Finite preorders and topological descent

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We explain that the Reiterman-Tholen's characterization of effective descent maps and various other constructions and results of Topological Descent Theory restricted to finite topological spaces and then translated into the language of finite preorders become very simple and natural. Moreover, this provides a clear motivation for most of them and can be used to construct counter-examples to open problems. In particular we show that no one of the following two classes of maps contains the other:

– Day-Kelly maps (=descent maps in the category of topological spaces);

– effective étale-descent maps.

We also reconsider the first example of non-effective descent map of finite topological spaces originally constructed by M. Sobral in [*Another approach to topological descent theory*, Preprint 98-11 DMUC]; in fact that example first suggested to us to consider the finite case.

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