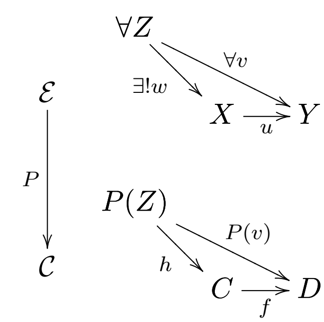
Notes on Michael Barr and Charles Wells's
"Category Theory for Computing Science":
http://www.tac.mta.ca/tac/reprints/articles/22/tr22.pdf
http://www.tac.mta.ca/tac/reprints/articles/22/tr22abs.html

These notes are at:
http://angg.twu.net/LATEX/2020barrwellsctcs.pdf

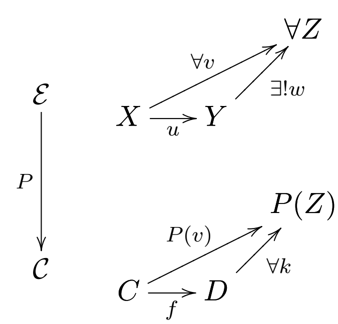
12. Fibrations

12.1.1. Fibrations and opfibrations (page 331):

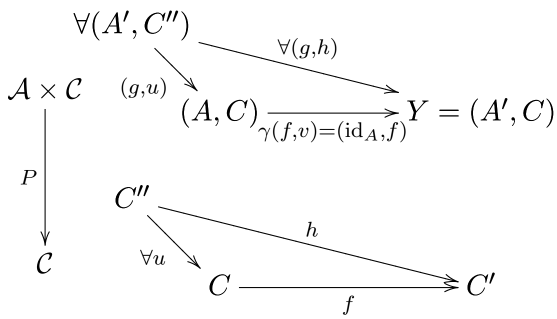
u is cartesian (for f and Y) when:



u is opcartesian (for f and X):

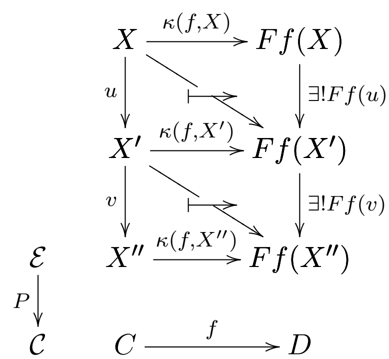


12.1.4. Example:

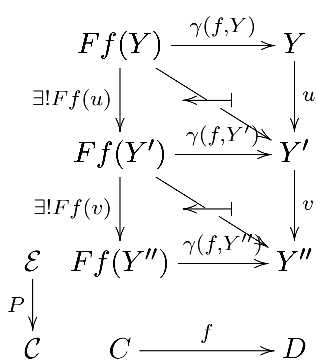


12.1.7 Cleavages induce functors (page 334)

Let $P : \mathcal{E} \to \mathcal{C}$ be an opfibration with opcleavage κ. Define $F : \mathcal{C} \to \mathbf{Cat}$ by...

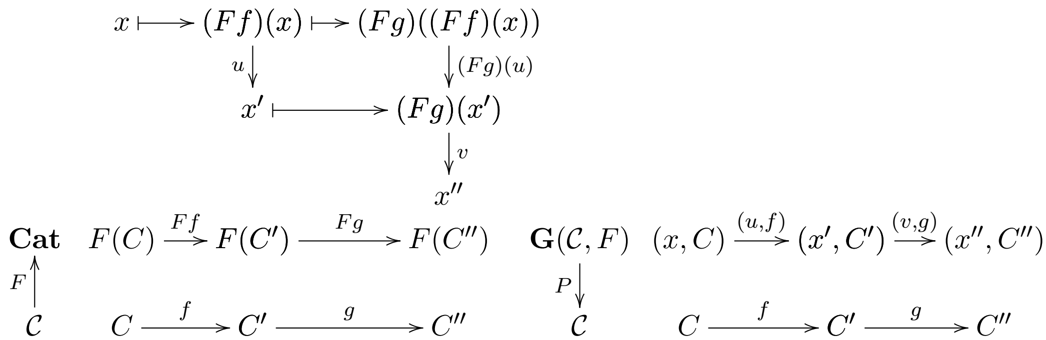


In a similar way, split fibrations give functors $\mathcal{C}^{\mathrm{op}} \to \mathbf{Cat}$. Let $P : \mathcal{E} \to \mathcal{C}$ be a fibration with cleavage γ. Define $F : \mathcal{C}^{\mathrm{op}} \to \mathbf{Cat}$ by



12.2 The Grothendieck construction

12.2.8 and **12.2.9**: Given a functor $F : \mathcal{C} \to \mathbf{Cat}$ (...) the Grothendieck construction in this more general setting constructs the opfibration induced by F, a category $\mathbf{G}(\mathcal{C}, F)$ defined as follows:



12.2.10 An analogous construction, also called the Grothendieck construction (in fact this is the original one), produces a split fibration $\mathbf{F}(\mathcal{C}, G)$ given a functor $G : \mathcal{C}^{\mathrm{op}} \to \mathbf{Cat}$: