Elliot Alexander Kaplan* (eakapla2@illinois.edu) and Philip Ehrlich. Number systems with simplicity hierarchies: a generalization of Conway’s theory of surreal numbers II.

In 2001, the second author brought to the fore the algebraico-tree-theoretic simplicity hierarchical structure of J. H. Conway’s ordered field \( \textbf{No} \) of surreal numbers and employed it to provide, among other things, necessary and sufficient conditions for an ordered field to be isomorphic to an initial subfield of \( \textbf{No} \), i.e. a subfield of \( \textbf{No} \) that is an initial subtree of \( \textbf{No} \). In this presentation, analogous results for ordered groups and ordered domains are established which in turn are employed to characterize the convex subgroups and convex subdomains of initial subfields of \( \textbf{No} \) that are themselves initial. It is further shown that an initial subdomain of \( \textbf{No} \) is discrete if and only if it is an initial subdomain of \( \textbf{No} \)’s canonical integer part \( \textbf{Oz} \) of omnific integers. (Received September 18, 2015)