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Harjoitus 13

1. Suppose  $\kappa > |T|$  is such that for all  $n < \omega$  and  $f : [\kappa]^n \rightarrow 2^{|T|}$  there is  $X \subseteq \kappa$  of power  $\kappa$  such that  $f \upharpoonright [X]^n$  is constant. Show that if  $T$  has a model of power  $\geq \kappa$  which omits  $p \in S(\emptyset)$ , then  $T$  has arbitrarily large models which omit  $p$ . (To prove the conclusion one does not really need such a large cardinal,  $\beth_{(2^{|T|})^+}$  is enough.)
2. Give an example of a theory and a type  $p \in S(\emptyset)$  such that  $T$  has a model omitting  $p$  but not arbitrarily large ones.