Preface

These notes are based on a set of lectures that I gave at the Rockefeller University in 1969. In their original version they were fairly widely distributed at the time. I have left them largely unchanged, though I would undoubtedly do many things differently, were I to write them today. I have made a few changes, which I explain below.

§1 has been extensively rewritten. This was motivated by the discovery that my notes contained no intuitive motivation for the basic concepts of admissibility theory, though I had certainly provided such motivation in my lectures. §2 deals with primitive recursive set functions, a subject which greatly interested me at the time. It contains a good deal of technical information, including extended recursion schemata and a proof of Carol Karp's "stability lemma". I have made no changes to §2. Despite its title, §3 bears at best a very tenuous relation to the subject known today as "fine structure theory". It introduces the Σ_1-projectum of an admissible structure and contains a number of lemmata on "strong" (i.e. nonprojectible) admissibles. I have made no changes, though much of the chapter strikes me today as being of marginal interest. §4 treats Jon Barwise' remarkable theory of infinitary languages on admissible structures. This beautiful theory enables us to use elementary model theory – as we know it from ordinary finitary predicate logic – to produce well founded structures. The original §4 is lost, alas, and I have therefore written a new version. §5 and §6, to which I have made no changes, deal with forcing over admissible sets (and even p.r. closed sets) in place of models of set theory. These chapters contain material which, to my knowledge, is still not readily available in the literature. (This is my main excuse for now placing the notes on my website.) The main result of these chapters says that if $\langle \alpha_i \mid i < \lambda \rangle$ is a countable sequence of countable ordinals s.t. α_i is admissible in $\langle \alpha_h \mid h < i \rangle$ for $i < \lambda$, then there is a real $a \subset \omega$ s.t. α_i is the i-th ordinal admissible in a for $i < \lambda$. As far as I know, no proof of this has appeared in print.

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