A graph \( G \) has distinguishing number 2, written \( D(G) = 2 \), if its vertices can be 2-colored (not necessarily properly) so that the only automorphism preserving the colors is the identity. For finite \( G \), it is known that when the elements of \( \text{Aut}(G) \) move enough vertices compared to the size of \( \text{Aut}(G) \), then \( D(G) = 2 \). The Infinite Motion Conjecture (IMC) for a locally finite, connected graph \( G \) is that “enough” is infinitely many. It is true for many cases: for example, when \( \text{Aut}(G) \) is primitive or countable, when \( G \) is a tree, or when \( G \) has sub-exponential growth. The conjecture appears to be connected more to the logic and topology of infinite permutation groups than graph theory: a counterexample to the same conjecture for directed, non-locally finite graphs uses a version of Cantor’s back-and-forth argument for countable dense linear orders without endpoints. This talk will survey what is known about the IMC and its variations. (Received September 17, 2013)