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*Note added in proof:* Besides the articles cited in subsection 1.5, an idea of Stueckelberg [82] should be mentioned as a forerunner of  $U_4$ -theory: "Torsion of space as a field acts differently from curvature of space (gravitation) only if the direction of transport (of momentum, F.W.H.) is different from the transported vector". Stueckelberg was aware that there should emerge a new spin-spin interaction, but he didn't present a theory. Since the early sixties Ivanenko and his coworkers also repeatedly advocated the use of torsion in GR (see our paper [28] for references). For a newer article see Ivanenko [83]. The deviations of  $U_4$ -theory from GR are worked out in [84], the question of the localization of material energy and spin is answered in [85].

*Errata:* In Part I the references [32,33] were misprinted. For the correction see [32a,33a].