IN MEMORY OF JACOB KOFNER
April 3, 1947-March 23, 1983

by

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On Saturday March 19th, 1983, Jacob Kofner gave a
talk, Extensions of Lasnev Theorems [14], at the Spring
Topology Conference, for which these Proceedings are the
journal of record. He died, at age 36, on the following
Wednesday, March 23rd. Although Jacob had been warned that
he suffered from a debilitating and sometimes fatal
disease, the dates above give some idea of the extent
to which Jacob's death caught his friends and colleagues by
surprise. Jacob will be missed by us all, and what is
particularly saddening is that Jacob's death came just as
he appeared to be successfully settled in at George Mason
University.

Jacob Kofner's mathematical interests lay in several
seemingly disparate areas of generalized metric spaces:
Symmetrizable spaces, quasi-metrizable spaces, semi-strati-
fiable spaces, orthocompact spaces, and transitive spaces.
Jacob's earliest work concerned a result of A. V.
Arhangel'skii [Soviet Math. Dokl. 6 (1965), 1187-1190].
Arhangel'skii had shown that each pseudo-open π-image of
metrizable space admits a weakly Cauchy symmetric. Jacob's
first two papers established the converse of Arhangel'skii's
result and gave an example of a functionally Hausdorff sym-
metrizable space that admits no weakly Cauchy symmetric.
Subsequently, Jacob showed that a zero-dimensional com-
pletely regular symmetrizable space need not admit a weakly

Cauchy symmetric [6]. In [6], Jacob also established the
result, which had been obtained by D. Burke [Proc. Amer.
Math. Soc. 33 (1972), 161-164], that a semi-metrizable
space admits a weakly Cauchy symmetric, and so, as both
Burke and Kofner observed, can be characterized as a space
that is the pseudo-open π-image of a metrizable space.

The new class of spaces to which Jacob referred in his
title to [1] were the spaces that he called pseudo-strati-
fiable spaces and that were called semi-stratifiable spaces
by G. Creede [Pacific J. Math. 32 (1970), 47-54]. The fol-
lowing excerpt from a letter by P. Alexandroff, written to
I. Parovichenko when Jacob had only his Master's degree,
indicates the import of Jacob's new class of spaces.

> I was impressed by the system of results built
> by Kofner around a new and apparently helpful concept
> of pseudo-stratifiable space (in particular the
> theorem: A space is semi-metrizable if and only
> if it is first countable and pseudo-stratifiable)
> . . . I would like to inform you that, in addition to
> Kofner's notes referred by me six months ago to Dan
> SSSR, I have also decided to recommend two of his
> articles for publication in the Polish journals Fund.
> Math. and Bull. Akad. Nauk. Without doubt these papers
> will arouse great interest . . .

On the basis of Alexandroff's recommendation, Paro-
vichenko accepted Jacob as a Ph.D. student. Although Jacob
prepared a Ph.D. thesis under Parovichenko's direction,
this thesis was never submitted because of Jacob's decision
to emigrate to Israel.

Jacob's interest in generalized metric spaces was
diverted from semi-stratifiable spaces and symmetrizable
spaces to quasi-metrizable when Jacob reviewed R. Stolten-
berg's paper, On Quasi-metric Spaces [Duke Math. J. 36
(1969), 65-71]. Stoltenberg had asked if every Moore

space is quasi-metrizable, and in the review of Stolten-
berg's paper Jacob provided an example of a non-quasi-
metrizable Moore space [3]. Jacob's further contributions
to the theory of quasi-metrizable spaces were both fundamental
and vast. Fortunately, Jacob, himself, surveyed his work in
this area [10], and so it suffices to consider here only
Jacob's most famous quasi-metric space, the Kofner Plane.

     It may appear presumptuous to associate Jacob's name
with a topology on the plane that is, after all, a simple
and natural modification of the topology of the Niemytzki
Plane (=Moore Plane). The name, Kofner Plane, however, is
justified, not by Jacob's definition of this space, but rather
by his having discovered its fundamental properties. In
establishing that the Kofner Plane is an orthocompact quasi-
metrizable space that admits no σ-interior-preserving base,
Jacob displayed dazzling geometric insight, and, despite a
few distracting misprints, the translation of his paper,
"On Δ-metrizable Spaces" [5], provides an accessible paper
of considerable depth, which shows that general topology is
rooted in geometry.

     Just as the example given in the review of Stoltenberg's
paper led Jacob to the study of quasi-metrizable spaces, it
was his invention of the Kofner Plane that led him to his
last major area of interest the study of orthocompact and
transitive spaces. A space is transitive provided that each
of its normal neighbornets contains a transitive neighbornet.
In light of the properties of the Kofner Plane mentioned
above, it is evident that the Kofner Plane is not a transi-
tive space; in fact this space is essentially the only

non-transitive space in the literature. Curiously, however,
classes of spaces that are transitive are also hard to find.
Although Jacob's example in [3] is a transitive Moore space
that is not orthocompact, his results from [11] and [12]
that every space with an orthobase is transitive and that
every generalized ordered space is transitive suggest that
there is a relationship between orthocompactness and transi-
tivity that is not yet well understood.

In a sense no one's mathematical career is complete,
but Jacob's mathematics was cut off, and so he has left
unanswered more than the usual number of questions. Some
are straightforward: Is every Moore space transitive?
Some are esoteric: Is every nth power of each quasi-
metrizable generalized ordered space n^+-transitive [13]?
But taken as a whole Jacob's questions should provoke us to
complete his work, and the completion of Jacob Kofner's work
will be a far better memorial to him than what is written
here.

<div align="center">Peter Fletcher</div>

Publications

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    metrizability theory* (Russian), Dokl. Akad. Nauk SSSR
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3. *Review of R. Stoltenberg's "On quasi-metric spaces"*
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4. *Pseudostratifiable spaces* (Russian), Fund. Math. 70,
    No. 1 (1971), 25-47.

5. *On Δ-metrizable spaces* (Russian), Mat. Zameti 13, No. 2
    (1973), 277-287.   (Translation = Math. Notes 13, No. 2
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6. *On symmetrizable spaces and factor mappings* (Russian),
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7. *Quasi-metrizable spaces*, Pacific J. Math. 88 (1980),
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9. *Products of ordered spaces and transitivity*, Topology
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