DENDROCHRONOLOGICAL ANALYSIS

INTRODUCTION

Dendrochronology, or tree-ring dating, is a field of research in the biological sciences that determines the age of wooden objects or those in which wood has been used, based on measurements of the variation in the width of annual growth rings of the wood. The method is used primarily for dating archaeological and architectural objects, and has been applied to problems in the history of art, especially issues involving the dating of paintings on wooden panels.[1] This method of dating allows us to ascertain at least a *terminus post quem* for a panel of a painting by determining the felling date of the tree from which the panel was cut, in other words, the date after which the wood for the panel could have been sawn or split. To arrive at a likely terminus for a panel painting the edges of a panel are examined and the measurements of the exact width of the annual rings are recorded. These measurements are then compared to the growth ring curve compiled from hundreds of examples in the University of Hamburg's computerized master chronology database. Since 1968, the dendrochronology department of the University of Hamburg has collected more than 5,500 analyses of panel paintings from various countries and centuries. This introduction surveys the methodology of the dating-procedure and presents the results obtained from the analysis of the mostly 15th and 16th-century Netherlandish panel paintings in the Rijksmuseum in Amsterdam.

THE ESTIMATION OF THE NUMBER OF SAPWOOD RINGS AND SEASONING

The final − and essential − result the art historian wants is the identification of the year of tree felling.

If it has been preserved, the last ring under the bark provides an exact date − even the precise season − when the tree was cut down. In preparing oak panels for paintings, panel makers normally used planks with radially oriented growth rings. The bark and the light, perishable sapwood were cut off, thereby eliminating evidence of the latest growth rings and making a determination of the exact felling year impossible. Only the most recent measured growth ring of the panel can be precisely dated. However, an estimate of the number of sapwood rings to be added can be derived from statistical evaluation, which considers each case individually. In addition to the number of sapwood rings, the provenance of the oak is essential in determining the felling date. Analysis of the number of sapwood rings found in trees from the Baltic region revealed that 90% of all trees have 11 to 23 sapwood rings: the median value was 15, the minimum 9, and the maximum 36. To determine the earliest possible felling date of oak from the Baltic region, at least 9 sapwood rings must be added to the latest growth ring found on the panel. Using the median of 15 sapwood rings the felling date of the oak tree can be estimated with a span of -2 to +4. If a panel is made exclusively of heartwood, the felling date of the tree cannot be determined as precisely because there is always the possibility that a number of heartwood rings were removed. For trees originating from Western Germany and the Netherlands a minimum of 7 sapwood rings is given with a median of 17 and a span of -4 to +6.

Determination of the felling date also provides information concerning how long the wood was seasoned before being used as a support. For 15th and 16th-century oak panels the interval between the felling of the tree and the creation of the painting

has been determined to be approximately 2-14 years in most cases.[2] It is also evident that the seasoning time depended on the workshop. An exact seasoning time cannot be determined when the number of sapwood rings is not known. The fewer the number of sapwood rings, the longer the seasoning time lasted. Furthermore the seasoning time is calculated under the assumption that on the panels only the sapwood rings were cut off. With each cut off heartwood ring the seasoning time changes as well.

DENDROCHRONOLOGY AS A TOOL FOR DATING PANEL PAINTINGS

Notwithstanding the problems related to determining the felling date of the tree and the seasoning time of the wood, dendrochronology can be useful in estimating when a panel painting was executed and by whom. It must be taken into account, however, that dendrochronology can only provide a conclusive result when the felling date is later than the art-historical dating of a panel. When the felling date is earlier than the art-historical dating one of three possibilities exist: the plank was cut from the centre of the tree, or it was seasoned for a long time, or the art-historical dating is too late. In all of these cases dendrochronology cannot provide a definitive solution.

Analysis of a group of panels from one workshop is more useful in determining when panel paintings could have been executed than the analysis of a single panel. In the following overview of the dendrochronological analysis of the panel paintings in this volume of the catalogue a likely range of dates has been provided for each panel. Two dating possibilities are presented: first, the earliest possible felling date for the tree based on the addition seven or nine years depending on the origin of the wood and second an estimated felling date with a median of 17 or 15. This information provides the most plausible range for the *terminus post quem* of each panel. A presumed date for the creation of the painting with the median plus a minimum of seasoning time of two years is also given.

In all cases, dendrochronology provides only an indication for when a panel painting was executed. It can, however, provide a *terminus post quem* for the creation of a panel painting. Exact dating is restricted by the youngest growth ring present on the panel, the seasoning time of the wood varies considerably as do the number of the tree rings cut off during the production process. The difference between the youngest ring measured on a panel and the art-historical dating of the paintings illustrates the possibilities and limitations of dendrochronology.

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[1] See Bauch *et al.* 1978; Baillie 1984; Klein 1991; Hillam/Tyers 1995; Lavier/Lambert 1996, pp. 543-56; Fraiture 2000.
[2] Bauch *et al.* 1978. For early Netherlandish paintings, see Leeflang 2007a, pp. 155-90, esp. p. 185.

