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For Kaye Tomlin,
Regards,
Glenn

RESEARCH NOTES AND COMMENTS

GLENN J. FARRIS

Fathoming Fort Ross

ABSTRACT

Archaeologists and historians studying Fort Ross have relied heavily on several inventories written in French and Spanish which were prepared in 1841 when the Russians put their holdings in California on the market. The linear measurements in these inventories were expressed in "fathoms." These have been translated into English and rendered into "feet." However, a re-interpretation of the figures suggests that they may be off by 16 percent. This new interpretation is supported by an early (1817) Russian map of Fort Ross as well as the results of three archaeological excavations. Due to the extensive nature of the inventory data and its potential use to archaeologists in their study of the Russian settlements in California, this correction of the linear measurements is of great importance.

Archaeologists and historians in California are faced with a variety of measuring units reflecting the polycultural heritage of the state. In trying to reconstruct the buildings at the Russian settlement of Fort Ross on the Sonoma County coast (Figure 1), research may involve documents written in Russian, Spanish, French, and German. Most of these documents have been translated into English and it is usually the English version which is readily available to researchers.

Two of the most valuable documents concerning Fort Ross are the extensive lists of the buildings and their linear measurements which are found in the proposals of sale of the property prepared in 1841. These documents are written up in Spanish for General Mariano G. Vallejo, then the Mexican *comandante* of the Northern frontier of California (Vallejo Papers n.d.). Subsequently the inventory was prepared in French for John A. Sutter, founder of New Helvetia (Sutter Papers n.d.) (see Figure



FIGURE 1. California with Fort Ross and other principal locations.

2). In addition, another French version was written by the French diplomat Eugene du Flot de Mofràs (1842).

The measurements of virtually all of the buildings then owned by the Russians at Fort Ross, Bodega Bay, and the various Russian ranches are extremely valuable to historical archaeologists since the foundations of the buildings are still to be found through careful excavation techniques. Aside from the value of these figures to California students of the Russian adventure in America, it is probable that these buildings represent standardized structures used throughout the holdings of the Russian-American Fur Company and so may be useful to researchers in Alaska and Hawaii.

In 1933 the *California Historical Quarterly* published a special issue entitled "The Russians in California." In one section dealing with the Russian withdrawal from California there is included in the appendix an English translation of the Spanish-language inventory document written for Vallejo (Dufour 1933). In this translation the measurements are given

Inventaire des biens meubles et immeubles qui se trouvent, au
 Fort Ross, à l'Établissement de Ross et aux Rancho de la
 Compagnie Russe-Américaine.

Biens immeubles

Les biens immeubles se trouvent à l'Établissement de Ross - Of au Rancho
 Kostomitinoff - C/É Chelokinoff - Of M. Schumick et C/É Ross

À l'Établissement de Ross

Une fortresse carrée, entourée d'une haie de poutre, 172 toises
 haut et large; elle a deux tours aux coins.

Dans la fortresse se trouvent:

La vieille maison du commandant, à deux étages, faite de
 bûches longue de 8 toises sur 5 de large, couverte de planches, remplie de
 à six chambres et une cuisine

La nouvelle maison du commandant, faite de bûches carrées, longue de
 14 sur 4 de large; 6 chambres et une cuisine

La maison pour les employés de la Compagnie, 10 chambres et 2 cuisines,
 104 de long sur 3 1/2 de large.

La cuisine, 5 chambres, 2 cuisines long 14 sur 4 de large.

Le vieux magasin à deux étages fait de poutres long 14 larg 14 ^{à l'intérieur}

Le magasin de blé fait de planches long 14 sur 4 de large.

Une cuisine 44 de l. sur 1/2 de large.

