I will tell a story in two parts. The first is a new description of Einstein's equations in dimension 4, using the language of gauge theory. The independent variable is not a Riemannian metric but rather an SO(3)-connection $A$ over a 4-manifold. When $A$ satisfies a certain inequality, a metric $g(A)$ can be built out of its curvature (analogous to the relationship between the electromagnetic potential and field). The total volume of $g(A)$ is an action for the theory, its critical points are connections $A$ for which $g(A)$ is Einstein. As I will explain, this gives a new way to search for Einstein metrics by looking for critical points of this new action functional, which is seemingly better behaved than the Einstein-Hilbert action. The second part of the story is symplectic. Given an SO(3)-connection as above, one can define a symplectic form on the total space $Z$ of the associated 2-sphere bundle. $Z$ is either a symplectic Fano or a symplectic Calabi-Yau. I will explain how this construction has led to many new examples of symplectic Calabi-Yau 6-manifolds (e.g., with arbitrary fundamental group, or simply connected with arbitrarily high $b_2$). Finally, I will end with some symplectic classification conjectures”, similar to McDuffs classification of symplectic Fano 4-manifolds. I will describe how the action functional of the first part of the story gives a possible way to prove these conjectures coming from the second part. This is joint work with Kirill Krasnov and Dmitri Panov.