

“ARTIFICE AND AUTHENTICITY IN ARCHITECTURE! TO PLAY OR NOT TO PLAY?”

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By

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THE MOLALLA LOG HOUSE A JOURNEY OF MYSTERY AND DISCOVERY

The Molalla Log House is an authentic, rare and carefully hand crafted hewn log building. It is a wooden artifact and a primary resource in the study to understand its origins. No historical documentation accounts for when and where it was built, who built it or why. This building still remains a mystery after seven years of focused research. ⁱ

It is compelling to comprehend why a group of people ventured into the wilderness of the northern Willamette Valley in the foothills of the Cascade Mountains near the first decades of the 19th century to build this unique and intriguing log building. Molalla is approximately 165 miles southeast of Astoria and connected to the Columbia River system via the Willamette, Molalla and Pudding Rivers. The MLH may have been built within the historic context of the fur trade era in North America. Transportation by river systems and Indian trails were the norm.

Marks left on the logs by builders have revealed that they may have been a crew of about ten. They had the resources, tools, knowledge, experience and skill to construct the MLH. The craftsmanship indicates that the builders came from a culture with long experience in constructing efficient structures from soft wood like Douglas fir.

The building was first named the David Fox Granary on Clackamas County's 1984 Historic Resources Inventory. The normal course of historic research yielded no information about its origins except that it had been moved by wagonload in 1892 to the corner of Wildcat and Wilhoit Roads (Wildcat Site), a remote rural area, in 1892 for David and Lennie Fox. The craftsmanship and rarity of the building warranted Landmark designation.

The MLH apparently stood on the landscape of Molalla for about 200 years and nearly half that time on its unknown original site. A preliminary archeological survey in 2013 failed to yield any association. The MLH occupied the Wildcat Site, within two miles of the original site, through various ownerships for 106 years and was used mostly as an outbuilding.

In order to have survived for 200 years, a good roof had to have continually protected it from the weather. By 2008, the roof had collapsed and about half of the logs were decayed and useless for rehabilitation. The owner donated the building to the Molalla Area Historical Society and the MLH was dismantled to prevent further deterioration. It was critical to save this rare example of ancient log building craft. It soon became evident that the structure was not built as a granary but planned as a house. The 'Fox Granary' was renamed the Molalla Log House. ⁱⁱ

With approval from Clackamas County Historic Review Board and SHPO, the MLH was carefully taken apart by hand by volunteers. There are marks on each log: penciled numbers made for the 1892 move and colored tags from the 2008 move. In a storage warehouse the logs were carefully examined and studied to learn more about the building technique and assess rehabilitation needs. Rehabilitation and historic research occurred simultaneously and one helped interpret clues from the other.

The authors wrote a Treatise in 2012 at the request of project advisors entitled: *Molalla Log House-Fox Granary, Theory of the Origins of a Potential Surviving Relic of a 1790s Russian Occupation of the Oregon Country*. Information known about the building was shared at that time. It included a preservation plan for the building with guidance from project advisors from various fields of expertise.

The logs of the building have been rehabilitated and new ones felled and hewn to replace the rotten ones. The building was reconstructed in 2014-2015. Great care in wood craftsmanship, using the same skilled expertise in building methods as the original builders, was executed to produce a nearly finished log building. Rehabilitation of salvaged logs included the use of clever techniques to strengthen the interior of the logs, while retaining as much as possible the outside patina. Unsalvageable logs have been kept.

In the winter and spring of 2015 the authors shared information about the building to both targeted groups of architectural historians and preservationists as well as interested members of the general public. They traveled the state and reached out through the media and Internet. Much input was received from interested persons worldwide, leading the authors to consider new possibilities for discovering the building's origins.

In May 2015, after numerous showings of the building to groups and individuals, the log house was once again dismantled by volunteers and moved to a donated storage building at the Bull Run Powerhouse site near Sandy. The logs will remain there until a site is secured and developed to receive the log building for education and interpretation. The Oregon Garden Board of Directors has shown interest in siting the building on their property in Silverton. Champoeg State Park would also be an appropriate location, particularly if association was found with the retired fur trade men that settled on the French Prairie in the 1830s.

Since 2008 it was necessary to move the logs to more than one storage facility.ⁱⁱⁱ The very nature of many log buildings allows for efficiency in dismantling and reassembly. Labeled logs fit together so well that they fairly easily can be taken apart and put back together again. This exercise of dismantling and reassembly does not take the skill of the original builders. Log buildings have a long history of being moved.

