Abstract. Let α be an automorphism of the totally disconnected group G. The compact open subgroup, V, of G is *tidy* for α if $[\alpha(V') : \alpha(V') \cap V']$ is minimised at V, where V' ranges over all compact open subgroups of G. Identifying a subgroup tidy for α is analogous to identifying a basis which puts a linear transformation into Jordan canonical form. This analogy is developed here by showing that commuting automorphisms have a common tidy subgroup of G and, conversely, that a group $\mathfrak{H}$ of automorphisms having a common tidy subgroup V is abelian modulo the automorphisms which leave V invariant. Certain subgroups of G are the analogues of eigenspaces and corresponding real characters of $\mathfrak{H}$ the analogues of eigenvalues.