Magasin pour les provisions de planches 64 de l. sur 4 de large

Il y a une pison

La chapelle avec une cloche

Un puits de 1/2 de profond




FIGURE 2. The first page of the French-language Sutter inventory—1841 (Courtesy of the Bancroft Library, University of California, Berkeley).

in feet. However, when reading the Spanish original, one is faced with a conflict between a literal translation of the Spanish measurement used (the *brazo*) and the English (feet) figures available in the translation. All of the linear measures in the original are given in *brazas* which is a nautical term equivalent to two *varas* or 5.48 feet (Toro y Gisbert 1968:163). In a more general sense the term *brazo* ("arms" in Spanish) means "fathom" and the English translator evidently seized on this meaning and decided to render the *brazas* in the English six-foot fathom. Given this cavalier attitude toward accuracy in translating, it is ironic to note Dufour's statement introducing the translation: "The inventory accompanying the proposal to Vallejo should meet the demands of the stickler for details" (Dufour 1933:61).

In an attempt to resolve the question of how to read the Spanish inventory measurements, the French documents (Sutter Papers n.d.; de Mofràs 1842) were consulted. In the inventory supplied to Sutter the term used in place of *brazas* is *toises*. This is a pre-metric French word which has a literal equivalent of 6.39 feet. It also has the meaning "fathom" (Larousse 1977:1799). It would appear that this translation of Russian into French, probably by a Russian clerk conversant in the latter language, resulted in the selection of this rather obsolete word.

The document, that of du Flot de Mofràs, renders the figures in the inventory into meters using a straight conversion of two meters for each *toise* (see Table 1). The contrast between measures used by a Frenchman as opposed to the translation efforts of a Russian clerk is apparent. However, even this figure is an approximation since a *toise* is only 1.949 meters rather than a full two meters (Larousse 1977:1799).

Unfortunately, there are no Russian versions of the inventory document available to examine, though some may exist. However, it is concluded that not only were the original inventory measures meant to be expressed in

"fathoms," but it is necessary to look to the Russian word for fathom for an answer to the question of which measure really reflects the actuality of the described structures. As it happens, the Russian word for fathom is *sazhen* which is equivalent to 84 inches or 7.0 feet (Great Soviet Encyclopedia 1979:663).

What suggests that this interpretation is correct is the fact that despite the significant difference between *brazas* and *toises* in their actual values (i.e., 5.48 feet versus 6.39 feet) the numbers on the French and Spanish documents are the same. For example, the "Old Warehouse" is said to be 8 *brazas* long by 4 *brazas* wide in the Vallejo document whereas it is 8 *toises* long by 4 *toises* wide in the Sutter document. Since the terms *sazhen*, *brazas*, and *toise* each translate to "fathom," it is probable that the "Old Warehouse" was actually 8 *sazhen* by 4 *sazhen*. Rather than the 48 feet by 24 feet measure given in the English translations, the dimensions of this building are 56 feet by 28 feet.

Using the interpretation that the *brazas* and *toises* should really be read as seven-foot *sazhens*, it is necessary to look to various sources to confirm or deny this hypothesis. In 1859, some 17 years after the Russian departure, the still standing stockade walls were measured as part of an official survey of the Muniz Rancho, which included Fort Ross. The perimeter of the fort was determined to be 1195.92 feet (Cf., Matthewson 1859). In table 1 the perimeter is shown to be 172 *brazas* (*toises*) which would amount to 1032 feet if the six-foot fathom were used but when the seven-foot *sazhen*-fathom is applied the distance is a much more reasonable 1204 feet.

Of invaluable assistance for the measurement of the buildings within the stockade is a Russian map, prepared in 1817, which has a scale drawing inset of the Fort Ross buildings (see Figure 3). Although there is no scale provided for the inset, it is possible to apply known measures such as the distance between the east and west stockade walls to derive the appropriate dimensions.

