

Recollections on the Warwick school of
dynamics and contributions of Klaus
Schmidt and Peter Walters

A. Katok
Penn State University

CHRONOLOGY

Warwick symposia 1965–

My mathematical life 1964–

in the West since 1978

First visit to Warwick:

Symposium on Diffeomorphisms and foliations Summer 1979

(Organized by D. Epstein)

MY INVOLVEMENT WITH WARWICK

- Diffeomorphisms and foliations 1979 (D. Epstein)
- Dynamical Systems, Stability and Turbulence 1980 (D. Rand)
- Smooth ergodic theory 1986 (P. Walters)
- Actions of higher rank abelian groups and applications 1993-94 (W. Parry, K.Schmidt, P. Walters)
- Symposium on Ergodic theory on Riemannian manifolds 1995
- Colloquium 1998
- Interaction with the Cambridge Newton Institute "Rigidity" program Spring 2000
- This conference 2003

OTHER PROGRAMS IN DYNAMICS

- 1973/74 Applications of topology and dynamical systems (E.C. Zeeman)
- 1974/75 Ergodic theory (W. Parry, P. Walters)
- 1980/81 Von Neumann algebras and ergodic theory (K. Schmidt)
- 1987/88 Structure and bifurcations of strange attractors (R. McKay, D. Rand)
- 2002/03 Geometric and probabilistic aspects of dynamical systems (O. Kozlovski, O. Sarig, S. van Strien, P. Walters)

LEADING PERSONALITIES (some adjacent area omitted)

C. Zeeman: from 1963 Built the department and from 1969 the MRC became director of MRC. Designed unique facilities and "round houses". Developed the infrastructure and had other people involved in running specific programs. Planned to develop topology, algebra, analysis (Original order).

D. Epstein: from 1963 (came with Zeeman). A leading topologist with strong interest in geometric aspects of dynamics

B.Parry: Came from Sussex 1968 where he already developed ergodic theory (P. Walters started as student from Birmingham and Sussex)). Many important Ph. D. students in Warwick.

P.Walters: from 1968 (after one year at Berkeley)

K.Schmidt: from Vienna 1974-1994

A. Manning: Ph. D. Student of Zeeman 1973 (also influenced by Bowen); on faculty from 1974 after a year in Brazil

D. Rand: (came from Southampton in the 70's) Started in algebra; quickly developed strong interest in geometric dynamics and applied mathematics

C.Series: (came in late 70's from Harvard); dynamical systems and geometry

M. Pollicott: Ph.D. with Parry 1982; on faculty 87-97)

S. van Strien: Ph. D. Student with Rand late 70's-early 80's; on faculty from mid-90's. Low-dimensional and complex dynamics

SOME STUDENTS FROM EARLIER TIMES

- A. Manning (C. Zeeman)
- M. Rees (B. Parry mid 70's)
- S. Tuncel (B. Parry, 84)
- S. van Strien (D. Rand. early 80's)
- J. Hawkins (K.Schmidt, about 82)
- N. Haydn (P.Walters, about 90)

How it looked from Moscow in the late 60's-70's and from the US later

- Very congenial environment.
- Synthesis of topological/geometric (Zeeman, Eels, Epstein, Series), ergodic theory (Parry, Schmidt, Walters, Pollicott) and smooth dynamics (Manning, Rand, McKay, van Strien). As a result exceptional breadth and creative environment. (Not necessarily fully in agreement with a view from inside?)
- Great atmosphere for students

Creation of Ergodic Theory and Dynamical Systems Journal

- Need for a unifying voice in the vigorous emerging field.
- First discussions in the late seventies.
- Role of Tranah and CUP; special relations of CUP with Warwick Walters and Schmidt first "managing" editors.
- First editorial team: KS, PW, M. Herman, AK
- Parry a major influence from the beginning and later an editor himself.

Selected contributions of Klaus Schmidt and Peter Walters

KS: Comprehensive theory of abelian groups of automorphisms of compact groups (with Lind, Kitchens, later Einsiedler...).

Algebraic geometry/commutative algebra approach and rigidity.

Synthesis of algebraic methods and ergodic theory.

Algebraic dynamics book.

PW: Major contribution to the developing the thermodynamical formalism in dynamics. Variational principle for pressure

(developing and generalizing earlier results by Adler, Goodman, Dinaburg, Goodman, Ruelle, etc) and the relative version with Ledrappier.

Ergodic theory book.