They are also very adaptable for reuse as an outbuilding, increasing their chances of survival. This is a fairly normal occurrence for log dwellings. The MLH was put to various uses over time, including a house, animal shelter, sheep sheering shed, machine and auto repair shop, and grain sack and hay storage. Because it was adapted and maintained for different uses over time, the log building survived for about two centuries in Oregon's climate.

The MLH exhibits sophistication in experience and practical knowledge in building a functional structure for efficiently and security against the elements. It resembles fortified structures built in the fur trade in the 18th and 19th century in North America. The craftsmanship exemplifies a learned building tradition that had been passed down from one generation to the next over centuries.

It was built to be impenetrable and to last. Each of the 72 logs felled to construct the 1-½ story structure was hewed on four sides square and crafted to fit tightly without spaces between the logs. Unlike typical pioneer construction, where chinking was used to fill in gaps in log cabin walls, these logs fit so flush that there was no need to fill the spaces between them. Each of the logs was hewed to a height ranging from 71/4"– 9 3/4 ", with widths of 6".

Logs were hewn to be slight trapezoids for tight fit against rain and wind. Each log was hewed so that the exterior of the log wall was flush. The sides of the logs on the interior of the building were shaped to create a slight 'V' cavity, which could be packed with a material to seal against the wind. Flattened exterior surfaces allowed water to run down and off the logs, not in-between or into exposed cracks, allowing the building greater longevity. This was a complex and ingenious approach to design and engineering.

The house measures 18 X 25 feet. The trees used to build the MLH were young, at most 60 growth years when they were felled. The size of the logs was ideal for a group of organized men to handle, hew and lift^{iv}.

Seventeen dovetailed log courses were stacked on top of mortised and tenoned mudsills. The walls were connected together at the corners of each log with half dovetail notching.^v Wood pins or treenails were handcrafted to secure the top and bottom corners of the building.

Building orientation on its original site is unknown. At the Wildcat Site the ridgelines of the roof were positioned north south. Building elevations are referred to, as they were oriented at the Wildcat Site.

The east elevation was highly compromised during the 1892 move. The original entrance appears to have been on the east elevation with a central door. Windows planned on each side were never cut in. The west elevation appears to have been planned for two windows, based on kerf marks made in the logs that were never sawn through. The west door dates from 1892 and uses pieces from the east side. The south and north elevations did not have windows in the original design.

The design and exact width of the original door is unknown, but evidence can be calculated on the east wall logs of an opening made to allow a door.

A number of physical design features of the MLH add to the mystery and uniqueness of this building. Kerf or saw cuts were made in the hewed logs soon after they were felled. None of these cuts were completed, indicating there was a change of plans, either for the use of the building its abandonment.

There is evidence of kerf cuts in four locations on the sidewalls; two in the front and two in the back but only the northwest example contains evidence of the width of the opening they anticipated. The dimensions of that kerf cut measures 44 ¼ inches. This window size would typically indicate a classical window design prior to the Gothic Revival in America and similar to casement windows of Russian America in early 19th century. The planned window width is large in comparison to the scale of the small log building. All the kerfs occur at about 44 inches from the corners of the building.

The cut of the rafter notches in the top plates of the east and west elevations indicate that the angle of the gable roof was approximately 30 degrees. The notches are three inches wide and spaced evenly from the edges of the building. The thirteen rafters found were light, less than three inches in diameter at the top. They were beautifully crafted peeled poles. The only nails used for the notched openings to the top plates or the sheathing were installed in 1892. That these rafters date from the original construction is indicated by the same execution of skilled woodcraft. Neither these rafters nor any used previously were installed with nails prior to 1892. How the rafters were attached to the top plate remains the most significant mystery of the Molalla Log House design.

In addition, the rafters each have a second notch of the same dimension adjacent to them. The purpose of this second notch, which also never had nails can only be guessed.^{vi} If the rafters found in 2008 were original the roofing was also installed without nails, which occurred with weighted thatch in Alaska^{vii} and Canada^{viii} and lashed bark in the Willamette Valley at the earliest dates.

A curious feature is the uneven notches made on the end of each top log on the north and south walls. They slope at a steep 45-degree angle, allowing for the possibility of attached shed roofs at both ends of the building or possibly a wrap around porch. These notches were laid out with no consistent measurement, unlike the rest of the carefully measured work. Square nails were found in each notch indicating that the design was done after the original construction.

