Preface

Visualization for the analysis of fluid motion

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In the present issue, Vol. 8 / No. 1 of the Journal of Visualization, seven technical papers are presented. In many of them, visualization plays key role for the analysis of fluid motions. The authors spread all over the world such as the countries, China, Hong-Kong, Denmark, Turkey, Korea, U. S. A., Jordan and Japan, which indicates JOV is becoming popular journal in the world. On behalf of the Editorial Board, the editors of the present issue acknowledge all the authors, referees and the people that contributed to the publication of this issue.

Fluid Motions are nonlinear in their nature. As a result, very different features of fluid motions appear when key parameters are changed. The key parameters in fluid dynamics are, for instance, Reynolds number, Mach number, Prandtl number, and else. Key parameters also lie in body geometries and their configurations immersed in fluid motion. There is infinite choice of the parameters for the problem settings. There are many methods for the approach to research of fluid motion. Theoretical, experimental and computational methods are the basic three. Fortunately, new measurement techniques especially using visualized allow us to carry out experiments for any flow configuration. Same is true for computational techniques. Now, there is a lot of good software available and progressed computer performance allowed us to carry out sophisticated simulations using PC's.

Based on the flow parameters, geometry parameters and the method of approach, we may prepare any number of technical papers by changing the key parameters. It may be necessary to do so for good understanding of nonlinear nature of fluid motions. When looking at the papers in this issue, we notice that it actually happens. They handle compressible flows/incompressible flows. Their approaches are experimental/computational. Their applications are so wide.

There is an old publication "Journal of the Aeronautical Research Institute, Tokyo Imperial University". The "Aeronautical Research Institute" now is the Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency (ISAS/JAXA) for which one of the editors of the present issue works. As a No. 65 of this old journal published in January 1930, there appeared the lecture given by Prof. L. Prandtl in October 1929. Within 23 pages of this journal (which would be only four or five pages of JOV), he explained all about boundary layer theory, flow instability, mixing-length (turbulence models) and effect of compressibility (Prandtl-Glauert law).

As fluid motion is nonlinear and the research became so difficult, deep analysis in a very narrow research area is required and we, researchers have fallen into such narrow region of fluid dynamics. When I saw the paper by Prof. Prandlt, I felt that we may need to stop and think what we are doing and how we are contributing to the research field of "Fluid Dynamics" from the global viewpoint. Visualization is a very good tool not only to understand the details of fluid motion but also to understand key feature of fluid motion. With this tool, we may be able to make much higher contributions to Fluid Dynamics.

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