TABLE 1
COMPARATIVE MEASUREMENTS OF BUILDINGS LISTED IN INVENTORY DOCUMENTS

Area Measured	Vallejo Inventory		Sutter Inventory		Revised Figures ⁵	
	brazas ¹	feet ²	toises ³	meters ⁴	sazhens	feet
Fort Ross Stockade						
circumference	172	1032	172	320	172	1204
height	2	12	2	4	2	14
Old Commandant's House (Kuskov House)						
length	8	48	8	16	8	56
width	6	36	6	12	6	42
New Commandant's House (Rotchev House)						
length	8	48	8	16	8	56
width	4	24	4	8	4	28
Commissioned Officers House (Officials' Quarters)						
length	10	60	10	30(?)	10	70
width	3.5	21	3.5	7	3.5	24.5
Barracks						
length	11	48(?)	11	22	11	77
width	4	24	4	8	4	28
Warehouse (Old)						
length	8	48	8	16	8	56
width	4	24	4	8	4	28
Warehouse (New)						
length	7	42	7	Not Listed	7	49
width	4	24	4		4	28
Kitchen (New)						
length	4	24	4	8	4	28
width	3.5	21	3.5	7	3.5	24.5
Warehouse for food supplies						
length	6	48(?)	6	12	6	42
width	3	18	4(?)	6	3	21
Chapel						
length	6	36	No Measurements		6	42
width	4	24	No Measurements		4	28
Well for water						
depth	2.5	15	2.5	5	2.5	17.5

Sources: 1) Vallejo Papers, Spanish language; 2) Dufour 1933; 3) Sutter Papers, French language; 4) DuFlot de Mofr s 1842; 5) Author's calculations.

Note: For the sake of brevity only the structures within the fort are shown here. The inventory documents go on to list many buildings outside the fort as well as at the ranches and at the port of Bodega Bay.

The main drawback to using the 1817 map is that the inset was partially destroyed and thus only shows the Kuskov House, the Old Warehouse, the northwest bastion, a bell tower, and part of the barracks found on the east side of the fort (Figure 3). The whole southern portion of the fort is missing in the detail al-

though tiny representations of the buildings exist on the larger scale map. Therefore, for archaeologists working at Fort Ross, the value of a correction of the measurements of the buildings mentioned in the inventories is in relation to those not included in the drawing. Table 1 provides the comparative measure-

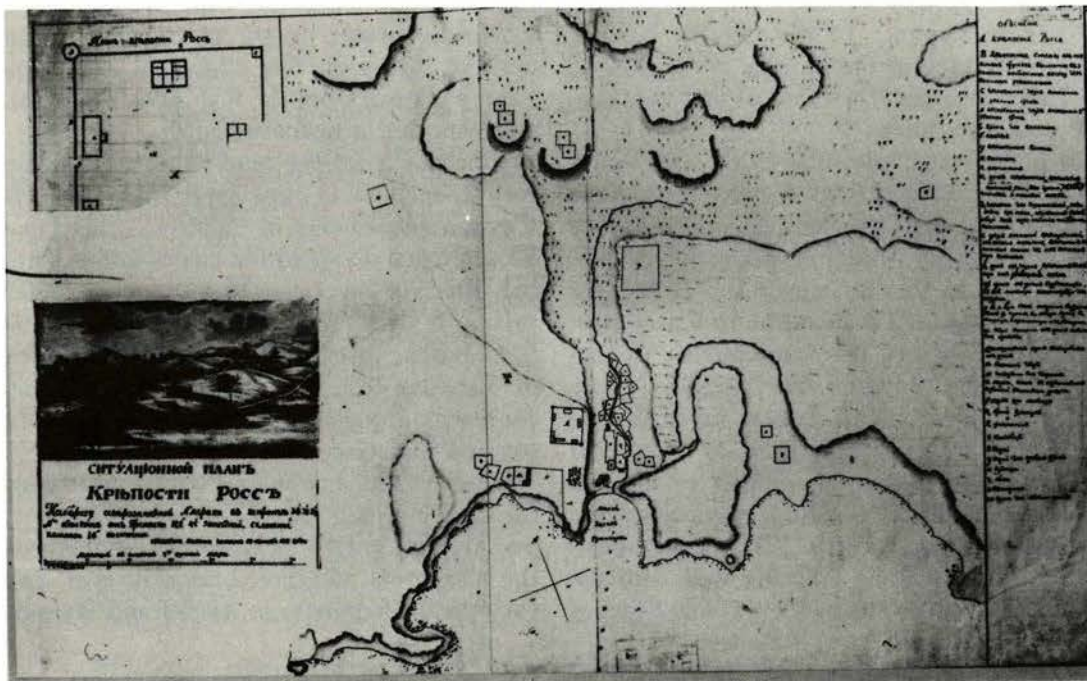


FIGURE 3. Russian Map of Fort Ross including partial inset of the interior of the fort (upper left). Kuskov House is at upper center of inset; the Fur Warehouse is at the left of the inset. (Courtesy The Limestone Press).

ments given in the primary sources along with the corrections.

