

Abstract Submitted  
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**Quarks, gluons, and color are sufficient, but are they necessary**

**II** DAVID BARTLETT, Univ of Colorado - Boulder — The 25th anniversary of the death of John Stewart Bell, was marked by lively discussion in Physics Today. This activity spurred me to consider the quark as one of Bells ugly hidden variables which can be discarded[J16.00008, April APS, 2016]. Here I extend comments on topics that are usually thought to be settled. These include CP-violation in KLong decay and quantum spookiness in B-decays. Apparently, the simple reaction  $e^+ e^-$  goes to anything + anything bar misses essential hadronic physics. The *psi* was indeed discovered by observing a sharp peak in the total cross section for  $e^+e^-$  at SLAC, but the J was found in the fragments from pp collisions at Brookhaven. Similarly, the parity of the D-meson was determined in a particle reconstruction by an LBL-SLAC group. They analyzed the Dalitz plot of the  $Kpipi$  in fragments at SPEAR and found Evidence for Parity Nonconservation in the Decays of the Narrow states near 1.87 GeV/c<sup>2</sup> [J. E. Wiss et al (1976)]. The authors did not mention quarks at all. Finally, the parity of the B-meson may be relevant to the exotic charmonium states observed in fragments at the B-factories. Unfortunately, the parity of the B cannot currently be determined independently of the quark model[PDG-2014, B+/-, top page 51].

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