Painter Title + art-historical dating Inventory number	Wood species	Number of panels (I, II, III etc.) – number of growth rings/sapwood rings – youngest heartwood ring	Earliest possible felling date: 9 sapwood rings	Earliest possible creating date: 9 sapwood rings + 2 years for seasoning	Presumed date: 15 sapwood rings + 2 years for seasoning	Presumed date: 15 sapwood rings + 10 years for seasoning	Remarks
Bosch, Jheronimus, copy after *Ecce homo*, c. 1530-50 SK-A-4252	oak	I – 109 – 1508 II – 110 – 1511	1520	1522	1528	1536	I, II: only 8 cm measured
Bosch, Jheronimus, copy after *The temptation of St Antony*, c. 1530-1600 SK-A-1795	oak	I – 103 – 1519 II – 192 – 1517 III – 222 – 1510	1528	1530	1536	1544	Baltic/Polish
Bosch, Jheronimus, copy after *The adoration of the Magi*, c. 1600-50 SK-A-124	oak	I – 189/7 – 1603 II – 135 – 1592	1605	1607	1613	1621	Baltic/Polish I, II: same tree Youngest heartwood ring: 1596 (1603 ⁻/- 7 sapwood rings) 1613 is most assumable, because the panel dates from the 17th century (youngest heartwood ring + 17)
Bosch, Jheronimus, manner of *The arrest of Christ*, c. 1530-50 SK-A-3113	oak	I – 234 – 1445 II – 143 – 1438	1454	1456	1462	1470	Baltic/Polish I, II: same tree
Bosch, Jheronimus, manner of *The Nativity*, c. 1550-1600 SK-A-4131		I – 268 – 1521 II – 270 – 1520 III – 262 – 1514	1530	1532	1538	1546	I, II, III: same tree
Bosch, Jheronimus, manner of *The extraction of the stone of folly*, c. 1550-1600 SK-A-1601	oak	I – 180 – 1535 II no measurement	1544	1546	1552	1560	Baltic/Polish
Bosch, Jheronimus, manner of *The temptation of St Antony*, c. 1550-1600 SK-A-3240	oak	I – 141 – 1528 II – 194 – 1534 III no measurement	1543	1545	1551	1559	Baltic/Polish

Bosch, Jheronimus, manner of *The battle between Carnival and Lent*, c. 1600-20 SK-A-1673	oak	I – 121 – 1528 II – 242 – 1569 III – 137 – 1567	1578	1580	1586	1594	Baltic/Polish I, III: same tree
Bossche, Aert van den, attributed to *Augustine sacrificing to an idol of the Manichaeans (?)*, c. 1480 SK-A-2057	oak	I – 113 – 1424 II – 93 – 1420 III – 94 – 1418	1433	1435	1441	1449	Baltic/Polish
Buys II, Cornelis Cornelisz, attributed to *The Lamentation of Christ*, c. 1535-40 SK-A-4219	oak	I – 216 – 1513 II – 208 – 1460 III – 92 – 1507	1522	1524	1530	1538	Baltic/Polish I, II, III: same tree III: only 13 cm measured
Buys II, Cornelis Cornelisz, attributed to *Triptych with the Lamentation of Christ (centre panel), the donor with St Benedict (inner left wing) and the donatrix with St Elizabeth of Thuringia (inner right wing)*, c. 1540-45 SK-A-2392	oak	Centre panel: I – 83 – ? II – 172/10 – 1515 Left wing: I – 211 – 1529 Right wing: I – 164 – 1514	Centre panel: 1515 Wings: 1538	Centre panel: 1516 Wings: 1540	Centre panel: 1522 Wings: 1546	Centre panel: 1530 Wings: 1554	Centre panel: Baltic/Polish Youngest heartwood ring: 1505 (1515 -/- 10 sapwood rings) Wings: same tree
Claesz van Leyden, Aertgen, attributed to *St Jerome in his study by candlelight*, c. 1520-30 SK-A-3903	oak	I – 226 – 1490	1499	1501	1507	1515	Baltic/Polish
Claesz van Leyden, Aertgen, attributed to *The calling of St Antony*, c. 1530 SK-A-1691	oak	I – 264 – 1469 II – 218 – 1460 III – 233 – 1455 IV – 114 – 1469	1478	1480	1486	1494	Baltic/Polish I, III: same tree
Claesz van Leyden, Aertgen, attributed to *Centre panel of a triptych with the raising of Lazarus*, c. 1530-35 SK-A-3480	oak	I – 136 – ? II – 200 – ? III – 205 – ?	-	-	-	-	No dating possible
Claesz van Leyden, Aertgen, attributed to *Inner left wing of a triptych with the male donor and St James the Greater*, c. 1530-35 SK-A-4751-A	oak	I – 85 – ? II – 108 – ?	-	-	-	-	No dating possible
Claesz van Leyden, Aertgen, attributed to *Inner right wing of a triptych with the female donor and St Catherine*, c. 1530-35 SK-A-4751-B	oak	I – 92 – ? II – 90 – ?	-	-	-	-	No dating possible

