

Species of wood used in cradle structures

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Abstract: *Species of wood used in cradle structures.* Study of objects from the collections of the National Museum, and the Royal Castle in Warsaw was conducted in order to examine the influence of cradling structures on wooden painting supports. Species of wood used both in cradle structures, and in painting supports were identified. The relationship between species of wood used, and the type of cradle structure were determined.

Keywords: Conservation of art objects, panel paintings, cradle

For centuries wood has served as support of painting. The greatest advantages of wood were its strength and availability. Different kinds of native wood were used depending on the location. In sixteenth century, panels made of exotic wood began to be used as painting supports. From the very beginning, artists and artisans faced the challenge to maintain planarity of the paintings. The priming and painting layers applied on the panel front constituted a moisture barrier which made the board prone to warping. A typical example of this are the icons.

Already in the Middle Ages, a variety of structures reinforcing and stabilizing the board were applied to the panel back. Their function was to hold together the panel (for example during transportation), as well as to conserve its planarity. Cradling is a great invention of the eighteenth century. First introduced at the end of seventeenth century, it became exceedingly popular in all of Europe, and continued to be widely used until the middle of the twentieth century.

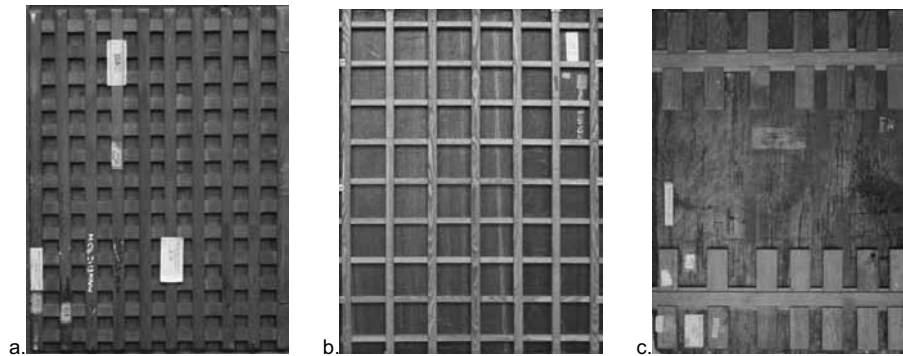


Fig.1 Three kinds of cradle structures found in objects from collections of the National Museum in Warsaw: a – flat cradle, b – vertical cradle, c – block cradle.

The cradle consists of slats glued along the grain, and of movable crossbars. The “flat cradle” is the first form of a movable structure (Fig.1 a). It consists of flat, massive, evenly spaced slats, the surface of which was often greater than that of the remaining surface of the reverse. The glued on slats constitute a moisture barrier and the original backside of the thinned plank is, therefore, more susceptible to distortions caused by environmental fluctuations. The portion of the surface of the glued on elements began to be reduced. A

modification of the above mentioned cradle is “vertical cradle” (Fig.1b). The advantage of this structure is thinner cross section of the slats. The next development in cradle structure was replacing the slats with blocks which supported crossbars – the block cradle, also known as the Italian cradle, which began to be used as from the middle of the twentieth century (Fig. 1c). In time, duralumin elements began to be introduced in to strengthen both the holders and the slats. This reduced the portion of the glued surface, as well as of the covered area of the reverse of the panel, thus eliminating susceptibility of wood to deformation. The usage of new materials also reduced friction within the cradle structure.

In all, 53 objects from collections of The National Museum and of the King’s Castle in Warsaw were examined (Fig.2). The research assessed the state of preservation of each object – of the paint layer, of the wooden support, and of the cradle structure. Kinds of wood used in supports and cradles were identified.¹

The species of wood most commonly used as painting support is oak, identified in 37 objects. In 4 objects spruce was used for constructing the panel, in 4 objects – poplar, in 2 objects – walnut, in 2 objects – exotic wood, and the remaining 4 of the examined painting supports are made of respectively: pinewood, fir, lime-wood and birch.

Majority of cradles are made of pinewood -14 objects, of oak - 13, and of spruce - 11. Subsequently, 4 are made of alder, 3 of fir, 3 of mahogany, and 3 (one of each) are made of two kinds of wood. Respectively: of mahogany and oak, of ash and oak, and of lime-wood and oak.

