- Objects are filter objects on small sets.
- The morphisms from a f.o. $\mathcal{A}$ to a f.o. $\mathcal{B}$ are triples $(f; \mathcal{A}; \mathcal{B})$ where $f \in \mathsf{RLD}(\mathrm{Base}(\mathcal{A}); \mathrm{Base}(\mathcal{B}))$ and $\mathrm{dom}\, f \subseteq \mathcal{A} \wedge \mathrm{im}\, f \subseteq \mathcal{B}$.
- The composition is defined by the formula $(g; \mathcal{B}; \mathcal{C}) \circ (f; \mathcal{A}; \mathcal{B}) = (g \circ f; \mathcal{A}; \mathcal{C})$.
- Identity morphism for an f.o. $\mathcal{A}$ is $I^{\mathsf{RLD}}_{\mathcal{A}}$.

To prove that it is really a category is trivial.

## 4.5 Monovalued and injective reloids

Following the idea of definition of monovalued morphism let's call **monovalued** such a reloid $f$ that $f \circ f^{-1} \subseteq I^{\mathsf{RLD}}_{\mathrm{im}\, f}$.

Similarly, I will call a reloid **injective** when $f^{-1} \circ f \subseteq I^{\mathsf{RLD}}_{\mathrm{dom}\, f}$.

**Obvious 21.** A reloid $f$ is

- monovalued iff $f \circ f^{-1} \subseteq I^{\mathsf{RLD}(\mathrm{Dst}\, f)}$;
- injective iff $f^{-1} \circ f \subseteq I^{\mathsf{RLD}(\mathrm{Src}\, f)}$.

In other words, a funcoid is monovalued (injective) when it is a monovalued (injective) morphism of the category of funcoids.

Monovaluedness is dual of injectivity.

**Obvious 22.**

1. A morphism $(f; \mathcal{A}; \mathcal{B})$ of the category of reloid triples is monovalued iff the reloid $f$ is monovalued.
2. A morphism $(f; \mathcal{A}; \mathcal{B})$ of the category of reloid triples is injective iff the reloid $f$ is injective.

**Theorem 54**

1. *A reloid $f$ is a monovalued iff it exists a function (monovalued binary relation) $F \in \mathrm{up}\, f$.*
2. *A reloid $f$ is a injective iff it exists an injective binary relation $F \in \mathrm{up}\, f$.*
3. *A reloid $f$ is a both monovalued and injective iff exists an injection (a monovalued and injective binary relation = injective function) $F \in \mathrm{up}\, f$.*

**Proof** The reverse implications are obvious. Let's prove the direct implications: