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## Preface

During the last two decades the following volumes containing the proceedings of the Israel Seminar in Geometric Aspects of Functional Analysis appeared:

- 1983-1984 Published privately by Tel Aviv University
- 1985-1986 Springer Lecture Notes, Vol. 1267
- 1986-1987 Springer Lecture Notes, Vol. 1317
- 1987-1988 Springer Lecture Notes, Vol. 1376
- 1989-1990 Springer Lecture Notes, Vol. 1469
- 1992-1994 Operator Theory: Advances and Applications, Vol. 77, Birkhauser
- 1994-1996 MSRI Publications, Vol. 34, Cambridge University Press
- 1996-2000 Springer Lecture Notes, Vol. 1745
- 2001-2002 Springer Lecture Notes, Vol. 1807.

Of these, the first six were edited by Lindenstrauss and Milman, the seventh by Ball and Milman and the last two by the two of us.

As in the previous volumes, the current one reflects general trends of the Theory. Most of the papers deal with different aspects of Asymptotic Geometric Analysis, which includes classical “Local Theory of Normed Spaces” type questions, but now with the main emphasis on geometric problems. In addition, the volume contains papers on related aspects of Probability, classical Convexity and also Partial Differential Equations and Banach Algebras. Last but not least, the volume contains two expository articles on two subjects which seem at first sight quite far removed from the main topic the Seminar deals with but which proved to be very much connected. One is Statistical Learning Theory and the other is Models of Statistical Physics. We are grateful to the two authors for agreeing to contribute these surveys to our volume, and we very much hope this inclusion will substantially contribute to the development of the connection of these fields with Asymptotic Geometric Analysis.

All the papers here are original research papers (or invited expository papers) and were subject to the usual standards of refereeing.

As in previous proceedings of the GAFA Seminar, we also list here all the talks given in the seminar as well as talks in related workshops and conferences. We believe this gives a sense of the main directions of research in our area.

We are grateful to Ms. Diana Yellin for taking excellent care of the typesetting and some text editing aspects of this volume.

*Vitali Milman*  
*Gideon Schechtman*

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## The Start of GAFA Seminar Notes: Some Memories After 20 Years of Activity

In 1983/1984 Tel Aviv University published the first volume of what became the well-known series of GAFA – Geometric Aspects of Functional Analysis – Israel Seminar Notes. Seven years later the same acronym GAFA was adopted for a new journal, Geometric And Functional Analysis, which was founded by M. Gromov and V. Milman. Now, 20 years on, I would like to relate how and why the GAFA seminar started, and how the journal GAFA came to the same name.

Gilles Pisier once said to me while holding a copy of the 1983/84 volume of GAFA, published privately in Tel Aviv: “It looks exactly like our ‘Séminaire D’Analyse Fonctionnelle’; you ‘stole’ it!”. Yes and no. We didn’t “steal” it because we purposely copied it (which is not to say that we liked its appearance or not)! The volumes of Seminar Notes of Ecole Polytechnique which were first produced under the title “Séminaire Maurey-Schwartz” and then, when Pisier took over from Maurey, under the title “Séminaire D’Analyse Fonctionnelle”, were privately published by the Centre de Mathématiques, Ecole Polytechnique. These volumes played an enormously important role in collecting and spreading the most up-to-date knowledge and information on Geometric Functional Analysis, contributing to important developments in this theory in the 1970’s and early 1980’s. So, when G. Pisier declared that he was “tired” of producing the Seminar Notes and that the 1980/81 volume had been his last, I was most upset and decided to act. Actually, since the 1980/1981 academic year, Joram Lindenstrauss and I had been holding regular Israeli Seminars in Tel Aviv, the geographical center of Israel. The stream of foreign visitors brought important scientific news, and so the research center for Geometric Functional Analysis shifted to Israel. So, in 1983, Joram Lindenstrauss and I agreed to collect all the talks we had that year and to continue in the French tradition by copying the appearance of “Séminaire D’Analyse Fonctionnelle”. I was lucky; an excellent student by the name of Haim Wolfson, was finishing his Ph.D. that year under my supervision. He already had a couple of results, known today to every expert in the field (unfortunately for us, he changed his

direction to Computational Biology, and became a top expert in that field). So, Haim Wolfson was put in charge of the actual production (and later the distribution) of the volume. It was his idea to create the name “GAFA”. He felt that the name should somehow be connected to Tel Aviv, and GAFA was the closest we could come to Jaffa, the oldest and most historical part of Tel Aviv. I accepted the idea immediately, but realized only later how strong and appealing this short expression is. The production of the first issue was too costly for us. Having no way of funding the next issue, Joram Lindenstrauss and I agreed to turn to Springer Lecture Notes. Today, it seems strange that we were reluctant to do so, and were actually forced into it.

As for the logo of GAFA, it was created by one of the most remarkable and distinguished Israeli painters, Jan Rauchwerger. Though a great painter, he was not a graphic artist, but being my closest friend, it was difficult for him to refuse my request for help. Years later, he also controlled the design of the cover of the journal GAFA, as well as any slides I used, or posters of conferences I organized. Today, his taste can be seen in many places in Mathematics, and some people think it is my taste.

Now, continuing to the journal GAFA, in 1987, a Birkhäuser representative approached me with the suggestion of producing a new journal. It was also around that time, in 1988/89, that Gromov and I decided that it would be worthwhile to create a forum to discuss the results related to what we called “Geometric Analysis”. I must emphasize here that our understanding of this combination of words, which we first made up in the mid 1980’s, was not the mechanical use of Analysis in Geometry or vice versa. It was the influence of analytical ideas in Geometry on a conceptual level and the asymptotic study of Geometry (asymptotics and estimates are the standard way of thinking in Analysis). The only meaning for this is the asymptotics by dimension, namely, the study of geometric problems in high dimensional spaces, with special emphasis on understanding the asymptotics by dimension. The Concentration Phenomenon and the immense progress in the asymptotic study of normed spaces during the mid 1980’s showed that the theory already existed and required attention. To our dismay another group decided to launch a journal with the same name “Geometric Analysis” just six months before our journal was scheduled to start. We tried negotiating but to no avail, and we had to urgently find a new name. I was in Zurich at that time for a 2-month visit and half that time I devoted to trying to resolve the matter. Then “GAFA”, a name I already liked very much, sprung to mind and Gromov instantly agreed. The dilemma was resolved and GAFA was born. Of course, this time instead of “Geometric Aspects of Functional Analysis”, GAFA became the acronym for “Geometric And Functional Analysis”.

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