Cleve, Joos van, workshop of *Portrait of a man*, c. 1520-30 SK-A-165	oak	I – 282 – 1483 II – 102 – 1498	1507	1509	1515	1523	Baltic/Polish
Cleve, Joos van, workshop of *Portrait of Maximilian I (1459-1519), emperor of the Holy Roman Empire*, c. 1530 SK-A-3293	oak	I – 218 – 1508	1517	1519	1525	1533	Baltic/Polish
Cock, Pseudo Jan Wellens de, attributed to *Left wing of an altarpiece with the Circumcision (inner wing) and the Virgin of an Annunciation (outer wing)*, c. 1515-25 SK-A-1725	oak	I – 244 – 1476	1485	1487	1493	1501	Baltic/Polish
Cock, Pseudo Jan Wellens de, attributed to *The Calvary*, c. 1520 SK-A-4921	oak	I – 139 – 1479 II – 99 – 1474 III – 123 – 1481 IV – 99 – 1479 V – 92 – 1473	1490	1492	1498	1506	Baltic/Polish I, II: same tree III, IV, V: same tree
Cornelisz van Oostsanen, Jacob *The Crucifixion*, c. 1507-10 SK-A-1967	oak	I – 147 – 1473 II – 179 – 1486 III – 227 – 1483 IV – 201 – 1442	1495	1497	1503	1511	Baltic/Polish I, II: same tree III, IV: same tree
Cornelisz van Oostsanen, Jacob *Triptych with the adoration of the Magi (centre panel), the donor and his six sons with St Jerome (inner left wing), the donor's wife and her seven daughters with St Catherine of Alexandria (inner right wing), St Christopher (outer left wing) and St Antony Abbot (outer right wing)*, 1517 SK-A-4706	oak	Centre panel: I – 271 – 1476 II – 250 – 1468	Centre panel: 1485	Centre panel: 1487	Centre panel: 1493	Centre panel: 1501	Centre panel: Baltic/Polish
Cornelisz van Oostsanen, Jacob *Salome with the head of John the Baptist*, 1524 SK-C-1349		I – 259 – 1483 II – 218 – 1483	1492	1494	1500	1508	Baltic/Polish
Cornelisz van Oostsanen, Jacob *Saul and the witch of Endor*, 1526 SK-A-668	oak	I – 134 – 1493 II – 138 – 1475 III – 141 – 1471 IV – 180 – 1465 V – 143 – 1483	1502	1504	1510	1518	Baltic/Polish

Cornelisz van Oostsanen, Jacob, workshop of *The adoration of the Magi*, c. 1510-15 SK-A-3324	oak	I – 71 – 1474 II – 103 –1482	1491	1493	1499	1507	Baltic/Polish
Cornelisz van Oostsanen, Jacob, workshop of *Portrait of Jan Gerritsz van Egmond van de Nijenburg (?-1523)*, c. 1518 SK-A-3838	oak	I – 190 – 1493	1502	1504	1510	1518	Baltic/Polish
Cornelisz van Oostsanen, Jacob, workshop of *Portrait of Jacob Cornelisz van Oostsanen (c. 1472/77-1528/33)*, 1533 SK-A-1405	-	I – 260 – 1506	1515	1517	1523	1531	Baltic/Polish
Coter, Colijn de *The Lamentation of Christ*, c. 1510-15 SK-A-856	oak	I – 192 – 1415 II – 175 – 1415	1424	1426	1432	1440	Baltic/Polish I, II: same tree
Coustain, Pierre, attributed to *Shield of Edward IV (1442-83), King of England, in his capacity as knight of the Order of the Golden Fleece*, c. 1481 SK-A-4641	oak	I – 120 – 1468 II – 166 – 1467 III – 175 – 1448	1477	1479	1485	1493	Baltic/Polish
Coustain, Pierre, attributed to *Shield of Jacob of Luxemburg (after 1441-88), Lord of Fiennes, in his capacity as knight of the Order of the Golden Fleece*, c. 1481 SK-A-4642	oak	I – 116 – 1460 II – 167 – 1460	1469	1471	1477	1485	Baltic/Polish
Engelbrechtsz, Cornelis *Christ on the cross with the Virgin, St John the Evangelist, Mary Magdalen, and Sts Cecilia and Barbara (left), and Sts Peter, Francis and Jerome (right)*, c. 1505-10 SK-A-859	oak	I – 169 – 1482	1491	1493	1499	1507	Baltic/Polish
Engelbrechtsz, Cornelis *Christ's second visit to the house of Mary and Martha*, c. 1515-20 SK-A-2232	oak	I – 172 – 1476 II – 116 – 1481 Frame: below – 48 – 1510 right – 55 – 1485	1490 Frame: 1519	1492 Frame: 1521	1498 Frame: 1527	1506 Frame: 1535	Baltic/Polish I, II: same tree
Engelbrechtsz, Cornelis *Christ taking leave of his mother*, c. 1515-20 SK-A-1719	oak	I – 180 – 1488 II – 292 – 1489	1498	1500	1506	1514	Baltic/Polish I, II: same tree

