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Towards a complicit set of cobordisms

Using a lot of pictures, we will explore a higher category whose k -morphisms are k -dimensional manifolds with boundary, interpreted as morphisms from their incoming to their outgoing boundary components. Higher categories of this kind provide the natural domains for topological quantum field theories. We will explain how the full structure of this higher category, which is truly an (∞, ∞) -category, can be encoded in an efficient way as a marked simplicial set.