**September 24, 2014:** David Vogan (MIT), *Matrices almost of order two.*

Langlands' conjectures about automorphic forms suggest that
$$\text{infinite-dimensional irreducible representations of } GL(n, \mathbb{R})$$
(something quite subtle) correspond more or less to
$$\text{conjugacy classes of elements of order two in } GL(n, \mathbb{C})$$
(something extremely simple).

I'll explain where this statement comes from, and how Langlands made precise the "more or less" so that the statement is actually true. I'll explain further how to use the same point of view to address other interesting problems, like Cartan's classification of real semisimple Lie groups.