Engelbrechtsz, Cornelis, circle of *Crucifixion with the Virgin, Mary Magdalen and St John the Evangelist*, c. 1510-20 SK-A-1508	oak	I – 220 – 1477	1486	1488	1494	1502	Baltic/Polish
Geertgen tot Sint Jans, attributed to *The adoration of the Magi*, c. 1480-85 SK-A-2150	oak	I – 169 – 1454 II – 200 – 1452 III – 187 – 1453	1463	1465	1471	1479	Baltic/Polish
Geertgen tot Sint Jans, attributed to *The holy kinship*, c. 1495 SK-A-500	oak	I – 180 – 1465 II – 179 – 1471 III – 252 – 1463 IV – 203 – 1464	1480	1482	1488	1496	Baltic/Polish I, III: same tree II, IV: same tree
Geertgen tot Sint Jans, attributed to *The tree of Jesse*, c. 1500 SK-A-3901	oak	I – 200 – 1469 II – 144 – 1469	1478	1480	1486	1494	Baltic/Polish I: 13 cm not measured II: 16 cm not measured
Goes, Hugo van der, copy after, and Anonymous, Netherlands *Memorial triptych (formerly called the Gertz memorial triptych) with the Lamentation (centre panel), nine male donor portraits with St John the Evangelist (inner left wing), nine female donor portraits with the Virgin and Child (inner right wing), St Peter (outer left wing) and St Mary Magdalen (outer right wing)*, after c. 1527, and 1561 SK-A-4488	oak	Centre panel: I – 173 – 1469 II – 72 – 1452 III – 198 – 1456 IV – 143 – 1459 Frame: top, left – 195 – 1523 bottom, right – 213 – 1527	Centre panel: 1478 Frame: 1534	Centre panel: 1480 Frame: 1536	Centre panel: 1486 Frame: 1546	Centre panel: 1494 -	Centre panel: Baltic/Polish I, II, III, IV: same tree Frame: West Germany/ Netherlands All pieces: same tree Sapwood : minimum 7 and median 17
Gossaert, Jan *Portrait of Floris van Egmond (1469-1539), Count of Buren and Leerdam*, c. 1519 SK-A-217	oak	I – 287 – 1489	1498	1500	1506	1514	Baltic/Polish
Gossaert, Jan, copy after *Portrait of Ruben Parduyn, knight of the Holy Sepulchre*, after c. 1644 SK-A-894	oak	I – 124 –1600 II – 158 – 1627 III – 134 – ?	1636	1638	1644	1652	Baltic/Polish 1644 is most assumable, because the panel dates from the 17th century
Heemskerck, Maarten van *Portrait of a man, possibly Pieter Gerritsz Bicker (1497-1567)*, 1529 SK-A-3518	oak	I – 305 – 1479 II – 186 – 1495 III – 113 – 1503	1513	1515	1521	1529	Baltic/Polish II: same tree as I, III of SK-A-3519 (youngest heartwood ring: 1504)

Heemskerck, Maarten van *Portrait of a woman, possibly Anna Codde (1504-?)*, 1529 SK-A-3519	oak	I – 262 – 1500 II no measurement III – 298 – 1504	1513	1515	1521	1529	Baltic/Polish I, III: same tree as II of SK –A-3518
Heemskerck, Maarten van *Portrait of Johannes Colmannus (1471-1538)*, c. 1538-40 SK-C-507	oak	I – 147 – 1510 II – 123 – 1515 III – 136 – 1511	1524	1526	1532	1540	Baltic/Polish II, III: same tree
Heemskerck, Maarten van *Samson destroying the Temple*, c. 1550-60 SK-A-3511	oak	I – 107 – 1505	1523	1525	1531	1539	Baltic/Polish I: same tree as a panel from the same ensemble, *Samson carrying the gate of* Gaza, formerly Wetzlar collection (youngest heartwood ring: 1514)
Heemskerck, Maarten van *Samson rending the lion*, c. 1550-60 SK-A-3512	oak	I – 141 – 1530	1545	1547	1553	1561	Baltic/Polish I: same tree as a panel from the same ensemble, *Samson conquering the Philistines*, Oberlin (youngest heartwood ring: 1536)
Heemskerck, Maarten van *Hercules destroying the centaur Nessus*, c. 1550-60 SK-A-3513	oak	I – 102 – 1526	1538	1540	1546	1554	Baltic/Polish I: same tree as five panels from the same ensemble, SK-A-3514 and four others in Oberlin, New Haven and formerly Wetzlar collection (youngest heartwood ring: 1529)

Heemskerck, Maarten van *Neptune with a seahorse*, c. 1550-60 SK-A-3514	oak	I – 92 – 1512	1538	1540	1546	1554	I: same tree as five panels from the same ensemble, SK-A-3513 and four others in Oberlin, New Haven and formerly Wetzlar collection (youngest heartwood ring: 1529)
Heemskerck, Maarten van *Left wing of a triptych with the donor Matelief Dammasz and St Paul (inner wing), and the Erythraean Sibyl (outer wing)*, 1564 SK-A-1910	oak	Frame: I – 202 – 1533 II – 190 – 1529 III – 207 – 1528	Frame: 1542	Frame: 1544	Frame: 1550	Frame: 1558	Frame: Baltic/Polish I, II, III: same tree
Heemskerck, Maarten van, workshop of *Christ as the Man of Sorrows*, c. 1545-50 SK-A-1306		I – 206/3– 1525 II – 129 – 1522 III – 162 – 1517	1531	1533	1539	1547	Baltic/Polish Youngest heartwood ring: 1522 (1525 ˙/- 3 sapwood rings)
Heemskerck, Maarten van, circle of *The baptism of Christ*, c. 1560-65 SK-A-4284	oak	I – 125 – 1516 II – 48 – 1516 III – 113 – 1511	1525	1527	1533	1541	Baltic/Polish I, II, III: same tree
Heemskerck, Maarten van, manner of *The Holy Trinity*, c. 1550-99 SK-C-1563	oak	Frame: back I – 127 – 1502 II – 189 – 1516 top I – 111 – 1507	Frame: 1525	Frame: 1527	Frame: 1533	Frame: 1541	Frame: Baltic/Polish
Isenbrant, Adriaen, attributed to *The Virgin and Child*, c. 1530-40 SK-A-4045	oak	I – 123 – ? II – 177 –1506	1515	1517	1523	1531	Baltic/Polish
Jacobsz, Dirck *Portrait of Pompejus Occo (1483-1537)*, c. 1531 SK-A-3924	oak	I – 84 – ? II – 134 – 1515	1524	1526	1532	1540	Baltic/Polish I, II: only 10 cm measured

