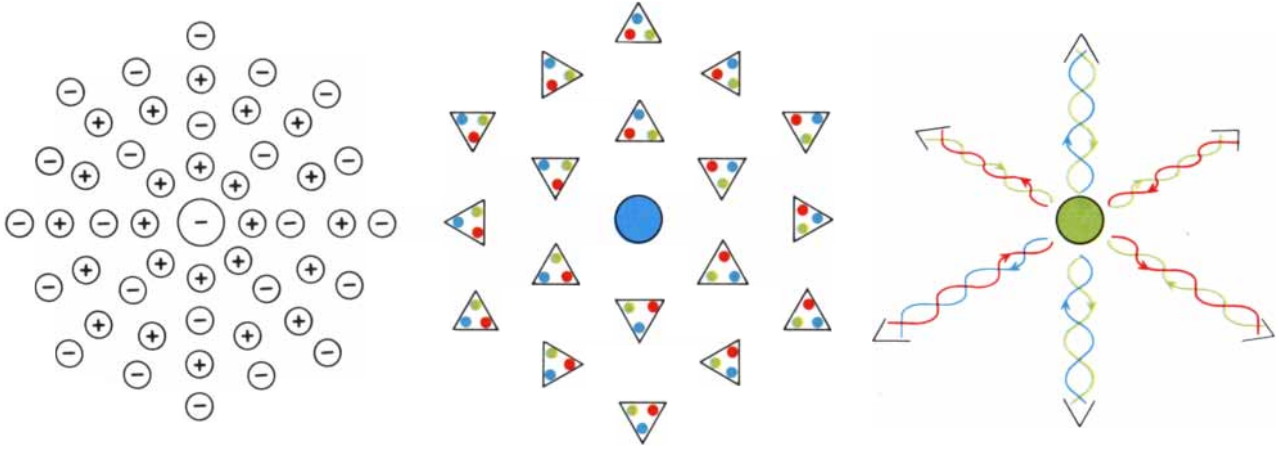

SCREENING AND CAMOUFLAGE EFFECTS modify the behavior of fundamental forces over distance. The left panel shows an electron in a vacuum; it is surrounded by short-lived pairs of virtual electrons and positrons, which in quantum theory populate the vacuum. The electron attracts the virtual positrons and repels the virtual electrons, thereby screening itself in positive charge. The farther from the electron a real charge is, the thicker the intervening screen of virtual positive charges is and the smaller the electron's effective charge will be. The color force is subject to the same screening effect (*center*). Virtual color charges (mostly quark-antiquark pairs) fill the vacuum; a colored quark attracts contrasting colors, thereby surrounding itself with a screen that acts to reduce its effective charge at increasing distances. An effect called camouflage counteracts screening, however. A quark continuously radiates and reabsorbs gluons that carry its color charge to considerable distances and change its color, in this case from blue to green (*right*). A charge's full magnitude can be felt only outside the space it occupies. Therefore camouflage acts to increase the force felt by an actual quark as it moves away from the first quark, toward the edge of the color-charged region. The net result of screening and camouflage is that at close range the strong interaction, which is based on the color charge, is weaker, whereas at longer ranges it is stronger.