Stellingen

behorende bij het proefschrift *Kleene Coalgebra*
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1. The type of a state based system, given by a functor, is all that is needed to specify and reason about the system: it provides (i) a canonical notion of equivalence, (ii) a universal domain of behaviors (the so-called final coalgebra), (iii) a language to specify them and (iv) axioms to refine specifications. Items (i) and (ii) are by now standard in the theory of Universal Coalgebra. Items (iii) and (iv) are the main contributions of this thesis.

2. There is a correspondence between each expression in the canonical language of specification derived from the type of the system and locally-finite systems. This generalizes the observation of Kleene for regular expressions and deterministic automata to a larger class of systems, including Mealy machines, labeled transition systems and probabilistic automata.

3. When reasoning about systems, the intended equivalence notion may depend on the context of application. Having methods general enough to cover different equivalences, such as bisimilarity or trace equivalence, is of the utmost importance.

4. Simple mathematical structures, such as streams and trees, are not only beautiful but can have high impact on the solution of complex problems.

5. In component-based software, it is expected that the correctness of a complex system follows from the correctness of its parts. This is impossible to achieve without a precise semantics of the interaction/composition rules.

6. In the next decade, coalgebraic methods will reach the age of maturity and with that will come the responsibility of finding their role in the computer science society.

7. Science evolves through constructive discussions and cooperation. In a new communication era, where contacts are made easier, science can evolve faster.

8. Evolution of science is dependent not only on cooperation, but also on disagreement. A researcher's creativity is at its best when he's trying to prove another researcher's wrong.

9. The quality of a student is directly related to the enthusiasm of her/his supervisors: a good supervisor truly enjoys supervision. On the other hand, a supervisor can only be enthusiastic if her/his students are highly motivated: a good student really enjoys studying.

10. Good scientists are the most valuable asset of a scientific institute, independently of their sex. Policies that create positions only for women are good for statistical purposes, but they throw the women who get them into the spotlight, having once again to work harder than men to prove themselves.