

```

EG[o_, opts___] := Module[{vd, n, gs, vs, es = {}, e, p = 0, m1, m2, g, q, k, lbl},
  lbl = Labels /. {opts} /. Options[EG];
  gs = VPBGens[n = Count[vd =  $\bar{\Gamma}$ [o], _EOS]]; vs = {vd};
  While[p < Length[vs], m1 = Count[vd = vs[[++p]], X[_[_], _]];
    Do[m2 = Count[q =  $\bar{\Gamma}$ [VD[VPB[n, g /. { $\sigma$  →  $\bar{\sigma}$ ,  $\bar{\sigma}$  →  $\sigma$ ]}]] ** vd], X[_[_], _]];
    If[m2 < m1, If[! MemberQ[vs, q], AppendTo[vs, q]];
    e = p → Position[vs, q][[1, 1]];
    AppendTo[es, If[lbl, Labeled[e, g, e] ] ],
    {g, gs} ] ];
  Graph[Table[If[lbl, Labeled[k, Length[vs[[k]]] - n], k], {k, p}], es,
  FilterRules[Join[{opts}, Options[EG]], Options[Graph]] ]

```