EXERCISE 1103. Prove that $\operatorname{card}\mathsf{FCD}(A,B) = 2^{2^{\max\{A,B\}}}$ if A or B is an infinite set (provided that A and B are nonempty).

LEMMA 1104. $\uparrow^{\mathsf{FCD}(\operatorname{Src} g, \operatorname{Dst} g)} \{(x,y)\} \sqsubseteq (\mathsf{FCD})g \Leftrightarrow \uparrow^{\mathsf{RLD}(\operatorname{Src} g, \operatorname{Dst} g)} \{(x,y)\} \sqsubseteq g$ for every reloid g.

PROOF.

$$\uparrow^{\mathsf{FCD}(\operatorname{Src} g, \operatorname{Dst} g)} \{(x,y)\} \sqsubseteq (\mathsf{FCD})g \Leftrightarrow \uparrow^{\mathsf{FCD}(\operatorname{Src} g, \operatorname{Dst} g)} \{(x,y)\} \not\asymp (\mathsf{FCD})g \Leftrightarrow @\{x\}\ [(\mathsf{FCD})g]^*\ @\{y\} \Leftrightarrow \uparrow^{\mathsf{RLD}(\operatorname{Src} g, \operatorname{Dst} g)} \{(x,y)\} \not\asymp g \Leftrightarrow \uparrow^{\mathsf{RLD}(\operatorname{Src} g, \operatorname{Dst} g)} \{(x,y)\} \sqsubseteq g.$$

□

THEOREM 1105. $\operatorname{Cor}(\mathsf{FCD})g = (\mathsf{FCD})\operatorname{Cor} g$ for every reloid g.

PROOF.

$$\operatorname{Cor}(\mathsf{FCD})g = \bigsqcup\left\{ \frac{\uparrow^{\mathsf{FCD}(\operatorname{Src} g, \operatorname{Dst} g)} \{(x,y)\}}{\uparrow^{\mathsf{FCD}} \{(x,y)\} \sqsubseteq (\mathsf{FCD})g} \right\} = \bigsqcup\left\{ \frac{\uparrow^{\mathsf{FCD}(\operatorname{Src} g, \operatorname{Dst} g)} \{(x,y)\}}{\uparrow^{\mathsf{RLD}(\operatorname{Src} g, \operatorname{Dst} g)} \{(x,y)\} \sqsubseteq g} \right\} = \bigsqcup\left\{ \frac{(\mathsf{FCD}) \uparrow^{\mathsf{RLD}(\operatorname{Src} g, \operatorname{Dst} g)} \{(x,y)\}}{\uparrow^{\mathsf{RLD}(\operatorname{Src} g, \operatorname{Dst} g)} \{(x,y)\} \sqsubseteq g} \right\} = (\mathsf{FCD})\bigsqcup\left\{ \frac{\uparrow^{\mathsf{RLD}(\operatorname{Src} g, \operatorname{Dst} g)} \{(x,y)\}}{\uparrow^{\mathsf{RLD}(\operatorname{Src} g, \operatorname{Dst} g)} \{(x,y)\} \sqsubseteq g} \right\} = (\mathsf{FCD})\operatorname{Cor} g.$$

□

CONJECTURE 1106.

1°. $\operatorname{Cor}(\mathsf{RLD})_{\mathrm{in}} g = (\mathsf{RLD})_{\mathrm{in}} \operatorname{Cor} g$;
2°. $\operatorname{Cor}(\mathsf{RLD})_{\mathrm{out}} g = (\mathsf{RLD})_{\mathrm{out}} \operatorname{Cor} g$.

THEOREM 1107. For every reloid f:

1°. $\operatorname{Compl}(\mathsf{FCD})f = (\mathsf{FCD})\operatorname{Compl} f$;
2°. $\operatorname{CoCompl}(\mathsf{FCD})f = (\mathsf{FCD})\operatorname{CoCompl} f$.

PROOF. We will prove only the first, because the second is dual.
$\operatorname{Compl}(\mathsf{FCD})f = \bigsqcup_{\alpha\in\operatorname{Src} f}((\mathsf{FCD})f)|_{\uparrow\{\alpha\}} =$ (proposition 1073) $= \bigsqcup_{\alpha\in\operatorname{Src} f}(\mathsf{FCD})(f|_{\uparrow\{\alpha\}}) = (\mathsf{FCD})\bigsqcup_{\alpha\in\operatorname{Src} f} f|_{\uparrow\{\alpha\}} = (\mathsf{FCD})\operatorname{Compl} f$. □

CONJECTURE 1108.

1°. $\operatorname{Compl}(\mathsf{RLD})_{\mathrm{in}} g = (\mathsf{RLD})_{\mathrm{in}} \operatorname{Compl} g$;
2°. $\operatorname{Compl}(\mathsf{RLD})_{\mathrm{out}} g = (\mathsf{RLD})_{\mathrm{out}} \operatorname{Compl} g$.

Note that the above Galois connection between funcoids and reloids is a Galois surjection.

PROPOSITION 1109. $(\mathsf{RLD})_{\mathrm{in}} g = \max\left\{ \frac{f\in\mathsf{RLD}}{(\mathsf{FCD})f\sqsubseteq g} \right\} = \max\left\{ \frac{f\in\mathsf{RLD}}{(\mathsf{FCD})f=g} \right\}$.

PROOF. By theorem 131 and proposition 320. □