Three types of cradle structures were found: the type with massive slats - 38 objects, vertical cradle – 14, and 1 block cradle. The following kinds of wood are used in vertical cradle: oak – in 8 structures, pinewood -in 2 structures, and in remaining 4 structures respectively: ash, spruce, fir, and mahogany. Flat cradles are made of: pinewood –12, spruce –9, oak – 5, alder – 4, fir – 2, mahogany – 2, poplar – 1. Three of the flat cradles are made of combination of two kinds of wood: the fixed slots attached along the grain are made of ash, and the crosswise movable slots of oak; the fixed slots attached along the grain are made of mahogany, and the crosswise movable slots of oak; the fixed slots attached along the grain are made of lime-wood, and the crosswise movable ones of oak. The one block cradle is made of spruce.

A functional cradle can be defined as a complete structure where all the fixed slots are glued to the support, and all the crosswise slots are movable. Of the 53 examined objects, only 18 have a functional cradle structure. 12 of them are flat cradles, and 6 – vertical cradle. This indicates high degree of fallibility of the structure. A conclusion can be drawn that vertical cradles are more reliable. Of the 14 vertical cradles, 6 are functional (42.4%), while of 38 flat structures, only 12 (31.5%). The largest number of functional flat cradles – 6 are mainly made of pinewood, 2 of oak, and one of each kind of wood, respectively: of spruce, and of alder. Cradles made of combination of two kinds of wood: mahogany/oak, lime-wood/oak have also been identified as functional.

The largest number of cradles – 14 are made of pinewood; 13 of oak, 11 of spruce. Other kinds of wood used are: fir, mahogany, alder, ash, poplar, and lime-wood. The vertical cradle are mainly made of oak. 12 flat cradles are made of pinewood, and 9 of spruce. Out of the total number of functional vertical cradles, half were made of oak, while all the functional flat cradles were made of pinewood.

¹ Macroscopic research of wooden species were made by Prof. I. Swaczyna, Warsaw University of Life Sciences – SGGW, Faculty of Wood Technology and M.Sc., Eng., E. Jeżewska, Academy of Fine Arts in Warsaw, Faculty of Conservation and Restoration Work of Arts.

In vertical cradle, the species of wood was chosen for its hardness. Both, the fixed and the movable slots were relatively narrow, with a nearly square cross section. They needed to be resistant to deformations caused by the movement of the support in order for the structure not to get blocked. In the case of flat cradles with the massive slots, it was more important that the wood is less prone to deformation caused by environmental fluctuations as the surface of the support covered by both, the fixed and movable slots is relatively large, and even slight changes of their size would cause blocking of the structure. For this reason, soft wood was preferred. This principle was not always observed, of course. The cradles were made by carpenters who were not always sufficiently trained. Many cradles are not made with understanding of how they should function. Availability was another important criterion of choice of the wood species.

Fig. 2.

