The polycyclic inverse monoids and the Thompson groups revisited

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We revisit our construction of the Thompson groups from the polycyclic inverse monoids in the light of new research. Specifically, we prove that the Thompson group $G_{n,1}$ is the group of units of a Boolean inverse monoid C_n called the Cuntz inverse monoid. This inverse monoid is proved to be the tight completion of the polycyclic inverse monoid P_n. The étale topological groupoid associated with C_n under non-commutative Stone duality is the usual groupoid associated with the corresponding Cuntz C^*-algebra. We then show that the group $G_{n,1}$ is also the group of automorphisms of a specific n-ary Cantor algebra: this n-ary Cantor algebra is constructed first as the monoid of total maps of a restriction semigroup à la Statman and then in terms of labelled trees à la Higman. I shall explain all undefined terms from scratch.

This work is a special case of ongoing research with Alina Vdovina (Newcastle, UK) and Aidan Sims (Wollongong, Australia).