Jacobsz, Dirck *Triptych with guards-men of the Amsterdam Kloveniersdoelen (headquarters of the arquebusiers' civic guard)*, 1529 (centre panel); c. 1532-35 (wings) SK-C-402	oak	Centre panel: I – 78 – 1505 II – 127 – 1506 III – 120 – 1506 IV – 149 – 1491 V – 141– 1474 Right wing: I – 130 – 1512 II – 155 – 1516 III – 98 – ? IV – 117 – 1509	Centre panel: 1515 Right wing: 1525	Centre panel: 1517 Right wing: 1527	Centre panel: 1523 Right wing: 1533	Centre panel: 1531 Right wing: 1541	Centre panel: I, II, III: same tree IV, V: same tree Right wing: Baltic I, IV: same tree
Kalkar, Jan Joest van, manner of *Fragment with the transfiguration of Christ*, c. 1515-20 SK-A-2596	oak	I – 100 – ?	-	-	-	-	No dating possible
Leyden, Lucas van *Triptych with the dance around the golden calf*, c. 1530 SK-A-3841	oak	Centre panel: I – 260 – 1507 II – 255 – 1507 Left wing: I – 223 – 1459 Right wing: I – 220 – 1460	Centre panel: 1516 Wings: 1469	Centre panel: 1518 Wings: 1471	Centre panel: 1524 Wings: 1477	Centre panel: 1532 Wings: 1485	Centre panel: Baltic/Polish I, II: same tree Wings: same tree as SK-A-3739
Leyden, Lucas van, workshop of *The Virgin and Child*, c. 1530 SK-A-3739	oak	I – 211 – 1457	1469	1471	1477	1485	Baltic/Polish I: same tree as wings of SK-A-3841 (youngest heartwood ring: 1460)
Leyden, Lucas van, copy after *Inner left wing of a diptych with Christ as the Man of Sorrows*, c. 1557-1600 SK-A-1483	oak	I – 191 – 1548	1557	1559	1565	1573	Baltic/Polish I: same tree as SK-A-1484
Leyden, Lucas van, copy after *Inner right wing of a diptych with the Virgin as Mater Dolorosa*, c. 1557-1600 SK-A-1484	oak	I – 203 – 1548	1557	1559	1565	1573	Baltic/Polish I: same tree as SK-A-1483
Massijs, Quinten *The carrying of the cross*, c. 1510-15 SK-A-4048	oak	I – 90 – 1491 II – 243 – 1492 III – 88 – 1491	1501	1503	1509	1517	Baltic/Polish I, III: same tree
Massijs, Quinten, workshop of *The Virgin and Child*, c. 1525-30 SK-A-247	oak	I – 193 – 1492 II – 330/3 – 1505	1511	1513	1519	1527	Baltic/Polish Youngest heartwood ring: 1502 (1505 -/- 3 sapwood rings)

Massijs, Quinten, copy after *Portrait of Desiderius Erasmus (1469 ?-1536)*, after c. 1535 SK-A-166	oak	I – 219 – 1510	1519	1521	1527	1535	Baltic/Polish
Mostaert, Jan Jansz *Triptych with the Lamentation (centre panel), the donor with St Peter (inner left wing), the donor's wife with St Paul (inner right wing) and the donors' coats of arms (outer wings)*, c. 1515-20 SK-A-2123	oak	Centre panel: I – 289 – 1480 II – 257 – 1481 Left wing: I – 150 – 1437 Right wing: I – 175 – 1501	Centre panel: 1490 Wings: 1510	Centre panel: 1492 Wings: 1512	Centre panel: 1498 Wings: 1518	Centre panel: 1506 Wings: 1526	Baltic/Polish Centre panel: I, II; same tree
Mostaert, Jan Jansz *The adoration of the Magi*, c. 1520-25 SK-A-671	oak	I – 276 – 1498	1507	1509	1515	1523	Baltic
Mostaert, Jan Jansz *Portrait of a woman*, c. 1525 SK-A-3843	oak	I – 141 – 1498 II – 171 – 1491	1507	1509	1515	1523	Baltic/Polish
Mostaert, Jan Jansz *Portrait of an African man*, c. 1525-30 SK-A-4986	oak	I – 183 – 1509	1518	1520	1526	1534	Baltic
Mostaert, Jan Jansz, circle of *Portrait of a man*, 1535 SK-A-743	oak	I – 151 – 1499 II – 151 – 1491	1508	1510	1516	1524	Baltic/Polish
Patinir, Joachim, workshop of *Landscape with the temptation of St Antony*, c. 1510-20 SK-A-3336	oak	I – 171/6 – 1490	1493	1495	1501	1509	Baltic/Polish Youngest heartwood ring: 1484 (1490 ˉ/- 6 sapwood rings)
Provoost, Jan *Triptych with the Virgin and Child (centre panel), St John the Evangelist (inner left wing) and Mary Magdalen (inner right wing)*, c. 1505-25 SK-A-2570	oak	Centre panel: I – 204 – 1494	Centre panel: 1503	Centre panel: 1505	Centre panel: 1511	Centre panel: 1519	Centre panel: Baltic/Polish
Provoost, Jan, attributed to *The Virgin and Child enthroned, with Sts Jerome and John the Baptist and a kneeling Carthusian monk*, c. 1510 SK-A-2569	oak	I – 129 – 1468 II – 252 – 1484	1493	1495	1501	1509	Baltic/Polish
Reymerswale, Marinus van, attributed to *St Jerome in his study*, c. 1535-45 SK-A-3123	oak	I – 153 – 1501 II – 183 – 1520 III – 160 – 1516	1529	1531	1537	1545	Baltic/Polish

