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CREATIVE SEQUENCES AND DOUBLE SEQUENCES

Sr. M. ADRIAN CARPENTIER, O.S.U.

*Introduction.** Creative sets, creative pairs of sets, creative k-tuples for any finite k, and creative sequences of sets have been treated already by J. Myhill [8], R. M. Smullyan [11], A. H. Lachlan [4, 5], V. Vŭcković [12, 13], and J. P. Cleave [1], among others. This paper presents first of all a complete mathematical theory for sequences using the methodology of Smullyan and Vŭcković. Definitions of effective inseparability, creativity, and universality are given, and for disjoint recursively enumerable sequences these concepts are shown to be equivalent. Isomorphism of creative sequences follows immediately from universality as in previous literature.

The second part of this paper is a development of analogous theories for double sequences. Four cases arise from considering a double sequence as a square array:

$$\begin{array}{cccccc} A_0^0 & A_1^0 & A_2^0 & A_3^0 & A_4^0 & \dots A_i^0 \dots \\ A_0^1 & A_1^1 & A_2^1 & A_3^1 & A_4^1 & \dots A_i^1 \dots \\ & & & \dots & & \\ A_0^n & A_1^n & A_2^n & A_3^n & A_4^n & \dots A_i^n \dots \\ & & & \dots & & \end{array}$$

and viewing it from different aspects. This is best explained by considering the property of disjointness. A double sequence is: (1) **h**-*disjoint* or pairwise disjoint within each row if for each $n \varepsilon N$, $A_i^n \cap A_j^n = \phi$ whenever $i \neq j$, (2) **v**-*disjoint* or pairwise disjoint within each column if for each $i \varepsilon N$, $A_i^n \cap A_i^m = \phi$ for $n \neq m$, (3) **t**-*disjoint* or totally pairwise disjoint if $A_i^n \cap A_j^m = \phi$

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