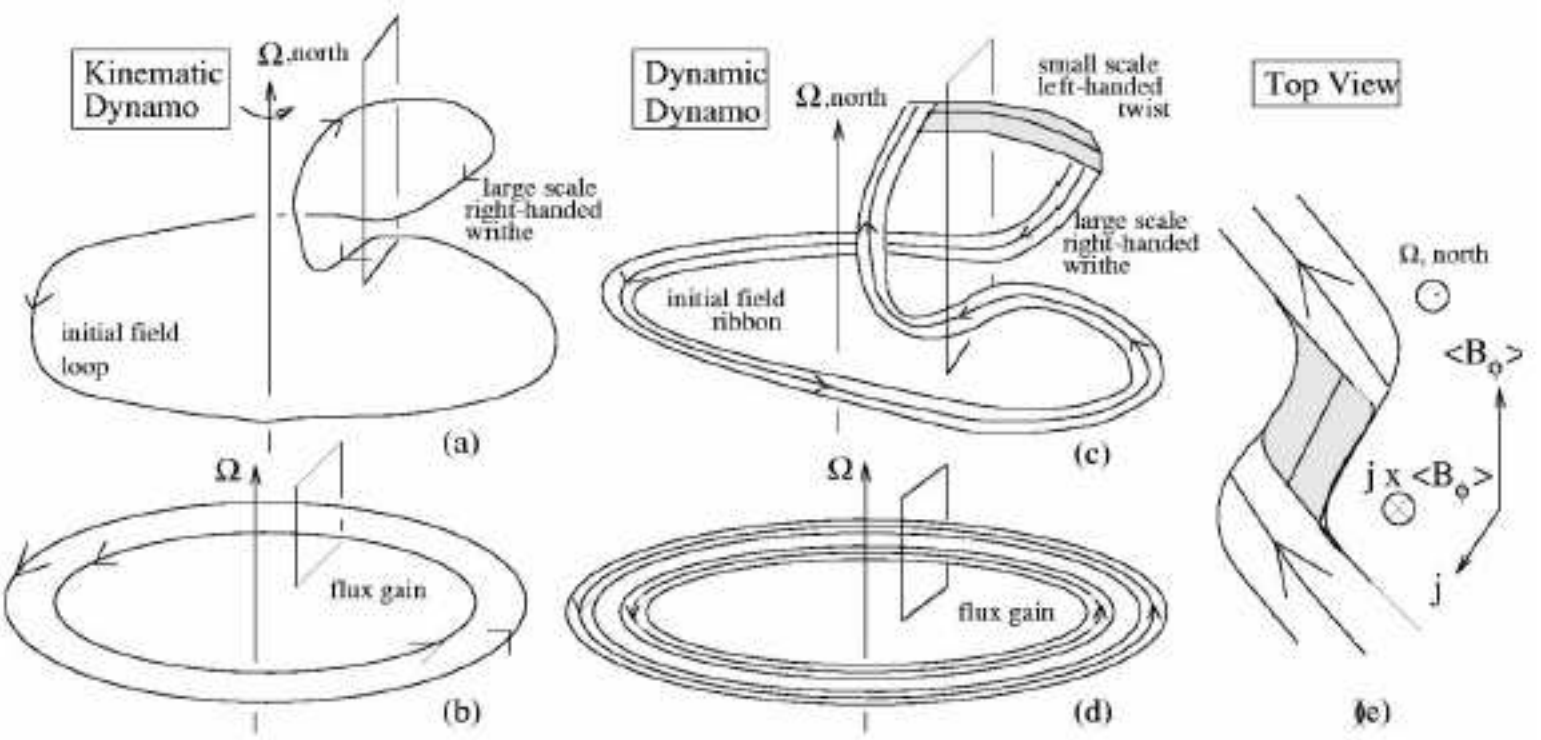

c. 1.—Schematic of *kinematic* helical α-Ω dynamo in northern hemisphere is shown in (*a*) and (*b*), while the *dynamic* helical α-Ω dynamo is sho
ogy in (*c*) and (*d*). The mean field is represented as a line in (*a*) and (*b*) and as a tube in (*c*) and (*d*). (*a*) From an initial toroidal loop, the α-effect i
ing loop of right-handed writhe that gives a radial field component. (*b*) Differential rotation at the base of the loop shears the radial component, amp
oroidal component, and the ejection of the top part of loop (through CMEs) allows for a net flux gain through the rectangle. (*c*) Same as (*a*) but w
represented as a flux tube. This shows how the right-handed writhe of the large-scale loop is accompanied by a left-handed twist along the tube, incorp
netic helicity conservation. (*d*) Same as (*b*) but with field represented as a ribbon/tube. (*e*) Top view of the combined twist and writhe that can be co
observed coronal magnetic structures in active regions. Note the N shape of the right-handed large-scale twist in combination with the left-handed
twist along the tube. The back-reaction force that resists bending is seen to result from the small-scale twist. Diffusing the top part of the loops allo
lux generation in the rectangles of (*a*)–(*d*) and alleviates the back-reaction that could otherwise quench the dynamo.