Scorel, Jan van *Portrait of a man*, 1529 SK-A-3853	oak	I – 306 – 1488	1497	1499	1505	1513	Baltic/Polish
Scorel, Jan van *Mary Magdalen*, c. 1530 SK-A-372	oak	I – 98 – 1513 II – 295 – 1508 III – 240 – 1510	1519	1521	1527	1535	Baltic/Polish I: addition at the top II, III: same tree
Scorel, Jan van *Portrait of Joris van Egmond (1504-59),* c. 1535-40 SK-C-1618	oak	I – 165 – 1513 II – 117 – 1523	1532	1534	1540	1548	Baltic/Polish
Scorel, Jan van *Landscape with Bathsheba*, c. 1540-45 SK-A-670		I – 193 – 1516 II – 204/1 – 1522 III – 96 – 1481 IV – 181 – 1520	1530	1532	1538	1546	Baltic/Polish I, II, IV: same tree Youngest heartwood ring: 1521 (1522 $^-$/- 1 sapwood ring)
Scorel, Jan van *Portrait of Reinoud III van Brederode (1493-1556), Lord of Vianen*, c. 1545 SK-A-1619	oak	I – 174 – 1510 II – 196 – 1489	1519	1521	1527	1535	Baltic/Polish
Scorel, Jan van, attributed to *The dying Cleopatra*, c. 1520-24 SK-A-2843	beech	I – 110 – 1509	1509	1511	-	-	Central Europe
Scorel, Jan van, workshop of *The baptism of Christ*, c. 1535 SK-A-1636	oak	I – 251 – 1450 II – 195 – 1457 III – 203 – 1453	1466	1468	1474	1482	Baltic/Polish II, III: same tree
Scorel, Jan van, copy after *Portrait of Willem van Lokhorst (1514-1564)*, 1554 SK-A-1855	oak	I – 240 – 1524 II – 144 – 1516	1533	1535	1541	1549	Baltic/Polish
Scorel, Jan van, copy after *Portrait of Cornelis Aerentsz van der Dussen (1481-1556)*, c. 1555-70 SK-A-1532	oak	I – 107 – 1530 II – 100- 1527 III – 107 – 1533	1542	1544	1550	1558	Baltic/Polish I, II, III: same tree
Vermeyen, Jan Cornelisz *Portrait of Erard de la Marck (1472-1538)*, c. 1528 SK-A-4069	oak	I – 238 – 1502 II – 159 – 1498	1511	1513	1519	1527	Baltic/Polish II: 13 cm not measured
Vermeyen, Jan Cornelisz *The Holy Family*, c. 1528 SK-C-1701	oak	I – 193 – 1511 II – 132 – 1493	1520	1522	1528	1536	Baltic/Polish
Vermeyen, Jan Cornelisz *The calling of St John during the marriage at Cana*, c. 1530-32 SK-A-4820	oak	I – 293 – 1498 II – 302 – 1501	1510	1512	1518	1526	Baltic/Polish

Vermeyen, Jan Cornelisz (?), manner of *Portrait of Charles V (1500-58), emperor of the Holy Roman Empire*, c. 1530 SK-A-164	oak	I – 115/3 – 1501	1507	1509	1515	1523	Baltic/Polish Youngest heartwood ring: 1498 (1501 ⁻/- 3 sapwood rings)
MASTERS OF							
Alkmaar, Master of *Panel of a polyptych with the seven works of charity: feeding the hungry*, 1504 SK-A-2815-1	oak	I no measurement II – 243 – 1477	1492	1494	1500	1508	Baltic/Polish II: same tree as I of SK-A-2815-4 (youngest heartwood ring: 1483)
Alkmaar, Master of *Panel of a polyptych with the seven works of charity: burying the dead*, 1504 SK-A-2815-4		I – 244 – 1472 II – 175/3 – 1486	1492	1494	1500	1508	Baltic/Polish I: same tree as II of SK-A-2815-1 Youngest heartwood ring: 1483 (1486 ⁻/- 3 sapwood rings)
Alkmaar, Master of, attributed to *Triptych with the adoration of the Magi (centre panel and inner wings), St Antony Abbot (outer left wing) and St Adrian (outer right wing)*, c. 1500-04 SK-C-1364	oak	Centre panel: I – 50 – ? II – 286 – 1467	Centre panel: 1476	Centre panel: 1478	Centre panel: 1484	Centre panel: 1492	Baltic/Polish
Alkmaar, Master of, attributed to *Left wing of a memorial tablet with eight male portraits, probably Willem Jelysz van Soutelande (?-1515/16) and family, with Sts James the Greater (inner wing), and the Van Soutelande coat of arms (outer wing)*, c. 1515-20 SK-A-1188-A	oak	I – 62 – 1477 II – 229 – 1473 III – 61 – 1478 IV – 84 – 1475 V – 98 – 1479	1488	1490	1496	1504	III, IV, V: additions at the top I, II, III, IV, V: same tree as the planks of SK-A-1188-B

