Preface

All the papers included in this issue of Serdica Mathematical Journal are related to the topics of well-posedness and stability of variational problems. It was proposed to have such an issue by the organizers of the Workshop "Well-posed Problems and Stability in Optimization" held at the Centre International de Rencontres Mathématiques (CIRM) in Marseille (France) during September 11–15, 1995.

I am grateful to the Editorial Board of Serdica Mathematical Journal for agreeing to have this issue, in which the papers follow the usual procedure of being communicated by a member of the Editorial Board and refereed by specialists.

The Workshop in Marseille followed 4 other workshops on the same general topic: Milano 1987 (organized by R. Lucchetti), Sofia 1989 (organized by P. Kenderov), Santa Margherita Ligure 1991 (organized by F. Patrone and T. Zolezzi) and Sozopol 1993 (organized by J. Revalski). This fifth edition was attended by some forty scholars coming from several countries, with a strong presence of Bulgarian, French and Italian mathematicians.

The aim of the workshop is to make a point on the mathematical theory dealing with well-posed problems and stability in the scalar and vector optimization, and related topics.

We remind that well-posedness means that there is a solution for the problem, continuously depending on the data (well-posedness in Hadamard sense), or such that every optimizing sequence approaches the solution (well-posedness in Tykhonov sense). A typical example one can consider is the genericity of the well-posed problems in given classes of optimization problems. A more applied issue is how to figure out a solution, and actually it is from this aspect that the two notions of well-posedness have origin.

The reader interested in introducing himself to this subject can consult the excellent book by A. Dontchev and T. Zolezzi "Well-posed Optimization Problems" (Lecture Notes in Mathematics 1543, Springer Verlag, 1993). Another book he or she could profitably consult is the book edited by R. Lucchetti and J. Revalski, "Recent Developments in Well-posed Variational Problems" (Mathematics and its Applications 331, Kluwer Academic Publishers, 1995). It contains papers introducing new areas of research in the field as well as an updating of already developed topics.

The workshop at CIRM has been devoted to both the theoretical and applied aspects of well-posedness. Here is the list of the different topics considered:

1) Topological aspects: hyperspace topologies and variational convergences. Genericity problems. Applications to the best approximation problems, to variational inequalities, to differential inclusions.

2) Well-posed problems in the calculus of variations, Lavrentiev phenomenon, Hamilton–Jacobi equations.

3) Robustness and stability in optimal control, Lipschitz behaviour of the solution set.

4) Well-posed problems in vector optimization. Stability of the solution set in game theory. Applications to mathematical economics.

5) Numerical methods in optimization, eigenvalue optimization, nonlinear conditioning, regularization.

6) Critical point theory, especially in the nonsmooth case, and applications.

Last but not least, I hope that this series of interesting workshops will continue: this seems to me very likely, due to the enthusiasm of the participants.

Yves Sonntag
Organizer of the Workshop