

PROPOSITIONS

pertaining to the thesis

AEOLIAN SEDIMENT AVAILABILITY AND TRANSPORT

Bas Hoonhout, March 24, 2017

1. Coastal dune growth is dominated by subaqueous and not by subaerial processes.
2. The construction height of a mega nourishment is a critical design parameter for aeolian sediment supply and dune growth.
3. The fluid shear velocity threshold relates to aeolian sediment availability, whereas the impact shear velocity threshold relates to aeolian sediment supply.
4. Coupled models can help crossing physical limits, while model crossings are likely to limit physics.
5. All scientific publications, data, software and even correspondence must be real-time accessible to anyone.
6. Confident engineers are not confined to statistical confidence.
7. Societal issues are simplified in presence of a shared interest. In absence of a shared interest societal issues are made simplistic.
8. Keeping focus is an underrated skill.
9. The parallel efficiency of raising twins is super-linear.
10. "Never send a human to do a machine's job" (Agent Smith in The Matrix, 1999).

These propositions are regarded as opposable and defensible, and have been approved as such by promotor prof. dr. ir. M.J.F. Stive and copromotor dr. ir. S. de Vries.

STELLINGEN

behorende bij het proefschrift

AEOLIAN SEDIMENT AVAILABILITY AND TRANSPORT

Bas Hoonhout, 24 maart 2017

1. De groei van kustduinen wordt gedomineerd door processen onder zeeniveau en niet door processen boven zeeniveau.
2. De constructiehoogte van een megasuppletie is een kritische ontwerpparameter voor de aanvoer van eolisch sediment en duingroei.
3. De drempelwaarde van de schuifspanningssnelheid bij initiatie van korrelbeweging is gerelateerd aan de beschikbaarheid van eolisch sediment, terwijl de drempelwaarde van de schuifspanningssnelheid bij korrelinslag is gerelateerd aan de aanvoer van eolisch sediment.
4. Gekoppelde modellen kunnen helpen fysieke grenzen te doorkruisen, terwijl een kruising van modellen vermoedelijk de fysica begrenst.
5. Alle wetenschappelijke publicaties, gegevens, software en zelfs correspondentie moet instantaan toegankelijk zijn voor iedereen.
6. Zelfverzekerde ingenieurs beperken zich niet tot statistische betrouwbaarheid.
7. Maatschappelijke problemen worden versimpeld door de aanwezigheid van een gedeeld belang. In afwezigheid van een gedeeld belang worden maatschappelijke problemen simplistisch gemaakt.
8. Focus behouden wordt als vaardigheid onderschat.
9. De parallelle efficiëntie van het opvoeden van een tweeling is super-lineair.
10. "Laat een mens nooit een machinetaak uitvoeren" (vrij naar Agent Smith in *The Matrix*, 1999).

Deze stellingen worden opponeerbaar en verdedigbaar geacht en zijn als zodanig goedgekeurd door promotor prof. dr. ir. M.J.F. Stive en copromotor dr. ir. S. de Vries.

CHANGE LOG

1. Coastal dune growth is dominated by subaqueous and not by subaerial processes.
Form: Comparison
Was: Coastal dune growth is governed by hydrodynamic rather than aeolian processes.
Motivation: Moved away from the aeolian/hydrodynamic discussion.
2. Construction height of a mega nourishment is a critical design parameter for aeolian sediment supply and dune growth.
Form: Factual
Was: Construction height is a better indicator for aeolian sediment supply from mega nourishments than surface area or volume.
Motivation: Moved from 4 to 2. Changed the form, not the message.
3. The fluid shear velocity threshold relates to aeolian sediment availability, whereas the impact shear velocity threshold relates to aeolian sediment supply.
Form: Definition
Was: The shear velocity threshold is the best available concept to account for limitations in aeolian sediment availability and supply.
Motivation: Moved from 2 to 3. I did not succeed in getting the shear velocity threshold, critical fetch and sediment supply in a single proposition without getting it way too long. Therefore I now only discuss the definition of the shear velocity threshold. In aeolian research sediment supply and availability are mixed up all the time. However, they are different if sediment availability/supply varies spatially, which is almost always the case in coastal environments. To distinguish between the two we need a more accurate description of aeolian sediment availability and supply, which can be done by splitting the definition of the shear velocity threshold.
4. Coupled models can help crossing physical limits, while model crossings are likely to limit physics.

Form: Word play
Was: Process-based modeling of sediment availability can best be continued by online coupling rather than expansion of existing models.
Motivation: Moved from 3 to 4. Moved away from "process-based" modeling, "online" coupling, and the comparison form. Also changed the form into a word play that is supposed to be entertaining for humans that are susceptible to the applicable emotions.

5. All scientific publications, data, software and even correspondence must be real-time accessible to anyone.

Form: Factual
Was: -
Motivation: Not changed.

6. Confident engineers are not confined to statistical confidence.

Form: Alliteration
Was: Engineering science is more about experience and common sense than statistical confidence.
Motivation: The message should be that statistical confidence is not everything (to an engineer). This variant moved away from the ambiguous terms "engineering science" and "common sense".
Alternative: Of all scientists, engineers more often find statistical confidence.
I think this alternative is also correct, but the message became totally different.

7. Societal issues are simplified in presence of a shared interest; in absence of a shared interest societal issues are made simplistic.

Form: Contemporary
Was: The absence of common cause is a better explanation to the observed rise in populism in the Western world than a silent majority, globalization or traditional divisions in society (e.g. prosperity, education, ethnicity).
Motivation: I kept the idea of the need of a shared interest, but moved away from populism. I quite liked the idea of simple vs. simplistic explanations that we discussed.

8. Keeping focus is an underrated skill.

Form: Factual
Was: -
Motivation: Not changed.

9. The parallel efficiency of raising twins is super-linear.

Form: Cryptic
Was: The time efficiency of raising twins is larger than any other parallel process as the overhead is negative.
Motivation: From computer science terminology: the time efficiency of a parallel process is called the parallel efficiency (speedup / number of processes), a parallel processes with an efficiency larger than unity is called super-linear. I played around with adding (mathematical) definitions in the proposition, but that becomes very messy. Therefore I chose to keep the slightly cryptic variant.

10. "Never send a human to do a machine's job" (Agent Smith in The Matrix, 1999).

Form: Citation
Was: -
Motivation: Not changed.