Alkmaar, Master of, attributed to *Right wing of a memorial tablet with nine female portraits, probably Kathrijn Willemdsdr van der Graft (?-1490/91) and family, with Mary Magdalen (inner wing), and the coats of arms of the Van der Grafts in alliance with the Van Soutelandes (outer wing)*, c. 1515-20 SK-A-1188-B	oak	I – 46 – 1342 II – 174 – 1427 III – 138 – 1439 IV – 47 – 1364	1488	1490	1496	1504	III, IV: additions at the top I, II, III, IV, V: same tree as the planks of SK-A-1188-A (youngest heartwood ring: 1479)
Alkmaar, Master of, attributed to *Panel of an altarpiece with the Circumcision (inner wing) and the Resurrection (outer wing)*, c. 1520-35 SK-A-1308	oak	I – 228 – 1493 II – 232 – 1495 III – 154 –1507	1516	1518	1524	1532	Baltic/Polish I, II: same tree as I of SK-A-1307
Alkmaar, Master of, attributed to *Panel of an altarpiece with Jesus disputing with the doctors in the Temple (inner wing) and Christ appearing to his mother (outer wing)*, c. 1520-35 SK-A-1307	oak	I – 224 – 1488 II – 257 – 1476 III – 247 – 1466	1504	1506	1512	1520	Baltic/Polish I: same tree as I, II of SK-A-1308 (youngest heartwood ring: 1495)
Amsterdam Death of the Virgin, Master of the *The death of the Virgin*, c. 1500 SK-A-3467	oak	I – 126 – 1480 II – 220 – 1452 III – 192 – 1471	1489	1491	1497	1505	Baltic/Polish
Amsterdam Death of the Virgin, Master of the, circle of *The Last Supper*, c. 1485-1500 SK-A-2129	oak	I – 85 – 1458 II – 217 – 1455	1469	1471	1477	1485	Baltic/Polish I, II: same tree as I, II of SK-A-2130 (youngest heartwood ring: 1460)
Amsterdam Death of the Virgin, Master of the, circle of *The Resurrection*, c. 1485-1500 SK-A-2130	oak	I – 119 – 1460 II – 84 – 1456	1469	1471	1477	1485	Baltic/Polish I, II: same tree as I, II of SK-A-2129
Brunswick Diptych, Master of the *The Nativity*, c. 1490-1500 SK-A-2563	oak	I – 115 – 1339 II – 142 – 1398	1407	1409	1415	1423	Baltic/Polish I, II: same tree
Brunswick Diptych, Master of the, attributed to *Left wing of a triptych with St Valerianus*, c. 1490-1500 SK-A-3305	oak	I – 177 – 1376	1390	1392	1398	1406	Baltic/Polish I: same tree as SK-A-3306 (youngest heartwood ring: 1381)

Brunswick Diptych, Master of the, attributed to *Right wing of a triptych with St Cecilia*, 1490-1500 SK-A-3306	oak	I – 151 – 1381	1390	1392	1398	1406	Baltic/Polish I: same tree as SK-A-3305
Delft, Master of *Triptych with the Virgin and Child and saints (centre panel), the donor with St Martin (inner left wing), the donor's wife with St Cunera (inner right wing) and the Annunciation (outer wings)*, c. 1500-10 SK-A-3141	oak	Centre panel: I – 94 – 1485 II – 175 – 1483 III – 182 – 1483	Centre panel: 1494	Centre panel: 1496	Centre panel: 1502	Centre panel: 1510	Centre panel: Baltic/Polish
Delft, Master of *The Virgin and St John lamenting over the body of Christ*, c. 1500-10 SK-A-3325	oak	I – 123 – 1388	1397	1399	1405	1413	Baltic/Polish
Figdor Deposition, Master of the *Part of a wing of an altarpiece with the martyrdom of St Lucy*, c. 1505-10 SK-A-1688	oak	I – 136 – 1475 II – 146 – 1474 III – 159 – 1483 IV – 124 – 1472	1492	1494	1500	1508	Baltic/Polish I, IV: same tree
Figdor Deposition, Master of the, circle of *Christ on the cross*, c. 1505 SK-A-2212	oak	I – 240 – 1477 II – 93 – 1481 III - 241 - 1479	1490	1492	1498	1506	Baltic/Polish I, II, III: same tree
Good Samaritan, Master of the *The good Samaritan*, 1537 SK-A-3468	oak	I – 74 – ? II – 74 – 1456 III – 90 – 1495 IV – 124 – 1510 V – 60 – ?	1519	1521	1527	1535	Baltic/Polish
Legend of Saint Ursula, the (Bruges) Master of the workshop of *Inner left wing of a triptych with the donor, his two sons and St John the Evangelist*, c. 1480-85 SK-A-3326	oak	I – 185 – 1461	1470	1472	1478	1486	Baltic/Polish
Portraits of Princes, Master of the *Portrait of Engelbert II (1451-1504), Count of Nassau, Lord of Breda, and regent of all the Netherlands in the name of Philip the Handsome*, c. 1487 SK-A-3140	oak	I – 125 – 1461	1470	1472	1478	1486	Baltic/Polish

