▸ THOMAS STRAHM, *Unfolding schematic formal systems: From non-finitist to feasible arithmetic.*
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The notion of *unfolding a schematic formal system* was introduced in Feferman [4] in order to answer the following question:

> *Given a schematic system* S, *which operations and predicates, and which principles concerning them, ought to be accepted if one has accepted* S*?*

A paradigmatic example of a schematic system S is the basic system NFA of non-finitist arithmetic. In Feferman and Strahm [5], three unfolding systems for NFA of increasing strength have been analyzed and characterized in more familiar proof-theoretic terms; in particular, it was shown that the full unfolding of NFA, $\mathcal{U}(\mathsf{NFA})$, is proof-theoretically equivalent to predicative analysis.

More recently, the unfolding notions for a basic schematic system of finitist arithmetic, FA, and for an extension of that by a form BR of the so-called bar rule have been worked out in Feferman and Strahm [6]. It is shown that $\mathcal{U}(\mathsf{FA})$ and $\mathcal{U}(\mathsf{FA}+\mathsf{BR})$ are proof-theoretically equivalent, respectively, to primitive recursive arithmetic, PRA, and to Peano arithmetic, PA.

The most recent application of the unfolding procedure is in the context of a natural schematic system FEA for *feasible arithmetic* in Eberhard and Strahm [3]. The main results obtained are that the provably convergent operations on binary words for the operational as well as the full predicate unfolding $\mathcal{U}(\mathsf{FEA})$ are precisely those being computable in polynomial time. The upper bound computations make essential use of a specific theory of truth TPT over combinatory logic, which has recently been introduced in Eberhard and Strahm [2] and Eberhard [1] and whose proof-theoretic analysis is due to Eberhard [1].

In this talk we will survey the unfolding procedure and its application to the various arithmetical systems, with some emphasis on the unfolding of feasible arithmetic.

[1] Sebastian Eberhard, *A feasible theory of truth over combinatory logic*, Preprint, 2011.

[2] Sebastian Eberhard and Thomas Strahm, *Weak theories of truth and explicit mathematics*, ***Festschrift for Helmut Schwichtenberg*** Ontos Verlag (to appear).

[3] ——— *Unfolding feasible arithmetic and weak truth*, submitted.

[4] Solomon Feferman, *Gödel's program for new axioms: Why, where, how and what?*, ***Gödel '96*** (Brno, Czech Republic), (Petr Hájek, editor), Lecture Notes in Logic vol. 6, Springer, 1996, pp. 3–22.

[5] Solomon Feferman and Thomas Strahm, *The unfolding of non-finitist arithmetic*, ***Annals of Pure and Applied Logic***, vol. 104 (2000), no. 1–3, pp. 75–96.

[6] ——— *Unfolding finitist arithmetic*, ***The Review of Symbolic Logic***, vol. 3 (2010), no. 4, pp. 665–689.