## Supplementary material

In Fig.S1 we give the definition used for $\omega$ when measuring on a single isolated complex since this may not be completely obvious. The complete results for the dihedral angle $\omega$ are shown in Fig.S2 Note the small fraction of points at low angles. These correspond to trigonal prisms and fall outside the scope of this article.


Fig.S1 The normal to the plane through the green ligand is used to calculate $\omega$ by taking the angle it makes with the projected red propagation vector.


Fig.S2 Measurements of $\omega$ for transition metal chelates using the CCDC-database.