Shed roofs created spaces attached to the house, but not connected to the living area. There is no evidence of original apertures in the end walls, leaving the possibility for spaces for animals under attached shed roofs. Oregon pioneers built barns and animal shelters away from houses for fear of fire. These notches may have been a later addition, made by less skilled workers. It is possible that this indicates a foreign culture's design for shed roof. These shed roofs were not reconstructed in 1892.

Another singular and unique feature in the Molalla Log House is a small dovetail notch on the interior of the east wall. It is located just below the second floor end joist space, about two feet in from the south wall. The wood was notched in a narrow slit in a dovetail shape and a perpendicular piece could only

have been inserted, as the logs were stacked. Its use is unknown and not reinstalled in 1892, but its location suggests that it could possibly have originally been used to support a stair ladder.

Floor joists were spaced evenly 24 inches on center. How the original floor was constructed is unknown.

From markings on the logs much has been surmised about the builders. A crew of some ten men felled, bucked, scored and hewed the wood. A later crew of at least five stacked, roofed and floored the structure. This organized group brought a variety of necessary tools to craft the building. They executed the systematic design of the building with learned skill. Tools used were adzes, slicks, broad axes, chisels, drills and saws. No nails or metal fastenings were used in the original making. The MLH was built over two seasons, possibly a year a part. It is estimated that it would take a total of about 4 weeks to complete the felling, bucking, scoring, hewing and assemblage of the structure.

A short study was conducted in 2009 comparing the depth of erosion at the ends of logs caused by exposure to sun and rain. The logs of the MLH were compared with several pioneer buildings in the Willamette Valley of known dates. It was found that logs erode at about 1/16th “ every 60 years. The MLH consistently showed a loss of 3/16” and in one case 3/8”, indicating that the logs had been in the weather longer than the pioneer buildings studied. An original building date for the MLH emerged in the range of the first decades of the 19th century. The building appears to have been rotated when it was moved. The erosion on the end grain of the logs indicates that the building faced the sun on more than one elevation.

In 2012 a visual comparative study of the tree rings or a Dendrochronological study was conducted of the MLH hewn logs with 12 Douglas fir trees growing under similar environmental conditions in the Willamette Valley. Samples were taken from felled hazard trees in national forests in the Clackamas and Bagby areas. Cookies were sliced from trunks and boring samples were collected and analyzed. This study yielded the surprising date of 1799 when the trees were felled to build the MLH.

In 2014 another visual analysis and a computerized study was conducted. The visual study yielded a possible 1798 date when the logs were felled. A computerized cross-dating database program was then used to compare with the MLH logs. The results included a possible 1798 date, but the computer gave a probability date of 1883. This latter date is in conflict with all other reconnaissance derived from the physical and historical evidence. The results of dendrochronology study on the logs of the MLH remain inconclusive.

In September 2014 the Oregon SHPO commissioned a C-14 dating study of MLH log samples. The results were inconclusive. It gave a probability date range within a 100-year timespan: 1795-1895.

Several clues give us reason to believe the building was built near the turn of the 19th century.

- Built with no nails, which were used extensively in Oregon by the 1850s
- Obsolete drill from 18th century used, probably in the builders’ tool box for many decades
- Extreme log end erosion
- Dendrochronology and C-14 date ranges allowing for late 18th and early 19th century build date
- Rotten log that needed replacement in 1892
- Design for wide window openings
- Roof design and shed roof design foreign to pioneer culture
- Building remodeled on original site (shed roof addition and 1870s window)

Although undocumented, historical context does allow the possibility of the MLH being built by two different organized foreign groups. The first c 1799 and the second in 1812- 1813.

“If we accept architecture as a cultural artifact then we must also see its histories as a text open to a variety of meanings”.^{ix}

The builders of the MLH left no historic documentation except for this unusual log house. Clues from the building have directed the theory of the possible date of construction and the culture of the builders.

Those who have seen and experienced the rehabilitated MLH have expressed that it exhibits a military and fort-like or commercial enterprise, perhaps representing a fur trade building tradition.

Historic research focused on possible groups of people who may have had the motivation, resources and skill to build this fortified log house between 1799 and 1840, prior to the Oregon Trail immigrants. Although the Oregon pioneer period was studied thoroughly for clues, only a few were helpful to steer a course to the possible original site, but not the builders.

