

- DR JAMES APPLEBY, *Resolving Two Paradoxes About Knowledge States in the Foundations of Intuitionistic Analysis*.

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A choice sequence is a continually growing sequence whose growth may, or may not, be restricted in some way. They were utilised by Brouwer to resolve a crucial issue with his intuitionistic re-foundation of mathematics; specifically, they allowed him to bridge gap between the rationals and the reals.

Choice sequences received no true formalisation in Brouwer's works, however, from [2] onwards, he considered them as a pair of growing objects; a list of elements generated so far, and a list of intensional first order restrictions.

A knowledge state is a formalised way of representing finite information about choice sequences. This allows us to formally represent intensional information about choice sequences, and achieve a notion of choice sequence close to that proposed by Brouwer. The theory *FIM-KS* put forward in [1] demonstrates that knowledge states can be used to successfully found intuitionistic analysis. They have also been used in [3] to show that the theory of the creating subject is not needed.

This talk demonstrates that the theory of knowledge states put forward in [1] allows two paradoxes to be derived, and it then outlines their resolution.

[1] J.F.APPLEBY, *Choice sequences and knowledge states: extending the notion of finite information to produce a clearer foundation for intuitionistic analysis*, Doctoral Thesis, Keele University, 2017.

[2] L.E.J.BROUWER, *Zur begründung der intuitionistischen Mathematik I*, *Mathematische Annalen*, vol. 93 (1925), pp. 244–257 .

[3] P.FLETCHER, *Brouwer's weak counterexamples and the creative subject: a critical survey*, *Journal of Philosophical Logic*, Upcoming .

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