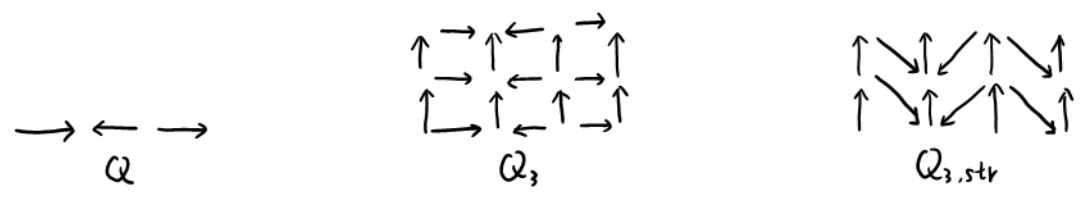
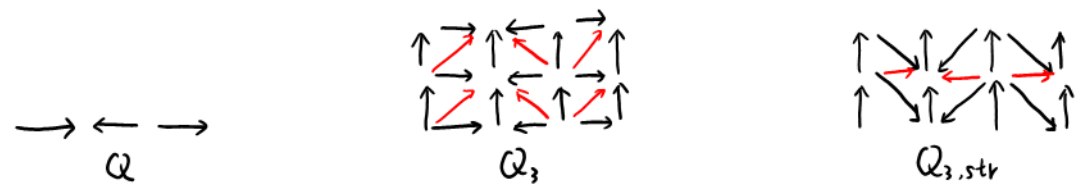


$$Flag_3(X) \longleftrightarrow Gr(\Phi(X))$$

$$Flag_{3, str}(X) \longleftrightarrow Gr(\Phi(X))$$



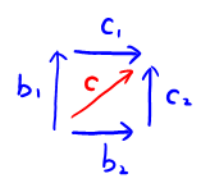
$$R = K(Q_d / \begin{smallmatrix} \rightarrow \\ \rightarrow \end{smallmatrix}) \quad \text{or} \quad K(Q_{d, str} / \begin{smallmatrix} \rightarrow \\ \rightarrow \end{smallmatrix}) \quad d \geq 2$$



$\rightarrow$  is the virtual arrow

$$\begin{array}{ccc} \eta \in Ext'(\Phi(S), \Phi(X)) & & 0 \rightarrow \Phi(X) \rightarrow \Phi(Y) \xrightarrow{\pi} \Phi(S) \rightarrow 0 \\ \downarrow & & \parallel \uparrow \\ Ext'(W, \Phi(X)) & & 0 \rightarrow \Phi(X) \rightarrow \pi^{-1}(W) \rightarrow W \rightarrow 0 \\ \downarrow & & \downarrow \parallel \\ \bar{\eta} \in Ext'(W, \Phi(X)/_V) & & 0 \rightarrow \Phi(X)/_V \rightarrow \pi^{-1}(W)/_V \rightarrow W \rightarrow 0 \end{array}$$

$$0 \rightarrow \bigoplus_{c \in Q_2} Re_{t(c)} \otimes_k e_{s(c)} T \rightarrow \bigoplus_{b \in Q_1} Re_{t(b)} \otimes_k e_{s(b)} T \rightarrow \bigoplus_{i \in Q_0} Re_i \otimes_k e_i T \rightarrow T \rightarrow 0$$



$$\begin{aligned} r \otimes x &\mapsto rc_1 \otimes x + r \otimes b_1 x \\ &\quad - rc_1 \otimes x - r \otimes b_2 x \\ r \otimes x &\mapsto rb \otimes x - r \otimes bx \end{aligned}$$

```

      1
    1 1 1
  1 2 1
    2 1 2
  1 3 1
    2 2 2
  1 3 1
    2 1 2
  1 2 1
    1 1 1
      1

```

$E_6$

```

      1
    1 1 1
  1 2 1
    2 1 2
  1 3 1
    2 3 2
  1 3 2 2
    2 4 1
  1 3 2 3
    2 4 2
  1 3 2 2
    2 4 1
  1 3 2 2
    2 3 1
  1 2 1 2
    1 2 1
      1 1 1
        1

```

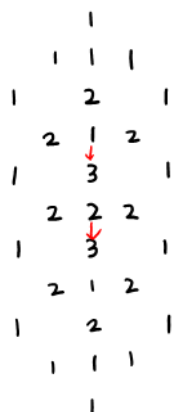
$E_7$

```

      1
    1 1 1
  1 2 1
    2 1 2
  1 2 3 1
    2 3 2 2
  1 3 4 1
    2 4 2 3
  1 3 5 2
    2 4 3 4
  1 3 6 2
    2 5 3 4
  1 4 6 2
    2 5 3 4
  1 3 6 2
    2 4 3 4
  1 3 5 2
    2 4 2 3
  1 3 4 1
    2 3 2 2
  1 2 3 1
    1 2 1 2
      1 2 1
        1 1 1
          1

