▸ MIGUEL CAMPERCHOLI, *Dominions in filtral quasivarieties.*
Facultad de Matemática, Astronomía, Física y Computación, Universidad Nacional de Córdoba, Argentina.
E-mail: `camper@famaf.unc.edu.ar`.

Let $\mathbf{A} \leq \mathbf{B}$ be structures, and $\mathcal{K}$ a class of structures. An element $b \in B$ is *dominated* by $\mathbf{A}$ relative to $\mathcal{K}$ if for all $\mathbf{C} \in \mathcal{K}$ and all homomorphisms $g, g' : \mathbf{B} \to \mathbf{C}$ such that g and g' agree on A, we have $gb = g'b$. Write $\mathcal{D}_{01}$ for the class of bounded distributive lattices, let $\mathbf{B} := \mathbf{2} \times \mathbf{2}$, and let $\mathbf{A}$ be the sublattice of $\mathbf{B}$ with universe $\{\langle 0,0\rangle, \langle 0,1\rangle, \langle 1,1\rangle\}$. As 01-lattice homomorphisms map pairs of complemented elements to pairs of complemented elements, and every element in a distributive lattice has at most one complement, it follows that $\langle 1,0\rangle \in \mathrm{dom}_{\mathbf{B}}^{\mathcal{K}}\mathbf{A}$. The key element to take away from this argument is that $\langle 1,0\rangle$ is generated by A if we add the complementation operation to $\mathbf{B}$. Since this (partial) operation is defined in every member of $\mathcal{D}_{01}$ by the conjunction of atomic formulas

$$\varphi(x,y) := x \wedge y = 0 \,\&\, x \vee y = 1,$$

it is preserved by all relevant maps. This situation generalizes as follows. Recall that a class of algebraic structures is a *quasivariety* provided it is axiomatizable and closed under direct products and substructures. A quasivariety $\mathcal{Q}$ is *filtral* if it is semisimple, its class of simple members is universal, and it is congruence distributive. For instance, $\mathcal{D}_{01}$ is a filtral quasivariety. In our talk we shall discuss the following result and some applications.

THEOREM. *Let $\mathcal{Q}$ be a filtral quasivariety and let $\mathcal{M}$ be its class of simple members. Suppose $\mathcal{M}$ has the amalgamation property and $\mathcal{M}_{ec}$ (the class of existentially closed members in $\mathcal{M}$) is axiomatizable. For all $\mathbf{A}, \mathbf{B} \in \mathcal{Q}$ such that $\mathbf{A} \leq \mathbf{B}$ and all $b \in B$ the following are equivalent:*

1. $b \in \mathrm{dom}_{\mathbf{B}}^{\mathcal{Q}}\mathbf{A}$
2. *There are a conjunction of atomic formulas $\delta(\bar{x}, y)$ and $\bar{a} \in A$ such that:*
   - *$\delta(\bar{x}, y)$ defines a function in $\mathcal{Q}$*
   - $\mathbf{B} \models \delta(\bar{a}, b)$
   - *$\mathcal{M}_{ec} \models \forall \bar{x} \exists y\, \delta(\bar{x}, y)$.*