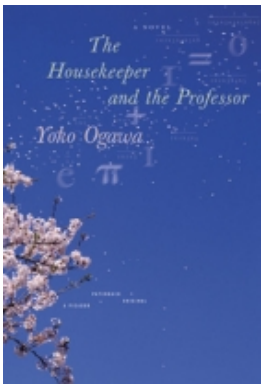
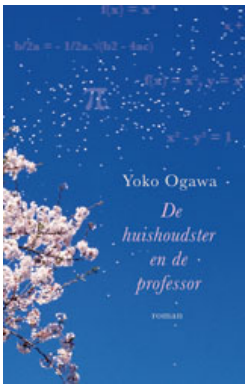
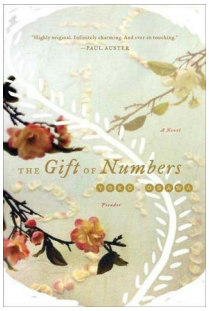
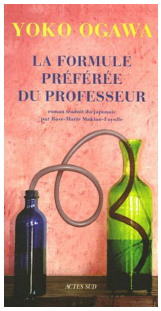
**The housekeeper and the professor / De huishoudster en de professor** *Yoko Ogawa*. Macmillan-Picador, 2009 (197 p.) ISBN 978-0-312-42780-1 / De Vliegende Hollander, Amsterdam, 2010 (207 p.), paperback, ISBN 978-90-495-0061-0.




Yoko Ogawa (born 1962) is a popular and successful Japanese writer. She has published over 20 books of fiction and non-fiction. She has had some affection for mathematics since the book under review (originally in Japanese published in 2003) is about a fictitious mathematics professor, and among her more recent work in 2006 she co-authored *Yo ni mo utsukushī sūgaku nyūmon* (*An Introduction to the World's Most Elegant Mathematics*) with *Masahiko Fujiwara*, a real mathematician (now emeritus professor). The latter has not been translated as far as I know. It is a dialogue between the two authors on the extraordinary beauty of numbers. The original Japanese title of the book under review literally means *The professor's beloved equation*. It was also under that title that it was adapted into a film by *Takashi Koizumi* released in 2006. The translation history is somewhat obscure because it seems uncertain that a first English translation of 2007 with the title *The gift of numbers* was indeed released. The one that is readily available now goes under the title mentioned on top of this page and appeared in 2009. I read the Dutch version from 2010. Many of Ogawa's work has been translated into French though. The first French translation *La Formule préférée du professeur* appeared in 2005 (Actes Sud) already.




When the book came out in 2003, it was a great success and Ogawa got a prize for it. The story is simple enough and gives a poetical account of the warm friendship bonds that grow between the unmarried housekeeper, her 10-year old son and the professor. The professor is a number theorist who got a car accident in 1975 causing serious brain injuries. As a result, he can only keep track of the present for at most 80 minutes, all other memories go back to the period before the accident. None of these three characters get a name, and neither does 'the widow', the professor's sister-in-law who hires the housekeeper to look after the professor. The professor tries to keep track of the present by sticking leaflets with short notes to his suit.

The first time the professor and the housekeeper meet, he asks not for her name but for the size of her shoes. It is 24, and he explains that it is 4 factorial. Then he asks her telephone number, which is 5761455. Now the professor is much more impressed because it is $\pi(10^8)$, the number of primes between 1 and $10^8$. This kind of conversation is repeated every morning because his memory has been reset every night, even though he stitched a note to his suit "My memory lasts only 80 minutes".



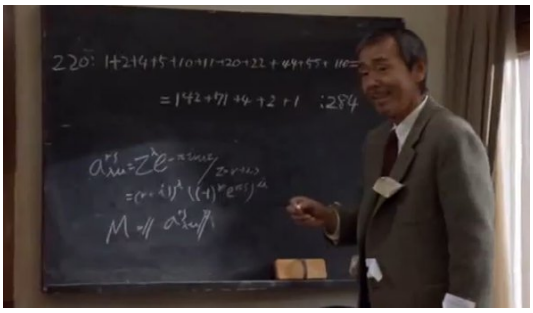



The film *The professor's beloved equation* with *Eri Fukatsu* as the housekeeper and *Akira Terao* as the professor

Besides numbers, the professor has two other passions: children and baseball. When he learns that the housekeeper has a son he insists that she brings him with her, and that he should come to the professor's house after school. He claims that "...children are the foundation of everything worthwhile in the adult world". When he meets the child, he thinks his skull is flat and he calls him Root (like in square-root) because "the root-sign $\sqrt{\ }$ is a strong sign that protects all numbers" and thus also children because they are equally dear to him.

