Receptor Mediated Endocytosis is a process whereby, for example, mammalian cells take up essential nutrients and hormones from their environments. The process involves the formation of a protein coat on the cytoplasmic side of the plasma membrane, a major constituent of this coat being a unique supramolecular complex known as a clathrin “triskelion.” A triskelion has the form of a three-legged structure whose identical clathrin heavy chains are joined at their C-termini to a common hub. Under the proper conditions the triskelions can polymerize into polyhedral cages whose edges and faces are like those of a soccer ball. We will review how physical methods such as dynamic light scattering (DLS) and small angle neutron scattering (SANS) can be used to establish certain mesoscopic properties of the triskelions. We then postulate how the latter affect the assembly of triskelions into closed cages, invoking a simple analytical model for the free energy change that occurs when triskelions are removed from solution during cage polymerization. An extension of this work allows us to posit and analyze a model for the formation of partially invaginated coat structures, known as clathrin coated pits (CCPs), which are seen in cells undergoing endocytosis. Kinetic Monte-Carlo simulations based on this model enable us to rationalize observations about the temporal and probabilistic characteristics of the maturation of pits into closed clathrin-coated vesicles (CCVs).