Naturalities:

$$(\alpha; f)^\flat = L\alpha; f^\flat \qquad \cfrac{\cfrac{A' \xrightarrow{\alpha} A \quad A \xrightarrow{f} RB}{A' \to RB}}{LA' \to B}\ \flat \quad ; \quad = \quad \cfrac{\cfrac{A' \xrightarrow{\alpha} A}{LA' \to LA}\ L_1 \quad \cfrac{A \xrightarrow{f} RB}{LA \to B}\ \flat}{LA' \to B}\ ;$$

$$(g; \beta)^\sharp = g^\sharp; R\beta \qquad \cfrac{\cfrac{LA \xrightarrow{g} B \quad B \xrightarrow{\beta} B'}{LA \to B'}}{A \to RB'}\ \sharp \quad ; \quad = \quad \cfrac{\cfrac{LA \xrightarrow{g} B}{A \to RB}\ \flat \quad \cfrac{B \xrightarrow{\beta} B'}{RB \to RB'}\ R_1}{A \to RB'}\ \sharp$$

Interdefinabilities:

$$\eta_A = (\mathrm{id}_{LA})^\sharp \qquad \cfrac{A}{A \to RLA}\ \eta \quad = \quad \cfrac{\cfrac{\cfrac{A}{LA}\ L_0}{LA \to LA}\ \mathrm{id}}{A \to RLA}\ \sharp$$

$$L\alpha = (\alpha; \eta_A)^\flat \qquad \cfrac{A' \xrightarrow{\alpha} A}{LA' \to LA}\ L_1 \quad = \quad \cfrac{\cfrac{A' \xrightarrow{\alpha} A \quad \cfrac{A}{A \to RLA}\ \eta}{A' \to RLA}\ ;}{LA' \to LA}\ \flat$$

$$g^\flat = Lg; \epsilon_B \qquad \cfrac{A \xrightarrow{g} RB}{LA \to B}\ \flat \quad = \quad \cfrac{\cfrac{A \xrightarrow{g} RB}{LA \to LRB}\ L_1 \quad \cfrac{B}{LRB \to B}\ \epsilon}{LA \to B}\ ;$$

$$f^\sharp = \eta_A; Rf \qquad \cfrac{LA \xrightarrow{f} B}{A \to RB}\ \sharp \quad = \quad \cfrac{\cfrac{A}{A \to RLA}\ \eta \quad \cfrac{LA \xrightarrow{f} B}{RLA \to RB}\ R_1}{A \to RB}\ ;$$

$$R\beta = (\eta_B; \beta)^\sharp \qquad \cfrac{B \xrightarrow{\beta} B'}{RB \to RB'}\ R_1 \quad = \quad \cfrac{\cfrac{\cfrac{B}{LRB \to B}\ \epsilon \quad B \xrightarrow{\beta} B'}{LRB \to B'}\ ;}{RB \to RB'}\ \flat$$

$$\epsilon_B = (\mathrm{id}_{RB})^\flat \qquad \cfrac{B}{LRB \to B}\ \epsilon \quad = \quad \cfrac{\cfrac{\cfrac{B}{RB}\ R_0}{RB \to RB}\ \mathrm{id}}{LRB \to B}\ \flat$$

Expensive adjunction: $\left(\mathbf{A}, \mathbf{B}, L, R, \flat, \sharp, \eta, \epsilon\right)$
Cheap adjunction 1: $\left(\mathbf{A}, \mathbf{B}, L, R, \flat, \sharp \quad \right)$
Cheap adjunction 2: $\left(\mathbf{A}, \mathbf{B}, L, R_0, \quad \sharp, \eta \quad \right)$
Cheap adjunction 3: $\left(\mathbf{A}, \mathbf{B}, L_0, R, \flat, \quad \epsilon\right)$