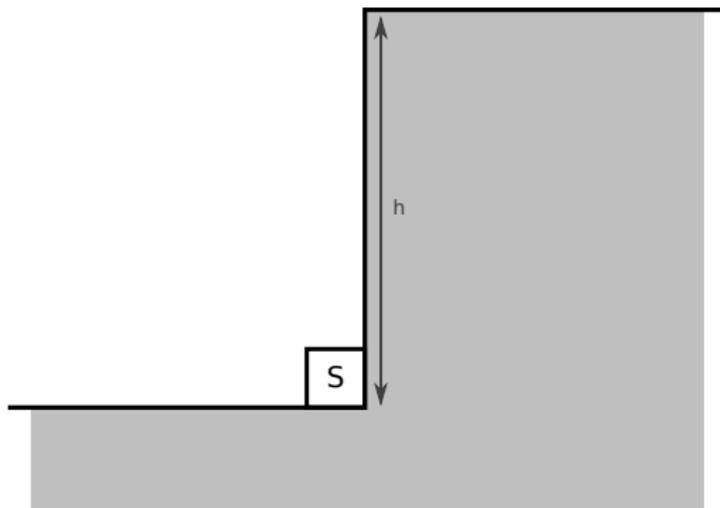# SCALE THE WALL
Project 4

January 20, 2017

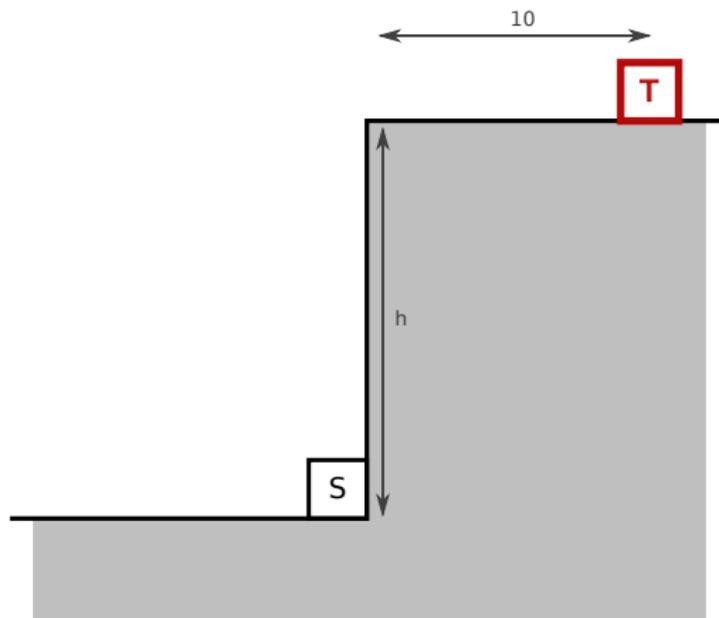Arthur Blot, Guillaume Combette, Octave Mariotti, Etienne Moutot, Johanna Seif

OUTLINE

1. Impossibility Proof

2. Working Tiling for Odd Height

IMPOSSIBILITY PROOF

THE PROBLEM

THE PROBLEM

PROBLEM FORMULATION

Let τ be a finite tileset.

The problem asks if there is a τ such that:

$$\forall h, \forall \alpha_\square, (\alpha_\square \text{ obtained from the seed}) \implies \begin{cases} |\alpha_\square| \in \mathbb{N} \\ \top \text{ is well placed in } \alpha_\square \end{cases}$$

PROBLEM FORMULATION

To contradict it: Find a h and an assembly $\beta_\square$ such that $\beta_\square$ obtained from the seed and:

