RIGHT ADJOINTS TO OPERADIC RESTRICTION FUNCTORS

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ABSTRACT. If $f : P \to Q$ is a morphism of operads, then there is a restriction functor from Q algebras to P algebras. This restriction functor generally admits a left adjoint. This restriction may or may not admit a right adjoint: if $G \to H$ is a group homomorphism, then the forgetful functor from H-sets to G-sets has a right adjoint, while there is no right adjoint to the functor from commutative algebras to associative algebras.

In this talk, we provide a concise necessary and sufficient condition for the existence of a right adjoint to the restriction functor, phrased in terms of the operad map f. We give a simple formula for this right adjoint, and examine the criterion in special cases. All of this is applicable over quite general ground categories. (Joint work with Gabriel C. Drummond-Cole)

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