As a way of realising some benefit from the beacon chain even before phases 1 and 2 of eth2 are complete, the proposal for a finality gadget to provide PoS-derived finally to the eth1 PoW chain has been proposed. This idea rests on eth1 nodes including a beacon chain light client to allow their fork choice rule to incorporate finality information from the beacon chain.

However, if eth1 clients already need to include light clients on the beacon chain, why stop there? Couldn't the random beacon be used to select a leader on the eth1 chain as a block proposer, and cut out PoW entirely? This could happen independently of the ongoing phase 1 and phase 2 research and allow eth1 to gain more of the eth2 benefits sooner (shorter and more evenly spaced block times, stronger security assumptions at lower issuance, greatly reduced energy requirements, lower barrier of entry to validators increasing node diversity).

It seems as though given the scale of ambition for eth2 and a number of significant unsolved problems such as state rent/stateless clients, it may still be years before a wholesale migration to eth2 is possible. Therefore in the mean time are there good reasons not

to expand the scope of the 'finality gadget' aspect of the beacon chain to include eth1 block proposal and eliminate proof of work mining sooner?