Rhenen, Master of *The conquest of Rhenen by John II of Cleves in 1499*, c. 1499-1525 SK-A-1727	oak	I – 230 – ? II – 224 – 1477 III – 237 – 1468 IV – 220 – 1473 V – 212 – 1479	1488	1490	1496	1504	Baltic/Polish
Spes Nostra, Master of the *Four canons with Sts Augustine and Jerome by an open grave*, *with the Visitation*, c. 1500 SK-A-2312	oak	I – 143 – 1465 II – 175 – 1466 III – 140 – 1469 IV – 167 – 1470	1479	1481	1487	1495	Baltic/Polish I, II, III, IV: same tree
Virgo inter Virgines, Master of the *The Virgin and Child with Sts Catherine, Cecilia, Barbara and Ursula*, c. 1495-1500 SK-A-501	oak	I – 143 – ? II – 181 – 1470 III – 160 – 1470	1479	1481	1487	1495	Baltic/Polish
ANONYMOUS							
Anonymous, northern Netherlands *Memorial tablet for the lords of Montfoort*, c. 1400 SK-A-831	oak	I – 91 – 1317 II – 204 – 1344 III – 126 – ? IV – 152 – 1351	1360	1362	1368	1376	Baltic/Polish
Anonymous, Gelderland *Eighteen scenes from the life of Christ, known as the Roermond Passion*, c. 1430-40 SK-A-1491	oak	I – 103 – ? II no measurement III – 34 – ? IV no measurement V – 39 – ? VI – 91 – ? VII no measurement VIII no measurement IX – 45 – ?	-	-	-	-	No dating possible
Anonymous, northern Netherlands *Portrait of Jacoba of Bavaria (1401-36), Countess of Holland and Zeeland*, after c. 1432 SK-A-498	oak	I – 236 – 1464 II – 37 – 1433 III – 168 – 1438	1473	1475	1481	1489	Baltic/Polish
Anonymous, northern Netherlands *Portrait of Frank van Borselen (c. 1390-1470), Lord of Sint Maartensdijk*, after c. 1432 SK-A-499	oak	I – 125 – 1418 II – 217 – 1447	1456	1458	1464	1472	Baltic/Polish I, II: same tree
Anonymous, southern Netherlands *The tower of Babel*, c. 1480-90 SK-A-2851	oak	I – 133 – 1469	1478	1480	1486	1494	Baltic/Polish

Anonymous, Bruges *The Virgin and Child*, c. 1500 SK-A-2552	oak	I – 283 – 1479	1488	1490	1496	1504	Baltic/Polish
Anonymous, southern Netherlands *Portrait of Philip the Handsome (1478-1506), Archduke of Austria, Duke of Burgundy*, c. 1500 SK-A-2854	oak	I – 249 – 1476	1485	1487	1493	1501	Baltic/Polish
Anonymous, northern Netherlands *Four scenes from the legend of St Elizabeth of Hungary*, c. 1500 SK-A-2237	oak	I – 232/3 – 1486 II – 31 – ? III – 221 – 1456	1492	1494	1500	1508	Baltic/Polish Youngest heartwood ring: 1483 (1486 ⁻/- 3 sapwood rings)
Anonymous, northern Netherlands *Memorial tablet of Jacob Jan van Assendelft (1396-1478) and his wife Haesgen van Outshoorn (?-1471)*, after c. 1500 SK-C-509	oak	I – 263 – 1470 II – 132 – ? III – 199 – 1457	1479	1481	1487	1495	Baltic/Polish I, III: same tree
Anonymous, north or south Holland *Portrait of Hendrik IV van Naaldwijk (c. 1430-96)*, c. 1500-06 SK-C-57	oak	I – 303 – 1482 II no measurement	1491	1493	1499	1507	Baltic/Polish
Anonymous, northern Netherlands *Portrait of a man*, c. 1530-40 SK-A-4056	oak	I – 71 – 1509 II no measurement	1518	1520	1526	1534	Baltic/Polish II: addition at the right
Anonymous, northern Netherlands *Portrait of a man*, c. 1540-50 SK-A-2107	oak	I – 144 – 1516	1525	1527	1533	1541	Baltic/Polish I: same tree as SK-A-2108
Anonymous, northern Netherlands *Portrait of a woman*, c. 1540-50 SK-A-2108	oak	I – 152 -1516	1525	1527	1533	1541	Baltic/Polish I: same tree as SK-A-2107
Anonymous, German *The Annunciation*, c. 1550 SK-A-2592	oak	I – 241 – 1519	1528	1530	1536	1544	Baltic/Polish
Anonymous, Netherlands *Portrait of Charles V (1500-58), emperor of the Holy Roman Empire*, c. 1550 SK-A-979	oak	I – 133 – 1508	1517	1519	1525	1533	Baltic/Polish

Anonymous, Netherlands *Portrait of Edward VI (1537-53), King of England*, c. 1550 SK-A-980	oak	I – 182 – 1526	1535	1537	1543	1551	Baltic/Polish
Anonymous, northern Netherlands *Portrait of Arent Franckensz van der Meer (?-1503), Lord of Papen-drecht, nicknamed 'malicious Aertje'*, c. 1550-60 SK-A-4715	oak	I – 190 – 1534	1547	1549	1555	1563	Baltic/Polish I: same tree as SK-A-4716 (youngest heartwood ring: 1538)
Anonymous, northern Netherlands *Portrait of Jacomina Claesdr van Ruyven (?-1509)*, c. 1550-60 SK-A-4716	oak	I – 192/1 – 1539	1547	1549	1555	1563	Baltic/Polish I: same tree as SK-A-4715 Youngest heartwood ring: 1538 (1539 -/- 1 sapwood ring)
Anonymous, southern Netherlands *The Entombment*, c. 1550-1600 SK-A-2591	oak	I – 220 – 1533 II – 231 – 1530 III – 200 – 1530	1542	1544	1550	1558	Baltic/Polish I, II: same tree