**Supplementary Analyses**

*Control experiment:* In an additional experiment we used a 4 dots masking paradigm (see Fig S1) to keep constant the stimulus duration, while having the same approach to test the oblique effect in relation to visibility judgments. Participants (N=25) were engaged in the same task of reproducing the orientation of the masked Gabor patch, and assessed the visibility on a two alternatives forced choice (“Seen” vs “Unseen”), and not by using a continuous scale. The pattern of results was strictly similar to the one reported in main text. In the lowest visibility conditions, defined both by good masking conditions (SOA=0) and by reported null visibility (“Unseen” responses), there was subliminal processing as the distribution of responses was centred on the stimulus. However, perception was not anisotropic in these trials. By contrast, in full visibility trials (SOA=500 and “Seen” responses) there was a clear effect of anisotropic processing: stimuli were systematically perceived away from the horizontal and vertical axes. Thus, here again the anisotropy as measured by the deviation from cardinals depended on the stimulus visibility.
Figure S1: Deviation effects in the main study as a function of visibility within each participant group (see main text). These graphs are equivalent to the one in Fig 4A, with separate plots for the data of the five exposure groups (From left to right: horizontal, vertical, none, diagonal, and anti-diagonal, respectively).
Figure S2: Schematic presentation of the paradigm used in the control experiment.