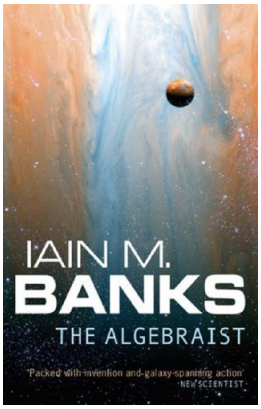
The algebraist *Iain M. Banks*, Obit, London, UK, 2004 (690 p.), Pocket, ISBN 1-8419-230-2.



When I spotted this pocket in a second hand book shop among a pile of science fiction pockets, I could not resist picking it up. The cover told me that the plot had to be situated in 4034 AD. Humanity had spread over the galaxies and Fassin Taak, the hero of the story, has to find a secret list supposedly in the possession the Dwellers. The Dwellers are huge double disk species that had been occupying space much longer than the human race and that lived mainly on gas giants, i.e. planets like Jupiter in our solar system mainly consisting of hydrogen and helium. But time is pressing because an armageddon war is threatening to destroy Taaks home planet.

Because I thought that the solution that our hero would find was in mathematics, I decided I wanted to know and embarked in this thick space opera. It soon became clear that all galaxies were connected by wormholes to allow time-travel, and that the one in the home-space of the hero had been destroyed. Because a rescuing fleet was under way but could not travel fast enough to prevent the total destruction, Fassin Taak was sent out to find the secret list which was rumoured to be a list of secret wormholes that the Dwellers kept hidden from the rest of the universe, or possibly some magic formula that defined a 'transformation' (it is never said what would be transformed) that would reveal the location of the secret wormholes. After endless expositions about the history of the universe, of past wars, the social, religious and political relationships, and a minute description of the most fantastic creatures all invented by Banks' unboundedly imaginative mind, our hero, after many adventures, can finally get hold of a document (we are now at page 644) that contains some formulas in an old forgotten set of symbols (I started thinking of Euclid's geometry or the Principia Mathematica or maybe Bourbaki – although the latter was less probable, the author being Scottish), but it wasn't any of these. After some decryption it turned out to be 'some equation' that resulted in $\dot{-}$ or after translation $\varnothing$. The end of the quest was reached, the result was zero. Whaw! No algebra needed. The mathematics, if there were any at all, were tacitly understood and left unspoken. I was once told that mathematics was the art of writing zero in the most possible complex ways. Perhaps that is Banks' conception of mathematics too. It then took a couple of more pages for the hero to find out that the zero referred to the local coordinate system of the homes of the Dwellers, these gas giants that have a rocky or metallic core. So, the centers of these giant planets, that is where the wormholes are. After reading 690 pages, it is still a mystery to me why the title of this book is 'The algebraist'. The word algebra is sporadically used like 'it's all algebra' meaning something as 'it's all abracadabra'. Let the algebraists among us be warned: this is only the story of a hero catching a zero, and I do not think this is the crux of algebra, or is it?.

The cover of the book is a nice picture (a real one) of the moon Io against a backdrop of Jupiter, taken from Cassini. The full picture can be seen at *http://www.spacedaily.com/images/cassini-galileo-jupiter-io-desk-1000.jpg*. The NASA Cassini orbiter was launched on October 15, 1997 and entered into orbit around Saturn on July 1, 2004. This picture of Jupiters moon Io was taken 'along the road'. The orbiter had to bring the ESA Huygens probe to Saturn (another gas giant). The probe descended to Saturns moon Titan on 15 January 2005. Cassini was named after the French-Italian astronomer Giovanni Domenico Cassini (1625–1712) and the probe after Christiaan Huygens (1629–1695), the Dutch astronomer, physicist and *mathematician*. And so we can conclude this review with a mathematician after all.

Adhemar Bultheel