Some recent developments in the problem of relaxation of the area functional

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We introduce the area functional for smooth maps u, namely the functional measuring the area of the graph of u. We discuss how to extend it to L1 and analyze the related questions of determining the domain and the expression of the extended functional. For graphs of codimension greater than 1 the problem is open, and we restrict our discussion to some examples where many variants of the Plateau problems pop out. We discuss some recent partial results and list some important open problems, which strongly show how the question is related to existence and regularity of solutions to Plateau problems in codimension >1.

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