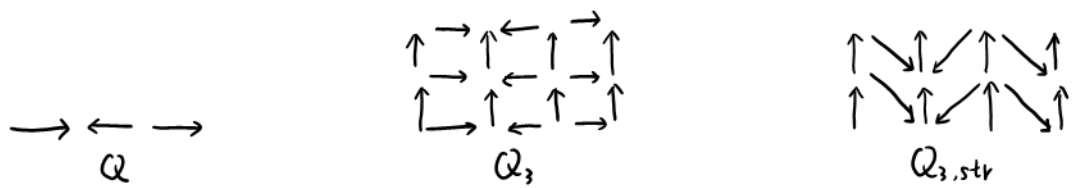
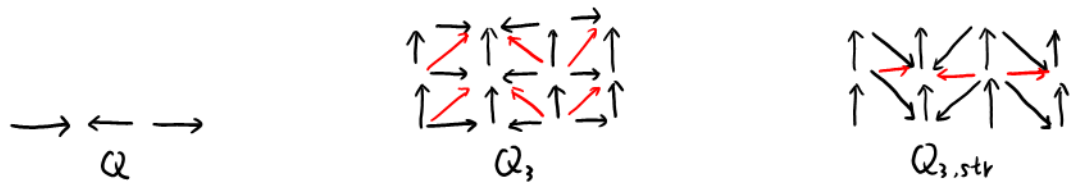


$$Flag_3(X) \longleftrightarrow Gr(\Phi(X))$$

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



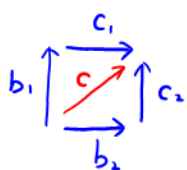
$$R = K(Q_d / \uparrow \rightarrow \uparrow) \quad \text{or} \quad K(Q_{d, str} / \uparrow \rightarrow \uparrow) \quad d \geq 2$$



\rightarrow is the virtual arrow

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

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



$$r \otimes x \mapsto \begin{matrix} rc_1 \otimes x + r \otimes b_1 x \\ -rc_1 \otimes x - r \otimes b_2 x \end{matrix}$$

$$r \otimes x \mapsto rx$$

$$r \otimes x \mapsto rb \otimes x - r \otimes bx$$

```

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

```

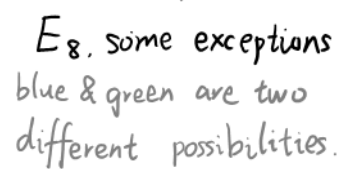
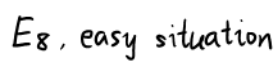
E_7

```

      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
    3 5 3 4
  2 4 6 2
    3 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

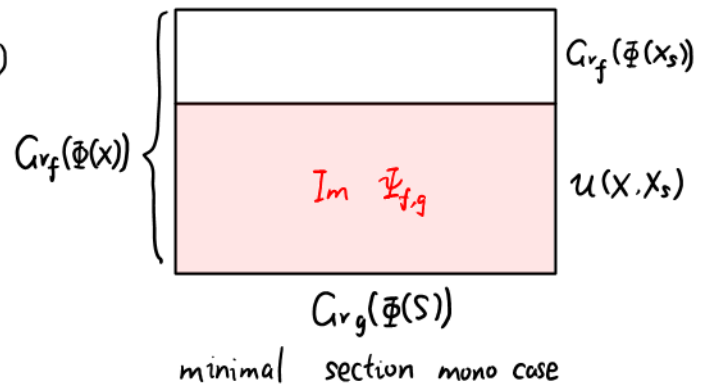
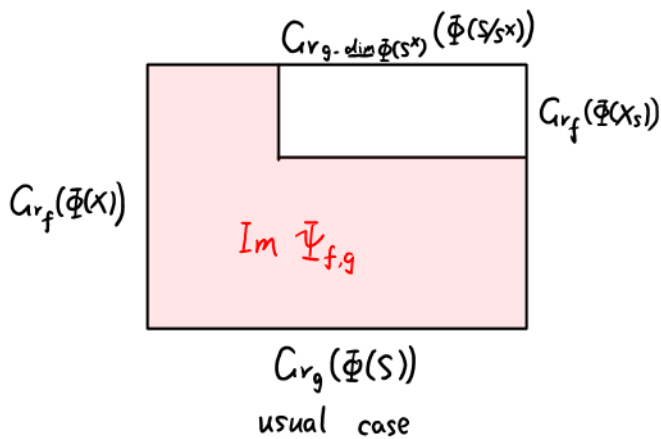


$\begin{array}{c} [M, N] \\ [M, N]' \\ M \end{array} \backslash \begin{array}{c} N \\ X \\ Y \\ S \end{array}$	X	Y	S
X	$\begin{smallmatrix} 1 \\ 0 \end{smallmatrix}$	$\begin{smallmatrix} 1 \\ 0 \end{smallmatrix}$	$\begin{smallmatrix} 0 \\ 0 \end{smallmatrix}$
Y	$\begin{smallmatrix} 0 \\ 0 \end{smallmatrix}$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

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

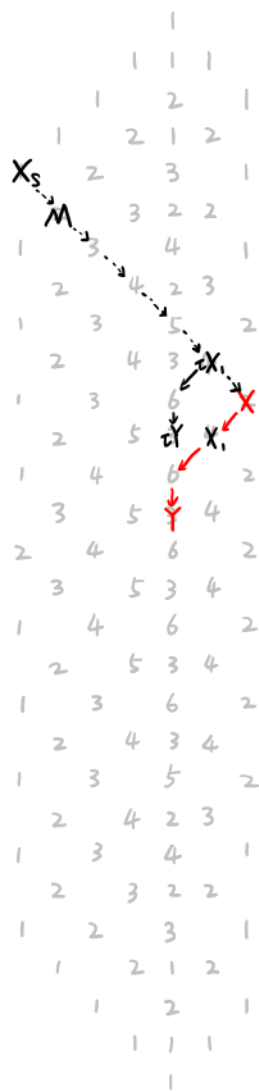
$$\begin{array}{ccccccc} 0 & \longrightarrow & \Phi(X) & \longrightarrow & \Phi(Y) & \xrightarrow{\pi} & \Phi(S) \longrightarrow 0 \\ & & \parallel & & \uparrow & & \uparrow \\ 0 & \longrightarrow & \Phi(X) & \longrightarrow & \pi^{-1}(W) & \longrightarrow & W \longrightarrow 0 \\ & & \downarrow & &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

θ





(a)



(b)



(c)



(d)