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On Nebesky ξ -grammars. (English. English summary)

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Let V be an alphabet and V^* the set of all strings over V . Then the 4-ary predicate ξ over V is defined as follows: $\xi(u, v, w, z)$ holds iff there exist $x, y, p, q, r \in V^*$ with p, q, r nonempty, such that $u = xry$, $v = xpry$, $w = xrqy$ and $z = xprqy$. Since $\xi(u, v, w, z_1)$ and $\xi(u, v, w, z_2)$ imply $z_1 = z_2$, ξ induces an operation on languages L over V , viz. $\xi(L) = L \cup \{z \in V^* \mid \exists u, v, w \in L: \xi(u, v, w, z)\}$. A ξ -grammar $G = (V, B, \xi^*)$ consists of an alphabet V , a finite language B over V , and $\xi^* = \bigcup \{\xi^i \mid i \geq 0\}$. The language generated by G is $L(G) = \xi^*(B)$.

The author shows that (i) the family of languages generated by these ξ -grammars is not closed under many operations (union, concatenation, Kleene $*$, homomorphism, etc.); (ii) the families of regular, of context-sensitive, and of recursively enumerable languages are each closed under the operation ξ ; and (iii) the family of context-free languages is not closed under ξ . *Peter R. J. Asveld* (NL-TWEN-C)