If 1799 was the build date, it is possible that the builders may have been a part of a larger Russian scheme to colonize America from Alaska to San Francisco, at the same time harvesting marine and land based furs. Russian American craftsmen and farmers may have traveled by sea from Alaska over the Columbia Bar and followed the waterways to build a settlement in the fertile Willamette Valley to hunt and grow grain. The Molalla area was rich in land furs and hunting grounds. It was also inhabited by the peaceful Kalalpuysans, which might allow newcomers an opportunity for non-combative occupation. Although Russian American activities were secretive, never documented, or lost in the 1790s, their navigators and fur hunters had the knowledge, wherewithal, and motivation to travel the waterways to Oregon and build.

The building tradition of the MLH is similar to log buildings constructed in the Scandinavian tradition of tightly stacked horizontal logs with corner notching. Russian log builders carried out this tradition in a variety of forms. There are buildings similar to the MLH documented in Alaska, built by Russian Americans from the middle of the 19th century. The Russian craftsmen and farmers sent to build settlements in Alaska came from the Baltic Region of Russia in 1793-1794. They brought their building tradition to Alaska, which was adapted to the business of building fur trade forts and settlements.^x

Another group capable of building the MLH prior to 1840 were a group of men from the Pacific Fur Company who occupied Fort Astoria from 1811–1814. This group included men with a collective long employment history in the fur trade in Canada.^{xi} These hearty and independent men were predominantly French, Scottish and English Canadians, Métis and Americans and were very familiar with building fur trading posts across the expanse of upper United States and Canada. They came to the Willamette Valley to build, trap and hunt.

There were two prevalent styles of fur trade post architecture in Canada, which dated to the mid-17th century in the Great Lakes, Hudson Bay and Mississippi watersheds. By the 19th century it had spread to the west coast of America and British Columbia. The first was *pièce-sur-pièce* style, using intermittent vertical posts between horizontal logs.^{xii} This building method is most commonly associated with French Canadian/Metis builders because it was used almost exclusively after the Northwest Company merged with the Hudson Bay Company in 1821. The other style also found in early fur trade buildings was the “Scandinavian” style, which used squared and dovetailed logs with no vertical posts.^{xiii xiv} This method was employed in Upper Canada or British Columbia, “where logs were squared that were long enough to extend across the breadth of the wall and then they dovetailed the corners.”^{xv} The Molalla Log House resembles this “Scandinavian” style.

Across the expanse of America these Pacific Fur Company men brought with them their fur trade building culture. They had the organization, motivation and skills to build a log structure like the MLH. Construction could have begun in the spring after the sap was up and before the summer wood was laid down, in the spring/summer of 1812 and completed in 1813 after the trees had twisted by men who were known to be in the Valley during this period hunting and trapping and building the Wallace House as a fur post just north of Salem. It may have been planned as a wintering house for PFC men but plans changed by 1813 due to war and British competition. It may have been completed as a storehouse, with no windows. The MLH could then have been used later by these same men who joined the North West Company^{xvi} and were free trappers in the winters in the Willamette Valley.^{xvii}

There are a number of avenues of documentation and research needed to further the discovery process of the Molalla Log House.

- Extensive photograph documentation occurred when the building was stacked in the spring of 2015 with the intent of developing three-dimensional model images through photogrammetry.
- Plan and elevation drawings should be made showing dimensions.
- Archeological investigation should continue on John Wilhoit's Donation Land Claim homestead site. Many research clues have pointed to this site, especially a diary entry recalling that neighboring farm families were holed up at "Wilhoit's Fourt" during an Indian scare. Local legend also points to this site as a place where an old Indian woman lived in a log cabin before the pioneers. This site has been continuously inhabited since the 1850s, but there may be artifacts associated to 19th century fur trade era activity.
- A forensic investigation of the logs should be pursued to assess any evidence of fur trade activity.
- Dendrochronology is a budding investigation in the Willamette Valley. Once more data is collected the MLH logs should be compared with new specimens to increase the sample size for a conclusive build date.

"While construction methods and architectural data are important means of "reading" old buildings for which little or no historical records exist, it is equally important to acknowledge that buildings are more than the sum of construction techniques and styles. They are "places" that have multiple meanings that accrue over time through a process that encompasses the skills of the builder, the use of the buildings, the temporal and geographical locations in which they were built, and the events that occurred within and around them."^{xviii}

The Molalla Log House has been saved and rehabilitated. There is much work still to do to give the building the attention and recognition it deserves within the context of Oregon's history and architectural history. Continued research and science may aid in further discovery. Securing a permanent steward and site for the building is the next step and then developing an interpretive program for education and appreciation.

As William Shakespeare aptly said: "If there is a good will, there is a great way". Let us join together and collectively work so that we may discover the true origins of this authentic and unique Oregon treasure.

