

A Simple Way to Obtain Ultrawords.

Robert A. Herrmann

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For the GGU-model, the following theorem is interpreted as follows: The \mathbf{d} represents an event sequence. The Robinson infinite numbers λ s are the objects that determine each of the hyperfinite $*$ event sequences that include \mathbf{d} . From the construction of the GGU-model, for each such λ and the collection of all hyperfinite $*$ event sequence within the model, there is a hyperfinite $*$ event sequence d_λ that contains the original \mathbf{d} . And, the d_λ results from application of the basic universe generating ultralogic $*$ \mathbf{S} to the ultraword w_λ . [Robinson formal infinite numbers are intuitive infinite numbers introduced by Leibniz.]

Theorem 7.3.5 *For $\mathbf{d} = \{\mathbf{F}_n \mid n \in \mathbb{N}\}$ and each infinite $\lambda \in \mathbb{N}_\infty$, there exists one and only one $w_\lambda \in *M_\lambda$ and hyperfinite d_λ such that $\mathbf{d} \subset d_\lambda \subset *S(\{w_\lambda\})$, and $d_\lambda \subset *d$.*

Proof. For each, $n \in \mathbb{N}$, let $G(n) = \{\mathbf{F}_i \mid 0 \leq i \leq n\} \subset \mathbf{d}$. Thus, $G: \mathbb{N} \rightarrow \mathcal{F}(\mathbf{d})$ the set of all finite subsets of \mathbf{d} . Let $n > 0$. Then \mathbf{M}_n has one and only one member and by definition $\mathbf{w}_n \in \mathbf{M}_n$ has the property that $G(n) \subset S(\{\mathbf{w}_n\})$. Hence, by $*$ -transfer, for the function $*M$, and each $\lambda \in \mathbb{N}_\infty$, there is one and only one $w_\lambda \in *M_\lambda$ such that hyperfinite $*G(\lambda) \subset *S(\{w_\lambda\})$. Finally, by definition of G , $\mathbf{d} \subset *G(\lambda) \subset *d$. ■

Note that theorems that generate or use ultrawords may need to be trivially modified or not used depending upon the definition for \mathbf{d} . For example, for the ordering used in [1], then the ultraword used and its location would be an ultimate ultraword as generated in theorem 7.3.4 in [2], where each w_{ij} is an ultraword or ultimate ultraword that, upon application of $*S$, yields the developmental paradigm for each interval $[c_i, c_{i+1})$.

[1] Herrmann, R. A. (2006), The GGU-model and Generation of the Developmental Paradigms, <http://arxiv.org/abs/math/0605120>

[2] Herrmann, R. A. (1993), The Theory of Ultralogics, Part II, <http://arxiv.org/abs/math/9903082>