A $\Sigma 1$ boundary → a perfect (or nearly perfect) crystal i.e. no boundary at all

Boundaries relatively close to the $\Sigma 1$ orientation are all boundaries with only small misorientations called "small-angle grain boundaries"
∑: Always Odd

They most conspicuous issue in the CSL theory of grain boundaries is that **there are no even values for** \( \Sigma \)! Try as you might - you will never find a \( \Sigma = 2 \) boundary or any other **even** number in the literature. Now why is this? Mostly no explanation is given.

If \( \Sigma \) is even it should be divided by multiples of 2 until an odd number is attained.
Fig. 6.26 A rotation of 53.1° about a $〈100〉$ axis of a simple cubic crystal gives this coincident site boundary with $\Sigma = 5$. The coincident sites also form a lattice with a unit cell whose sides are equal to $\sqrt{5}a$ in the boundary. The cell size of the reciprocal lattice is thus five times larger than that of the primitive lattice.