ⁱ The authors have had assistance from a number of people and organizations. The Kinsman Foundation funded the dismantling and rehabilitation of the log house. The National Trust for Historic Preservation and the Clackamas County Cultural Coalition funded a preliminary Archeological Survey. The Molalla Area Historical Society and Restore Oregon have acted as fiscal sponsors. Archeologists from the University of Oregon Museum of Natural and Cultural History provided expertise during the 2013 archeological survey. Project Advisors in the fields of architectural history, archeology, history, dendrochronology and historic preservation have provided their expertise. Dozens of additional volunteers have donated their time and knowledge.

ⁱⁱ The building had no granary features. Kerf cuts in the logs indicate a plan for windows, which were not common to granaries. The name Fox Granary was given by locals because sacks of grain were stored in it in the mid 20th century.

ⁱⁱⁱ Storage and shop buildings under private ownership were either donated or rented with no long term guarantee resulting in the necessity of moving the logs more than once since 2008.

^{iv} First hand experience in the 21st century has shown us that it takes 6-8 strong people to lift the MLH logs, especially when they are fragile. The size of the logs (six inches wide and eight inches tall) makes it possible to lift new sturdy logs by a small group without the use of animals. New end logs can be moved by two people after hewing.

^v This is another example of the builder's understanding of efficiency. Half dovetail notching achieves the same strength of hold as does full dovetail notching but can be made more expediently. This shows the builders experience with soft wood like Douglas fir. The builders may have been very adept at erecting

highly crafted and functional log structures quickly because they had done it many times in their trade. This type of notching also allows rainwater to drain out, which helps prevent rotting.

^{vi} Perhaps the second notch was made to release the rafter from a nail-less design or perhaps the original rafter was larger, spanning the top plate, which would restrain it and the second notch is a later alteration for a porch extension where the extension was nailed to the side of the main rafters.

^{vii} As seen in c. 1890s photographs of log buildings with thatched roofs in Seldovia Alaska, (*Alaska State Library Historical Collection, photographer John E. Thwaites*)

^{viii} John I. Rempel, *Building with Wood and other aspects of nineteenth-century building in central Canada* (University of Toronto Press, 1977, *Early photographs of thatched roof buildings at Hudson Bay Company's Fort Garry in Manitoba, Canada* p 15-16).

^{ix} Dana Arnold, *Reading Architectural History* (London: Routledge, 2002, 7)

^x Pam Hayden and Gregg Olson, *Treatise: Molalla Log House-Fox Granary, Theory of the Origins of a Potential Surviving Relic of a 1790s Russian Occupation of the Oregon Country* (2012)

^{xi} Two buildings at Fort Astoria had similar dimensions to the Molalla Log House: the Gentlemen's Dwelling House was 18' X 23' in size and the Receiving Store was 18' X 26'.

^{xii} Peter Ennals and Deryck W. Holdsworth, *Homeplace-The Making of Canadian Dwelling over Three Centuries* University of Toronto Press, 1998, p 60-61)

^{xiii} Tusa Shea, *From Necessity to Style: A History of Log Buildings in British Columbia from the Colonial Era to Present* (BC Heritage Branch, Ministry of Tourism, Sport and the Arts 2005)

^{xiv} John I. Rempel, *Building with Wood and other aspects of nineteenth-century building in central Canada* (University of Toronto Press, 1977, p 16-18)

^{xv} James Michael Hébert, *Culture Built Upon the Land: A Predictive Model of Nineteenth-Century Canadian/ Métis Farmsteads*, (Masters Thesis submitted to Oregon State University for Applied Anthropology, April 13, 2007).

^{xvi} The North West Company was headquartered in Montreal, Canada at this time.

^{xvii} Joseph Gervais was a French Canadian who came overland with the Pacific Fur Company and worked as a freeman in the Willamette Valley in the winters. He retired to the French Prairie to build in the 1830s. His house was described as being 18' X 24' feet in size, very similar to the Molalla Log House. It was two storied and constructed of square hewed logs. The roof was made of poles as rafters, and the shingling was of carefully laid strips or sheets of ash bark, imbricated. Upon these were cross planks to hold them in place. There were three windows on the lower floor of about 30 X 36 inches in dimensions, and for lights were covered with fine thinly dressed deerskins.

^{xviii} Tusa Shea, *From Necessity to Style: A History of Log Buildings in British Columbia from the Colonial Era to Present* (BC Heritage Branch, Ministry of Tourism, Sport and the Arts 2005)