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Thirty years and counting.

It has been over 30 years since Stanley proved that face numbers of simplicial polytopes satisfy McMullen's g -conditions. We will survey various attempts to extend this result to more general spaces. Along the way we will see that if Stanley's idea holds for PL-spheres, then there are strong implications for face numbers of PL-manifolds. Alternatively, if his idea does not hold for PL-spheres, then it must fail in an 'interesting' way. (Received September 04, 2010)