ADDENDUM TO A PAPER ON FIXED POINTS*

By

RONALD H. ROSEN

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Please see [2] for definitions and notation. In this paper the author proved some fixed point theorems for chainable continua which are the inverse limits of arcs. He also raised the question whether every chainable continuum is the inverse limit of a family of arcs. It is known that each chainable metric continuum, otherwise known as a snakelike continuum, is indeed the limit of an inverse sequence of arcs.

Mardešić in [1] gave a counter example to this conjecture. On the other hand he proved the following result which we shall utilize below to extend our fixed point theorems.

Theorem. (*Mardešić*) *Every chainable continuum is the inverse limit of a family of snakelike continua.*

Incidentally, it may be noted that the inverse limit of chainable continua is also a chainable continuum.

Lemma 3′. *Suppose f and g are u. s. c. functions of a snakelike continuum X into another X', f is onto and the graphs of f and g are both connected. Then f and g have an incidence point.*

This is a modification of Lemma 3 of [2] using snakelike continua here instead of arcs; of course it is an immediate consequence of Theorem 1 of [2]. A similar modification of this theorem gives us:

Theorem 1′. *Let X and Y be inverse limits of inverse systems of snakelike continua over directed sets A and A', respectively, and ϕ be an isomorphism of A into A'. Suppose f and g are u. s. c. functions of X into Y, f is onto and the graphs of f and g are both connected. Then f and g have an incidence point.*

The proof is quite similar to that of Theorem 1 and uses Lemma 3′ above rather than Lemma 3.

Judicious substitution of "inverse limit of snakelike continua" for "inverse limit of arcs" in the remaining theorems of [2], give us further more general results.

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Bibliography

[1] Mardešić, Sibe, *Chainable continua and inverse limits,* Glasnik Mat. Fiz. Ser. II 14 (1959), 219–232.

[2] Rosen, R. H., *Fixed points for multi-valued functions* etc., Proc. A. M. S., vol. 10 (1959), 167–173.

University of Michigan and
Columbia University.
Ann Arbor, Michigan 48104
U. S. A.