▸ GURAM BEZHANISHVILI, LUCA CARAI, AND PATRICK J. MORANDI, *Deriving Priestley and Esakia dualities and their generalizations from Pontryagin duality for semilattices.*
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Hofmann, Mislove, and Stralka [2] developed a version of Pontryagin duality that establishes a dual equivalence between the categories of semilattices and Stone semilattices. Since Stone semilattices are exactly algebraic lattices, it follows that the category of semilattices is equivalent to the category of algebraic lattices and maps that preserve arbitrary joins and compact elements. This equivalence on the object level is a reformulation of the well-known 1-1 correspondence between semilattices and algebraic lattices. The restriction to the distributive case yields an equivalence between the categories of distributive semilattices and algebraic frames.

By Priestley and Esakia dualities, the categories of distributive lattices and Heyting algebras are dual to the categories of Priestley and Esakia spaces, respectively. These dualities have been generalized to various subreducts of distributive lattices and Heyting algebras. We show how to derive Priestley and Esakia dualities and their generalizations from Pontryagin duality for semilattices. In particular, we show how to obtain the dualities for distributive and implicative semilattices developed by Bezhanishvili and Jansana [1]. This provides a frame-theoretic perspective on Priestley and Esakia dualities and their generalizations.

[1] G. Bezhanishvili and R. Jansana, *Duality for distributive and implicative semi-lattices*, 2008. Available from http://www.ub.edu/grlnc/docs/BeJa08-m.pdf.

[2] K. H. Hofmann, M. Mislove, and A. Stralka, ***The Pontryagin duality of compact*** O***-dimensional semilattices and its applications***, Lecture Notes in Mathematics, Vol. 396, Springer-Verlag, 1974.