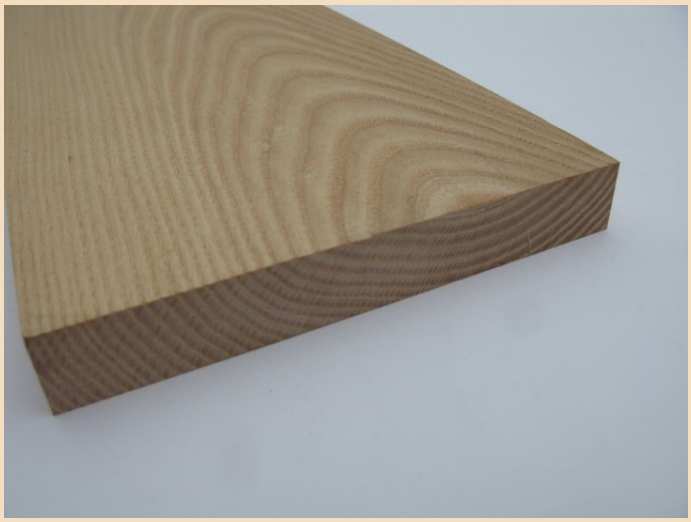
Figure and Grain

Understanding grain direction is very important when working wood as it influences the quality of cut, especially from edge tools (chisels and planes), but it is easy to confuse figure with grain.

Figure is the pattern created on the wood surface by the annual rings intersecting with the surface. This can be seen clearly in the Ash board pictured below. The annual rings are evident on the end of the board, see how the line of the figure originates where the annuals rings intersect with the surface of the board.



End of Ash board showing intersection of annual rings and figure.

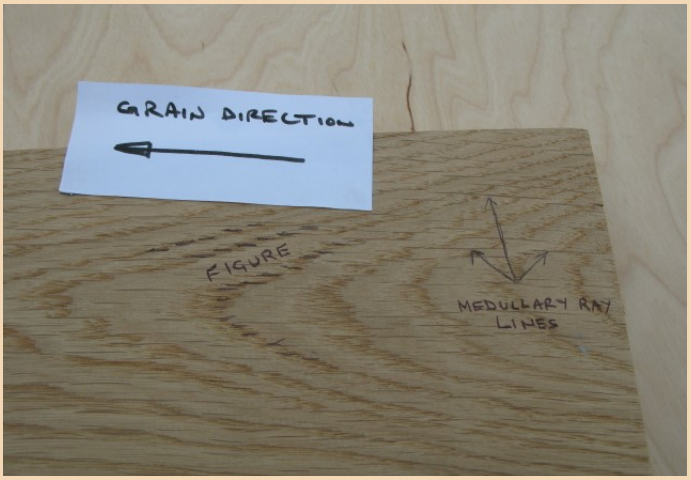
The grain is different to the figure. It is the orientation of the wood fibres in relation to the surface. Imagine the trunk as a bundle of straws with the straws representing the wood fibres running up the trunk. If the bundle is cut longitudinally in line with the straws the grain will be running parallel to the surface, so there will be no definite grain direction. If the cut is made obliquely to the surface the straws will be cut diagonally across the ends. You can imagine running your finger down the slope of the cut will be smoother than going the other way. (there will be a knap to the surface). When planing or chiselling wood you want the smooth cut down the slope, this will make the cut easier and also give a cleaner almost burnished surface (if your edge is sharp).

It can be difficult to work out the grain direction. Figure can give some clues. If the figure is cathedral window look at the base of the window arch , if the annual rings are curving down from the surface forming a “u” shape plane from the base of the window upwards, if they curve up forming more of an “n” shape plane in the opposite direction.

Annual rings curve up to the base of cathedral window. Plane from base upwards.

Annual rings curve away from the base of the cathedral window. Plane from the top of the window downwards.

In woods with strong medullary rays look for the line of the rays in the face of the board at right angles to the edge you wish to cut, if they are sloping plane up the slope. (this does not work with ray fleck as it is too chaotic). In the illustration the difference between figure and grain is clear. The figure marked trends downwards from the top surface going from right to left (except where it curves round at the bottom to form cathedral window). But the ray lines highlighted slope in the opposite direction, so the grain is running upwards from right to left . This is the direction you should plane when planing the top edge.



Face of oak board showing figure and grain directions.

Sometimes it is just too difficult to work out grain direction by inspection, then you must work it out by trial and error, turning the piece if it is difficult to cut in one particular direction until you find the best direction. On some difficult boards the grain direction may vary along the length and width of the board, then you need a very sharp, finely set plane, or to resort to the cabinet scraper to get a tear out free surface.