13.3	13.3
figured black silk	15.2	12.0	8.5
plain black silk	15.2	14.2	9.8
fancy woollen	10.1	6.5	6.5
THREAD			
all color	1.5	2.3	6.2
blue	1.5		2.3
stitching	4.4	4.3	4.3
TARTAN			
Argyle	1.1	1.1	1.0
Gordon	1.1	1.1	1.0
HOSE			
Men's 1/2 cotton	19.6	17.1	26.6
Girls colored 4	16.0		27.2
" " 5	17.7		
Women's slate			
worsted	36.1	32.9	32.9
Women's white			
worsted	32.9	32.9	32.9
Women's white			
cotton		24.7	24.7

It should be pointed out that the net amount or

TABLE 28

Cost Indices for Fabric from Upper Fort Garry.

CLOTH	YEAR		
	1846	1847	1848
Hair cloth	14.7	14.7	14.7
Fustian trousers	33.7	22.0	20.7
Linen cheese cloth	160.0	160.0	153.3
Figured cashmere (vests)	29.3		40.0
Figured black silk (vests)	53.3	42.0	34.3
Drugget	2.5	2.7	2.5
Fancy muslin	56.7		54.7
Cotton leno	1.0		
Book muslin	2.4	35.0	33.3
Scotch cambric	62.0		60.0
Thread	5.5		
Holland tape	14.3		14.3
Furniture prints (cotton)	88.7	87.7	77.0
Light prints (cotton)	55.3	75.3	76.8
Grey cotton	1.2		
Irish linen	14.6		15.0
India Nankeen	35.3		
Mouseline de Laine	162.0	220.0	135.3
Camlet	360.0		353.3
Merino	173.3	153.3	153.3
Cotton velvet	8.0		
Silk velvet			48.7
List cloth	15.3	15.3	
Common white flannel	293.3	293.3	282.0
Women's hose	126.7	115.3	115.3

value of goods changed over the years under study which

is why some items are listed for some years and not other years (HBCA.B.239/ee/116 fo. 157, 195, 245, 311, 341). As can be seen from Table 29, the net amount imported was far greater for the years the Sixth Regiment was stationed at UFG than for the years they were not. The second amount listed for 1847 was an

TABLE 29

Net Amount Imported to Red River from 1845 to 1849 Inclusive, in pounds sterling.

YEAR	NET AMOUNT IMPORTED
1845	5378. 3. 4
1846	5619. 9.11
1847	18005.17.14
1847	606.10.10
1848	13304.16.10
1849	4377.12. 4

additional order made especially for the army.

Appendix E
STATISTICAL TESTS.

THE KRUSKAL-WALLIS TEST

The Kruskal-Wallis test is an analysis of variance. It is preferable to the Mann-Whitney and median tests for the following reasons:

The Kruskal-Wallis test uses more information contained in the observations than does the median test. That is, the Kruskal-Wallis test statistic is a function of the ranks of the observations in the combined sample, as was true with the Mann-Whitney test, while the median test statistic was dependant only on the knowledge of whethyer the observations were below or above the grand median. For this reason the Kruskal-Wallis test is usually more powerful than the median test (Conover 1971:256).

The Kruskal-Wallis test is a comparison of the sums of ranking for each of the categories of the nominal-scale variable (Blalock 1972:349).

Ordinal-scale means that the measurement does not supply any information about the magnitude of the difference between elements (Blalock 1972:16). Nominal-scale means that classification is done by category with numbers arbitrarily used as tags for different categories (Blalock 1972:15).

The assumptions of the Kruskal-Wallis test are as follows:

1. The samples are random;
 2. there is mutual independence among samples; and
 3. the measurement scale is at least ordinal
- (Conover 1971:257).

The null hypothesis is that all of the populations distribution functions are identical. The alternative hypothesis is that at least one of the populations tends to yield larger observations than one of the other populations (Conover 1971:257).

The formula for calculating the test statistic, F , given in Blalock (1972:350) is

$$F = \frac{\left(\frac{1^2}{N(N+1)} \sum \frac{R^2}{N} \right) - 3(N+1)}{1 - \sum T_i / (N^3 - N)}$$

where N_i and N represent the number of cases in the i th category and in the total sample respectively. The denominator represents a correction for ties, where

$$T_i = t_i^3 - t_i$$

t_i being the number of observations tied for a given rank. The Kruskal-Wallis test was run on the mainframe at the University of Manitoba, using SAS version 84.

PEARSON'S PRODUCT-MOMENT CORRELATION

Pearson's product-moment correlation was used to measure the correlation between two variables within a population or sample. Correlations is measured on a scale between -1, which indicates negative correlation, and +1, which indicates positive correlation. Zero indicates that the variables are randomly distributes (Conover 1971:244).

The formula used to compute the value was:

$$r_{xy} = \sum (x-\bar{x})(y-\bar{y}) / \sqrt{(\sum (x-\bar{x})^2 \sum (y-\bar{y})^2)}$$

(SAS 1982:501).

CHI-SQUARE TEST

A chi-square test of homogeneity or independence for each two-way table was computed. For 2 by 2 tables, Fisher's Exact test was performed (SAS 1982:515). The formula used was:

$$X^2 = \sum (n_i - n\pi_i)^2 / n\pi_i = \sum (O-E)^2 / E$$

where O is the observed count n_i and E is the expected count $n\pi_i$ (SAS 1982:498).

For bivariate categorical distributions, this chi-square test is specialized to use the n multiplied by the product of the marginal probability estimates as the expected value under the hypothesis of independence (SAS 1982:498).

The assumptions of the chi-square test are:

1. Two nominal scales; and

2. independent random samples (Blalock 1972:277).

The null hypothesis is that the two samples are not related, or that they are independent. The alternative hypothesis is that the two samples are homogenous or they are related (Blalock 1972:278).