assumptions of a speculative character. Given these, we are let to expect substantial deviations from scaling in the structure functions at large q^2. The effects are somewhat washed out in the partially integrated cross sections but are still visible there, especially for the x distributions as they change shape with beam energy.

It is natural to ask how these results compare with expectations for other possible mechanisms of scaling breakdown. In this connection it is especially interesting to contemplate a situation where the strong interactions are governed by an abelian rather than a non abelian gauge theory.[19] Of course abelian theories are not asymptotically free. That is, if there is a fixed point it is not at the origin of coupling constant space. The anomalous dimensions, which are determined at the fixed point, cannot therefore be reliably gotten by perturbation theory - even if we knew where the fixed point is located. Just for orientation, however, suppose that the effective coupling constant at the fixed point is very small, so that lowest order perturbation theory can be used. In that case the anomalous dimensions would have the same general properties as in the non-abelian case. The chief difference is that the analog of Eq. (2) would contain q^2/μ^2 in place of $\log (q^2/\mu^2)$ - the scaling deviations, that is, would go like inverse powers of (q^2/μ^2) rather than inverse powers of $\log q^2/\mu^2$. For the structure functions and differential cross sections, therefore, the general trends would resemble those of the non-abelian case, but the effects would be greatly magnified.

There is another mechanism of possible scaling breakdown for neutrino processes that has been discussed in the literature.[20] The idea here is to modify the parton model solely through endowing the partons with form factors. The trends can be seen in the paper by Barger.[20]