

# Chapter 3

## Further studies in the future

Caterpillars were shown to be graceful early on by Rose [19]. Chen and Shih [12] showed that 2-caterpillars are graceful. We have showed that 4-caterpillars are graceful. We thus conjecture that there exists a graceful labelling of  $2^k$ -caterpillars for  $k \in \mathbb{N}$ .