$$|\beta_\square| \notin \mathbb{N}$$

or

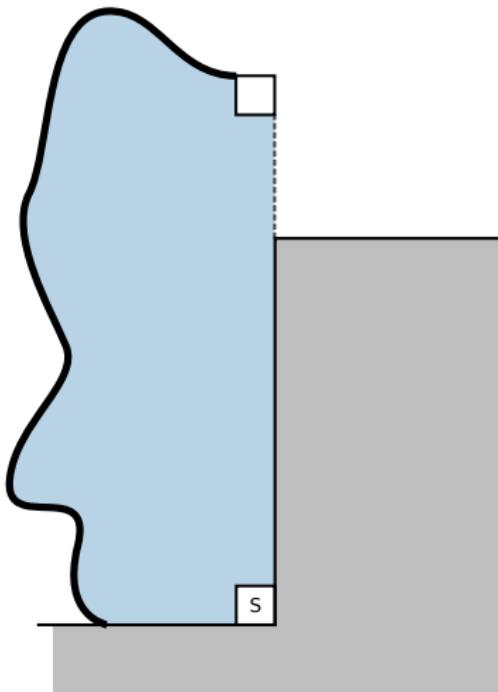T is not well placed in $\alpha_\square$

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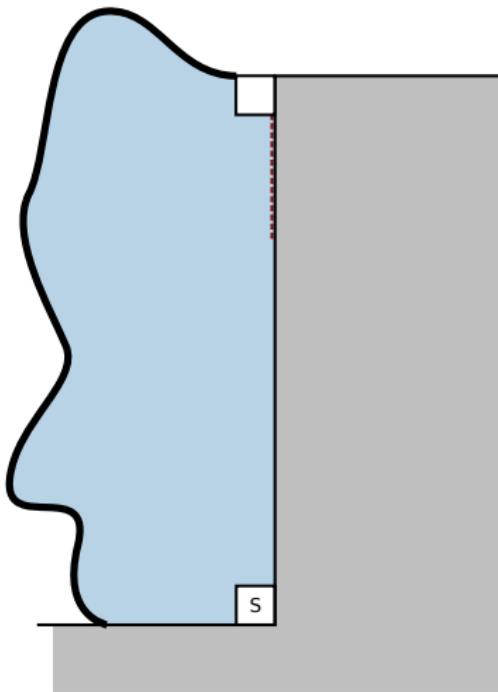### T is not well placed in $\alpha_\square$

THE CONTRADICTION

S = set of all partial configurations originating from the seed.

$S' \subseteq S$ = subset of those that have not overstepped the vertical of the wall

Claim

There exist a partial config $c \in S'$ that is only extensible to the right (overstepping the vertical)
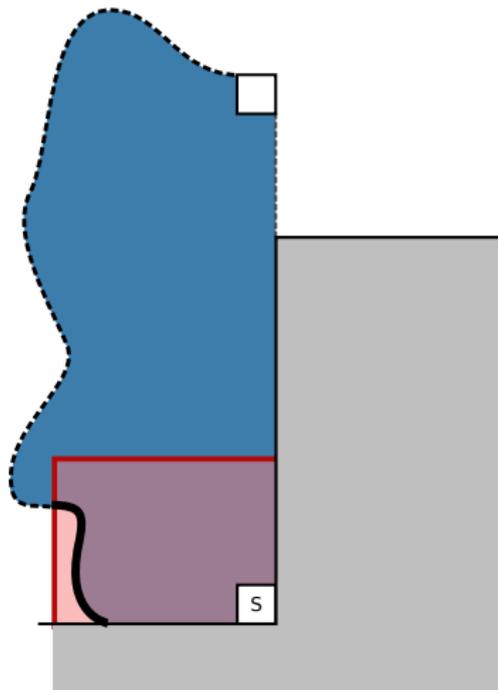
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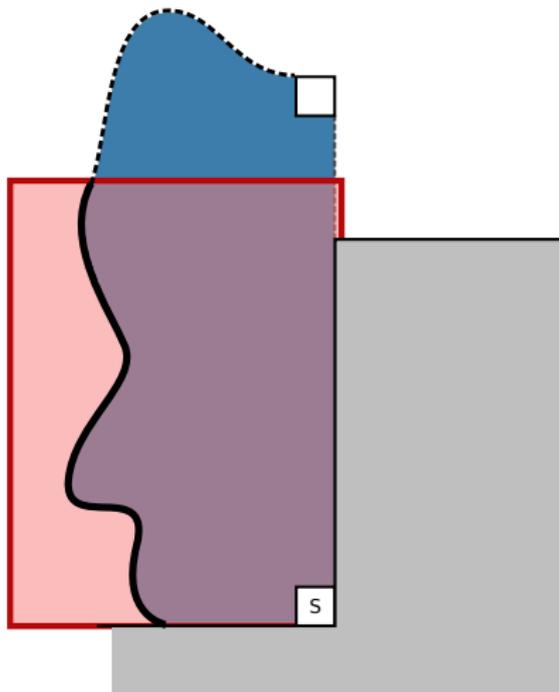
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There exist a partial config $c \in S'$ that is only extensible to the right (overstepping the vertical)

"COMPACTNESS"

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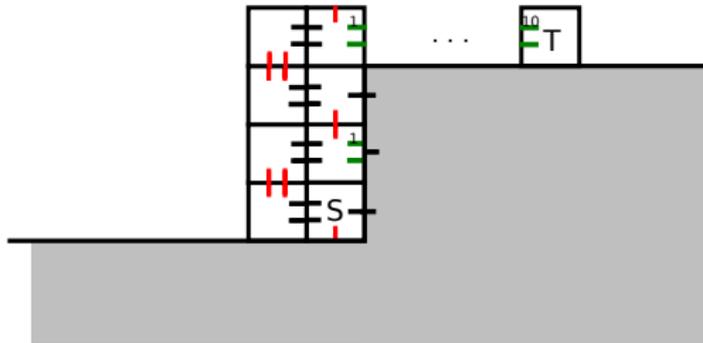WORKING TILING FOR ODD HEIGHT

WORKING TILING FOR ODD HEIGHT

Figure: The tileset

Figure: Example of tiling