Corrigenda to "Integration Theory: A Second Course" by Martin Väth

This corrigendum is published so late, because I hoped for quite a while that there will be a second edition of the book in which I could fix the mistakes.

First of all, I want to excuse for falsely claiming after Theorem 7.1 that there is an inaccuracy in the corresponding proof of Jürgen Elstrodt's book "Maß- und Integrationstheorie". This was a misunderstanding on *my* side, and the alternative proof of Elstrodt's book is completely correct.

A second mistake is in Proposition 2.8: It is in general true that all measurable sets in a product $S_1 \times \cdots \times S_n$ of Borel spaces S_i are Borel, but the converse holds in general only if all except at most one of the spaces S_i has a countable base of the topology. (Thanks to J. Elstrodt for pointing out this mistake.)

Due to this mistake, one can claim in Theorem 5.3 only that the restriction of the functions to $S \times S_0$ (and also to $S_0 \times S$) are measurable if $S_0 \subseteq S$ has a countable base of its inherited topology.

The other assertions based on Theorem 5.3 in the book remain true, nevertheless, but the proof of some results for convolutions is more complicated if S does not have a countable base of the topology: Essentially, one must argue by approximating with functions with compact support. On product spaces, one can show for such functions a Fubini type theorem by means of the Stone-Weierstraß approximation theorem. Details are already written in the second edition of the book, but it is unclear whether this well ever appear.