```

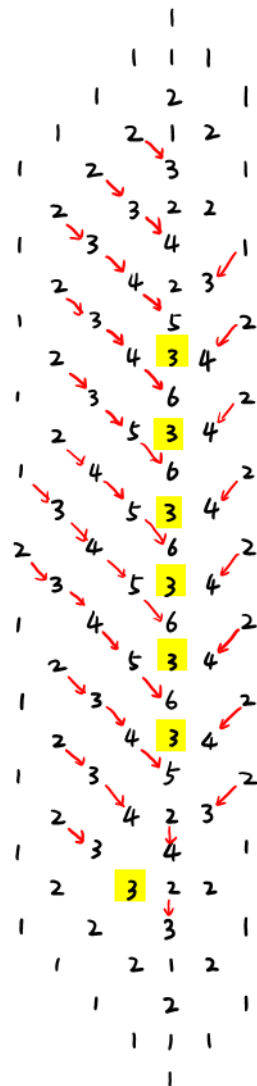
$E_8$



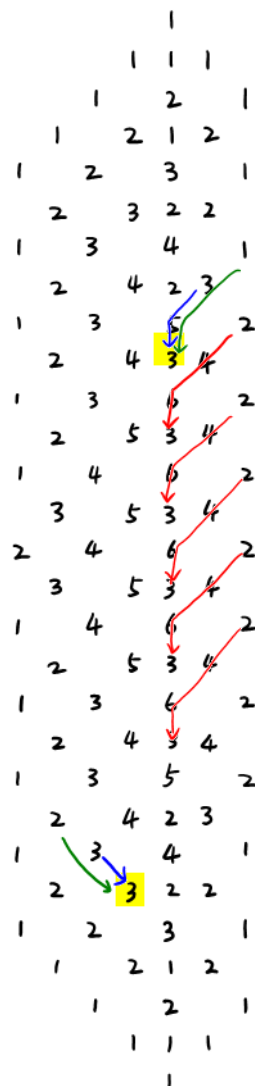
$E_6$



$E_7$



$E_8$ , easy situation



$E_8$ , some exceptions  
blue & green are two  
different possibilities.

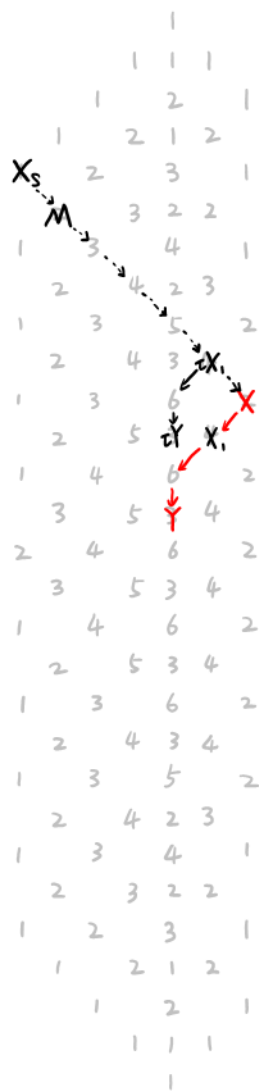
$\begin{array}{c} [M, N] \\ [M, N]' \end{array} \begin{array}{c} N \\ M \end{array}$	X	Y	S
X	$\begin{smallmatrix} 1 \\ 0 \end{smallmatrix}$	$\begin{smallmatrix} 1 \\ 0 \end{smallmatrix}$	$\begin{smallmatrix} 0 \\ 0 \end{smallmatrix}$
Y	$\begin{smallmatrix} 0 \\ 0 \end{smallmatrix}$	$\begin{smallmatrix} 1 \\ 0 \end{smallmatrix}$	$\begin{smallmatrix} 1 \\ 0 \end{smallmatrix}$
S	$\begin{smallmatrix} 0 \\ 1 \end{smallmatrix}$	$\begin{smallmatrix} 0 \\ 0 \end{smallmatrix}$	$\begin{smallmatrix} 1 \\ 0 \end{smallmatrix}$

$$\begin{array}{c}
 \eta \in \text{Ext}'(\Phi(S), \Phi(X)) \\
 \downarrow \\
 \text{Ext}'(W, \Phi(X)) \\
 \downarrow \\
 \bar{\eta} \in \text{Ext}'(W, \Phi(X)/_V)
 \end{array}$$

$$\begin{array}{ccccccc}
 0 & \longrightarrow & \Phi(X) & \longrightarrow & \Phi(Y) & \xrightarrow{\pi} & \Phi(S) \longrightarrow 0 \\
 & & \parallel & & \uparrow & & \uparrow \\
 0 & \longrightarrow & \Phi(X) & \longrightarrow & \pi^{-1}(W) & \longrightarrow & W \longrightarrow 0 \\
 & & \downarrow & & \downarrow & & \parallel \\
 0 & \longrightarrow & \Phi(X)/_V & \xrightarrow{\iota} & \pi^{-1}(W)/_V & \xrightarrow[\theta]{\pi'} & W \longrightarrow 0
 \end{array}$$



(a)



(b)



(c)



(d)