

L.E.J. Brouwer – Topologist, Intuitionist,
Philosopher

Dirk van Dalen

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How Mathematics Is Rooted in Life

 Springer

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*In loving memory of our daughter Tineke
8 July 1958–14 October 2009*

Preface

Faire abstraction du monde d'objets (ce qui est nécessaire pour travailler dans les mathématiques intuitionnistes) n'est possible qu'en éprouvant la vie comme un rêve.

Brouwer

Among the leading scientists of all times, Brouwer occupies a somewhat unorthodox position that merits a closer look. A genius is usually supposed to be continually involved in brilliant and illustrious activities. Mozart, for example, was said to be the embodiment of music, his mind at all times and places emerged in creation and reflection. In mathematics, Euler would be the perfect example—always investigating, creating, publishing, until a ripe old age. Brouwer belonged to a different class of genius; gifted with a deep intuition, he had an unparalleled access to the secrets and intricacies of mathematics and other subjects, but the manifestations of his genius were rather the eruptions of a proud and isolated volcano than a smooth running river of clever theorems. Indeed, Brouwer refused to join the class of specialised academics, who swear allegiance to a particular topic. He felt free to invest his time and energy in a wide range of activities, running from mysticism, psycholinguistics, art, politics to long walks, swimming, solitary contemplation, to fighting injustice.

The scientific highlights, of course, are Brouwer's topological innovations and the creation of his revolutionary intuitionistic mathematics. Both are manifestations of his unparalleled power of reflection. His intuitionism clearly benefitted from, and was based on his mystic views.

In the following pages the life of this unusual scientist is sketched. The scientific highlights are his breakthrough in the young subject of topology that triggered the transition from the tradition of Cantor to modern topology, and the introduction and consolidation of constructive methods and philosophy under the name *intuitionism*. As a confirmed internationalist he got entangled in the interbellum struggle for the ending of the boycott of the German and Austrian scientists. And roughly at the same time he was drawn into the Formalism–Intuitionism conflict, known as the *Grundlagenstreit*, which found an untimely end in the so-called *War of the frogs and the mice*.

One should not get the impression that his life was one long string of conflicts, but is certainly true that his uncompromising opposition to injustice got him more than his share of problems.

The present biography is a revision of the earlier two volume biography published by the Oxford University Press. After these had, so to speak, passed their natural life span, the OUP gracefully agreed to allow me to publish the present version with Springer. The contents have here and there been updated, and some sections have been pruned.

I have in the Oxford Press edition expressed my gratitude to a large number of friends and colleagues and institutions, and I want on this place to say again how much the biography owes to them. I am indebted to Garth Dales who volunteered to proof read the first seven chapters.

Without the efficient and friendly support of Joerg Sixt and his staff my task would have been a heavy burden, they more than deserve my thanks.

In the mean time the Selected Correspondence of Brouwer (Brouwer 2011) (in an English translation) has appeared, so the reader will have access to a rich source of background information not available earlier.

Utrecht, the Netherlands
November 2012

Dirk van Dalen

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