The catalogue number	Measurements in centimeters	No. of planks of panel	Dating	Provenance	Type of cradle	Kind of wood in the support	Kind of wood in the cradle	Functionality
M. Ob. 602	57x48x0,6	5	XVI	italian	flat	poplar	pine	+
M. Ob. 580	54x63x0,3	3	XVII	northern ,	flat	oak	pine	+
M. Ob. 1419	44x32,3x0,8	2	XVII	northern	flat	oak	pine	+
M. Ob. 2413	49,7x64,5x0,5	2	XVII	northern	flat	oak	pine	+
M. Ob. 1713	65x100,5x0,5	4	XVI	northern	flat	oak	pine	+
M. Ob. 1206	56x66x0,6	2	XVII	northern	flat	oak	pine	+
158976	106x73,8x0,4	3	?	copy	flat	oak	pine	+
M. Ob. 2419	74x57x0,5	3	XVII	northern	flat	oak	pine	-
M. Ob. 1056	72x97x0,3	4	XVII	northern	flat	oak	pine	-
184237	74x103x0,2-0,4	4	?	copy	flat	oak	pine	-
M. Ob. 2436	47x65x0,3	2	XVIII	northern	flat	oak	pine	-
M. Ob. 2317	63x53x0,4	3	XVII	northern	flat	oak	pine	-
M. Ob. 1948	42,x62,5x0,4	2	XVII?, XIX?	northern	flat	oak	spruce	+
M. Ob. 453	59x67x1,1	2	XIX	northern	flat	walnut	spruce	-
M. Ob. 1047	72,7x104x0,6	3	XIX/XX	copy	flat	oak	spruce	-
M. Ob. 46	64x96,5x0,5	4	XVI/XVII	northern	flat	oak	spruce	-
M. Ob. 1870	62x85x0,5	?	XVI	italian	flat	exotic	spruce	-
M. Ob. 2381	32,5x37x?	1	XVII	northern	flat	oak	spruce	-
M. Ob. 1811	48,4x62,3x0,3	2	XVII	northern	flat	oak	spruce	-
M. Ob. 1707	52,5x68x0,7	3	XVI/XVII	northern	flat	spruce	spruce	-
ZKW128165	78,5x105x0,7	3?	XVII	northern	flat	oak	spruce	-
M. Ob. 1209	39,6x59,4x0,3	2	XVII	northern	flat	oak	oak	+
ZKW/1993	82,5x53,2x0,6	3	XVIII	italian	flat	oak	oak	+
ZKW 1096	57X74,5X0,5	4	XVII/XVIII	northern	flat	oak	oak	-
M.Ob.2506	43,5x58x0,5	2	XIX/XX	northern	flat	oak	oak	-
M.Ob.2483	109x70x0,5	4	XVI	northern	flat	oak	oak	-
M. Ob. 2693	39,5x30x0,4	1	XVII	northern	flat	oak	alder	+
164635	61,5x62x0,7	3	XVI	italian	flat	fir	alder	+
M. Ob. 1054	24,2x19,4x0,4	2	XVII	northern .	flat	oak	alder	-
M.Ob.2691	59,3x73,5x0,3	?	XVIII/XIX	northern	flat	walnut	alder	-
M.Ob.337	96x85x0,7	?	XVII	italian	flat	lime-wood	fir	-
M. Ob. 626	68x58x1,7	?	XVI	italian	flat	poplar	fir	-
128837	41x27,5x0,9	1	XVI	italian	flat	poplar	poplar	-
ZKW/862	123,5x93,5x0,5	4	XVI	northern	flat	oak	mahogany	-
ZKW/4481	32,5x27x0,3	1	XVII	northern	flat	oak	mahogany	-
M. Ob. 1476	37x25,7x0,5	1	XVII	copy	flat	oak	mahogany/oak	+
M. Ob. 1824	62,5x85,5x0,5	3	XVII	northern	flat	oak	lime-wood/oak	+
184756	53x40,5x2	1	XVII	italian	flat	poplar	ash/oak	-
M. Ob. 1961	76x119,5x0,5	3	XIX	northern	vertical	oak	oak	+
M. Ob. 1727	55,5x68,7x0,5	3	XVII	copy	vertical	oak	oak	+

M. Ob. 1608	67x114x0,7	3	XVII	northern	vertical	oak	oak	+
M.Ob.2440	89x57,5x0,5	3	XVI	northern	vertical	oak	oak	-
M. Ob. 1735	42,2x34x0,5	1	XVII	northern	vertical	oak	oak	-
M. Ob. 1820	35x46x0,5	1?	XVII	northern	vertical	oak	oak	-
M. Ob. 1992	41,5x58x1,2	3	XVII	northern	vertical	pine	oak	-
M. Ob. 2438	58,4x80,5x0,8	3	XVII	northern	vertical	oak	oak	-
M. Ob. 1742	45x78,8x0,7	2	XVII	northern	vertical	oak	pine	+
M. Ob. 1064	30x41x0,6	2	XIX	northern	vertical	exotic	pine	-
M. Ob. 105	71,5x56x0,9	2	XVI	italian	vertical	spruce	fir	+
M. Ob.2154	69x55x1	3	XVI?	northern	vertical	spruce	spruce	-
ZKW/2123/	105,5x73x0,3	3	XIX	northern	vertical	oak	mahogany	-
ZKW dep.FC/112	42,7x32,5x0,4	1	XVII	?	vertical	birch	ash	+
186925	56x80x1,1	1	XVI	italian	block	spruce	spruce	-

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Streszczenie: *Gatunki drewna stosowane w parkietach.* Badając wpływ konstrukcji parkietażowej na drewniane podłoża malarstwa przebadano obiekty z Muzeum Narodowego w Warszawie oraz Zamku Królewskiego w Warszawie. Zidentyfikowano gatunki drewna podobrazni oraz konstrukcji. Ustalono najczęściej stosowane gatunki drewna i ich użycie w zależności od typu konstrukcji parkietażowej.

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