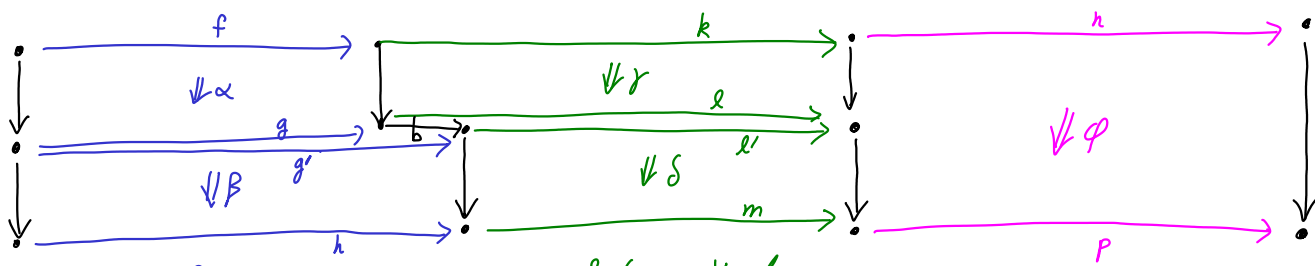


$$A \xrightarrow{H} B \xrightarrow{K} C \xrightarrow{L} D$$



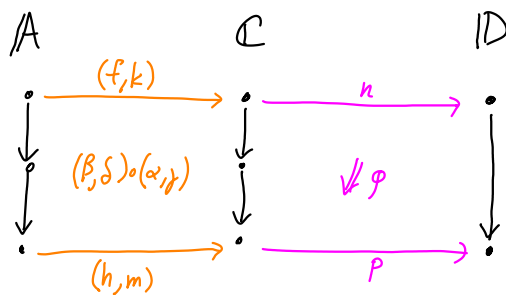
α & β can't be composed in H

γ & δ can't be composed in K

But in $H \circ K$, (α, γ) has vertical codomain (g, l)
 (β, δ) has vertical codomain (g', l')

$$\text{and } (g, l) = (g \circ b, l') = (g \cdot b, l') = (g', l')$$

so (α, γ) and (β, δ) can be composed. Thus, in $H \circ K$ we have the square at right:



and therefore a square

$$\begin{array}{ccc} A & \xrightarrow{(f, k, n)} & D \\ \downarrow & & \downarrow \\ & & \\ \downarrow & & \downarrow \\ & & \\ & \xrightarrow{(h, m, p)} & \end{array} \quad \text{in } (H \circ K) \circ L.$$

On the other hand, in $K \circ L$ there are no nontrivial pairable squares: Nothing of the form $(\gamma, -)$ or $(\delta, -)$ or $(-, \varphi)$. Hence in $H \circ (K \circ L)$ there is no analogue of $((\beta, \delta) \circ (\alpha, \gamma), \varphi)$.