Although the 1817 map lends strong support to the *brazas-toises-sazhen* hypothesis, the real proof must come from the physical evidence. Such evidence is provided by the archaeological excavations done at the fort. Excavation at three of the buildings is particularly relevant. Two of these, the Kuskov House and the Old Warehouse, are shown on the 1817 map inset. A third, the Officials' Quarters, was located in the southern portion of the fort, in the area missing from the inset.

Extensive archaeology was performed in the 1970s by William Pritchard, Karl Gurke, and Bryn Thomas seeking the foundations of the Kuskov House. Thomas, in summarizing the research, expressed concern over the conflicting nature of the historical sources which gave the width of the building as 36 feet (Vallejo inventory) or 39.36 feet (du Flot de Mofràs 1842) (Thomas 1976:4). In the end he chose to

accept the figure derived from his interpretation of the 1817 map. This width figure, which most closely coincided with the placement of the postholes and wall sills found archaeologically, was 42 feet (or 6 *sazhens*). The length of the foundation was 56 feet (or 8 *sazhens*), also fitting both the 1817 map dimensions and the archaeological finds. As can be seen in Table 1, this pair of figures fits precisely the re-interpretation of the Vallejo and Sutter inventories.

In the case of the Officials' Quarters, the English translation of the Vallejo document yields dimensions of 60 feet long by 21 feet wide (Dufour 1933). In the original, however, the dimensions were 10 *brazas* long by 3.5 *brazas* wide. If *brazas* actually means *sazhen*, then these should reconstruct to 70 feet by 24.5 feet. Archaeological investigations undertaken by David L. Felton of the Department of Parks and Recreation established that the actual dimensions were slightly over 69 feet in

length and nearly 23 feet in width (Felton 1981, pers. comm.). In this case the building was in the area of the missing portion of the 1817 map inset and therefore no map comparison could be made.

In a third example, that of the Old Warehouse, whereas the English translation of the Vallejo document provides dimensions of 48 feet in length by 24 feet in width, they should be read as 56 feet for length and 28 feet for width. A projected scale of the 1817 map inset generally supports this contention. Archaeological work initiated by Cabrillo College under the direction of Robert Edwards and completed by the Department of Parks and Recreation in 1981 by the author established the location of the building, particularly the northwest corner (Farris 1981). The dimensions of the building coincide well with the inventory figures. The width is 27 feet 8 inches and the length is 57 feet 9 inches.

Apart from correcting the basic error of measurement which surfaced in the English translations of the inventory documents, a series of minor errors were also noted in the form of incorrect transcribing of numbers from the Vallejo document. In one case the length of the barracks in the fort was given as 11 *brazas* in the Spanish but somehow translated to only 48 feet in the English. This figure should be 77 feet. The French (Sutter) document also shows this length figure as 11 *toises*. In another case the English translation states: "Within 5000 feet of the Presidio are:" whereas the Spanish text states: "En 500 brazas de Presidio son:" and the French version reads: "A 500 toises de la forteresse se trouvent:" It is unclear how the translator jumped from 500 brazas to 5000 feet. If he had been consistent it would have read 3000 feet, though in fact the figure translates to 3500 feet.

Considering the great value of these inventory documents to archaeologists as well as reconstruction architects, having the correct measurements is clearly important. In addition, this case exemplifies the need to consult

the original versions whenever possible, especially when points of detail are concerned. Although this statement may seem trite, evidence from the Fort Ross experience suggests that it bears repeating.

Whereas a proper reading of these inventory documents is most applicable to specific Russian settlements in California, there may be a greater dividend for others interested in the Russian-American Fur Company enterprise. It has been suggested by Anatole Senkevitch, an architect with a special interest in Russian frontier architecture, and John McKenzie, longtime Fort Ross museum curator and historian, that particularly about the 1830s the Company put out standardized plans for building their establishments (Senkevitch and McKenzie 1981, pers. comm.). If this is so, the California measurements may give clues for other researchers in Alaska and Hawaii.

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