1062-53-179 **Shihshu Walter Wei*** (wwei@ou.edu), Professor Shihshu Walter Wei, Department of Mathematics, The University of Oklahoma, Norman, OK 73019. *The unity and simplicity of p-harmonic geometry.*

We'll discuss the unity and simplicity of p-harmonic geometry by way of simple example rather than by philosophical generalities.

Let $F : [0, \infty) \to [0, \infty)$ be a strictly increasing C^2 function with $F(0) = 0$. Then one can define F-energy and $F-$*harmonic map* in a similar way to p-energy and p- harmonic map.

We unify the concepts of F-harmonic maps, minimal hypersurfaces in Euclidean space, maximal spacelike hypersurfaces in Minkowski space, and Yang-Mills Fields, and introduce F*-Yang-Mills fields*, F-degree, and generalized Yang-Mills-Born-Infeld fields (with the plus sign or with the minus sign) on manifolds. When $F(t) = t\,, \frac{1}{p}(2t)^{\frac{p}{2}}\,, \sqrt{1+2t} - 1\,,$ and $1 - \sqrt{1-2t}\,,$ the F-Yang-Mills field becomes an ordinary Yang-Mills field, p-Yang-Mills field, a generalized Yang-Mills-Born-Infeld field with the plus sign, and a generalized Yang-Mills-Born-Infeld field with the minus sign on a manifold respectively.

We will discuss their common features in geometric analysis and geometric measure theory.

We will also discuss *sharp geometric inequalities on manifolds*. Some applications to geometry, topology, differential equations, several complex variables, and geometric flows will be considered. (Received August 07, 2010)