

Abstract submitted for Thirty-Third Annual Victorian Algebra Conference

Title: Quasi-primal Cornish algebras

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Varieties generated by quasi-primal algebras are a natural generalisation of Boolean algebras and play an important role in the interface between logic and universal algebra. A Cornish algebra is a bounded distributive lattice equipped with a family of unary operations each of which is either an endomorphism, and so models a strong form of modal operator, or a dual endomorphism, and so models a De Morgan negation. We characterise quasi-primal Cornish algebras. The results yield as a special case a recent result by Davey, Nguyen and Pitkethly describing quasi-primal Ockham algebras. Our characterisation is in terms of the Priestley dual of the algebra.

(Cornish algebras are named for the South Australian mathematician Bill Cornish who introduced them as a natural generalisation of Ockham algebras, in an invited lecture entitled “Monoids acting on distributive lattices” at the annual meeting of the Australian Mathematical Society at La Trobe University in May 1977. The notes from that lecture were never published but were distributed privately. They first appeared in print as part of Cornish’s far-reaching monograph “Antimorphic Action: Categories of Algebraic Structures with Involutions or Anti-endomorphisms” published nine years later.)