

- ▶ IGOR SEDLÁR, *Fixpoints in generalized Lambek calculus*.  
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Modal logics with fixpoint operators have received considerable attention (e.g. dynamic logic with program iteration [3] or epistemic logic with common knowledge [2]). In this talk we discuss a positive modal logic with a binary update modality  $\backslash$  and its fixpoint version  $\backslash^*$ . The update operator is a generalized version of the left division of the (non-associative) Lambek calculus. The difference is that while the Lambek left division has a relational semantics using a ternary relation on a set, the generalized  $\backslash$  uses a ternary relation between elements of a set, subsets of that set and members of that set. Our main technical result is a complete axiomatization of a relational semantics for the logic and a decidability result. The technique used to obtain these results is a modification of the techniques used in the case of more standard fixpoint operators such as program iteration or common knowledge. In a sense, this work generalizes the work of Bimbó and Dunn [1] on relational semantics for the logic of Kleene algebras.

[1] K. BIMBÓ AND J. M. DUNN, *Relational semantics for Kleene Logic and Action Logic*, *Notre Dame Journal of Formal Logic*, vol. 46 (2005), no. 4, pp. 461–490.

[2] R. FAGIN, J. Y. HALPERN, Y. MOSES, AND M. Y. VARDI, *Reasoning About Knowledge*, MIT Press, 1995.

[3] D. HAREL, D. KOZEN, AND J. TIURYN, *Dynamic Logic*, MIT Press, 2000.