▸ MARTIN HYLAND, *Identity and existence.*
Department of Pure Mathematics and Mathematical Statistics, University of Cambridge, Wilberforce Road, Cambridge CB3 0WB, UK.
E-mail: M.Hyland@dpmms.cam.ac.uk.

For many years it was apparent that there must be some connection between Type Theory and the theory of weak higher dimensional categories. The insights coming from Homotopy Type Theory provide a new angle on that idea. In particular Homotopy Type Theory suggests paying very careful attention to just how and in what ways we have weak structure.

One important aspect is the possibility to replace the computation rules of Type Theory by axioms in terms of identity types. It is important to understand that extreme form of weakness and consider whether there are additional principles (coherence conditions) which should come into play. Considerations related to this issue appear for example in [1] and [2]. This raises the question of the special status of the identity types, a modern form of the question 'Is identity a predicate?'.

In early work on weak categories coherence conditions and coherence theorems play a major role. However in more modern developments (the theory of quasicategories for example) such considerations play no role. This appears to be a move from a theory in an algebraic spirit to one informed by homotopy theory. In recent developments (not only in [1] and [2] but also for example in more recent unpublished work of Awodey Gambino and Sojakova) refined forms of ceherence reappear. Again there is something to understand.

[1] Steve Awodey and Michael Warren, *Homotopy Theoretic Models of Identity Types*, ***Mathematical Proceedings of the Cambridge Philosophical Society***, vol. 146 (2009), pp. 45–55.

[2] Richard Garner, *On the strength of dependent products in the type theory of Martin-Löf*, ***Annals of Pure and Applied Logic***, vol. 160 (2009), pp. 1–12.