Remark 3.64. [02K] *Attention! Suppose as above that the sets A_i are not empty. This is formally written as $\forall i \in I, \exists x \in A_i$. Intuitively this brings us to say that the element x depends on i, and therefore that $x = x(i)$. This step, as intuitive as it is, is exactly the axiom of choice.*