There are a few hints about the broken lives that the housekeeper and the professor have lived before. She, as an unmarried mother, and without higher education has to look for money to survive together with her son who lives as a latch-key child. He was once a mathematician with some undisclosed love-life until that tragic car accident. He is now confined to solving problems that are posed in *The Journal of Mathematics*. So the main theme is not the mathematics, but the loving almost family-like relation between these three characters. She is the one looking after all his practical needs with great admiration

for his work. He is a father-like figure for the son and is 'teaching' them. i.e., he encourages them to think of some elementary properties of (prime) numbers and tries to transfer to them their divine beauty. For example, a homework that he gives to the son is to find a general formula to sum the first $n$ integers. Mother and son together eventually come to the solution $n(n+1)/2$.



The professor explaining amicable numbers

Whenever confused, the professor is basically only able to express himself clearly in numbers or mathematics. For example when it comes to a crisis because the widow fires the housekeeper after she stayed overnight with the professor because he had a fever. Their separation destroys the sphere of peace and leaves them orphaned. Fortunately, none of the other housekeepers before could produce the same love and patience to stay with the professor for long, and the same happens now. The reaction of the professor during the discussion is typical. He is not intervening, but after a while he firmly puts a sheet on the table that contains the formula $e^{i\pi}+1=0$ and leaves without a word. That puts an end to uncertainty, the housekeeper is re-engaged and the trio is reunited again.

Another theme of the novel is baseball. *Yutaka Enatsu* is a legendary Japanese pitcher. He is the indisputable hero of both the professor and of Root. The housekeeper organizes an excursion for the three of them to a match of Enatsu's team the *Tigers*. The son and his mother agree to conceal to the professor that Enatsu is not playing anymore. This is a peak in the story causing the conflict with the widow. Another highlight is when Root is seeking desperately – and eventually finds – a trading card with a piece of wood of Enatsu's bat that he wants to give for the professor's birthday.



Yoko Ogawa

So far I haven't said much about the many pages of 'mathematics' in this novel. Of course there are some statistics related to baseball games that are discussed. In fact the professor never saw a single baseball match, he is only interested in the statistics. I also have mentioned Euler's formula (which the housekeeper keeps in her wallet like a photograph of a beloved person), but the main mathematical topic is number theory, or should I say just numbers. Here prime numbers obviously have a lead with twin and Mersenne primes and Fermat's Last Theorem with Wiles proof briefly mentioned near the end. Any number is an incentive to broach properties of numbers, be they amicable, perfect, deficient or abundant, triangular, or Ruth-Aaron pairs. The mathematics are very elementary though, but I wonder if a mathematical illiterate will be interested in reading several pages about mathematics. For a mathematician, I do not think these pages are interesting either. Fortunately, even in those pages, when the professor's enthusiasm flares, the sphere of love and tenderness is maintained.

I wonder if a similar book could have been written if the professor were not a mathematician. Of course the simplicity and down-to-earth reality that governs the housekeeper's life, as well as the limitation of the professor's memory are essential elements in Ogawa's evocation of their relationship, but are the mathematics as essential? Isn't there an uneasy scent of a caricature of a mathematician? A somewhat naive person permanently chasing after yet another property numbers, living is his own world, unable to communicate or look after himself or adapt to a realistic society. When the professor tries to explain his work while he was in Cambridge, he suddenly deteriorates in a mathematical vocabulary ending up with Artin's theorem, but then he realizes that he is not able to explain himself. The novel is a gem that has won rightfully prizes. It is stripped down to crystal clear sentences evoking warmth and moving emotions. Nevertheless, it leaves me somehow with an uneasy feeling as a mathematician.

There are a number of mathematical puns that I can appreciate. For example the housekeeper's birthday is February 20 or 2.20, while the professor's thesis got number 284. And it so happens that 220 and 284 are amicable numbers. Enatsu's shirt number was 28: a perfect number. I do not know if it is intended that there are 11 chapters (according to the professor 11 is "even among the prime numbers, an exceptionally beautiful prime"). Root's 11th birthday is celebrated on 11 September (9/11 indeed) and it is the final breakdown since professor's brain starts collapsing. Let me end with a quote of Ogawa (alias the professor): "Math has proven the existence of God because it is absolute and without contradiction; but the devil must exist as well, because we cannot prove it."

Adhemar Bultheel