$$1 \longrightarrow F \overset{\longleftarrow}{\longrightarrow} G \overset{\longleftarrow}{\longrightarrow} H \longrightarrow 1$$

$$\downarrow \qquad\qquad \downarrow$$

$$0 \longrightarrow grF \longrightarrow grG \overset{\longleftarrow}{\longrightarrow} grH \longrightarrow 0$$

$$\| \| \quad | \quad |$$

Can we at least rescue a theorem of the form "here's $A(G)$ in terms of $A(H)$ & $A(F)$" out of this?

$$abc = cba$$

$$[a, b] = ab a^{-1} b^{-1}$$

$$abca^{-1}b^{-1}c^{-1} = abcc^{-1}a^{-1}b^{-1}[b, a, c]$$

$$= [a, b] \cdot [b, [a, c]] [a, c][b, c]$$

$$[ab, c] = abcb^{-1}a^{-1}c^{-1} = a[b, c]ca^{-1}c^{-1}$$

$$\qquad aba = bab$$

$$= [a, [b, c]] [b, c] ac\, a^{-1}c^{-1}$$

$$= [a, [b, c]] [b, c] [a, c]$$